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Ventral side: Prosternal process mediobasally not margined.

Male genitalia: Figs 781–783.

Female: Unknown.

Distribution: Sudan (Fig. 778).

Biology: Unknown.

### **Hydrovatus vividus** Guignot

Figs 778, 784–786.

*Hydrovatus vividus* GUIGNOT, 1954a:3 (orig. descr., faun.); 1954b:12 (descr., faun.); 1958b:5 (disc.); 1959a:172, 175 (descr., faun.).

Type locality: Mabwe, PNU, Zaire.

Type material studied: Holotype, m: Holotypus/Congo belge PNU Mabwe 585 m 2.II.1949 Mis. .F. de Witte 2305a/Coll. Mus. Congo (ex coll. I.P.N.C.B.)/Dr. F. Guignot det. 1953 *Hydrovatus vividus* Guign. Type m (MAC). – Paratype: Same data as holotype but: Allotypus/31.I. 3.II.1949, 2299a (1 ex. MAC). In all, 2 exx.

Diagnosis: Very close to *H. parallelipennis* above, but distinguished by examination of the penis: Ventral outline of penis medially with a distinct expansion.

Description: only important deviations from description of *H. parallelipennis* recognized.

Length of body: 4.36–4.40 mm, breadth: 2.48–2.52 mm. Dorsal aspect of body as in *H. parallelipennis* (Fig. 769).

Male genitalia: Figs 784–786.

Female: Externally as male.

Distribution: Zaire (Fig. 778).

Biology: Unknown.

### **6.5.11. Species group 11 (sp.gr. *oblongipennis*)**

#### **Hydrovatus seminarius** Motschulsky

Figs 787–795.

*Hydrovatus seminarius* MOTSCHULSKY, 1859:42 (orig. descr., faun.; in part *H. maai* n.sp.); 1869:29 (faun.); SHARP 1882a:815 (descr., faun.); BRANDEN, 1885:27 (faun.); RÉGIMBART, 1899b:239 (faun.); ZIMMERMANN, 1920a:35 (faun.).

*Hydrovatus fuscus* SHARP, 1882a:326 (orig. descr., disc., faun.); BRANDEN, 1885:26 (faun.); SHARP, 1890:343 (faun.); SEVERIN, 1890:CXC (faun.); RÉGIMBART, 1899b:233 (descr., faun.); JAKOBSON, 1905:419 (faun.); ZIMMERMANN, 1920a:33 (faun.); FENG, 1933a:324 (faun.); 1933b:92, 93 (descr., faun.); WU, 1937:203 (faun.); GUIGNOT, 1954g:564 (faun.); 1956g:57 (faun.); VAZIRANI, 1969:3 (faun.); 1970b:106 (descr., faun.); WEWALKA, 1972:115 (faun.); VAZIRANI, 1973:288, 293 (descr., faun.); ROCCHI, 1976:179 (faun.); VAZIRANI, 1977a:28 (faun.); BRANCUCCI, 1979:196 (faun., descr.); ROCCHI, 1982:57 (faun.); WEWALKA, 1982:117, 123 (faun.); JÄCH, 1984:237 (faun., biol.); ROCCHI, 1986a:33 (faun.); NAKANE, 1990a:198 (disc.). **New synonym.**

*Hydrovatus tinctus* SHARP, 1882a:328 (orig. descr., faun.); BRANDEN, 1885:27 (faun.); RÉGIMBART, 1899b:233, 234 (syn. *H. fuscus* Sharp); ZIMMERMANN, 1920a:34 faun.); FENG, 1933a:324 (list.); WU, 1937:204 (list.); WEWALKA, 1972:115 (list.); VAZIRANI, 1977a:31 (faun.). **New synonym.**

*Hydrovatus matsuii* NAKANE, 1990a:198 (orig. descr., faun.); 1990b:25, 28 (faun.). **New synonym.**

#### Type locality: India cont.

Type material studied: *H. seminarius*: Lectotype, m, by present designation: *Hydrovatus seminarius* Motsch. I. or. Birma ?/1275 (ZMM). - Paralectotype: Mounted on card below lectotype on same pin (1 ex. ZMM; paratype of *H. maai* n.sp.). - *H. fuscus*: Lectotype, m, by present designation: Type/No 7/Celebes Macassar O. Beccari/Sharp Coll. 1905-313/Type 7 *Hydrovatus fuscus* n.sp. (BMNH). - Paralectotype: Cotype/Celebes/Sharp Coll. 1905-313/*Hydrovatus fuscus* Sharp co-type (1 ex. BMNH). - *H. tinctus*: Lectotype, m, by present designation: Type/Type 9/Bangkok/Siam/Sharp Coll. 1905-313/*Hydrovatus tinctus* n.sp. (BMNH). - Paralectotype: Principally with same data as lectotype (1 ex. BMNH). - *H. matsuii*: Holotype, m: Japan: Nehara Tatsugo T. Amani-Unshima Kagoshima Pref. 25.III.1988 leg. E. Matsui/Holotype/*Hydrovatus matsuii* det. T. Nakane (coll. Nakane).

Additional material studied: India: Rajast. Bharatpur 11.VIII.1989 (33 exx. coll. Balke & Hendrich, 8 exx. MZH); Karikal/*Hydrovatus fuscus* Shp det. Wewalka 1972 (1 ex. NMW); S. Andaman Isl. Bimblton Lichtfang an Bach 22.XII.1976/*Hydrovatus fuscus* Shp det. Wewalka 1981 (2 exx. NMW). - Sri Lanka: Uda Walawa 10.I.1988/sugercane plant. (1 ex. BMNH); Hildenduuva 17-29.III.1983 (9 exx. MZH); Colombo 1-3.XII.1984 at light (1 ex. MZH); Ceylon (3 exx. MNB, 1 ex. MZH). - Nepal: Kathmandu 18-27.IX.1979/*H. fuscus* Sharp det. Satô, 1989 (6 exx. MZH). - Burma: Rangoon 6.XI.1984/*H. fuscus* Sharp det. Rocchi 1985 (1 ex. coll. Rocchi); Palon (Pegu) VIII-IX.1887/*H. tinctus* Shp ? det. Régimbart (1 ex. MCG). - Thailand: Thail. NO Kohon Kaen, lux 23-26.XII.1980 (1 ex. MNB); Chieng Mai 300 m at light 14.XI.1957 (1 ex. BBM); ca 220 km NW Bangkok 110 m, IX.1990 (16 exx. MNB, 4 exx. MZH); Pattaya 1-15.XII.1979 (1 ex. UZI). - Laos: Vientiane 31.V.-3.VI.1960/light trap (7 exx. BBM, 2 exx. MZH); Vientiane 30.V.1965/at light (15 exx. BBM, 4 exx. MZH); Vientiane 28.V.1965 (2 exx. BBM); Vientiane 26.V.1965/at light (3 exx. BBM); Vientiane 8.V.1965/at light (1 ex. BBM); Vientiane 2-4.VI.1960 (2 exx. BBM); Vientiane pr. Ban Van Eue 30.II.1965/light trap (2 exx. BBM); Vientiane pr. Gi Sion Vill. de Tha Ngone 28.II.1965/light trap (2 exx. BBM); Luang Prabang 300 m 4-5.VI.1960/light trap (1 ex. BBM); Sedone Pr. Pakse 22.V.1965 (1 ex. BBM). - Vietnam: Lachto Tonkin (50 exx. MNHN, 5 exx. MZH). - Malaysia: Penang 15-17.I.1981 (1 ex. UZI). - Indonesia: Sumatra: N. Sumatra lux Dolok-Merungir 1.X.-14.XI.1984 (6 exx. MNB, 2 exx. MZH); Bali: Ubud ca 300 m, Reisfeld 26.VIII.1990 (1 ex. coll. Balke & Hendrich); Sumbawa, Dompoe 24-25.V.1927 (1 ex. MNB). - Japan: Ryukyu archipelago: Is. Iriomote Mitara 8.VIII.1962 (2 exx. MZH, variation). In all, 207 exx.

**Diagnosis:** A quite distinct species, although it exhibits a slight variation in the shape of the penis. The species is characterized by a quite small body, by a totally margined frontal part of the head, by the almost evenly curved strongly built apical hook of the paramere, and by the broad penis in dorsal aspect.

Length of body: 2.24–2.66 mm, breadth: 1.48–1.68 mm. Habitus (Fig. 787). Body punctation slightly variable in different parts of range.

Head: Pale ferrugineous to ferrugineous. Frontally sometimes with vague paler area. Punctation fine, sparse, in part hardly visible. At eyes and shallow frontal depressions with denser punctures. Submat, microsculptured (meshes distinct). Anteriorly rounded, medially slightly straightened. Between eyes finely margined (Fig. 788). Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 789).

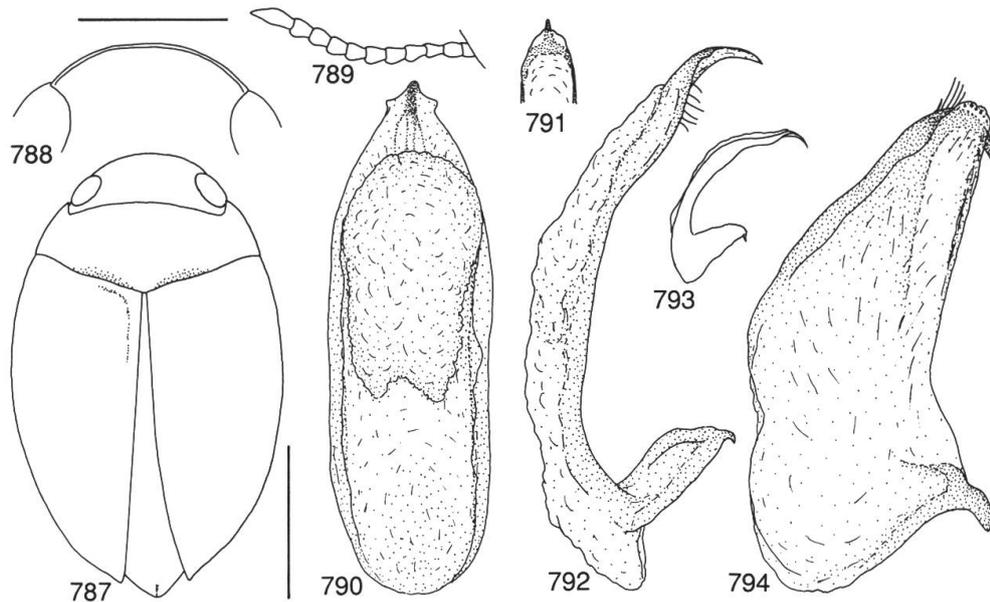
Pronotum: Ferrugineous to dark ferrugineous, laterally with vague pale ferrugineous to pale brown areas. Punctation fine, somewhat sparse, laterally on disc with still finer and sparser punctures; punctation in part almost absent. Rather shiny, microsculptured (meshes generally discernible). Lateral outline of pronotum rounded.

Elytra: Ferrugineous to dark ferrugineous, paler at epipleura. Without distinct colour pattern. Punctation fine to rather fine, somewhat sparse. Apically and laterally punctures finer, sparser, partly absent (varying from the Ryukyu Archipelago by a general elytral punctation somewhat coarser). Discal row of punctures basally clearly discernible although surrounded by adjacent punctures. Rarely discal row quite indistinct. Dorsolateral row of punctures very indistinct, hardly visible. Lateral row of punctures clearly discernible, although rather irregular. Rather shiny, with very fine, sporadically discernible reticulation. Meshes of microsculpture sometimes extensively clearly discernible. Epipleura pale ferrugineous to ferrugineous, punctation and reticulation very fine, often indistinct.

Ventral side: Pale ferrugineous to ferrugineous to brown and dark brown. Punctation rather fine to fairly coarse, somewhat sparse. Abdomen, except basally, almost impunctate. Rather shiny, almost without microsculpture. Abdomen with fine reticulation. Prosternal process laterally finely margined, medial surface almost flat to slightly convex, finely punctate. Stridulatory apparatus narrow, consists of numerous striae.

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

Male genitalia: Figs 790–794. Slight variation exhibited in shape of apical half of penis (lateral aspect). Also minor differences in appearance of penis apex in dorsal view.



Figs 787–794: *Hydrovatus seminarius*. – 787, habitus. – 788, head, frontal aspect. – 789, antenna. – 790, penis, dorsal aspect. – 791, supplementary illustration of penis apex. – 792, penis, lateral aspect. – 793, supplementary illustration of penis. – 794, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia (excl. Figs 791, 793).

Female: Externally approximately as male but without stridulatory apparatus.

Distribution: India including Andaman Islands, Sri Lanka, Nepal, Burma, Thailand, Laos, Vietnam, Malaysia, Indonesia: Sumatra, Celebes, Sumbawa, Bali and Japan (Fig. 795). Unverified record under the name *H. tinctus* from New Guinea (VAZIRANI, 1977a), and under the name *H. fuscus* China, Taiwan (SHARP, 1882a), Indonesia: Timor (RÉGIMBART, 1899b), Indonesia: Java (GUIGNOT, 1956g), Pakistan (WEWALKA, 1972), and Bangla Desh (ROCCHI, 1976).

Biology: In Sri Lanka sampled in sugercane plantation and in Indonesia, Bali, in a rice field. Often sampled at light collection. See also JÄCH(1984).

Synonymy: The lectotypes and holotype of the four species involved have been examined. Despite slight variation exhibited, e.g. in shape of penis I believe them all to belong to one species, the valid name of which is *H. seminarius* (oldest available name). Further studies are needed to decide if a separation of subspecies is justified.

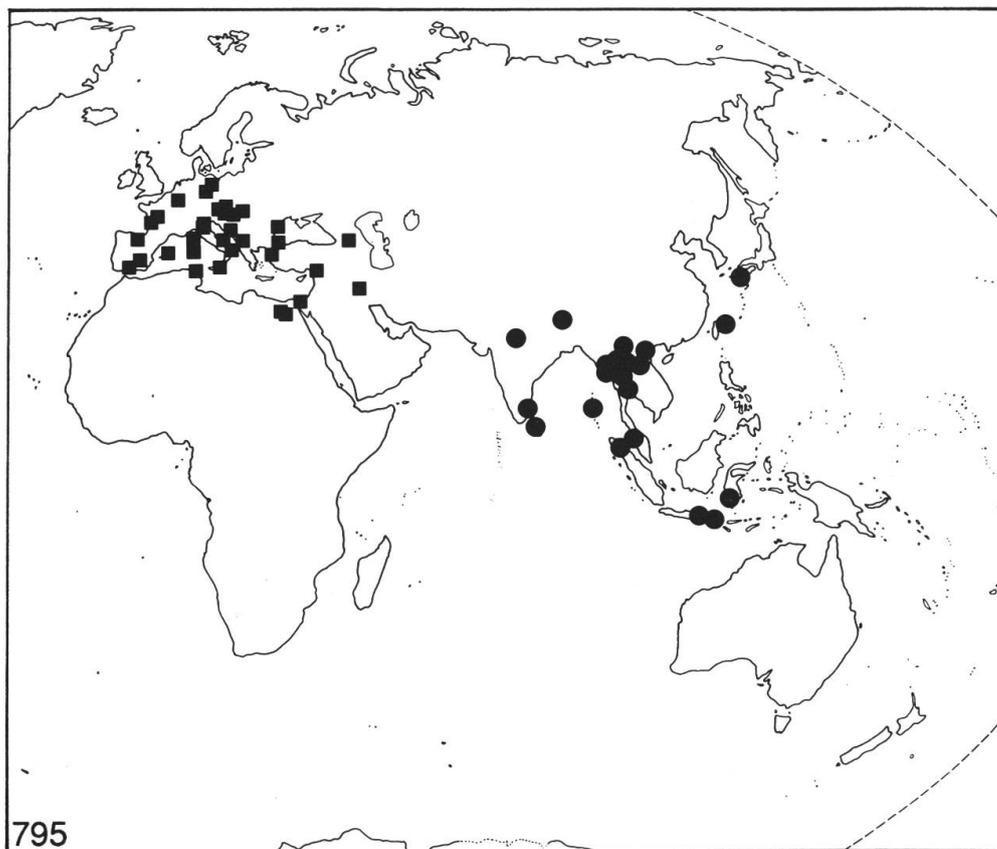


Fig. 795: Distribution of *Hydrovatus seminarius* (dot) and *H. cuspidatus* (square).

### ***Hydrovatus cuspidatus* (Kunze)**

Figs 20, 795–802.

*Hyphydrus cuspidatus* KUNZE 1818:68 (orig. descr., faun.).

*Hydrovatus cuspidatus* AHRENS, MOTSCHULSKY 1853:4 (faun.).

*Oxynoptilus cuspidatus* (KUNZE), SCHAUM 1868:29 (descr., faun.).

*Hydrovatus cuspidatus* GERMAR, CROTCH 1873:387 (disc.).

*Hyphydrus cuspidatus* KUNZE, SHARP 1876:61 (disc.).

*Hydrovatus cuspidatus* (KUNZE), LEPRIEUR, 1879:LXXXII (disc.); SHARP, 1882a:321 (descr., faun.); KOLBE, 1883:404 (disc., faun.); BRANDEN, 1885:26 (faun.); GANGLBAUER, 1892:446 (descr., faun.); RÉGIMBART, 1895b:99 (faun.); JAKOBSON, 1905:418 (faun.); REITTER, 1908:207 (descr., faun.); GERHARDT, 1910:37 (faun.; under name *Oxynoptilus*); SAHLBERG, 1913:40 (faun.); ZIMMERMANN, 1919:126 (list.); DORSSELAER, 1919:79 (descr., faun.); ZIMMERMANN, 1920a:33 (faun.); WINKLER, 1924:218 (faun.); BEDEL, 1925:334, 335 (descr., faun., biol.); ZAITZEV, 1927:3, 38 (faun.); PORTEVIN, 1929:180 (descr., faun.; under name *Oxynoptilus*); ZIMMERMANN, 1930:27 (descr., faun.); GUIGNOT, 1933:278 (descr., faun., biol.); HOULBERT, 1934:44, 138 (descr., faun., biol.); BAGUENA CORELLA, 1936:84 (faun.; under name *Oxynoptilus*); F. BALFOUR-BROWNE, 1936:28 (disc.); F. BURMEISTER, 1939:217 (faun., biol.); F. BALFOUR-BROWNE, 1940a:187 (descr., disc., faun.); Horion, 1941:368 (faun.); BAGUENA

- CORRELLA, 1942:17 (faun.; under name *Oxynoptilus*); CSIKI, 1946:587 (descr., faun.); GUIGNOT, 1947b:58 (descr., faun., biol.); LAGAR, 1949:53 (faun.); ZAITZEV, 1951:54 (faun.); 1953:90 (faun.); HLISNIKOVSKY, 1954:94 (faun.); JOSEPH OMER-COOPER, 1954:255, 256 (disc., faun.); DORSSELAER, 1957:10 (faun., biol.); GUÉORGUIEV, 1958:44 (faun.); KOCHER, 1958:12 (disc., faun.); GUIGNOT, 1959a:142, 143 (descr., faun.); GUÉORGUIEV, 1960:24 (faun.); FOCARILE, 1960:47, 51, 65, 103., 106 (faun., biol.); GUIGNOT, 1961b:932 (biol.); FRANCISCOLO, 1964:178, 179, 180, 181 (descr., disc., faun.); GUÉORGUIEV, 1964:298 (faun.); 1965a:113 (disc.); 1965b:103 (faun.); BILARDO, 1965:139, 144, 150 (faun., biol.); SCHAEFLEIN, 1971:25 (descr., faun., biol.); GALEWSKI, 1971:59 (descr., faun.); GUÉORGUIEV, 1971:9 (faun.); ZAITZEV, 1972:115 (descr., faun., biol.); ANGELINI, 1973:8 (faun.); GUÉORGUIEV, 1973:105 (faun.); LARSON & PRITCHARD, 1974:57 (stridulatory function disc.); GALEWSKI, 1974:577 (larva descr., faun., biol.); HEBAUER, 1976:107, 111 (biol.); ALFIERI, 1976:32 (faun.); BURAKOWSKI & al., 1976:240 (faun.); MALICKY, 1977:227 (faun.); DE MARZO, 1977:112 (larva illustr.); NIEUKERKEN, 1979:51 (faun., biol.); FRANCISCOLO, 1979:275, 276, 277 (descr., disc., faun., biol.); ROCCHI, 1980:122, 125 (faun.); GUORGUIEV, 1981:401 (faun.); GIACINTO, 1981:77 (faun.); BANGSHOLT, 1981:56 (descr., faun., biol.); MAZZOLDI, 1982:42 (faun.); SCHAEFLEIN & WEWALKA, 1982:6 (faun., biol.); NIEUKERKEN, 1982:16 (faun.); COX & COX, 1982:151, 153 (faun.); SCHAEFLEIN, 1983:5 (faun.); FICHTNER, 1983:7 (faun., biol.); BISTRÖM & SILFVERBERG, 1983:1 (faun.); ROCCHI, 1984b:33, 37 (faun.); ANGELINI, 1984:55 (faun.); GALEWSKI, 1985:49, 51 (larva descr.); WEWALKA, 1986:277 (faun., biol.); ROCCHI, 1986b:84 (faun., biol.); LUCHT, 1987:50 (faun.); JÄCH & MARGALIT, 1987:329, 333, 334 (faun., biol.); GUÉORGUIEV, 1987:43 (descr., faun.); PONS 1987:127 (faun.); BURMEISTER & al., 1987:177 (faun., biol.); LEBLANC, 1988:29 (list.); NILSSON, 1988:2284 (descr., disc., larva); RATTI, 1989:90, 99 (faun.); KOCH, 1989:111 (faun., biol.); SCHAEFLEIN, 1989:5 (faun.); GERECKE & BRANCUCCI, 1989:44, 46 (faun., biol.); LÖDERBUSCH, 1989:350 (faun.); ALARIE & HARPER, 1990:372 (list.); RICO & al., 1990:40, 178 (faun.); PEDERZANI, 1990:66 (faun., biol.); HANSEN & al., 1991:104 (faun.); ROCCHI, 1991:68 (faun.); KLAUSNITZER, 1991:165, 172, 173 (faun., biol., larva descr.); BALKE & HENDRICH, 1991:363, 370 (faun., biol.); HENDRICH & BALKE, 1991a:71, 72 (descr., faun., biol.); 1991b:453–458 (disc., faun., biol.); RIHA, 1992:20 (cat., faun.); MAZZOLDI & TOLEDO, 1992:189 (faun., biol.); HEBAUER, 1992:112 (biol.).
- Hydrovatus maculatus* SHARP, 1882a:322 (orig. descr., faun.); BRANDEN, 1885:26 (faun.); SEVERIN, 1890:CXC (disc.); RÉGIMBART, 1895b:103 (disc., faun.); JAKOBSON, 1905:418 (faun.); ZIMMERMANN, 1919:126 (disc., nomen praeocc. by *H. maculatus* Motschulsky = *Microdytes maculatus* (Motschulsky)); 1920a:34 (list.); WINKLER, 1924:218 (list.); ZIMMERMANN, 1930:29 (disc.); BALFOUR-BROWNE, 1939:480 (disc.); GUIGNOT, 1959a:144 (list.); GUÉORGUIEV, 1965a:113 (list.); HOSSEINIE, 1978:169, 171 (faun., biol.).
- Hydrovatus maculosus* ZIMMERMANN, 1919:126 (nom. nov. for *H. maculatus* Sharp); 1920a:34 (faun.); WINKLER, 1924:218 (faun.); ZIMMERMANN, 1930:29 (disc.); GUIGNOT, 1959a:142, 144 (descr., faun.); GUÉORGUIEV, 1965a:113 (faun.; given as subsp. of *H. cuspidatus*); ALI, 1978:12 (faun.).
- Hydrovatus simplex* SHARP, 1882a:322 (orig. descr., faun.); BRANDEN, 1913:40 (faun.); ZIMMERMANN, 1920a:36 (faun.); WINKLER, 1924:218 (faun.); BEDEL,

1925:335 (faun., syn. *H. clypealis* Sharp); ZIMMERMANN, 1930:27, 29 (descr., faun.); F. BURMEISTER 1939:217 (faun.); GUIGNOT 1945a:298 (disc.); 1947b:58, 59 (descr., faun.); 1959a:125, 130 (descr., faun.); FRANCISCOLO, 1964:177, 178, 180, 212 (descr., disc., faun.); GUÉORGUIEV, 1973:103, 105 (faun.); FRANCISCOLO, 1979:276, 277, 278 (descr., faun.); ANGELINI, 1984:55 (faun.); ROCCHI, 1986b:84 (disc., faun.); GARCIA RAJAS, 1987:210 (faun., biol.); BURMEISTER & al., 1987:169, 184 (faun.); RICO & al., 1990:41, 178 (faun.); RIBERA & ISART, 1992:236, 242, 243, 244, 245 (descr., disc., biol.). **New synonym.**  
 (not) *Hydrovatus cuspidatus* (KUNZE), LENG, 1920:77 (faun.); YOUNG, 1956:53 (disc.). Incorr. syn. with *H. pustulatus* Melsheimer.

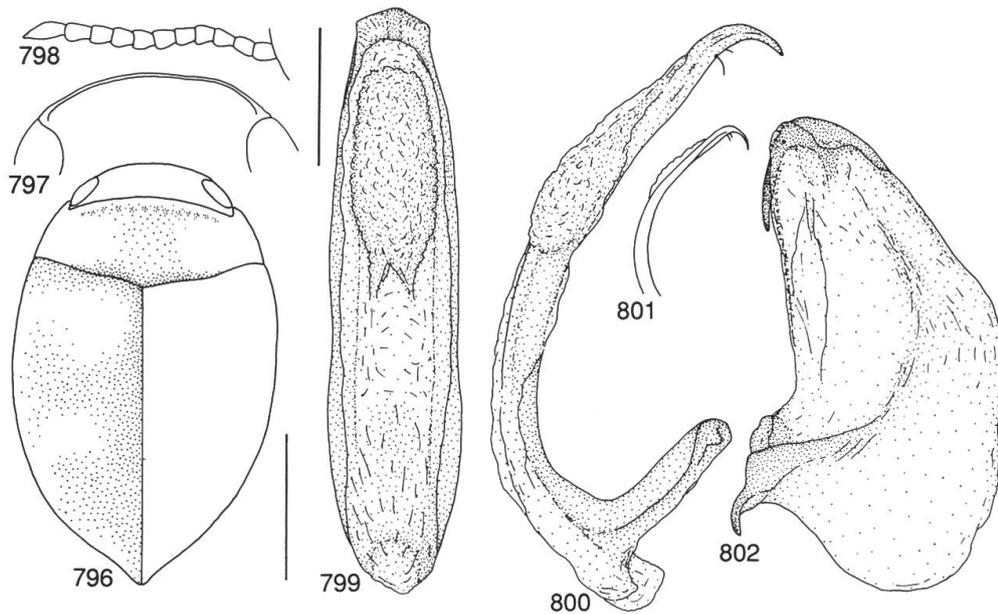
#### Type locality: Halle, Germany.

Type material: *H. cuspidatus*: Probable female cotype: Coll. Zool. Mus. Leipzig, Übernahm 1971/Staatl. Museum fr Tierkunde Dresden (1 ex. SMD). Being a female, which often is difficult to associate with the male, I have decided not to designate it as a lectotype. Males belonging to the original type material may turn up later. – *H. maculatus* = *H. maculosus*: Lectotype, f, by present designation: 424/Type/Mesopotamia/Mesopotamia Millingen/Sharp Coll. 1905–313/*Hydrovatus maculatus* Sharp Type (B MNH, mounted on right on same card as one paralectotype). – Additional paralectotypes: Same data as lectotype (2 exx. BMNH). – *H. simplex*: Lectotype, m, by present designation: *Hydrovatus simplex* m Type D.S./Type/Corsica/Europe/*Hydrovatus simplex* (BMNH). – Paralectotypes: Principally with same data as lectotype (1 ex. BMNH, 1 ex. MNHN); Malaga (1 ex. BMNH); *H. simplex* var. *Elmas* Sardinia (3 exx. BMNH).

Additional material studied: Germany: Potsdam (1 ex. MNB); Halle 21.V.1953 (1 ex. MNB); Deutschland (1 ex. OLL). – France: Bordeaux V.1943 (1 ex. MNB); Ht Viennes St Barbant (1 ex. MNB); Dinneys V.1926 (2 exx. MNB); Lille (4 exx. MCN); Corsice (1 ex. MZH); Francia (2 exx. MCN). – Austria: Wien (1 ex. MNB); Umg. Wien (3 exx. OLL); Neusiedlersee 20.V.1933 (2 exx. OLL); Neusiedlersee (1 ex. MZH); Austria (4 exx. MCN, 3 exx. OLL, 1 ex. MNB). – Hungary: Siofok (1 ex. MNB); Ungarn (4 exx. OLL, 2 ex x. MNB). – Spain: Palencia (1 ex. MNB); Sierra Morena Sta Helena 4–8.IV.1926 (4 exx. MZH); Mallorca Albufera (1 ex. Mus. Frey, 2 exx. MNB). – Italy: Syracuse (1 ex. MZH); Brindisi (2 exx. MZH); Manfredonia (1 ex. MNB, 2 exx. OLL); Castel'Franco 25.VI.1893 (4 exx. MNB); Emilia Poeggiolo V.1896 (1 ex. MNB); Emilia VI.1905 (2 exx. MNB); Sardinia (1 ex. MNB). – Yugoslavia: Vardarebene Macedonia (1 ex. MNB); Dalmacia (2 exx. MCN). – Romania: Mangalia Kuchta (1 ex. OLL). – Greece: Lesbos (1 ex. MZH). – Turkey: Side, at light 3.VI.1989/*H. simplex* Shp det. Nilsson (1 ex. coll. Nilsson). – Syria: Syria (1 ex. MNB). – Egypt: Ain Shifa 2.VII. (2 exx. AMS); El Ariq VI. (3 exx. AMS); Baharein 10.VI. (4 exx. AMS); Baharein VI.1935 (3 exx. BMNH, 1 ex. MZH); Girba 12.VIII.1935 (4 exx. BMNH, 2 exx. MZH); Siwa reg. (14 exx. AMS). – Armenia (part of former USSR): Dzirwez 12.IV.1958/*H. cuspidatus* (Kunze) det. Khnzorian det. (2 exx. MZH). – Location unknown: (5 exx. MNB). In all, 117 exx.

**Diagnosis:** A somewhat variable but still characteristic species which is distinguished by examination of the penis: Penis (dorsal aspect) is quite broad, narrows slightly towards an obtuse apex.

Length of body: 2.52–2.92 mm, breadth: 1.68–1.86 mm. Habitus (Fig. 796).



Figs 796–802: *Hydrovatus cuspidatus*. – 796, habitus. – 797, head, frontal aspect. – 798, antenna. – 799, penis, dorsal aspect. – 800, penis, lateral aspect. – 801, supplementary illustration of penis. – 802, paramere. Left top scale 0.5 mm, head and antenna; left bottom scale 1 mm, habitus; right scale 0.4 mm, genitalia (excl. Fig. 801).

Head: Pale ferruginous to ferruginous. Almost impunctate. Narrowly at eyes and in shallow frontal depressions with slightly coarser and denser punctures. Submat, microsculptured (meshes distinct). Head frontally rounded, medially straightened, narrowly margined (Fig. 797). Antenna pale ferruginous, rather slender, not distinctly modified (Fig. 798).

Pronotum: Ferruginous to pale ferruginous, basally with vague, darkened area. Punctuation rather fine to fine; at margins punctures fairly dense. Broad discal area with finer and distinctly sparser punctures. Rather shiny to slightly mat, finely microsculptured (meshes distinct). Lateral outline of pronotum rounded; outline posteriorly sometimes almost straight.

Elytra: Blackish to dark ferruginous to ferruginous. Sometimes with vague to quite vague paler spots (Fig. 796). Sometimes paler areas totally absent. Punctuation rather fine (size of punctures variable), somewhat sparse. Laterally and apically punctures distinctly finer and sparser. Discal row of punctures almost absent (mixed with ordinary punctuation). Dorsolateral row of punctures generally clearly discernible, although somewhat irregular. Lateral row of punctures quite distinct. Rows some times indistinct. Rather shiny, although

finely microsculptured (meshes generally discernible, often partly weakly developed). Epipleura pale ferrugineous to ferrugineous, punctures and microsculpture rather indistinct.

Ventral side: Dark ferrugineous to pale ferrugineous. Punctuation rather fine to fairly coarse, fairly dense. Abdomen, except basally, almost impunctate. Rather shiny, almost without microsculpture. Abdomen submat, with fine reticulation. Stridulatory apparatus rather narrow, consists of numerous, minute ridges. Prosternal process laterally finely margined, medial surface almost flat to slightly convex and finely punctate.

Legs: Pale ferrugineous to ferrugineous. Pro- and mesotarsus somewhat enlarged. Protarsal claws not distinctly modified.

Male genitalia: Figs 799–802. Shape of penis apex somewhat variable.

Female: Dorsal side of body more mat than in male. Without stridulatory apparatus.

Larva: Fig. 20.

Distribution: Germany, France, Austria, Hungary, Spain, Italy, Greece, Yugoslavia (Macedonia), Romania, Turkey, Syria, Egypt, Iraq, Armenia (Fig. 795). The species has also been recorded at least from Belgium (SHARP, 1882a), Tunisia and Algeria (RÉGIMBART, 1895b), Marocco, Libya and Ethiopia, Eritrea (BEDEL, 1925), the Netherlands (ZIMMERMANN, 1930), Azerbaijan (JAKOBSON, 1905), Caucasus and Uzbekistan (F. BURMEISTER, 1939), Czechoslovakia, Albania and Yugoslavia, Serbia (HORION, 1941), Georgia (ZAITZEV, 1953), Bulgaria (HLISNIKOVSKY, 1954), Dalmatia (present Croatia) and Palestina (JOSEPH OMER-COOPER, 1954), Poland (Guorguiev, 1960), Iran and Turkmenistan (GUÉORGUIEV, 1965b), Ukraine (ZAITZEV, 1972), Portugal and Slovenia (FRANCISCOLO, 1979), Israel (GUÉORGUIEV, 1981), Denmark (BANGSHOLT, 1981) and Switzerland (LUCHT, 1987). Records from North America refer to *H. pustulatus* Melsheimer (incorrect synonymization).

Biology: HENDRICH & BALKE (1991b) give a quite comprehensive description of collecting localities in Germany. In northern Germany *H. cuspidatus* was collected in woodland fens and mosses among the peat–mosses. It is regarded as a strongly threatened species in Germany (BALKE & HENDRICH, 1991). KLAUSNITZER (1991) reports the species to be living in standing and also in brackish water. HEBAUER (1992) reports that the species is iliophilous and living in standing, neutral waterbodies. In Greece *H. cuspidatus* is reported

from an isolated pool in a dry stream bed, with a muddy bottom and extended mats of *Chara* sp., and from a marshy area with low water that is muddy, Typhetum along the shore, and semisubmersed herbaceous vegetation. In both localities the species occurred together with many other Hydradephaga species (MAZZOLDI & TOLEDO, 1992). Often sampled at light collection. Additional notations of the biology are given in several papers listed above (marked with biol.). See also under the section on biology of the genus *Hydrovatus*, p. 90.

Synonymy: *H. cuspidatus* has a wide distribution in Europe, and its interpretation among different authors seem to coincide. I have examined only one probable (female) cotype of the species. Slight uncertainty thus remains regarding its species-concept. *H. simplex* and *H. maculosus* seem morphologically to coincide quite well with what is known under the name *H. cuspidatus*. There are minor differences in the shape of the penis, and the elytral colour pattern exhibits variation (unicoloured/with distinct colour pattern). At present I prefer not to distinguish subspecific groups. The taxon *H. maculosus* is regarded as a subspecies of *H. cuspidatus* by Guéorguiev (1965a). Synonymy of *H. cuspidatus* (valid name) and *H. simplex* is proposed here.

### **Hydrovatus insolitus** Guignot

Figs 803–808, 816.

*Hydrovatus rufoniger* (CLARK), GUIGNOT, 1945a:306, 311, 317 (no descr., faun., in part *H. rufoniger*).

*Hydrovatus insolitus* GUIGNOT, 1948b:163 (orig. descr., faun.); 1959a:173, 175 (descr., faun.); BILARDO & PEDERZANI, 1978:104, 107 (descr., disc., faun.); PEDERZANI & ROCCHI, 1982:71 (faun.); BILARDO & ROCCHI, 1987:98 (faun., biol.); 1990:170 (faun.).

*Hydrovatus propinquus* GUIGNOT, 1955g:272 (orig. descr., faun.); 1961a:233 (faun.).

#### **New synonym.**

*Hydrovatus cryptus* GUIGNOT, 1956f:49 (orig. descr., faun.); BRUNEAU DE MIRÉ & LEGROS, 1963:850 (disc., faun.); MEDLER, 1980:155 (faun.). **New synonym.**

*Hydrovatus tritus* GUIGNOT, 1959a:160, 166 (orig. descr., faun., originally a manuscript-species of J. Balfour-Browne). **New synonym.**

*Hydrovatus nachtigali* BRUNEAU DE MIRÉ & LEGROS, 1963:849, 888 (orig. descr., faun., on p. 888 by mistake given as *naghtigali*). **New synonym.**

Type locality: Mt Nimba, Guinea.

Type material studied: *H. insolitus*: Holotype, m: Mt. Nimba 500–700 m A. Villiers/m/IFAN-1948/Type/F. Guignot, det. 1947 *Hydrovatus insolitus* Guign. Type m/ Museum Paris (MNHN). – *H. propinquus*: Holotype, m: Shambe Sudan 10.6.31/Afrika Motorfahrt H. Dingler 1931/Type/Dr. F. Guignot det. 1955 *Hydrovatus (Vathydrus) propinquus* n.sp. Type m (ZSM). – Paratype: Shambe VI.1931/Paratype (1 ex.

MNHN). – *H. cryptus*: Holotype, m: Holotypus m/Recolté dans Ehobe tourbeux I.R.S.A.C. – Mus. Congo Tshuapa: Terr. Bikoro 350 m: Lac Tumba N. Leleup X.1955/F. Guignot det., 1956 *Hydrovatus (Vathydrus) cryptus* n.sp. Type m (MAC). – *H. tritus*: Holotype, m: Holotype *tritus* Balf.-Br./Musée du Congo Soudan: 3.VI.1926 L. Burgeon/R. Dét. 0 3021/*Hydrovatus compactus* Shp. det. Gschwendt./R. Det. F. 5500/*Hydrovatus tritus* Holotype! J. Balfour-Browne det./F. Guignot det. 1959 *Hydrovatus (Vathydrus) cryptus* Guign. (MAC). I have seen three specimens labelled as paratypes from Katanga: Kansenia (one as cotype of *H. tritus* and two probably by mistake *H. tristis* B.-Br.). Original description (GUIGNOT, 1959a) mentions only the holotype – thus the three “paratypes” in MAC do not belong to the type material. Additionally they are not conspecific with *H. insolitus*-*H. tritus*, but belong to another *Hydrovatus* species. – *H. nactigali*: Holotype, m: Marecages de Tigui 27–28. sept. 1959/Tibesti zone du Borkou Bruneau de Miré/Type/*Hydrovatus (Vathydrus) nactigali* n.sp. C. Legros det. (MNHN). – Paratypes: Marécages de Tigui 6.VIII.56/Borkou Ph. de Miré/Museum Paris f (1 ex. MNHN); Source de Yerra 15.VIII.56/Tibesti Massif Koussi Ph. de Miré/Museum Paris (1 ex. MNHN).

Additional material studied: Gambia: 3.5 km S Georgetown, hilltop at Sankuli Kunda, alt. ca 30 m, at light 18.30–20.15, 15.XI.1977 UTM 28PEK2593 (1 ex. LUZ); Bathurst 16.I.1968 (2 exx. coll. Palm). – Senegal: PNG Niokolo Koba Badi (1 ex. MNHN); Mboro VIII.1971 (1 ex. MNHN). – Mali: Bamako 20.VII.1951 (1 ex. MNHN). – Guinea Bissau: Oio Pr. 20 km W Mansoa 3.VIII.1992 (1 ex. coll. Persson). – Guinea: Seredou lux 4.IV.1975 (4 exx. MNB, 2 exx. MZH); Seredou lux 7., 8.IV.1975 (3 exx. MNB, 1 ex. MZH). – Ivory Coast: Foro-Foro ad lucem (1 ex. MZH). – Nigeria: Stream 13 mi Benin on Enugo rd 23.IV.1963 (3 exx. AMS); Stream 86 mi from Makurdi on Jos rd 25.IV.1963 (6 exx. AMS). – Sudan: Malakal 5–20.I.1963 (1 ex. MZH); Shambe B. el Jebel/28.V.–19.VI.1954/*H. insolitus* Guign. J. B.-Browne det. (2 exx. BMNH); R. Post 21, appr. 105 km S L. No/28.V.–19.VI.1954 (1 ex. BMNH); B. el Abiad (4 exx. MNB, 1 ex. MZH). – Benin: 3 km S Parakou 5.VII.1989 (9 exx. coll. Vondel, 3 exx. MZH); Parakou 7.VII.1989 (4 exx. coll. Vondel); Onklou E Djougou 24.VII.1989 (3 exx. coll. Vondel, 1 ex. MZH). – Zaire: PNG 6.I.1950/*H. propinquus* Guign. det. Guignot 1957 (1 ex. MAC). – Angola: R. Lac Calundo 105 km Est Luso XII.1954 (4 exx. MNHN, 2 exx. MZH); R. Lac Calundo, sous pierres 27.XII.1954 (2 exx. MNHN); Lac Carumbo / 7.52S, 19.55E, 21.VII.1957 (1 ex. MNHN). – Botswana: Okavango Thamalakane riv. XII.1973 (1 ex. TMP). In all, 75 exx.

Diagnosis: A well-defined species, which is separated by examination of the peculiarly shaped penis (dorsal aspect): Quite broad, narrows quite evenly to a distinct apex, which in lateral view is only moderately curved downwards; ventrally quite close to the apex with distinct, stiff hairs or spines.

Length of body: 3.08–3.60 mm, breadth: 1.96–2.32 mm. Habitus (Fig. 803).

Head: Dark ferruginous to ferruginous. Frontally often slightly paler. Punctuation very fine, sparse, partly absent. In rather shallow frontal depressions and narrowly at eyes with somewhat denser punctures. Slightly mat, microsculptured (meshes fairly distinct).

Head frontally rounded, medially distinctly straightened. Finely margined. Close to eyes margin sometimes weakly developed, indistinct (Fig. 804). Antenna pale ferruginous, rather slender, not distinctly modified (Fig. 805).

Pronotum: Dark ferruginous to ferruginous. Frontally and basally generally with vague darkened areas. Laterally pronotum generally becomes slightly paler. Punctuation fine to rather fine, fairly dense. Laterally punctuation distinctly finer and sparser, partly indistinct. Rather shiny, finely and, in part, indistinctly microsculptured (meshes medially and laterally often distinct). Lateral outline of pronotum almost straight to rounded.

Elytra: Dark ferruginous to ferruginous. Laterally elytra generally paler but without distinct colour pattern. Punctuation fine to very fine, rather sparse, laterally punctures indistinct and partly absent. In specimens from Angola elytral punctuation in general somewhat coarser. Discal row of punctures fairly distinct anteriorly. Lateral row of punctures somewhat irregular. Between discal and lateral rows with scattered slightly coarser punctures, and sometimes also a weakly defined dorsolateral row of punctures may be discerned. Rather shiny, finely microsculptured (meshes generally visible). Epipleura pale ferruginous to ferruginous, punctuation and microsculpture rather indistinct.

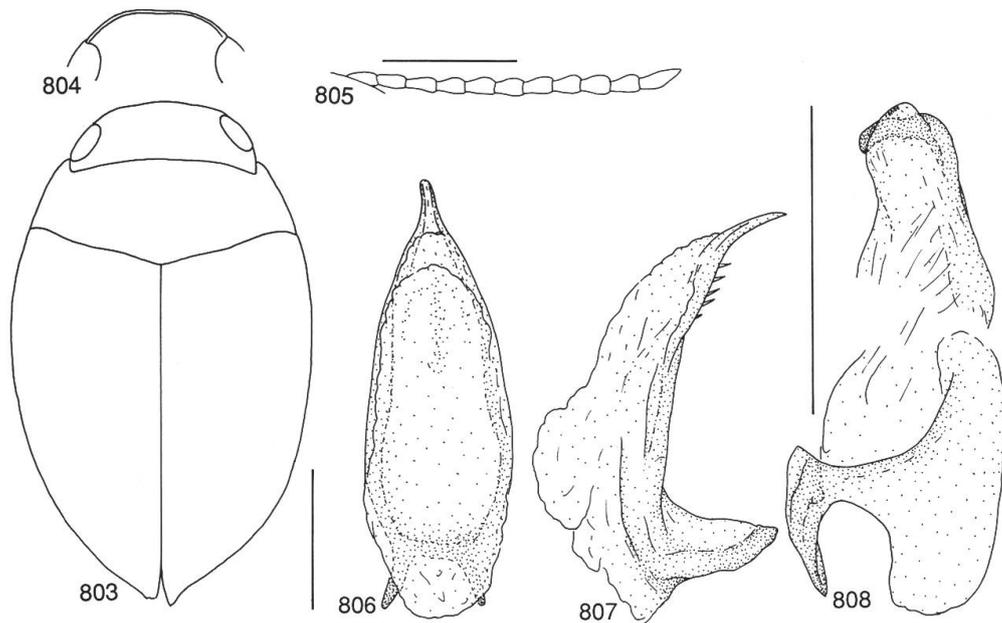
Ventral side: Ferruginous to pale ferruginous. Punctuation fairly coarse to rather fine, quite dense. At midline, punctures distinctly finer. Abdomen almost impunctate. Shiny, almost without microsculpture. Abdomen finely microsculptured. Stridulatory apparatus narrow, consists of numerous minute striae. Prosternal process laterally finely margined, medial surface almost flat, indistinctly punctate.

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

Male genitalia: Figs 806–808. Breadth of penis slightly variable (dorsal aspect). Apical hook of paramere varies between almost evenly curved hook to hook with uneven outline.

Female: Dimorphous. Externally as male or dorsally mat, distinctly microsculptured. Without stridulatory apparatus.

Distribution: Gambia, Senegal, Mali, Chad, Guinea Bissau, Guinea, Ivory Coast, Benin, Nigeria, Sudan, Zaire, Angola, Botswana (Fig. 816). Additional unverified records are Gabon (BILARDO & PEDERZANI, 1978) and Congo (PEDERZANI & ROCCHI, 1982).



Figs 803–808: *Hydrovatus insolitus*. – 803, habitus. – 804, head, frontal aspect. – 805, antenna. – 806, penis, dorsal aspect. – 807, penis, lateral aspect. – 808, paramere (broken). Horizontal scale 0.5 mm, antenna; left scale 1 mm, habitus and head; right scale 0.5 mm, genitalia.

**Biology:** In Nigeria sampled in streams. Often sampled at light collection. See also BILARDO & ROCCHI (1987).

**Synonymy:** The holotypes of the five involved species have been examined, and the only noteworthy difference is found in the shape of the parameral hook. This feature, however, exhibits variation, so that a transition series is formed between extremes. Thus, at least at present, I consider making a distinction between different species weakly supported, and accordingly the five taxa are regarded as conspecific. The oldest available name for this species is *H. insolitus* (valid name of the species).

### **Hydrovatus gravis** Guignot

Figs 809–816.

*Hydrovatus gravis* GUIGNOT, 1954a:5 (orig. descr., faun.); 1954b:15 (descr., faun.); 1959a:173, 178 (descr., faun.); BILARDO & PEDERZANI, 1978:108 (disc.).

**Type locality:** Kabenga, PNU, Zaire.

**Type material studied:** Holotype, m: Holotypus/Congo belge: PNU Kabenga (1240 m) 30.III-8.IV.1949 Mis. G.F. de Witte 2488a/Coll. Mus. Congo (ex coll. I.P.N.C.B.)/Dr. F. Guignot, 1953 *Hydrovatus gravis* Guign. Type m (MAC).

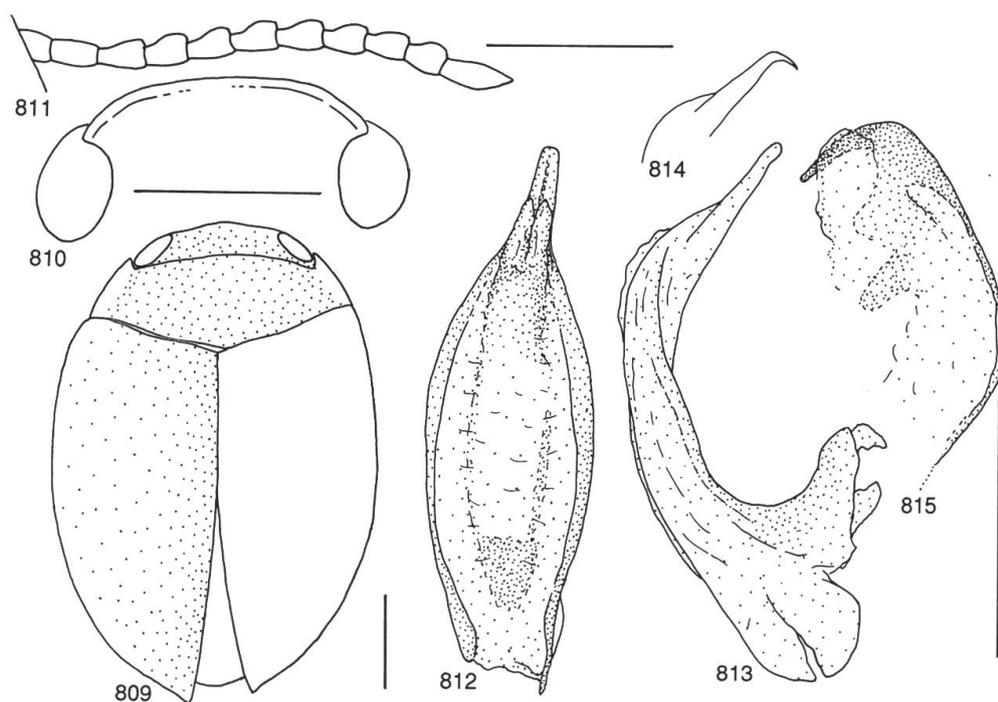
**Additional material studied:** Zaire: Kasai, Ngombe 16.XI.1921 (1 ex. ZSM). In all, 2 exx.

