Koleopterologische Rundschau	72	15 - 111	Wien, Juni 2002

Herophydrus SHARP: cladistic analysis, taxonomic revision of the African species, and world check list (Coleoptera: Dytiscidae)

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Abstract

The taxonomy and systematics of the genus *Herophydrus* SHARP, 1882 in Africa are reviewed. At present, 39 species are recognized, of which three are non-African and one, *H. musicus* (KLUG), occurs both in Africa and outside the continent.

A cladistic analysis of 47 taxa, including all available *Herophydrus* species, was undertaken. In total, 31 morphological characters were considered. The consensus tree produced suggests that *Herophydrus* is paraphyletic as *Heroceras descarpentriesi* (PESCHET), and the two species of *Hygrotus* (s.str.) are nested within *Herophydrus*. The result strongly indicates that the current generic classification of Hygrotini (or Hydroporini) needs further revision.

All African species are described and male genitalia illustrated. A key to the African species (males), notes on distribution and ecology are given. Six new species are described: *H. gigantoides* sp.n. (Democratic Republic of the Congo), *H. endroedyi* sp.n. (South Africa), *H. nigrescens* sp.n. (South Africa), *H. wewalkai* sp.n. (Angola, Namibia, South Africa), *H. bilardoi* sp.n. (Botswana) and *H. natator* sp.n. (Angola, Namibia, Botswana).

The following new synonymies are proposed: *H. picturatus* RÉGIMBART, 1903 = *H. assimilis* RÉGIMBART, 1895; *H. erythraeus* RÉGIMBART, 1904 = *H. nodieri* (RÉGIMBART, 1895); *H. bifasciatus* GSCHWENDTNER, 1932 = *H. gigas* RÉGIMBART, 1895; *H. wahlbergi* OMER-COOPER, 1956 = *H. ovalis* GSCHWENDTNER, 1932; *H. catersi* GUIGNOT, 1955 = *H. kalaharii* GSCHWENDTNER, 1935; *H. sobrinus* OMER-COOPER, 1931 and *H. cooperi* GSCHWENDTNER, 1938 = *H. pallidus* OMER-COOPER, 1931 (valid name); *H. biseriatus* RÉGIMBART, 1895 and *H. poecilus* RÉGIMBART, 1895 = *H. spadiceus* SHARP, 1882; *H. ruficeps* (BOHEMAN, 1848) and *H. mutatus* (GEMMINGER & HAROLD, 1868) = *H. guineensis* (AUBÉ, 1838); *H. oscillator* SHARP, 1882, *H. coelamboides* RÉGIMBART, 1895 and *H. labiosus* GUIGNOT, 1950 = *H. inquinatus* (BOHEMAN, 1848); *H. paradoxus* GSCHWENDTNER, 1932 = *H. rohani* PESCHET, 1924.

Lectotypes are designated for *Coelambus interruptus* SHARP, *C. muticus* SHARP, *Herophydrus biseriatus* RÉGIMBART, *H. capensis* RÉGIMBART, *H. catersi* GUIGNOT, *H. confusus* RÉGIMBART, *H. cooperi* GSCHWENDTNER, *H. expressus* GSCHWENDTNER, *H. heros* SHARP, *H. hyphoporoides* RÉGIMBART, *H. ignoratus* GSCHWENDTNER, *H. kalaharii* GSCHWENDTNER, *H. mutatus* GEMMINGER & HAROLD, *H. obscurus* SHARP, *H. oscillator* SHARP, *H. pallidus* OMER-COOPER, *H. poecilus* RÉGIMBART, *H. ritsemae* RÉGIMBART, *H. rohani* PESCHET, *H. sjostedti* RÉGIMBART, *H. sobrinus* OMER-COOPER, *H. spadiceus* SHARP, *H. variabilis* RÉGIMBART, *Hydroporus musicus* KLUG, *H. ruficeps* BOHEMAN, and *Hyphidrus* [!] *guineensis* AUBÉ.

The subspecies *H. gigas discrepatus* GUIGNOT, 1954 is now ranked as a separate species. The species status of *H. ignoratus* GSCHWENDTNER, 1933 and *H. kalaharii* GSCHWENDTNER, 1935 is restored.

Key words: Coleoptera, Dytiscidae, *Herophydrus*, Africa, revision, cladistic analysis, new species, new synonymies, lectotype designation.

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* Contribution to the study of Dytiscidae 75

Introduction

This joint-work is the first to deal with the tribe Hygrotini, traditionally included in Hydroporini (s.l.), in a long series of papers by the senior author on the systematics, taxonomy and faunistics of Hydroporinae (Dytiscidae). Among the tribes of Hydroporinae recognized, the Hydroporini has proved to be one of the most difficult to define (e.g. NILSSON & ANGUS 1992, NILSSON & HOLMEN 1995). Besides problems in understanding the phylogeny and the delimitation of higher systematic categories, considerable uncertainty in the definition of many hydroporine genera exists. The monophyly of many genera remains to be tested as it seems that at least some of them are defined by sets of diagnostic characters rather than apomorphies. The genus *Herophydrus*, introduced by SHARP (1882), is a good example of this problematic situation. A brief historical review on the taxonomy and systematics of *Herophydrus* is given below.

The main aims of the present work are:

1. To provide a complete taxonomic study of the genus *Herophydrus* in Africa, with diagnoses and descriptions of all recognized taxa and a key for their determination.

2. To analyse *Herophydrus* cladistically to establish a classification based on monophyletic groups.

Material and methods

The study material, consisting of about 3500 adult specimens, is deposited in a number of institutions and private collections. These are referred to in the text by the following abbreviations:

AMS	Albany Museum, Grahamstown, South Africa
BMNH	The Natural History Museum, London, England
CHB	Coll. Hendrich, Berlin, Germany
CNU	Coll. Nilsson, Umeå, Sweden
CRF	Coll. Rocchi, Florence, Italy
CRW	Coll. Reintjes, Würzburg, Germany
CWV	Coll. Wewalka, Vienna, Austria
IFAN	Institut Fondamental d'Afrique Noire, Dakar, Senegal
ISN	Institut Royal des Sciences Naturelles, Bruxelles, Belgium
ITA	Instituut voor Taxonomische Zoölogie, Amsterdam, Netherlands
LUZ	Zoological Museum, Lund, Sweden
MAC	Musée Royal de l'Afrique Centrale, Tervuren, Belgium
MCG	Museo Civico di Storia Naturalia "Giacomo Doria", Genova, Italy
MNB	Museum für Naturkunde der Humboldt Universität, Berlin, Germany
MNHN	Museum national d'Histoire naturelle, Paris, France
MZF	Museo Zoologica della Specola, Florence, Italy
MZH	Zoological Museum, Helsingfors, Finland
NMW	Naturhistorisches Museum, Vienna, Austria
OLL	Oberösterreichisches Landesmuseum, Linz, Austria
RMS	Naturhistoriska Riksmuseet, Stockholm, Sweden
RNHL	Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands
SAM	South African Museum, Cape Town, South Africa
TMP	Transvaal Museum, Pretoria, South Africa
USNM	Smithsonian Institution, Washington, D.C., USA
ZFMB	Zoologisches Museum Alexander Koenig, Bonn, Germany

The examined material is almost entirely preserved as dry, pinned specimens. For study of the male genitalia, which requires specimen dissection, we have used the procedure described in detail in BISTRÖM (1997). Briefly, the specimen under examination is softened in hot water and

then dissected under a binocular (Wild M5). When necessary, the genitalia have been treated with 10% KOH solution. Illustrations of external morphological features and genitalia of large species have been drawn using the same microscope with a camera lucida mounted on it. Genitalia of smaller species have been illustrated with a light microscope (Wild M11) and a suitable camera lucida. The final versions of the illustrations have been prepared by scanning the drafts onto a computer. The figures were further processed with the Corel PHOTO-PAINT 9 and Corel DRAW 9 computer programs. The distribution maps were also produced using the latter program.

In the section Classification and descriptions, each taxon is provided with a list of references. The reader is informed of the general contents in cited literature by abbreviations in brackets:

biol.	information on ecology and living habits
cat.	latest world catalogue (NILSSON 2001)
descr.	information on morphology and anatomy
desig.	designation of type
disc.	status (often taxonomic) discussed
faun.	information on distribution and geography
list.	check lists, synonymy lists
orig. descr.	original description of taxon included

The matrix prepared for parsimony analyses includes 47 taxa and 31 characters, all treated as non-additive. The trees were rooted with *Laccornis oblongus* (STEPHENS, 1835). Other non-*Herophydrus* species included were: *Chostonectes gigas* (BOHEMAN, 1858), *Heroceras descarpentriesi* (PESCHET, 1923), *Hygrotus* (*Coelambus*) *impressopunctatus* (SCHALLER, 1783), *H.* (*C.*) *marklini* (GYLLENHAL, 1813), *H.* (*H.*) *decoratus* (GYLLENHAL, 1810), *H.* (*H.*) *inaequalis* (FABRICIUS, 1776), *Hyphoporus bengalensis* SEVERIN, 1890, and *H. solieri* (AUBÉ, 1838). The genus *Laccornis* GOZIS (Laccornini) was used to root the tree as it has been suggested as the sister-group of all other Hydroporinae (WOLFE 1985, MILLER 2001). The other species were chosen as to represent the genera assigned to the tribe Hygrotini by NILSSON & HOLMEN (1995), except *Pseudhydrovatus* PESCHET, which was recently transferred to the tribe Hydrovatini (BISTRÖM 2002). The Hygrotini genera share an epipleuron with a humeral carina. As this character is also present within some Australian genera of Hydroporini, including *Chostonectes,* with the exception of the species *C. gigas,* we examined it to check its position relative to the Hygrotini.

The character matrix (Table 1) was analysed in NONA 2.0 (GOLOBOFF 1998) using the following sequence of commands: hold5000; hold/100; mult*100 (swapping of trees not recommended). The shortest trees found were saved with the command ksv*, collapsing all unsupported branches. The procedure of closing the program and re-reading the tree file into it, applying the commando 'best', and saving the remaining trees with ksv* was repeated twice, to filter out trees with unsupported nodes ('amb-', collapsing nodes if minimum length is zero). The resulting tree file was opened in WINCLADA 09.99i (Beta) (NIXON 1999), in which the remaining suboptimal trees were deleted, and a strict consensus of the remaining trees was constructed. This program was also used to optimize characters on one of the shortest trees, chosen to be as congruent with current classification as possible. Bremer support of individual clades was calculated in NONA, saving trees up to 6 steps longer. As an alternative strategy, tree search was also performed in the program Hennig86 (FARRIS 1988), followed by successive weighting to reduce the ambiguity of the data set and decrease the number of shortest trees. However, this procedure in fact increased the number of shortest trees drastically.

All lectotype designations in this article are made in order to stabilize nomenclature.

List of characters

Head

1. Head, anterior margin: (0) without bead; (1) bead medially broken, gap wider than bead on one side; (2) bead medially broken, gap narrower than bead on one side; (3) bead complete.

2. Head dorsally, colour of posterior of eyes: (0) infuscate; (1) not darker than rest of head.

3. Head dorsally, colour near anterior margin: (0) pale; (1) infuscate.

4. Head posterior to eyes, dorsal punctation: (0) distinct; (1) absent or indistinct.

5. Head, dorsally near anterior margin: (0) not impressed; (1) impressed.

6. Labrum: (0) not visible from above; (1) visible from above with head in horizontal position.

7. Antennomere 4, relative length: (0) subequal to length of antennomeres 3 and 5; (1) distinctly shorter than antennomeres 3 and/or 5.

Pronotum

8. Pronotum, medially: (0) without longitudinal stria; (1) with longitudinal stria.

Elytron

9. Elytron, colour pattern: (0) not vittate; (1) vittate.

10. Elytron, shape of ventral ridge: (0) not markedly elevated posteriad; (1) evenly elevated posteriad to abrupt end; (2) ligulate, i.e. posterior part abruptly elevated before slope. Note: This character is somewhat gradual and e.g. *Hygrotus inaequalis* is near the limit between states 1 and 2. We have coded it as 2, but coding it as 1 does not change results of phylogenetic analysis.

11. Elytron, discal row of punctures: (0) visible; (1) not visible.

12. Epipleuron, humeral angle: (0) without transverse carina; (1) with transverse carina.

Ventral side

13. Metasternum, punctation: (0) with large submedian area impunctate; (1) even.

14. Metasternal/metacoxal suture medially: (0) distinct; (1) indistinct; (2) border absent.

15. Metacoxal processes: (0) not produced posteriad; (1) produced posteriad.

16. Metacoxae, intralinear space: (0) flat; (1) with longitudinal elevations.

17. Metacoxae, width of intralinear space: (0) lines subparallel and space narrow; (1) lines diverging anteriad, space at level of anterior margin of trochanter wider than nearest distance from line to metafemur when leg held at right angle; (2) lines diverging anteriad, space at level of anterior margin of trochanter subequal to nearest distance from line to metafemur.

Legs

18. Male protarsus, width: (0) even; (1) enlarged, narrows anteriorly.

19. Protarsomere 5, length: (0) subequal to protarsomere 3; (1) distinctly shorter than protarsomere 3.

20. Metatarsomeres 1-5, anterior face: (0) impunctate; (1) punctate.

21. Metafemur, longitudinal row of punctures on ventral face: (0) present; (1) absent.

22. Male metafemur, posterior extension: (0) absent; (1) present.

23. Metatrochanter, shape: (0) not enlarged and not pointed; (1) enlarged and apically pointed.

Male genitalia

24. Paramere shape apically: (0) narrow, pointed; (1) broad, rounded.

25. Penis, shape: (0) non-twisted; (1) slightly twisted rightwards.

26. Penis, apical half: (0) laterally not flattened; (1) narrow, flattened.

27. Penis, apical part: (0) bilobed; (1) laterally pointed; (2) laterally and apically pointed; (3) rounded or apically pointed.

28. Penis, apical part: (0) not capped; (1) capped.

29. Penis, laterobasally: (0) not lobed; (1) lobed.

30. Paramere, shape: (0) 2-3 x as long as wide; (1) about 4 x as long as wide.

31. Paramere, apicolateral setation: (0) distinct; (1) few scattered setae.

Table 1: Distribution of character states among 38 species of *Herophydrus* and nine outgroup species.

	1		2		3	
	12345	67890	12345	67890	12345	67890 1
Laccornis oblongus	00000	00000	00000	00000	00000	00000 0
Chostonectes gigas	00000	00001	00100	01000	00000	13001 0
Heroceras descarpentriesi	0010?	00111	01010	02101	00000	01000 0
Hygrotus decoratus	31010	01002	11110	02001	00000	03000 1
Hygrotus inaequalis	30010	01002	11100	02011	00000	03000 1
Hygrotus impressopunctatus	00000	10112	01010	02001	00010	13000 0
Hygrotus marklini	00000	10112	01001	01001	00010	03000 1
Hyphoporus bengalensis	31001	10012	11010	01001	00000	03001 0
Hyphoporus solieri	31000	10112	01010	01111	00000	13001 0
Herophydrus assimilis	30110	10001	01011	02001	01100	03010 0
Herophydrus bilardoi	21010	11001	01011	02001	00000	01000 0
Herophydrus capensis	20010	11111	01011	02001	00000	03000 0
Herophydrus cleopatrae	31010	11011	11011	02001	00000	13000 1
Herophydrus confusus	30110	11011	01001	12001	10000	03000 0
Herophydrus discrepatus	11010	10101	01011	02001	00001	03100 0
Herophydrus endroedyi	20010	11011	01011	02001	00000	01000 0
Herophydrus gigantoides	11010	10001	01011	02001	00001	03100 0
Herophydrus gigas	11010	10001	01011	02001	00001	03100 0
Herophydrus gschwendtneri	20010	11011	01011	02001	00000	01000 0
Herophydrus guineensis	21010	11001	01021	02001	00000	01000 0
Herophydrus heros	10010	00001	01011	02001	00001	03100 0
Herophydrus hyphoporoides	31010	10001	11011	02001	01100	03010 0
Herophydrus ignoratus	20010	11011	01011	02001	00000	01000 0
Herophydrus inquinatus	20010	11011	01011	02001	00000	01000 0
Herophydrus janssensi	11010	10001	01011	02001	00001	03100 0
Herophydrus kalaharii	21010	01011	01011	02001	00000	01000 0
Herophydrus musicus	21010	10011	11011	02001	00000	01000 0
Herophydrus muticus	20110	11111	01011	02001	00000	01000 0
Herophydrus natator	21010	11001	01011	02001	00000	01000 0
Herophydrus nigrescens	20010	11001	01011	02001	00000	01000 0
Herophydrus nodieri	10010	10001	01011	02001	00001	03100 0
Herophydrus obscurus	21010	11111	01011	02001	00000	01000 0
Herophydrus ovalis	21010	11001	01011	02001	00000	02000 0
Herophydrus pallidus	20010	11011	01011	02001	00000	00000 0
Herophydrus pauliani	30100	10011	11011	12101	00000	03000 0
Herophydrus quadrilineatus	20010	11011	01011	02001	00000	01000 0
Herophydrus ritsemae	31010	11001	01021	02001	00000	02000 0
Herophydrus rohani	00110	11101	01021	02001	10000	03000 0
Herophydrus rufus	31001	10011	01021	02001	00000	02000 0

Herophydrus sjostedti	21010 11011 11011 02001 00000 01000 0
Herophydrus spadiceus	20110 11011 01011 02001 00000 01000 0
Herophydrus sudanensis	31010 11001 01001 02001 00000 02000 0
Herophydrus tribolus	30011 11011 11021 02001 00000 02000 0
Herophydrus variabilis	20110 11011 01011 02001 00000 01000 0
Herophydrus verticalis	30110 10001 01011 02001 01100 03010 0
Herophydrus vittatus	20010 11011 01011 02001 00000 01000 0
Herophydrus wewalkai	21010 11011 01011 02001 00000 03000 0

Historical review of the taxonomy of *Herophydrus*

Of the species currently assigned to the genus *Herophydrus* SHARP, *H. musicus* (KLUG, 1834) was the first to be described. As was the case for all other but two of the species of the genus known before SHARP (1882) described his new genus *Herophydrus*, KLUG (1834) associated his new species from Egypt with the genus *Hydroporus* CLAIRVILLE. Exceptional in this case were AUBÉ (1838), who described *H. guineensis*, and CLARK (1863) who described *H. rufus* (from China), in the genus *Hyphydrus* ILLIGER. *Herophydrus guineensis* was the only previously described species that SHARP (1882) included in his new genus of Hydroporini, to which he added five new species: three from Madagascar and two from South Africa.

SHARP (1882) found *Herophydrus* nearly allied to the larger genus *Coelambus* THOMSON (known as *Hygrotus* or *Coelambus* + *Hygrotus* by modern authors). His main characters for separating *Herophydrus* from *Coelambus* were: (1) ventral elytral ridge without abrupt posterior elevation (ligula), and (2) the shorter and broader protibia.

The separation of *Herophydrus* from *Coelambus* remained enigmatic for some time. RÉGIMBART (1895) transferred *Hydroporus musicus* and *Coelambus muticus* to *Herophydrus*. Of the 17 African *Herophydrus* species described by RÉGIMBART between 1889 and 1908, only *Coelambus nodieri* was not transferred to *Herophydrus* until GSCHWENDTNER (1932a) and GUIGNOT (1936). On the other hand, RÉGIMBART (1895) transferred *Herophydrus heros* SHARP to *Coelambus*, which later was rejected by ZIMMERMANN (1919). GSCHWENDTNER (1932a) suggested that the structure of the prosternal process was useful in the separation of *Coelambus* and *Herophydrus*.

After the death of Régimbart, new African *Herophydrus* species were described chiefly by Gschwendtner, Guignot and Omer-Cooper. GUIGNOT (1952c) expanded the geographical range of the genus to the Oriental region, when he described *H. morandi* from Cambodia, and later also included the Chinese *H. rufus* (CLARK) in *Herophydrus*. The most recently described species of *Herophydrus* is *H. galileae* WEWALKA, 1984, later synonymized under *H. cleopatrae* (PEYRON, 1858) by FERY (2001). In his recent world catalogue, NILSSON (2001) recognized 44 species of *Herophydrus* from the Afrotropical, Oriental, and Palearctic regions.

The delimitation of *Herophydrus* from the chiefly Oriental genus *Hyphoporus* SHARP (VAZIRANI 1969) is somewhat problematic, and *Hyphoporus rotundatus* GSCHWENDTNER, 1931, was synonymized with *Herophydrus rufus* by SATÔ & BRANCUCCI (1984). The characters separating the two genera were discussed by GUIGNOT (1950b) and VAZIRANI (1969).

The only species described as *Herophydrus* and later transferred to another genus is the African species *H. descarpentriesi* (PESCHET 1923), now placed in the monobasic genus *Heroceras* GUIGNOT, 1950.

GUIGNOT (1946b) first designated *H. inquinatus* (BOHEMAN) as type species of *Herophydrus*. GUIGNOT (1950b) subsequently replaced it with *H. guineensis* (AUBÉ), after having observed that *H. inquinatus* was not originally included in the genus by SHARP (1882). Based on differences in

the development of the clypeal bead, GUIGNOT (1950b) described the new subgenus *Dryephorus* with *H. nodieri* (RÉGIMBART) as type species. Later, GUIGNOT (1959a) separated *Herophydrus* s.str. into two different species groups, viz., the *guineensis* and *ritsemae* groups. OMER-COOPER (1964) rejected GUIGNOT's (1950b) subgeneric division and instead separated a subset of the African species into three groups.

Herophydrus was for a long time kept in its original position as a genus of Hydroporini. NILSSON & HOLMEN (1995) followed HOULBERT (1934) and placed *Herophydrus* in the tribe Hygrotini, together with the genera *Heroceras*, *Hygrotus* (s.l.) and *Hyphoporus*. The separation of Hydroporini and Hygrotini has gained support from a more recent analysis of dytiscid phylogeny (MILLER 2001), although the monophyly of both these tribes remains doubtful.

Biology

Documentation on biology has been limited, and thus, our knowledge is sparse. For some species, the only available information is what is written on the labels pinned to the specimens. Records in literature are also scanty, with scattered information present for a number of species.

Knowledge of the immature stages of *Herophydrus* is poor. BERTRAND (1963) gave a general description of the mature larvae of a few unidentified species. He noted a certain similarity with larvae of European species of *Hygrotus* (*Coelambus*) and observed that secondary urogomphal setae were present in some and absent in other species. More recently, ALARIE et al. (2001) gave a detailed description of all three larval instars of *H. musicus* from the Canary Islands.

Generally described, the members of the genus are often sampled in comparatively small water bodies with vegetation such as ponds, small streams, puddles in swamps, drainage ditches, dams and temporary pools, etc. At least some species are attracted by artificial light (UV, black light, etc.): *Herophydrus variabilis*, *H. endroedyi*, *H. inquinatus*, *H. nigrescens*, *H. guineensis*, *H. natator*, *H. wewalkai*, *H. sjostedti*, *H. ritsemae*, *H. gigas*, *H. heros* and *H. nodieri*. Members are also collected in mountainous areas at high altitudes, steppes and desert areas and salt lakes. Below, specific information is briefly presented:

Herophydrus rohani is reported by OMER-COOPER (1964) (as *H. paradoxus*) from pond and streams.

Herophydrus muticus was sampled at fairly high altitudes and regarded as an orophilous species (1650 - 3100 m a.s.l. according to NILSSON & PERSSON 1993). On several occasions, this species was collected from small waterbodies, such as small streams, streamlets, pools, temporary pools, etc.

Herophydrus v. variabilis is sampled at high altitudes (2600 - 3100 m a.s.l.) and reported as an orophilous species by GUIGNOT (1961). It has been sampled from a stream (OMER-COOPER 1964) and, according to a collection label, in a quarry pool.

Herophydrus variabilis secundus is also sampled at high altitudes (1750 - 1900 m a.s.l.).

Herophydrus endroedyi was collected at an elevation of 1300 m a.s.l. in Natal, South Africa.

Herophydrus gschwendtneri is reported from a pool and a stream (OMER-COOPER 1964).

Herophydrus inquinatus is a difficult case because at least some of the biological literature concerns other species (e.g. OMER-COOPER 1931). Such data is thus to be carefully evaluated before acceptance. In Mozambique, this species has been reported from a drainage ditch (OMER-COOPER 1956a). In addition it has been reported as occurring in streams, ponds and swamps

(OMER-COOPER 1964), as well as from a farm dam with thick weed at its edges and a shallow, muddy, weeded dam.

Herophydrus pallidus has been sampled at high altitudes (5500 - 7500 feet and 1900 - 2600 m a.s.l.), and in Tanzania, in a natron lake.

Herophydrus quadrilineatus is regarded as orophilous and is sampled at high altitudes: 2069 - 3100 m a.s.l. (NILSSON & PERSSON 1993).

Herophydrus vittatus: VINSON (1956) reports this species from swamps or slow-running streams. It has also been collected under water plants at banks of a spring brook (WEWALKA 1980).

Herophydrus guineensis is regarded as living in the zone of savannah and steppes (GUIGNOT 1946a, FORGE 1981) but has also been sampled at altitudes as high as 5300 - 7500 feet (OMER-COOPER 1931). It has been reported in Mozambique from drainage ditches with various vegetation (OMER-COOPER 1956a), in Chad abundantly from large swamps (BRUNEAU DE MIRÉ & LEGROS 1963) and in Egypt as rare in rice nurseries (EL-SHERIF et al. 1978). Obviously, the species can be recorded as living in such varied waterbodies as swamps, ponds and streams (OMER-COOPER 1964) or springs and seeps (CURTIS 1991; as *H. mutatus*). According to label information in Tanzania, it was sampled in a sulphurous pool in rich woodland.

Herophydrus musicus is regarded a desert species by GUIGNOT (1961). Furthermore, MACHADO (1987) states that *H. musicus* is a rainwater species occurring in desert areas of Africa. On the Canary Islands, the species was sampled in a small, sunny, virtually vegetation-free pool and the bottom of which was covered by rock, stones and gravel (BALKE et al. 1990). Additional, recent information from the Canary Islands includes observation of larvae from a shallow, exposed floodzone of an irrigation pond, with sand and clay soil and *Juncus* sp. and *Typha angustifolia* growths. Moreover, adults and larvae were sampled in a well-vegetated water zone of a reservoir with a reduced water level and a heavy clay soil (ALARIE et al. 2001).

Herophydrus ritsemae in Malawi is collected in a water reservoir surrounded by a marshy area with small areas of open water and red mud (OMER-COOPER 1964).

The type material of *Herophydrus discrepatus* was sampled at an altitude of 1750 m a.s.l.

Herophydrus gigas is reported to occur in drainage ditches with grassy sides and *Limnophyton* vegetation, and with duckweed growth in some ditches (OMER-COOPER 1956a). General ecological information includes occurrence of the species in streams, ponds and swamps (OMER-COOPER 1964). CURTIS (1991) reports the species from seasonal wetlands such as springs and seeps.

According to label data *H. heros* is sampled at an altitude of 950 - 1000 m a.s.l.

Herophydrus nodieri is associated with savannahs and steppes according to GUIGNOT (1946a). It has been sampled in a small stream largely choked with strong grass (OMER-COOPER 1956a), between 6000 and 7000 feet a.s.l. OMER-COOPER (1931).

Classification and descriptions

Herophydrus SHARP

Herophydrus SHARP 1882: 389, 392, 861 (orig. descr.); KOLBE 1883: 409 (faun.); RÉGIMBART 1895: 34, 38 (descr.); JAKOBSON 1908: 416 (descr.); PESCHET 1917: 3, 18 (descr., faun.); ZIMMERMANN 1919: 146 (descr.); 1920a: 73 (list.); 1930: 117 (descr., faun.); GUIGNOT 1936: 28 (disc.); 1946a: 315 (faun.); 1946b: 115 (type species desig.); 1947: 68, 77 (descr., faun.); 1950b: 150 (descr.); BERTRAND 1951: 115 (faun.); GUIGNOT 1954c: 376, 377 (faun.); 1955a: 36 (faun.); OMER-COOPER 1957: 62 (disc.); GUIGNOT 1959a: 339 (type species desig., descr., faun., biol.); 1961: 927 (faun.); BERTRAND 1963: 402, 434 (larva descr., faun.); OMER-COOPER 1964: 366 (descr., disc.); 1965: 63, 65 (descr., faun., disc.); FERREIRA 1967: 534 (list., faun); BERTRAND 1970: 18, 20, 36 (larva descr.); VAZIRANI 1977: 47 (list.); FRANCISCOLO 1979: 301, 318, 691 (descr., faun.); MEDLER 1980: 154, 156 (list., faun.); MACHADO 1987: 33 (faun.); NILSSON et al. 1989: 295 (type species disc.); NILSSON & PERSSON 1993: 70, 46 (faun.); NILSSON et al. 1995: 503 (faun.); NILSSON & ROUGHLEY 1997: 3 (list.); ALARIE et al. 2001: 195 (larva descr.); FERY 2001: 358 (disc.); NILSSON 2001: 202 (cat.).

Subgenus *Herophydrus* s.str. SHARP, GUIGNOT 1959a: 339 (descr.); OMER-COOPER 1964: 367 (descr., disc.); MEDLER 1980: 155 (list., faun.); NILSSON & ROUGHLEY 1997: 3 (list.).

Subgenus *Dryephorus* GUIGNOT 1950b: 180 (orig. descr.); 1959a: 339, 365 (descr.); OMER-COOPER 1964: 367 (descr., disc.); FERREIRA 1967: 534 (list., faun.); MEDLER 1980: 154 (list., faun.); NILSSON & ROUGHLEY 1997: 3 (list.).

TYPE SPECIES:

Herophydrus SHARP: *Hyphydrus guineensis* AUBÉ, by subsequent designation (GUIGNOT 1950b).

Dryephorus GUIGNOT: *Coelambus nodieri* RÉGIMBART, by original designation (GUIGNOT 1950b).