Diagnosis: A distinct species characterized by a large body, by the frontal margin of the head which is weakest medially, and by the quite long and straight apical part of the penis; extreme apex distinctly curved (lateral aspect).

Length of body: 4.60–4.68 mm, breadth: 3.04–3.16 mm. Habitus (Fig. 809).

Head: Ferruginous to dark ferruginous. Finely to rather finely and sparsely punctate. Punctures denser close to eyes and in shallow frontal depressions. Rather shiny, although totally microsculptured (meshes distinct). Head frontally rounded, margined but margin partly reduced and broken (Fig. 810). Antenna pale ferruginous, quite slender, not distinctly modified (Fig. 811).

Pronotum: Blackish ferruginous to dark ferruginous, laterally with vague pale ferruginous areas. Rather finely and irregularly punctate. Punctures densest in middle of pronotum, and sparsest laterally. Anteriorly and laterally with coarser punctures. Rather shiny, although microsculptured (meshes laterally distinct, and medially partly indistinct). Lateral outline of pronotum rounded.



Figs 809–815: *Hydrovatus gravis*. – 809, habitus. – 810, head, frontal aspect. – 811, antenna. – 812, penis, dorsal aspect. – 813, penis, lateral aspect (tip broken). – 814, supplementary illustration of penis. – 815, apical part of paramere. Top horizontal scale 0.5 mm, antenna; bottom horizontal scale 1 mm, head; left scale 1 mm, habitus; right scale 0.5 mm, genitalia (excl. Fig. 814).

Elytra: Blackish to dark ferrugineous. Laterally elytra become gradually paler; at epipleura ferrugineous. Finely and rather sparsely punctate. Laterally punctures sparser and more irregularly distributed. Discal row of punctures quite distinct from base to apex. Dorsolateral row of punctures partly indistinct. Lateral row of punctures rather irregular but still discernible. Rather shiny, although finely microsculptured (meshes partly obliterated). Epipleura pale ferrugineous to ferrugineous, rather finely and somewhat irregularly punctate, microsculpture indistinct.

Ventral side: Dark ferrugineous. Rather coarsely but somewhat sparsely punctate. Abdomen and posterior part of metacoxal plates almost impunctate. Shiny, not microsculptured. Abdomen and posterior part of metacoxal plates finely reticulate. Stridulatory apparatus with numerous minute striae. Prosternal process laterally margined, medial surface slightly uneven, punctate.

Legs: Dark ferrugineous to ferrugineous. Pro- and mesotarsi somewhat enlarged. Claws unmodified.

Male genitalia: Figs 812–815. Extreme downwards curved apex of penis broken in holotype.

Female: Unknown.

Distribution: Zaire (Fig. 816).

Biology: Unknown.

### **Hydrovatus hamatus** Guignot

Figs 816–824.

*Hydrovatus hamatus* GUIGNOT, 1950c:4 (orig. descr., faun.); 1953a:234 (faun.); 1955a:28 (faun.); 1955b:214 (disc.); 1959a:173, 179 (descr., faun.); MEDLER, 1980:155 (faun.); BILARDO & ROCCHI, 1987:97, 99 (descr., disc., faun.); 1990:180 (disc.).

*Hydrovatus savanicola* GUIGNOT, 1956b:214 (faun., not description); 1958b:4 (orig. descr., faun.); 1958c:102 (disc.); BILARDO & ROCCHI, 1987:97 (syn. *H. hamatus*, faun.).

*H. proximus* GUIGNOT, 1958c:102 (orig. descr., faun.); BILARDO & ROCCHI, 1987:97 (syn. *H. hamatus*).

Type locality: Musosa, Zaire.

Type material studied: *H. hamatus*: Holotype, m: Musosa 3.I.1939 H.J. Brdo/R. Mus. Hist. Nat. Belg. I.G. 12.838/m/*Hydrovatus hamatus* Guign. Type m/Type/Dr. F. Guignot det. 1950 *Hydrovatus hamatus* Guign. n.sp. (ISN). – Paratypes: Principally with same data as holotype (2 exx. CAS, 2 exx. AMS). – *H. savanicola*: Holotype, m: Holotypus/Congo Belge PNG Miss. H. De Saeger II/gc/13s, 21.VI.1951 Réc. H. De Saeger, 1953/Coll. Mus. Congo (ex coll. I.P.N.C.B.)/F. Guignot det., 1956 *Hydrovatus (Vathydrus) savanicola* n.sp. Type m (MAC). – Paratypes: Principally with same data as holotype but 6.VII.1950, 723 (1 ex. MAC); 11.VII.1951, 2114 (1 ex. MAC);

4.X.1951, 2511 (1 ex. MAC); 8.VIII.1952, 3924 (1 ex. MAC); 19.VIII.1952, 3956 (1 ex. MAC). – *H. proximus*: Holotype, m: Holotypus/Elisabethville/Kasapa/19.11.48/1025/Coll. Mus. Congo ex. coll. J. Pantos/F. Guignot det., 1957 *Hydrovatus (Vathydrus) proximus* n.sp. Holotype (MAC).

Additional material studied: Sierra Leone: Makeni 12,03W;8,53N, 27.XI.1993 light trap 18–21/*H. hamatus* Guignot det. Nilsson -94 (1 ex. LUZ). – Zaire: PNG 21.VI.1951/*H. savanicola* Guign. det. Guignot 1957 (1 ex. AMS). – Angola: Rives Lac Calundo 31.XII.1954 (1 ex. MNHN, 1 ex. MZH); R. L. Calundo 25.XII.1954 (1 ex. MNHN); R. L. Calundo 26.XII.1954 (1 ex. MNHN). In all, 18 exx.

Diagnosis: A medium-sized species, which is characterized by the frontal margin of the head which does not reach the eyes, by asymmetric male protarsal claws, and by peculiar details in the male genitalia: Penis broad, narrows gradually to a slender apex (dorsal aspect); the strengthening lobes of the penis medially are distinctly

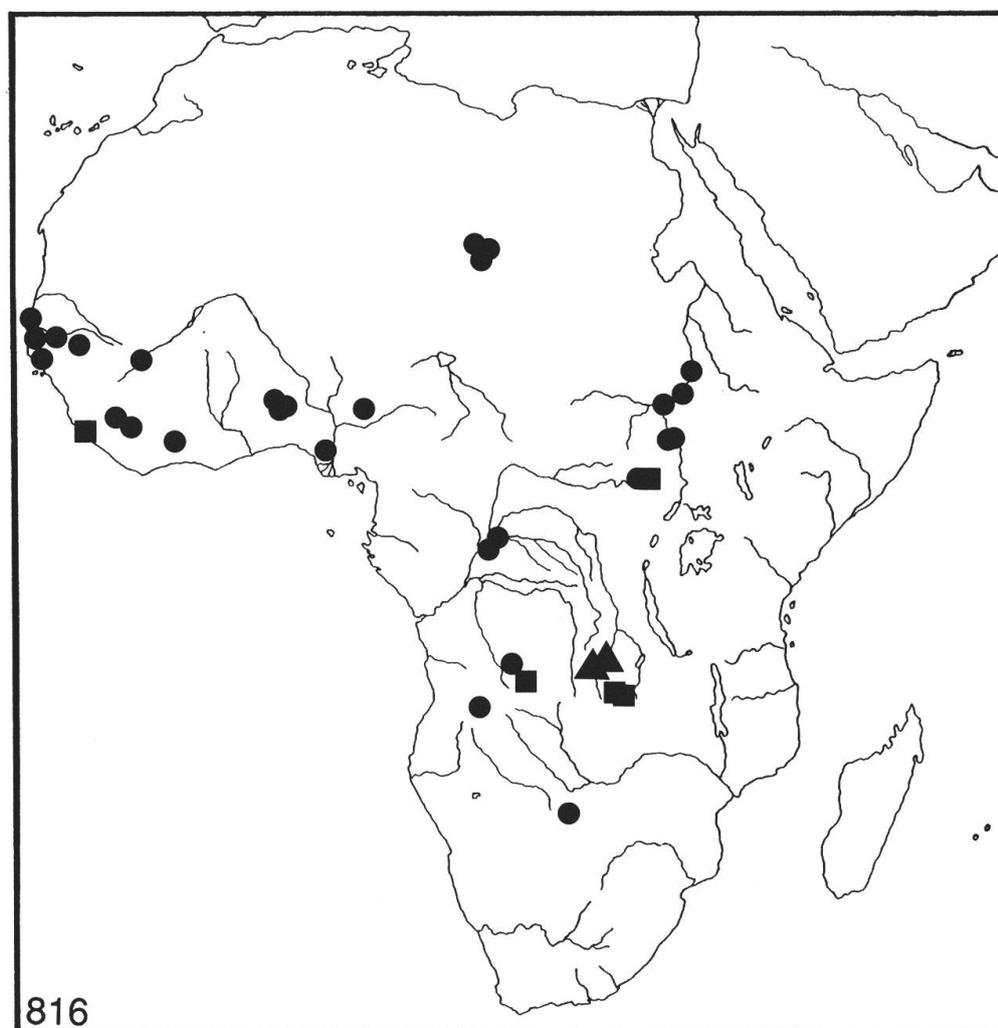


Fig. 816: Distribution of *Hydrovatus insolitus* (dot), *H. gravis* (triangle) and *H. hamatus* (square).

expanded (lateral aspect); the apex of the paramere with a peculiar configuration.

Length of body: 3.42–3.72 mm, breadth: 1.96–2.24 mm. Habitus (Fig. 817).

Head: Pale ferruginous to ferruginous and brownish; frontally often paler than posteriorly. Often unicoloured. Indistinctly and sparsely punctate. At eyes and in fairly distinct frontal depressions with somewhat coarser punctation. Rather shiny, microsculptured (meshes distinct; anteriorly more strongly developed than posteriorly). Head frontally rounded, medially somewhat straightened. Margined, but margin does not reach eyes. Medially margin sometimes broken (Fig. 818). Close to eyes sometimes with fragments of a margin. Antenna pale ferruginous, quite slender, not distinctly modified (Fig. 819).

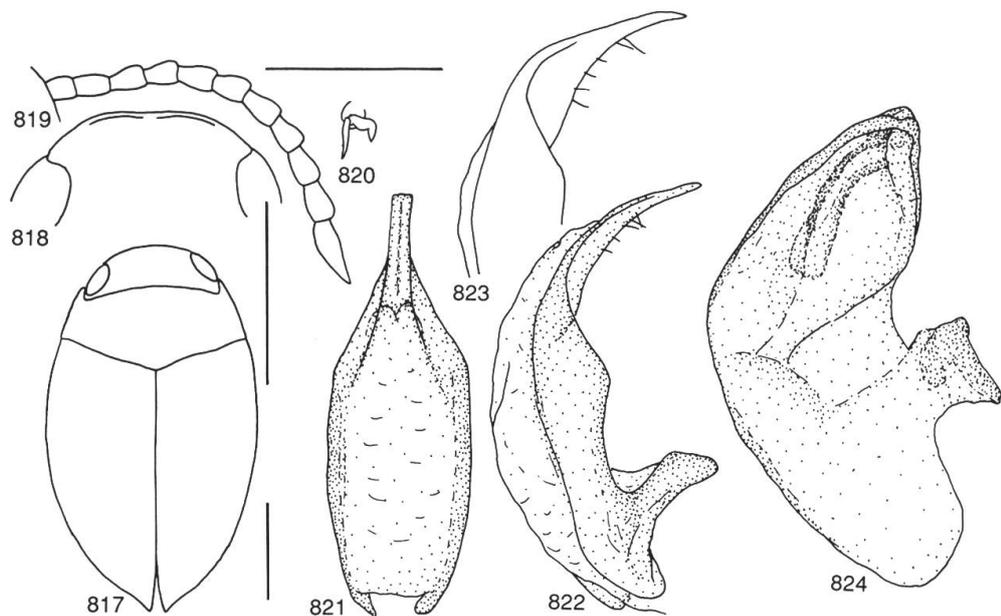
Pronotum: Ferruginous to brownish. Laterally with vague, quite broad, pale ferruginous areas. Rather finely and densely punctate. Laterally punctation distinctly finer and sparser. At pronotal margins with an irregular row of slightly coarser punctures. Rather shiny, finely microsculptured (meshes weakly developed, rather indistinct). Lateral outline of pronotum rounded.

Elytra: Ferruginous to brownish. Laterally elytra become gradually paler. Without distinct colour pattern. Very finely and sparsely punctate. Laterally punctation almost absent except for rows of punctures and scattered punctures. Discal row of punctures somewhat irregular but discernible from base to close to apex. Dorsolateral row of punctures basally and apically absent; medially irregular row visible. Lateral row of punctures sparse but clearly visible. Rather shiny, very finely microsculptured (meshes partly obliterated). Epipleura ferruginous, rather finely and quite sparsely punctate, rather shiny and indistinctly microsculptured.

Ventral side: Pale ferruginous to ferruginous. Rather finely and somewhat sparsely punctate. Abdomen almost impunctate. Shiny, scattered, indistinct reticulation may be discerned. Abdomen submat, microsculptured. Stridulatory apparatus consists of numerous minute striae. Prosternal process laterally finely margined, medial surface almost flat, indistinctly punctate.

Legs: Pale ferruginous. Pro- and mesotarsus somewhat enlarged. Protarsal claws asymmetric (Fig. 820).

Male genitalia: Figs 821–824. Penis apex basally sometimes quite broad.



Figs 817–824: *Hydrovatus hamatus*. – 817, habitus. – 818, head, frontal aspect. – 819, antenna. – 820, protarsal claws. – 821, penis, dorsal aspect. – 822, penis, lateral aspect. – 823, supplementary illustration of penis. – 824, paramere. Horizontal scale 0.5 mm, antenna and claws; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Female: Protarsal claws simple, not modified. Without stridulatory apparatus.

Distribution: Sierra Leone, Zaire, Angola (Fig. 816). Additional unverified records are Burundi (GUIGNOT, 1955a), Sudan (GUIGNOT, 1959a), Nigeria (MEDLER, 1980) and Senegal, under the name *H. savanicola* (GUIGNOT, 1956b).

Biology: Practically unknown. In Sierra Leone collected with a light trap between 18–21.

Synonymy: Despite minor differences in shape of the male genitalia I agree with previous synonymization of *H. hamatus* (valid name), *H. savanicola* and *H. proximus*. I have examined the holotype of the three taxa involved.

### ***Hydrovatus castaneus* Motschulsky**

Figs 825–834, 843.

*Hydrovatus castaneus* MOTSCHULSKY, 1855:82 (orig. descr., faun.); 1869:29 (faun.); SHARP, 1882a:334 (descr., faun.); BRANDEN, 1885:25 (faun.); RÉGIMBART, 1888:613 (list.); SHARP, 1890:343 (faun.); SEVERIN, 1890:CXC (faun.); RÉGIMBART, 1895b:114 (disc., faun.); 1899b:240, 241 (descr., faun.); ZIMMERMANN, 1920a:32 (faun.); F. BALFOUR-BROWNE, 1936:28 (disc.); LEECH, 1948:387 (disc.); GUIGNOT, 1954e:196 (disc.); VAZIRANI, 1967:102 (disc., faun.); 1970b:98 (descr.,

faun.); ROCCHI, 1976:179 (faun.); VAZIRANI, 1977a:26 (faun.); BRANCUCCI, 1979:195 (descr., faun.); NAKANE, 1988a:21 (disc.).

*Hydrovatus reticulatus* ZIMMERMANN, 1924:194 (orig. descr., faun.); GUIGNOT, 1956g:59 (disc., faun.); VAZIRANI, 1977a:30 (faun.). **New synonym.**

*Hydrovatus bironicus* GUIGNOT, 1956g:58 (orig. descr., faun.). **New synonym.**

**Type locality: Inde or.**

Type material studied: *H. castaneus*: 10075/type/*Hydrovatus castaneus* Motsch. Ind. Or. Motsch. (1 ex. MNB); *Hydrovatus castaneus* Ind. typ from Motschulsky fide Wehncke Ind. or./*Hydrovatus castaneus* Motsch. Ind. or. var.? type (1 ex. BMNH). Only female represented in type material studied, and therefore I prefer not to designate a lectotype for the species. Possibly, additional specimens belonging to the type material will later appear. – *H. reticulatus*: Java-Preange Tjigembong/Corporaal/Type (1 ex. ZSM). Neither in this case is lectotype designated, because the specimen studied is a female; according to the original description there should be an additional specimen (not located). – *H. bironicus*: Holotype, m: Batavia Biro 1898/Holotypus 1956 m *Hydrovatus bironicus* Guignot/F. Guignot det. 1956 *Hydrovatus (Vathydrus) bironicus* n.sp. Holotype, m (TMB). – Paratype: Same sampling data as holotype (1 ex. TMB, 3 exx. Mus. Frey).

Additional material studied: India: Calcutta (1 ex. MNB); Nagpore (1 ex. MNB). – Burma: Ind. or. Birma (2 exx. ZMM; one of the specimens mounted on same card as specimen belonging to another *Hydrovatus species*; possible type material of *H. castaneus*). I have also examined one specimen labelled: *Hydrovatus castaneus* Motsch. Type mihi D.S. Burmah (in BMNH), which is probably not to be placed in the original type material. This specimen is a male, but lacks stridulatory apparatus and belongs to *H. rufescens* Motschulsky. – Exact location unknown: Ind. or./*rufescens* Motsch. (2 exx. MNHN). In all, 14 exx.

**Diagnosis:** A very problematic species, the status of which is still uncertain. Very close to or even synonymous with the two consecutive species. *H. castaneus* is characterized by comparatively large body size, by the weakly developed frontal margin of the head, by thickened, asymmetric male protarsal claws, by possession of a stridulatory apparatus, by fine to very fine elytral punctation, and by the shape of the penis: Penis narrows evenly to apex (dorsal aspect). I cannot present any definite distinguishing features of *H. castaneus* in relation to *H. rufoniger* and *H. bonvouloiri* below. This complex undoubtedly needs further study.

Length of body: 3.44–3.88 mm, breadth: 2.16–2.32 mm. Habitus (Fig. 825).

Head: Ferruginous to pale ferruginous; palest frontally. Very finely and quite sparsely punctate. Punctures sometimes hardly visible. In fairly distinct frontal depressions and narrowly at eyes with denser punctures. Slightly mat, finely microsculptured (meshes distinct). Head frontally rounded, medially straightened. A few fine medial punctures form a short, sometimes interrupted margin. Fron-

tal punctures sometimes combined into a fine medially broken margin (Figs 826–827). Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 828).

Pronotum: Ferrugineous to dark ferrugineous, laterally with vague pale ferrugineous areas. Mediobasally sometimes with a vague darkened area. Punctuation rather fine and dense. Laterally punctures become finer and sparser, except for a few somewhat irregularly distributed, somewhat coarser punctures, which sometimes form an indistinct row. Rather shiny, although finely microsculptured (meshes weakly developed but generally discernible). Lateral outline of pronotum almost straight to rounded.

Elytra: Dark ferrugineous to ferrugineous. Laterally elytra become gradually paler; at epipleura pale ferrugineous. At suture and medially along base with vague darkened lines (sometimes not discernible). Finely to very finely and sparsely punctate. Laterally and apically punctures become still finer and, in part, hardly discernible. Discal row of punctures from base to apex quite distinct. Dorsolateral row of punctures irregular and sparse but generally recognizable (formed by a few punctures). Lateral row of punctures fine and quite irregular. Rows of punctures and fine general punctuation mixed with a few scattered coarser punctures. Rather shiny, very finely microsculptured (meshes very weakly developed, partly indistinct). Epipleura pale brown to ferrugineous, indistinctly punctated and microsculptured.

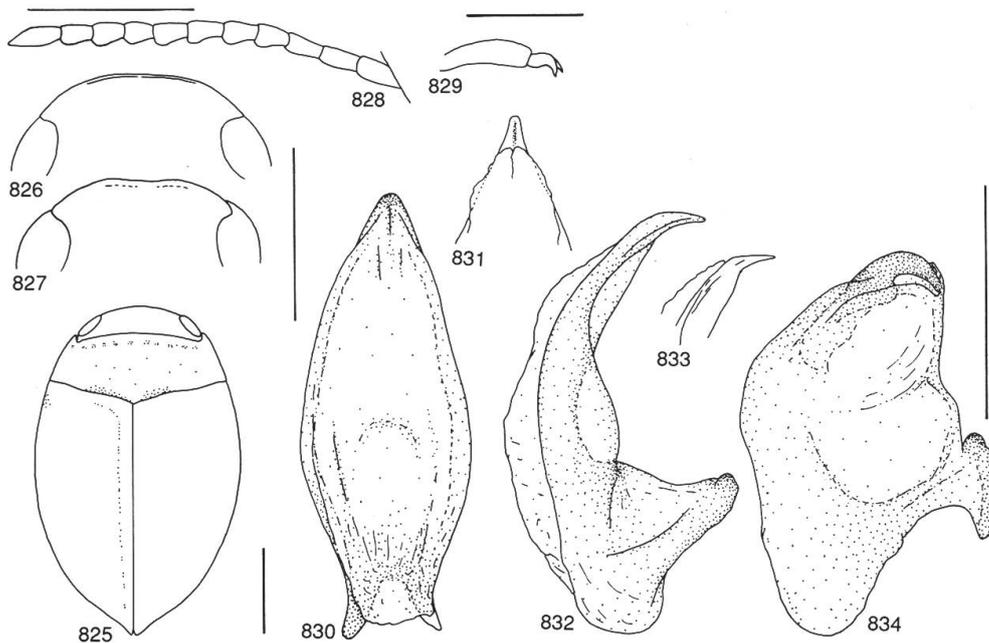
Ventral side: Pale ferrugineous to ferrugineous to brown. Rather finely and sparsely to rather sparsely punctate. Abdomen almost impunctate, except for fine, sparse basal punctuation. Shiny, not microsculptured. Abdomen almost totally with fine reticulation. Stridulatory apparatus narrow, consists of numerous minute striae. Prosternal process laterally finely margined, medial surface almost flat to slightly excavate, with distinct punctures.

Legs: Pale brown to pale ferrugineous. Pro- and mesotarsus somewhat enlarged. Protarsal claws asymmetric; one claw basally thickened (Fig. 829).

Male genitalia: Figs 830–834.

Female: Pro- and mesotarsus narrower than in male. Protarsal claws simple. Without stridulatory apparatus. Dorsal body microsculpture often quite distinct; meshes well developed. Association of single females and males generally difficult.

Distribution: India, Burma, Indonesia: Java (Fig. 843). Additional unverified records are Indonesia: Celebes (SHARP, 1882a), Sri Lanka



Figs 825–834: *Hydrovatus castaneus*. – 825, habitus. – 826–827, head, frontal aspect. – 828, antenna. – 829, male protarsal claws. – 830, penis, dorsal aspect. – 831, supplementary illustration of penis apex. – 832, penis, lateral aspect. – 833, supplementary illustration of penis. – 834, paramere. Left horizontal scale 0.5 mm, antenna; right horizontal scale 0.25 mm, claws; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 0.5 mm, genitalia (excl. Figs 831, 833).

(SHARP, 1890), Bangla Desh (ROCCHI, 1976) and Indonesia: Sumatra (VAZIRANI, 1977a). The species is also recorded from Borneo under the name *H. reticulatus* (ZIMMERMANN, 1924). All material of this species needs re-examination!

Biology: Unknown.

Synonymy: Type material has been examined for all three species involved (see also under type material studied). Despite the fact that two of the species in the type material examined are represented only by females, I consider them all to belong to one species. I, however, leave the door open for additional synonymizations with the two consecutive species. The name *H. castaneus*, being the oldest available name, is the valid name for this species.

### ***Hydrovatus rufoniger rufoniger* (Clark)**

Figs 835–841, 843.

*Hyphidrus rufoniger* CLARK, 1863:423 (orig. descr., faun.).

*Hydrovatus rufoniger* (CLARK), SHARP, 1882a:334 (descr., faun.); BRANDEN, 1885:27 (faun.); RÉGIMBART, 1899b:240 (descr., faun.); ZIMMERMANN, 1919:127 (list.); 1920a:35 (faun.); 1922:148 (faun.); WINKLER, 1924:218 (faun.); ZIMMERMANN,

1926:26 (faun.); 1927:19, 23 (descr., faun.); 1930:31 (descr., faun.); FENG, 1932:21 (faun.); 1933a:331 (faun., not syn. with var. *politus* Sharp); 1933b:91, 93 (descr., faun.); WU, 1937:204 (faun.); GUIGNOT, 1945a:306, 311, 317 (descr., faun., in part *H. insolitus* Guignot); 1948b:163 (disc.); 1954g:565 (disc., faun.); 1956g:55 (faun.); VAZIRANI, 1969:3 (faun.); 1970b:96 (descr., faun.); ROCCHI, 1976:179 (faun.); VAZIRANI, 1977a:30 (faun.); WATTS, 1978:16 (descr., faun.); 1985:23 (faun.); ROCCHI, 1986a:33 (faun.); LAWRENCE & al., 1987:332 (faun., biol.).

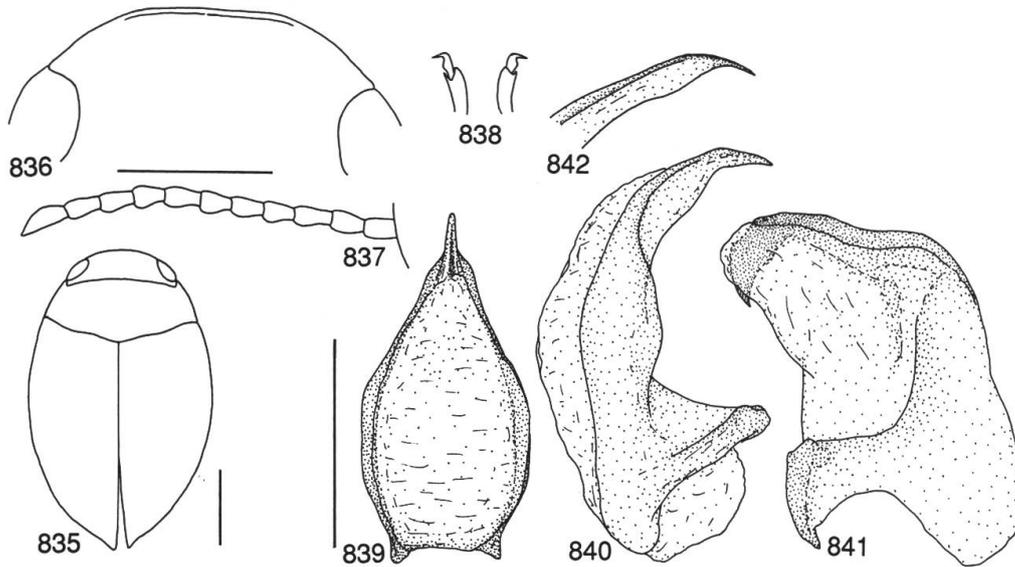
*Hydrovatus atricolor* RÉGIMBART, 1880:212 (orig. descr., faun.); BRANDEN, 1885:25 (faun.); RÉGIMBART, 1899b:240 (syn. *H. rufoniger*); ZIMMERMANN, 1919:127 (list.); 1920a:35 (list.); 1926:26 (list.); 1927:24 (list.); 1930:31 (list.); FENG, 1932:21 (list.); WU, 1937:204 (list.).

#### Type locality: China.

Type material studied: *H. rufoniger*: Lectotype, m, designated by Watts (1978): Lectotype/67 56/*H. rufoniger* Clark China/*Hydrovatus rufoniger* Clk Det. C. Watts 1979 (BMNH). – Paralectotypes: Bowring China/*rufoniger* (1 ex. BMNH); Bowring Java/*rufoniger* (1 ex. BMNH). – *H. atricolor*: Solok (not located).

Additional material studied: Thailand: Chiangmai 300 m, at MV light 14.XI.1957 (1 ex. BBM); Chiangmai XI.1920 (1 ex. MZH); Siam/*H. rufoniger* Clk J. B.-Browne det. (1 ex. BMNH); Chiang Rai 1.I.1988 (1 ex. NMW); ca. 220 km NW Bangkok 110 m, IX.1990 (14 exx. MNB, 4 exx. MZH); Khon Kaen, im Zoo ad lucem 26.I.1978 (1 ex. coll. Wewalka). – Vietnam: Dak Song 76 km SW Ban Me Thout 870 m, 19–21.V.1960/light trap (7 exx. BBM, 2 exx. MZH); Ban Me Thout 500 m, 20–24.XII.1960/light trap (1 ex. BBM); Nha Tr ang 17–26.XI.1960/light trap (3 exx. BBM); Kontum 570 m 13–14.VI.1960/light trap (4 exx. BBM, 1 ex. MZH); Long-Xuyen (Cochinchine) (1 ex. MNHN, 1 ex. MZH); Saigon/*H. atricolor* Rgb. (1 ex. MNHN); Saigon Giadinh Pr. 10.VI.1970 (1 ex. coll. Wewalka). – Malaysia: Sungoi Buloh Kuala Lumpur 20.IX.1972 (1 ex. coll. Wewalka); Borneo, Sarawak Bau distr. Lake Area 30.VIII.1958 (1 ex. BBM); Sarawak Bau Lake Area 29.VIII.1958 (1 ex. BBM). – Borneo (2 exx. MZH, 8 exx. MNB). – Indonesia: Sumatra: Labuan Bilik (1 ex. MZH); N Sum. Siborong Borong S Toba See 16.II.1990 (1 ex. NMW); Java: Batavia/under el. light in verandah, june/*H. politus* Shp t. Régib./*H. rufoniger* (Clk) J. B.-Browne det. 1957 (2 exx. BMNH); Java/*castaneus* var. D.S. (2 exx. BMNH); W Java Cibodas Garden 17.I.1987 (1 ex. coll. Wewalka); W Java Jakarta 11.I.1987 (1 ex. coll. Wewalka); Ceram Umg. Wahai 12.II.1989 (1 ex. NMW). In all, 70 exx.

Diagnosis: Very close to the preceding species. Synonymy cannot be excluded. Generally separated from *H. castaneus* above, by the unevenly narrowing penis apex (dorsal aspect). Two subspecies are distinguished in *H. rufoniger*, viz. *H. r. rufoniger* and *H. rufoniger politus*. These can be separated by examination of the penis apex (lateral aspect): An extreme apex, evenly rounded, in *H. r. politus*, while almost straight in *H. r. rufoniger*. The subspecies *politus* possibly deserves the rank of separate species? This question, and the species in general, undoubtedly need further study. See also diagnoses of *H. castaneus* above and *H. bonvouloiri* below.



Figs 835–842: *Hydrovatus rufoniger*. – *H. r. rufoniger*: 835, habitus. – 836, head, frontal aspect. – 837, antenna. – 838, male protarsal claws. – 839, penis, dorsal aspect. – 840, penis, lateral aspect. – 841, paramere. *H. r. politus*: 842, penis apex, lateral aspect. Horizontal scale 0.5 mm, head, antenna and claws; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

**Description:** only important differences from description of *H. castaneus* recognized.

**Length of body:** 3.52–3.76 mm, breadth: 2.12–2.26 mm. Habitus (Fig. 835). Dorsal punctation of body variable: Very fine, indistinct to rather fine, clearly discernible.

**Head:** Frontal aspect of head (Fig. 836). Frontal margin very fine, disappears before reaching eyes. Antenna (Fig. 837).

**Pronotum:** Punctation fine, somewhat sparse. Laterally punctures still finer, sparser and partly absent (except for irregular row of coarser punctures along pronotal margins).

**Legs:** Protarsal claws asymmetric (Fig. 838).

**Male genitalia:** Figs 839–841.

**Distribution:** China, Thailand, Malaysia, Vietnam, Indonesia: Sumatra, Java, Ceram (Fig. 843). Some of the dots on the map are approximately placed (generally in the center part of the area in question). Additional records are Cambodia and Singapore (RÉGIMBART, 1899b), New Guinea (ZIMMERMANN, 1927), India (ZIMMERMANN, 1930), Sri Lanka (VAZIRANI, 1969), Burma (VAZIRANI, 1970b) and Bangla Desh (ROCCHI, 1976). Records from Australia probably refer to *H. rufoniger politus*, dealt with below. Old African

records are regarded as highly doubtful and refer most probably to some other *Hydrovatus* species.

**Biology:** Insufficiently documented. Often sampled at light collection.

**Synonymy:** The synonymy of *H. rufoniger* and *H. atricolor* proposed by RÉGIMBART (1899b) is followed here. I have not examined the type material of the latter taxon.

### **Hydrovatus rufoniger politus** Sharp

Figs 842–843.

*Hydrovatus politus* SHARP, 1882a:332 (orig. descr., faun.); BRANDEN, 1885:27 (faun.).

*Hydrovatus rufoniger* var. *politus* Sharp, RÉGIMBART, 1899b:240 (descr., faun.); ZIMMERMANN, 1919:128 (disc., faun.); 1920a:35 (faun.); FENG, 1932:22 (syn. *H. rufoniger*); 1933a:331 (not var. of *H. rufoniger*).

*Hydrovatus politus* Sharp, GUIGNOT, 1954g:565 (disc., faun., dist. sp.); WATTS, 1978:17 (syn. *H. rufoniger*, lectotype design.); LAWRENCE & al., 1987:332 (list.).

**Type locality:** Port Bowen, Queensland, Australia.

**Type material studied:** Lectotype, f, designated by WATTS (1978): Lectotype/Type 11/Port Bowen/864 4408/Queensland Australia/*Hydrovatus politus* n.sp./*Hydrovatus politus* Sharp Det. C. Watts 1979 (BMNH). – Paralectotypes: Brisbane (1 ex. BMNH); Nov. Holl. Queensland (1 ex. BMNH); Queensland Australia (1 ex. BMNH).

**Additional material studied:** Australia: NT: Holmes Jungle Palm Cr. 15 km NE Darwin, 5 m, 13.VII.1961/light trap (1 ex. BBM); NT Holmes Jungle 11 km NE by E of Darwin 15.V.1973 (8 exx. ANIC, 2 exx. MZH); NT Bessie Spring ESE C. Crawford, at light 12.IV.1976 (2 exx. ANIC); NT 15 km E by N Mt Cahill 29.X.1972, at light (1 ex. ANIC); NT Boroalba Cr. Springs 28.X.1972 (1 ex. ANIC); NT Coast. Pl. Res. St., at light 31.V.1966 (4 exx. ANIC); NT Batten Cr. 15.IV.1976, at light (1 ex. ANIC); NT N of Mt Cahill 29.X.1972, at light (1 ex. ANIC); NT E of Mt Cahill 18.XI.1972 (1 ex. ANIC); NT Stuart H:way 52 km S Darwin 9.XI.1972 at light (1 ex. ANIC); NT NNW Cahill's Cr. E. Allig. R. 8.VI.1973 (6 exx. ANIC, 2 exx. MZH); NT E. Allig. R. 9.VI.1973 (7 exx. ANIC, 1 ex. MZH); NT N Cahill's Cr., E. Allig. R. 7.VI.1973 (5 exx. ANIC); NT NW Cahill's Cr., E. Allig. R. 27.V.1973 (8 exx. ANIC, 1 ex. MZH); NT N Mt Cahill 21.V.1973 (1 ex. ANIC); NT Cahill Cr., at light 29.V.1973 (2 exx. ANIC); NT NNW Cahill Cr. 28.V.1973 (1 ex. ANIC); NT N Mt Cahill 13.VI.1973 (4 exx. ANIC); NT NNW Mt Cahill 20.V.1973 (2 exx. ANIC); NT S Allig. R. 20.V.1973 (1 ex. ANIC); NT Mt Cahill 21.V.1973 (5 exx. ANIC); NT NNW Cahill's Cr. 8.VI.1973 (1 ex. ANIC); NT Koongarra 12.VI.1973 (3 exx. ANIC); same but 24.V.1973 (5 exx. ANIC); NT 22 km WSW Boroloola 2.XI.1975 (1 ex. ANIC); NT Jim Jim Cr. 17.VI.1973 (2 exx. ANIC); NT nr Darwin Coast. Pl. Res. St. 6.VI.1966 at light/*H. rufoniger* (Cl.) Weir det. 1991 (10 exx. ANIC); same sampling data but 30.V.1966 (15 exx. ANIC); same but 5.VIII.1966 (2 exx. ANIC); NT Tindal, 1–20.XII.1967 light trap (1 ex. ANIC); NT Pt Darwin (3 exx. ANIC); NT Howard Springs 12.V.1983 (10 exx. ANIC, 2 exx. MZH); NT N of Mudginbarry 26.V.1973 at light (14 exx. ANIC, 2 exx. MZH); NT 18 km E by N Oenpelli 1.VI.1973 (4 exx. ANIC); NT SW by S of Oenpelli 30.V.1973 at light (3 exx. ANIC); same but 6.VI.1973

(2 exx. ANIC); NT Naborlek Dam 2.VI.1973 (2 exx. ANIC); Queensland: Q ENE Mt Tozer 11–16.VII.1986 (5 exx. N IC, 2 exx. MZH); same but 5–10.VII.1986 (4 exx. ANIC); Q NE by E Mt Tozer 1.VII.1986 (1 ex. ANIC); Q Hann R. 27.VI.1986 (3 exx. ANIC); Q Ayr 28.XII.1970 (2 exx. ANIC, 1 ex. MZH); Q Ayr 10.IX.1970 (2 exx. ANIC); Q Archers Cr. 17.7 km W of Ravenshoe 13.IV.1974 (5 exx. ANIC); Q Archers CK 13.IV.1973 at light (4 exx. ANIC); Q Cape trib. area 21–28.III.1984 (1 ex. ANIC); Q NW by N of Cooktown 18.V.1977 (3 exx. ANIC); Q Keatings Gap 16.V.1977 (7 exx. ANIC, 2 exx. MZH); Q W by N of Cooktown 17.V.1977 (8 exx. ANIC); Q Cooktown 24.V.1976 roadside swamp (1 ex. ANIC); Q NE Mt Webb 1–3.X.1980 (1 ex. ANIC); same but 3.V.1981/at light (4 exx. ANIC, 1 ex. MZH); same but 30.IV.1981 (3 exx. ANIC); Q Mt Webb N.P. 27–30.IV.1981/rainforest litter (1 ex. ANIC); Q 23 km NE Bauhinia Downs 23.IV.1981 (4 exx. ANIC); Q 9 km NW by N of Moonie 22.IV.1981 (1 ex. ANIC); Q Eidsvold XII.1965 at light (1 ex. ANIC); Q Mt Molloy at light 30.XII.1969 (1 ex. ANIC); Q Kowonyama Mitchell R. 25.X.1976 (1 ex. ANIC); NQ Edge Hill 24. IV.1965 (2 exx. ANIC); Somerset I.1876 (1 ex. MCG); Q Cairns I.1946 (5 exx. ANIC); Q Brisbane II.1934 (1 ex. ANIC); Q 21 mi. S Miriam Vale 14.XII.1967 light trap (1 ex. ANIC); NQ Cardstone 23.I.1965 (1 ex. ANIC); Q Townsville (1 ex. ANIC); Q Bamago 4–5.III.1964 (2 exx. ANIC); NQ Mc Ivor R 25 mi N Cooktown 6.V.1970/*H. rufoniger* var. *politus* det. Watts 1974 (15 exx. ANIC); Q Iron Range C York V.1961 (1 ex. BMNH); Q P. Bowen/*H. castaneus* Motsch. det. Régimbart/*H. rufoniger* var. *politus* Shp det. J. Balfour-Browne (2 exx. BMNH); West Australia: WA E Calm Site, 14 km S by E Kalumbura Miss. 3–6.VI.1988/*H. rufoniger* (Cl.) det. Weir 1989 (5 exx. ANIC); WA The Crusher Calm Site, 4 km S by W Mining Camp Mitchell Plat. 2–6.VI.1988 (4 exx. ANIC); WA 4 km S by W Mining Camp Mitchell Plat 13.V.1983 (2 exx. ANIC); WA Mining Camp Mitchell Plat. 9–19.V.1983 at light (4 exx. ANIC); WA Fitzroy Riv. (on H:way) 13.IV.1984 at light (1 ex. ANIC); New South Wales: NSW Mebbin St. For. 18 km W of Uki 23–24.XI.1982 (1 ex. ANIC); NSW Valery Mc. Mullen's block light trap 10.I. 1967 (1 ex. ANIC). In all, 274 exx.

Diagnosis: See under diagnosis of *H. r. rufoniger* above.

Description: only diagnostically important features are mentioned.

Length of body: 3.10–3.70, breadth: 1.88–2.24 mm.

Apex of penis: Fig. 842.

Distribution: Australia: West Australia, Northern Territory, Queensland, New South Wales (Fig. 843). Records outside Australia need verification (refer probably to *H. r. rufoniger*).

Biology: Often sampled at light collection. In Queensland collected in rainforest litter.

### **Hydrovatus bonvouloiri** Sharp

Figs 1–2, 843–850.

*Hydrovatus bonvouloiri* SHARP, 1882a:335 (orig. descr., faun.); BRANDEN, 1885:25 faun.); RÉGIMBART, 1899b:240 (descr., faun.); ZIMMERMANN, 1920a:31 (faun.); 1927:19, 24 (descr., faun.); FENG, 1932:21 (faun.); 1933a:330 (faun.); 1933b:92 (descr., faun.); WU, 1937:203 (faun.); GUIGNOT, 1954g:565 (faun.); 1956g:59

(disc.); VAZIRANI, 1970b:99 (descr., faun.); ROCCHI, 1976:179 (faun.); VAZIRANI, 1977a:26 (faun.); BRANCUCCI, 1979:195 (faun.); ZHAO, 1981:110 (faun.); SATÔ & BRANCUCCI, 1984:1 (disc., faun.); ROCCHI, 1986a:33 (faun.); NAKANE, 1988a:21, 22 (descr., faun.); 1990b:24 (faun.).

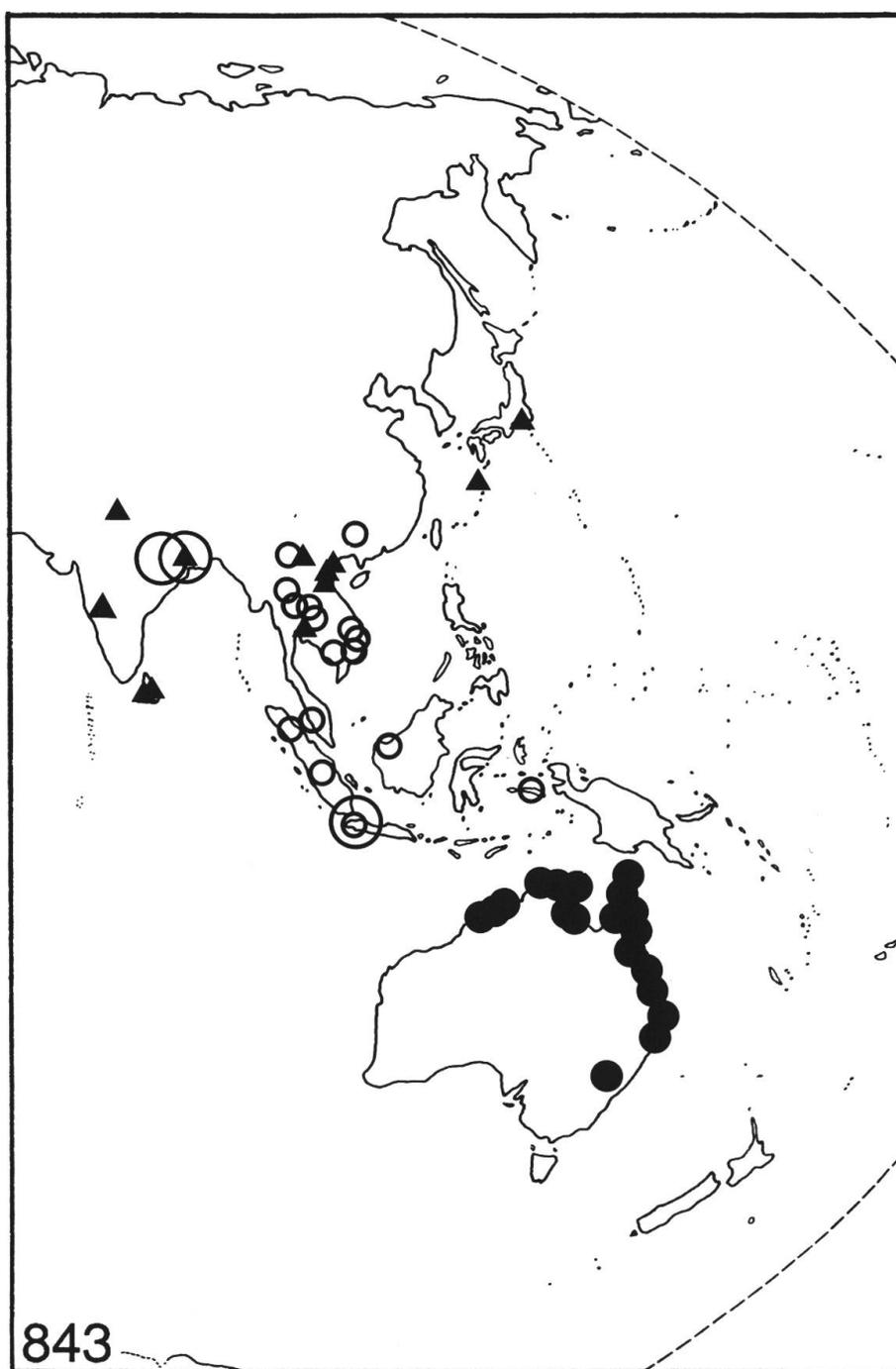


Fig. 843: Distribution of *Hydrovatus castaneus* (large circle), *H. r. rufoniger* (small circle), *H. rufoniger politus* (dot) and *H. bonvouloiri* (triangle).

*Hydrovatus loochooensis* KAMIYA, 1938:10 (orig. descr., faun.); GSCHWENDTNER, 1939:2 (descr., faun.); NAKANE, 1959:61 (descr., faun.); NAKANE & al., 1963:56 (descr., faun.); ZAITZEV, 1972:116 (descr., faun.; by mistake given as *loochovensis*); SATÔ & BRANCUCCI, 1984:1 (syn. *H. bonvouloiri*); NAKANE, 1988a:21 (list.); 1990b:24 (list.).

Type locality: India bor.

Type material: *H. bonvouloiri*: India bor. (coll. Bonvouloir). Not located. – *H. loochooensis*: Loo-Choo, Okinawa, Shuri, 19.I.1937 D. Miyadi. Destroyed in World War II (Brancucci & Satô, 1984).

Material studied: India: Rajasthan Bharatpur 11.VIII.1989 (12 exx. coll. Balke & Hendrich, 4 exx. MZH); Calcutta/*H. castaneus* Motsch. det. Zimmermann (7 exx. MNB); Maissour Shimoga VII.1897 (1 ex. coll. Wewalka); Konbir (1 ex. coll. Wewalka). – Sri Lanka: Polonaruwa 23.XI.1984/*H. bonvouloiri* Sharp det. Rocchi 1985 (1 ex. coll. Rocchi); 10071/Ceylon/? *picipennis* Motsch. (1 ex. MNB, paralectotype of *H. picipennis* Motschulsky); Ratnapura Umg. 4.I.1981 (1 ex. coll. Wewalka); Colombo Umg. 12.XI.1980 (1 ex. coll. Wewalka); Ceylon/? *H. rufoniger* Clk var. (1 ex. BMNH). – Thailand: Nakhon Nayok 24.I.1968/*H. bonvouloiri* Sharp det. Satô, 1989 (10 exx. MZH). – Laos: Vientiane 31.V.–3.VI.1960/light trap (3 exx. BBM, 1 ex. MZH); Vientiane 2–4.VI.1960 (1 ex. BBM); Vientiane 9.V.1965/at light (1 ex. BBM); Vientiane 28.V.1965 (1 ex. BBM); Vientiane 30.V.1965/at light (6 exx. BBM, 3 exx. MZH); Borikhane Pr. Pakkading 17.V. 1965 (1 ex. BBM); Muong Sing NW L. Prabang 650 m 6–10.VI.1960/light trap (1 ex. BBM). – Japan: Aichi Pref. Gounodo-ike Chita 9.VI.1963/*H. bonvouloiri* Sharp det. Satô, 1989 (2 exx. MZH); Nakanoshima Is. Tokara 7.VII. 1960/*H. bonvouloiri* det. Satô, 1989 (1 ex. MZH). – Vietnam: Hanoi 22.V.1986 (3 exx. coll. Wewalka); Hanoi (12 exx. MNHN, 6 exx. MZH); Nindin 16.VI.1985 (1 ex. coll. Wewalka). In all, 83 exx.