DIAGNOSIS: Medium- to large-sized hydroporines characterized by a combination of features:

1. Fourth segment of pro- and mesotarsi very small, hardly discernible.

2. Frontal part of head narrowly delimited by a line, which medially may be broken. Line sometimes reduced so that it is discernible only close to eyes.

3. Head posterior to eyes impunctate or with very fine and sparse punctures.

4. Male antenna slender, not modified.

5. Prosternal process lanceolate with posterior apex somewhat deflected.

6. Metacoxal processes not incised and not produced backwards; covering base of metatrochanters.

7. Metatarsal claws equal in length.

8. Epipleuron with a basal cavity, posteriorly delimited by a distinct rim.

9. Body somewhat elongate to oval.

10. Both unicoloured species and species with distinct colour patterns exist.

11. Penis symmetric or slightly asymmetric, paramere in one segment.

The genus is most similar to *Heroceras*, *Hygrotus* (including *Coelambus* THOMSON), and *Hyphoporus*.

Description (see also under Diagnosis above)

Length of body 2.88 - 7.25 mm; width 1.88 - 4.17 mm. Dorsal aspect of body often with distinct colour pattern; some species are, however, almost unicoloured or colour pattern is strongly reduced.

Head: Antenna slender, not modified. Punctures dense to rather sparse, evenly distributed to somewhat irregular, at pronotum impunctate or with very fine, sparse punctures. Shiny, not reticulated, to submat, densely microsculptured. Rarely head is entirely mat.

Pronotum: Lateral outline of pronotum rounded to almost straight. Sides of pronotum finely margined. Discally punctation often slightly sparser and finer than at pronotal edges. Microsculpture variable, sometimes totally absent, and pronotum shiny or microsculpture variously extensive; shiny to mat.

Elytra: Punctation generally dense and extensively and quite evenly distributed. Different size categories can be distinguished in many species – this feature is particularly distinct frontally, in the area between the sutural line and the discal row of punctures. Shiny, lacking reticulation or partly with meshes of microsculpture discernible. Sometimes elytra entirely mat, but separate meshes indistinct or not present.

Ventral aspect: With extensive punctation. Size and density of punctures variable. Punctation on moderate areas may be completely lacking (e.g. narrow area posteriorly on metacoxal plate and on each side of body-midline on metathorax). Shiny, not reticulated to mat or submat, totally microsculptured.

Sexes: Male and female often externally similar and difficult to separate. In some species, female is to a variable degree microsculptured and less shiny. Female rarely dimorphous. Male pro- and mesotarsi sometimes enlarged and broader than in female. In a few species, the male exhibits a distinct process on metafemur. Male of one species exhibits keeled metacoxal plates.

Juvenile stages: Not studied. Larvae have been dealt with in BERTRAND (1963, 1970) and ALARIE et al. (2001).

Distribution: Most diverse in Africa south of the Sahara, but the genus is also known from the southern parts of the Palearctic and Oriental regions.

Key to the African species of *Herophydrus*

In a majority of species, only males can be determined to an acceptable degree of certainty. Generally, examination of male genitalia is required for correct determination. Thus, the present key, which is to be regarded as tentative, is restricted to males. *Herophydrus obsoletus*, only known by its female, is excluded – this species is characterized by small body size (length 3.80 mm), almost totally obliterated head foremargin (Fig. 5A), and dark body with sparse dorsal colour pattern (Fig. 5B). Externally, it resembles *H. rohani*.

1 Head frontal margin distinct, complete (unbroken, medially not in contact with head foremargin) (Figs. 2A, 29A) 2

\- Head frontal margin incomplete (strongly reduced and only discernible close to eyes or medially broken, sometimes margin ends touch head fore edge, sometimes ends fade away before reaching head edge) (Figs. 37A, 7A) 9

2 Male metafemur with distinct posterior expansion (Fig. 31C); penis with lateral ridges (Figs. 31D, 32C) 3

\- Male metafemur lacks posterior expansion; penis lacks lateral ridges (Figs. 2C, 27C) 5

3 Penis apical part and posterior part almost equally broad (Fig. 31D) ..... *assimilis*

\- Penis narrows distinctly anteriorly (Fig. 32C) 4

4 Penis anterior part broad (Fig. 32C) ..... *verticalis*

- Penis anterior part slender (Fig. 30D) ..... *hyphoporoides*

5 Penis apex trifid (frontolateral processes sharp) (Figs. 27C, 29D) 6

- Penis apex not trifid (lacks frontolateral processes) (Figs. 2C, 3C) 8

6 Head immediately posterior to frontal margin with a narrow impression (Fig. 29A); penis frontolateral processes project forward (Fig. 29D) ..... *tribolus*

- Head lacks narrow impression posterior to frontal margin (Fig. 28A); penis frontolateral processes project backward (Fig. 28C) 7

7 Penis frontal half almost straight (extreme apex curved) (Fig. 27D) ..... *sudanensis*

- Penis frontal half distinctly curved (Fig. 28E) ..... *ritsemae*

8 Male metacoxal plate with two keels; penis narrows abruptly towards apex (Fig. 3C) ..... *confusus*

- Male metacoxal plate not keeled, smooth; penis narrows gradually towards apex (Fig. 2C)..... *pauliani*

9 Penis "capped" (strongly constricted near apex) (Fig. 37E) (body length 5.00 - 7.42 mm; head foremargin generally strongly reduced) 10

- Penis not "capped" (generally smaller species; head foremargin typically well-developed) 15

10 Extreme apex of penis pointed (Fig. 34C) ..... *gigantoides*

- Extreme apex of penis not pointed (Fig. 37E) 11

11 Penis (lateral aspect) apically robust, quite broad (Fig. 35E) ..... *gigas*

- Penis (lateral aspect) apically not robust, slender (Figs. 36D, 37F) 12

12 Body length 6.58 - 7.25 mm; fragments of head frontal margin discernible towards middle (Fig. 36A) ..... *janssensi*

- Body length 5.75 - 6.50 mm; head frontal margin only discernible at eyes (Fig. 37A) 13

(Note: Points 13 - 14; determination tentative)

13 Male pro- and mesotarsi enlarged, broad (Fig. 33C) ..... *discrepatus*

- Male pro- and mesotarsi slender or moderately enlarged 14

14 Body elongated (Fig. 37B); male pro- and mesotarsi moderately enlarged; dorsal colour pattern distinct (Madagascar) ..... *heros*

- Body stouter (Fig. 38B - C); male pro- and mesotarsi slender; dorsal colour pattern variable (often diffuse or strongly reduced) (mainland Africa, south of Sahara) ..... *nodieri*

15 Penis (lateral aspect) strongly curved (Fig. 6G) ..... *capensis*

- Penis (lateral aspect) almost straight to moderately curved (Figs. 12E, 24D) 16

16 Penis (dorsal aspect) apically pointed (Figs. 23C, 26C) 17

- Penis (dorsal aspect) apically obtuse (Figs. 4D, 7F) 18

17 Elytral colour pattern distinct (Fig. 23B); penis almost equally broad, except for abruptly narrowing apex (Fig. 23C) ..... *wewalkai*

- Elytra almost unicoloured; colour pattern diffuse (Fig. 26B); penis narrows gradually towards arrow-shaped apex (Fig. 26C) ..... *ovalis*

18 Head frontal margin fragmentary, strongly reduced (Fig. 4A); apical half of penis flattened, strongly enlarged (Fig. 4D) (small species, body length 3.28 - 3.88 mm) ..... *rohani*

- Head frontal margin at least laterally well-developed (Figs. 7A, 11A); apical half of penis not strongly enlarged (Figs. 7F, 21C) (most species larger, body length more than 4 mm) 19

19 Penis apex (dorsal aspect) lacks sharp lateral flaps (Figs. 7F, 14F) 20

- Penis apex (dorsal aspect) with sharp lateral flaps (Figs. 10C, 25C) 24

20 Head almost totally pale, lacks dark interocular marking (Fig. 24B) (small species, body length 2.88 - 3.60 mm) ..... *musicus*

- Head partly darkened, with interocular marking (Figs. 7B, 14C) (larger species, body length 3.60 - 5.75 mm) 21

21 Penis (dorsal aspect) narrows distinctly and evenly towards narrowly obtuse apex (Fig. 7F); head anteriorly, posterior to frontal margin black (Fig. 7B) ..... *muticus*

- Penis (dorsal aspect) narrows moderately towards broad obtuse apex (Fig. 8F); head anteriorly, posterior to frontal margin paler, not black (Figs. 14C, 16B) 22

22 Body length 3.60 - 4.20 mm ..... *vittatus*

- Body length 4.36 - 5.75 mm 23

23 Penis in lateral view robust (Fig. 14G), apex (dorsal aspect) lacks sharp lateral flaps (Fig. 14F) ..... *pallidus*

- Penis in lateral view slender (Fig. 8H), apex (dorsal aspect) with sharp lateral flaps, sometimes not discernible from above (Fig. 8F-G) ..... *spadiceus* (in part)

24 Body ferrugineous to blackish ferrugineous, colour pattern (dorsal aspect) diffuse (weakly developed) or absent 25

- Body with distinct colour pattern (variably extensive) (Figs. 9D, 17B) 26

25 Elytral punctures in basal half, between discal row of punctures and sutural line, of two different size classes: coarser punctures sparser and about 3 x the diameter of the finer ones; apical part of penis broad (Fig. 22C) ..... *obscurus*

- Elytral punctures in basal half, between discal row of punctures and sutural line, subequal, no distinct size classes discernible; apical part of penis narrower (Figs. 19C, 19F) ..... *guineensis*

26 Penis long, slender (Figs. 13E, 17C) 27

- Penis, shorter, robust, distinctly broader (Figs. 11C, 25C) 30

27 Elytral colour pattern reduced to marginal spots (Fig. 17B); apical half (lateral aspect) of penis with ventral outline almost straight (Fig. 17D) ..... *nigrescens*

- Elytral colour pattern consists of longitudinal dark areas (Figs. 13D, 15B); apical half (lateral aspect) of penis with ventral outline curved (Fig. 13F, 15E) 28

28 Elytral punctures in basal half, between discal row of punctures and sutural line, subequal, no distinct size classes discernible; male genitalia as in Figs. 15D - E ..... *quadrilineatus*

- Elytral punctures in basal half, between discal row of punctures and sutural line, of two different size classes: coarser punctures sparser and about 3 - 4 x the diameter of finer ones 29

29 Penis (dorsal aspect) narrows evenly towards quite slender apex (Fig. 13E) ..... *inquinatus*

- Penis (dorsal aspect) slightly curved inwards anterior to apex (Fig. 10C) ..... *endroedyi*

30 Elytral colour pattern reduced to marginal spots (Fig. 20B) (see also Fig. 8C, dark morph of *H. spadiceus*) 31

- Elytral colour pattern consists of longitudinal dark areas (Figs. 8D, 9D) 32

31 Body length 4.44 - 5.08 mm; lateral flaps of penis apex strongly expansive (Fig. 18C) ..... *bilardoi*

- Body length 5.08 - 5.50 mm; lateral flaps of penis moderately expansive (Fig. 20C) ..... *natator*

32 Elytral punctures in basal half, between discal row of punctures and sutural line, subequal or somewhat irregular, no distinct size classes discernible 33

- Elytral punctures in basal half, between discal row and sutural line, of two different size classes; coarser punctures at minimum 2 - 3 x diameter of finer punctures 35

33 Body length 5.00 - 5.75 mm; penis robust (Fig. 21C-D) ..... *kalaharii*

- Body length 3.80 - 4.84 mm; penis more slender (Figs. 9E, 25C) 34

34 Head anteriorly (posterior to frontal line) somewhat darkened; darker than head posteriorly; male genitalia (Fig. 8F - I); body length 4.36 - 4.84 mm (Madagascar)..... *spadiceus* (in part)

- Head anteriorly (posterior to frontal line and anterior to dark interocular marking) pale; not darker than head posteriorly; male genitalia (Fig. 25C-E); body length 3.80 - 4.50 mm (East African mainland)..... *sjostedti*

35 Head almost totally with fine microsculpture (meshes clearly discernible); male genitalia as in Fig. 9E-G (see also ssp. *secundus*) ..... *variabilis*

- Head shiny, almost not microsculptured (limited, fragments of microsculpture may be discerned)..... 36

36 Penis (lateral aspect) with apical half almost straight (Fig. 12E)..... *ignoratus*

- Penis (lateral aspect) with apical half distinctly curved (Fig. 11D) ..... *gschwendtneri*

The different species below are presented in the same order as they appear in the consensus tree (Fig. 1). All cited label information is placed between quotation marks, and when two or more labels are on one pin, different labels are separated by a slash (/). Label data of type material are generally quoted in full, while data on ordinary material are quoted to their informative part.

Herophydrus pauliani GUIGNOT (Figs. 2, 39)

Herophydrus pauliani GUIGNOT 1950a: 128 (orig. descr.); 1959a: 344, 351, 353 (descr., faun.); ROCCHI 1991: 8 (faun.); NILSSON 2001: 204 (cat.).

TYPE LOCALITY: Madagascar, Itremo River.

TYPE MATERIAL: **Holotype**, ♂: *Herophydrus pauliani* Guign. - "Type male/Itremo Riv. Inst. Sci. Ent. Madagascar VIII. 49 I.M." (MNHN). - **Paratypes**: Principally with same data as holotype (2 exs. MNHN).

ADDITIONAL MATERIAL EXAMINED:
MADAGASCAR: "Suberbieville" (1 ex. MAC, 1 ex. MZH).

DIAGNOSIS: *H. pauliani* belongs to the species characterized by unbroken frontal margin of head. Examination of male genitalia confirms correct determination: penis (dorsal aspect) quite broad, for a long distance almost parallel-sided, narrows gradually to pointed apex.

Description: Body: Length 4.02 - 4.20 mm, breadth 2.20 - 2.40 mm. Dorsal appearance as in Fig. 2B.

Head: Dark ferrugineous to blackish, frontally and posteriorly with narrow paler area. Frontal margin quite distinct, medially unbroken, but area between margin and frontal outline medially narrow. Frontal outline rounded, medially slightly concave (Fig. 2A). Punctation rather fine, dense, close to pronotum punctures somewhat finer and sparser. Area between frontal outline and frontal margin finely punctate. Rather shiny to submat, finely microsculptured (reticulation in part indistinct, hardly visible). Frontal depressions quite deep but vaguely delimited. Head at inner margin of eyes with a dense row of punctures. Antenna pale ferrugineous to ferrugineous, segments 4 - 11 at least partly darkened, brownish to blackish.

Pronotum: Lateral outline rounded. Extreme apex of posterior corners clearly discernible, although not pronounced. Blackish to dark ferrugineous, with medial area pale ferrugineous to ferrugineous, vague marking. Punctation rather fine to somewhat coarse, quite dense. Mediolaterally punctation distinctly sparser. Shiny, not microsculptured.

Elytra: Blackish to dark ferrugineous, with vague, sometimes indistinct, paler markings (Fig. 2B). Punctation dense and quite evenly distributed, fine to rather fine, and size of punctures

somewhat variable but not of two distinct kinds. Rows of punctures indistinct, mixed with adjacent punctures and hardly discernible. Shiny, not reticulated. Epipleuron dark ferrugineous to ferrugineous, distinctly punctate and shiny, not reticulated.