Diagnosis: This species is not definitely distinguished as an individual species separate from the two preceding species, and accordingly, synonymy cannot be excluded. The penis is as in *H. r. rufoniger* but often slightly narrower (dorsal aspect). Elytral punctation is sometimes slightly coarser in *H. bonvouloiri* than in the other taxa. See also the diagnoses of *H. castaneus* and *H. r. rufoniger* and additionally under the section synonymy below.

Description: only important, deviating features recognized.

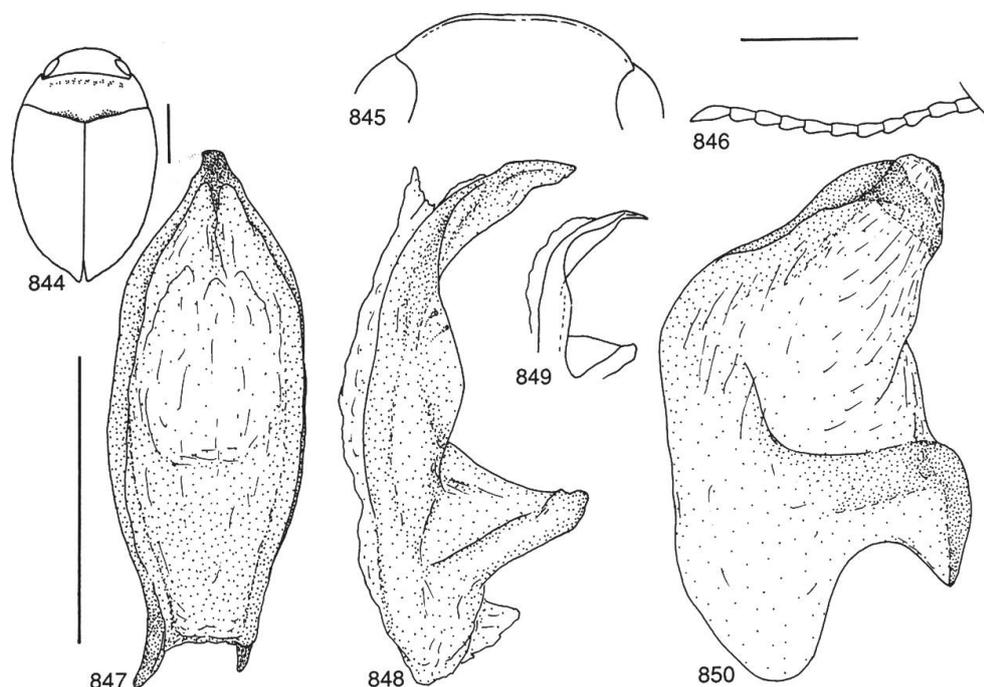
Length of body: 2.96–4.00 mm, breadth: 1.96–2.36 mm. Habitus (Fig. 844).

Head: Frontal aspect of head (Fig. 845). Antenna (Fig. 846).

Elytra: Punctures often a little coarser, irregularly distributed. In specimens from Thailand elytral punctures somewhat finer.

Male genitalia: Figs 847–850.

Distribution: India, Sri Lanka, Japan, Thailand, Laos, Vietnam (Fig. 843). Additional records are Indonesia: Sumatra, Java (ZIMMERMANN, 1927), China (FENG, 1932), Burma (GUIGNOT, 1954g), Bangladesh (ROCCHI, 1976), Malaysia, Taiwan and Philippines (VAZIRANI, 1977a).



Figs 844–850: *Hydrovatus bonvouloiri*. – 844, habitus. – 845, head, frontal aspect. – 846, antenna. – 847, penis, dorsal aspect. – 848, penis, lateral aspect. – 849, supplementary illustration of penis. – 850, paramere. Horizontal scale 0.5 mm, head and antenna; left top scale 1 mm, habitus; left bottom scale 0.5 mm, genitalia (excl. Fig. 849).

**Biology:** Unsufficiently documented. Often sampled at light collection.

**Synonymy:** The type material of *H. bonvouloiri* and *H. loochoen-sis* have not been located. Accordingly the synonymy of the two taxa is here based on previous synonymization (SATÔ & BRANCUCCI, 1984). Absence of types also hampers the interpretation of the relationship between *H. bonvouloiri* versus *H. castaneus* and *H. rufoniger*. Possibly all three taxa belong to one species?

### **Hydrovatus picipennis** Motschulsky

Figs 851–857, 865.

*Hydrovatus picipennis* MOTSCHULSKY, 1859:40 (orig. descr., faun.); 1861:14 (faun.); 1869:29 (faun.); SHARP, 1882a:334 (descr., faun.); BRANDEN, 1885:26 (faun.); RÉGIMBART, 1899b:241 (descr., faun.); ZIMMERMANN, 1920a:35 (faun.); 1927:19, 25 (descr., faun.); GUIGNOT, 1956g:58 (disc., faun.); VAZIRANI, 1970b:97 (descr., faun.); 1977a:29 (faun.).

**Type locality:** Sri Lanka.

**Type material studied:** Lectotype, m, by present designation: Hist.-Coll. 10071 Ceylon, Nietn./Zool. Mus. Berlin (MNB). – Paralectotypes: Same data as lectotype (1

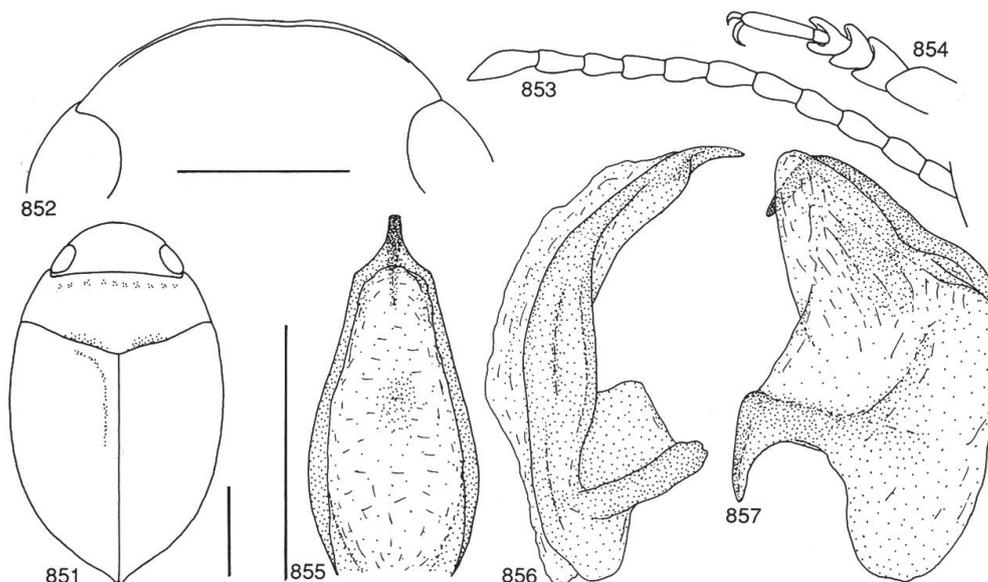
ex. MNB); *Hydrovatus picipennis* Motsch. Ceylan Colombo (1 ex. ZMM). Both paralectotypes probably belong to the original type material but are not conspecific with lectotype; belong probably to *H. bonvouloiri*.

Additional material studied: Thailand Khon Kaen ad lucem 27.V.1979 (1 ex. coll. Wewalka). In all, 4 exx. I have also examined the specimen on which SHARP (1882) based his interpretation of *H. picipennis* Motschulsky (label data: *Hydrovatus picipennis* Motsch. Type mihi D.S. Bangkok Castenau/1153/Siam (1 ex. BMNH)). The specimen is a female, and therefore it is very difficult to associate with to any certain species. Comparison with the male lectotype, however, strongly indicates that the Sharp's specimens is not conspecific with the lectotype of *H. picipennis*, which in general exhibits distinctly coarser body punctures.

Diagnosis: *H. picipennis* is also quite closely related to the three preceding species. Because of probable confusion in their taxonomy the male genitalia must be examined for separation of *H. picipennis*: The penis narrows quite abruptly towards the narrow apex (dorsal aspect), and the extreme apex is only slightly curved downwards (lateral aspect). Other useful features for identification of *H. picipennis* are its almost unmodified male protarsal claws and the appearance of the stridulatory apparatus, which consists of clearly discernible and comparatively long ridges.

Description: only important distinguishing features recognized.

Length of body: 3.86–4.08 mm, breadth: 2.32–2.40 mm. Habitus (Fig. 851).



Figs 851–857: *Hydrovatus picipennis*. – 851, habitus. – 852, head, frontal aspect. – 853, antenna. – 854, male protarsus. – 855, penis, dorsal aspect. – 856, penis, lateral aspect. – 857, paramere. Horizontal scale 0.5 mm, head, antenna and tarsus; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Head: Frontal aspect of head (Fig. 852). Antenna broken in lectotype; apical segments missing. Supplementary illustration drawn from male specimen from Thailand (Fig. 853).

Pronotum: Rather shiny, although microsculptured (meshes quite distinct).

Elytra: Rather finely and quite densely punctate. Apically and laterally punctures still finer, sparser and more irregularly distributed. Discal row of punctures basally clearly visible. Dorsolateral row of punctures indistinct, defined by a few scattered punctures. Lateral row of punctures fine, sparse, and somewhat irregular. Rather shiny, microsculptured (meshes weakly developed but clearly visible).

Ventral side: Metathorax with a few quite coarse punctures. Metacoxal plates with quite coarse but sparse punctures. Stridulatory apparatus with comparatively long, clearly visible ridges.

Legs: Protarsal claws of male not distinctly modified (Fig. 854).

Male genitalia: Figs 855–857.

Female: Probably unknown.

Distribution: Sri Lanka, Thailand (Fig. 865). Unverified records are India, Philippines and Indonesia: Sumatra and Java (eg. VAZIRANI, 1970b, 1977a). ZIMMERMANN (1927) also gives Borneo.

Biology: Unknown.

### **Hydrovatus rufescens** Motschulsky

Figs 858–865.

*Hydrovatus rufescens* MOTSCHULSKY, 1859:41 (orig. descr., faun.); 1869:29 (faun.); SHARP, 1882a:815 (descr., faun.); BRANDEN, 1885:27 (faun.); RÉGIMBART, 1899b:239 (descr., faun.); ZIMMERMANN, 1920a:35 (faun.); VAZIRANI, 1970b:99 (descr., faun.); 1977a:30 (faun.); 1981:260 (faun.; by mistake given as *rufeseens*).

Type locality: Ind. or., Burma.

Type material studied: Lectotype, m, by present designation: *Hydrovatus rufescens* Motsch. I. or. Birma/1280 (ZMM). – Paralectotypes: Same data as lectotype and mounted on card below lectotype on same pin (1 ex. ZMM); *H. rufescens* Motsch. Ind. or. (2 exx. ZMM); 67 56/*Hydrovatus rufescens* Mots. (Type) Ind. orient. (1 ex. BMNH).

Additional material studied: Thailand: Tap Tan Uthai Thanis 200 m, I.1979 (6 exx. coll. Wewalka, 2 exx. MZH). – Cambodia: Siemreap, Angkor 6.XII.1957 (1 ex. BMNH, 1 ex. MZH). – Indonesia: Sumatra: N Sumatra, lux, Dolok-Merungir 1.X.–14.XI.1984 (78 exx. MNB, 8 exx. MZH); Manna (3 exx. NMW); S-Nias 40 km N Telukdalam 13.II.1990 (5 exx. NMW, 2 exx. MZH); S-Nias Umg. Telukdalam 12.II.1990 (2 exx. NMW, 1 ex. MZH). In all, 114 exx.

Diagnosis: A distinct species which resembles very much the preceding species. It is, however, easily distinguished by the absence of the

stridulatory apparatus in the male. Genital features as well as external anatomy highly support the placement of *H. rufescens* in this group of species.

Description: only differences from description of *H. castaneus* noted.

Length of body: 3.36–3.84 mm, breadth: 2.04–2.40 mm. Habitus (Fig. 858).

Head: Frontal aspect of head (Fig. 859). Antenna (Fig. 860).

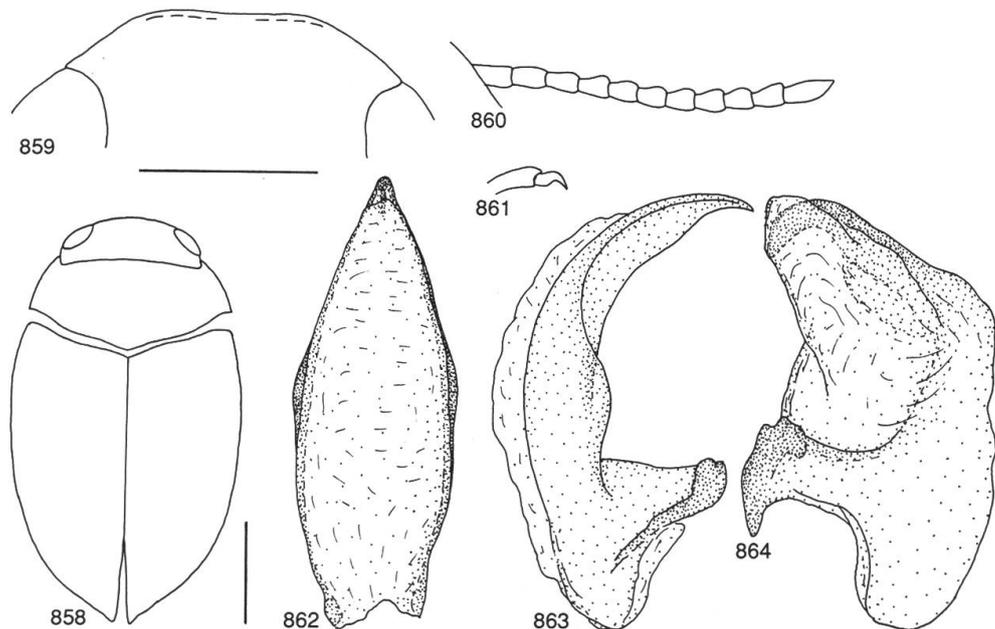
Ventral side: Punctuation fine to very fine, sparse, slightly irregularly distributed. Abdomen almost impunctate. Stridulatory apparatus absent.

Legs: Protarsal claw (Fig. 861).

Male genitalia: Figs 862–864.

Distribution: Burma, Thailand, Cambodia, Indonesia: Sumatra (Fig. 865). Exact location of records from Burma and Sumatra in part unknown; mapped approximately. Additional unverified record is India (VAZIRANI, 1981).

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



Figs 858–864: *Hydrovatus rufescens*. – 858, habitus (broken). – 859, head, frontal aspect. – 860, antenna. – 861, male protarsal claw. – 862, penis, dorsal aspect. – 863, penis, lateral aspect. – 864, paramere. Horizontal scale 0.5 mm, head, antenna and claw; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

**Hydrovatus weiri** n.sp.

Figs 865–873.

Type locality: Synnot Ck, 16.31S, 125.18E, WA, Australia.

Type material: Holotype, m: 16.31S, 125.18E CALM Site 25/1 Synnot Ck WA 17–20 June 1988 T.A. Weir/at light, open forest/*Hydrovatus* sp. det. T.A. Weir 1989 (ANIC). – Paratypes: 14.52S, 125.50E WA “The Crusher” CALM Site 9/1, 4 km S by W Mining Camp Mitchell Plateau 2–6 June 1988 I.D. Naumann/at light, open forest (3 exx. ANIC, 2 exx. MZH); same as preceding, but sampled at light, open forest near closed forest margin (1 ex. ANIC); (21.35S 117.04E) Millstream WA Crystal Pool 28.X. 70 at light E.B. Britton (1 ex. ANIC); 1/2 km WNW of Millstream HS 21.35S, 117.04E WA, 14 Apr. 1971 Upton & Mitchell (1 ex. ANIC); 1 km NNE Millstream WA (21.35S, 117.04E) 3–4.IV.1971 M.S. Upton (1 ex. MZH); 14.49S, 126.49E Carson Escarpment WA 9–15. Aug. 1975 I.F.B. Common and M.S. Upton (1 ex. ANIC); 15.39S, 144.30E Laura Gorge 11 km SE by S of Laura QLD 120 m, 24 May 1977 I.F.B. Common & E.D. Edwards (1 ex. ANIC); Townsville Queensland F.H. Taylor/*Hydrovatus nigrita*? Shp (1 ex. ANIC). In all, 13 exx.

Etymology: The new species is named after the collector of the holotype, Dr. T.A. Weir, who kindly also arranged an important loan of Australian *Hydrovatus* material for this study.

Diagnosis: A distinct species which is particularly characterized by a generally, quite elongate body shape, by quite distinct elytral and pronotal punctation, by a clearly visible discal row of punctures, by slender and symmetric male protarsal claws and by the shape of the penis; the apical part of the penis is different from *H. nigrita* and *H. rufoniger politus*, which also occur in Australia.

Length of body: 3.24–3.64 mm, breadth: 1.84–2.08 mm. Habitus (Fig. 866). Body broadest anterior to middle.

Head: Blackish ferruginous to dark ferruginous, frontally with quite broad paler area. Head sometimes totally ferruginous. Punctation fine, sparse, posteriorly indistinct. In shallow frontal depressions and at eyes with distinctly coarser punctures. Slightly mat, finely microsculptured (meshes distinct). Head frontally rounded, medially straightened, narrowly margined. Margin often broken and weakly developed close to eyes (Fig. 867). Antenna slender, not distinctly modified (Fig. 868).

Pronotum: Blackish ferruginous to ferruginous, laterally paler. Sometimes almost totally ferruginous with mediobasal darkened area. Punctation rather fine, quite dense, except laterally on disc; punctation sparser, partly absent. Rather shiny, finely microsculptured (meshes clearly visible). Lateral outline of pronotum almost straight to evenly curved.

Elytra: Blackish to dark ferruginous, laterally generally paler. Without distinct colour pattern. Punctation fine to rather fine, so-

mewhat sparse and irregularly distributed. Laterally and apically punctures only slightly finer and sparser. Discal row of punctures clearly visible. Dorsolateral and lateral rows of punctures also discernible, but more irregular than discal row. Between discal and

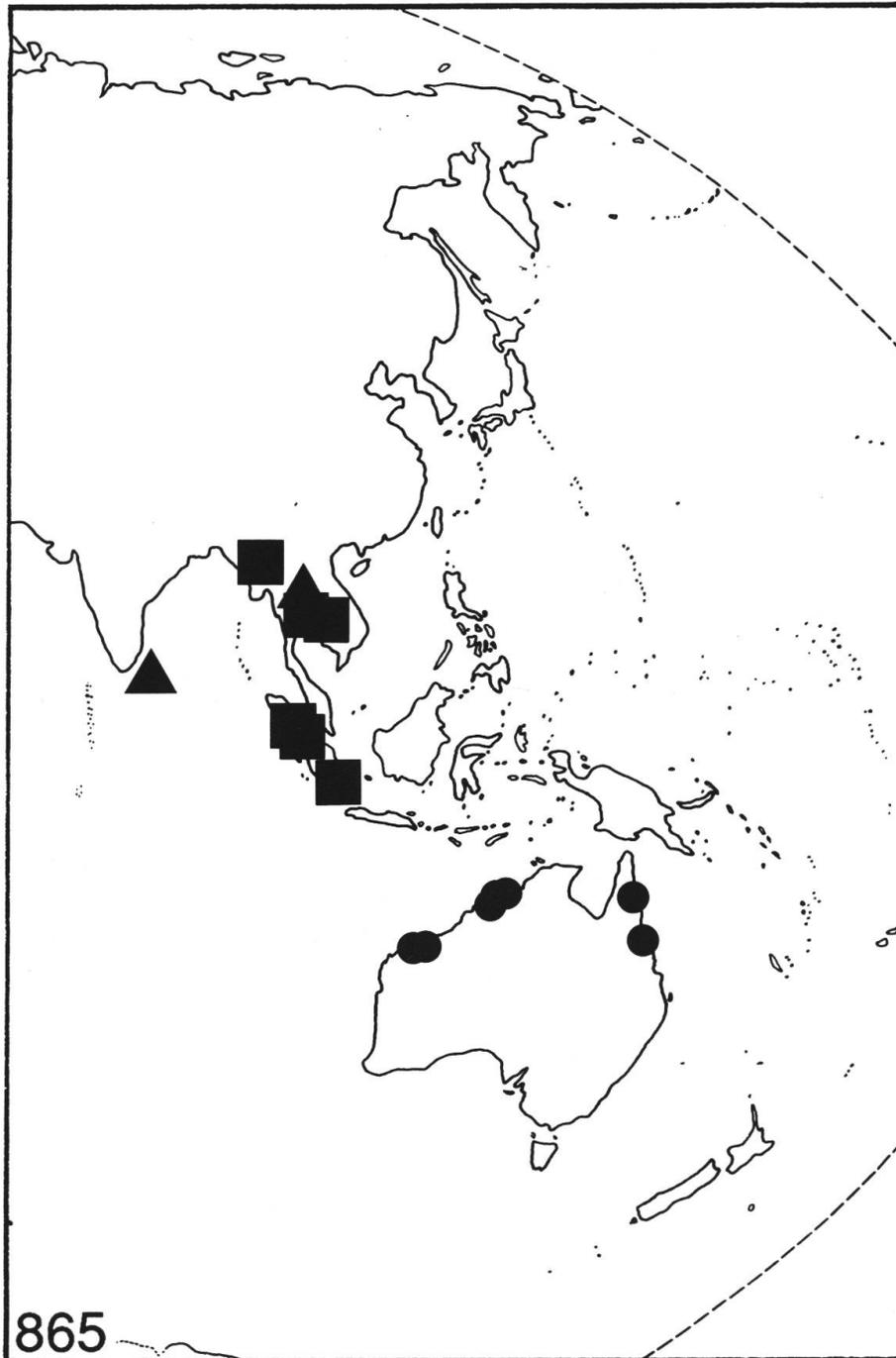
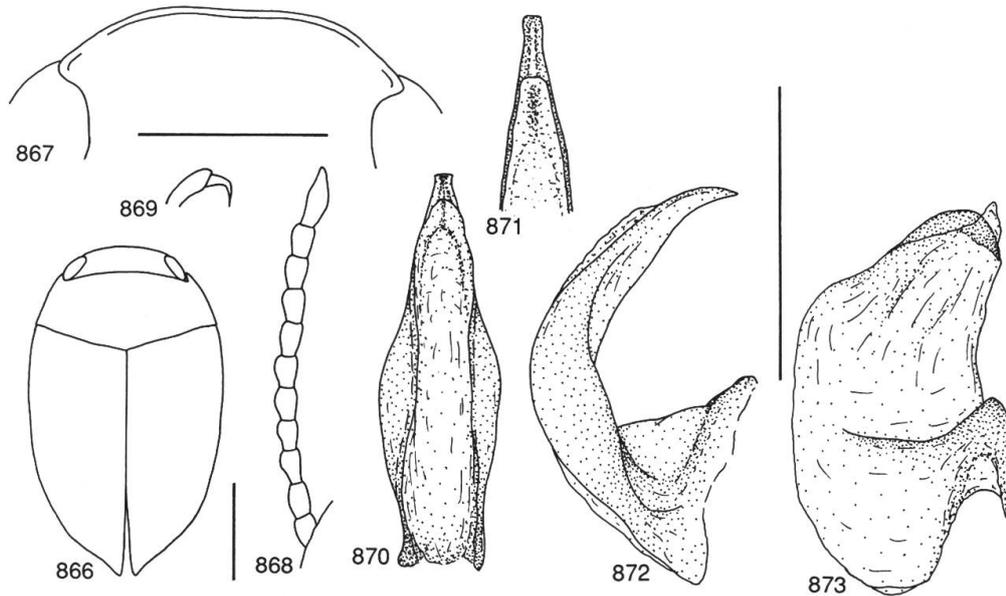


Fig. 865: Distribution of *Hydrovatus picipennis* (triangle), *H. rufescens* (square) and *H. weiri* (dot).



Figs 866–873: *Hydrovatus weiri*. – 866, habitus. – 867, head, frontal aspect. – 868, antenna. – 869, male protarsal claw. – 870, penis, dorsal aspect. – 871, penis apex, dorsal aspect. – 872, penis, lateral aspect. – 873, paramere. Horizontal scale 0.5 mm, head, antenna and claw; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

lateral rows with a few scattered, coarser punctures. Elytra rather shiny, very finely microsculptured (meshes sometimes hardly visible). Epipleura dark ferruginous to ferruginous. Epipleural punctation and microsculpture weakly developed.

Ventral side: Dark ferruginous to ferruginous. Punctation quite coarse to rather fine, dense to quite dense. Abdomen only basally with distinct punctures. Shiny, almost without reticulation. Abdomen finely reticulated. Prosternal process laterally narrowly margined, medial surface densely punctate and microsculptured. Stridulatory apparatus narrow, consists of numerous minute striae.

Legs: Dark ferruginous to ferruginous. Pro- and mesotarsus quite broad. Protarsal claws quite slender, symmetric (Fig. 869).

Male genitalia: Figs 870–873.

Female: Externally approximately as male but lacks stridulatory apparatus.

Distribution: Australia: Queensland, West Australia (Fig. 865).

Biology: Sampled at light in open forest, and at least once close to the margin of a closed forest.

**Hydrovatus obsoletus** Peschet

Figs 874–881, 894.

*Hydrovatus obsoletus* PESCHET, 1922:374, 375 (orig. descr., faun.); GUIGNOT, 1945a:305, 306, 311 (descr., faun.; in part *H. uncus* = *H. villiersi*); 1955a:28 (faun.); 1956b:214 (disc.); 1956c:317, 319 (disc., faun.; on p. 319 given by mistake as *absoletus*); 1959a:173, 176 (descr., faun.); 1959c:141 (faun.); FERREIRA 1963:153 (faun.); BILARDO & PEDERZANI, 1978:108 (disc.); BILARDO & ROCCHI, 1987:98 (faun., biol.).

*Hydrovatus straeleni* GUIGNOT, 1947a:25 (orig. descr., faun.); 1948c:8 (descr., faun.); 1959a:176 (syn. *H. obsoletus*); FERREIRA, 1963:153 (list.).

*Hydrovatus adelphus* GUIGNOT, 1956b:317, 319 (orig. descr., faun.); OMER-COOPER, 1965:101 (descr., faun.). **New synonym.**

## Type locality: Gwasso Njiro, Kenya.

Type material studied: *H. obsoletus*: Lectotype, m, by present designation: Africa Or. Ingl. Gwasso Njiro Patrizi 12–19/Museum Paris 1945 Coll. R. Peschet/Type/*Hydrovatus obsoletus* n.sp. R. Peschet (MNHN). – Paralectotypes: Principally with same data as lectotype (2 exx. MCG). In original description whole type material (3 exx.) is considered to be female. This is incorrect, since two of the specimens are in fact males. GUIGNOT (1959a) states that the type is in MCG, but this statement is not to be considered an official lectotype designation. The specimen in MNHN is a male with genitalia well preserved, while male in MCG lacks genitalia. Because male genitalia in this case are necessary for correct identification, I have chosed as lectotype the male in MNHN. – *H. straeleni*: Holotype, m: Lac Eduard (925) Bitshumbi 7.X.1933 G.F. de Witte Parc Nat. Albert/m/L. Gschwendtner det. *Hydrovatus compactus* Sharp/*Hydrovatus straeleni* Guign. m Type (MNHN). – Paratypes: Same as holotype but 9–12.X.1933 (1 ex. MNHN); f/Paratypus/Congo belge PNA Lac Kibuga 26.VII.1935 Mission H. Damas: 264/Coll. Mus. Congo (ex coll. I.P.N.C.B.)/F. Guignot det. 1945 *Hydrovatus straeleni* Guign. Paratype f (1 ex. MAC). – *H. adelphus*: Holotype, m: I.R.S.A.C. – Mus. Congo Kivu:Kavimvira (Uvira)( la lumière) IX/X.1954 G. Marlier/F. Guignot det., 1955 *Hydrovatus (Vathydrus) adelphus* n.sp. Type (MAC).

Additional material studied: Ivory Coast: C. Iv. (1 ex. MNHN). – Sudan: Malakal 5–20.I.1963 (1 ex. MZH). – Uganda: Swamba (1 ex. BMNH). – Kenya: 30 km W Kitale 23–28.XII.1990 (2 exx. coll. Persson). – Tanzania: Daressalam IV.1911 (1 ex. MNB); Daressalam II.1912 (2 exx. MNB); Rukwa Valley 29.XII.1961 (1 ex. AMS); Ukiriguru light trap 16.IX.1959 (1 ex. BMNH). – Mozambique: Pr. Gorongoza Tendos de l'Uréma II.1907 (1 ex. MZH); Pr. Gorongoza Tendo du Sungove alt. 40 m, VIII., X.1907 (2 exx. MNHN); Val Pungove Guengére I., XII.1906 (2 exx. MNHN); Maputo 1.V.1977 light/*H. obsoletus* Pesch. det. Brancucci (6 exx. LUZ); Beira 19–20.IV.1954 (1 ex. BMNH); Beira (1 ex. MCG, determination uncertain because studied ex. is a female). – Botswana: Chobe R. 8 km W Kasane 27–29.XII.1987 (2 exx. CMNH, 1 ex. MZH). – South Africa: Zululd Mtubatuba IX.1947 (1 ex. AMS). In all, 37 exx.

**Diagnosis:** A distinct species characterized by possession of a stridulatory apparatus in combination with the appearance of the penis; it resembles the penis of the species *H. parallelipennis*, *H. mollis* and *H. vividus*. These three species lack a stridulatory apparatus, and they are placed in species group 10.

Length of body: 3.52–3.96 mm, breadth: 2.28–2.46 mm. Habitus (Fig. 874). Shape of body oval.

Head: Pale ferrugineous to dark ferrugineous. Frontally often with a vague paler area. Finely and sparsely punctate. In rather shallow frontal depressions and narrowly at eyes with slightly coarser and denser punctures. Submat, distinctly microsculptured (meshes distinct). Head frontally rounded, medially somewhat straightened. From eye to eye narrowly margined (Fig. 875). Antenna pale brown to pale ferrugineous, quite slender, not distinctly modified (Fig. 876).

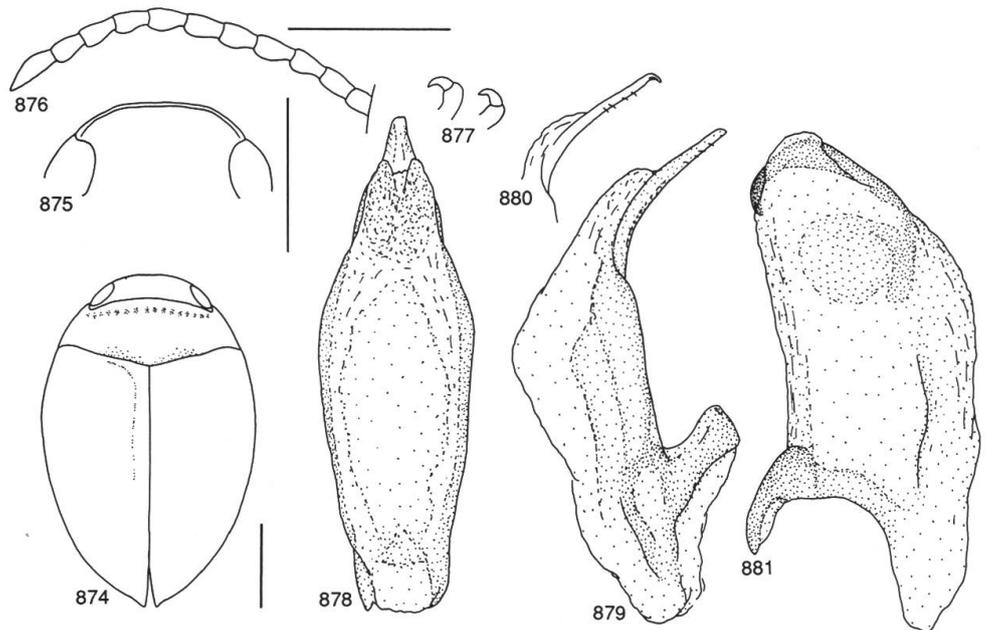
Pronotum: Dark ferrugineous to pale ferrugineous. Laterally with vague paler area. Mediobasally often with vague darkened area. Rather finely and densely punctate. Laterally punctures become still finer and sparser, except for a few coarser punctures close to lateral margins. Rather shiny to submat, finely microsculptured (meshes clearly visible). Lateral outline of pronotum rounded to almost straight.

Elytra: Blackish ferrugineous to ferrugineous to pale brown. Darkest at suture and palest at epipleura, but without distinct colour pattern. Rather finely and somewhat sparsely punctate. Laterally punctures become still finer, sparser and more irregularly distributed. Discal and lateral rows of punctures somewhat irregular but clearly discernible. Dorsolateral row of punctures weakly defined but often still discernible. Between rows of punctures with a few scattered coarser punctures. Rather shiny, microsculptured (meshes generally distinct, sometimes partly somewhat indistinct). Epipleura pale ferrugineous to dark ferrugineous, with a few rather fine punctures, shiny and indistinctly microsculptured.

Ventral side: Pale ferrugineous to dark ferrugineous. Metathorax and -coxal plates with fairly coarse but somewhat sparse punctation. Metathorax medially with finer punctation. Metacoxal plates posteriorly and abdomen almost impunctate. Rather shiny, indistinctly reticulate. Abdomen submat, densely microsculptured. Prosternal process laterally margined, medial surface almost flat. Stridulatory apparatus narrow, with numerous very fine striae.

Legs: Pale ferrugineous to pale brown. Pro- and mesotarsus somewhat enlarged. Protarsal claws distinctly thickened (Fig. 877).

Male genitalia: Figs 878–881. Slight variation is exhibited in appearance of penis apex: Sometimes only moderately bent (lateral aspect).



Figs 874–881: *Hydrovatus obsoletus*. – 874, habitus. – 875, head, frontal aspect. – 876, antenna. – 877, male protarsal claws. – 878, penis, dorsal aspect. – 879, penis, lateral aspect. – 880, supplementary illustration of penis. – 881, paramere. Horizontal scale 0.5 mm, antenna and claws; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Female: Without stridulatory apparatus. Protarsal claws simple.

Distribution: Ivory Coast (exact location unknown), Sudan, Zaire, Uganda, Kenya, Tanzania, Botswana, Mozambique, and South Africa (Fig. 894). Unverified records include Rwanda (GUIGNOT, 1955a), Zambia and possibly Cameroon (GUIGNOT, 1959a) and Ethiopia (GUIGNOT, 1945a), but the last record probably refers to *H. villiersi*.

Biology: Insufficiently documented. Sometimes sampled at light collection. See also BILARDO & ROCCHI (1987).

Synonymy: The synonymization of *H. obsoletus* and *H. straeleni* is confirmed by examination of lectotype and holotype of the two taxa. An additional synonymy is established, also by comparison of types: *H. obsoletus* = *H. adelphus*. The name *H. obsoletus* is the valid name of the species, being the oldest available name.

### ***Hydrovatus otiosus* Guignot**

Figs 882–887, 894.

*Hydrovatus otiosus* GUIGNOT, 1945b:8 (orig. descr., faun.); 1945a:307, 309 (descr., disc., faun.); 1959a:125, 127 (descr., faun.); BERTRAND & LEGROS, 1971:242 (faun., biol.).

Type locality: Riv. Ikopa, env. Tananarive, Madagascar.

Type material studied: Holotype, m: Riv. Ikopa/Env. Tananarive VII. 1934 G. Olsoufieff/Type/*Hydrovatus otiosus* Guign. Type m (MNHN). – Paratypes: Same data as holotype (2 exx. AMS, 3 exx. MAC, 1 ex. ZSM).

Additional material studied: Madagascar: Madagascar/*Hydrovatus* n.sp./det. Régimbart (1 ex. NHN). In all, 8 exx.

**Diagnosis:** A distinct species characterized by possession of a stridulatory apparatus in combination with the shape of the male genitalia: The penis apex is quite broad, obtuse (dorsal aspect), and almost straight (lateral aspect) and the size of the parameral hook is quite moderate.

Length of body: 2.28–2.40 mm, breadth: 1.54–1.64 mm. Habitus (Fig. 882). Shape of body quite globular.

**Head:** Ferruginous to pale ferruginous. Finely and rather sparsely punctate. In shallow frontal depressions and at eyes with slightly coarser and denser punctures. Rather shiny, although microsculptured (meshes distinct). Frontal outline medially almost straight, from eye to eye narrowly margined (Fig. 883). Antenna pale ferruginous, rather slender, not distinctly modified (Fig. 884).

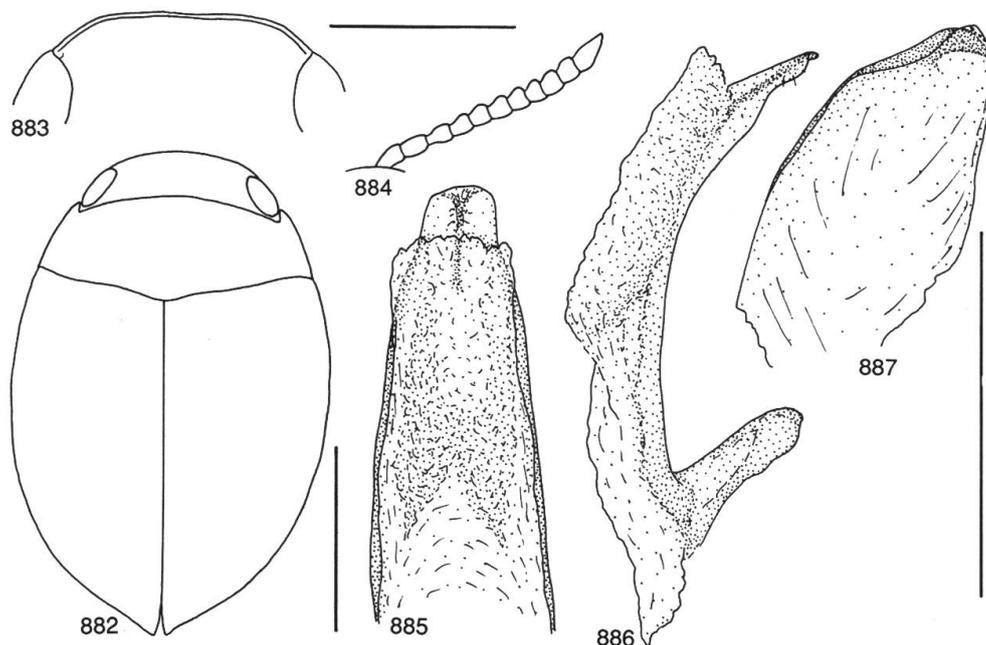
**Pronotum:** Dark ferruginous to ferruginous, laterally slightly paler; pale ferruginous. Rather finely and fairly densely punctate. Punctures slightly irregularly distributed; laterally on disc a little sparser. Rather shiny, finely microsculptured, mediobasally meshes obliterated. Lateral outline of pronotum almost straight to somewhat rounded.

**Elytra:** Dark ferruginous to ferruginous. Laterally elytra become gradually paler; at epipleura ferruginous to pale ferruginous. Without distinct colour pattern. Rather finely and quite densely punctate. Laterally and apically punctures distinctly finer and sparser. Discal row of punctures anteriorly generally clearly visible. Dorsolateral and lateral rows of punctures rather indistinct, but generally still discernible. Rather shiny, finely microsculptured (meshes generally discernible). Epipleura pale ferruginous, indistinctly punctate and reticulate.

**Ventral side:** Pale ferruginous to ferruginous. Fairly coarsely to rather finely and quite densely punctate. Abdomen, except basally (with quite coarse punctures), almost impunctate. Rather shiny, almost without microsculpture. Abdomen with very fine reticulation. Stridulatory apparatus consists of about 20 minute ridges. Prosternal process laterally quite broadly margined, medial surface almost flat.

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

**Male genitalia:** Figs 885–887.



Figs 882–887: *Hydrovatus otiosus*. – 882, habitus. – 883, head, frontal aspect. – 884, antenna. – 885, penis, dorsal aspect. – 886, penis, lateral aspect. – 887, apical part of paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Female: Externally approximately as male but without stridulatory apparatus.

Distribution: Madagascar (Fig. 894).

Biology: Insufficiently documented. See also BERTRAND & LEGROS (1971).

### ***Hydrovatus perrinae* Bilardo & Pederzani**

Figs 888–894.

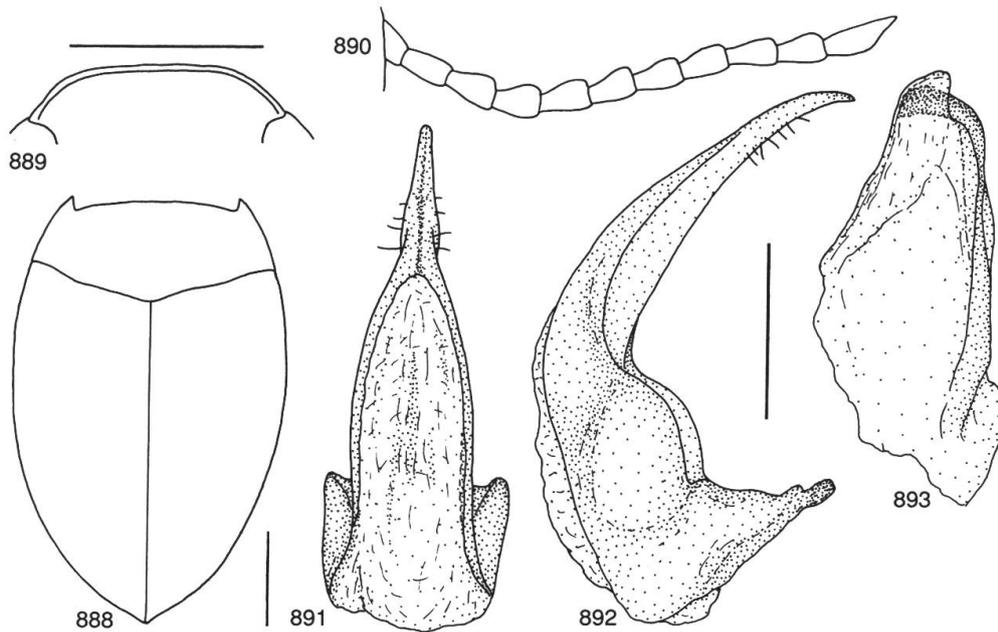
*Hydrovatus perrinae* BILARDO & PEDERZANI 1978:107, 108 (orig. descr., faun.).

Type locality: Bouaké, Ivory Coast.

Type material studied: Holotype, m: Côte d'Ivoire Bouaké 12.VIII.1973 Bilardo & Pederzani/*Hydrovatus perrinae* Bilardo & Pederzani/Holotypus (MCM). – Same sampling data as holotype (1 ex. MCM, 1 ex. coll. Bilardo). In all, 3 exx.

Diagnosis: A quite large-sized, distinct species, which is easily distinguished by genital features in the male: The strengthening lobes of the penis with a basal location and the apex of the penis peculiar (with discernible lateral hairs and shape different from all other recognized *Hydrovatus* species).

Length of body 4.40–4.60 mm, breadth 2.76–2.80 mm. Habitus (Fig. 888). Shape of body oval.



Figs 888–893: *Hydrovatus perrinae*. – 888, habitus. – 889, head, frontal aspect. – 890, antenna. – 891, penis, dorsal aspect. – 892, penis lateral aspect. – 893, apical part of paramere. Horizontal scale 1 mm, head; left scale 1 mm, habitus; right scale 0.5 mm, antenna and genitalia.

Head: Ferruginous to brownish. With fine, rather sparse punctation. At eyes and in shallow frontal depressions with slightly coarser punctures. Submat, microsculptured (meshes distinct). Head frontally rounded, medially straightened. From eye to eye finely to very finely margined (Fig. 889). Antenna pale ferruginous, rather slender, not distinctly modified (Fig. 890).

Pronotum: Dark ferruginous to dark brown. Laterally pronotum becomes gradually paler. Rather finely and densely punctate. Laterally punctures become still finer and sparser. At pronotal margins with scattered coarser punctures. Rather shiny, very finely and somewhat indistinctly microsculptured. Lateral outline of pronotum somewhat curved.

Elytra: Dark ferruginous to dark brown. Laterally elytra slightly paler. Without distinct colour pattern. Finely and rather sparsely punctate. Discal row of punctures slightly irregular but clearly visible from base to elytra apex. Dorsolateral and lateral rows of punctures also irregular, but still discernible. Rather shiny, indistinctly microsculptured. Epipleura ferruginous to brownish. Indistinctly punctated and microsculptured.

Ventral side: Dark ferrugineous to ferrugineous to brownish. Metathorax rather finely and densely punctate. Metacoxal plates finely and sparsely punctate. Abdomen basally with very fine punctures, otherwise almost impunctate. Rather shiny, almost without microsculpture. Abdomen with very fine reticulation. Prosternal process laterally finely margined, medial surface slightly uneven. Stridulatory apparatus narrow, consists of numerous fine striae.

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

Male genitalia: Figs 891–893.

Female: Externally resembling male but lacks stridulatory apparatus.

Distribution: Ivory Coast (Fig. 894).

Biology: Unknown.

### **Hydrovatus lintrarius** Guignot

Figs 894–903.

*Hydrovatus lintrarius* GUIGNOT 1958c:101 (orig. descr., faun.).

Type locality: Lac Tumba, Mabali, Tshuapa, Zaire.

Type material studied: Holotype, m: Holotypus/Récolté sur prairie flottante/I.R.S.A.C. Mus. Congo Tshuapa: Lac Tumba Mabali G. Marlier 25.X.1955/F. Guignot det., 1957 *Hydrovatus* (*Vathydrus*) *lintrarius* n.sp. Holotype (MAC). – Paratypes: Principally with same data as holotype (2 exx. MAC).

Additional material studied: Cameroon: Neu Cameron (1 ex. MNB, 1 ex. MZH). – Zaire: Lac Tumba (1 ex. MAC, labelled as paratype but sampling data do not coincide with data in original description). In all, 6 exx.

Diagnosis: A comparatively large-sized species, characterized by the totally margined frontal part of the head, by thickened male protarsal claws, by the well-developed parameral hook in combination with quite a peculiar shape of the penis, provided with distinct strengthening lobes and the absence of distinct lateral flaps. The penis apex is moderately and evenly curved (lateral aspect).

Length of body: 3.30–3.56 mm, breadth: 2.06–2.24 mm. Habitus (Fig. 895).

Head: Ferrugineous, frontally with a fairly broad, vague pale ferrugineous area. Almost impunctate; scattered very fine punctures may be discerned. Narrowly at eyes and in frontal shallow depressions with slightly coarser punctures. Rather shiny, although finely microsculptured (meshes clearly visible). Head frontally rounded, medially somewhat straightened, from eye to eye distinctly margined (Fig. 896). Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 897).

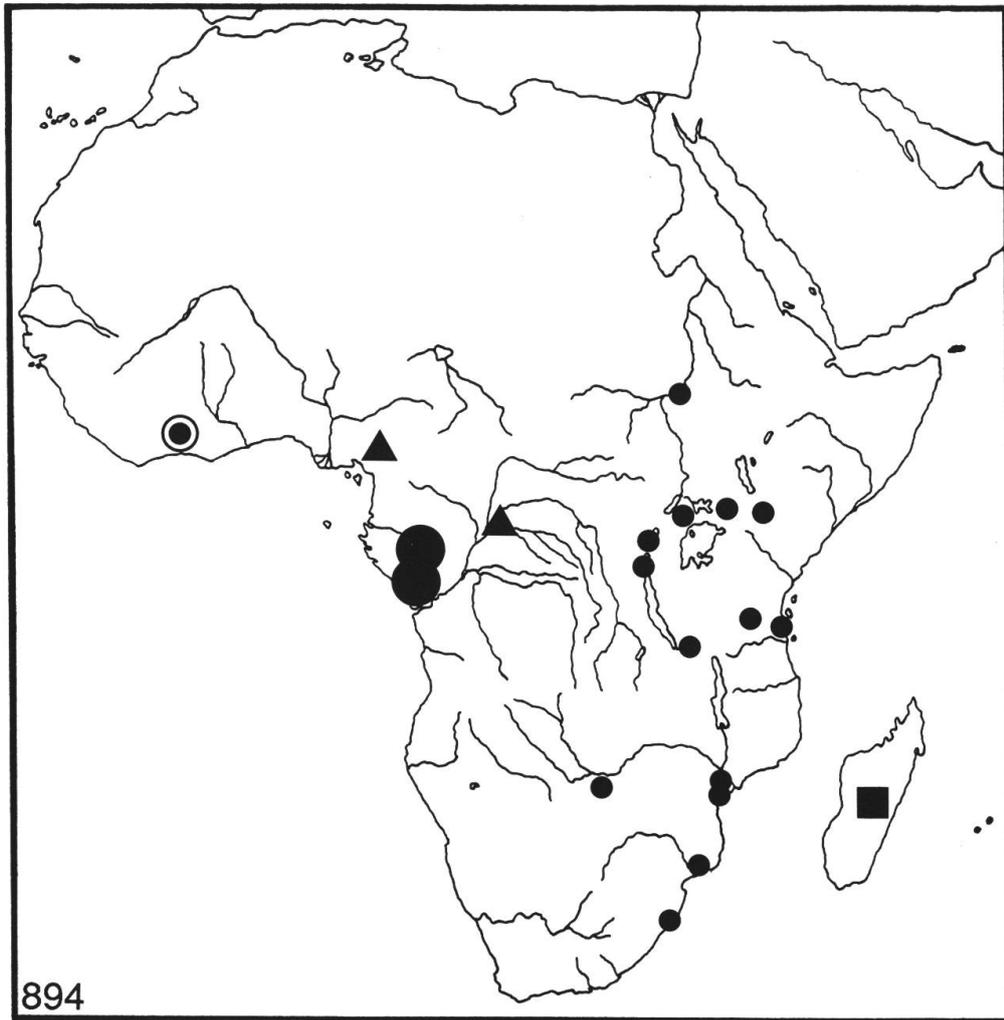
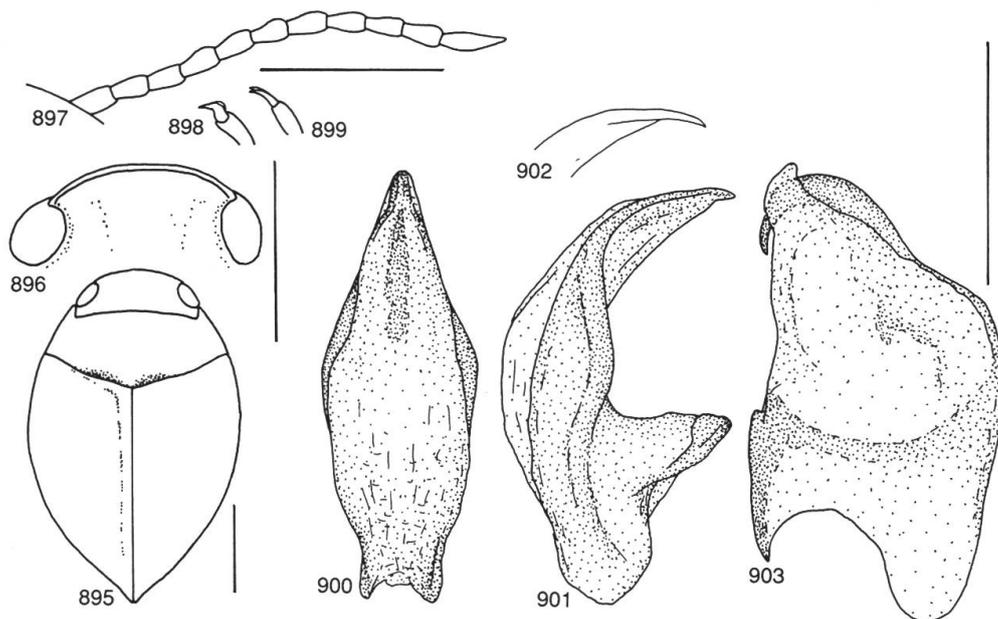


Fig. 894: Distribution of *Hydrovatus obsoletus* (small dot), *H. otiosus* (square), *H. perrianae* (circle), *H. lintrarius* (triangle) and *H. omentatus* (large dot).