Ventral aspect: Blackish to dark ferrugineous, prothorax at least partly paler. Rather finely and quite densely punctate. Prothorax, metathorax on each side of midline medially and metacoxal plates posteriorly impunctate. Rather shiny, scattered reticulation discernible.

Legs: Dark ferrugineous to ferrugineous, sometimes partly blackish. Pro- and mesotarsi strongly enlarged.

Male genitalia: Fig. 2C-E.

Female: Pro- and mesotarsi less strongly enlarged than in male.

Distribution: Madagascar (Fig. 39).

Herophydrus confusus RÉGIMBART (Figs. 3, 40)

Herophydrus confusus RÉGIMBART 1895: 44 (orig. descr., faun.); SEVERIN 1892: 472 (list.; nomen nudum); ZIMMERMANN 1920a: 73 (faun.); GUIGNOT 1959a: 343, 350, 351 (descr., faun.); ROCCHI 1991: 85 (faun.); NILSSON 2001: 203 (cat.).

TYPE LOCALITY: Madagascar, Antananarivo (Annanarivo).

TYPE MATERIAL: **Lectotype**, ♂, by present designation: "Annanarive Sikora Res. Régimb. 91/Coll. R.I.Sc.N.B. Madagascar/Type/Régimbart det. 1895: *Herophydrus confusus* Rég." (ISN). - **Paralectotypes**: Same sampling data as in lectotype (2 exs. ISN, 4 exs. MNHN). [Note: Although SEVERIN (1892) and GUIGNOT (1959a) indicate that types are deposited in a certain collection, no official designation of lectotype has thus far been made. Thus, we have chosen a male specimen from ISN provided with a type label as lectotype of *H. confusus*.]

DIAGNOSIS: A characteristic species which cannot be confused with any other species by the male, which exhibits two distinct keels on the metacoxal plate. The broad body, the almost complete frontal margin of head and the shape of the penis are also useful features when separating *H. confusus* from other *Herophydrus* species.

Description: Body: Length 3.68 - 3.92 mm, breadth 2.20 - 2.28 mm. Body in dorsal aspect (Fig. 3B). Colour pattern clearly discernible although somewhat vague.

Head: Black, anteriorly with an indistinct dark ferrugineous area. Posteriorly between eyes narrow area pale ferrugineous. Frontal outline rounded, medially slightly concave. Frontal margin quite distinct, except medially very fine and hardly discernible (Fig. 3A). Punctation fine to rather fine, fairly dense, slightly irregularly distributed. Close to pronotum and anterior to frontal margin, head punctures distinctly finer. At inner eye margin narrow area with dense punctures. Frontal depressions rather shallow. Shiny, not microsculptured (posteriorly scattered reticulation may be discerned). Antenna pale ferrugineous, segments 5 - 11 at least partly darkened.

Pronotum: Lateral outline curved. Extreme apex of pronotal process not pronounced. Black to blackish ferrugineous, with vague dark ferrugineous area (paler area sometimes discernible only laterally). Punctation rather fine, distribution of and size of punctures slightly irregular. Shiny, reticulation almost totally absent (scattered fragments of microsculptre may be discerned).

Elytra: Black to dark ferrugineous, with vague ferrugineous markings (Fig. 3B). Punctation rather fine, quite dense and rather evenly distributed. On frontal half of elytron, two different kinds of punctation may be discerned: Coarser punctures (diameter approx. 2 x diameter of finer punctures) sparser than finer punctures. Rows of punctures hardly discernible; mixed with adjacent, ordinary punctation. Generally, at least discal row of punctures and lateral row of

punctures visible. Shiny, not reticulated. Epipleuron dark ferrugineous to ferrugineous, fairly distinct punctation, not reticulated and shiny.

Ventral aspect: Black to dark ferrugineous. Metacoxal plate with two keels: outer keel rounded and partly impunctate; inner keel narrow and quite sharp. Abdominal punctation quite dense, at base coarser than apically. Punctation on metathorax absent close to midline and medially on each side of midline. Shiny, not reticulated, except on impunctate posterior area of metacoxal plates and small area medially on each side of metathorax midline.

Legs: Pro- and mesotarsi slightly enlarged. Dark ferrugineous to ferrugineous. Mesofemur quite broad, somewhat flattened and curved. Profemur with dense hairtufts on frontal edge.

Male genitalia: Fig. 3C-E.

Female: Metacoxal plate lacks distinct keels: laterally with a moderately elevated impunctate area. According to GUIGNOT (1959a) male pro- and mesotarsi slightly enlarged.

Distribution: Madagascar (Fig. 40).

Herophydrus rohani PESCHET (Figs. 4, 41)

Herophydrus rohani PESCHET 1924: 140 (orig. descr.); 1925: 35 (descr., faun.); BALFOUR-BROWNE 1950: 361 (faun.); GUIGNOT 1959a: 366, 370 (descr., faun.); FERREIRA 1967: 535 (faun., list.); NILSSON 2001: 204 (cat.).

Herophydrus paradoxus GSCHWENDTNER 1932a: 12 (orig. descr.); GUIGNOT 1948a: 8 (descr., faun.); 1953a: 234 (faun.); 1954b: 20 (faun.): OMER-COOPER 1956b: 364 (disc.); GUIGNOT 1959a: 366, 367, 371 (descr., faun.); OMER-COOPER 1964: 367, 373 (descr., faun., biol.); NILSSON 2001: 204 (cat.); **syn.n.**

TYPE LOCALITY: of *rohani*: Angola, Huilla District; of *paradoxus*: Democratic Republic of the Congo (Zaire), Lulua, Sandoa.

TYPE MATERIAL: **Lectotype** of *rohani*, ♀, by present designation: "Museum Paris, Angola District de Huilla, Mission Rohan-Chabot 1914/Septembre/*Herophydrus rohani* n.sp. R. Peschet" (1 ex. MNHN). - **Paralectotype** (teneral ex.): Same data as lectotype (1 ex. MNHN). - **Holotype** of *paradoxus*, ♀: "Holotypus/Musée du Congo, Lulua: Sandoa IX-1930 G.F. Overlaet/Type Gschwendt./R DET D 2162/*Hyphydrus paradoxus* Gschwendt. det. Gschwendtner" (MAC). - **Paratype**: Principally same but, "Katanga Kakyelo 1/9-XI-1930 G.F. de Witte" (1 ex. MAC).

ADDITIONAL MATERIAL EXAMINED:

TANZANIA: "Small stream Rungwe 8.X. 1948" (2 exs. AMS); same but "9.X. 1948" (2 exs. AMS); same but "X. 1948" (4 exs. AMS).

DEMOCRATIC REPUBLIC OF THE CONGO (Zaire): "Kafakumba IV. 1939/*H. paradoxus* Guign. det. Guignot 1948" (3 exs. ISN, 1 ex. MNHN); "Katanga Kabenga 1240 m/31.III. 1949" (31 exs. ISN, 4 exs. MNHN).

ZAMBIA: "Shashe/XII. 1959" (1 ex. MNHN).

MALAWI: "Hotel Dam, Dedza 29.IX. 1948" (6 exs. AMS, 1 ex. MZH); "Dedza, Lilongwe rd 30.IX. 1948" (1 ex. AMS); "Livingstonia, stream by homestead 20.X. 1948" (1 ex. AMS); "Marshy spring, Vipya plateau 7.X. 1948" (1 ex. AMS); "Pond 40 mi from Njakwa nr Ft Hill Rd 18.X. 1948" (2 exs. AMS); "Njakwa Distr. 18.X. 1948" (4 exs. AMS); "Ciswete R nr Dedza 28.IX. 1948" (1 ex. AMS).

DIAGNOSIS: A characteristic species which is most similar (conspecific?) to *H. obsoletus*, of which only the female is known so far (see under diagnosis below). *H. rohani* is characterized by its small body size, weakly developed head foremargin and by a peculiarly shaped penis: apex of penis in dorsal view flattened, broad.

Description: Body: Length 3.28 - 3.88 mm, breadth 1.88 - 2.16 mm. Shape of body oblong, dorsal colour pattern somewhat variable (Fig. 4B-C).

Head: Dark ferrugineous to pale ferrugineous; with a vague, often broad, blackish to dark ferrugineous area between eyes. Frontal outline rounded, medially straight to slightly concave. Frontal margin very fine, hardly visible (Fig. 4A); sometimes rudimentary. Punctation quite fine,

irregularly distributed, rather sparse to quite dense. At pronotum punctation absent or very fine and sparse. Shiny, not microsculptured. In a narrow depression at eyes with a dense row of punctures. Frontal depressions quite distinct, although shallow. Antenna pale ferrugineous.

Pronotum: Lateral outline rounded. Blackish, mediolaterally paler, dark ferrugineous to ferrugineous. Pronotum sometimes dark ferrugineous; laterally becoming gradually paler. Punctation very fine to rather fine, quite dense. Mediolaterally punctures fine and sparse. Shiny, not microsculptured.

Elytra: Blackish to dark ferrugineous, often with distinct, ferrugineous to pale ferrugineous, somewhat variable markings (Fig. 4B-C). Punctation fine to very fine, slightly irregularly distributed. Anteriorly, punctures distinctly of two kinds (at maximum, coarse punctures almost 5 x coarser than fine ones). Discal, dorsolateral and lateral rows of punctures anteriorly discernible, although rather indistinct. Shiny, not microsculptured. Epipleuron ferrugineous. Epipleural punctures fine, partly absent (fine punctures located on inner part of epipleuron).

Ventral aspect: Blackish to dark ferrugineous to ferrugineous. Prothorax partly ferrugineous to pale ferrugineous. Punctation coarse to fine; irregularly distributed. Punctures partly dense, partly absent. Shiny, not microsculptured.

Legs: Pale ferrugineous to ferrugineous. Pro- and mesotarsi quite slender.

Male: Genitalia as in Fig. 4D-F.

Female: Externally similar to male.

Distribution: Tanzania, Democratic Republic of the Congo (Zaire), Angola, Zambia, Malawi (Fig. 41). An additional, unverified record is from Zimbabwe (OMER-COOPER 1964).

Synonymy: Type material of the two species involved have been studied and considered conspecific. *Herophydrus rohani*, being older than *H. paradoxus,* is the valid name of the species.

Herophydrus obsoletus RÉGIMBART (Figs. 5, 42)

Herophydrus obsoletus RÉGIMBART 1895: 44 (orig. descr.); SEVERIN 1892: 472 (type location); ZIMMERMANN 1920a: 74 (faun., list.); PESCHET 1924: 140 (faun., disc.); 1925: 36 (faun.); GUIGNOT 1959a: 366, 372 (descr., faun.); ROCCHI 1991: 85 (faun.); NILSSON 2001: 204 (cat.).

TYPE LOCALITY: Madagascar, Antananarivo (Ananarive).

TYPE MATERIAL: **Holotype**, ♀: "Coll. R.I.Sc.N.B. Madagascar Ananarive Sikora 91/Type/det. Régimbart 1895 *Herophydrus obsoletus* Rég. n.sp. type" (ISN).

DIAGNOSIS: Very similar to *H. rohani*. The two species can be distinguished by features exhibited by elytral punctation: 1. In *H. obsoletus,* coarser punctures slightly sparser anteriorly between suture and discal row of punctures, 2. Size difference between the two kinds of punctures larger in *H. rohani* than in *H. obsoletus* and 3. Finer punctures denser in *H. obsoletus* than in *H. rohani*. However, until a male of *H. obsoletus* has been detected and examined, the status of this species remains uncertain.

Description (only differences from *H. rohani* noted): Body: Length 3.84 mm, breadth 2.18 mm, ovally oblong (Fig. 5B).

Head: Frontal margin rudimentary, almost totally absent (Fig. 5A).

Elytra: Dark ferrugineous, with minute, rather vague pale ferrugineous markings (Fig. 5B). In anterior half, punctures of two different kinds. Finer punctures quite evenly distributed; coarser punctures sparse and irregularly distributed. Diameter of coarse punctures approximately 2 - 3 x

larger than that of finer kind of punctures. Discal row of punctures distinct to quite distinct in anterior ¾ of elytron. Dorsolateral and lateral rows of punctures discernible, although rather irregular; mixed with adjacent punctures.

Male: Unknown.

Distribution: Madagascar (Fig. 42).

Herophydrus capensis RÉGIMBART (Figs. 6, 43)

Herophydrus capensis RÉGIMBART 1895: 40 (orig. descr.); ZIMMERMANN 1920a: 73 (list.); GUIGNOT 1959a: 345, 358 (descr., faun.); OMER-COOPER 1962: 294 (faun., disc.); 1965: 141, 142, 200 (descr., disc., faun.); NILSSON 2001: 203 (cat.).

TYPE LOCALITY: South Africa, Cape Province.

TYPE MATERIAL: **Lectotype**, ♀, by present designation: "Type/*Hygrotus capensis* Régb. type/*Herophydrus*" (1 ex. SAM). - **Paralectotype**, ♀: "Cape/*capensis* Rég./*Herophydrus capensis* Rég. en cf/*H. capensis* Rég". (1 ex. MNHN).

ADDITIONAL MATERIAL EXAMINED:

SOUTH AFRICA: "C. Pr./Pringle Bay 23.IX. 1993" (1 ex. ITA); "WCPr., small vlei nr Cape Town 18.XI. 1947" (16 exs. AMS); "Cape Town Camp S Bay XII. 1991" (2 exs. SAM); "C. Pr. Cape Agulhas 1.I. 1992/Soetendalsvlei Marsh/*H. capensis* Régb. det. Mazzoldi 1994" (1 ex. CWV); "WCPr. Hermanus 1.XII. 1959" (1 ex. AMS); "Cape Flats Princess vlei 13.VII. 1946/*H. capensis* Régb. det. Guignot 1950" (1 ex. AMS); "CPr. Somerset West 25.Jan. 1947" (1 ex. AMS); "Wynberg, stream 13.VII. 1946" (1 ex. AMS); "WCPr. Grabow 17.I. 1959" (2 exs. AMS).

DIAGNOSIS: Easily distinguished by examination of male genitalia; penis uniquely strongly curved (lateral aspect) and differs in this respect from all other known *Herophydrus* species.

Description: Body: Length 4.83 - 5.33 mm, breadth 2.56 - 2.92 mm. Dorsal aspect as in Fig. 6B.

Head: Pale ferrugineous. Between eyes is a distinct, dark ferrugineous area. Posterior to eyes vaguely darkened. Frontal outline rounded, medially slightly concave. Frontal margin medially for a short distance broken (from eye towards middle, margin becomes gradually finer; fades away medially and does not touch anterior edge) (Fig. 6A). Frontal depressions clearly visible, although quite vaguely delimited. Punctation fine to rather fine, fairly dense. Anterior to frontal margin punctures very fine and sparse. Posteriorly, punctures absent. At inner margin of eye is a densely punctate narrow furrow. Shiny, almost without reticulation (scattered minute areas of very fine microsculpture may be discerned). Antenna pale ferrugineous, segments 7 - 11 generally at least partly darkened apically.