Pronotum: Ferrugineous, laterally with vague, pale ferrugineous areas. Fairly coarsely and densely punctate. Laterally punctuation becomes somewhat finer; on disc with narrow impunctate areas. Rather shiny, almost without microsculpture. Laterally with fine reticulation. Lateral outline of pronotum almost straight.

Elytra: Dark ferrugineous to ferrugineous, without distinct colour pattern. Along suture and basally with indistinct darkened areas. Fairly coarsely and densely punctate. Laterally punctures become slightly finer and sparser. Close to epipleura elytra almost impunctate. Rows of punctures indistinct; only irregular lateral row of punctures discernible. Rather shiny, although very finely microsculptured (meshes often reduced and hardly visible). Epipleura pale ferrugineous.



Figs 895–903: *Hydrovatus lintrarius*. – 895, habitus. – 896, head, frontal aspect. – 897, antenna. – 898, male protarsal claw. – 899, female protarsal claw. – 900, penis, dorsal aspect. – 901, penis, lateral aspect. – 902, supplementary illustration of penis. – 903, paramere. Horizontal scale 0.5 mm, antenna and claws; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 0.5 mm, genitalia (excl. Fig. 902).

ous, finely and rather indistinctly punctate, shiny; indistinct sporadic reticulation may be discerned.

Ventral side: Ferruginous to pale ferruginous. Fairly coarsely to finely punctate. Abdomen almost impunctate, except for basally; with a few fine punctures. Shiny, scattered, indistinct reticulation may be seen. Abdomen with very fine, hardly discernible microsculpture. Stridulatory apparatus with numerous minute striae. Prosteral process finely margined, medial surface finely punctate and somewhat excavate.

Legs: Pale ferruginous to ferruginous. Pro- and mesotarsus slightly enlarged. Protarsus with basally thickened claws (Fig. 898).

Male genitalia: Figs 900–903. Supplementary illustration of penis apex drawn from a male from Cameroon.

Female: Externally almost similar to male, but lacks stridulatory apparatus. Protarsal claws simple (Fig. 899).

Distribution: Cameroon, Zaire (Fig. 894).

Biology: Sampled on floating mat of grass.

**Hydrovatus omentatus** Guignot

Figs 894, 904–910.

*Hydrovatus omentatus* GUIGNOT, 1950b:99 (orig. descr., faun.; in part *H. stappersi* Guignot); 1959a:160, 167 (descr., faun.); 1961b:933 (faun.); BILARDO & PEDERZANI, 1978:103, 107 (descr., faun.).

Type locality: N'Gomo Bas–Ogoué, Gabon.

Type material studied: Holotype, m: Gabon N'Gomo Bas–Ogoué/m/Type/*Hydrovatus omentatus* Guign. Type m/Museum Paris coll. Guignot (MNHN). – Paratype: Same data as holotype but labelled allotype f (1 ex. MNHN, the specimen is actually a male of *H. stappersi*, see p. 432).

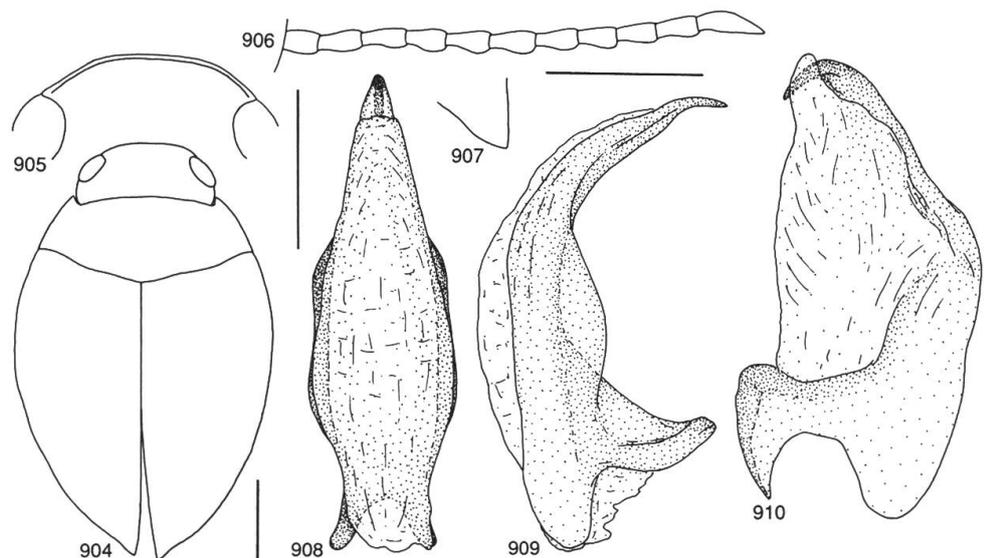
Additional material studied: Congo: Loudima Sagro Park/7.XII.1963 by lamplight (2 exx. TMB). In all, 4 exx.

Diagnosis: Close to the preceding species *H. lintrarius*. *H. omentatus* is characterized by quite a large-sized body, by the completely margined frontal part of the head, by a stridulatory apparatus consisting of about 30 discernible ridges, and by the less pronounced parameral hook in comparison with *H. lintrarius*, and by the apical part of the penis: Distinctly undulate (lateral aspect).

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

Length of body: 4.40–4.56 mm, breadth: 2.84–2.88 mm. Habitus (Fig. 904).

Head: Frontal aspect in Fig. 905. Antenna in Fig. 906.



Figs 904–910: *Hydrovatus omentatus*. – 904, habitus. – 905, head, frontal aspect. – 906, antenna. – 907, apex of elytron. – 908, penis, dorsal aspect. – 909, penis, lateral aspect. – 910, paramere. Horizontal scale 0.5 mm, antenna and elytral apex; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 1 mm, genitalia.

Pronotum: Punctuation rather fine, dense. Laterally punctures finer, sparser and partly somewhat indistinct. Rather shiny, microsculptured (meshes medially indistinct, weakly developed and partly absent).

Elytra: Punctuation rather fine, dense. Apically and close to epipleura punctures still finer and sparser. Rows of punctures indistinct or absent (mixed with ordinary punctures). Apical outline of elytron somewhat unevenly curved (Fig. 907).

Ventral side: Stridulatory apparatus rather narrow, consists of about 30 minute but discernible ridges. Medial surface of prosternal process slightly uneven, indistinctly punctate.

Legs: Pro- and mesotarsus fairly broad. According to GUIGNOT (1959a) male protarsal claws asymmetric. Intact male not examined. In male from Congo protarsal claw slightly asymmetric; quite long, quite broad but moderately curved; tip, however, broken.

Male genitalia: Figs 908–910.

Female: Female allotype proved to be a male of *H. stappersi*. One female specimen from Congo most probably belongs to this species. Externally as male but body dull, distinctly microsculptured (female probably dimorphous; also with a shiny morph, although not yet recorded). Additionally female lacks stridulatory apparatus. Protarsal claws not modified.

Distribution: Gabon, Congo (Fig. 894). The original description gives probably by mistake Congo (GUIGNOT, 1950b), but it should be Gabon. Additional unverified record is the Ivory Coast (BILARDO & PEDERZANI, 1978).

Biology: Practically unknown. In Congo sampled at light collection.

### **Hydrovatus nigrita** Sharp

Figs 911–918.

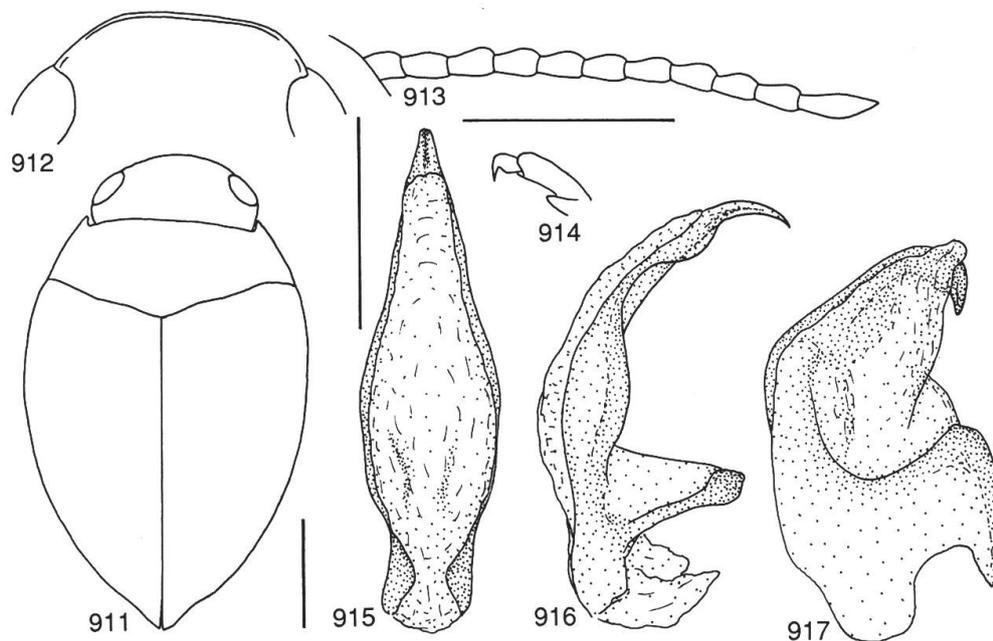
*Hydrovatus nigrita* SHARP, 1882a:333 (orig. descr., faun.); BRANDEN, 1885:26 (faun.); RÉGIMBART, 1899b:241 (descr., faun.); ZIMMERMANN, 1920a:34 (faun.); PESCHET, 1922:376 (disc., faun.); GUIGNOT, 1956g:54, 56 (faun.); VAZIRANI 1977a:28 faun.); WATTS, 1978:16, 17, 19 (descr., faun.); 1985:23 (faun.); LAWRENCE & al., 1987:332 (faun., biol.).

Type locality: Cape York, Queensland, Australia.

Type material studied: Lectotype, m, designated by Watts (1978): m *Hydrovatus nigrita* Wehncke Ind. auth. Cape York H.k. Type mihi D.S./Lectotype/Australia/Queensland Australia/*Hydrovatus nigrita* Sharp Australia Cape York/*Hydrovatus nigrita* Wehncke/*Hydrovatus nigrita* Sharp Det. C. Watts 1979 (BMNH). – Paralectotypes: Qsld Rockhampton (2 exx. BMNH); Qsld (2 exx. BMNH).

Additional material studied: Indonesia: Ambon: Waai, 16.XI.1991/in freshwater pool with *Eichornia crassipes* veg. (3 exx. coll. Vondel, 1 ex. MZH); Ceram, Umg. Wahai 12.II.1990 (4 exx. NMW, 2 exx. MZH). – New Guinea: Paniai Pr. Nabire, Kali Bobo 19., 20. & 26.1990 (26 exx. coll. Balke & Hendrich, 8 exx. MZH). – Papua New Guinea: SE Mamai Pltu E Pt Glasgow 150 m, 7.II.1965/light trap (1 ex. BBM); SE Popondelta 60 m, 30–31.VIII.1963/light trap (5 exx. BBM, 1 ex. MZH); same but 31.VIII.–2.IX.1963 (5 exx. MZH, 8 exx. BBM); same but 3–4.IX.1963 (3 exx. BBM); 1 mi S Morehead W Distr. 8.44S,141.38E, 29.VIII.1970 (1 ex. ANIC). – Australia: Northern Territory: Coast. Ol. Res. St. nr Darwin, at light 6.VI.1966/*H. nigrita* Shp det. Watts 1970 (3 exx. ANIC); NT E Allig. R. 7.VI.1973 (3 exx. ANIC, 1 ex. MZH); same but 29.V.1973 (1 ex. ANIC); NT Koongarra 15 km E Mt Cahill 12.VI.1973 (1 ex. ANIC); NT Daly R. Mission 17.VIII.1974 (1 ex. ANIC, 1 ex. MZH); Queensland: Pt Danger Coolangatta light trap/*H. nigrita* Shp det. Watts 1990 (1 ex. ANIC); Q Ayr 10.IX.1970 (1 ex. ANIC); NQ Cardstone 20.XII.1965 (1 ex. ANIC); same but II.1966 (1 ex. ANIC); New South Wales: Congo 8 mi SE by E Moroya 1.XII.1979 (1 ex. ANIC); same but 14.II.1981 (1 ex. ANIC); NSW Parramatta 26.II. 1965/*H. rufoniger* det. Watts 1972 (1 ex. BMNH); Australia (1 ex. MNB). In all, 92 exx.

Diagnosis: A quite distinct species, the closest relative of which is probably *H. navigator*, below. *H. nigrita* is particularly characterized by a quite large-sized and dark body, by the incompletely margined frontal part of the head, and by distinct and evenly curved lateral flaps apically on the penis.



Figs 911–917: *Hydrovatus nigrita*. – 911, habitus. – 912, head, frontal aspect. – 913, antenna. – 914, male protarsal claw. – 915, penis, dorsal aspect. – 916, penis, lateral aspect. – 917, paramere. Horizontal scale 0.5 mm, antenna and claw; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 1 mm, genitalia.

Length of body: 3.40–4.16 mm, breadth: 2.24–2.60 mm. Habitus in Fig. 911.

Head: Dark ferruginous to ferruginous. Very finely, partly indistinctly and sparsely punctate. In rather shallow frontal depressions and narrowly at eyes with slightly coarser and denser punctures. Submat, finely microsculptured (meshes distinct). Head frontally rounded, medially somewhat straightened. Finely margined but at eyes margin reduced (Fig. 912). Antenna pale ferruginous, rather slender, not distinctly modified (Fig. 913).

Pronotum: Blackish to dark ferruginous, laterally slightly paler. Punctuation rather fine, fairly dense. Laterally punctures become more indistinct with separate punctures weakly impressed. Rather shiny to slightly mat (meshes discernible but weakly developed). Lateral outline of pronotum somewhat rounded.

Elytra: Blackish to dark ferruginous. Laterally elytra becomes only slightly paler. Without distinct colour pattern. Punctuation rather fine, fairly dense. Apically and close to epipleura punctures finer, sparser and rather indistinct. Separate puncture rather weakly impressed. Rows of punctures absent or indistinct. Laterally elytra with a fairly distinct groove. Rather shiny to slightly mat, finely microsculptured (meshes partly indistinct, weakly developed). Epipleura dark ferruginous to ferruginous, finely and densely punctate (punctures concentrated in inner part), and rather indistinctly reticulated.

Ventral side: Blackish to dark ferruginous. Punctuation rather fine and sparse. Abdomen, except base, almost impunctate. Rather shiny, almost without microsculpture. Abdomen submat, finely microsculptured. Stridulatory apparatus comparatively broad, consists of numerous minute but still clearly discernible ridges. Prosternal process laterally finely margined, medial surface almost flat to slightly uneven.

Legs: Pale ferruginous. Pro- and mesotarsus somewhat enlarged. Protarsal claws modified (Fig. 914).

Male genitalia: Figs 915–917. In specimens from New Guinea penis medially broader than for example in Australian specimens.

Female: Lacks stridulatory apparatus. Protarsal claws simple, not distinctly modified. Dimorphous; one specimen examined with mat, distinctly reticulated dorsal aspect of body.

Distribution: Indonesia: Ambon, Ceram, New Guinea, Papua New Guinea, Australia: Northern Territory, Queensland and New Philippines; occurrence in the Philippines needs verification. Cf.

Philippines; occurrence in the Philippines needs verification. Cf. *H. naviger* below.

Biology: Often sampled at light collection. In the Indonesian island Ambon collected in a freshwater pool with *Eichornia crassipes* vegetation.

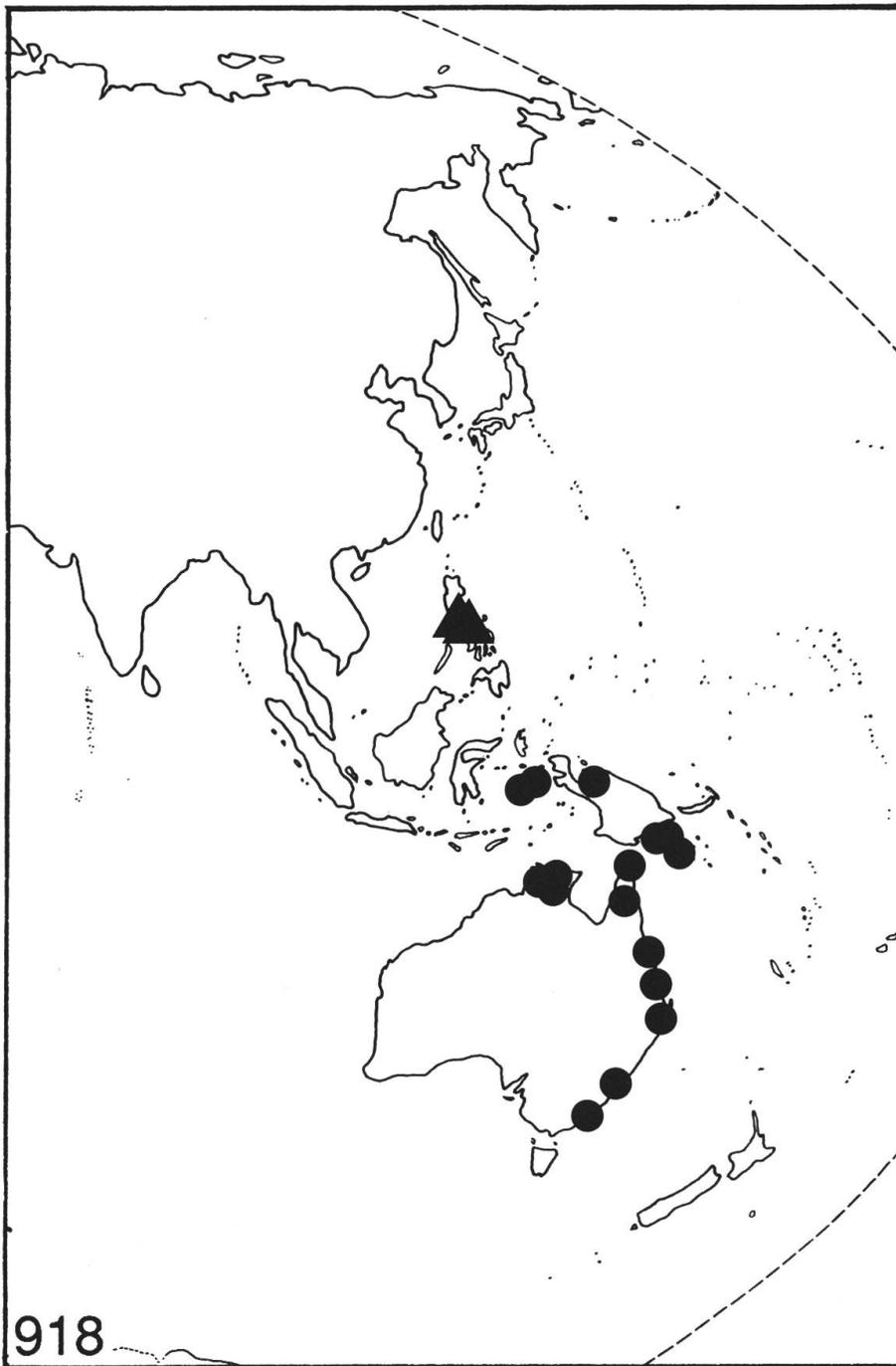


Fig. 918: Distribution of *Hydrovatus nigrita* (dot) and *H. naviger* (triangle).

**Hydrovatus naviger** n.sp.

Figs 918–928.

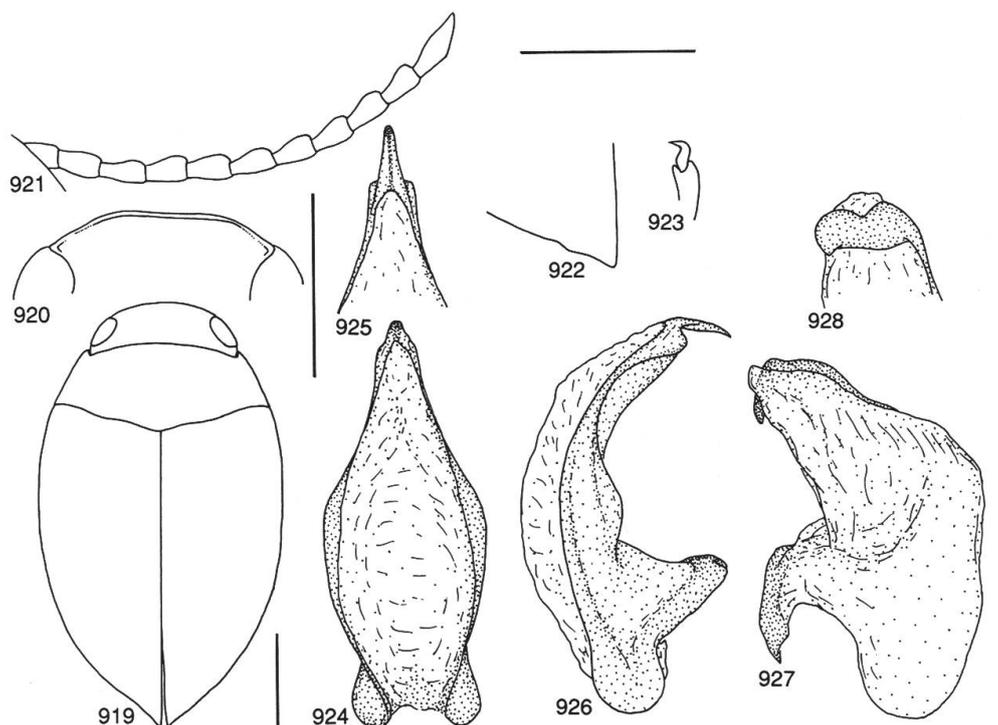
Type locality: Laguna de Bay, Luzon, Philippines.

Type material: Holotype, m: Type/Philippines: Luzon, Laguna de Bay Mrs. Cruz-Mercene/Brit. Mus. 1987–14/*Hydrovatus naviger* Type! J. Balfour-Browne det. III. 1975 (BMNH). – Paratypes: Same data as holotype (7 exx. BMNH, 3 exx. MZH); Philippinen I. 1914 Lucena Friedrichs G. (1 ex. MNB). In all, 12 exx.

Derivation of the name: The manuscript-name proposed by Dr. J. Balfour-Browne, who originally recognized the new species, is here adopted.

Diagnosis: Closest to *H. nigrita* above. The two species are distinguished by differences in appearance of the elytral microsculpture in the male (meshes more pronounced in *H. naviger*) and by differences in the shape of the penis apex: Apical flaps of the penis are extended forwards (lateral and dorsal aspects).

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



Figs 919–928: *Hydrovatus naviger*. – 919, habitus. – 920, head, frontal aspect. – 921, antenna. – 922, apex of elytron. – 923, male protarsal claw. – 924, penis, dorsal aspect. – 925, penis apex, dorsal aspect. – 926, penis, lateral aspect. – 927, paramere. – 928, paramere-apex, ventral aspect. Horizontal scale 0.5 mm, antenna, elytral apex and claw; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 1 mm, genitalia (excl. Figs 925, 928).

Length of body: 3.72–4.24 mm, breadth: 2.36–2.56 mm. Habitus (Fig. 919).

Head: Frontal aspect of head in Fig. 920. Antenna in Fig. 921.

Pronotum: Lateral outline of pronotum almost straight to rounded.

Elytra: Lateral outline of elytron apically finely dentate (Fig. 922). Elytral microsculpture clearly visible although fine. Rows of punctures discernible although somewhat irregular (dorsolateral row most weakly developed and often hardly discernible).

Ventral side: Stridulatory apparatus with hardly visible, minute ridges. Medial surface of prosternal process with dense punctation.

Legs: Protarsal claws modified, symmetric (Fig. 923).

Male genitalia: Figs 924–928.

Distribution: Philippines (Fig. 918).

Biology: Unknown.

### **Hydrovatus mundus** Omer-Cooper

Figs 929–936, 944.

*Hydrovatus mundus* OMER-COOPER, 1931:762 (orig. descr., faun., biol.); BALFOUR-BROWNE, 1939:482 (descr., disc., faun.; in part *H. uncus* = *H. villiersi*); GUIGNOT, 1959a:185, 188 (descr., faun.); OMER-COOPER, 1963:184 (descr., faun.).

Type locality: Suc-Suci, Lake Awai, Ethiopia.

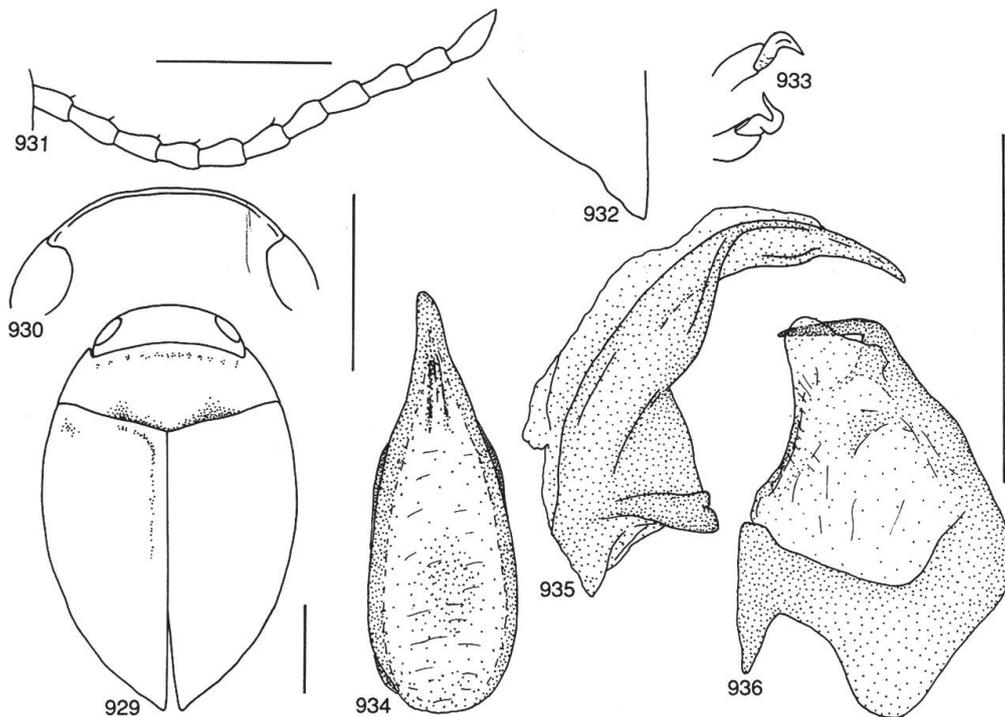
Type material studied: Holotype, f: Type/Abyssinia Suc-Suci, Lake Awai 5,500 ft. 12.XI.1926 J. Omer-Cooper/Brit. Mus. 1933–136/*Hydrovatus mundus* O.-C. Det. J. Omer-Cooper (BMNH). – Paratype (ex. mentioned in orig. descr.): m/Uganda Lake Victoria Ulambwi Bay 16.II. 24 M. Graham (124)/*H. mundus* O.-C./*Hydrovatus mundus* O.-C. J. Balfour-Browne det. IV.1960 (1 ex. BMNH).

Additional material studied: Uganda: Same data as the paratype (1 ex. AMS). In all, 3 exx.

Diagnosis: A distinct species, which is particularly characterized by the straight, well-sclerotized apical hook of the paramere. The association of the sexes follows OMER-COOPER (1931); incorrect association cannot, however, be excluded.

Length of body: 3.96–4.28 mm, breadth: 2.48–2.64 mm. Habitus in Fig. 929.

Head: Dark ferruginous. Anteriorly head slightly paler. Punctation very fine, rather sparse and hardly visible. In shallow frontal depressions and narrowly at eyes with denser and somewhat coarser punctures. Rather shiny, microsculptured (meshes quite distinct). Head anteriorly rounded, medially straightened. Narrowly margined from eye to eye, but margin sometimes broken for a short distance above base of antennae (Fig. 930). Antenna pale ferruginous, slender, not distinctly modified (Fig. 931).



Figs 929–936: *Hydrovatus mundus*. – 929, habitus. – 930, head, frontal aspect. – 931, antenna. – 932, apex of elytron. – 933, male protarsal claws. – 934, penis, dorsal aspect. – 935, penis, lateral aspect. – 936, paramere. Horizontal scale 0.5 mm, antenna and claws; left top scale 1 mm, head and elytral apex; left bottom scale 1 mm, habitus; right scale 1 mm, genitalia.

**Pronotum:** Ferrugineous, laterally slightly paler. Anteriorly and mediobasally with vague, darkened areas. Punctuation rather fine, dense. Laterally on disc with distinctly finer and sparser punctures. Rather shiny, not microsculptured. Laterally finely microsculptured (meshes clearly discernible). Lateral outline of pronotum slightly rounded.

**Elytra:** Ferrugineous, laterally slightly paler. Without distinct colour pattern. Punctuation rather fine, quite dense. Apically punctures somewhat finer and more irregularly distributed. Discal row of punctures discernible, although mixed with adjacent punctures. Dorsolateral row of punctures indistinct; defined only by a few coarser punctures. Lateral row of punctures sparse, somewhat irregular. Rather shiny, with fine and scattered microsculpture (on large areas meshes absent or very indistinct). Lateral outline of elytral apex slightly undulate (Fig. 932). Epipleura pale ferrugineous, almost impunctate and almost without microsculpture.

Ventral side: Ferruginous to pale ferruginous. Punctation rather fine to fairly coarse, somewhat sparse. Separate punctures shallow and often rather indistinct. Abdomen, except base, almost impunctate. Shiny, microsculpture almost totally absent. Apical sternite with discernible reticulation. Stridulatory apparatus consists of numerous minute ridges. Prosternal process laterally finely margined, medial surface flat to slightly depressed, punctate.

Legs: Pale ferruginous to ferruginous. Pro- and mesotarsus quite broad. Protarsal claws strongly modified, asymmetric (Fig. 933).

Male genitalia: Figs 934–936.

Female: Resembles male but without stridulatory apparatus and with simple protarsal claws.

Distribution: Ethiopia, Uganda (Fig. 944). Records from Ghana, Sudan, Kenya and Malawi (BALFOUR-BROWNE, 1939) are regarded as unreliable and refer, at least partly, to other *Hydrovatus* species.

Biology: Holotype sampled in Ethiopia at an altitude of about 5500 feet a.s.l.

### ***Hydrovatus oblongipennis* Régimbart**

Figs 937–944.

*Hydrovatus oblongipennis* RÉGIMBART, 1895b:117 (orig. descr., faun.); 1910:4 (disc., faun.); ZIMMERMANN, 1920a:34 (faun.); 1926:24, 26 (descr., disc., faun.); GSCHWENDTNER, 1931:181 (faun.); GUIGNOT, 1958b:5 (disc.); 1959a:161, 169 (descr., faun.); 1959c:141 (faun.); BRUNEAU DE MIRÉ & LEGROS, 1963:848 (disc.); OMER-COOPER, 1963:180, 181 (descr., faun.); 1965:200 (disc., faun.); LEGROS, 1972:461 (faun.); BILARDO & PEDERZANI, 1978:104, 107 (descr., faun.); BILARDO, 1982b:250 (faun.); PEDERZANI & ROCCHI, 1982:71 (faun.); BILARDO & PEDERZANI, 1990:161, 162, 170 (faun., biol.).

*Hydrovatus crassus* GUIGNOT, 1958b:5 (orig. descr., faun.); OMER-COOPER, 1963:180 (syn. *H. oblongipennis*); 1965:200 (syn. list.).

Type locality: Ht. Quilou, Loango int., Angola.

Type material studied: Lectotype, f (only female available among cotypes), by present designation: Loango int. Ht Quilou/f/Museum Paris coll. Maurice Régimbart, 1908/Type (MNHN). – Paralectotypes: Same data as lectotype (2 exx. MNHN); Senegal Cap Vert/Museum Paris coll. Maurice Régimbart 1908/f/Type/*oblongipennis* Rég. (1 ex. MNHN). – *H. crassus*: Holotype, m: Holotypus/Congo Belge PNG Miss. H. De Saeger I/a/14, 7.I.1950 Réc. G. Demoulin 584/Coll. Mus. Congo (ex I.P.N.C.B.) F. Guignot det., 1955 *Hydrovatus (Vathydrus) crassus* n.sp. Type m/*Hydrovatus oblongipennis* Rég. det. J. Omer-Cooper (MAC). – Paratypes: Principally with same data as holotype but 4.V.1951 Réc. H. De Saeger, 1656 (1 ex. ISN); same but 26.VI.1951, 1982 (2 exx. ISN); 18.VII.1951, 2106 (1 ex. ISN); 24.VII.1951, 2133 (1 ex. ISN); 4.X.1951, 2511 (1 ex. ISN); 7.XII.1951, 2875 (1 ex. MAC); 19.III.1952, 3199 (1 ex. MAC); 25.VII.1952, 3858 (1 ex. MAC); 8.VIII.1952, 3924 (2 exx. MAC).

Additional material studied: Sudan: Equatoria Nimule 11–13.III.1963 (5 exx. MZH); Malakal 5–20.I.1963 (5 exx. MZH); Yambio 17–25.IV.1963 (1 ex. MZH); L. Shambe, shore 21.I.1954 (2 exx. AMS); Shambe/28.V.–19.VI. 1954 (1 ex. BMNH); Kadugli X. 1954 (1 ex. BMNH); White Nile 13.I.1954 (1 ex. AMS). – Ghana: Legon 3–18.III.1969/at light (1 ex. BMNH); Ashanti Kumasi 330 m/light trap 18., 20., 21., 28.V., 16.VI., 15.IX.1967 (12 exx. TMB, 2 exx. MZH). – Nigeria: Badagry 8 km W Lagos I–IV.1977 (4 exx. BM NH, 2 exx. MZH). – Equatorial Guinea: Nkolentangan (1 ex. MNB); Span. Guinea (1 ex. MZH). – ? Central African Republic: Neu-Kamerun (2 exx. MNB, 1 ex. MZH). – Ethiopia: Env. Addis Abeba 20.VIII.1969 UV-lum./*H. oblongipennis* Régb. det. Brancucci (6 exx. MZH, 9 exx. coll. Nilsson, 1 ex. coll. Rocchi, 4 exx. coll. Wewalka); Bourié, bord riv. Omo 600 m (6 exx. MNHN, 2 exx. MZH); Ilubabor Pr. Pokwo, Baro r. 25.VIII. 1972/*H. oblongipennis* Régb. det. Nilsson 1990 (1 ex. MAC). – Zaire: Mayumbe (2 exx. ZSM); Luluabourg 14.IV.1923 (1 ex. ZSM); Congo B. (2 exx. MNHN). – Uganda: Murchison N.P. Chobe 27.VII.1971 (2 exx. MCG). – Tanzania: Usagara/*H. mucronatus* Rég. det. Zimmermann (1 ex. MNB). – Angola: Riv. Lac Calundo 105 km Est Luso XII.1954 (1 ex. MNHN); Mare sous bois, Rte Turismo (7.21S,20.50E) 9.VIII.1957 (1 ex. MZH). – Zambia: Lusaka Kafue City-Kafue R. 1200, 22.IX.–2.XII.1987 (7 exx. MCG, 2 exx. MZH). – Malawi: Dambo/Livingstonia 21.X.1948/*H. oblongipennis* Régb. det. Omer-Cooper (1 ex. AMS). – Mozambique: Val. Pungou Guengére IV., XI., XII. 1906 (3 exx. MNHN, 2 exx. MZH). – South Africa: Zulu Hluhluwe IX. 1960 (1 ex. TMP); Zululd. Dukuduku For. 20–21.XI.1956 (1 ex. TMP); Zululd. Mtubatuba 23.IX.1949 (1 ex. AMS). In all, 115 exx.

**Diagnosis:** *H. oblongipennis* is characterized by a large-sized, somewhat elongate body, by the almost totally margined frontal part of the head, by the distinctly modified male protarsal claws and by features exhibited in penis: Apex comparatively long and narrow, in lateral aspect rather weakly curved downwards; strenghtening lobes of penis clearly visible from above. Slight morphological variation, eg. in the shape of the penis and microsculpture, indicate the possible existence of two species in this taxon.

Length of body: 4.08–5.02 mm, breadth: 2.40–3.00. Habitus (Fig. 937).

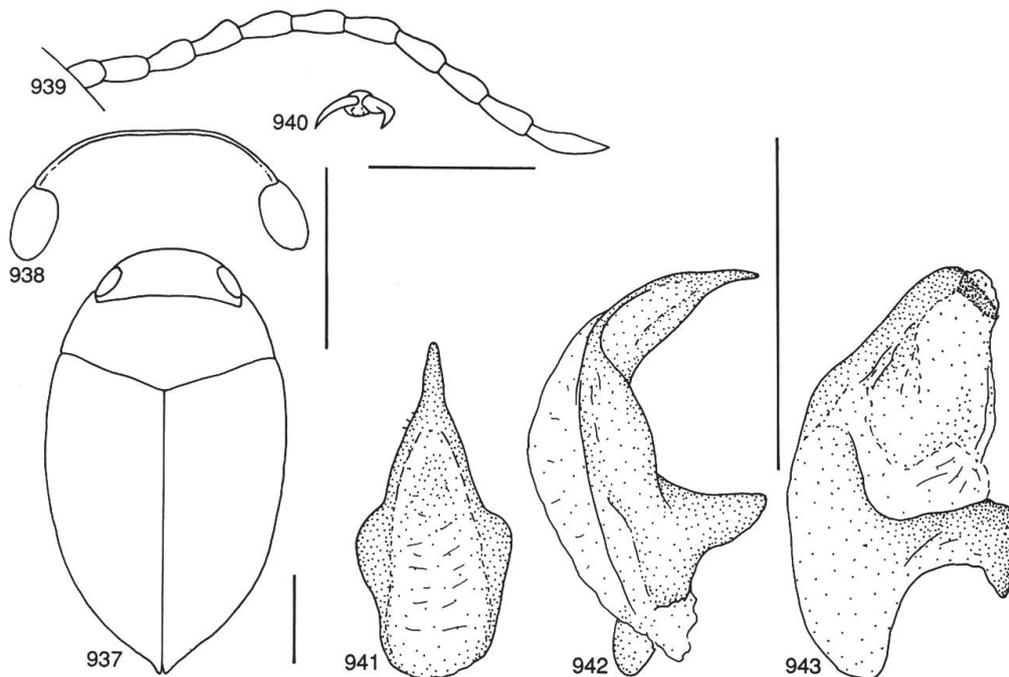
**Head:** Dark ferrugineous to ferrugineous, frontally often with a quite vague paler area. Finely and rather sparsely punctate. In rather shallow frontal depressions and narrowly at eyes with denser punctures. Slightly mat to rather shiny, microsculptured (meshes distinct). Head frontally rounded, medially somewhat straightened. Margined but margin broken for a short distance at minute tubercles close to eyes (Fig. 938). Antenna pale ferrugineous, slender, not distinctly modified (Fig. 939).

**Pronotum:** Dark ferrugineous to blackish ferrugineous. Laterally often vaguely paler. Rather finely to finely and quite densely punctate. Laterally on disc punctures on quite broad area finer and sparser.

Rather shiny, although microsculptured (meshes distinct). Lateral outline of pronotum somewhat rounded.

Elytra: Blackish ferruginous to dark ferruginous. Laterally paler but without distinct colour pattern. Rather finely and quite sparsely punctate. Laterally punctures become still finer and sparser. Elytral punctation sometimes on whole disc very fine or almost absent. Also density of punctures somewhat variable (sparse to quite dense). Discal row of punctures distinct. Dorsolateral row of punctures clearly visible, although somewhat irregular. Lateral row of punctures quite sparse and somewhat irregular, but still clearly discernible. In specimens with especially fine general punctation, rows of punctures more pronounced. Rather shiny, although microsculptured (laterally meshes partly reduced and hardly visible). Epipleura ferruginous, finely punctate and reticulate.

Ventral side: Ferruginous. Rather finely and quite densely punctate. Abdomen almost impunctate, except basally; with a few scattered punctures. Rather shiny, abdomen with very fine microsculpture. Prosternal process laterally narrowly margined, medial surface indistinctly concave. Stridulatory apparatus consists of numerous fine striae.



Figs 937–943: *Hydrovatus oblongipennis*. – 937, habitus. – 938, head, frontal aspect. – 939, antenna. – 940, male protarsal claws. – 941, penis, dorsal aspect. – 942, penis, lateral aspect. – 943, paramere. Horizontal scale 0.5 mm, antenna and claws; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 1 mm, genitalia.

Legs: Pale ferruginous to ferruginous. Pro- and mesotarsus broad. Protarsal claws asymmetric (Fig. 940).

Male genitalia: Figs 941–943.

Female: Dorsal aspect of body mat to submat, with distinct microsculpture (meshes well developed). Stridulatory apparatus absent. Protarsal claws simple.

Distribution: Senegal, Ghana, Nigeria, Equatorial Guinea, ? Central African Republic/Cameroon (exact location unknown), Sudan, Ethiopia, Zaire, Uganda, Tanzania, Angola, Zambia, Malawi, Mozambique, South Africa (Fig. 944). Additional unverified records are Benin, Gabon (GUIGNOT, 1959a), the Ivory Coast (BILARDO & PEDERZANI, 1978) and Congo (PEDERZANI & ROCCHI, 1982).

Biology: Insufficiently documented. In Ethiopia sampled at an altitude of 600 m a.s.l. Often trapped at light collection.

Synonymy: The synonymy of *H. oblongipennis* and *H. crassus* was proposed by OMER-COOPER (1963). This interpretation is followed here although further study may lead to a separation of species. At least so far *H. oblongipennis*, being older, is the valid name of the species.

### **Hydrovatus bedoanus** Bruneau de Miré & Legros      Figs 944–947.

*Hydrovatus bedoanus* BRUNEAU DE MIRÉ & LEGROS, 1963:847, 888 (orig. descr., faun.).

Type locality: Marécages de Bedo, zone du Borkou, Chad.

Type material studied: Holotype, f: Marécages de Bedo 29–30 sept. 1959/Tibesti zone du Borkou Bruneau de Miré/Type/*Hydrovatus (Vathydrus) bedoanus* n.sp. C. Legros det. (MNHN). – Paratype: Principally with same data as holotype (1 ex. MNHN). In all, 2 exx.

Diagnosis: Species status of *H. bedoanus* is unclear because only the female is known. Probably close to *H. oblongipennis* discussed above. Because only the female has been available for study I am unable to give any distinguishing features for the species. I simply refer to the description below and the original description (BRUNEAU DE MIRÉ & LEGROS, 1963).

Description: based on female.

Length of body: 4.04–4.28 mm, breadth: 2.48–2.68 mm. Habitus (Fig. 945).

Head: Frontally pale ferruginous, posteriorly slightly darker, ferruginous. Punctuation very fine, sparse, indistinct. Narrowly at

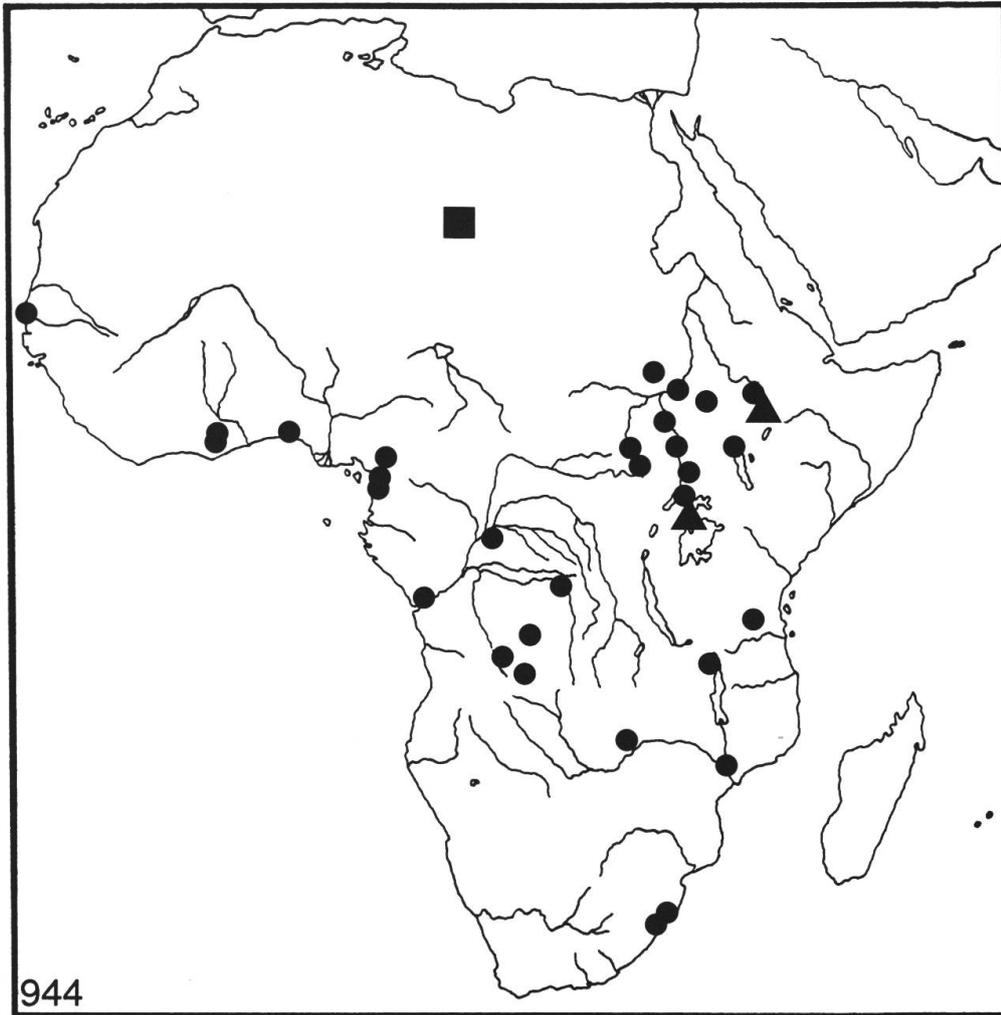
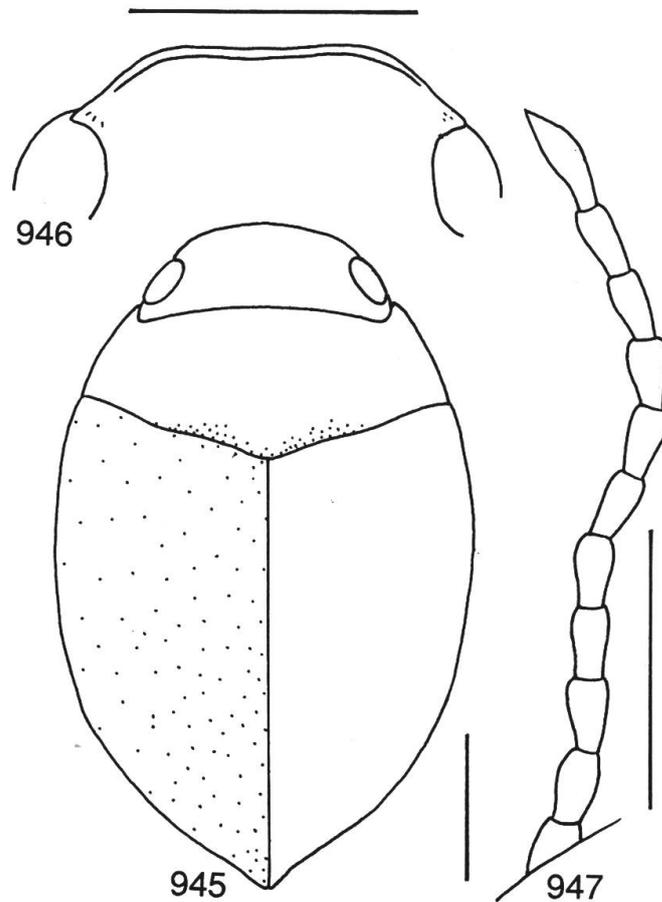


Fig. 944: Distribution of *Hydrovatus mundus* (triangle), *H. oblongipennis* (dot) and *H. bedoanus* (square).

eyes and in rather shallow frontal depressions, punctation somewhat denser and coarser. Rather shiny, finely microsculptured (meshes distinct). Head frontally rounded, medially distinctly straightened. Frontally finely margined but margin disappears a short distance from eyes (Fig. 946). Antenna pale ferrugineous, slender, not distinctly modified (Fig. 947).

Pronotum: Ferrugineous to pale ferrugineous. Laterally palest. Mediobasally with a vague darkened area. Punctation rather fine to fine, fairly dense. Laterally on disc with a narrow area where punctures distinctly finer and sparser. Rather shiny, microsculptured (meshes clearly visible although weakly developed). Lateral outline of pronotum somewhat rounded.



Figs 945–947: *Hydrovatus bedoanus*, female. – 945, habitus. – 946, head, frontal aspect. – 947, antenna. Horizontal scale 1 mm, head; left scale 1 mm, habitus; right scale 0.5 mm, antenna.

Elytra: Dark ferrugineous to ferrugineous, palest laterally. Without distinct colour pattern. Rather finely to finely and fairly densely punctate. Punctures apically finer and laterally more irregularly distributed. Discal row of punctures anteriorly fairly distinct, posteriorly indistinct and mixed with ordinary punctation. Dorsolateral row of punctures hardly visible, formed by a few irregular punctures. Lateral row of punctures quite indistinct and irregular, but still discernible. Rather shiny, very finely and indistinctly microsculptured (meshes partly very weakly developed or even absent). Epipleura pale ferrugineous to ferrugineous. Rather finely and densely punctate.

Ventral side: Ferrugineous. Rather finely and densely punctate. Abdomen, except basally, almost impunctate. Rather shiny, almost without microsculpture. Abdomen with fine reticulation. Prosternal

process laterally finely margined, medial surface indistinctly depressed, densely punctate.

Legs: Pale ferruginous to ferruginous. Pro- and mesotarsus broad.

Male: Unknown.

Distribution: Chad (Fig. 944).

Biology: Unknown.

### **Hydrovatus guignotianus** Guignot

Figs 948–954, 962.

*Hydrovatus guignotianus* GUIGNOT, 1956a:84 (disc., faun., no descr.); 1959a:160, 163 (orig. descr., faun.; given with Balfour-Browne in press as author but never described).

Type locality: Senegal.

Type material studied: Holotype, m: Senegal/n.sp. (MNHN). – Paratypes: Diafarabé Soudan fr. XII–1953/Daget coll./f/Allotype/F. Guignot det., 1955 *Hydrovatus Vathydrus guignotianus* B-Br. (1 ex. MNHN).

Additional material studied: Gambia: 3.5 km S Georgetown, hilltop at Sankuli Kunda, alt. about 30 m, at light 18.30–20.15, 15.XI.1977 (1 ex. LUZ). – Senegal: Cap Skiring at light 19.30–02.00, 10.XI.1977 (2 exx. LUZ); Kidira/VIII.1954 (2 exx. IFAN, 1 ex. MZH). – Mali: Diafarabé/XII.1953 (1 ex. MNHN); Entre Kayes et Kabate/VII.1954 (1 ex. MNHN); K. Mahina 10.XI.1973 (1 ex. BMNH). – Ghana: Ashantee/*H. ? guignotianus* m. J. B.-Br. det. 1949 (1 ex. BMNH, female; determination uncertain). – Benin: 3 km S Parakou 5.VII.1989 (1 ex. coll. Vondel); Kotonou 1904 (3 exx. MNHN, 1 ex. MZH). – Nigeria: Oyo Pr. Ogbomoshu 9–14.II.1948/*H. guignotianus* P-type J. B.-Br. det. (1 ex. BMNH; not type material). In all, 18 exx.

Diagnosis: A well delimited species, which is particularly characterized by a quite large and broad body, by the entirely margined frontal part of the head, by thickened male protarsal claws, by a stridulatory apparatus with about 20 discernible ridges and by peculiar genital-structures: The penis is quite broad and narrows quite gradually to a slender apex (dorsal aspect) and the penis from base to apex is almost evenly curved (lateral aspect).

Length of body: 3.60–3.92 mm, breadth: 2.32–2.56 mm. Habitus (Fig. 948), body quite broad.

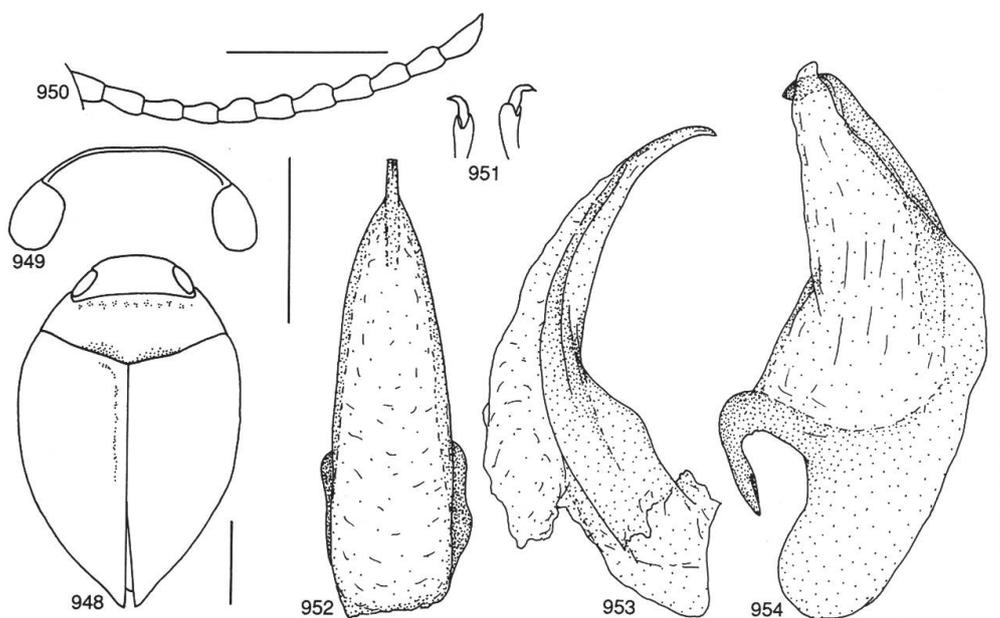
Head: Pale ferruginous to ferruginous. Almost impunctate. In rather shallow frontal depressions and narrowly at eyes with fine and dense punctation. Rather shiny, finely microsculptured (meshes clearly discernible). Head frontally rounded, medially somewhat straightened. Between eyes narrowly margined (Fig. 949). Antenna pale ferruginous, rather slender, not distinctly modified (Fig. 950).

Pronotum: Ferruginous, basally with vague darkened area and laterally slightly paler than medially. Punctation rather fine, fairly

dense. Laterally punctures become slightly finer, sparser and more irregularly distributed. Rather shiny, very finely microsculptured (meshes discernible but weakly developed). Lateral outline of pronotum somewhat rounded.

Elytra: Ferruginous. Laterally elytra become gradually paler; at epipleura pale ferruginous to pale brown. Without distinct colour pattern. Punctuation rather fine, somewhat sparse. Laterally and apically punctures slightly finer, sparser and more irregularly distributed. Rows of punctures indistinct or absent (mixed with adjacent punctures). Shiny, very finely microsculptured (meshes weakly developed but generally discernible). Epipleura pale ferruginous, rather indistinctly punctate and reticulate.

Ventral side: Ferruginous to pale ferruginous. Rather finely and somewhat sparsely punctate. Abdomen, except basally, almost impunctate. Shiny, almost without microsculpture. Abdomen with very indistinct transverse reticulation. Stridulatory apparatus consists of about 20 rather minute but clearly discernible ridges. Prosternal process laterally finely margined, medial surface almost flat, distinctly punctate.



Figs 948–954: *Hydrovatus guignotianus*. – 948, habitus. – 949, head, frontal aspect. – 950, antenna. – 951, male protarsal claws. – 952, penis, dorsal aspect. – 953, penis, lateral aspect. – 954, paramere. Horizontal scale 0.5 mm, antenna and claws; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 1 mm, genitalia.

Legs: Pale ferrugineous to ferrugineous. Pro- and mesotarsus somewhat enlarged. Protarsal claws somewhat thickened (Fig. 951).

Male genitalia: Figs 952–954.

Female: Externally approximately as male but without stridulatory apparatus and with protarsal claws simple.

Distribution: Gambia, Senegal, Mali, Ghana (only female record), Benin, Nigeria (Fig. 962).

Biology: Insufficiently known. Often sampled at light collection.

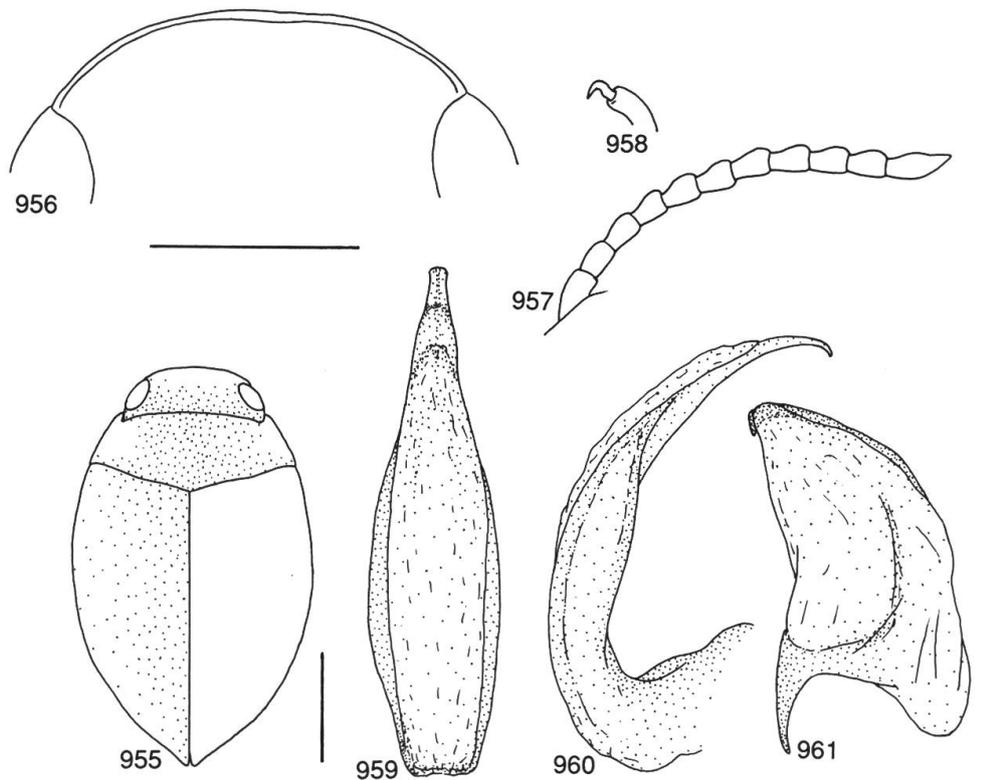
### **Hydrovatus pederzanii** Bilardo & Rocchi

Figs 955–962.

*Hydrovatus pederzanii* BILARDO & ROCCHI 1990:179, 189 (orig. descr., faun.).

Type locality: Ewo, Congo.

Type material studied: Holotype, m: Congo Brazzaville Ewo V. 1979 leg. Onore/L = 3.51, la = 2.12/Holotypus/*Hydrovatus pederzanii* Bil. & Rocchi det. A. Bilardo 1987 (coll. Bilardo). In all, 1 ex.



Figs 955–961: *Hydrovatus pederzanii*. – 955, habitus. – 956, head, frontal aspect. – 957, antenna. – 958, male protarsal claw. – 959, penis, dorsal aspect. – 960, penis, lateral aspect. – 961, paramere. Horizontal scale 0.5 mm, head, antenna and claw; left scale 1 mm, habitus; right scale 1 mm, genitalia.

**Diagnosis:** A quite large-sized species, which is characterized by the completely margined frontal part of the head, by somewhat modified male protarsal claws and by the weakly developed apical hook of the paramere.

Length of body: 3.50 mm, breadth: 2.10 mm. Habitus (Fig. 955).

**Head:** Blackish ferrugineous, frontally with a quite broad and distinct pale ferrugineous area. Punctuation fine to very fine, rather sparse and irregularly distributed. At eyes and in rather shallow frontal depressions with denser punctures. At pronotum impunctate. Rather shiny, although finely microsculptured (meshes distinct). Head frontally narrowly margined; outline medially somewhat straightened (Fig. 956). Antenna pale brown, rather slender, not distinctly modified (Fig. 957).

**Pronotum:** Blackish ferrugineous. Laterally with a quite broad and distinct, pale ferrugineous area. Punctuation rather fine to fine, somewhat sparse, irregularly distributed. Laterally on disc punctures even finer and sparser. At pronotal margins with irregular coarser punctures. Rather shiny, although finely microsculptured (meshes generally clearly discernible). Lateral outline of pronotum rounded.

**Elytra:** Blackish to dark ferrugineous (palest laterally), without distinct colour pattern. With fine to very fine, sparse punctuation. Laterally and apically ordinary punctuation almost absent, very indistinct. Discal row of punctures from apex to base quite distinct. Dorsolateral and lateral rows of punctures also clearly visible, although sparser. Between discal and lateral rows with a few scattered, quite coarse punctures. Rather shiny, although finely microsculptured (meshes generally discernible).

**Note!** In accordance with the wish of the depositor of the type I have not detached the specimen from the card. Thus the ventral aspect has not been examined.

**Legs:** Brown to pale brown. Pro- and mesotarsus quite broad. Protarsal claws somewhat modified (Fig. 958).

**Male genitalia:** Figs 959–961.

**Female:** Not examined. Probably with simple protarsal claws.

**Distribution:** Congo (Fig. 962).

**Biology:** Unknown.

**Hydrovatus nigricans** Sharp

Figs 962–970.

*Hydrovatus nigricans* SHARP, 1882a:332 (orig. descr., faun.); KOLBE 1883:404, 405 (descr., faun.); BRANDEN, 1885:26 (faun.); SEVERIN, 1892:472 (list.); RÉGIMBART, 1895b:113 (descr., faun.); 1899b:241 (disc., faun.); ZIMMERMANN, 1920a:34 (faun.); PESCHET, 1920:249 (faun.); GUIGNOT, 1945a:305, 307, 316 (descr., disc., faun.); 1955f:861 disc.; 1959a:160, 166 (descr., faun.); OMER-COOPER, 1963:179, 181 (descr., faun.); 1965:103 (descr., faun.).

*Hydrovatus abotti* GUIGNOT, 1954b:14 (faun., no descr.; given as *H. abotti* Balfour-Browne); 1959a:160, 165 (orig. descr., faun.; given as *H. abotti* Balfour-Browne in press); 1959c:140 (disc.); OMER-COOPER, 1965:103 (syn. *H. nigricans*).

**Type locality: Madagascar.**

Type material studied: *H. nigricans*: Holotype, m (labelled type m): Type 19/m/Type/Madagascar/Sharp Coll. 1905–313/*Hydrovatus nigricans* n.sp. *Hyphydrus nigricans* Dej./Madagascar (BMNH). – Paratypes (one ex. labelled as f type): Principally with same data as holotype (5 exx. BMNH). – *H. abotti*: Cotypes, f: I.R.S.A.C. – Mus. Congo Kivu: Kavimvira (Uvira) (a la lumire) II/III.1955 G. Marlier (2 exx. MAC); same data but XII.1954 (1 ex. MAC); same data but VI.1955 (2 exx. MAC).

Additional material studied: Sudan: Equateur Pr. Li Rangu II–III.1948/from streams/Type *H. abotti* J. B.-Br. (1 ex. BMNH, does not belong to original type material). – Ethiopia: Sidamo L. Awassa 8.I. 1989/*H. nigricans* Shp det. Nilsson 1989 (1 ex. coll. Nilsson). – Congo: Ht. Ogoué jusque a Boué (1 ex. MNHN). – Zaire: PNU Mabwe 585 m, 25–28.I.1949 (1 ex. MAC); same and *H. uncus* B.-Br. det. Guignot 1953 (1 ex. MAC); PNU Kabenga 1240 m, 30.III.–8.IV.1949/*H. uncus* B.-Br. det. Guignot 1953 (1 ex. MAC); PNG 10.III.1952 (2 exx. MAC); PNG 5.V.1952 (1 ex. MAC, 1 ex. ISN). – Tanzania: Kilossa III.1912 (1 ex. MNB); Zanzibar Maggapwani rd IX.1955 (1 ex. AMS). – Malawi: Ft Johnstone, Hornet Swamp 29.IX.1948 (2 exx. AMS); Dally's Hotel nr Ft Johnstone, swamp 23.VIII.1948 (9 exx. AMS); Monkey Bay, swamp 28.IX.1948 (1 ex. AMS). – Angola: R. Coroca N Pt Alexandre 22–23.VI.1954/ponds with algae & *Lemna*, fringing *Juncus* (6 exx. BMNH). – Mozambique: Pr. Gorongoza Foret Dinhanconde 350 m alt. X. 1907 (1 ex. MZH); Pr. Gorongoza Tendos du Sungoué et Riv. Vunduzi, alt. 40 m (1 ex. MNHN); Pr. Gorongoza Tendos de l'Uréma (1 ex. MNHN); Val. Pungoué Guenguere I. 1906 (1 ex. MNHN). – South Africa: Natal Umzikulwana Riv. 8.VIII. 1961 (1 ex. AMS); Zululd Mtubatuba 4.IX.1961 (1 ex. AMS). – Madagascar: Pr. Majunga/canaux irrig. Manaratsandra (7 exx. MNHN, 4 exx. MZH); Pr. Analalava Distr. Antsohiny XI., XII.1908 (2 exx. MNHN); Pr. Fenerive, Reg. Soanierana (1 ex. MNHN); Env. Antsirabe q. 1600 c.a. 15.VII.1970 (2 ex x. MCG); Nossi-Bé (1 ex. MNHN); Sikora (2 exx. NMW); Madag. (4 exx. MNHN, 2 exx. MNB, 1 ex. TMP). In all, 73 exx.

**Diagnosis:** A distinct species, which is easily recognized by study of the penis: The penis apex is apically peculiarly undulate (lateral view). The configuration of the penis apex indicates a close relationship with *H. stappersi* and *H. compactus*, treated below.

Length of body: 3.76–4.44 mm, breadth: 2.40–2.88 mm. Habitus (Fig. 963).

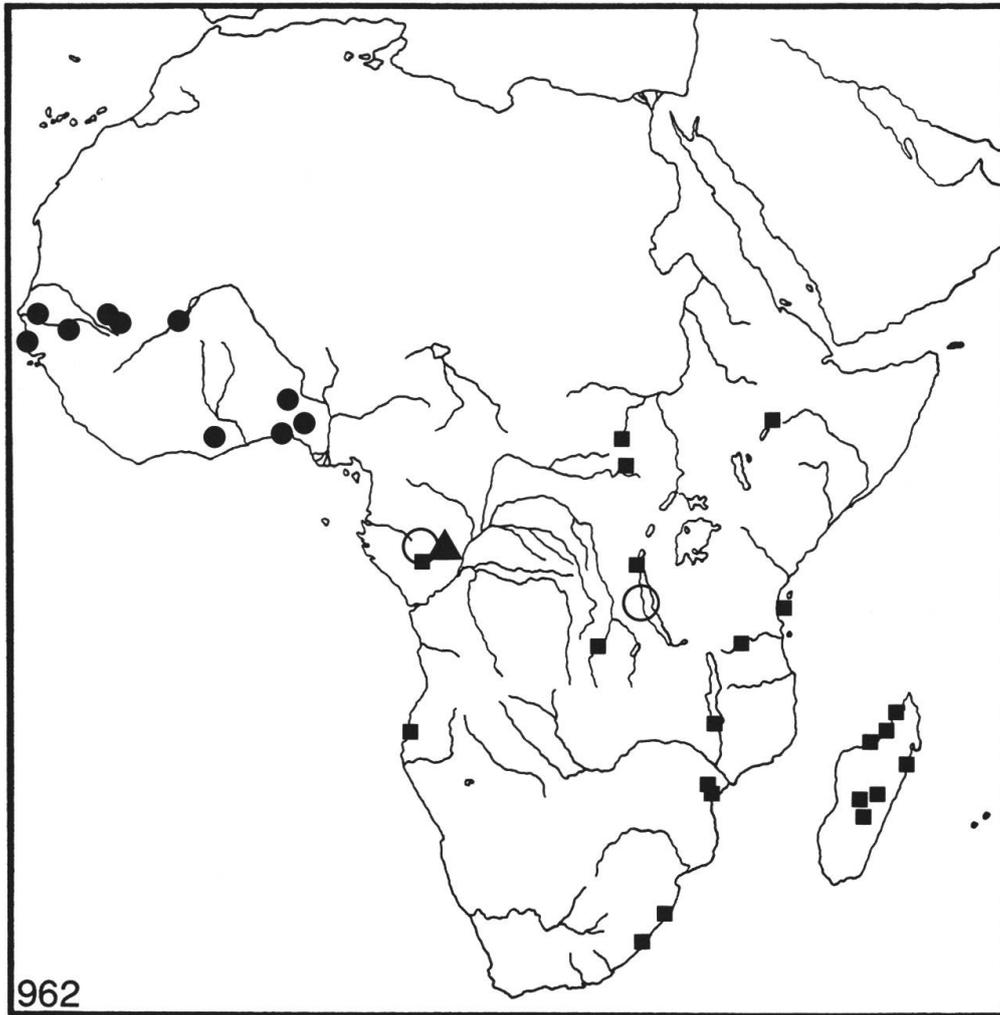


Fig. 962: Distribution of *Hydrovatus guignotianus* (dot), *H. pederzani* (triangle), *H. nigricans* (square) and *H. stappersi* (circle).

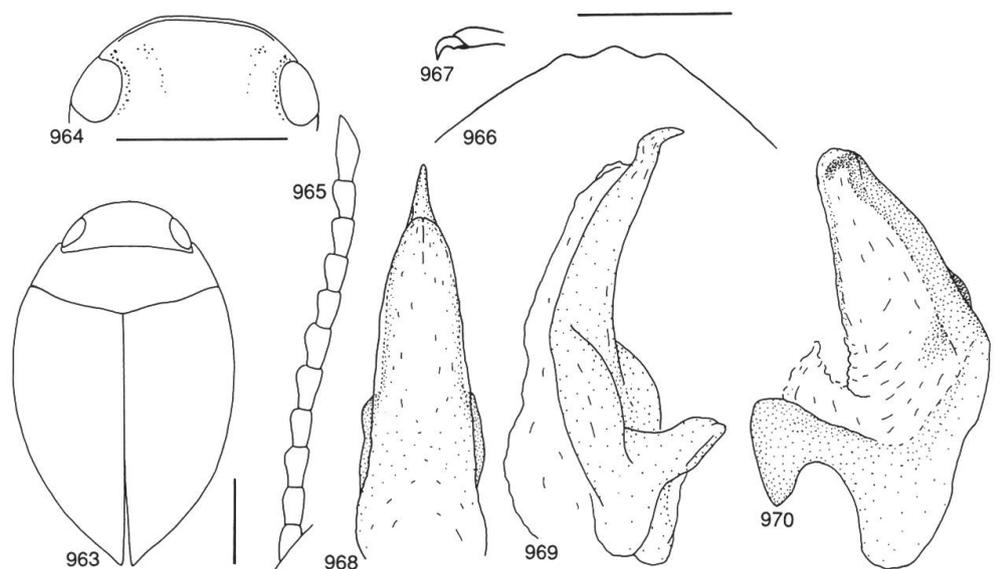
Head: Dark ferrugineous to ferrugineous. Anteriorly with a vague paler area. Very finely and somewhat sparsely punctate. At pronotum punctures hardly visible. In frontal depressions (rather shallow) and at eyes with a few coarser punctures. Submat, distinctly microsculptured, except at pronotum; rather shiny and reticulation indistinct. Head frontally rounded, medially somewhat straightened. Narrowly margined but margin disappears near eyes (Fig. 964). At eyes sometimes with rudiments of a margin. Antenna pale brown to pale ferrugineous, slender, without distinct modifications (Fig. 965).

Pronotum: Blackish ferrugineous to dark ferrugineous. Laterally with vague ferrugineous areas. Fairly coarsely and densely punctate. Laterally on disc punctures distinctly sparser. Rather shiny, finely

and partly indistinctly microsculptured (meshes laterally clearly visible). Lateral outline of pronotum almost straight to somewhat rounded.

**Elytra:** Blackish ferrugineous to dark ferrugineous. Laterally elytra become gradually paler; at epipleura ferrugineous. Finely and partly indistinctly but quite densely punctate. Laterally punctures distinctly sparse and still finer. Discal row of punctures quite distinct. Dorsolateral row of punctures defined only by a few, quite coarse punctures. Lateral row of punctures irregular but still clearly discernible. Rather shiny, not microsculptured. Apically with discernible reticulation. Elytral apex provided with a minute but quite distinct depression. Epipleura pale ferrugineous to ferrugineous, finely and sparsely punctate, rather shiny and not reticulate.

**Ventral side:** Dark ferrugineous to ferrugineous. Rather finely and partly indistinctly and quite sparsely punctate. Abdomen almost impunctate. Rather shiny, not microsculptured (indistinct scattered reticulation may be discerned). Prosternal process laterally narrowly margined, medially punctate and slightly excavate. Stridulatory apparatus rather narrow, with numerous, extremely fine striae. Posterior outline of apical sternite somewhat undulate (Fig. 966).



Figs 963–970: *Hydrovatus nigricans*. – 963, habitus. – 964, head, frontal aspect. – 965, antenna. – 966, apical sternite. – 967, male protarsal claw. – 968, penis, dorsal aspect. – 969, penis, lateral aspect. – 970, paramere. Left horizontal scale 1 mm, head; right horizontal scale 0.5 mm, antenna, sternite and claw; left scale 1 mm, habitus; right scale 1 mm, genitalia.

Legs: Pale ferrugineous to pale brown. Pro- and mesotarsus distinctly enlarged. Protarsal claws somewhat asymmetric (Fig. 967).

Male genitalia: 968–970.

Female: Lacks stridulatory apparatus. Protarsal claws simple.

Distribution: Sudan, Ethiopia, Congo, Zaire, Tanzania, Malawi, Angola, Mozambique, South Africa, Madagascar (Fig. 962). Additional but unverified records are Gabon (RÉGIMBART, 1895b), and under the name *H. abotti*, Zambia (GUIGNOT, 1959a).

Biology: Sometimes sampled in artificial irrigation channels. In Malawi abundantly collected in swamps. In Zaire captured at an altitude of 1240 m a.s.l. Also collected in ponds with algae, *Lemna* and *Juncus*.

Synonymy: I agree with the interpretation of synonymy between *H. nigricans* and *H. abotti*, established by OMER-COOPER (1965). The name *H. nigricans*, being older, is the valid name of the species.

### **Hydrovatus stappersi** Guignot

Figs 962, 971–976.

*Hydrovatus omentatus* GUIGNOT, 1950b:99 (descr., in part *H. omentatus*).

*Hydrovatus stappersi* GUIGNOT, 1956c:317 (faun., no descr.; given as *H. stappersi* Balfour-Browne); 1959a:161, 171 (orig. descr., faun.; given as *H. stappersi* Balfour-Browne in press).

Type locality: Toa, Zaire.

Type material studied: Holotype, m: *Holotypus stappersi* Balf.-Br./Musée du Congo, mare de plaine de Toa 31.VII.1912 Dr. Stappers 1277/R. Det. 1795 B/*Hydrovatus compactus* Sh. det. Gschwendt./R. Det. G 5500/*Hydrovatus stappersi* Holotype J. Balfour-Browne det. (MAC). – Paratypes: Principally with same data as holotype (3 exx. MAC, 1 ex. BMNH).

Additional material studied: Gabon: N'Gomo Bas-Ogoué/Allotype/*Hydrovatus omentatus*? allotype f Guign. (1 ex. MNHN, belongs to type material of *H. omentatus* – cf. p. 411). In all, 6 exx.

Diagnosis: Very close to *H. nigricans* above. Externally almost similar but is distinguished by examination of the shape of the penis apex: More strongly undulate in *H. stappersi* than in *H. nigricans*.

Description: only distinguishing features recognized.

Length of body: 3.92–4.16 mm, breadth: 2.62–2.76 mm. Habitus (Fig. 971).

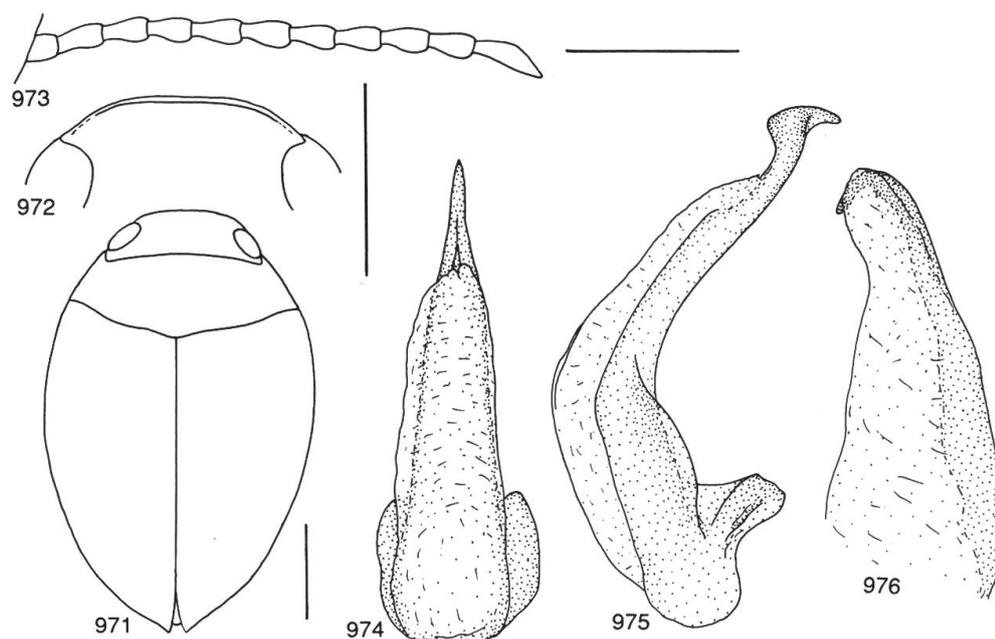
Head: Frontal part of head and antenna in Figs 972, 973.

Elytra: Rather shiny, microsculpture very indistinct. Only apically with clearly visible reticulation.

Male genitalia: Figs 974–976.

Distribution: Gabon, Zaire (Fig. 962).

Biology: Unknown.



Figs 971–976: *Hydrovatus stappersi*. – 971, habitus. – 972, head, frontal aspect. – 973, antenna. – 974, penis, dorsal aspect. – 975, penis, lateral aspect. – 976, paramere. Horizontal scale 0.5 mm, antenna; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 1 mm, genitalia.

### *Hydrovatus compactus* Sharp

Figs 977–982, 989.

*Hydrovatus compactus* SHARP, 1882a:333 (orig. descr., faun.); BRANDEN, 1885:25 (faun.); RÉGIMBART, 1895b:117 (descr., faun.); SHARP, 1901:3 (disc., faun.); JAKOBSON, 1905:419 (faun.); ZIMMERMANN, 1920a:32 (faun.); WINKLER, 1924:218 (faun.); ZIMMERMANN, 1926:24 (disc.); 1930:31, 32 (descr., faun.); GSCHWENDTNER, 1930:197 (faun.); 1931:181 (faun.; in part *H. obsoletus*, cf. GUIGNOT, 1959a:176; syn. with *H. oblongipennis*, cf. OMER-COOPER, 1963:180, 1965:200); 1938a:6 (faun.); GUIGNOT, 1948c:8, 9 (disc., faun.; syn. with *H. albertianus* = *H. villiersi* cf. GUIGNOT, 1959a:165; ? syn. with *H. uncus* = *H. villiersi* cf. OMER-COOPER, 1963:182); 1950a:261 (faun.); 1955f:861 (disc.); 1956b:214 (faun.); 1959a:160, 168 (descr., faun.); 1959c:141 (faun.); LEGROS, 1972:460 (faun.); ALFIERI, 1976:32 (faun.).

#### Type locality: Gabon.

Type material studied: Holotype, f: Type/Sharp Coll. 1905–313/Type 20 *Hydrovatus compactus* n.sp. Gabon f nec m J. B.B. det. (BMNH).

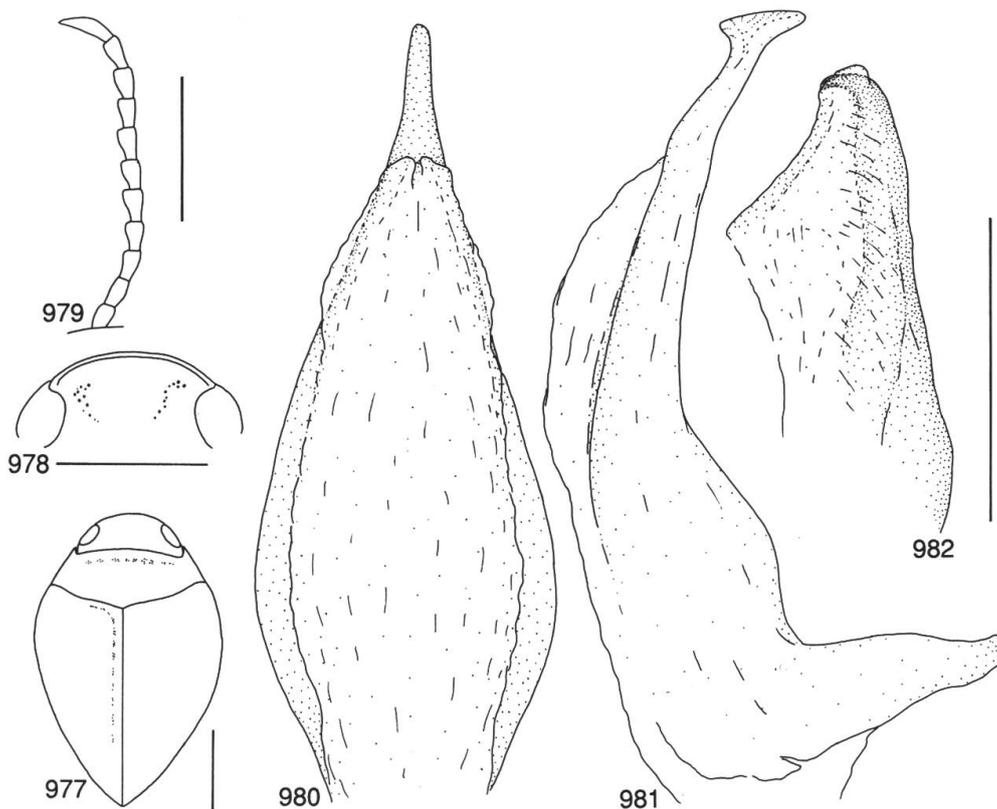
Additional material studied: Sudan: Gell River Post 70 m Bahr-el-Gebel/*H. compactus* Shp det. Balfour-Browne (1 ex. BMNH); Bahr el Ghazel Wau 19.II.1963 (2 exx. MZH); Malakal 5–20.I.1963 (4 exx. MZH). – Ethiopia: Env. Addis Abeba 20.VIII.1969 lum. UV/*H. compactus* Shp det. Brancucci (2 exx. MZH); Env. Addis Abeba 20.VIII.1969/*H. compactus* Shp det. Rocchi 1977 (1 ex. coll. Rocchi). – Zaire: PNG 13.XI. 1951/*H. guignotianus* B.-Br. det. Guignot 1958 (1 ex. MAC); PNG 10.III.1952 (1 ex. MAC); PNG 12. VIII. 1952/*H. compactus* Sharp det. Guignot

1958/*H. uncus* m. det. J. Balfour-Browne 1957 (2 exx. MAC); PNG 17.VII.1952/*H. compactus* Sharp det. Guignot 1958/*H. uncus* m. det. J. Balfour-Browne 1957 (1 ex. MAC). In all, 16 exx.

**Diagnosis:** A characteristic species which is easily recognized by its peculiar body shape (dorsal aspect) and by examination of the penis: Apex long, slender and “hammer-shaped” (lateral aspect). The appearance of the male genitalia indicates a close relationship with the two preceding species.

Length of body: 3.52–3.68 mm, breadth: 2.28–2.34 mm. Shape of body in Fig. 977; posteriorly strongly attenuate.

**Head:** Pale ferrugineous to ferrugineous. Almost impunctate. A few rather fine punctures discernible in frontal shallow depressions. Rather shiny, finely microsculptured. Head frontally rounded, finely margined (Fig. 978). Antenna pale ferrugineous to pale brown, rather slender, without distinct modifications (Fig. 979).



Figs 977–982: *Hydrovatus compactus*. – 977, habitus. – 978, head, frontal aspect. – 979, antenna. – 980, penis, dorsal aspect. – 981, penis, lateral aspect. – 982, apical part of paramere. Horizontal scale 1 mm, head; left top scale 0.5 mm, antenna; left bottom scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Pronotum: Ferrugineous. Laterally pronotum becomes gradually paler; near side margins pale ferrugineous. Punctuation fairly dense and distinct. Laterally punctures sparser and finer. Shiny, almost without microsculpture. Lateral outline of pronotum almost straight.

Elytra: Ferrugineous. Laterally elytra become gradually paler; at epipleura pale ferrugineous. Without distinct colour pattern. Punctuation fairly dense and distinct. Posteriorly and laterally close to epipleura elytra almost impunctate. Shiny, laterally and posteriorly with fine, partly fragmentary microsculpture. Epipleura pale ferrugineous, almost impunctate and without microsculpture.

Ventral side: Thorax pale ferrugineous, while otherwise pale ferrugineous to ferrugineous. Metathorax fairly densely but indistinctly punctate. Metacoxal plates fairly coarsely and densely punctate; at medial line punctuation indistinct. Abdomen almost impunctate. Rather shiny, very finely and fragmentarily microsculptured. Prosternal process laterally narrowly margined. stridulatory apparatus consists of about 20 discernible ridges.

Legs: Pale ferrugineous. Pro- and mesotarsus slightly enlarged. Protarsal claws asymmetric.

Male genitalia: Figs 980–982.

Female: Lacks stridulatory apparatus.

Distribution: Gabon, Sudan, Ethiopia, Zaire (Fig. 989). Additional unverified distributional records are Senegal, Egypt (RÉGIMBART, 1895b), and Niger (GUIGNOT, 1950a).

Biology: Unsufficiently documented. Often sampled at light collection.

### **Hydrovatus sobrinus** Omer-Cooper

Figs 983–989.

*Hydrovatus sobrinus* OMER-COOPER, 1957:32 (orig. descr., faun.); 1958:59 (faun., biol.); 1963:163 (syn. *H. nepos*); 1965:95 (syn. list.).

*Hydrovatus nepos* GUIGNOT, 1959c:138 (orig. descr., faun.); OMER-COOPER, 1963:161, 163, 167 (descr., faun.); 1965:95 (descr., faun.); BILARDO & ROCCHI, 1987:96 (faun., biol.).

Type locality: Ermelo, Transvaal, South Africa.

Type material studied: *H. sobrinus*: Holotype, m: Type/Transvaal Ermelo 7.12.1948 J. O.-C./Type m/*H. sobrinus* O.-C. det. J. Omer-Cooper (BMNH). – Paratypes: Paratype/Transvaal Nylstroom 27.8.1948 JOC/*Hydrovatus sobrinus* O.-C. det. J. Omer-Cooper (1 ex. ISN); Paratype/Transvaal, sluggish stream Ermelo 7.12.1948 JOC/*Hydrovatus* sp. nov. nr. *facetus* Gw. J. Balfour-Browne det. (4 exx. AMS); same sampling data as preceding (1 ex. MAC); Paratype/Transvaal Breyton rd nr L. Chris-

sie 7.12.1948 (1 ex. AMS); Trsvl Deel Kraal J. O.C. VIII.1948/Paratypus *H. sobrinus* sp.n. J. Omer-Cooper (1 ex. TMP). – *H. nepos*: Holotype, m: Congo Belge Lac Tanganyika Albertville emb. Lubuy 19.VIII.1953 J. Verbeke – KEA UV 5019/Type/F. Guignot det., 1956 *Hydrovatus (Vathydrus) nepos* n.sp. Type m (ISN). – Paratype: Principally with same data as holotype (1 ex. MNHN, possibly not conspecific with holotype?).

Additional material studied: Zaire: Kivu Kavimvira (Uvira) lum. XII.1954, II–III.1955, I.1956/*H. nepos* Guign. det. Guignot 1957 (14 exx. MAC). – Malawi: Dambo/Ft Johnstone 22–27.IX.1948 (2 exx. AMS). – Namibia: Okahandja 4700 ft 22.V.1954/waterhole and seepage through sand (4 exx. BMNH, 2 exx. MZH). – Zimbabwe: Rusapi, stream 13.XI.1948 (1 ex. AMS); Melsetter arboretum 3.I.1963 (6 exx. AMS); Stream with lilies, betw. Salisbury and Bromley 12.XI.1948 (1 ex. AMS). – Botswana: Moremi Res. 18–20.I V.1972/at light (1 ex. BMNH). – South Africa: Trsvl Ermelo 1.XII.1948 (1 ex. AMS); Ermelo 8.XII.1948 sluggish stream (20 exx. AMS); Donkerpoort Dam VIII. 1948 (1 ex. AMS); Donkerpoort Dam 25.VIII.1948 (3 exx. AMS); Trsvl Bundu Inn 25.28S–28.55E/24.III.1974 E–Y 306 at merc. vap. light (2 exx. TMP, females, det. uncertain); Nelshoogate For. St. 25.50S–30.50E/30.XI.1986 E–Y 2334, UV light (1 ex. TMP, female, det. uncertain); Zululd Mtubatuba 23.IX.1947 (1 ex. AMS); Zululd Dukuduku For. St./5.IV.1974 E–Y 330, at light (1 ex. TMP, female det. uncertain). – Swaziland: Mbabane 5.XII.1948 (3 exx. AMS). – Location unknown: UV light trap 8–9.III.1960 Neubecker (1 ex. MZH). In all, 76 exx.

**Diagnosis:** A well-defined species, which is particularly characterized by a quite small-sized body, by the completely margined frontal part of the head, by the generally discernible colour pattern of the body (dorsal aspect), and by peculiar features on the male genitalia: Apex of penis narrowly truncate (dorsal aspect) and the apical hook of the paramere undulate and provided with hairs.

Length of body: 2.36–2.84 mm, breadth: 1.60–1.86 mm. Habitus (Fig. 983), dorsally generally with discernible colour pattern.

**Head:** Pale ferruginous to pale brown. Finely to very finely and sparsely punctate. In rather shallow frontal depressions and narrowly at eyes with slightly coarser punctures. Rather shiny, microsculptured (meshes distinct). Head frontally rounded, between eyes distinctly but rather narrowly margined (Fig. 984). Antenna pale ferruginous, rather slender, not distinctly modified (Fig. 985).

**Pronotum:** Pale ferruginous to pale brown. Anteriorly and medio-basally with rather vague blackish to dark ferruginous areas. With rather fine, sparse and somewhat irregularly distributed punctation. Laterally on disc with a fairly broad, almost impunctate area. Rather shiny, microsculptured (meshes clearly visible). Lateral outline of pronotum almost straight.

**Elytra:** Blackish ferruginous to dark ferruginous, with rather vague pale ferruginous to ferruginous spots (Fig. 983). Spots sometimes quite distinct. Rather finely and somewhat sparsely pun-

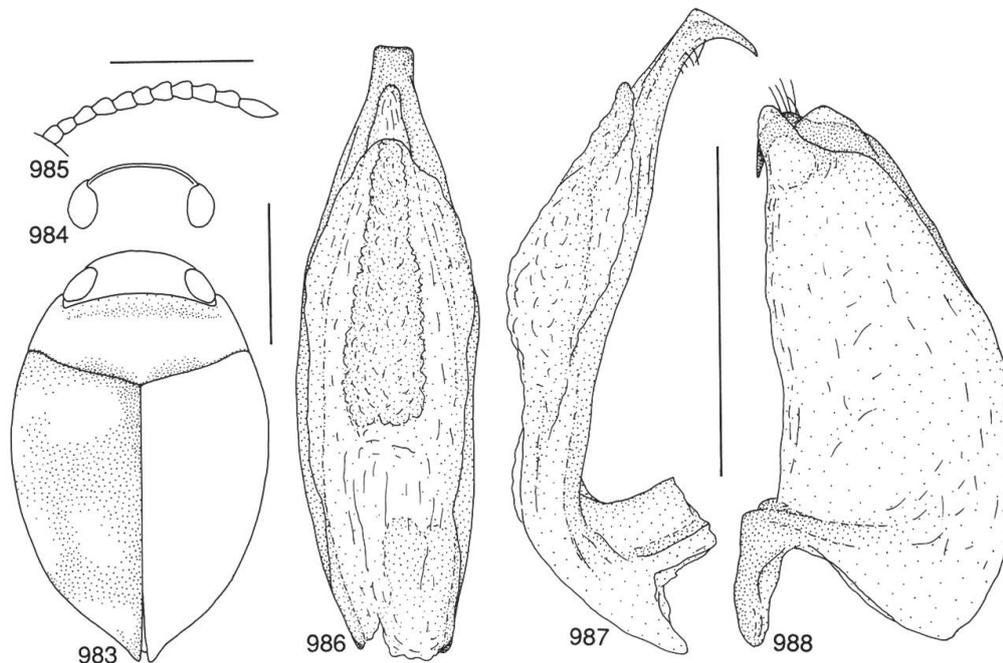
ctate. Discal row of punctures anteriorly clearly visible. Dorsolateral row of punctures sometimes absent, sometimes defined by a few irregular punctures. Lateral row of punctures somewhat indistinct. Rather shiny, microsculptured (meshes fine but on main part of elytra discernible). Epipleura pale ferruginous, rather finely punctate, and rather shiny, with very fine reticulation.

Ventral side: Ferruginous to pale ferruginous. Fairly coarsely and densely punctate. Abdomen almost impunctate, except basally: Densely and quite coarsely punctate. Shiny, almost without microsculpture. Four apical sternites submat, finely microsculptured. Stridulatory apparatus consists of numerous minute striae. Prosternal process laterally narrowly margined, medial surface slightly elevated and sparsely punctate.

Legs: Pale ferruginous. Pro- and mesotarsus slightly enlarged. Tarsal claws simple.

Male genitalia: Figs 986–988.

Female: Lacks stridulatory apparatus. Body microsculpture dorsally somewhat variable; sometimes quite widely reduced (meshes indistinct).



Figs 983–988: *Hydrovatus sobrinus*. – 983, habitus. – 984, head, frontal aspect. – 985, antenna. – 986, penis, dorsal aspect. – 987, penis, lateral aspect. – 988, paramere. Horizontal scale 0.5 mm, antenna; left scale 1 mm, habitus and head; right scale 0.5 mm, genitalia.

Distribution: Zaire, Malawi, Namibia, Zimbabwe, Botswana, South Africa, Swaziland (Fig. 989).

Biology: According to OMER-COOPER (1958) the species was collected in spring waters with red mud probably due to iron bacteria. Also sampled from a swamp and from streams: a series of muddy pools connected by a trickle of water, with water lilies in the pools and a small stream with large-flowered blue water lilies (OMER-COOPER, 1963). In Namibia collected in a water-hole and seepage through sand. Often captured at light collection. Cf. also under *H. nepos* in BILARDO & ROCCHI (1987).

Synonymy: I agree with the interpretation of OMER-COOPER (1963) that *H. sobrinus* and *H. nepos* are conspecific. As far as I can see the valid name of this species is, however, *H. sobrinus* (older name) and not *H. nepos* as suggested by Omer-Cooper.

### **Hydrovatus suturalis** Bilardo & Pederzani

Figs 989–996.

*Hydrovatus suturalis* BILARDO & PEDERZANI 1978:106, 107 (orig. descr., faun.).

Type locality: Toumodi, the Ivory Coast.

Type material studied: Holotype, m: Côte d'Ivoire Toumodi 11.VIII.1973 Bilardo & Pederzani/Holotypus/*Hydrovatus suturalis* Bil. & Ped. det. Bilardo (coll. Bilardo).