Pronotum: Lateral outline rounded. Extreme apex of posterior corner broadly rounded. Pale ferrugineous. Anteriorly narrowly and posteriorly quite broadly darkened; blackish to dark ferrugineous. Punctation fine to rather fine, dense, slightly irregularly distributed. Shiny, not microsculptured.

Elytra: Pale ferrugineous to ferrugineous, with blackish to dark ferrugineous, slightly variable markings (Fig. 6B-C). Punctation in frontal half double: coarser punctures about 3 - 4 x larger than finer punctures. Dense, coarser punctures slightly sparser than finer punctures. Posteriorly, punctation almost equal in size, dense. Rows of punctures in anterior half discernible, although rather indistinct; mixed with adjacent ordinary punctation. Shiny, not microsculptured. Epipleuron pale ferrugineous, distinctly punctate and shiny, not microsculptured.

Ventral aspect: Blackish to dark ferrugineous, abdomen distinctly paler, ferrugineous to pale ferrugineous. Punctures rather fine to fine, fairly dense but somewhat irregularly distributed. Metathorax on each side of midline medially, apical sternite medially and metacoxal plates

posteriorly impunctate. Metathorax and metacoxal plates partly finely, often rather indistinctly, microsculptured. Abdomen shiny; scattered indistinct reticulation may be discerned.

Legs: Pale ferrugineous to ferrugineous, often partly darkened. Pro- and mesotarsi distinctly enlarged (Fig. 6D).

Male genitalia: Fig. 6E-H.

Female: Body submat, densely microsculptured (meshes of microsculpture minute). Pro- and mesotarsi slender, not enlarged.

Distribution: South Africa (Fig. 43).

Herophydrus muticus (SHARP) (Figs. 7, 44)

Coelambus muticus SHARP 1882: 398 (orig. descr.).

Herophydrus muticus (SHARP), RÉGIMBART 1887: 637 (descr., faun.); 1895: 39, 44 (descr., disc., faun.); 1904: 204 (faun.); ZIMMERMANN 1920a: 74 (list.); RÉGIMBART 1922: 528 (faun.); OMER-COOPER 1931: 779 (descr., faun., biol.); GUIGNOT 1959a: 343, 346, 351 (descr., faun.); 1961: 934 (biol.); ROCCHI 1975: 47 (faun.); NILSSON & PERSSON 1993: 70, 94 (faun., biol.); NILSSON 2001: 204 (cat.).

TYPE LOCALITY: Ethiopia (Abyssinia).

TYPE MATERIAL: **Lectotype**, ♂, by present designation: "Type/Abyssinia/Sharp Coll. 1905-313/Type 185 *Coelambus muticus* n.sp./Abyssinia" (BMNH). - **Paralectotypes**: "Cotype/Abyssinia/Sharp Coll. 1905-313/*Herophydrus muticus* Shp Co-type" (2 exs. BMNH); "Abyss. Raffray/Typus/16/*muticus* Sharp/syntypus *Coelambus muticus* Sharp 1882" (1 ex. MCG); "Coll. R.I.Sc.N.B. Ethiopia Abyss. Raffray no 185 mihi/Type/*H. m.*" (1 ex. ISN).

ADDITIONAL MATERIAL EXAMINED:

ERITREA: "Adi-Ugri V. 1901 grasslands of Berga" (2 exs. CRF); "Adi-Ugri Riv. Maj Cacala" (6 exs. MNHN).

ETHIOPIA: "Scioa Falle 8.II. 85/*H. muticus* Sharp det. Régimbart 1891" (6 exs. ISN, 10 exs. MCG, 3 exs. MNHN, 2 exs. CWV); "Shoa Burajo 15 km W Addis Abeba 24.X. 1988, 2600 m" (4 exs. LUZ); "Chancho R. 2600 m 38,46E 09,20N, 29.X. & 20.XII. 1983/*H. muticus* Shp det. Nilsson" (2 exs. MZH); "Roba R. 2600 m 38,46E 09,15N, 29.X. 1983/*H. muticus* Shp det. Nilsson" (1 ex. MZH); "Sululta 11.VI. 1963/ *H. muticus* Shp det. Nilsson" (2 exs. MZH); "Adigrat 31.V. 1963/*H. muticus* Shp det. Nilsson" (1 ex. MZH; male gen. illustr.); "Arsi Bilalo 5 km S Assella 22.IX. 1988, small stream 2500 m" (43 exs. LUZ); same but "20.V. 1988" (2 exs. CNU); same but "23.V. 1988" (7 exs. LUZ, 1 ex. CNU); same but "29.V. 1988" (5 exs. LUZ); same but "9.VI. 1988/stream" (5 exs. LUZ); same but "5.X. 1988, pond" (2 exs. LUZ); same but "10.I. 1989, 2500 m" (16 exs. LUZ); same but "22.IX. 1988, small stream" (3 exs. LUZ); same but "21.V. 1988, streamlet" (1 ex. LUZ); "Arsi Bilalo 31.V. 1988/*H. muticus* Shp det. Nilsson" (1 ex. CWV); "Arsi Assella 15.IV.-20.V. 1988" (1 ex. LUZ); "Assella, small stream 2300 m, 10-13.XII. 1967" (4 exs. LUZ); "Arsi, 13 km S Assella, stream 12.II. 1889, 2600 m" (1 ex. LUZ); same but "15.I. 1989" (5 exs. LUZ); "Duscha Riv. 2.5 km S Assella 2400 m 8.XII. 1967" (14 exs. LUZ); "Arsi 40 km S Assella, Lemu 19.XI. 1989, shallow water, sed, oil" (5 exs. LUZ); same but "26.II. 1989, 2600 m" (1 ex. LUZ); "Arsi Bekoji 11.XI. 1988, 2800 m, streamlet" (4 exs. LUZ); "Arsi Bekoji 10.XI. 1989 2800 m, temporary pool" (11 exs. LUZ); "Arsi 13 km E Bekoji, Galama Mnts 15.I. 1989, 3100 m" (5 exs. LUZ); "Arsi 10 km S Sagure Ashebaka R. 19.VI. 1988" (13 exs. LUZ); "40 km WNW Addis Abeba 4.IV. 1971, mt 2600" (1 ex. CRF); "Acachi 12.II. 1889/*H. muticus* Shp det. Régimbart" (7 exs. MCG); "Acachi II. 89" (1 ex. MNHN); "Arussi Pr. Kechema Riv. 7.5 km N Sagure 2510 m, 9.XII. 1967" (24 exs. LUZ); "S Aethiopien/Gimirra" (1 ex. MNB); "Simien nr. Dabat from valley S Falasha Mission 21.I. 1953" (14 exs. BMNH, 5 exs. MZH); "Simien, Debarec ca. 9800 ft, 11.XI. 1952/from streams with steep earth banks and small falls" (2 exs. BMNH); "from stream in flat valley/Gamo Pr. Bonghé (Gughé Highlands) ca. 9000 ft, 29.XII. 1948" (1 ex. BMNH); "Mussolini Pass 1.VI. 1963" (1 ex. MZH); "Ethiopia/*H. muticus* Shp det. Nilsson" (2 exs. MZH; 1 ex. NMW); "Abyss. Raffray" (2 exs. MNHN).

DIAGNOSIS: A characteristic species easily identified by the following combination of features: 1. Head foremargin broken for a short distance, 2. Head almost totally dark and 3. Penis narrows gradually to truncate apex (dorsal view).

Description: Body: Length 3.64 - 4.56 mm, breadth 2.08 - 2.52 mm. Dorsal appearance as in Fig. 7B.

Head: Black to dark ferrugineous. Narrow area anterior to frontal line often ferrugineous; posteriorly with a rather narrow, vaguely ferrugineous to pale ferrugineous area. Frontal outline rounded, medially slightly concave. Frontal border clearly visible, medially for a short distance broken (Fig. 7A); border without adjacent furrow. At inner margin of eyes, a narrow, densely punctated area. Frontal depressions quite deep but not distinctly delimited. Densely and finely to rather finely punctated. Area anterior to frontal line and narrow posterior area finely to very finely and sparsely punctate. Shiny, not reticulated; at eyes, fine microsculpture discernible. Basal segments of antenna pale ferrugineous to ferrugineous; apical segments gradually darkened, ferrugineous to dark brown.

Pronotum: Lateral outline rounded, posteriorly slightly straightened. Posterior corners distinct, although extreme apex rounded. Frontally and posteriorly with a broad darkened area; black to dark ferrugineous. Laterally and medially, except in middle, pale ferrugineous to ferrugineous. Punctation fine to rather fine, quite dense and almost evenly distributed. Shiny, almost totally without reticulation.

Elytra: Pale ferrugineous to ferrugineous, with quite distinct black to dark ferrugineous markings. Elytral colour pattern constant, rarely expanded or reduced (Fig. 7B-E). Punctation in frontal part of two kinds: fine and fairly dense, mixed with a few scattered, slightly coarser punctures. In posterior part, punctation a little coarser, denser and almost evenly distributed. Laterally, punctures fine and somewhat sparse. Discal row of punctures quite distinct in anterior half of elytron; dorsolateral row also discernible but more irregular. Lateral row of punctures sparser and rather irregular. Shiny, not reticulated. Epipleuron shiny, not reticulated, with rather fine, somewhat sparse punctures.

Ventral aspect: Black to dark ferrugineous. Punctation fairly coarse to fine, fairly dense. Medial part of metathorax, area between metacoxal lines and area posterior to metacoxal plates, with distinctly finer and sparser punctures, partly impunctate. Shiny, almost lacking reticulation; metacoxal plates posteriorly, with an impunctate, microsculptured area.

Legs: Pro- and mesotarsi moderately enlarged. Pale ferrugineous to ferrugineous; basal part of femora darkened.

Male genitalia: Fig. 7F-H.

Female: Externally similar to male.

Distribution: Eritrea, Ethiopia (Fig. 44).

Herophydrus spadiceus SHARP (Figs. 8, 45)

Herophydrus spadiceus SHARP 1882: 393 (orig. descr.); KOLBE 1883: 410 (descr., faun.); BRANDEN 1885: 39 (faun.); RÉGIMBART 1895: 43, 45 (descr., disc., faun.); 1903: 2 (descr., faun.); ZIMMERMANN 1920a: 74 (faun., list.); GUIGNOT 1959a: 344, 356 (descr., faun.); BERTRAND & LEGROS 1971: 243 (faun.); ROCCHI 1991: 85 (faun.); NILSSON 2001: 205 (cat.).

Herophydrus spadiceus var. *lineolata* KOLBE 1883: 410 (orig. descr.); BRANDEN 1885: 39 (given as var. *lineata*, faun.); ZIMMERMANN 1920a: 74 (list.); GUIGNOT 1959a: 356 (given as ab. *lineolatus*, descr., faun.).

Herophydrus biseriatus RÉGIMBART 1895: 45 (orig. descr.); ZIMMERMANN 1920a: 73 (faun.); GUIGNOT 1950a: 129 (disc.); 1959a: 344, 355 (descr., faun.); ROCCHI 1991: 85 (faun.); NILSSON 2001: 203 (cat.); **syn.n.**

Herophydrus poecilus RÉGIMBART 1895: 4 (disc., not descr.); 1903: 3 (orig. descr.); ZIMMERMANN 1920a: 74 (faun., list.); GUIGNOT 1959a: 343, 349, 351 (descr., faun.); ROCCHI 1991: 85 (faun.); NILSSON 2001: 204 (cat.); **syn.n.**

TYPE LOCALITY: of *spadiceus*: Madagascar; of *lineolata*: Madagascar; of *biseriatus*: Madagascar, Antsianaka; of *poecilus*: Madagascar, Fort-Dauphin.

TYPE MATERIAL: **Lectotype** of *spadiceus*, ♂, by present designation: "*Hydroporus spadiceus* Type Madagascar D.S./Type/Madagascar/Type 62 *Hydroporus spadiceus*" (BMNH). - **Paralectotype**: "*Hyphydrus spadiceus* Dej. Madagas. coll. Dejean (?)" (1 ex. BMNH). - **Holotype** of *lineolata*, ♀: "10077/var. *linolatus* Kolbe/Hist. Coll. (Coleoptera) Nr. 10077 *Herophydrus spadiceus* Sharp Madagascar Goud. Zool. Mus. Berlin" (MNB). - **Lectotype** of *biseriatus*, ♂, by present designation: "Madag./male/cotype *biseriatus*" (MNHN). - **Paralectotypes**: "Mad. Antsianaka Perrot Frères 1er semestre 1892" (2 exs. MNHN); "Antsianaka" (4 exs. MNHN; one previously after original description considered as *H. assimilis* and one simply labelled "*seriatus*"). - **Lectotype** of *poecilus*, ♂, by present designation: "Madagascar (Sud) Fort-Dauphin Alluaud 1900, 9/Type/*Herophydrus poecilus* Rég. Type" (MNHN). - **Paralectotypes**: Same data as lectotype but lacks type-indications (1 ex. MNHN); "Madagascar (Sud) Pays Androy (Nord) Alluaud 1900, 34/*poecilus* Rég." (1 ex. MNHN); "Madagascar (Sud) Bassin de la Tarasy Alluaud 1900, 23" (1 ex. MNHN).

ADDITIONAL MATERIAL EXAMINED:

MADAGASCAR: "E. Mad. 17.I. 1995 pr. Andilamena 900 m, Ambatombe, light, leg. G. Dunay & J. Janak" (1 ex. NMW); "E. Mad. 18-20.I. 1995 pr. Andilamena 950-1000 m, 5 km S Ampamoho, light, leg. G. Dunay & J. Janak" (2 exs. NMW); "Foret de Fito" (8 exs. MAC, 4 exs. MZH); "La Mandraka" (1 ex. MAC); "Rte d'Anosibe XII. 1961" (1 ex. MAC); "Antsianaka" (1 ex. MNHN); "Antsianaka 1er Sem. 1892" (2 exs. MNB, 2 exs. MNHN); "Mahakambahiny" (1 ex. MNHN); "Suberbieville" (1 ex. MAC); "S-O, Sept Lacs Tuléar VI-VII. 1957" (9 exs. MNHN, 4 exs. MZH); "Env. Perinet riv. Farimbany (q. 800 m) 18.VII. 1970" (4 exs. MCG, 1 ex. CRF); "Prov. Tamatave Foret de Perinet 17.VII. 70/*H. spadiceus* Shp det. Pederzani" (1 ex. CWV); "Env. de Moramanga (q. 1000 ca) 21.VII. 1970" (5 exs. MCG); "Env. de Antsirabe (q. 1600 c.a.) 15.VII. 1970" (5 exs. MCG); "Foret de Fito/*H. spadiceus* Shp det. Wewalka" (1 ex. CWV); "Diego I. 29" (2 exs. NMW); "Tananarive VII. 1934/Lac Tzimbanzaza" (4 exs. AMS, 7 exs. ISN, 2 exs. MNHN); "Tananarive Betongolo 1400 m lum., 21.XI. 1946" (1 ex. MNHN); "Tananarive VII. 1934" (1 ex. MNHN); "Env. Tananarive, marais de Nanisana 31.V. 1947" (1 ex. MNHN); "Env. Tananarive" (9 exs. MNHN, 1 ex. MZH); "Ananarive Sikora 91" (1 ex. ISN); "Madagascar, Österr. Exp. 58, leg. Starmühlner" (1 ex. ISN, 1 ex. NMW); "Madag. VII." (1 ex. ISN); "Madag." (4 exs. MNHN); "Madag./Hist. Coll. 10077" (3 exs. MNB).