Additional material studied: Gambia: Outside Abuko Nat. Res. at water works, at light 19.00–21.50, 22.XI. 1977 (1 ex. LUZ). – Guinea Bissau: Oio 2 km E Binar 21.VII.1992 (1 ex. coll Persson); Cacheu: 5 km W Bula 25.VII.1992 (1 ex. coll. Persson); Bula 18., 29.VII.1992 (2 exx. coll Persson). – Benin: 3 km S Parakou 5.VII. 1989 (1 ex. coll. Vondel, 1 ex. MZH); 4 km S Parakou 10.VII.1989 (1 ex. coll. Vondel); Parakou 11.VII.1989 (2 exx. coll. Vondel, 1 ex. MZH); Ouroumonsi, Nikki 12.VII.1989 (3 exx. coll. Vondel, 1 ex. MZH). – Chad: Ft. Archambault Bakare ou Boungoul/IV., V. 1904 (2 exx. MNHN, 1 ex. MZH). – Nigeria: NC St. Yengre 4.VIII.1973 (1 ex. MZH). – Sudan: Equatoria Nzara 22.IV.1986 (1 ex. coll. Wewalka). – Zaire: Ht. Zaire Umg. Doruma 18.IV.–10.V.1986 (4 exx. coll. Wewalka, 1 ex. MZH). In all, 26 exx.

Diagnosis: Within the species group easily recognized by the absence of a stridulatory apparatus in the male in combination with a quite large-sized, globular body and by a strongly hooked penis apex. Shape of the penis, male antenna, body and modified male protarsal claws strongly indicate the location of *H. suturalis* in this species group. Absence of the stridulatory apparatus is regarded as a case of character-loss.

Length of body: 3.08–3.30 mm, habitus 2.04–2.14 mm. Habitus (Fig. 990). Shape of body globular.

Head: Pale ferruginous to ferruginous. Punctuation fine to very fine, sparse. At eyes with very fine, slightly denser punctures. Rather

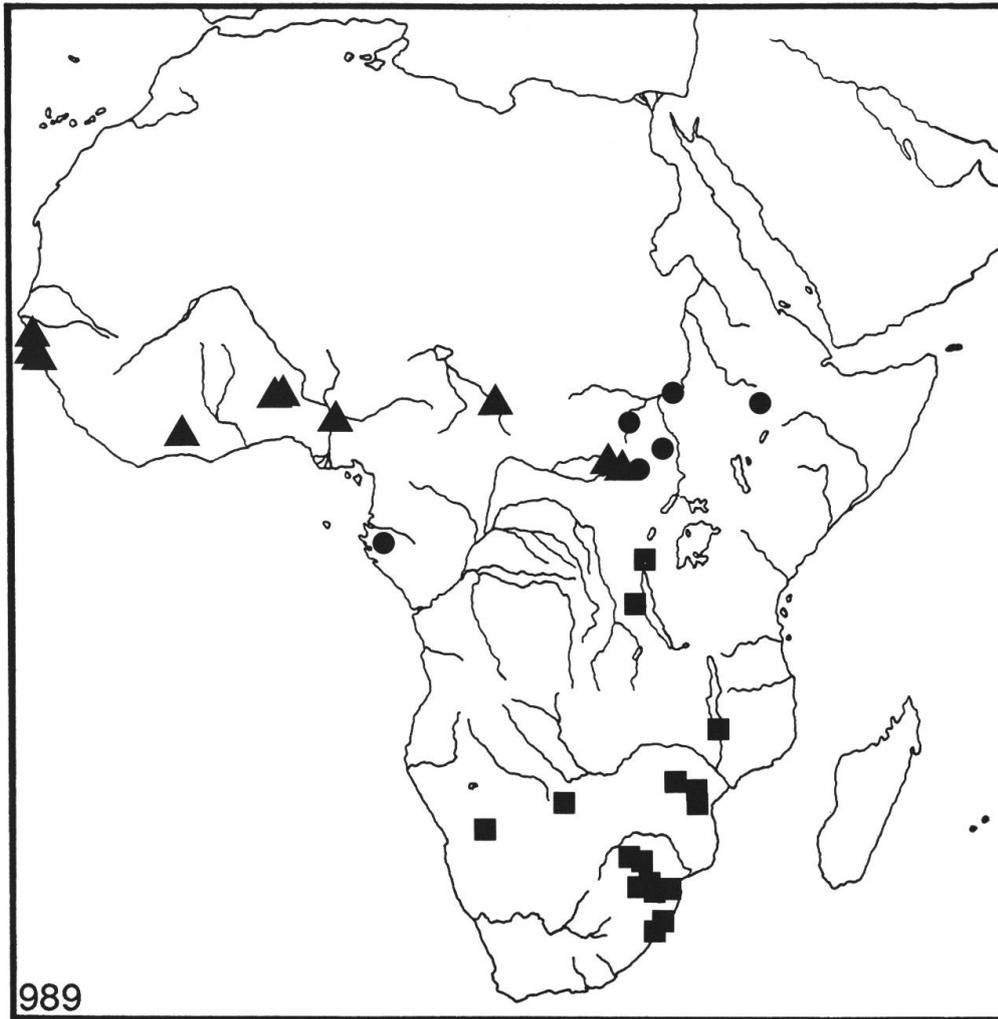
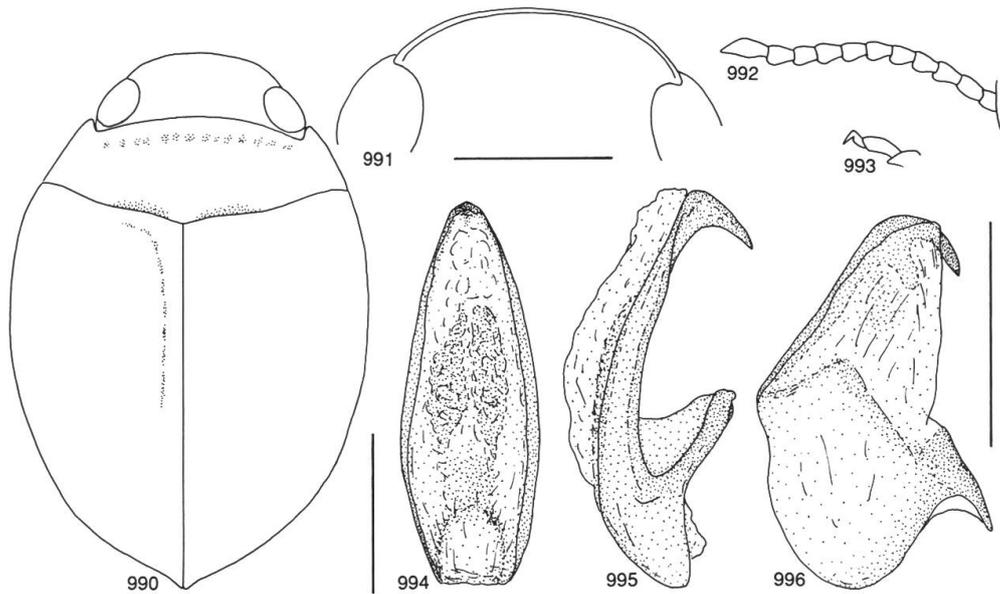


Fig. 989: Distribution of *Hydrovatus compactus* (dot), *H. sobrinus* (square) and *H. suturalis* (triangle).

shiny, microsculptured (anteriorly and medially meshes particularly distinct). At eyes with quite distinct depressions. Head frontally rounded, quite distinctly margined (Fig. 991). Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 992).

Pronotum: Ferrugineous, laterally with vague pale ferrugineous areas. Mediobasally with a narrow darkened area, which sometimes is absent. Rather finely to finely and somewhat sparsely punctate. Laterally on disc with a narrow impunctate area. Rather shiny, microsculptured (meshes quite distinct). Lateral outline of pronotum almost straight.

Elytra: Ferrugineous. Laterally paler, pale ferrugineous to pale brown. Without distinct colour pattern. Punctuation fine, somewhat



Figs 990–996: *Hydrovatus suturalis*. – 990. habitus. – 991, head, frontal aspect. – 992, antenna. – 993, male protarsal claw. – 994, penis, dorsal aspect. – 995, penis, lateral aspect. – 996, paramere. Horizontal scale 0.5 mm, head, antenna and claw; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

sparse, apically and laterally still finer and distinctly sparser (partly absent). Discal and dorsolateral rows of punctures almost absent; defined only by a few punctures. Lateral row of punctures also weakly developed but still clearly discernible. Microsculpture very fine (meshes rather indistinct, except apically). Epipleura pale ferruginous, almost impunctate, finely reticulated.

Ventral side: Pale ferruginous to dark ferruginous. Fairly coarsely to finely and somewhat sparsely punctate. Abdomen almost impunctate. Shiny, almost without reticulation. Abdomen with very fine, partly indistinct microsculpture. Prosternal process laterally quite distinctly but narrowly margined, medial surface slightly convex, punctation and reticulation almost absent. Stridulatory apparatus absent.

Legs: Pale ferruginous to ferruginous. Pro- and mesotarsus slightly enlarged. Protarsal claws distinctly modified (Fig. 993).

Male genitalia: Figs 994–996.

Female: Protarsal claws simple.

Distribution: Gambia, Guinea Bissau, Ivory Coast, Benin, Nigeria, Chad, Sudan, Zaire (Fig. 989).

Biology: Unsufficiently documented. In Gambia captured at light collection.

**Hydrovatus simoni** Régimbart

Figs 997–1003.

- Hydrovatus simoni* RÉGIMBART, 1894:236 (orig. descr., faun.); 1895b:103 (descr., faun.); 1906:246 (faun.); ZIMMERMANN, 1920a:35 (faun.); 1920b:225 (faun.); PESCHET, 1925:33 disc., faun.); GSCHWENDTNER, 1930:194 (faun.); OMER-COOPER, 1931:761 (disc.); GSCHWENDTNER, 1931:181 (faun.); 1935:18 (faun.); GUIGNOT, 1945a:300, 305 (descr., disc., faun.); 1950a:261 (faun.); OMER-COOPER, 1957:23, 30 (disc., faun.); 1958:57, 59 (disc., faun., biol.); GUIGNOT, 1959a:143, 147 (descr., faun.); OMER-COOPER, 1963:169, 171 (descr., faun.); 1965:97 (descr., faun.); FERREIRA, 1967:532 (faun.); BILARDO & PEDERZANI, 1978:106 (disc.); PEDERZANI & ROCCHI, 1982:70 (faun.); BILARDO & ROCCHI, 1987:96 (descr., faun., biol.); PEDERZANI, 1988:106 faun., biol.); BILARDO & ROCCHI, 1990:160, 161, 162, 170 (faun., biol.); CURTIS, 1991:186 (faun. biol.).
- Hydrovatus regimbarti* ZIMMERMANN, OMER-COOPER, 1931:760 (faun; in part *H. regimbarti*); GUIGNOT 1945a:300, 304 (list.); OMER-COOPER, 1965:98 (list.).
- Hydrovatus glomeratus* GUIGNOT, 1942:13 (orig. descr., faun.); 1945a:300, 302 (descr., faun.); OMER-COOPER, 1957:30 (disc.); GUIGNOT, 1959a:143, 147 (descr., faun.); 1961b:934 (faun.); OMER-COOPER, 1962:296 (disc.); 1963:170, 171 (descr., faun.); 1965:98 (descr., disc., faun.); BILARDO & ROCCHI, 1987:96 (faun., biol.); CURTIS, 1991:186 (faun., biol.). **New synonym.**
- Hydrovatus consimilis* OMER-COOPER, 1957:30 (orig. descr., faun.); 1965:98 (syn. *H. glomeratus*). **New synonym.**

**Type locality: Hamman's Kraal, Transvaal, South Africa.**

Type material studied: *H. simoni*: Lectotype, m, by present designation: Hamman's Kraal Transvaal Simon/Museum Paris coll. Maurice Régimbart 1908/Type/*simoni* Rég. (MNHN). – Paralectotypes: Same as lectotype (2 exx. MNHN); *Hydrovatus simoni* typ Rég./m/Type SAM-Ent 844 (1 ex. SAM). Possible paralectotype (specimen lacks any kind of type label): Hamman's Kraal Transvaal Simon (1 ex. MNHN). – *H. glomeratus*: Holotype, m: Abyssinia Stream W of Zaquala 6,000 ft 27.X.1926 J. Omer-Cooper/m/*Hydrovatus regimbarti* Zimm./Type/*Hydrovatus glomeratus* Guign. Type m (MNHN). – Paratype: Abyssinia: Water hole N of Makki River/6,000 ft 28.XI. 1926 J. Omer-Cooper/f/Allotype/*Hydrovatus glomeratus* Guign. Allotype f (1 ex. MNHN). – *H. consimilis*: Holotype, m: m/Type/Transvaal Dist. R. Nyl at Num Num 28. Aug.1948 Omer-Cooper/Type m/Brit. Mus. 1957–660/*H. consimilis* O.-C. (BMNH).

Additional material studied: Chad: Moyen Chari Ft Archambault Boungoul (Bakare) IV.1904 (2 exx. MNHN). – Cameroon: Rhinoceros Camp (Korup N.P.) muddy gravel in river 19.XI.1988 (2 exx. coll. Foster). – Congo: Dimonika (Mayumbe) I. 1964 (1 ex. MZH). – Zaire: PNG II/gc/11, 30.III.1951 (2 exx. MNHN). – Sudan: Senaar, Bl. Nile, lux 21.X.1979 (1 ex. MNB). – Ethiopia: Brit. Legat. pond 8100 ft 8.XI.1926 (1 ex. TMP); L. Zwai, West marsh 5500 ft 2–3.XI.1926 (1 ex. AMS); Mt Chilalu 7000 ft, 8.XI.1926 (1 ex. AMS); Water hole N of Makki R. 28.XI.1926 (17 exx. AMS). – Kenya: Kibwezi 1.IV.1908 (1 ex. MNB). – Tanzania: Muansa 4.XI.1914 (1 ex. MNB); Ukiriguru, light trap 22.V.1959 (1 ex. BMNH); Ukiriguru, light trap 27.I. 1960 (3 exx. BMNH, 2 exx. MZH). – Zimbabwe: Big pool 1 mi from Lindi 22.XI.1948/*H. consimilis* O.-C. det. Omer-Cooper (4 exx. AMS); Wankie game res. 3.IX.1948 (5 exx. AMS); Sinkukwe, pool 30.VIII.1948 (3 exx. AMS); Murani R. 48 mi from Umtali

30.XI.1948 (1 ex. AMS); Stream at Salisbury 17.IX.1948 (5 exx. AMS); Stream halfway hotel Salisbury.Gatooma 14.IX.1948/*H. consimilis* det. Omer-Cooper (6 exx. AMS); Zambese Salisbury (1 ex. MNHN). – Namibia: Damarald Ugab R., 24.XII.1974, E–Y 516 shore washing (1 ex. TMP); Etosha Pan Okaukujo camp/28.XII.1974 E–Y 526 shore washing (1 ex. TMP); Kaokoveld Sesfontein, 17 km WSW/1.II. 1975 E–Y 599 singled in riverbed (1 ex. TMP); Ovamboland Namutoni 31.V.1954/weedy water-hole and stream (4 exx. BMNH, 1 ex. MZH). – Botswana: Tsotsorogo Pan 17.VI.–9.VII.1930/*H. simoni* Rég. det. Gschwendtner (2 exx. TMP); Kuke Pan 14–15.IV.1972/at light (1 ex. BMNH). – South Africa: Trsvl Nelshoogate, galery for./4.XII.1987 E–Y 2354 UV light (1 ex. TMP, 1 ex. MZH); Waterbeg Haakdorringboom farm/13.II.1976 E–Y 1039 flood debris (2 exx. TMP, 1 ex. MZH); Moordrift IX. 1924/*H. simoni* Rég. det. Gschwendtner (1 ex. TMP); Trsvl Potgieteruss 29.XI.1948 (2 exx. AMS); Trsvl Donkerspoort Dam Nylstroom 23.VIII.1948 (2 exx. AMS); Trsvl D. Kraal 23.X.1948 (2 exx. AMS); Waterbg distr. Deel Kraal 23.VIII.1948 (12 exx. AMS); Trsvl Middelburg 29.XI.1948 (4 exx. AMS); Trib. Riv. Koop, Nelspruit-Barberton XII.1948 (1 ex. AMS); Trsvl Nylsvlei I–III.1990 (34 exx. coll. Pitzke & Widdig, 3 exx. MZH); Nylstr./Num Num 23.VIII. 1948 (24 exx. AMS, 1 ex. TMP); Riv. Nyl Naboomspruit 27.XI.1948 (1 ex. AMS); Pretoria distr. Roodeplaats/UV 30.X.–10.XI.1960 (1 ex. TMP). – Swaziland: Little Usutu Riv. nr Bremersdorp 5.XII.1948/*H. ? facetus* Guign. det. Omer-Cooper/*H. glomeratus* Guign. det. J. Balfour-Browne 1960 (5 exx. AMS). In all, 178 exx.

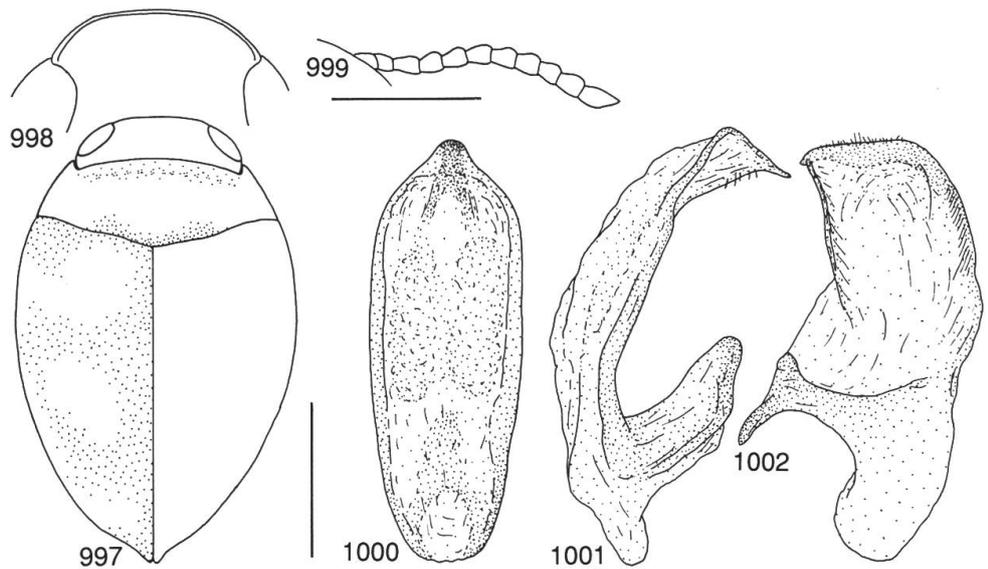
**Diagnosis:** This species is distinguished from similar species by examination of the shape of the male genitalia: Penis is quite broad (dorsal aspect) and apex is laterally triangular with a pointed tip; the paramere with the apical outline straight for a comparatively long distance.

**Length of body:** 2.26–2.82 mm, breadth: 1.52–1.80 mm. **Habitus** (Fig. 997), body generally with discernible colour pattern.

**Head:** Pale ferruginous to pale brown, frontally often with paler area. Finely and rather sparsely to sparsely punctate. Submat, microsculptured (meshes distinct). Head frontally rounded, medially straightened, between eyes narrowly margined (Fig. 998). Antenna pale ferruginous to pale brown, rather slender, not distinctly modified (Fig. 999).

**Pronotum:** Pale ferruginous to pale brown. Anteriorly slightly posterior to foremargin with a vague dark ferruginous area and mediaobasally with a slightly more distinct blackish area. Finely to rather finely and somewhat irregularly punctate. Laterally on disc punctures sparsest. Rather shiny, although finely microsculptured (meshes weakly discernible). Lateral outline of pronotum almost straight to somewhat rounded.

**Elytra:** Dark ferruginous to ferruginous, generally with vague pale ferruginous areas (Fig. 997). Finely to very finely and fairly



Figs 997–1002: *Hydrovatus simoni*. – 997, habitus. – 998, head, frontal aspect. – 999, antenna. – 1000, penis, dorsal aspect. – 1001, penis, lateral aspect. – 1002, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

densely punctate. Punctures finest apically and laterally and coarsest at base and suture. Discal row of punctures irregular and hardly visible. Dorsolateral row of punctures often absent or very indistinct. Lateral row rather irregular but still discernible. Rather shiny although finely microsculptured (meshes weakly developed but generally still discernible). Epipleura pale ferruginous to ferruginous, with fairly coarse punctures concentrated to inner part of epipleuron. Rather shiny, finely microsculptured.

Ventral side: Pale ferruginous to ferruginous. Fairly coarsely and densely punctate. At midline punctures finer, and major apical part of abdomen with only a few indistinct punctures. Rather shiny, except abdomen; finely microsculptured. Stridulatory apparatus rather narrow, consists of numerous minute ridges. Prosternal process laterally finely margined, medial surface almost flat to slightly elevated, rather finely punctate.

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

Male genitalia: Figs 1000–1002.

Female: Lacks stridulatory apparatus.

Distribution: Chad, Cameroon, Congo, Zaire, Sudan, Ethiopia, Kenya, Tanzania, Namibia, Botswana, Zimbabwe, South Africa,

Swaziland (Fig. 1003). Additional unverified records are Angola (PESCHET, 1925), Niger (GUIGNOT, 1950a), Comores (FERREIRA, 1967), Zambia (PEDERZANI, 1988) and Gabon (BILARDO & ROCCHI, 1990).

**Biology:** In Cameroon collected in a river with muddy gravel. In Namibia sampled in weedy water-hole and stream and also on a wet shoreline. In South Africa from flood debris. In Ethiopia sampled at altitudes of 5500–7000 feet a.s.l. Also captured at light collection (eg. UV light). In Swaziland reported from a small stream with gravel bed and from muddy pools among reeds and rushes at its sides (OMER-COOPER, 1958). In Zambia reported from riverside marshes with herbaceous vegetation and reeds at the sides of a broad and slow running river; bottom soil consisted of clay, sand and vegetal debris (PEDERZANI, 1988). Finally the species is reported to occur in springs and seeps and wetlands in calcereous rock area (CURTIS, 1991). See also BILARDO & ROCCHI (1987, 1990).

**Synonymy:** Holotypes of *H. glomeratus* and *H. consimilis* and the lectotype of *H. simoni* have been examined and compared and found to belong to one and the same species. The oldest name, *H. simoni*, is the valid name of this species.

### **Hydrovatus regimbarti** Zimmermann

Figs 1003–1010.

*Hydrovatus sharpi* RÉGIMBART, 1895b:103 (orig. descr., faun.); ZIMMERMANN, 1919:127 (nomen praeocc. by *Hydrovatus sharpi* Van den Branden, 1885); 1920a:35 (list.); OMER-COOPER, 1931:760 (list.); GUIGNOT, 1945a:300 (list.); 1950b:97 (list.); OMER-COOPER, 1957:34 (list.); GUIGNOT, 1959a:150 (list.); 1961a:233 (list.); OMER-COOPER, 1963:172 (list.).

*Hydrovatus regimbarti* ZIMMERMANN, 1919:127 (nom. nov. for *H. sharpi* Régimbart); 1920a:35 (faun.); OMER-COOPER, 1931:760 (descr., faun., biol.); GUIGNOT, 1945a:300 (descr., faun.); 1948c:8 (faun.); 1953a:234 (faun.); 1955e:1095 (faun.); 1956c:319 (disc.); OMER-COOPER, 1957:30, 34 (disc.); GUIGNOT, 1959a:148, 150 (descr., faun.); 1961a:233 (faun.); OMER-COOPER, 1963:161, 164, 172, 177 (descr., faun.); 1967:61 (disc.); LEGROS, 1972:460 (faun.); BILARDO & PEDERZANI, 1978:102, 103 (descr., disc., faun.); BILARDO, 1982a:445 (descr., faun.); PEDERZANI & ROCCHI, 1982:81 (disc.); BILARDO & ROCCHI, 1987:96 (faun., biol.).

*Hydrovatus navigator* GUIGNOT, 1942:13 (orig. descr., faun.); 1943:86 (descr., faun.); 1950b:97 (syn. *H. regimbarti*); 1955e:1095 (list.); 1959a:150 (list.); OMER-COOPER, 1963:172 (list.).

*Hydrovatus laeviusculus* GSCHWENDTNER, 1943:423 (orig. descr., faun.); GUIGNOT, 1953a:234 (faun.); 1959a:148, 150 (descr., faun.). **New synonym.**

*Hydrovatus subsimilis* GUIGNOT, 1958b:2 (orig. descr., faun.); 1961a:232 (faun.); OMER-COOPER, 1967:62 (disc.). **New synonym.**

Type locality: Addah, Ghana.

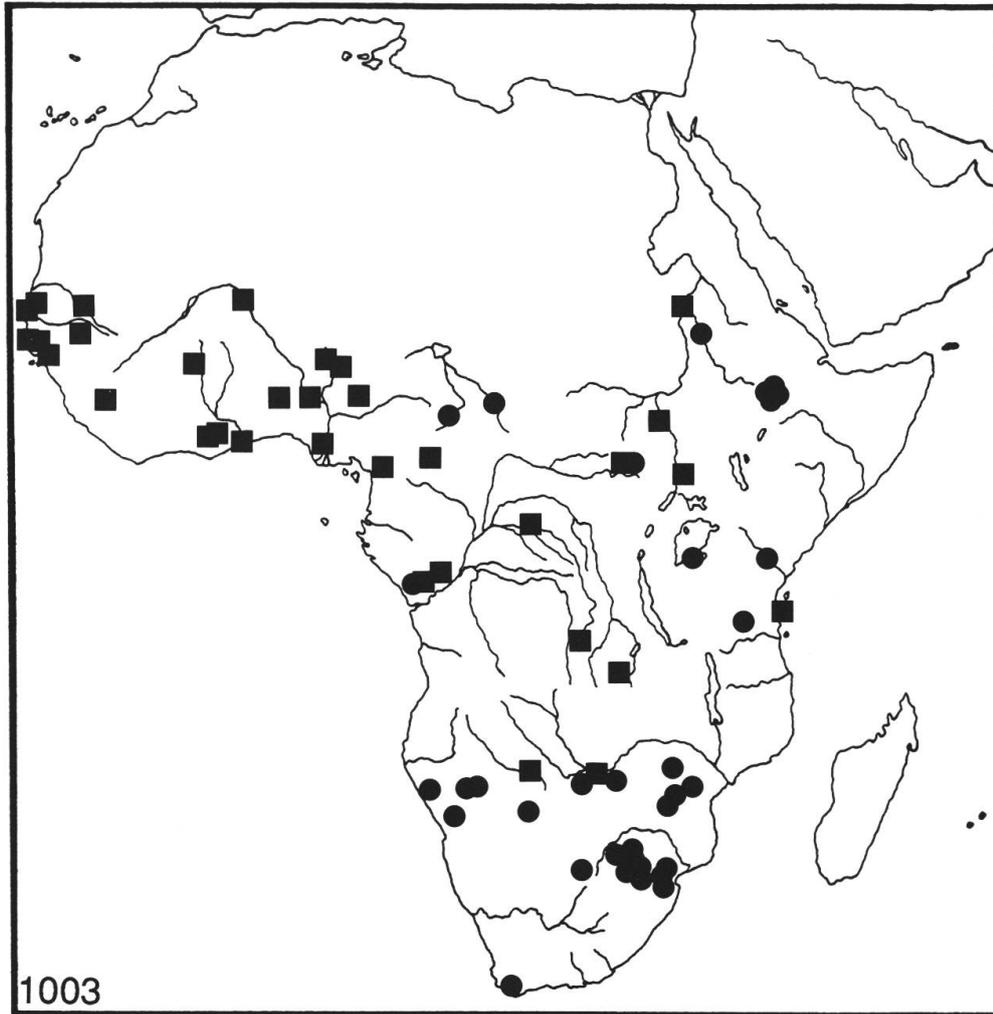


Fig. 1003: Distribution of *Hydrovatus simoni* (dot) and *H. regimbarti* (square).

Type material studied: *H. sharpi* = *H. regimbarti*: Lectotype, m, by present designation: Addah/Museum Paris coll. Maurice Régimbart, 1908 (MNHN). – Paralectotypes: Same data as lectotype (3 exx. MNHN). Probable type material found in unsorted material of MNHN, but not provided with type labels are: Addah/Museum Paris coll. Régimbart, 1908/*sharpi* Wehncke (2 exx. MNHN). – *H. navigator*: Holotype, f: Haute Volta Tourni/Museum Paris 12.1930–IV.1931 Ch. Alluaud & P.A. Chappuis/f/Type/Det. Dr. Guignot *Hydrovatus navigator* Guign. Type (MNHN). – Paratypes: Same data as holotype (3 exx. MNHN); Soudan Francais Gao/Museum Paris 12.1930–IV.1931 Ch. Alluaud & P.A. Chappuis/f/Paratype (1 ex. MNHN). – *H. laeviusculus*: Holotype, m: Holotypus/Coll. Mus. Congo Bukama –VII.1937 Lt Marée/Type Gschw./R. Dét. L. 4559/*H. laeviusculus* Gschw. det. Gschwendtner (MAC). – *H. subsimilis*: Holotype, m: Holotypus/Congo Belge PNG Miss. H. De Saeger II/gc/11, 30.III.1951 Réc. H. De Saeger 1482/Coll. Mus. Congo (ex coll. I. P.N.C.B.)/F. Guignot det., 1956 *Hydrovatus subsimilis* n.sp. Type m (MAC). – Paratypes: Same data as holotype (1 ex. MAC); principally same data as holotype but 4.VIII.1951, 2209

(2 exx. MAC). Two additional paratypes from PNG, 7.I.1952, 2996 and 19.II.1952, 3137, I believe to belong to some other, quite closely related *Hydrovatus* species; both also deposited in MAC.

Additional material studied: Gambia: Outside Abuko Nat. Res., at waterworks, at light 19.00–21.50, 22.XI. 1977/*H. regimbarti* det. A. Nilsson (10 exx. LUZ). – Senegal: Riv. Casamance (1 ex. MNHN); Sangalkam VIII. 1971 (15 exx. MNHN, 5 exx. MZH); Mboro VIII.1971 (33 exx. MNHN, 5 exx. MZH); Mboro Niafe/20.XII. 1961 (1 ex. MNHN); Sebikotane VIII.1971 (16 exx. MNHN, 5 exx. MZH); Kayar VIII.1971 (3 exx. MNHN); Somone VIII.1971 (10 exx. MNHN, 2 exx. MZH); Ht Senegal Kayes 1900 (1 ex. MNHN); P. Nat. Niokolo Koba, Badi 15.VIII.–25.IX.1955 (2 exx. IFAN); Mpak 11 km S Ziguinchor, at light 19.00–21.00, 8.XI.1977 (1 ex. LUZ). – Guinea: Sereidou, lux 4., 5., 7–8., 16., 18.IV., 4.V.1975 (512 exx. MNB, 15 exx. MZH). – Guinea Bissau: Bissau 1947 (1 ex. MNHN). – Ghana: Ashanti reg. Kwadaso, agric. st. 6.42N–1.39W/light trap 26.II. 1969 (3 exx. TMP, 1 ex. MZH); Kumasi 330 m N6.43–W1.36/15.IX.1967 at light (1 ex. TMP); same as preceding but 20.V.1967 and 16.VI.1966 (3 exx. TMB); Ashanti Juaben 340 m/water pond 19.II.1967 (1 ex. TMB); Addah/*H. regimbarti* Zimm. det. J. Balfour–Browne (6 exx. BMNH); Addah 3.III.1905/*H. regimbarti* Zimm. det. J. Balfour–Browne (1 ex. BMNH). – Benin: Parakou 6.VII.1989 (5 exx. coll. Vondel, 1 ex. MZH). – Nigeria: Stream on Katsina rd ca 37 mi, fr. Funtua 5.IV.1963 (14 exx. AMS); Stream 64 mi. fr. Bida on Jebba rd 12.IV.1963 (2 exx. AMS); same as preceding but 15.IV.1963 (1 ex. AMS); Jos–Wamberg rd, detritus pond 13.IV.1963 (2 exx. AMS); Stream 17 mi. from Benin on Enugo rd. 23. IV.1963 (1 ex. AMS). – Cameroon: Reg. Lolodorf (1 ex. MNHN); Dimako (1 ex. MZH). – Sudan: Duckweed ditch, Nimule ferry 4.II.1954 (2 exx. AMS); L. Shambe, shore 31.I.1954 (2 exx. AMS); Chartum/*H. regimbarti* Zimm. det. Rocchi 1981 (1 ex. coll. Rocchi). – Congo: Kindamba Méya Settl./9.XI.1963 by lamplight (2 exx. TMB); Loudima Sagro Park/7.XII. 1963 by lamplight (1 ex. TMB). – Zaire: Tshuapa Bamaniana VIII.1953/*H. sporas* Guign. det. Guignot 1957 (1 ex. MAC); Elisabethville (2 exx. MAC); PNG (2 exx. MAC); Congo Belge (1 ex. MNHN). – Tanzania: Zanzibar Mangapwani rd 13.IX.1955 (6 exx. AMS). – Botswana: Chobe R. 8 km W Kasane 27–29.XII.1987 (5 exx. CMNH, 1 ex. MZH). – Namibia: Nyangana, Okavango 1–9.IV. 1988 (4 exx. ZFMB). – W Africa/*H. regimbarti* Zimm. det. J. Balfour–Browne (4 exx. BMNH). In all, 734 exx.

Diagnosis: *H. regimbarti* is distinguished from closely related species by the absence of a well-developed stridulatory apparatus in the male (about 10 fine striae discernible at the site for the apparatus; regarded as loss of a once-possessed character). The location of *H. regimbarti* in this species group is supported particularly by the appearance of the male genitalia.

Length of body: 2.18–2.62 mm, breadth 1.42–1.70 mm. Habitus (Fig. 1004). Body often with quite distinct colour pattern.

Head: Pale brown to pale ferruginous to ferruginous. Punctation very fine, sparse, hardly visible. In shallow frontal depressions and narrowly at eyes with somewhat denser punctures. Submat, microsculptured (meshes distinct). Head frontally rounded, medially

somewhat straightened. Between eyes narrowly but quite distinctly margined (Fig. 1005). Antenna pale ferruginous to pale brown, rather slender, not distinctly modified (Fig. 1006).

Pronotum: Pale brown to pale ferruginous, frontally and medio-basally with a somewhat vague to vague blackish to dark ferruginous area. Punctuation rather fine, fairly dense. Laterally punctures more irregularly distributed; laterally on disc with a narrow almost impunctate area. Finely microsculptured. Mediobasally reticulation absent or sporadic. Lateral outline of pronotum almost straight to rounded.

Elytra: Blackish to dark ferruginous to dark brown, with vague ferruginous to pale brown markings (Fig. 1004). Elytral colour pattern sometimes quite distinct, sometimes hardly visible. Punctuation rather fine to fine, somewhat sparse. Laterally and apically punctures distinctly finer, partly indistinct. Discal row of punctures basally discernible, although rather indistinct. Dorsolateral row of punctures generally also discernible, but indistinct. Lateral row of punctures clearly visible. Shiny, very finely and indistinctly microsculptured (meshes clearly visible only at apical region). Epipleura pale ferruginous, very finely and sparsely punctate, not microsculptured.

Ventral side: Ferruginous to pale ferruginous. Punctuation fairly coarse, somewhat sparse. Abdomen, except basally, with distinctly finer and sparser punctuation; in part almost impunctate. Shiny, almost without microsculpture. Abdomen with very fine and indistinct reticulation. Well-developed stridulatory apparatus absent; at location of apparatus with few very fine striae. Prosternal process laterally quite distinctly margined, medial surface almost flat, rather sparsely but quite distinctly punctate.

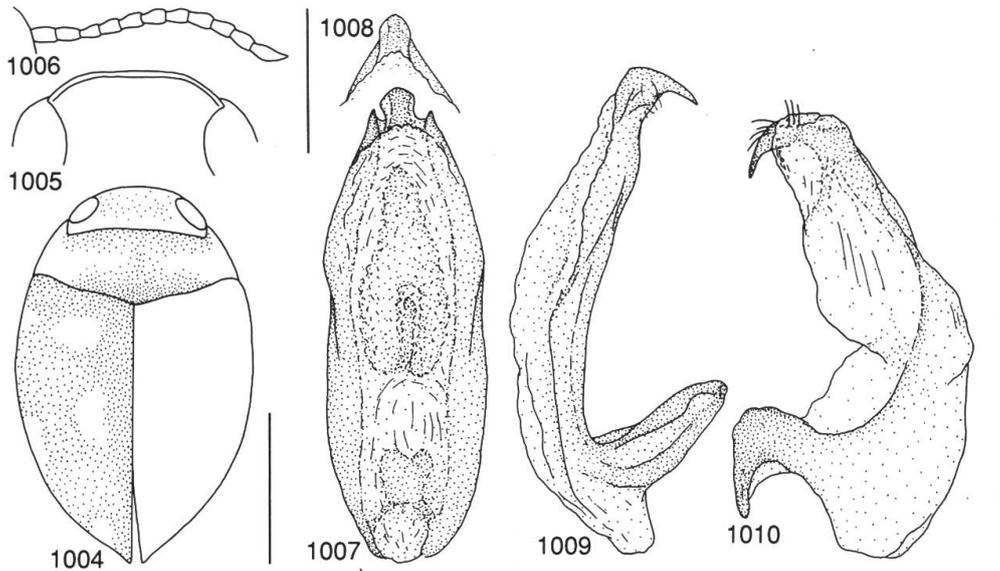
Legs: Pale ferruginous to ferruginous to brownish. Pro- and mesotarsus slightly enlarged.

Male genitalia: Figs 1007–1010.

Female: Externally quite similar to male.

Distribution: Gambia, Senegal, Mali, Burkina, Guinea, Guinea Bissau, Ghana, Benin, Nigeria, Cameroon, Congo, Zaire, Sudan, Tanzania, Botswana, Namibia (Fig. 1003). Unverified records are the Ivory Coast (GUIGNOT, 1945a), Ethiopia (eg. GUIGNOT, 1959a), and Malawi (OMER-COOPER, 1963).

Biology: In Nigeria sampled from ponds of streams and in a detritus pond. In Sudan captured from a ditch with duckweed. Often sampled at light collection. See also BILARDO & ROCCHI (1987).



Figs 1004–1010: *Hydrovatus regimbarti*. – 1004, habitus. – 1005, head, frontal aspect. – 1006, antenna. – 1007, penis, dorsal aspect. – 1008, supplementary illustration of penis apex. – 1009, penis, lateral aspect. – 1010, paramere (medially partly broken). Left top scale 0.5 mm, head and antenna; left bottom scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Synonymy: Type material of the four involved taxa (*H. sharpi* = *H. regimbarti*, *H. navigator*, *H. laeviusculus*, *H. subsimilis*) have been examined and are all regarded as belonging to one somewhat variable but widely distributed species. There are minor differences in appearance of colour pattern and body punctation as well as in shape of the male genitalia. As far as I can decide these deviations, however, fall within the normal variation of one species. Thus the name *H. regimbarti*, being the oldest available name of the taxon, is the valid name.

### **Hydrovatus nefandus** Omer-Cooper

Figs 1011–1016, 1026.

*Hydrovatus nefandus* OMER-COOPER, 1956:22 (faun., biol.; no descr.); 1957:34 (orig. descr., faun.); 1962:296 (disc., faun.); 1963:164, 167 (descr., faun.); 1965:98 (descr., faun.); 1967:62 (disc.); BILARDO & PEDERZANI 1978:102 (disc.); BILARDO & ROCCHI, 1987:96 (faun., biol.).

Type locality: Duivel's Kloof, Transvaal, South Africa.

Type material studied: Holotype, m: Holotype/Duivel's Kloof 24.11.1948 J.O.C./Brit. Mus. 1957–660/*Hydrovatus nefandus* O.-C. (BMNH).

Additional material studied (include also some possible paratypes): Zimbabwe: Wankie Game Res. IX.1948 (40 exx. AMS); Gwaai R. 1.IX.1948 (1 ex. AMS); Bembezi R. 14.VI.1961 (1 ex. AMS); Cashel 2.I.1963 (1 ex. AMS); Big pool 1 mi. fr.

Lindi 22.XI.1948 (2 exx. AMS). – Namibia: Gaufscha Pan Kaukua-Kungv./IX.1951 (1 ex. TMP). – Botswana: N'Kate Makarikari 6–23.VIII.1930/*H. reticuliceps* Rég. det. Gschwendtner (8 exx. TMP, 1 ex. MZH); same but determined later to *H. nefandus* O.-C. det. Omer-Cooper (5 exx. TMP). – South Africa: Trsvl, Belfast XI.1948 (1 ex. AMS); Trsvl, Ermelo 1.XII.1948 (1 ex. AMS, with paratype label); Pretoria 26.XI.1902/*H. nefandus* O.-C. det. Omer-Cooper (2 exx. TMP); Donkerspoort 24.VIII.1948/*H. nefandus* O.-C. det. Omer-Cooper (1 ex. TMP); Plat R. 6–18.IV.1905 (1 ex. TMP, det. uncertain, female); OFS Deelfontain Bothaville SE 2726 Ba/10–21.IV.1978 (2 exx. BNM, 1 ex. MZH); OFS Smits-Kraal Boshof SE 2825 Aa/8–9.V.1978 (1 ex. BNM); P. Maritzburg 7.IV.1947 (2 exx. AMS); ECPr. Komgha, quarry pond 1955 (1 ex. AMS); ECPr. Elliotsdale 28.III.1957 (13 exx. AMS); ECPr. Mquanduli 29.III.1957 (1 ex. AMS); CPr. Zwartkopfs R. 25.II.1959 (1 ex. AMS); CPr. Bathurst Distr. Kleinemonde 9.V.1954/*H. nefandus* O.-C. det. Omer-Cooper (1 ex. AMS, 1 ex. MAC); Kuboos Richtersveld XI.1933/*H. regimbarti*? det. Gschwendtner (1 ex. TMP); Plettenberg Bay XII.1950/*H. nefandus* O.-C. det. Omer-Cooper (1 ex. TMP); Humansdorp Storms R. 15.II.1947 (1 ex. AMS). – Madagascar: Mad. Sud, Pays Androy (Nord) (1 ex. MNHN). In all, 94 exx.

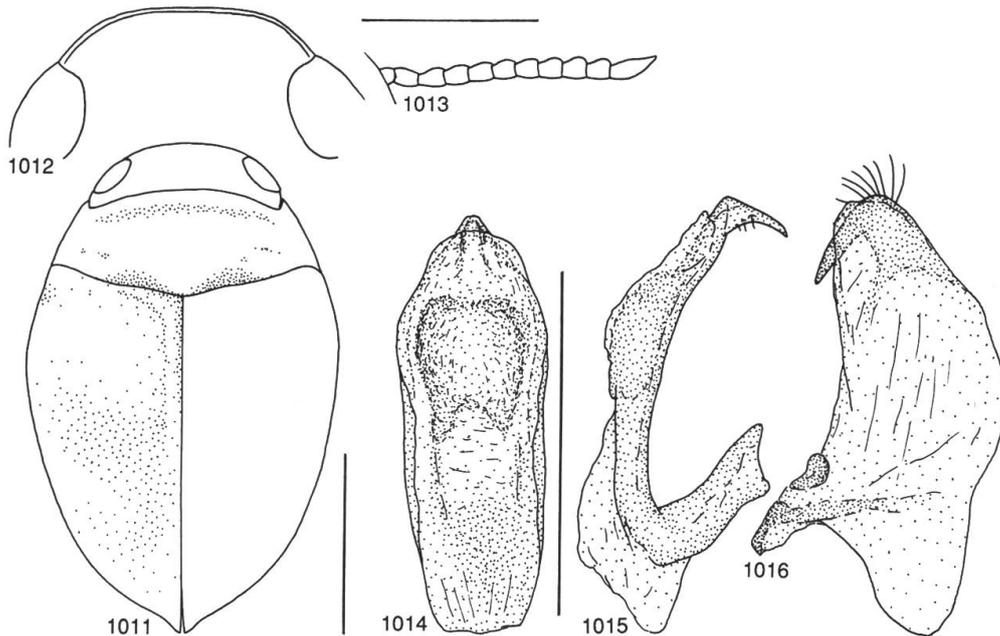
**Diagnosis:** *H. nefandus* is characterized by a quite small but comparatively broad body, by a generally visible dorsal colour pattern, by the penis' being in its apical half quite broad (dorsal aspect), and by the shape of parameral hook (apex evenly and weakly curved; provided with discernible hairs).

Length of body: 2.34–2.62 mm, breadth: 1.58–1.80 mm. Specimen from Madagascar smaller (length 2.26 mm, breadth 1.46) than specimens from the African continent. Habitus (Fig. 1011).

**Head:** Pale ferrugineous. Punctuation fine to very fine, sparse, narrowly at eyes and in shallow frontal depressions punctures denser. Rather shiny, microsculptured (meshes fairly distinct). Head frontally rounded, medially straightened, narrowly margined (Fig. 1012). Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 1013).

**Pronotum:** Ferrugineous to pale ferrugineous, laterally slightly paler, anteriorly and at base with a vague darkened area. Punctuation rather fine to fine, quite dense. Laterally punctures still finer laterodiscally with a narrow, impunctate area. Rather shiny, finely to very finely microsculptured (meshes, in part, somewhat indistinct). Lateral outline of pronotum slightly rounded.

**Elytra:** Pale ferrugineous to ferrugineous, with vague, somewhat variable paler areas (Fig. 1011). Punctuation rather fine to fine, quite dense and quite evenly distributed. Apically and close to epipleura punctuation finer. Rows of punctures absent or very indistinct (mixed with adjacent punctures). Lateral row of punctures, although rather indistinct and irregular, still discernible. Rather shiny, very finely



Figs 1011–1016: *Hydrovatus nefandus*. – 1011, habitus. – 1012, head, frontal aspect. – 1013, antenna. – 1014, penis, dorsal aspect. – 1015, penis, lateral aspect. – 1016, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.

microsculptured (meshes, in part, rather indistinct). Epipleura pale ferrugineous, with rather few somewhat indistinct punctures, microsculpture indistinct.

Ventral side: Ferrugineous to pale ferrugineous to pale brown. Coarsely to fairly coarsely punctate. Abdomen, except basally, almost impunctate. Shiny, almost without microsculpture. Abdomen submat, finely microsculptured. Stridulatory apparatus narrow, consists of numerous minute striae. Prosternal process laterally rather finely margined, medial surface almost flat or slightly convex, finely punctate.

Legs: Pale ferrugineous to ferrugineous. Pro- and mesotarsus rather slender.

Male genitalia: Figs 1014–1016. Penis of holotype broken and obviously lost.

Distribution: Namibia, Botswana, Zimbabwe, South Africa, Madagascar (Fig. 1026). Also reported from Mozambique (OMER-COOPER, 1956).

Biology: In Mozambique reported from a heavily manured market garden, with a number of drainage ditches (main ditch about 5 m wide with grassy sides and *Limnophyton* sp. growing in it). Some of the ditches were covered with duckweed (OMER-COOPER, 1956).

**Hydrovatus cessatus cessatus** Guignot      Figs 1017–1023, 1026.

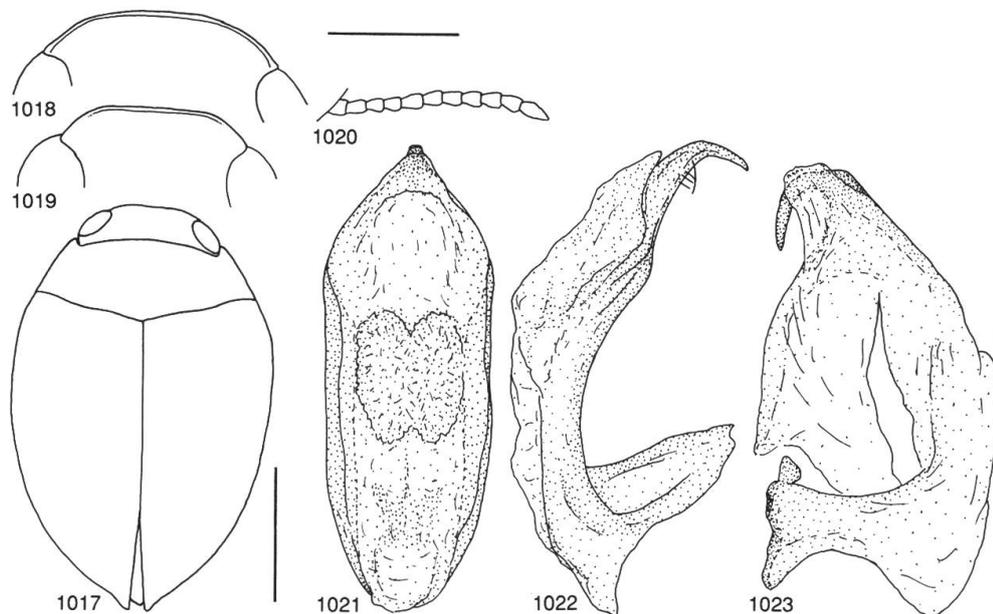
*Hydrovatus cessatus* GUIGNOT, 1956b:213 (orig. descr., faun.); 1961a:233 (disc.).  
*Hydrovatus patens* GUIGNOT, 1956b:213 (orig. descr., faun.); 1961a:233 (syn.  
*H. cessatus*).

Type locality: Ouassadou, Senegal.