DIAGNOSIS: Because of extensive variation in external body shape, colour pattern and shape of penis, *H. spadiceus* is difficult to delimit, and accordingly, to diagnose. Possibly, shape of penis is the best feature for identification of the species: in dorsal view, quite long and narrows slightly and evenly towards apex (or lateral outlines slightly curved inwards posterior to penis apex), which is either provided with distinct lateral extensions or extensions absent and frontolateral corners of penis slightly rounded. Penis apex (lateral view) only weakly curved.

Description: Body: Length 4.36 - 4.84 mm, breadth 2.48 - 2.84 mm. Dorsal colour pattern distinct but exhibits considerable variation and sometimes rather vague (Fig. 8B-E); body-shape also slightly variable, from quite elongate to somewhat oval (Fig. 8B).

Head: Black to dark ferrugineous to ferrugineous. Between eyes is a broad, anteriorly vague delimited blackish area. Posterior to eyes also strongly darkened. Frontal outline rounded, medially rather narrowly somewhat concave. Frontal margin quite distinct, broken for a short distance. Margin-ends curved anteriorly; very close to frontal edge margin-ends sometimes become indistinct, hardly discernible (Fig. 8A). Punctation fine to rather fine, somewhat irregularly distributed; between eyes quite dense, posteriorly, almost impunctate. Medio-frontally punctures quite sparse and distinctly finer. At inner margin of eyes, narrow area with dense punctures. Shiny, posteriorly sometimes with very fine, scattered fragments of reticulation. Antenna pale ferrugineous to ferrugineous.

Pronotum: Black to dark ferrugineous, mediolaterally pronotum becomes gradually paler. Colour pattern sometimes rather indistinct. Lateral outline almost evenly curved. Posterior corners not pronounced, extreme apex rounded. Punctation rather fine to somewhat coarse, quite dense, except mediolaterally punctures somewhat sparser and finer. Discal punctures partly united forming irregular longitudinal lines. Shiny, not reticulated.

Elytra: Black to dark ferrugineous, sometimes with variable, distinct, ferrugineous colour pattern (Fig. 8B-E). Punctation fine to rather fine, fairly dense, quite evenly distributed. Size of punctures somewhat irregular; punctures not distinctly divided into two different kinds or difference between distinguished size categories small (coarse puncture about 2 x diameter of fine puncture). Discal row of punctures anteriorly clearly discernible. Lateral and dorsolateral rows of punctures generally visible although rather indistinct (mixed with ordinary punctation). Shiny, not microsculptured. Epipleuron dark ferrugineous to ferrugineous, distinctly punctate, shiny and not microsculptured.

Ventral aspect: Black to dark ferrugineous. Punctation fine to coarse, somewhat irregularly distributed (sparse to dense). Metacoxal plates posteriorly and metathorax medially on each side of midline impunctate. Rather shiny, almost without microsculpture.

Legs: Blackish to dark ferrugineous to ferrugineous. Pro- and mesotarsi somewhat enlarged.

Male: Genitalia as in Fig. 8 F-I. Shape of penis apex variable.

Female: Externally almost same as male. Sternites laterally finely microsculptured.

Distribution: Madagascar (Fig. 45).

Synonymy: Type material of all four taxa involved (see above) have been examined and compared. Morphological differences between recognized taxa exist, as do intermediates. At least for the time being, they are considered conspecific, and *H. spadiceus*, being the oldest name, is also the valid name of this species. Future careful studies may reveal whether the species should be divided into separate species.

Herophydrus variabilis variabilis RÉGIMBART (Figs. 9, 46)

Herophydrus variabilis RÉGIMBART 1906: 238 (orig. descr.); ZIMMERMANN 1920a: 74 (list., faun.); GUIGNOT 1936: 30, 31 (descr., faun.); 1946a: 313 (faun.); 1954b: 18 (faun.); 1959a: 345, 359 (descr., faun.); 1961: 934 (biol.); OMER-COOPER 1964: 367, 368 (descr., faun., biol.); NILSSON 2001: 205 (cat.).
Herophydrus variabilis ab. *dilutus* GUIGNOT 1936: 31 (orig. descr.); 1959a: 359, 360 (descr., faun.).

TYPE LOCALITY: Kenya, Wa-Kikuyu.

TYPE MATERIAL: **Lectotype**, ♂, by present designation: "Afr. or.le anglaise Escarpment (Wa-Kikuyu) Ch. Alluaud VIII. 1903" (MNHN). - **Paralectotypes**: Same data as on lectotype (22 exs. MNHN); "Afr. or.le anglaise Kijabé (Rift Valley orle) Ch. Alluaud VIII. 1903" (3 exs. MNHN). - Status unclear: "Afr. or. anglaise Mts. Aberdare de Nyere a Naivasha Alluaud & Jeannel/Mt. Kinangop vers est, prairies alpines 3000-3100 m Fevr. 1912 St. 55/paratype" (1 ex. MNHN).

ADDITIONAL MATERIAL EXAMINED:

KENYA: "Afrique or. anglaise Monts Aberdare (versant sud-ouest) Alluaud & Jeannel/Lisiére infer. des forets et prairies decouvertes 2600-2700 m Fevr. 1912 St. 57/Type ab. *dilutus*/Type" (1 male, MNHN); "Aberderena 10.III. 1989" (3 exs. CNU); "5 km S Nyahururu 28.X. 1995/*H. inquinatus* Boh. det. Wewalka 96" (1 ex. CWV); same data but "*H. variabilis* Rég. det. Wewalka 96" (4 exs. CWV); "Turi 8000 ft 4.XII. 1963" (1 ex. BMNH); "Br. O. A. Escarpment" (3 exs. ISN); "Mais forest Kinangop Mt Aberdare vers ouest 2600 m, Miss. Omo (3 exs. ISN); N Kinangop 8300 ft, 30.V. 1957/quarry pool nr Kenya pencil slats saw mills" (1 ex. BMNH).
TANZANIA: "D. O. Afr. 18.II. 07 Lomalasin" (1 ex. MNB); "Mt Meru crater, 2.VI. 1972" (1 ex. BMNH).

DIAGNOSIS: A fairly well-delimited species characterized by a large body and variable dorsal colour pattern. Correct identification requires examination of male genitalia: penis large, in dorsal view almost parall-sided, frontolateral extensions rather weakly developed. Penis in lateral view towards apex almost evenly but moderately curved. See also subspecies *H. v. secundus* below.

Description: Body: Length 4.92 - 5.92 mm, breadth 2.75 - 3.42 mm. Ovally oblong, with highly variable dorsal colour pattern (Fig. 9B-D).

Head: Blackish to dark ferrugineous. Anteriorly and posteriorly between eyes paler; ferrugineous to pale ferrugineous. Frontal outline, rounded, medially somewhat concave. Frontal margin rather weakly developed; close to eyes margin clearly visible, medially margin becomes indistinct and disappears (medially broken for a comparatively long distance); ends of margin do not reach the frontal head edge (Fig. 9A). Punctation fine to rather fine, dense. Punctures posteriorly almost absent; anteriorly narrowly very fine. At inner margin of eyes is a dense row of punctures. Frontal depressions quite extensive but indistinctly delimited. Rather shiny, almost entire head finely microsculptured. Antenna pale ferrugineous to ferrugineous.

Pronotum: Posteriorly, broadly blackish to dark ferrugineous. Anteriorly, also darkened, but dark area narrower. Medially, and laterally pale ferrugineous to ferrugineous. Lateral outline of pronotum somewhat curved to almost straight. Posterior corners quite distinct. Punctation rather fine to fine, fairly dense. Mediolaterally, a small impunctate to sparsely punctate area. Shiny, extensively not reticulated; anteriorly and laterally, fine reticulation may be discerned.

Elytra: Pale brown to pale ferrugineous, with variable black to dark ferrugineous markings (Fig. 9B-D). Visibility of colour pattern varies: indistinct to quite distinct. Specimens with reduced dark elytral markings have been named *H. v.* ab. *dilutus* GUIGNOT. The aberration is to be regarded as a simple morph. Punctation very fine to fine, dense. Frontally, punctures form two distinct kinds; coarser punctures distinctly sparser and rather irregularly distributed (diameter 3 - 4 x larger than in fine punctures). Discal row of punctures frontally clearly discernible, although somewhat irregular. Dorsolateral and lateral rows of punctures indistinct to somewhat indistinct, mixed with adjacent punctures but at least sometimes weakly discernible. Shiny, not reticulate. Epipleuron pale ferrugineous to ferrugineous; distinctly punctate and not reticulate, shiny.

Ventral aspect: Black to dark ferrugineous, prothorax mainly pale ferrugineous to ferrugineous. Punctation coarse to fine, quite dense but somewhat irregularly distributed; metathorax medially on each side of midline with a large impunctate area. Metacoxal plates posteriorly with broad impunctate area. Shiny, not reticulate.

Legs: Pale ferrugineous to ferugineous. Pro- and mesotarsi slightly enlarged.

Male genitalia as in Fig. 9E-G.

Female: Entire pronotum, with four apical sternites, submat, finely microsculptured. See also below under *H. v. secundus*.

Distribution: Kenya, Tanzania (Fig. 46). Unverified literature record is from the Democratic Republic of the Congo (GUIGNOT 1954b) - possibly refers to the subspecies *H. variabilis secundus* below.

Herophydrus variabilis secundus GUIGNOT (Fig. 46)

Herophydrus variabilis secundus GUIGNOT 1954a: 5 (orig. descr.); 1954b: 18 (descr., faun.); NILSSON 2001: 205 (cat.).

TYPE LOCALITY: Democratic Republic of the Congo (Zaire), Upemba National Park, Dipwa River.

TYPE MATERIAL: **Holotype**, ♂: "Holotypus/Congo belge: PNU R. Dipwa (1900 m) 17-I-1948 Mis. G.F. de Witte 1242a/coll. Mus. Congo (ex. coll. I.P.N.C.B.)/Type/F. Guignot det. 1953 *Herophydrus variabilis secundus* Guignot Type" (MAC). - **Paratypes**, studied: "Congo Belge PNU Mukana (1810 m)/20-XII-1948 F. de Witte/Paratype" (2 exs. MNHN); "Paratypus/Congo Belge PNU Katongo affl. Mubale (1750 m) 12-IV-1948 Mis. G.F. de Witte 1522a/Coll. Mus. Congo (ex. coll. I.P.N.C.B.)/*H. v. secundus* Guign. det Guignot 1953" (1 ex. MAC); "PNU Lusinga (1760 m) 6.XII. 1947, 1100a/*H. v.* ssp. *secundus* Guignot 53" (1 ex. ISN).

ADDITIONAL MATERIAL EXAMINED:

DEMOCRATIC REPUBLIC OF THE CONGO (Zaire): "PNU Lusinga (1760 m) 1-8.XII. 1947/*H. inquinatus* Boh. det. Guignot 52" (1 ex. ISN).

ZIMBABWE: "28.XI.-1.XII., 20.33S-28.30E Matopos N.P. lux 1933" (8 exs. MNB, 3 exs. MZH).

DIAGNOSIS: The subspecies *H. v. secundus* can be distinguished from *H. v. variabilis* by having more distinct dark elytral colour pattern and by the female, which is totally submat, finely microsculptured. Additionally, penis in lateral view apically straight, almost as in *H. ignoratus*. Not conspecific with this species, however because of the former's larger body, male head frontally microsculptured and penis dorsally broader. Future studies will reveal whether the subspecies *secundus* is a valid species or not.

Description: Length of body 5.40 - 5.67 mm, breadth 3.00 - 3.17 mm.

Distribution: Democratic Republic of the Congo (Zaire), Zimbabwe (Fig. 46).

Herophydrus endroedyi sp.n. (Figs. 10, 47)

TYPE LOCALITY: South Africa, Orange Free State, Sasolburg.

TYPE MATERIAL: **Holotype**, ♂: "S. Afr., O. F. State Sasolburg 11. 1982 D.M. Kroon" (TMP). - **Paratypes**: Same data as holotype (6 exs. TMP, 3 exs. MZH; 1 ex. NMW); "S. Afr.: OFS Parys 4 km E 26.54S-27.35E/Farm Abel 52, 4-7.XII. 1992 M. Krüger" (1 ex. TMP); "Oranjekrag H. F. Verwoerd Dam 8-11.XII. 1969 J. H. Potgieter, c.s." (1 ex. TMP); "S. Afr. Natal Drakensberg Cathedral Peak 28.57S-29.12E/15.3. 1976 EY: 1090 at light leg Endrödy-Younga" (1 ex. TMP, 1 ex. MZH); "S. Afr. Natal Cathedral Peak 28.57S-29.12E/16.3. 1976 EY: 1093 black light coll. Endrödy-Younga" (2 exs. TMP, 1 ex. MZH); "S. Afr. Middld. Karkloof Dam 29.21S-30.15E/12.12. 1989 E-Y: 2767 water coll., dam, Endrödy-Younga" (1 ex. TMP, 1 ex. MZH); "S. Afr. Natal Middld, Karkloof for. 1300 m 29.18S-30.13E/13.12. 1989 EY: 2772 UV-light in forest Endrödy & Klimaszew" (1 ex. TMP); "Natal 40 km S Bethlehem 30.XII. 1993 leg. Wewalka (10)/*Herophydrus oscillator* Sharp det. Wewalka 94" (22 exs. CWV, 5 exs. MZH); "Pt Natal Boh." (2 exs. MNB; females, determination uncertain); "Trsvl Belfast 29.XI. 1948 Omer-Cooper" (12 exs. AMS, 1 ex. ISN); "Trsvl Pietersburg 25. Nov. 1948 Omer-Cooper" (4 exs. AMS); "Trsvl Breyton Rd L. Chrissie 7. Dec. 1948 J. Omer-Cooper" (3 exs. AMS; 3 additional exs. in very bad condition, not labelled as paratypes); "Trsvl Middelburg XI. 1948" (2 exs. AMS); "Trsvl Wasserman's Beacon 6.XII. 1948" (1 ex. AMS); "Trsvl Waterberg Distr. Del Kraal 22.VIII. 1948" (2 exs. AMS); "Trsvl Ermelo, gravel pits 8. Dec. 1948 J. Omer-Cooper" (4 exs. AMS); "EC Pr. Wodehouse, Town dam Dordrecht 5.V. 1955" (2 exs. AMS); "EC Pr. Matatiele 5.V. 1956" (1 ex. AMS); "EC Pr. Nquanakwe 12.V. 1956" (1 ex. AMS); "Aliwal North 18-25.VIII. 1954" (3 exs. SAM, 1 ex. MZH). - Namibia: "SW Afr. Gobabeb/Kuiseb 23.3S,150E, 406 m, 20.II.-6.III. 1997" (1 ex. ZFMB). - Botswana: "Bakgatla Sebele 5.XI. 1968 MV-trap 1488/Robert D. Ward collection, donated 1989/*Herophydrus oscillator* Sharp det. Rocchi 91" (1 ex. CRF); "Botswana Serowe Farmer's Brigade mercury vapour light Nov. 94 P. Forchhammer" (1 ex. CRF).

DIAGNOSIS: Very close to *H. inquinatus*, and only recognizable by examination of the penis; in *H. endroedyi,* penis apex more strongly curved (lateral aspect) and penis in dorsal view almost parallel and narrows suddenly close to apex (in *H. inquinatus,* penis narrows for a long distance evenly towards apex).

Description (only differences from *H. inquinatus* noted): Body: Length 4.20 - 5.17 mm, breadth 2.28 - 2.83 mm. Appearance in dorsal view as in Fig. 10B.

Head: Posterior to eyes often also darkened. Frontal part of head as in Fig. 10A.

Elytra: Colour pattern slightly variable; often as in Fig. 10B.

Male genitalia: Fig. 10C-E.

Distribution: South Africa (Natal, Oranje Free State, Transvaal, E Cape Province), Namibia and Botswana (Fig. 47).

Etymology: The new species is named after the late Dr. Sebastian Endrödy-Younga, Pretoria, whose hospitality the senior author appreciated very much when visiting South Africa.

Herophydrus gschwendtneri OMER-COOPER (Figs. 11, 48)

Herophydrus gschwendtneri OMER-COOPER 1957: 63 (orig. descr.); 1964: 370 (descr., faun., biol.); 1965: 142, 143, 144 (descr., disc., faun.); NILSSON 2001: 203 (cat.).

TYPE LOCALITY: South Africa, Transvaal, Breyton Road, near Lake Chrissie.

TYPE MATERIAL: **Holotype**, ♂, by present designation: "Type/Transvaal Breyton Rd. nr. L. Chrissie 7. Dec. 1948 J. Omer-Cooper/*Herophydrus gschwendtneri* O-C. det. J. Omer-Cooper type" (BMNH). - **Paratype**, ♀: Same relevant data as in lectotype (1 ex. BMNH).

ADDITIONAL MATERIAL EXAMINED:

ZIMBABWE: "Inyanga XI. 1948" (13 exs. AMS).

SOUTH AFRICA: "Trsvl. Breyton Rd nr. L. Chrissie/7.XII. 1948" (22 exs. AMS, 1 ex. TMP); "Capland Algoa Bay" (1 ex. TMP); "Pool at road-side nr Wildebees R 26.III. 1993" (1 ex. AMS, 1 ex. MZH); "Dam on Gatberg R 26.III. 1993" (1 ex. AMS); "Gatberg R at Gatberg Vlei 26.3. 1993" (1 ex. AMS, 1 ex. MZH).

DIAGNOSIS: Resembling *H. inquinatus* and *H. endroedyi* but generally with more extensive dark elytral colour pattern. Correct identification requires examination of the penis, which is shorter and apex broader than in the two close species.

Description: Body: Length 4.56 - 4.75 mm, breadth 2.50 - 2.67 mm. Ovally oblong. Dorsal aspect with slightly variable colour pattern (Fig. 11B).

Head: Pale ferrugineous to ferrugineous. Between eyes is an often somewhat vague darkened area. Posterior to eyes dark ferrugineous. Frontal outline rounded, medially somewhat concave. Frontal margin weakly developed; only discernible laterally at eyes (margin broken for a long distance; margin ends do not reach frontal edge) (Fig. 11A). Punctation fine to rather fine, dense, almost evenly distributed. At pronotum, punctures very fine, somewhat sparse. Rather shiny, not reticulate, except medially between eyes (slightly mat and finely reticulated). Frontal depressions discernible but their delimitation vague. At inner margin of eyes head slightly depressed and only with slightly denser punctures. Antenna pale ferrugineous.

Pronotum: Pale ferrugineous to ferrugineous. Frontally and basally with darkened area (delimitation often vague). Lateral outline of pronotum rounded. Posterior corners discernible but not strongly pronounced. Punctation fine to rather fine, dense; mediolaterally, punctures somewhat sparser. Shiny, not reticulated.

Elytra: Pale ferrugineous, with blackish to dark ferrugineous, slightly variable colour pattern (Fig. 11B). Punctation fine, quite dense. In anterior half of elytra, two distinct kinds of punctures may be separated: Finer, denser and more evenly distributed punctures and coarser, sparser and irregularly distributed punctures. Diameter of coarser puncture about 2 x diameter of finer puncture. Discal row of punctures clearly discernible in anterior half of elytron. Dorsolateral row and lateral row of punctures also discernible but somewhat irregular and more indistinct. Shiny, not reticulated. Epipleuron pale ferrugineous, rather finely punctate and shiny, not reticulated.

Ventral aspect: Ferrugineous to dark ferrugineous. Punctation coarse to rather fine, quite dense but somewhat irregularly distributed: Metathorax medially on each side of midline and metacoxal plates posteriorly impunctate. Shiny, not reticulate. Scattered fragments of reticulation may be discerned.

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

Male genitalia: Fig. 11C-E.

Female: Externally similar to male.

Distribution: Zimbabwe, South Africa: Transvaal and Cape Province (Fig. 48).

Herophydrus ignoratus GSCHWENDTNER restored species (Figs. 12, 49)

Herophydrus ignoratus GSCHWENDTNER 1933: 87 (orig. descr.); 1938: 8, 9, 10 (descr., faun.); GUIGNOT 1950b: 146, 147 (disc., faun., syn. *H. inquinatus*); 1959a: 363 (syn.); OMER-COOPER 1965: 143 (syn. *H. inquinatus*); NILSSON & PERSSON 1993: 71 (syn.); NILSSON 2001: 203 (syn.).
Herophydrus inquinatus var. *ignoratus* GSCHWENDTNER, OMER-COOPER 1957: 63, 65 (descr., faun.).

TYPE LOCALITY: Democratic Republic of the Congo (Zaire), Shaba Province, Kando.

TYPE MATERIAL: **Lectotype**, ♂, by present designation: "Holotype male/Musée du Congo Katanga. Kando 8-VIII-1931 G.F. de Witte/Type male Gschw./R. Dét D 2221/*Herophydrus ignoratus* Gschw. det. Gschwendtner" (MAC). - **Paralectotypes**: "Katanga: Kakyelo 1-9.XI. 1930 G. F. de Witte" (3 exs. MAC, 1 ex. OLL); "Haut-Luapula Kakyelo 1-9.XI. 1930 G. F. de Witte" (1 ex. OLL); "Elisabethville X. 1911 miss. agric." (1 ex. MAC).

ADDITIONAL MATERIAL EXAMINED:

DEMOCRATIC REPUBLIC OF THE CONGO (Zaire): "PNA Ruhengeri (S. Kirii) 31.VIII., 31.VIII.-3.IX., 3.X., X. 1934" (103 exs. ISN, 1 ex. MNHN, 4 exs. OLL, 1 ex. CWV); Same but with "(1800m)" (1 ex. ISN); "Ituri Nioka 28.VII. 59" (1 ex. MAC, 1 ex. MZH); "Adeda" (1 ex. MNHN).

RWANDA: "Kinazi 1600 m, terr. Nyanza 5-8.I. 1953" (1 ex. ISN); "Ruhengeri 7.VII. 1959" (1 ex. MAC, 1 ex. MZH); "Lac Bulera affl. 8.VII. 59" (1 ex. MAC); "Rubona 6.VII. 59" (1 ex. MAC).

KENYA: "25 km SE Nyeri Karatina 4.XI. 1995/*H. inquinatus* Boh. det. Wewalka 96" (1 ex. CWV); "5 km S Nyahururu 28.X. 1995/*H. inquinatus* Boh. det. Wewalka 96" (1 ex. CWV); "Br.O.Afr. Farm Karundu 1910/*H. inquinatus* Boh. det. Mouchamps" (3 exs. ISN, 1 ex. CWV); same collecting data but "*H. inquinatus* (Boh.) Fery det. 2000" (1 ex. MZH, 32 exs. NMW); "Nairobi, Wa-Kikuju et Masai 1903" (6 exs. MNHN); "Wa-Kikuyu Bassin de l'Athi R. Kamitit XI. 1908" (2 exs. ISN); "Wa-Kikuyu Ft Hall I. 1912, 1990 m" (1 ex. ISN); "Kitale Uashin Gishu 2100 m, Miss. Omo" (4 exs. ISN); "Mau-Escarpment Molo XII. 1911, 2420 m" (2 exs. ISN); "Molo XII. 1911, 2420 m" (1 ex. MNHN); "Mais Forest Kinangop Mt. Aberdare, vers ouest 2000 m" (1 ex. MNHN); "S of Eldoret 7000 ft 5.XII. 1967" (3 exs., MNHN, 10 exs. BMNH); "Pond near Eldoret 20.VII. 1970" (1 ex. BMNH).

TANZANIA: "Mufundi distr., Mafinga m. 1900, 2-15.I. 1993" (6 exs. MCG), "D.O.A. Langenburg" (2 exs. MNB).

ZAMBIA: "Mazabuka II 1947" (1 ex. AMS).

ZIMBABWE: "Zambesia Salisbury" (2 exs. MNHN); "Masuka Salisbury" (1 ex. MNHN); "Mashuna Salisbury" (1 ex. MNHN); "28.XI.-1 XII. 93, 20,33S/28.30 E. Matopos NP lux." (1 ex. MNB); "Inyani Riv. 38 mi. Salisbury 17.IV. 1048" (12 exs. SAM).

SOUTH AFRICA: "Trsvl, Waterberg distr./R Nyl 23.VIII. 1948/*H. inquinatus* v. *ignoratus* Gschw. det. Omer-Cooper" (1 ex. TMP).

DIAGNOSIS: *H. ignoratus* is a well-delimited species characterized particularly by penile features: In dorsal view, penis broad, almost parallel-sided, and in lateral view, apical half of penis straight, not distinctly curved. The species is also characterized by elytral punctation, which is clearly divided into two size classes (size difference, see description below).

Description: Body: Length 4.75 - 5.50, breadth 2.67 - 3.17. Ovally oblong, with quite distinct but somewhat variable colour pattern (Fig. 12B-C).

Head: Pale ferrugineous, between eyes with broad blackish to dark ferrugineous marking. Posterior to eyes somewhat darkened (delimitation vague). Frontal outline rounded, medially quite distinctly concave. Frontal margin laterally discernible, although weakly developed. Towards middle margin becoming indistinct, hardly visible. Margin medially broken for a short distance; margin-ends reach frontal edge (Fig. 12A). At inner side of eyes is a rather dense row of punctures. Punctation fine to rather fine, fairly dense but slightly irregularly distributed. Posteriorly, punctures distinctly finer and sparser (separate punctures elongated, forming fine striae). Anterior to frontal margin, head with very fine punctation. Frontal depressions clearly visible, although their delimitation vague. Shiny, extensively not reticulated; with fine, scattered microsculpture at eyes and medially between eyes. Antenna pale ferrugineous.

Pronotum: Lateral outline rounded to almost straight. Posterior corners with extreme apex quite distinct, pale ferrugineous. Frontally and posteriorly, black to dark ferrugineous, quite distinct markings. Punctation fine to very fine, quite dense. Mediolaterally, distinctly finer and sparser punctures. Rather shiny, not microsculptured.

Elytra: Pale ferrugineous, with black to dark ferrugineous, distinct but somewhat variable markings (Fig. 12 B-C). Punctation quite dense. In frontal half of elytra, punctation forms two distinct size classes. Finer punctures slightly denser and much finer; diameter of coarse punctures 4 - 5 x diameter of finer punctures. Posteriorly, size classes become obscure; size of punctures somewhat irregular. Difference between elytral puncture sizes somewhat variable; coarser puncture may exceed diameter of finer punctures by 3 - 6 x. Rows of punctures at least anteriorly visible: discal row of punctures quite distinct, dorsolateral row of punctures irregular and rather indistinct, and lateral row of punctures somewhat irregular but clearly discernible. Shiny, not microsculptured. Epipleuron with punctures somewhat indistinct, shiny, not microsculptured.

Ventral aspect: Dark ferrugineous to ferrugineous. Prothorax mainly pale ferrugineous. Punctation coarse to fine, quite dense but somewhat irregularly distributed. Metathorax medially on each side of midline and metacoxal plates posteriorly impunctate. Shiny, almost totally lacking microsculpture. Very fine, scattered reticulation may be discerned.

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

Male genitalia: Fig. 12D-F.

Female: Dimorphous, externally similar to male, or body dorsally submat, finely microsculptured.

Distribution: Kenya, Tanzania, Democratic Republic of the Congo (Zaire), Rwanda, Zambia, Zimbabwe, South Africa (Transvaal) (Fig. 49).

Restored species: Study of type material revealed that *H. ignoratus* cannot be placed in synonymy with *H. inquinatus* or any other recognized *Herophydrus* species. Thus, the taxon again deserves rank as a valid species.

Herophydrus inquinatus (BOHEMAN) (Figs. 13, 50)

Hydroporus inquinatus BOHEMAN 1848: 254 (orig. descr.); SHARP 1882: 798 (descr., faun.).

Herophydrus inquinatus (BOHEMAN), RÉGIMBART 1894: 229 (faun.); 1895: 41 (descr., faun.); 1906: 237, 238 (disc., faun.); 1908: 3 (descr., disc., faun.); ZIMMERMANN 1920a: 73 (faun., list.); ALWARTH 1921: 442 (faun.); OMER-COOPER 1931: 778 (descr., faun., biol.); GSCHWENDTNER 1932a: 14 (descr.); 1933: 88 (disc.); 1935: 19, 20 (descr., faun.); GUIGNOT 1935: 38 (disc.); GSCHWENDTNER 1938: 7, 8, 9, 10 (descr., disc.); GUIGNOT 1936: 29, 30, 31 (descr., disc., faun.); 1946a: 312, 316, 318 (descr., disc., faun.); 1954b: 18 (faun.); 1955a: 29 (descr., faun.); OMER-COOPER 1956a: 21 (faun., biol.); 1957: 63, 65 (descr., disc.); GUIGNOT 1959a: 345, 363 (descr., faun.); OMER-COOPER 1962: 295 (disc., faun.); 1964: 367, 369 (descr., faun., biol.); OMER-COOPER 1965: 141, 143 (descr., disc., faun.); BERTRAND & LEGROS 1967: 867 (faun.); HARRISON & HYNES 1988: 11 (biol., faun.); NILSSON & PERSSON 1993: 70, 71, 94 (faun.); NILSSON 2001: 203 (cat.).