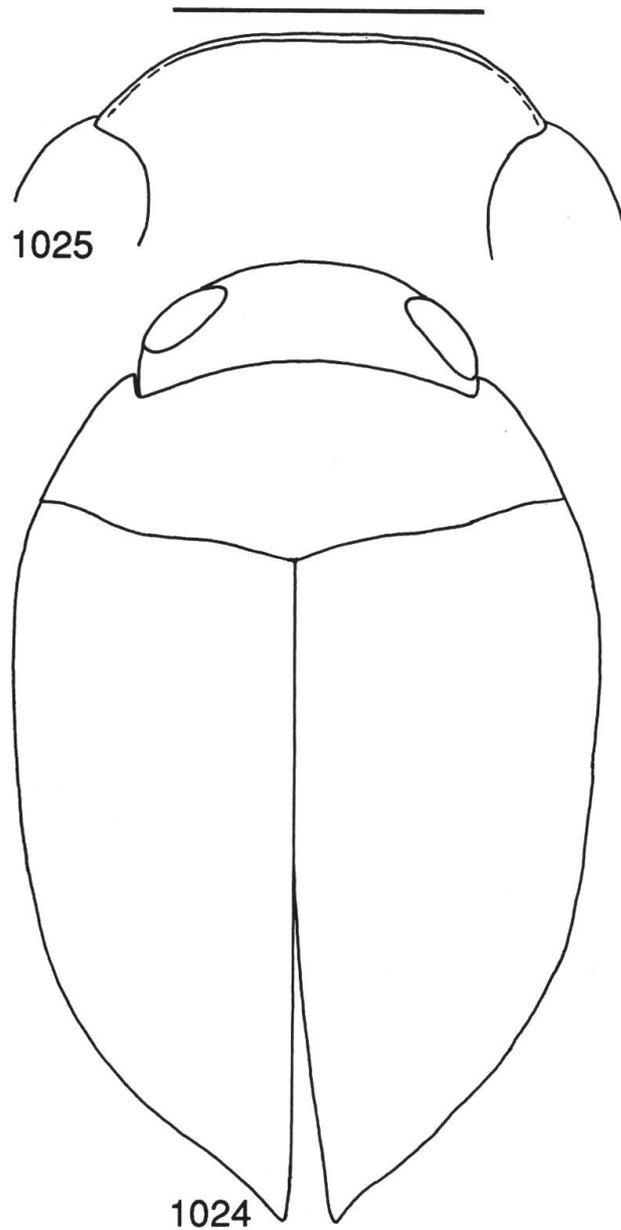
Type material studied: *H. cessatus*: Holotype, f: Mission IFAN au Parc National du Niokolo Koba (Senegal)/IFAN 1955 Ouassadou 12.VIII.55/f/Type/F. Guignot det. 1956 *Hydrovatus (Vathydrus) cessatus* n.sp. Type (MNHN). – *H. patens*: Holotype, m: Mission IFAN au Parc National du Niokolo Koba, Badi (Sénégal) 15.VIII–25.IX.1955/Type/Museum Paris/F. Guignot det., 1954 *Hydrovatus (Vathydrus) patens* n.sp. Type (MNHN). – Paratypes: Same data as holotype but labelled as paratypes (3 exx. MNHN).

Additional material studied: Senegal: Sangalkam VIII.1971 (1 ex. MNHN); Sebitokane VIII.1971 (1 ex. MZH). In all 7 exx.

Diagnosis: *H. c. cessatus* is characterized by a medium-sized body with quite rounded lateral outlines, by clearly discernible (about 15) ridges of the stridulatory apparatus, by the strongly developed apical hook of the paramere, by the broad penis (dorsal aspect), and by the quite evenly curved apex of the penis (lateral aspect). The subspecies *H. c. cessatus* may be distinguished from subspecies *H. cessatus australis* (see below) by the broader body, and by sparser and more irregularly distributed elytral punctures.



Figs 1017–1023: *Hydrovatus c. cessatus*. – 1017, habitus. – 1018–1019, head, frontal aspect. – 1020, antenna. – 1021, penis, dorsal aspect. – 1022, penis, lateral aspect. – 1023, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia.



Figs 1024–1025: *Hydrovatus cessatus australis*. – 1024, habitus. – 1025, head, frontal aspect. Horizontal scale 0.5 mm, head; vertical scale 1 mm, habitus.

Length of body: 2.74–3.28 mm, breadth: 1.80–2.14 mm. Habitus (Fig. 1017).

Head: Dark ferrugineous. Punctuation fine, sparse and somewhat irregularly distributed. Punctures densest narrowly at eyes. Rather shiny, microsculptured. Meshes frontally strongly developed, at pronotum distinctly weaker. Head with frontal depressions, sometimes connected, forming a U-shaped rather shallow depression (starts

close to eyes). Head frontally straightened, rather finely margined. Sometimes margin does not reach eyes (Figs 1018–1019). Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 1020).

Pronotum: Dark ferrugineous, laterally pronotum becomes gradually slightly paler; ferrugineous. Punctuation rather fine, fairly dense, but somewhat irregularly distributed. Discally punctures sparsest. Rather shiny, microsculptured (meshes rather weakly developed but clearly visible). Lateral outline of pronotum almost straight to somewhat rounded.

Elytra: Dark ferrugineous, laterally slightly paler. Without distinct colour pattern. Punctuation fine to rather fine, somewhat sparse, irregularly distributed. Apically and laterally punctures finer and sparser. Rows of punctures rather indistinct. Often partly discernible, although mixed with adjacent punctures. Of rows, lateral row most pronounced. Rather shiny, finely microsculptured (meshes generally visible). Epipleura ferrugineous to pale ferrugineous, finely and rather sparsely punctate, rather shiny; microsculpture almost absent.

Ventral side: Ferrugineous to pale ferrugineous. Rather finely to coarsely but quite sparsely punctate. Abdomen, except basally, with very fine, partly indistinct and sparse punctures. Rather shiny, almost without microsculpture. Abdomen, except laterally, with fine reticulation. Stridulatory apparatus consists of about 15 minute ridges. Prosternal process laterally rather narrowly but distinctly margined. Medial surface of process almost flat, densely punctate.

Legs: Pale ferrugineous to ferrugineous. Pro- and mesotarsus rather slender.

Male genitalia: Figs 1021–1023.

Female: Externally approximately as male but lacks stridulatory apparatus.

Distribution: Senegal (Fig. 1026).

Biology: Unknown.

Synonymy: I accept the synonymization of *H. cessatus* and *H. patens* proposed by GUIGNOT (1961a). The two names are equally old; GUIGNOT (1961a) chose *H. cessatus* to be the valid name for the species.

### ***Hydrovatus cessatus australis* n. ssp.**

Figs 1024–1026.

Type locality: Lac Carumbo, Angola.

Type material: Holotype, m: Ang. Stn. No. 13842/Angola Lac Carumbo 7.52S/19.55E, 21.VII.1957 (MNHN). – Paratypes: Same as holotype (1 ex. MNHN, 1 ex. MZH); Marais du L. Carumbo rive Gauche 7.IX.1957 J. Bertrand coll. (1 ex.

MNHN); Ang. Rives Lac Calundo, 105 km E Luso XII., 21.XII., 30.XII.1954/Museum Paris coll. Bertrand (2 exx. MNHN, 1 ex. MZH). In all, 7 exx.

**Diagnosis:** This subspecies, with a more southern distribution in Africa, is distinguished from *H. c. cessatus* by its generally slightly narrower body, and by its exhibiting denser, more evenly distributed and coarser elytral punctation. Additionally, the elytral reticulation is weaker, in part even absent in the new subspecies.

**Description:** only differences from description of *H. c. cessatus* recognized.

Length of body: 2.76–2.94 mm, breadth: 1.76–1.90 mm. Habitus (Fig. 1024).

**Head:** Depressions of head shallow and indistinct. Frontal margin of head visible from eye to eye, although weakly developed near eyes (Fig. 1025).

**Pronotum:** Reticulation partly indistinct and hardly discernible.

**Elytra:** Punctation rather fine, fairly dense and quite evenly distributed. Extreme apex and narrow area close to epipleura with distinctly finer punctures. Rows of punctures absent or hardly visible. Reticulation partly absent or very fine, almost totally obliterated.

**Distribution:** Angola (Fig. 1026).

**Biology:** Unknown.

### **Hydrovatus deserticola** Guignot (species complex) Figs 1026–1035.

*Hydrovatus badius* OMER-COOPER, 1931:760 (orig. descr., faun., biol.); BALFOUR-BROWNE, 1939:480 (faun.); GSCHWENDTNER, 1943:421, 422 (descr., disc.); GUIGNOT, 1943:85 (descr., disc.); 1945a:298 (descr., faun.); 1959a:125, 129 (descr., faun.); 1961b:933 (faun.); OMER-COOPER, 1967:62 (disc.); BILARDO & PEDERZANI, 1978:102, 103 (descr., disc., faun.); BILARDO & ROCCHI, 1990:170 (faun.). Preoccupied by *Hydroporus badius* Clark, 1863 = *Hydrovatus acuminatus* Motschulsky, 1859.

*Hydrovatus badius deserticola* Guignot, 1950a:260 (orig. descr., faun.); 1959a:129 (descr., faun.).

*Hydrovatus marlieri* GUIGNOT, 1956c:317, 318 (orig. descr., faun.); 1958b:2(disc.); 1959c:137 (faun.); OMER-COOPER, 1965:62 (disc.; by mistake given as *H. malieri*); BILARDO & PEDERZANI, 1978:102 (disc.); BILARDO & ROCCHI, 1987:94, 95 (descr., faun.).

*Hydrovatus sporas* GIOGMPT, 1959c:137 (orig. descr., faun.); OMER-COOPER, 1965:98: (descr., faun.); 1967:62 (disc.); BILARDO & PEDERZANI, 1978:102 (disc.); BILARDO & ROCCHI, 1987:94, 95 (descr., faun., biol.); PEDERZANI, 1988:106 (faun., biol.); BILARDO & ROCCHI, 1990:162, 170 (faun., biol.).

*Hydrovatus fallax* BALFOUR-BROWNE, OMER-COOPER, 1967:62 (disc.; no description).

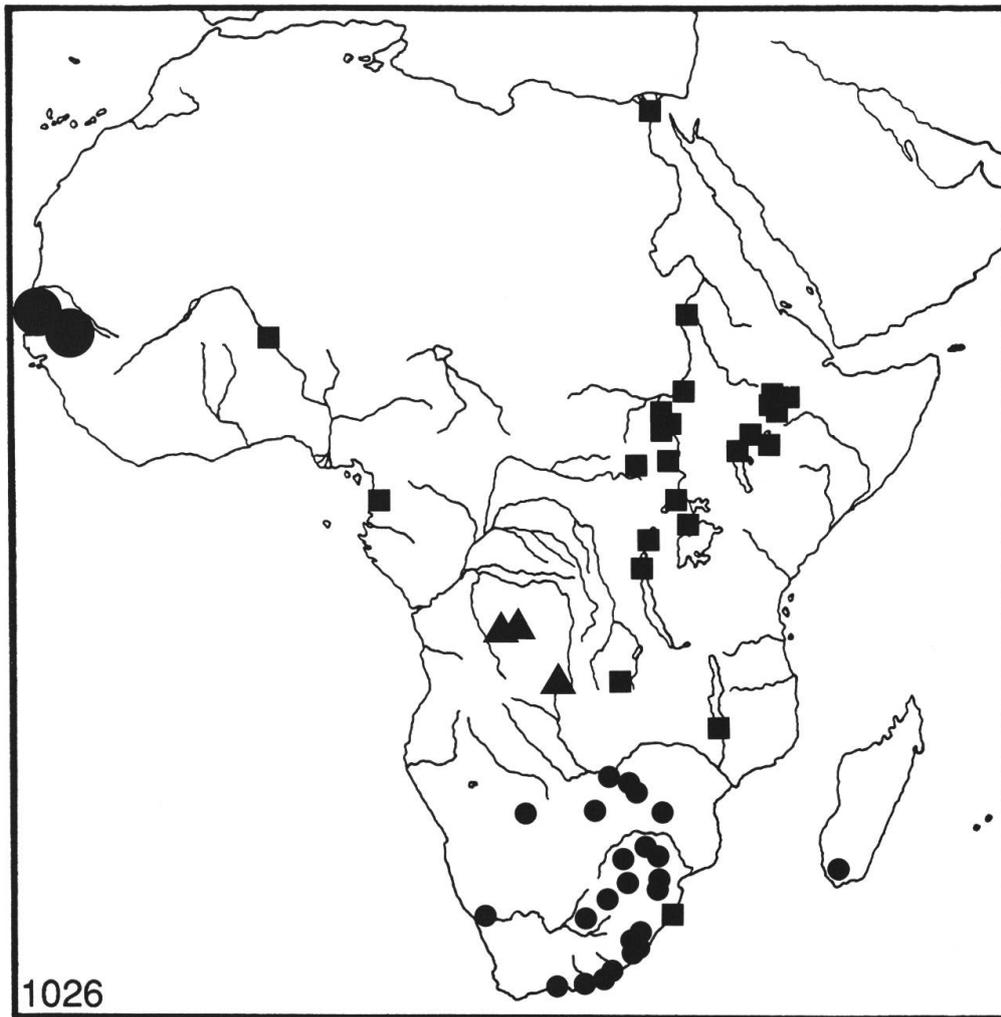


Fig. 1026: Distribution of *Hydrovatus nefandus* (small dot), *H. c. cessatus* (large dot), *H. cessatus australis* (triangle) and *H. deserticola*-complex (square).

Type locality: Hora Harsadi, Addas, Ethiopia.

Type material studied: *H. badius*: Holotype, m: Type/Abyssinia 7000 ft Hora Harsadi, Addas 2.XII.1926 J. Omer-Cooper/Brit. Mus. 1933-136/*H. badius* O-C. J. Omer-Cooper (BMNH). – Paratypes: Cotype/Abyssinia 7000 ft Mt Chilalu 8.XI.1926 J. O-C. (1 ex. BMNH, 1 ex. AMS); Cotype/Abyssinia 7000 ft Hora Bishoftu Addas 2.XII.1926 J. O-C. (1 ex. BMNH, 2 exx. MAC, 4 exx. AMS); Cotype f (2 exx. AMS). Specimens with same data as type material but not provided with type labels: Hora Bishoftu (6 exx. AMS); Mt Chilalu (3 exx. AMS); West Marsh, L. Zwai 5500 ft 2-3.I.1926 (1 ex. AMS). – *H. badius deserticola*: Holotype, m: Niger Territory, Niamey (not located, should be in IFAN). – Paratype: Terr. du Niger Niamey VII. 1947/m/Paratype/*Hydrovatus badius* ssp. *deserticola* Guign. (1 ex. MNHN). – *H. marlieri*: Holotype, m: Holotypus/I.R.S.A.C. – Mus. Congo Kivu: Kavimvira (Uvira) (à la lumière) IX/X.1964 G. Marlier/F. Guignot det. 1955 *Hydrovatus (Vathydrus) marlieri* n.sp. Type m (MAC). – Paratypes: Principally with same data as holotype (2 exx. MAC). – *H. sporas*: Holotype, m: Congo Belge Lac Edouard: Vitshumbi ds.

vossia 23.I.1954 J. Verbeke – KEAC 3100/Type/F. Guignot det. 1956 *Hydrovatus (Vathydrus) sporas* n.sp. type m (ISN). – Paratypes: Same data as holotype but 3207 prés emb. Ruindi 21.I.1953 (1 ex. MNHN); same as holotype but 3052 U.V. 14.VII.1953 (1 ex. MNHN).

Additional material studied: Egypt: Cairo (1 ex. MZH). – Sudan: Malakal 1962 (2 exx. MZH); Malakal 5–20.I. 1963/ad lucem (13 exx. MZH); L. Shambe, shore 31.I.1954/*H. fallax* J. B-Br. i.l. (17 exx. AMS); L. Shambe, pool in marsh 31.I.1954/*H. fallax* J. B-Br. i.l. (1 ex. AMS); Equatoria Gainglil rd 22.I.1954/*H. fallax* J.B-Br. i.l. (9 exx. AMS); Gainglil 22.II.1954, muddy pool on rd. (2 exx. AMS); White Nile Sudd Reg. I.1954 (2 exx. incl. holotype of J. Balfour-Browne's ms species *H. fallax*); Riv. Post 21, app. 105 km S L. No/28.V.–19.VI. 1954 (1 ex. BMNH); Khartoum (1 ex. coll. Wewalka). – Ethiopia: Sidamo L. Awassa 8.I.1989 *H. badius* O-C. det. Nilsson 1989 (1 ex. coll. Nilsson); Sidamo pr., by hot springs at Noikien and L. Abaya, 1350 m 12.IX. 1972 (7 exx. MAC); Shoa pr. Sodere VIII.1971 (2 exx. MAC); Shoa pr. L. Awassa 9.VII.1973 (1 ex. MAC); Gamu-Gofa pr. NO L. Stephanie 715 m, 26.VI.1974 (2 exx. MAC); Nanoropus Bords Rodolphe 565 m/*H. badius* O-C. det. Guignot (1 ex. MNHN); Nanoropus 565 m (7 exx. MNHN, 3 exx. MZH). – Equatorial Guinea: Bata (5 exx. MCN). – Niger: Niamey IX.1988 at light (1 ex. coll. Wewalka). – Zaire: Kivu, Kavim vire, Uvira, lum. XII.1954/*H. sporas* Guign. det. Guignot 1959 (8 exx. MAC); same as preceding but 1–15.V.1955 (1 ex. MAC); Elisabethville (3 exx. MAC); PNG 8.VIII.1952/*H. sporas* Guign. det. Guignot 1958 (11 exx. MAC); PNG 24.VII.1952/*H. sporas* Guign. det. Guignot 1958 (5 exx. MAC); PNG 30.VI.1952/*H. sporas* Guign. det. Guignot 1958 (1 ex. MAC); PNG (2 exx. MAC); Congo Belge C 33, C 84 (3 exx. MNHN, 1 ex. MZH). – Uganda: Ug. occ., Pr. Unyoro rég. AlbertNyanza II.1909/Albert-Nyanza Baie de Butiaba/*H. fallax* J. B-Br. det. J. Balfour-Browne 1961 (1 ex. MNHN); Kampala 28.XI.1929 (1 ex. AMS). – Malawi: Dally's Hotel nr Ft. Johnstone, swamp 23.VIII.1948 (1 ex. AMS). – South Africa: Natal Mtubatuba 24.VII.1947 (6 exx. AMS). In all 152 exx.

Diagnosis: *H. deserticola* probably represents a group of species in which at least two species can be distinguished. On the basis of the appearance of the stridulatory apparatus, the species-complex may be divided into one group exhibiting a highly modified stridulatory file (ridges reduced to three and located at a distinct depression, Fig. 1032; the "*H. fallax*-type"), and another group with a stridulatory file consisting of some (6–8) quite fine but clearly discernible tubercles (without a distinct depression)(Fig. 1031). Intermediates are rarely found, but the distinction between the two different groups seems not to be complete. Thus I have decided, at least thus far, not to distinguish two different species, but instead treat them as a complex until further, clearly needed studies have been worked out. *H. deserticola* is characterized by the shape of the penis in combination with the appearance of the stridulatory apparatus (both morphs). The described taxa treated here are *H. badius*, *H. badius deserticola*, *H. marlieri* and *H. sporas* – this treatment is not to be regarded as

a synonymization of these! The name *H. badius* is preoccupied (see above), and because I do not separate any subspecies I will treat the probable species complex thus far under the name *H. deserticola*.

Length of body: 2.32–2.70 mm, breadth: 1.44–1.74 mm. Habitus (Fig. 1027).

Head: Pale ferrugineous to ferrugineous. Finely and rather sparsely punctate. Narrowly at eyes and in shallow frontal depressions with denser punctures. Rather shiny, but with distinct microsculpture (meshes distinct). Frontal outline rounded, narrowly margined (Fig. 1028). Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 1029).

Pronotum: Ferrugineous to brown, laterally paler; at lateral margins pale brown to pale ferrugineous. Distinctly but rather sparsely punctate; discally punctures still sparser. Rather shiny but with distinct microsculpture (meshes clearly discernible). Lateral outline of pronotum almost straight to somewhat rounded.

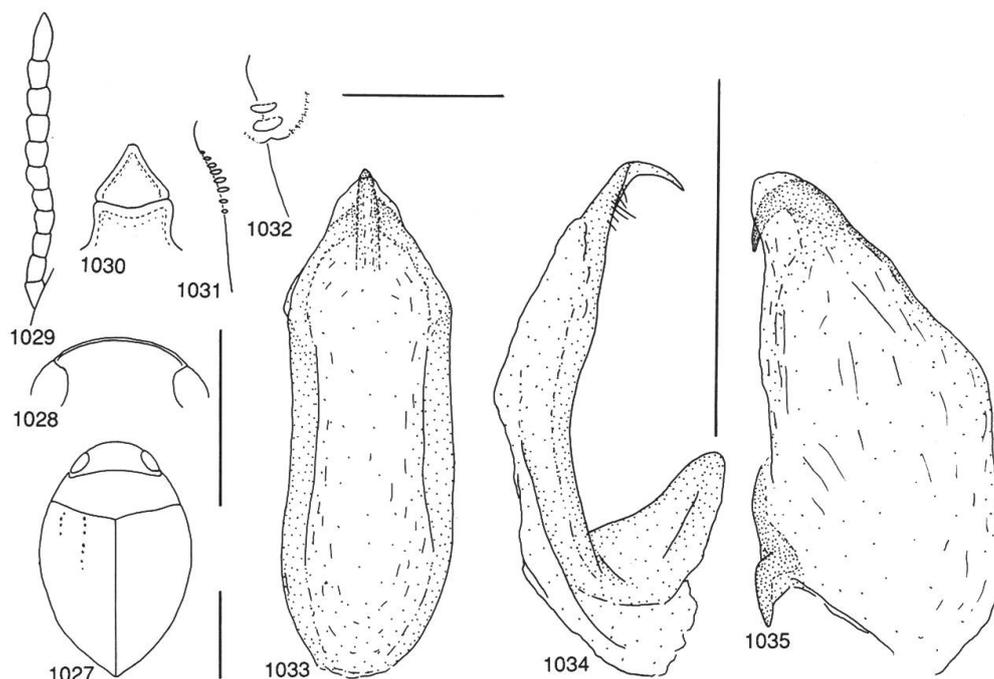
Elytra: Dark brown to dark ferrugineous, laterally elytra become gradually paler. Without distinct colour pattern. Punctuation distinct but somewhat irregularly distributed. Punctures coarsest and densest at suture; laterally and posteriorly punctures finer and more irregular. Discal and lateral rows of punctures discernible but quite irregular and indistinct. Dorsolateral row of punctures only sometimes visible. Rather shiny although distinctly microsculptured (meshes distinct except laterally). Sometimes reticulation indistinct; clearly discernible meshes only in apical part of elytra. Epipleura pale brown to pale ferrugineous, indistinctly punctate, shiny; indistinctly microsculptured.

Ventral side: Pale brown to pale ferrugineous. Metathorax, metacoxal plates and base of abdomen fairly coarsely and densely punctate. Abdomen otherwise almost impunctate. Shiny, almost without microsculpture. Abdomen with fine reticulation. Stridulatory apparatus of two kinds (Figs 1031–1032). With three distinct ridges at depression or without depression and with 6–8 smaller ridges. Prosternal process laterally finely margined (Fig. 1030), medial surface almost flat and punctate.

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

Male genitalia: Figs 1033–1035.

Female: Externally as male but lacks stridulatory apparatus.



Figs 1027–1035: *Hydrovatus deserticola-complex*. – 1027, habitus. – 1028, head, frontal aspect. – 1029, antenna. – 1030, prosternal process. – 1031, stridulatory apparatus. – 1032, stridulatory apparatus of “*fallax-type*”. – 1033, penis, dorsal aspect. – 1034, penis, lateral aspect. – 1035, paramere. Horizontal scale 0.5 mm, antenna, process and stridulatory apparatus; left top scale 1 mm, head; left bottom scale 1mm, habitus; right scale 0.5 mm, genitalia.

**Distribution:** Egypt, Niger, Sudan, Ethiopia, Equatorial Guinea, Zaire, Uganda, Malawi, South Africa (Fig. 1026). Additional unverified records are Mali (GUIGNOT, 1943), Gabon (BILARDO & PEDERZANI, 1978), and under the name *H. marlieri* Botswana (BILARDO & ROCCHI, 1987), and under the name *H. sporas* Zambia (PEDERZANI, 1988).

**Biology:** Collected at high altitudes, and often at light collection. Once sampled in a hot spring. In Sudan from a muddy pool. In Zambia reported under the name *H. sporas*, from wide ponds with shores mostly covered by grass and aquatic vegetation, partly shadowed by trees and shrubs; bottom soil of clay, sand and vegetal debris. Additionally from riverside marshes with herbaceous vegetation and reeds at the sides of a broad, slow-running river; bottom soil of clay, sand and vegetal debris (PEDERZANI, 1988). See also BILARDO & ROCCHI (1987, 1990).

**Hydrovatus dentatus** Bilardo & Pederzani Figs 1036–1042, 1049.

*Hydrovatus dentatus* BILARDO & ROCCHI, 1990:179, 188 (orig. descr., faun.).

Type locality: Chibembe, Luangwa valley, Zambia.

Type material studied: Holotype, m: Zambia Luangwa valley, Chibembe dint. 6.X.1984 N. Sanfilippo/2.33 × 1.38/Holotypus/*Hydrovatus dentatus* Bil. & Rocchi det. Bilardo (MCM). – Paratype: Principally with same data as holotype (1 ex. coll. Bilardo).

Additional material studied: Zambia: Mufuwe IV., XI–XII.1964 (3 exx. BMNH, 1 ex. MZH). – South Africa: Zululd Dukuduku for. st. 28.22S–32.19E/5.IV.1974 E–Y 330 at light (1 ex. TMP); Zululd Mtubatuba 28.29S–32.10E/4.IV.1974 E–Y 325 air plankton, dark (1 ex. TMP, 1 ex. MZH). In all, 9 exx.

Diagnosis: A well-defined species, which is particularly characterized by tooth-shaped penis apex (lateral aspect; a unique configuration in *Hydrovatus*).

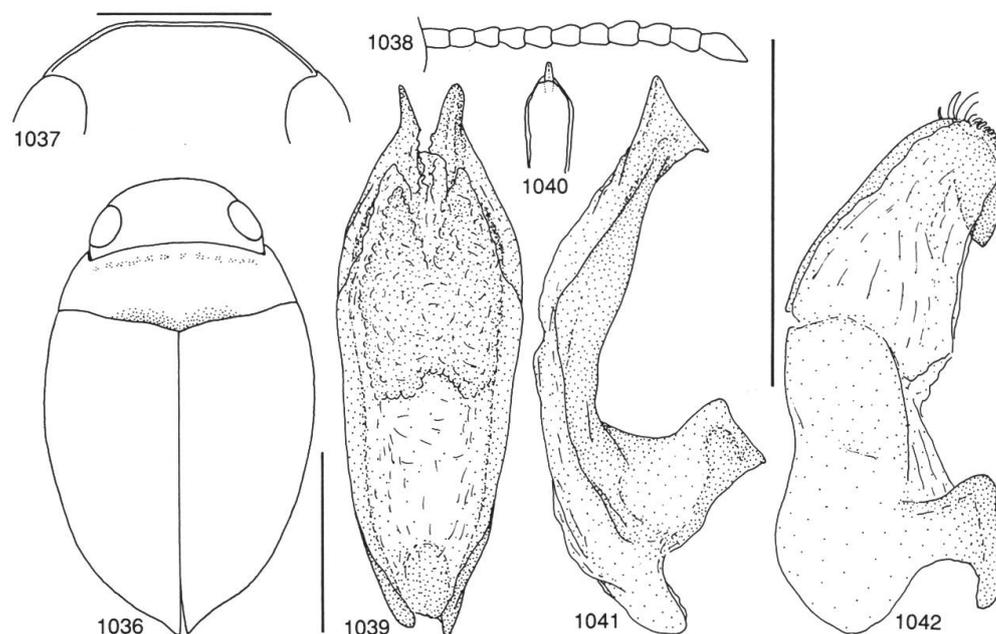
Length of body: 2.14–2.42 mm, breadth: 1.32–1.46 mm. Habitus (Fig. 1036).

Head: Pale ferruginous. Punctuation fine, sparse, somewhat irregularly distributed. At eyes and in shallow frontal depressions with somewhat denser punctures. Rather shiny, although microsculptured (meshes clearly discernible). Head frontally rounded, medially distinctly straightened; between eyes margined (Fig. 1037). Antenna pale ferruginous, rather slender (Fig. 1038).

Pronotum: Pale ferruginous, mediobasally with narrow darkened area. Punctuation fine to very fine, rather sparse. Laterally on disc punctures almost absent. Rather shiny, very finely microsculptured (meshes partly weakly developed, indistinct). Lateral outline of pronotum somewhat rounded.

Elytra: Dark ferruginous to brownish. Laterally elytra become gradually paler; at epipleura pale brown. Without distinct colour pattern. Punctuation fine, somewhat sparse. Laterally and apically punctures still finer, partly absent. Discal row of punctures hardly visible (mixed with adjacent punctures). Dorsolateral and lateral rows of punctures irregular and rather indistinct. Rather shiny, although microsculptured (meshes rather weakly developed, partly indistinct). Epipleura pale ferruginous, almost impunctate and non-reticulate.

Ventral side: Pale ferruginous to brown. Punctuation fairly coarse to fine, rather sparse. Abdomen almost impunctate. Shiny, not microsculptured. Abdomen indistinctly reticulated. Stridulatory apparatus formed by about 10 minute but discernible tubercles. Prosteral process laterally broadly margined, medial surface almost flat, with a few punctures.



Figs 1036–1042: *Hydrovatus dentatus*. – 1036, habitus. – 1037, head, frontal aspect. – 1038, antenna. – 1039, penis, dorsal aspect. – 1040, supplementary illustration of penis apex. – 1041, penis, lateral aspect. – 1042, paramere (medially partly broken). Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.4 mm, genitalia (excl. Fig. 1040).

Legs: Pale ferruginous. Pro- and mesotarsus quite slender.

Male genitalia: Figs 1039–1042.

Female: Externally as male but lacks stridulatory apparatus.

Distribution: Zambia, South Africa (Fig. 1049).

Biology: In South Africa sampled at light collection.

### **Hydrovatus facetus** Guignot

Figs 1043–1049.

*Hydrovatus facetus* GUIGNOT, 1942:13 (orig. descr., faun.); 1945a:300, 302, 313 (descr., faun.); OMER-COOPER, 1957:30 (disc.); 1958:57, 59 (disc., faun., biol.); GUIGNOT, 1959a:143, 146 (descr., faun.); OMER-COOPER, 1965:98 (disc.).

*Hydrovatus continentalis* GUIGNOT, 1957:13 (short descr.); 1958b:4 (disc.); 1959c:142 (orig. descr., faun.); BRUNEAU DE MIRÉ & LEGROS, 1963:846 (disc., faun.); OMER-COOPER, 1963:173, 177 (descr., faun.); BILARDO & ROCCHI, 1987:96 (faun., biol.). **New synonym.**

*Hydrovatus quezeli* BRUNEAU DE MIRÉ & LEGROS, 1963:844, 888 (orig. descr., faun., biol.). **New synonym.**

Type locality: Kavirondo Bay, Kenya.

Type material studied: *H. facetus*: Holotype, m: Baie de Kavirondo (Victoria Nyanza N-E.) Ch. Alluaud IX–X. 1903/m/Type/Det. dr. Guignot *Hydrovatus facetus* Guignot Type (MNHN). – *H. continentalis*: Holotype, m: Congo Belge Lac Albert: Kasenyi mare I, 29.VI.1953 J. Verbeke – KEA 4030/m/Type/F. Guignot det., 1956

*Hydrovatus (Vathydrus) continentalis* n.sp. Type m (ISN). – Paratype: Congo Belge Lac Edouard: Vitshumbi UV 22.I.1954 3098/m/Paratype (1 ex. MNHN). – *H. quezeli*: Holotype, m: Faya mare de Guidi 19 janv. 1959/Tibesti, zone du Borkou Bruneau de Miré/m/Type/*Hydrovatus (Vathydrus) tibesticus* n. sp. (manuscript name) C. Legros det./*Hydrovatus (Vathydrus) quezeli* B. de Miré & Legros (MNHN). – Paratypes: Faya 4.10 Oct. 1959/Tibesti zone du Borkou Bruneau de Mir (2 exx. MNHN); Faya 20 janv. 1959/Tibesti zone du Borkou (1 ex. MNHN).

Additional material studied: Gambia: 3.5 km S Georgetown, hilltop at Sankuli Kunda, alt. about 30 m, at light 18.30–20.15, 15.XI.1977 (2 exx. LUZ). – Benin: Parakou 11.VII. 1989 (1 ex. coll. Vondel); Parakou 7.VII.1989 (1 ex. coll. Vondel); Ounou Nikki 12.VII.1989 (2 exx. coll. Vondel, 1 ex. MZH). – Zaire: PNG Inimvua 20.V.1952 (1 ex. ISN); Kivu Sanghe Pl. de Ruzizi, la lum. XII.1951/*H. continentalis* Guign. det. Guignot 1957 (1 ex. MAC). In all, 16 exx.

**Diagnosis:** A well-defined species, characterized by a medium-sized body, by a completely margined frontal part of the head, by the stridulatory apparatus consisting of about 30 small but clearly discernible ridges and by peculiar details in the appearance of the male genitalia: Penis almost evenly broad (dorsal aspect); apex rather short, distinctly bent downwards but almost straight (lateral aspect) and a parameral hook quite strongly developed. Close to preceding species.

Length of body 2.72–3.02 mm, breadth 1.80–1.94 mm. Habitus (Fig. 1043).

**Head:** Pale ferrugineous to ferrugineous. Finely and somewhat sparsely punctate. Punctures somewhat irregularly distributed; densest in shallow frontal depressions and narrowly at eyes, sparsest at pronotum. Submat, microsculptured (meshes distinct). Head frontally rounded, medially distinctly straightened. Between eyes margined (Fig. 1044). Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 1045).

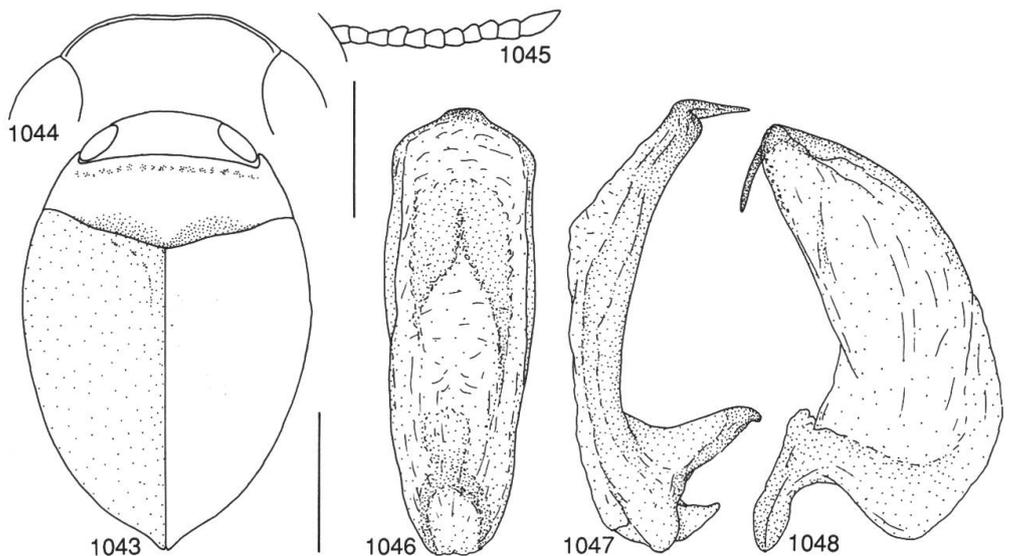
**Pronotum:** Pale ferrugineous to ferrugineous, basally and frontally with vague darkened areas. Frontal darkened area often hardly visible. Finely and fairly densely punctate. Laterally on disc with a rather narrow, sparsely punctated area. Rather shiny, microsculptured (meshes fine but clearly discernible). Lateral outlines of pronotum almost straight to slightly rounded.

**Elytra:** Pale ferrugineous to ferrugineous to brownish and blackish ferrugineous, generally without distinct colour pattern (rarely with quite distinct colour pattern). Elytra darkest at suture and palest at epipleura. Rather finely and fairly densely punctate. Punctures somewhat irregularly distributed. Discal row of punctures basally discernible. Dorsolateral row of punctures generally absent.

Lateral row of punctures rather indistinct but still visible. Rather shiny, finely and somewhat indistinctly microsculptured. Epipleura pale ferrugineous, fairly densely punctate (punctures concentrated in inner part of epipleuron) and finely microsculptured. Epipleural punctures and reticulation rather indistinct.

Ventral side: Dark ferrugineous to pale ferrugineous. Fairly coarsely and densely punctate. Abdomen except basally almost impunctate. Shiny, without microsculpture. Abdomen finely reticulated. Stridulatory apparatus consists of about 30 minute but clearly visible ridges. Prosternal process laterally finely margined, medial surface almost flat and finely punctate.

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



Figs 1043–1048: *Hydrovatus facetus*. – 1043, habitus. – 1044, head, frontal aspect. – 1045, antenna. – 1046, penis, dorsal aspect. – 1047, penis, lateral aspect. – 1048, paramere. Left top scale 0.5 mm, head and antenna; left bottom scale 1 mm, habitus; right scale 0.4 mm, genitalia.

Male genitalia: Figs 1046–1048.

Female: Externally almost as male but lacks stridulatory apparatus; frontal outline of head rounded, medially generally less strongly straightened.

Distribution: Gambia, Chad, Benin, Zaire, Kenya, Zimbabwe (Fig. 1049). An additional unverified record is Swaziland (OMER-COOPER, 1958) and under the name *H. continentalis* in Botswana (BILARDO & ROCCHI, 1987).

**Biology:** In Swaziland reported from a swift river with pools among rocks, at an altitude of approximately 2200 feet (OMER-COOPER, 1958). In Zimbabwe sampled in pools. Often sampled at light collection. See also BRUNEAU DE MIRÉ & LEGROS (1963) and BILARDO & ROCCHI (1987).

**Synonymy:** The holotypes of the three taxa involved (*H. facetus*, *H. continentalis*, *H. quezeli*) have been examined. Despite minor external differences I regard them all as belonging to one species. Thus the oldest name, *H. facetus*, is the valid name of this species.

### **Hydrovatus reticuliceps** Régimbart

Figs 1049–1055.

*Hydrovatus reticuliceps* RÉGIMBART, 1895b:109 (orig. descr., faun.); ZIMMERMANN, 1920a:35 (faun.); 1926:27 (faun.); GSCHWENDTNER, 1935:18 (faun., = *H. nefandus* O-C., cf. OMER-COOPER, 1965:98); GUIGNOT, 1945a:308, 309, 311 (disc., faun.); OMER-COOPER, 1956:22, 28 (descr., faun., biol.); GUIGNOT, 1959a:125, 126, 127 (descr., disc., faun.); OMER-COOPER, 1963:163 (descr., faun.); BILARDO & PEDERZANI, 1978:102, 103 (descr., faun.); BILARDO & ROCCHI, 1987:94 (faun., biol.; by mistake given as *H. reticuliceps* Régimbart, 1985); PEDERZANI 1988:106 (faun., biol.); BILARDO & ROCCHI, 1990:160, 161, 162, 170 (faun., biol.).

*Hydrovatus liberatus* GUIGNOT, 1945b:9 (orig. descr., faun.); 1945a:308 (descr., faun.); 1959a:125, 127 (descr., faun.); 1961b:933 (faun.). **New synonym.**

*Hydrovatus compotor* GUIGNOT, 1955c:182, 184 (orig. descr., faun.); 1961a:232 (faun.); MEDLER 1980:155 (faun.). **New synonym.**

**Type locality:** Cap Lopez, Gabon.

**Type material studied:** *H. reticuliceps*: Lectotype, m, by present designation (mounted to left on same label as one paralectotype): Cap Lopez/Museum Paris coll. Maurice Régimbart 1908/Type/*reticuliceps* Rég./Lectotype J. Omer-Cooper June 1960 (MNHN). – Paralectotype: See under lectotype (1 ex. MNHN). – *H. liberatus*: Holotype, m: Cameroun Ebolowa/m/Type/*Hydrovatus liberatus* Guign. Type m (MNHN). – *H. compotor*: Holotype, m: Holotypus m/Coll. Mus. Congo Elisabethville (lumière) XI. 1951–II.1952 Ch. Seydel/Type/R. Det. 6649 FF/Guignot det. 1954 *Hydrovatus compotor* n.sp. Type m (MAC). – Paratypes: Same sampling data as holotype (1 ex. MAC); same data as holotype but 1.III.52/30.IX.1953 (1 ex. MAC).

**Additional material studied:** Gambia: Outside Abuko Nat. Res. at water works, at light 19.00–21.50, 22.XI. 1977/*H. reticulatus* Régb. det. Nilsson (11 exx. LUZ). – Guinea Bissau: Bula 18., 29.VII.1992 (2 exx. coll. Persson); 5 km W Bula 25.VII.1992 (1 ex. coll. Persson). – Guinea: Seredou, lux 4., 7–8., 18.IV., 4.V.1975 (16 exx. MNB, 7 exx. MZH); Siguiri 2–8.XI.1961 (1 ex. TMB). – Ivory Coast: Foro-Foro ad lucem (1 ex. MZH). – Ghana: Ashanti Reg. Kumasi, Nhiasu/light collection 12., 24.VI., 12., 20., 28.V., 23–29.V., 2.VII., 10.VIII., 15.IX., 18., 20.X.1967 (49 exx. TMB, 5 exx. MZH); Ashanti Reg. Kwadaso/light collection 9.IV., 12., 22., 26.V.1969 (9 exx. TMB, 1 ex. MZH); N. Reg. Damongo Mole Res/light collection 12.VIII.1971, 12.IX.1970 (3 exx. TMB); N Reg. Banda-Nkwanta/light collection 13–17., 24–26. IX., 10., 14–19.X.1965 (4 exx. TMB); W Reg. Busua/light collection 6.IV.1966 (3 exx. TMB). – Benin: Ourounonsi Nikki 12.VII.1989 (2 exx. coll. Vondel). – Chad: Moyen Chari

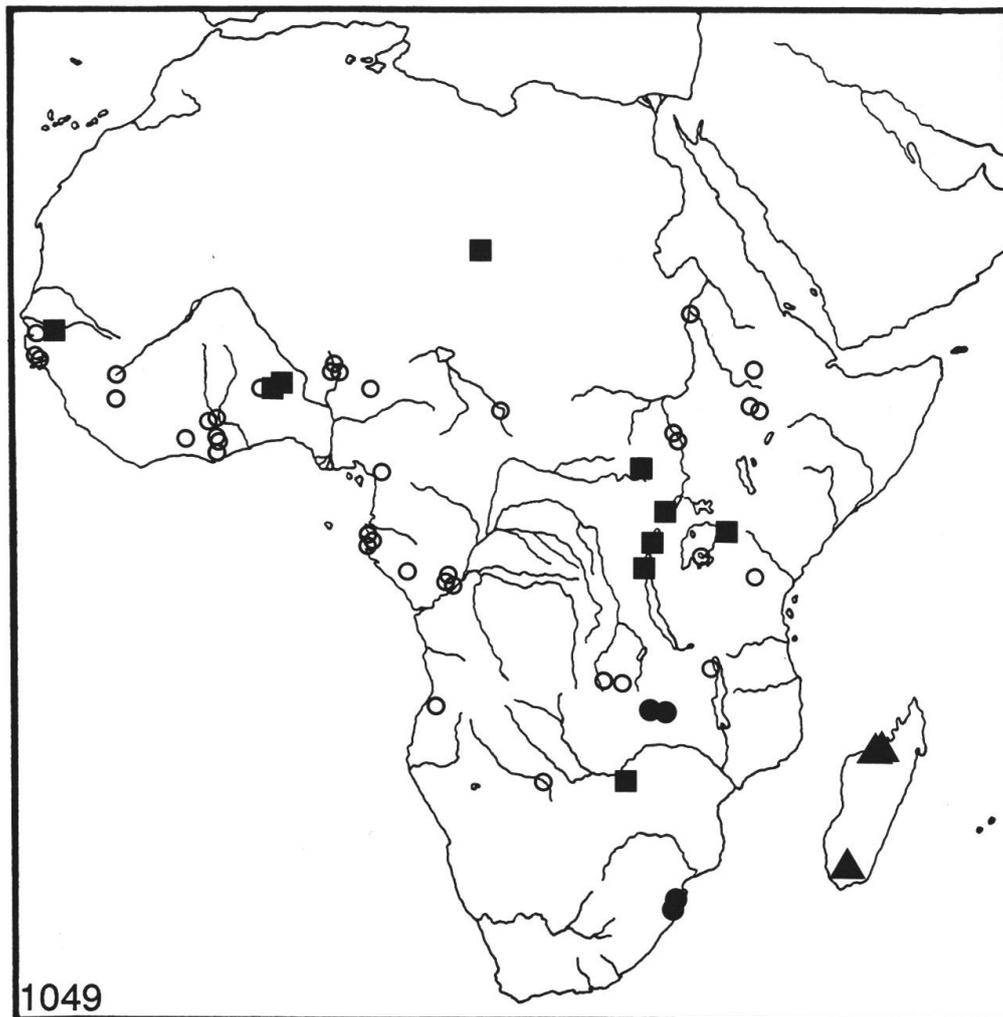


Fig. 1049: Distribution of *Hydrovatus dentatus* (dot), *H. facetus* (square), *H. reticuliceps* (circle) and *H. testudinarius* (triangle).

Ft Archambault Boungoul (Ba-Karé) V.1904 (1 ex. MNHN). – Nigeria: Stream cr. Kaduna rd nr. Zaria 4.IV.1963 (1 ex. AMS); Stream cr. Katsina rd. 37 mi from Funtua 5.IV.1963 (2 exx. AMS); Detritus pond, Jos-Wambe rd. 13.IV.1963 (2 exx. AMS); Samaru/light trap 20.X.1969 (1 ex. TMB). – Sudan: Bor, Bahr el Jebel/ 28.V.–19.VI.1954 (2 exx. BMNH, 1 ex. MZH); Tombe 17.I.1954 (1 ex. AMS); Chartoum (1 ex. coll. Wewalka). – Ethiopia: Bahar Dar 20.X.1968/Lichtfang/*H. liberatus* Guign. det. Wewalka (1 ex. coll. Nilsson); Jimma 1800 m, lum. IV–VIII.1971/*H. liberatus* Guign. det. Nilsson 1990 (2 exx. MAC); Kaffa pr., Gojeb R. 75 km SW Jimma, 1450 m, 18.X.1972 (1 ex. MAC). – Gabon: Riv. Gongoué (1 ex. MNHN); Pt Gentil (2 exx. MNHN). – Congo: Mt Fouari Res. nr Gabon/by lamplight 13.XII.1963 (1 ex. TMB); Brazzaville Orstom park/light trap 23.XII.1963 (1 ex. TMB); Kindamba Méya settl./soil trap in savannah 13.XI.1963 (1 ex. TMB); Rep. Congo V.1984 (1 ex. coll. Rocchi). – Zaire: Elisabethville, lum. (1 ex. MAC). – Tanzania: Usa R., 3900 ft/light trap 15.IX.–31.XII.1965 (2 exx. TMB); Ukerewe Isl. (1 ex. BMNH). – Angola: Cubalde Ganda, rivers de la riv. Cubal 12.55S, 14.30E, 1–15.III.1956 (1 ex. MNHN).

– Malawi: Livingstonia 21.X.1948 (2 exx. AMS). – Namibia: Andara, Okavango 26.I.1975 (1 ex. coll. Wewalka). In all 148 exx.

**Diagnosis:** A well-defined species, characterized particularly by the appearance of the male genitalia: Penis almost evenly broad from base to apex (dorsal aspect); penis tip pointed peculiarly (lateral aspect); parameral hook apically slender, rather weakly developed.

Length of body: 2.28–2.74 mm, breadth: 1.50–1.80 mm. Habitus (Fig. 1050).

**Head:** Dark ferrugineous to pale ferrugineous. Punctation very fine, sparse, indistinct. In shallow frontal depressions and at eyes punctures slightly denser. Submat, microsculptured (meshes anteriorly very strongly developed). Head frontally rounded, medially straightened, between eyes finely margined (Fig. 1051). Above antenna, frontal margin often almost obliterated. Antenna pale ferrugineous, rather slender, not distinctly modified (Fig. 1052).

**Pronotum:** Blackish ferrugineous to ferrugineous. Frontally and basally sometimes with a vague darkened area. Finely and rather sparsely punctate. Punctures somewhat irregularly distributed; basally densest. Rather shiny, microsculptured (meshes fairly distinct). Lateral outline of pronotum almost straight to slightly rounded.

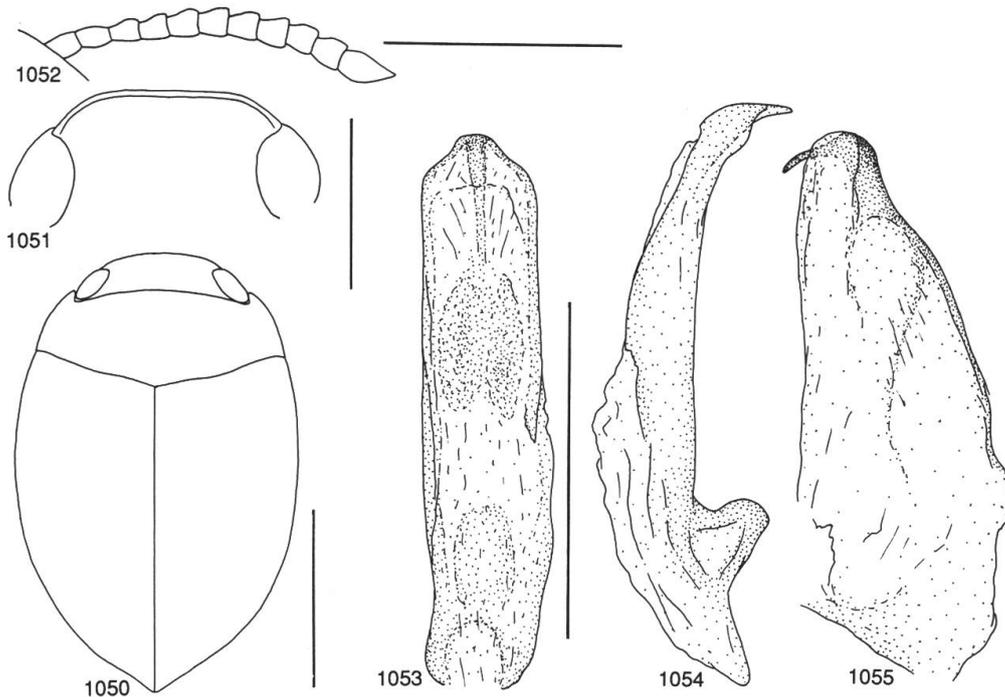
**Elytra:** Blackish ferrugineous to ferrugineous, darkest basally and anteriorly at suture. Distinct colour pattern absent. Rather finely and somewhat sparsely punctate. Laterally and apically punctures distinctly finer (partly almost obliterated). Rows of punctures absent or very indistinct. Irregular lateral row generally discernible. Rather shiny, microsculpture weakly developed, hardly discernible. Epipleura dark ferrugineous to pale ferrugineous, almost impunctate and non-reticulate.

**Ventral side:** Dark to pale ferrugineous. Rather finely to fairly coarsely and somewhat sparsely punctate. Abdomen almost impunctate; only basally with a few punctures. Rather shiny, almost without microsculpture. Abdomen with very fine, laterally indistinct, microsculpture. Stridulatory apparatus quite narrow, consists of numerous minute ridges. Prosternal process laterally finely margined, medial surface almost flat, finely punctate.

**Legs:** Pale ferrugineous to ferrugineous. Pro- and mesotarsus rather slender; claws simple.

**Male genitalia:** Figs 1053–1055.

**Female:** Lacks stridulatory apparatus.



Figs 1050–1055: *Hydrovatus reticuliceps*. – 1050, habitus. – 1051, head, frontal aspect. – 1052, antenna. – 1053, penis, dorsal aspect. – 1054, penis, lateral aspect. – 1055, paramere (basally broken). Horizontal scale 0.5 mm, antenna; left top scale 0.5 mm, head; left bottom scale 1 mm, habitus; right scale 0.4 mm, genitalia.

**Distribution:** Gambia, Guinea Bissau, Guinea, Ivory Coast, Ghana, Benin, Chad, Nigeria, Cameroon, Gabon, Sudan, Ethiopia, Congo, Zaire, Angola, Tanzania, Malawi, Namibia (Fig. 1049). Unverified records are Mozambique (OMER-COOPER, 1956), Rhodesia (GUIGNOT, 1959a), Botswana (BILARDO & ROCCHI, 1987) and Zambia (PEDERZANI, 1988). Under the name *H. compotor* the species is also known from Senegal (GUIGNOT, 1961a).

**Biology:** In Nigeria sampled in streams and once in a detritus pond. In Ethiopia collected at an altitude of 1800 m a.s.l. Often sampled at light collection. From Mozambique the species is reported in a slow flowing stream forming a long marshy pool with *Marsilia* sp. and grass at the edges; with *Lagarosiphon* sp. and a few water lilies at one end (OMER-COOPER, 1956). In Zambia collected in a water reservoir for irrigation (wide ponds with shores mostly covered with grass and aquatic vegetation, partly shadowed by trees and shrubs; bottom soil of clay, sand and vegetal debris (PEDERZANI, 1988)). See also BILARDO & ROCCHI (1987, 1990).

Synonymy: Types of *H. reticuliceps*, *H. liberatus* and *H. compotor* have been examined and found to belong to one species. The oldest name, *H. reticuliceps*, is the valid name of the species.

**Hydrovatus testudinarius** Régimbart

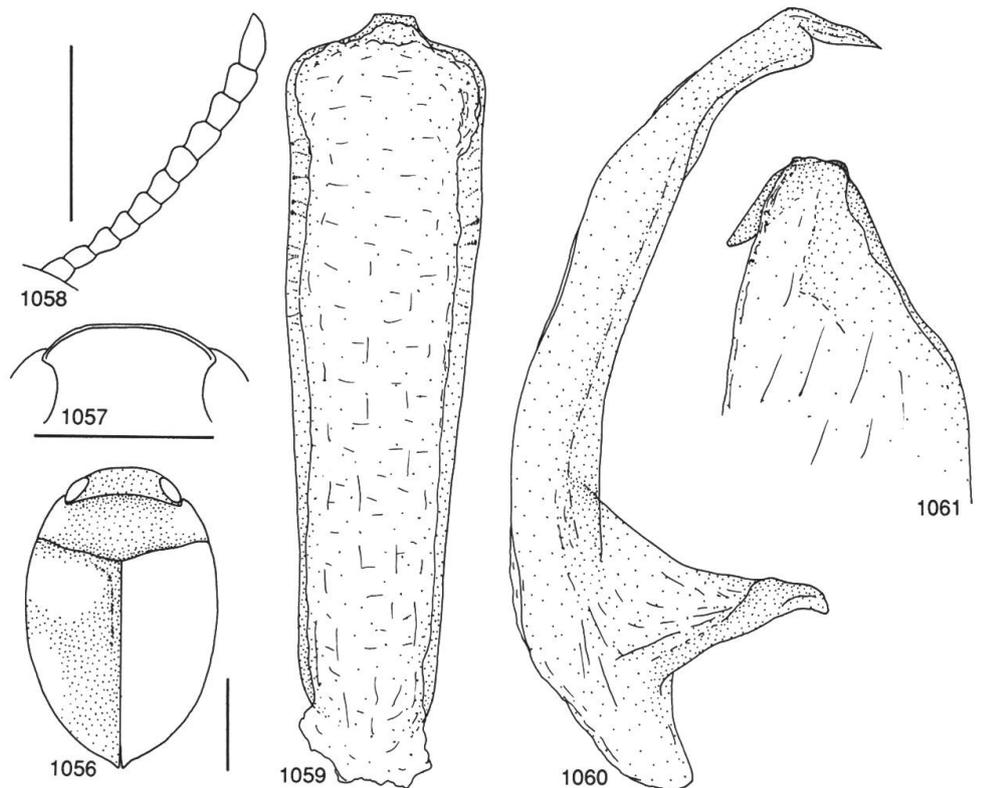
Figs 1049, 1056–1061.

*Hydrovatus testudinarius* RÉGIMBART, 1895b:106 (orig. descr., faun.); 1903:11 (faun.); ZIMMERMANN, 1920a:36 (faun.); GUIGNOT, 1959a:149, 155 (descr., faun.); 1959c:142 (disc., faun.); BRUNEAU DE MIRÉ & LEGROS, 1963:846 (disc., faun.); OMER-COOPER, 1963:173 (disc.; given as *H. testudinarius*)

Type locality: Lac Ambodinandohalo, Madagascar.

Type material studied: Holotype, f: Madagascar P. Cambou 73–94/173 1894/Type/*testudinarius* Rég. (MNHN). Exact type locality given in original description.

Additional material studied: Madagascar: Same data as holotype (1 ex. MNHN); Centre-Sud 1901/*H. testudinarius* Rég. J. Balfour-Browne (1 ex. MNHN); Ambijoroa Tsaramandroso 12.I.1951 (1 ex. AMS); Ankarafantsika (forest res.) nr Marovoay 1.XII.1959 (4 exx. CAS, 2 exx. MZH). In all, 10 exx.



Figs 1056–1061: *Hydrovatus testudinarius*. – 1056, habitus. – 1057, head, frontal aspect. – 1058, male antenna. – 1059, penis, dorsal aspect. – 1060, penis, lateral aspect. – 1061, apical part of paramere. Horizontal scale 1 mm, head; left top scale 0.5 mm, antenna; left bottom scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Diagnosis: Easily identified by its exhibiting the following character-combination: Male without stridulatory apparatus; dorsal side of body with clearly discernible colour pattern; peculiar shape of penis (lateral and dorsal aspects). The location in this species group is particularly indicated by the appearance of the penis, which resembles very much penis of the two preceding species. The absence of a stridulatory apparatus is probably to be regarded as a case of loss of a once-possessed feature.

Length of body: 2.82–3.12 mm, breadth: 1.90–2.00 mm. Habitus (Fig. 1056).

Head: Pale ferrugineous to ferrugineous to brownish. Punctuation fine, rather sparse, irregularly distributed. Narrowly at eyes and in fairly distinct frontal depressions with coarser and denser punctures. Submat, microsculptured (meshes distinct). Head frontally rounded, medially almost straight, between eyes finely margined (Fig. 1057). Antenna pale ferrugineous to pale brown, quite slender (segments 3–11 indistinctly enlarged) (Fig. 1058).

Pronotum: Dark ferrugineous to ferrugineous, anteriorly and posteriorly with vague darkened areas. Laterally pronotum paler; pale ferrugineous. Punctuation fairly coarse, fairly dense, somewhat irregularly distributed. Laterally on disc with transverse impunctate area. Rather shiny, although microsculptured (meshes distinct). Lateral outline of pronotum almost straight to slightly rounded.

Elytra: Dark ferrugineous to brownish, with vague pale ferrugineous to ferrugineous areas. At suture darkened (Fig. 1056). Punctuation rather fine to fairly coarse, somewhat sparse and slightly irregularly distributed. Punctures laterally finer; at epipleura partly almost absent. Rows of punctures indistinct or absent (mixed with adjacent punctures). Only lateral row of punctures clearly visible, although somewhat irregular. Rather shiny, finely microsculptured (meshes weakly developed but discernible over entire elytral surface). Epipleura pale ferrugineous to ferrugineous, with rather few but quite distinct punctures. Shiny, indistinctly microsculptured.

Ventral side: Dark ferrugineous to ferrugineous. Punctuation fairly coarse and sparse. Abdomen, except basally, almost impunctate. Rather shiny, almost without microsculpture. Abdomen with very fine transverse reticulation. Stridulatory apparatus absent. Prosternal process laterally rather finely margined, medial surface almost flat, with fairly distinct punctures.

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

Male genitalia: Figs 1059–1061.

Female: Externally approximately as male. Antenna and pro- and mesotarsus slightly narrower than in male.

Distribution: Madagascar (Fig. 1049).

Biology: Unknown.

### **Hydrovatus galpini** Omer-Cooper

Figs 1062–1067, 1081.

*Hydrovatus galpini* OMER-COOPER, 1957:35 (orig. descr., faun.); 1962:296 (disc.); 1963:168, 171 (descr., faun.); 1965:96 (female descr., faun.); BILARDO & PEDERZANI, 1978:108 (disc.); CURTIS, 1991:186 (faun.).

Type locality: Bandolier Kop, Transvaal, South Africa.

Type material studied: Holotype, m: Type/Transvaal Bandolier Kop Nov. 23.1948 J. O-C./*H. galpini* O-C. Type (BMNH). – Paratype: Paratype/*H. galpini* O-C. m/Transvaal Bandolier Kop Nov.23.1948 J.O-C. (1 ex. AMS).

Additional material studied: Zimbabwe: Big pool, 1 mi. from Lundi 12.XI.1948 (1 ex. AMS); pond 26 mi. from Ft. Victoria on Beit Bridge rd 13.XI.1948 (1 ex. AMS). – Namibia: Windhoek, riverbed 9.VIII.1939 (2 exx. AMS); Windhoek, from dam 7.VIII.1939 (2 exx. AMS); Anabeb ftn, Kaokol. SE 1913Ba 1.X.1987 (2 exx. SMW); Kaoko Otavi ftn SE 1813Bc 2.X.1987 (20 exx. SMW); Kaikans ftn Damaral. SE 2013Ba 9.X.1986 (2 exx. SMW, 1 ex. MZH); Xai-Ais Obob trib. SE 1913Dc 8.X.1986 (2 exx. SMW, 1 ex. MZH); Gai-Ais Damaral. SE 2014Bc 17.X.1986 (1 ex. SMW, 1 ex. MZH). – South Africa: Arniston VII.1946 (2 exx. AMS); OFS Deelfontain Bothaville SE 2726Ba/13–17.XI.1978 (1 ex. BNM). In all 41 exx.

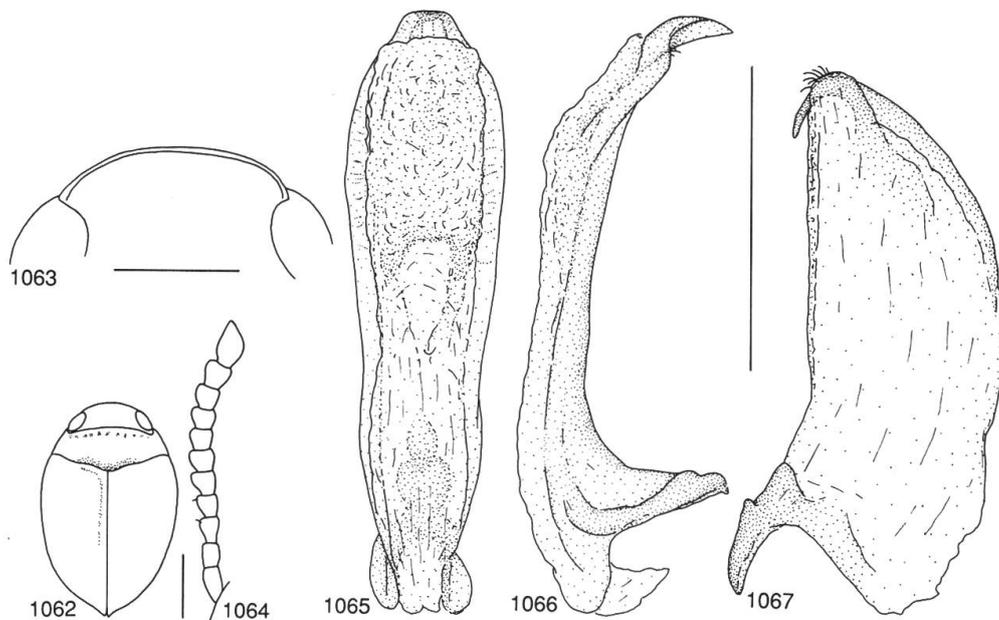
Diagnosis: A well-defined and easily distinguished species, which is characterized by the combination of the following features: Body of medium size; male antenna becoming weakly and gradually broader towards the apex; stridulatory apparatus consisting of approximately 20 clearly discernible ridges; penis becoming gradually broader towards the apex, and close to the apex quite abruptly narrowing (dorsal aspect); the penis in its apical half quite moderately curved downwards (lateral aspect).

Length of body: 2.94–3.16 mm, breadth: 1.90–2.06 mm. Habitus (Fig. 1062).

Head: Pale ferruginous. Very finely, sparsely and partly indistinctly punctate. In rather shallow frontal depressions and narrowly at eyes with slightly denser punctures. Rather shiny, microsculptured (meshes distinct). Head frontally rounded, narrowly margined (Fig. 1063). Antenna pale ferruginous, segments 3–11 slightly enlarged (segments become gradually broader toward apex) (Fig. 1064).

Pronotum: Pale ferrugineous, mediobasally with vague darkened area. Punctuation rather fine, slightly irregularly distributed. Laterally on disc punctuation finer, partly absent. Rather shiny, microsculptured (meshes quite distinct except in limited discal areas; reticulation almost obliterated). Lateral outline of pronotum almost straight to slightly rounded.

Elytra: Pale ferrugineous to pale brown, without distinct colour pattern. Punctuation rather fine, somewhat sparse. Laterally and apically punctures finer and more irregularly distributed. Rows of punctures rather indistinct, but generally at least partly discernible (discal and dorsolateral rows sometimes not visible). Rather shiny, finely microsculptured (meshes rather indistinct, partly hardly visible). Epipleura pale ferrugineous to pale brown, with a few rather fine punctures, slightly mat, finely microsculptured.



Figs 1062–1067: *Hydrovatus galpini*. – 1062, habitus. – 1063, head, frontal aspect. – 1064, antenna. – 1065, penis, dorsal aspect. – 1066, penis, lateral aspect. – 1067, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Ventral side: Ferrugineous to pale ferrugineous. Fairly coarsely and quite densely punctate. Abdomen, except basally, almost impunctate. Rather shiny, without microsculpture. Abdomen, in part with very fine, indistinct microsculpture. Stridulatory apparatus consists of about 20 comparatively big ridges. Prosternal process laterally finely margined, medial surface almost flat, finely punctate.

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

Male genitalia: Figs 1065–1067.

Female: Antenna slender, not distinctly enlarged apically. Stridulatory apparatus absent.

Distribution: Zimbabwe, Namibia, South Africa (Fig. 1081).

Biology: Unknown.

**Hydrovatus heterogynus** Zimmermann      Figs 1068–1073, 1081.

*Hydrovatus heterogynus* ZIMMERMANN, 1926:26 (orig. descr., faun.); GUIGNOT, 1945a:306, 311 (descr., faun.); 1955b:213 (disc.); 1959a:159, 163 (descr., faun.).

Type locality: Daressalam, Tanzania.

Type material studied: Holotype, m: Dar es Salam/Type/Samml. A. Zimmermann/Holotypus *Hydrovatus heterogynus* Zimm. Staatssamml. München (ZSM; male genitalia mounted on separate card). – Paratype, f: Dar es sal./*Hydrovatus heterogynus* n.sp. f Type/*heterogynus* Zimm. n.sp. (1 ex. MNB). Guignot (1959a:163) stated that the type is in ZSM; this can be interpreted as a lectotype designation. In all, 2 exx.

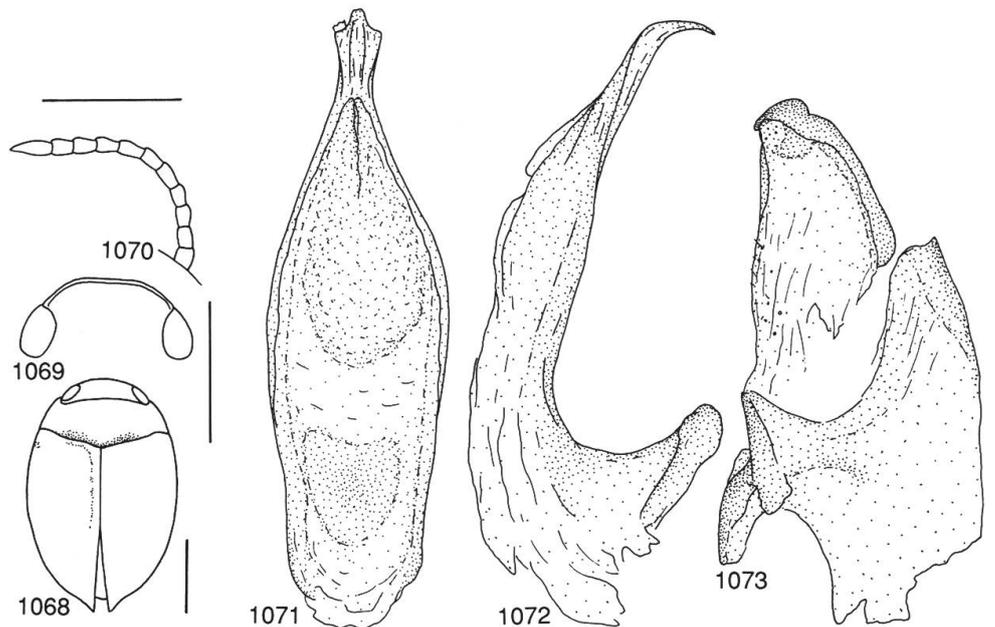
Diagnosis: A well-delimited species, which is conveniently identified by the deviating features in the male genitalia: The penis is broad and narrows strongly towards an almost trifid apex (dorsal view); the apical hook of the paramere is clearly discernible although weakly developed in comparison with most other *Hydrovatus* species. The stridulatory apparatus consists of about 15 shallow striae (non-functional reduced feature?).

Length of body: 3.10 mm, breadth: 1.98–2.04 mm. Habitus (Fig. 1068).

Head: Pale ferrugineous. Finely and sparsely punctate. Submat, distinctly microsculptured (meshes distinct). Head frontally rounded, medially straightened, between eyes narrowly margined. Frontal depressions quite wide and distinct (Fig. 1069). Antenna pale ferrugineous, rather slender (Fig. 1070).

Pronotum: Ferrugineous, laterally pale ferrugineous. Basally with a somewhat vague, darkened area. Rather finely and somewhat sparsely punctate. Laterally on disc with a narrow, almost impunctate area. Rather shiny, distinctly microsculptured (meshes clearly visible). Lateral outline of pronotum slightly rounded.

Elytra: Ferrugineous, laterally pale ferrugineous. Without distinct colour pattern. Rather finely and somewhat sparsely punctate. Laterally and apically in particular, punctures finer. Only a slightly irregular lateral row of punctures discernible. Rather shiny, although



Figs 1068–1073: *Hydrovatus heterogynus*. – 1068, habitus. – 1069, head, frontal aspect. – 1070, antenna. – 1071, penis, dorsal aspect. – 1072, penis, lateral aspect. – 1073, paramere (partly broken). Horizontal scale 0.5 mm, antenna; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 0.5 mm, genitalia.

fairly distinctly microsculptured (meshes clearly discernible). Epipleura pale ferrugineous, sparsely punctate, and rather shiny although distinctly reticulate.

Ventral side: Ferrugineous to pale ferrugineous. Coarsely but somewhat sparsely punctate. Abdomen almost impunctate. Metathorax without microsculpture, metacoxal plates microsculptured (meshes distinct), and abdomen submat; with transversely elongated reticulation. Prosternal process laterally finely margined, medially almost flat. Stridulatory apparatus consists of about 15 shallow striae.

Legs: Pale ferrugineous. Pro- and mesotarsus somewhat enlarged.

Male genitalia: Figs 1071–1073.

Female: Pronotum and elytra submat, distinctly microsculptured.

Distribution: Tanzania (Fig. 1081).

Biology: Unknown.

### ***Hydrovatus impunctatus* Guignot**

Figs 1074–1081.

*Hydrovatus impunctatus* GUIGNOT, 1953a:234, 235 (orig. descr., faun.); 1953c:144 (faun.); 1958b:2 (disc.); 1959a:199, 203 (faun.).

*Hydrovatus cunctator* GUIGNOT, 1958b:2 (orig. descr., faun.). **New synonym.**

*Hydrovatus vagetinctus* GUIGNOT, 1958b:2 (orig. descr., faun.). **New synonym.**

*Hydrovatus pallidus* BILARDO & PEDERZANI, 1979:766 (orig. descr., faun.); BILARDO & ROCCHI, 1987:100 (faun., biol.); 1990:181, 191 (descr., faun.). **New synonym.**

Type locality: Elisabethville, Zaire.

Type material studied: *H. impunctatus*: Holotype, f: Holotypus f/Coll. Mus. Congo Elisabethville, à la lumière XI.50/VI.51 Ch. Seydel/R. Det. D. 6183/Guignot det. 1953 *Hydrovatus impunctatus* Guign. Type f (MAC). – *H. cunctator*: Holotype, m: Holotypus/Holotypus (original type label)/Congo Belge PNG Miss. H. De Saeger 117/gd/14s, 4.VIII.1951 Réc. H. De Saeger 2209/Coll. Mus. Congo (ex coll. I.P.N.C.B.)/F. Guignot det., 1958 *Hydrovatus (Vathydrus) cunctator* n.sp. Paratypes (MAC). – Paratypes: Principally same data as in holotype but: 4.X.1951, 2511 (4 exx. ISN); 19.II.1952, 3137 (1 ex. MAC); 26.VI.1952, 3707 (1 ex. MAC); 30.VI.1952, 3721 (1 ex. MAC); 8.VIII.1952, 3924 (1 ex. MAC); 28.VIII.1952, 3987 (1 ex. MAC). – *H. vagetinctus*: Holotype, m: Congo Belge PNG Miss. H. De Saeger II/gc/13s, 21.VI.1951 Réc. H. De Saeger, 1953/Coll. Mus. Congo (ex coll. I.P.N.C.B.)/F. Guignot det. 1956 *Hydrovatus vagetinctus* n.sp. Type m (MAC). – Paratypes: Principally with same data as holotype but 30.III.1951, 1482 (3 exx. MAC). – *H. pallidus*: Holotype, m: Holotypus/Coll. Mus. Tervuren Cte d'Ivoire: Divo J. Decelle 28.XI.1963/*Hydrovatus* (s.str.) *pallidus* Bil. & Ped., det. A. Bilardo (MAC). – Paratype: Same data as holotype (1 ex. MAC).

Additional material studied: Ivory Coast: Divo (1 ex. MAC). – Ghana: Ashanti reg. Kwadaso, agric. st. 6.42N–1.39W/light trap 26.II.1969 (15 exx. TMP, 5 exx. MZH); Kumasi 330 m, N6.43–W1.36/15.IX.1967 at light (4 exx. TMP, 1 ex. MZH). – Nigeria: Ibadan, at light 27.XI.1955 (2 exx. BMNH, 1 ex. MZH). – Zaire: Elisabethville (1 ex. MAC); PNG (1 ex. MAC). In all, 48 exx.

Diagnosis: *H. impunctatus* is characterized particularly by the shape of the penis: Quite broad and almost parallel-sided, except close to the apex where it narrows abruptly to a slender, quite long and strongly curved tip (dorsal and lateral aspects). Other features useful for identification are: Body size moderate; frontal margin of head at eyes reduced; stridulatory apparatus consisting of numerous minute striae.

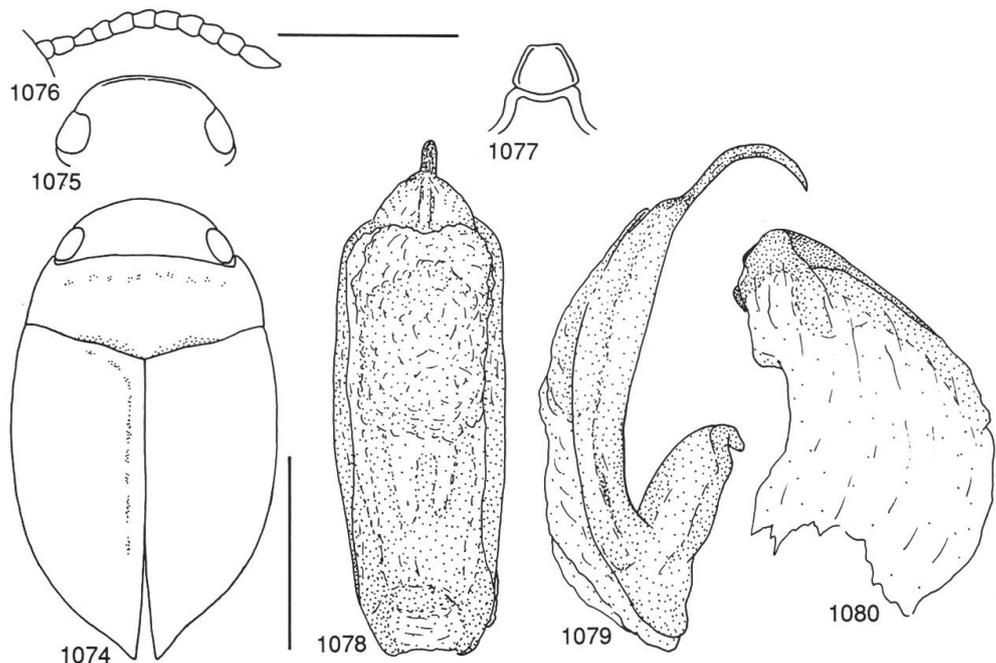
Length of body: 1.92–2.28 mm, breadth: 1.20–1.44 mm. Habitus (Fig. 1074).

Head: Pale ferruginous to ferruginous. Very finely and sparsely punctate. Submat, microsculptured (meshes distinct). Frontal depressions shallow. Head frontally rounded, medially somewhat straightened and narrowly and finely margined; margin reduced at eyes. often broken for a short distance medially (Fig. 1075). Antenna pale ferruginous, rather slender (Fig. 1076).

Pronotum: Pale ferruginous to pale brown, mediobasally with narrow vague, slightly darkened area. Finely and somewhat sparsely punctate. Laterally on disc punctation still finer and sparser. Rather shiny, although finely microsculptured (meshes clearly discernible). Lateral outline of pronotum slightly rounded.

Elytra: Pale brown, without distinct colour pattern. At suture and base with minute, vague darkened areas (Fig. 1074). With fine to very

fine, scattered punctures. Laterally punctures almost absent. Discal row of punctures at elytral base clearly visible; posteriorly indistinct. Dorsolateral and lateral row of punctures very fine, rather irregular and indistinct. Shiny, very finely and indistinctly microsculptured (lateral meshes hardly discernible). Epipleura pale ferrugineous, finely and sparsely punctate, shiny and not microsculptured.



Figs 1074–1080: *Hydrovatus impunctatus*. – 1074, habitus. – 1075, head, frontal aspect. – 1076, antenna. – 1077, prosternal process. – 1078, penis, dorsal aspect. – 1079, penis, lateral aspect. – 1080, apical part of paramere. Horizontal scale 0.5 mm, antenna and process; left scale 1 mm, habitus and head; right scale 0.5 mm, genitalia.

Ventral side: Pale ferrugineous. Finely and sparsely punctate. Abdomen almost impunctate; laterally at base with fine punctures. Rather shiny. Abdomen with very fine microsculpture. Stridulatory apparatus with numerous minute striae. Prosternal process laterally margined and frontally truncate (Fig. 1077).

Legs: Pale ferrugineous. Pro- and mesotarsus somewhat enlarged.

Male genitalia: Figs 1078–1080.

Female: Externally approximately as male but lacks stridulatory apparatus.

Distribution: Ivory Coast, Ghana, Nigeria, Zaire (Fig. 1081). The species is additionally reported under the name *H. pallidus* from Botswana (BILARDO & ROCCHI, 1987).

Biology: Sometimes sampled at light collection. See also BILARDO & ROCCHI (1987).

Synonymy: I have examined the holotypes of the four species involved: *H. impunctatus*, *H. cunctator*, *H. vagetinctus* and *H. pallidus*. Although the holotype of *H. impunctatus*, is a female I am convinced that it is conspecific with the three other taxa, the holotypes of which are males (the shape of the penis is very characteristic and similar in these three species). The oldest available, name *H. impunctatus*, is thus the valid name of the species.

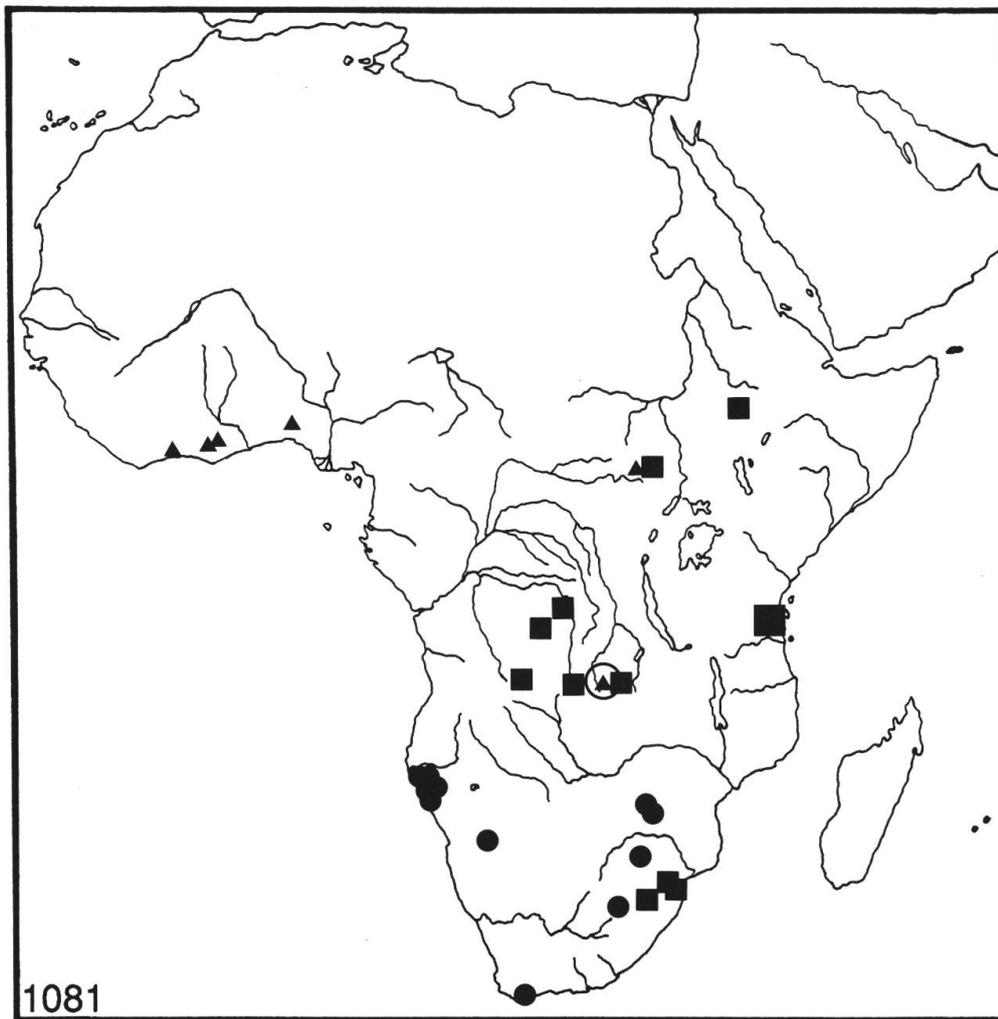


Fig. 1081: Distribution of *Hydrovatus galpini* (dot), *H. heterogynus* (large square), *H. impunctatus* (triangle), *H. bredoi* (small square) and *H. seydeli* (circle).

**Hydrovatus bredoi** Gschwendtner

Figs 1081–1087.

*Hydrovatus bredoi* GSCHWENDTNER, 1943:421 (orig. descr., faun.); GUIGNOT, 1953a:234 (faun.); 1953c:146 (disc.); 1955c:183, 185 (disc.); 1959a:134, 136 (descr., faun.); OMER-COOPER, 1965:94 (descr., faun.).

*Hydrovatus differens* OMER-COOPER, 1957:39 (orig. descr., faun.); 1958:59 (faun., biol.); 1965:94 (syn. *H. bredoi*).

Type locality: Elisabethville, Zaire.

Type material studied: *H. bredoi*: Holotype, f: Holotypus/Coll. Mus. Congo Elisabethville –II.1940 H.J. Bredo/Type f Gschw./R. Det. H. 4559/*Hydrovatus bredoi* Gschw. det. Gschwendtner (MAC). – *H. differens*: Holotype, m: m/Type/Transvaal Damwaal 29.II.1948 J.O.C./*Hydrovatus* sp. J. Balfour-Browne det./*H. differens* O.-C. type (BMNH). – Paratype: Principally with same data as holotype but 23.II.1948 (1 ex. BMNH).

Additional material studied: Zaire: Elisabethville, à la lumière XI. 1950/VI. 1951 (2 exx. MAC); PNG 27.II. 1952 (1 ex. MAC); PNG 28.VIII.1952 (1 ex. MAC); Luluabourg 13.IV.1923 (2 exx. ZSM). – Ethiopia: Kaffa Pr. Jimma 1720 m, 23–29.IV.1972 (16 exx. MAC, 3 exx. MZH). – Angola: Etang du Canzar 7.38S, 21.38E, 12.VII.1957 (2 exx. MNHN, 2 exx. MZH); Riv. Lac Calundo 4.I.1955 (2 exx. MNHN). – Zambia: Mwinilunga distr. Ikelenge nr Kalene, Zambezi rapids/3.V.1963 M.V. light trap (3 exx. BMNH, 1 ex. MZH). – Swaziland: Mbabane 5.XII.1948/*H. differens* O.-C. det. Omer-Cooper (10 exx. AMS, 1 ex. TMP); 9 mi. from Mbabane 6.XII. 1948 (1 ex. AMS). In all, 46 exx.

Diagnosis: A distinct species, which can be immediately determined after examination of the peculiar male genitalia: The penis ends abruptly (dorsal aspect); the well sclerotized apical part of the paramere is long and almost straight. Not to be confused with any other *Hydrovatus* species.

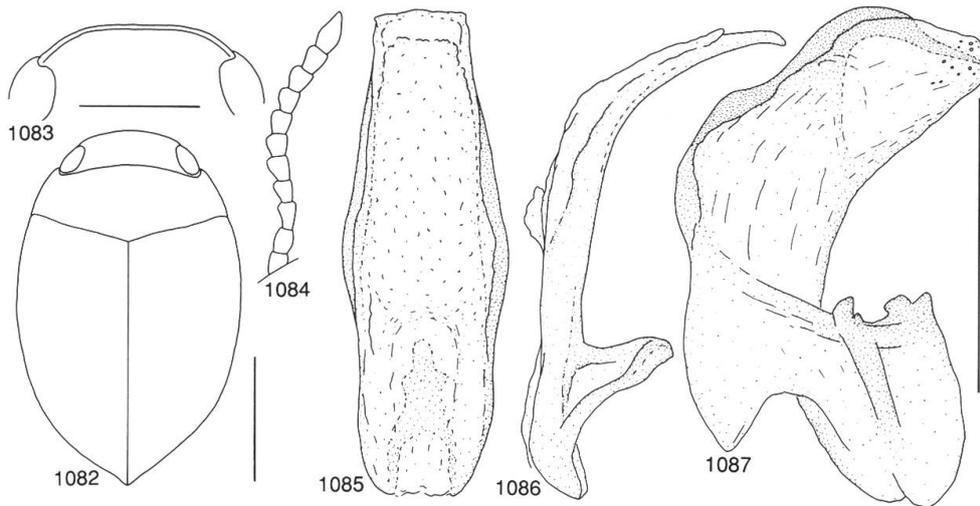
Length of body: 2.60–2.90 mm, breadth: 1.64–1.82 mm. Habitus (Fig. 1082).

Head: Blackish to dark ferrugineous. Very sparsely and indistinctly punctate. Narrowly at eyes and in shallow frontal depressions with slightly more distinct punctures. Rather shiny, although microsculptured (frontal meshes particularly distinct). Head frontally rounded, medially straightened. Between eyes narrowly margined (Fig. 1083). Antenna pale brown to pale ferrugineous, quite slender (Fig. 1084).

Pronotum: Blackish ferrugineous to dark ferrugineous. Quite finely and somewhat sparsely punctate. Laterally punctures slightly irregular. Shiny, very finely microsculptured (meshes hexagonal). Lateral outline of pronotum slightly rounded.

Elytra: Blackish ferrugineous to ferrugineous. Elytra darkest at suture and palest laterally. Rather finely and sparsely punctate.

Punctures laterally finer and sparse (in part, hardly visible). Discal row of punctures fairly distinct. Dorsolateral row of punctures, in part, sparser. Lateral row of punctures rather sparse but still distinct. Shiny, very finely microsculptured. Lateral meshes of microsculpture indistinct. Epipleura with a few somewhat indistinct punctures, shiny, almost without microsculpture.



Figs 1082–1087: *Hydrovatus bredoi*. – 1082, habitus. – 1083, head, frontal aspect. – 1084, antenna. – 1085, penis, dorsal aspect. – 1086, penis, lateral aspect. – 1087, paramere. Horizontal scale 0.5 mm, head and antenna; left scale 1 mm, habitus; right scale 0.5 mm, genitalia.

Ventral side: Dark ferruginous to ferruginous. Rather finely to finely and somewhat sparsely punctate. Abdomen almost impunctate. Shiny, without microsculpture. Abdomen almost totally with very fine, in part, hardly visible microsculpture. Prosternal process laterally narrowly margined, medially slightly convex. Stridulatory apparatus consists of a little over 20 distinct short striae.

Legs: Ferruginous. Pro- and mesotarsus rather slender.

Male genitalia: Figs 1085–1087.

Female: As male but lacks stridulatory apparatus.

Distribution: Zaire, Ethiopia, Angola, Zambia, Swaziland, South Africa (Fig. 1081).

Biology: In Ethiopia sampled at an altitude of 1720 m a.s.l. Often sampled at light collection. In Swaziland reported from spring waters with red mud probably due to iron bacteria, at an approximate altitude of 4000 feet a.s.l.

Synonymy: Holotypes of *H. differens* and *H. bredoi* have been examined. I agree with the synonymization of the two species proposed by OMER-COOPER (1965). The older name, *H. bredoi*, is the valid name of the species.

**Hydrovatus seydeli** Guignot

Figs 1081, 1088–1090.

*Hydrovatus seydeli* GUIGNOT, 1953c:144, 145 (orig. descr., faun.); 1955c:184 (descr., disc.); 1959a:134, 136 (descr., faun.).

Type locality: Elisabethville, Zaire.

Type material studied: Holotype, f. Holotypus f/Coll. Mus. Congo Elisabethville (lumière) XI.1951–II.1952 Ch. Seydel/Type/R. Det. U. 6226/Dr. F. Guignot det. 1953 *Hydrovatus seydeli* Guign. Type f (MAC). In all 1 ex.

Diagnosis: Because I have examined only one specimen (the female holotype) I am unable to present any diagnostically useful characters for *H. seydeli*. I simply refer to the description below and Guignot's papers listed above. According to GUIGNOT (1955c), it is close to *H. bredoi*, *H. compotor* = *H. reticuliceps*, and *H. collega*, the latter of which in this work is placed in species group 9. Combination of males to female holotype is problematic – the risk of misinterpretation is great.

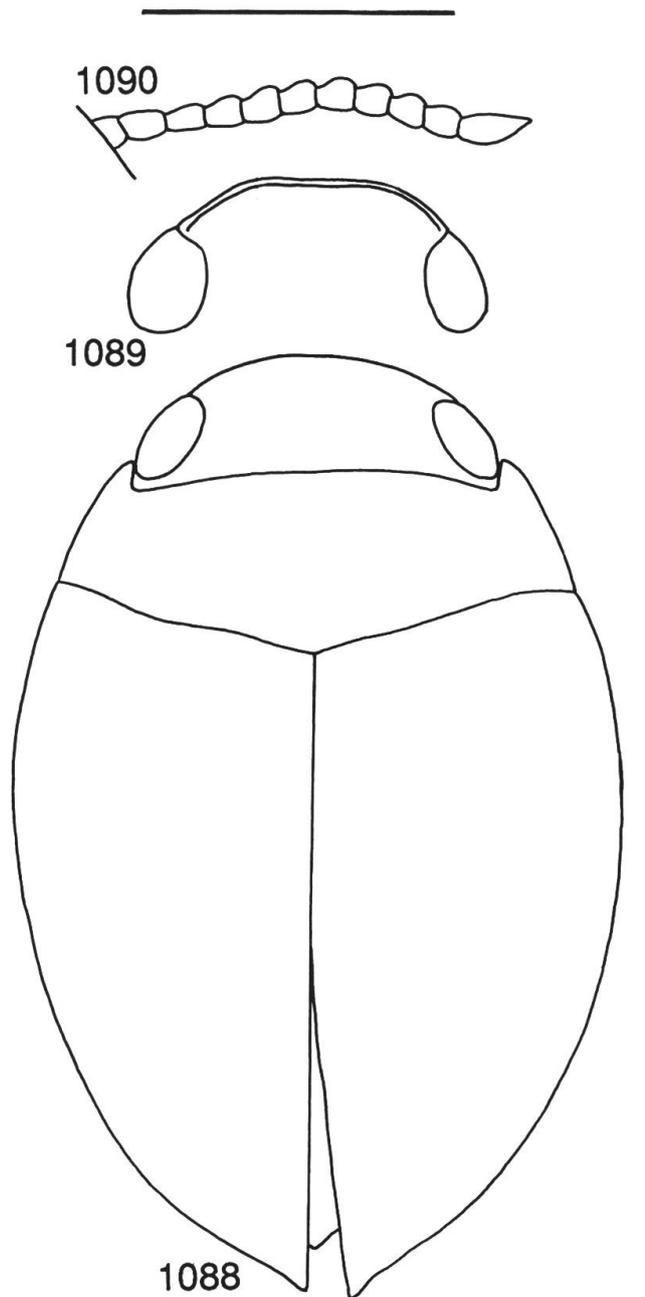
Description: based on female.

Length of body: 2.66 mm, breadth: 1.72 mm. Habitus (Fig. 1088).

Head: Ferruginous. Finely, sparsely and somewhat irregularly punctate. At pronotum, punctation almost absent. Rather shiny, although microsculptured (meshes quite distinct). Head medially straightened. Between eyes narrowly margined (Fig. 1089). Frontal depressions quite shallow. Antenna pale ferruginous, quite slender (Fig. 1090).

Pronotum: Ferruginous, laterally pronotum becomes gradually slightly paler; at sides pale ferruginous. Finely and irregularly punctate. Discally and laterally with sparser punctation. Shiny, although microsculptured (meshes generally quite distinct; laterally partly reduced). Lateral outline of pronotum rounded.

Elytra: Ferruginous to pale ferruginous, without distinct colour pattern. Finely and quite sparsely punctate. Laterally and apically punctures become still finer and sparser; in part, punctures totally absent. Discal row of punctures clearly discernible from base to near apex of elytron. Dorsolateral row indicated by a few fine punctures. Lateral row of punctures quite distinct. Shiny, very finely microsculptured. Meshes hardly visible and often almost totally obliterated. Epipleura pale ferruginous, almost impunctate and shiny, very indistinctly microsculptured.



Figs 1088–1090: *Hydrovatus seydeli*, female. – 1088, habitus. – 1089, head, frontal aspect. – 1090, antenna. Horizontal scale 0.5 mm, antenna; vertical scale 1 mm, habitus and head.

Ventral side: Pale ferrugineous to ferrugineous. Coarsely to rather finely and sparsely punctate. Abdomen almost impunctate. Shiny, with very indistinct and scattered reticulation. Prosternal process laterally distinctly margined, medial surface slightly convex.

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

Male: Vide GUIGNOT (1955c, 1959a). Mis-combination of sexes cannot be excluded!

Distribution: Zaire (Fig. 1081).

Biology: Practically unknown. The holotype was captured at light collection.

### 6.5.12. Species group 12 (sp.gr. *villiersi*)

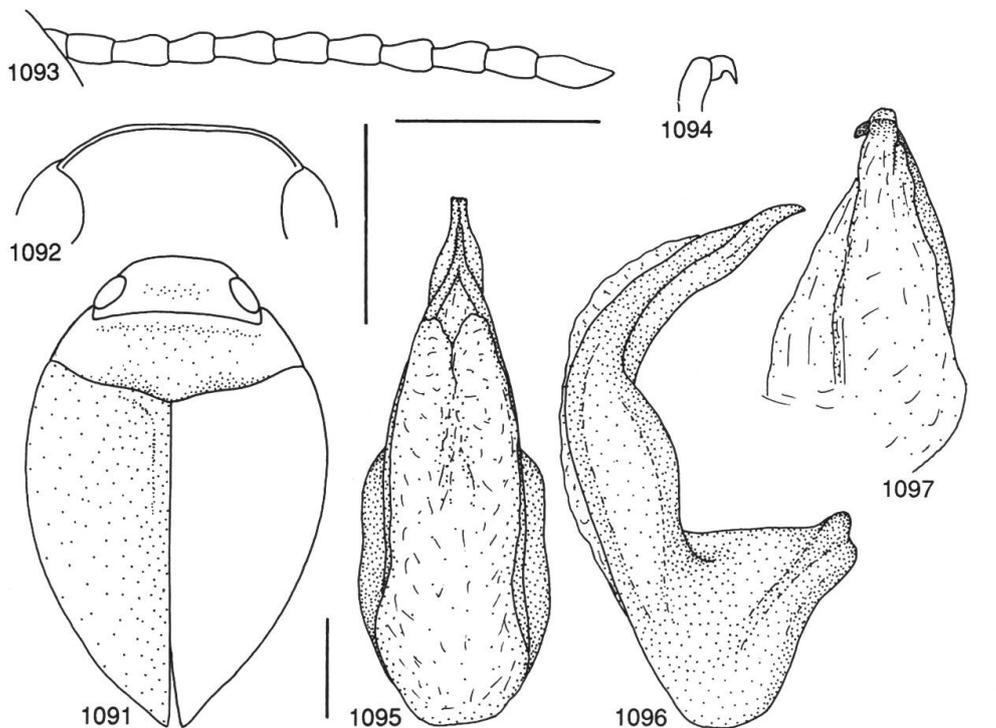
***Hydrovatus vulpinus* n.sp.**

Figs 1091–1097, 1112.

Type locality: Majinji Pan, Nuanetsi River, Zimbabwe.

Type material: Holotype, m: Type/S. Rhodesia Nuanetsi River, Majinji Pan IV–V.1961/M–V light trap/Rhodesian Schoolboys Expedition B.M. 1961–707/*Hydrovatus pyrrius* Type! J. Balfour-Browne det. XI. 1961 (BMNH). – Paratypes: Same as holotype (2 exx. BMNH, 1 ex. MZH). In all, 4 exx.

Derivation of name: The manuscript-name *H. pyrrius*, proposed by J. Balfour-Browne, is already occupied. The species is thus named *H. vulpinus*.



Figs 1091–1097: *Hydrovatus vulpinus*. – 1091, habitus. – 1092, head, frontal aspect. – 1093, antenna. – 1094, male protarsal claw. – 1095, penis, dorsal aspect. – 1096, penis, lateral aspect. – 1097, apical part of paramere. Horizontal scale 0.5 mm, antenna and claw; left top scale 1 mm, head; left bottom scale 1 mm, habitus; right scale 1 mm, genitalia.