Herophydrus oscillator SHARP 1882: 394 (orig. descr.); BRANDEN 1885: 39 (faun.); RÉGIMBART 1895: 41, 42, 43, 44, 45 (descr., disc., faun.); ZIMMERMANN 1920a: 74 (faun., list.); 1920b: 226 (faun.); GSCHWENDTNER 1932a: 14 (descr., faun.); 1933: 89 (disc.); 1935: 19 (faun.); OMER-COOPER 1957: 63, 65 (descr., faun.); GUIGNOT 1959a: 345, 364 (descr., faun.); OMER-COOPER 1964: 367, 370 (descr., faun., biol.); 1965: 142, 143, 144 (descr., disc., faun.); PEDERZANI 1988: 108 (faun.); CURTIS 1991: 186 (faun., disc.); NILSSON 2001: 204 (cat.); **syn.n.**

Herophydrus coelamboides RÉGIMBART 1895: 42 (orig. descr.); ZIMMERMANN 1920a: 73 (faun., list.); OMER-COOPER 1957: 65 (syn. disc.); GUIGNOT 1959a: 345, 361 (descr., faun.); OMER-COOPER 1965: 144 (syn.); NILSSON 2001: 203 (cat.); **syn.n.**

Herophydrus labiosus GUIGNOT 1950b: 147, 148, 149 (orig. descr.); OMER-COOPER 1957: 65 (syn.); GUIGNOT 1959a: 364 (syn.); OMER-COOPER 1965: 144 (syn.); NILSSON 2001: 204 (syn.); **syn.n.**

TYPE LOCALITY: of *inquinatus*: South Africa (Caffraria orientali et interiore); of *oscillator*: South Africa, Adoo Bush; of *coelamboides*: South Africa, Natal; of *labiosus*: South Africa, Natal, Dumbready.

TYPE MATERIAL: **Syntypes** of *inquinatus*: "Caffraria/J. Wahlb./Type/Type/4616 E91, and Caffraria/J. Wahlb./Paratype/*Herophydrus inquinatus* Boh./*H. oscillator* Shp female det. J. Omer-Cooper/4617 E91" (2 exs. RMS, no lectotype designated because male specimen may exist). - **Lectotype** of *oscillator*, ♂, by present designation: "Type/Type 186/Caffraria/*Herophydrus oscillator* Sh." (BMNH). - **Paralectotypes**: "Type 186/Caffraria/Sharp Coll. 1905-313" (1 ex. BMNH); "Cotype/Caffraria/Sharp Coll. 1905-313/*H. oscillator* Shp" (1 ex. BMNH); "Cotype/Sharp Coll. 1905-313/Caffraria/*Herophydrus oscillator* Shp Co-type" (1 ex. BMNH); "Paratype/Caffraria/Sharp Coll. 1905-313/*Hydroporus* 186 mihi Caffr. (Adoo bush)/*Herophydrus oscillator* Shp" (1 ex. BMNH); "Cotype/ *Hydroporus* no. 186 mihi Caffr. (Adoo bush)/*Herophydrus oscillator* Shp cotype" (1 ex. BMNH). - **Holotype** of *coelamboides*, ♀: "Natal/*Hygrotus coelamboides* Rég. type unique/holotype/*H. oscillator* Shp. det. J. Omer-Cooper" (SAM, not examined, specimen lost). - **Holotype** of *labiosus*, ♂: "Dumbready, Natal/male/Type de *labiosus* Guignot" (MNHN).

ADDITIONAL MATERIAL EXAMINED [Note: Among undissected specimens may be exs. of *H. endroedyi*]:

ZAMBIA: "Livingstone Zambezi riverside Musi O'Tunya 16.VIII. 1986/*H. oscillator* Shp det. Pederzani" (1 ex. MCG).

ZIMBABWE: "Shangani R. 13.IX. 1948" (1 ex. AMS); "Bulawayo VII. 1945" (1 ex. AMS); "Salisbury Distr. Makazi R. 4. VIII. 1946/*H. inquinatus* Boh. det. Omer-Cooper" (1 ex. LUZ); "Stream nr Salisbury 17.IX. 1948" (2 exs. AMS); "28.XI.-1.XII. 1993, 20,33S/28,30E, Matopos N.P. lux" (3 exs. MNB, 1 ex. MZH); "1-5.XII. 1993, 20,13S/31,00E, Kyle Recer. Park at L Mutirkwi, lux" (1 ex. MNB); "Rusapi 13.XI. 1948" (3 exs. AMS); "Marandellas 12.XI. 48" (1 ex. AMS).

NAMIBIA: "9.I. 1993 Oranje R Violsdrift" (2 exs. MZH); "Naukluft 8.X. 1979" (2 exs. MZH, 1 ex. TMP); "Namib Tinkas dam 22.50S-15.30E/1.XI. 1974 EY:440 shore washing" (5 exs. MZH, 17 exs. TMP); "Damaral. Groot Barmen 22.05S-16.40E/12.IX. 1975 EY:370, shore washing" (5 exs. MZH, 14 exs. TMP); "Hereroland Otjinenu Farm 21.10S-18.50E/4.VII. 1978 EY:1457" (1 ex. TMP); "Namib Gobabeb 23.34S-15.03E/7.IX. 1974 EY:363 shorewashing" (1 ex. MZH, 6 exs. TMP); "Gt Namaqld Frm Kub Süd Fish R. 24.12S-17.30E/2.VIII. 1981 EY:1819" (1 ex. MZH, 1 ex. TMP); "Khomashochl Farm Wissenfels 23.20S-18.25E/14.IX. 1974 EY:371 shore washing" (11 exs. TMP, 3 exs. MZH); "Namib Sessriem Canyon 24.35S-15.47E/15.I. 1975 EY:549 shore washing" (1 ex. MZH, 3 exs. TMP); "Ca 7 mi NE Grootfontein 29.V. 1954/waterhole in dolomite" (1 ex. MZH, 2 exs. BMNH); "Windhoek Dam, 8.VII. 1937" (1 ex. AMS); "Windhoek New Dam 17.VII. 1937" (1 ex. AMS); "Windhoek Distr. Valencia Ranch/14-24.IV. 1972" (1 ex. MZH, 4 exs. TMP); "24.29,41S-17.51,52E, Hardap Gr. Water Inst., pool shore, water plant, water catches 1.XII. 1997" (6 exs. MZH, 23 exs. MNB); "24.27,38S-17.42,29E, Hardap Gr. Hardap fountain" (2 exs. MZH, 7 exs. MNB); "Hardapdam Mariental Distr. 10-14.IV. 1972" (1 ex. MZH, 2 exs. TMP); "Namib des. Numis Wasser 26.03S-16.15E/9.VIII. 1989 EY: 2642 shorewash, rockpool" (1 ex. TMP); "40 km ex. Stampriet-Gochas SE 21.18 Ba, 25.I. 1981" (4 exs. TMP); "Tsumkwe Pan 14.IX. 1961" (1 ex. TMP); "Kaokoweld Anabib (Orumpembe) 100 mi W Ohopoho 12-13.VI. 51" (1 ex. LUZ); "Kaokoweld Omutati 70 mi WSW Ohopoho 5.VI. 51" (1 ex. LUZ); "Okarumuti Farm 25.VIII. 1984/22.12S-17.15E mt. 1800" (1 ex. CRF); "Okahandja 1240 m, 8-12.III. 79/*H. oscillator* (?) det. Wewalka" (1 ex. CWV); "19.XI. 1993, 27.55S-17.29E, 250 m Fish Riv. Canyon Ai-Ais lux" (1 ex. MNB); "12.I 1993 Fish-Riv.-Canyon im Canyon" (2 exs. MNB, 1 ex. MZH); "Gr. Etemba" (1 ex. MNB); "Rooibank V. 1905" (1 ex. MNB); "Gr. Fontain" (2 exs. MNB); "Knis (?) am Fisch Fluss DSWAfr." (3 exs. MNB, 1 ex. MZH).

BOTSWANA: "Metsimaklaba 7-12.III. 1930/*H. oscillator* Shp det. Gschwendtner" (1 ex. TMP).

SOUTH AFRICA: "Transvaal, Nelshoogate For. St. 25.50S-30.50E/30.XI. 19786 EY: 2334 UV light" (1 ex. TMP); "Nelshoogate galery for. below St. 25.51S-30.53E/4.XII. 1986 EY: 2354 UV light" (1 ex. MZH, 2 exs. TMP); "Cullinan Distr. Ho Khotso Farm/28.XI. 1980" (2 exs. TMP); "Trsvl Wiedouw Farm 31.43S-18.43E/19.VIII. 1983 EY: 1945" (1 ex. TMP); "Wiedouw Farm/19.VIII. 1983 EY: 1946 shorewashing" (2 exs. TMP); "Vereeniging 11.X. 1950/at light, evening" (4 exs. LUX); "Nietverdiend 8.I. 1978" (1 ex. MZH); "Moordrift IX. 1924/*H. oscillator* Shp det. Gschwendtner" (10 exs. TMP); "Trsvl Belfast/29.XI. 1948" (1 ex. TMP); "Pretoria 1940/*H. oscillator* Shp det. Guignot 1951 Pretoria 1951" (1 ex. ISN, 2 exs. MCG); "Pretoria Distr. Roodeplaat/UV light trap 30.X.-10.XI. 1960" (1 ex. MZH, 2 exs. TMP); Same but "26.X. 1960" (2 exs. TMP); Same but "8-10.X. 1960" (1 ex. TMP); "Pretoria Distr. Roodeplaat III. 1960" (1 ex. TMP); Same but "X. 1960" (1 ex. MZH, 2 exs. TMP); "Naboomspruit Torino Rh 24.37S-28.38E/14.I. 1990 EY:2773 UV-light" (1 ex. TMP); "Potschfarm/*H. oscillator* Shp det Gschwendtner" (1 ex. TMP); "Waterval Farm 25.35S-26.16E/light 12.XI. 1991" (1 ex. TMP); "E Trsvl, Penge 13-17.XI. 1972" (1 ex. TMP); "Swartruggen Dam III. 1970 (1 ex. TMP); "Potschstroom/*H. oscillator* Sharp det. Gschwendtner det., Koster X. 1924/*H. oscillator* Shp det. Gschwendtner" (5 exs. TMP); "Potschefstroom" (2 exs. SAM); "Pienaar's Riv. VI. 1921/*H. oscillator* Shp det.

Gschwendtner" (2 exs. TMP); "Golden Gate 16-25.I. 1968" (1 ex. TMP); "Willowmore 1.II." (1 ex. TMP); "Trsvl" (1 ex. LUZ); "Johannesburg X-XII. 1951" (2 exs. ISN); "J-burg" (1 ex. ISN); "Belfast 29.XI. 1948" (22 exs. AMS); "Middelburg XI. 1948" (2 exs. AMS); "Johannesburg Rivonia 19.XI. 1952" (1 ex. LUZ); "Waterberg distr. R. Nyl VIII. 1948" (3 exs. AMS); "Waterberg Distr., Deel Kraal VIII. 1948" (3 exs. AMS); "Wasserman's Beacon 6.XII. 1948" (1 ex. AMS, 1 ex. ISN); "Pietersburg Distr. XI. 1948" (1 ex. AMS); "Breyton Road nr L. Chrissie 2.XII. 1948" (1 ex. AMS); "Muddy Pools, Standerton 8.XII. 1948" (2 exs. AMS); "Bockenhorst Beacon Hamman's Kraal" (1 ex. MNHN); "Boeckenhort Num Num 23.8. 1948" (3 exs. AMS); "Klip Riv. nr Alberton 29.VIII. 1947" (1 ex. AMS); "Buffelriver at H way 30, 30. XI. 1955" (1 ex. CRF); "OFS; Maghaleen, Zastron distr. III. 1969" (1 ex. TMP); "Machaleen 2.XII. 1969" (1 ex. TMP); "V. d. Kloof Dam III. 1969" (2 exs. TMP); "Sasolburg XI. 1982" (1 ex. TMP); "Bloemfontein" (1 ex. MNHN); "Vredefort nr Koningspruit 29.VIII. 1947" (3 exs. AMS); "Natal; Crocodile Riv. N 7.XI. 1956" (2 exs. AMS); "Zululand Huhluwe 18.IX. 1957" (1 ex. AMS); "Zulul. St Lucia Mission Roch 28.22S-32.35E/18.XII. 75, bl. light EY: 983" (2 exs. TMP, 1 ex. MZH); "40 km S Bethlehem 30.XII. 1993/*H. oscillator* Shp det. Wewalka 94" (1 ex. CWV); " Itala Game Res, Louwsburg 10-23.XII. 1992" (1 ex. MNB); "Dumbready" (2 exs. MNHN); "Bergville Mont-aux-sources 4000 ft. 6.IV. 54/farm dam, thick weed at edges" (1 ex. BMNH); "Natal" (1 ex. AMS, 1 ex. MNHN); "Oranje Vrystaat" (1 ex. MNHN, 1 ex. MZH); "C.Pr; WC Du Toits Mts 9 km SE Franschhoek 33.55S, 19.08E, 28.II. 97" (1 ex. NMW); "WC Hex Riv. Mts 7 km SW Ceres, 33.23S,19.19E, 400 m, 26.II. 97" (1 ex. MZH, 1 ex. NMW); "CPr., Clanwilliam, distr. Sederberg VII. 1958" (1 ex. MAC, 1 ex. MZH); "Clanwilliam" (6 exs. SAM); "Mossel Bay" (1 ex. SAM); "Mosselbay VIII. 1922" (1 ex. BMNH); "Grabouw 10.XI. 1976" (1 ex. SAM); "CPr 5.I. 94, 20 km W Bredarsdorp/*H. oscillator* Shp det. Wewalka 94" (1 ex. CWV); "CPr. 3.I. 94 20 km W George, 50 m/*H. oscillator* Shp det. Wewalka 94" (2 exs. CWV); "CPr 5.I. 10 E Hermanus/*H. oscillator* Sharp det. Wewalka 94" (3 exs. CWV); "CPR 6.I. 94 30 km W Hermanus/*H. oscillator* Shp det. Wewalka 94" (2 exs. CWV); "CPr, 4.I. 94, Heidelberg/*H. oscillator* Shp det. Wewalka 94" (2 exs. CWV); "Willowmore 21.II. 1947" (2 exs. AMS); "CPr./Distr. Greyton 9-20.XI. 1994" (23 exs. ITA, 6 exs. MZH, 1 ex. NMW); "W Capl. Troe Troe I. 1884" (1 ex. MNB); "EC. Pr. Kowie R." (1 ex. AMS); "Grahamstown 39 km E Upington SE 28.21Bc, 20.X. 1979" (1 ex. TMP); "Upington" (8 exs. SAM); "Grahamstown August" (3 exs. AMS); Same but "4.VIII. 1948" (1 ex. AMS); Same but "VIII. 1947" (2 exs. AMS); Same but "IV. 1946" (1 ex. AMS); Same but "15.V. 1946" (1 ex. AMS); Same but "10.VI. 1960" (1 ex. AMS); Same but "III. 1947" (2 exs. AMS); Same but "IV. 1947" (2 exs. AMS); Same but "VIII. 1946" (3 exs. AMS); Same but "III. 1939" (1 ex. AMS); "Grahamstown R. Abssei IX. 47" (1 ex. AMS); "Grahamstown Albany Distr. 10.III. 1946" (4 exs. AMS); "Albany distr." (1 ex. AMS); "Grahamstown, small pond Cradock R, Teafontein 29.VII. 49" (4 exs. AMS); "Alice 25.II. 1926" (1 ex. AMS); "Alice 23.3. 1926" (1 ex. AMS); "Kimberley" (1 ex. AMS, 1 ex. SAM); Same but "III. 1913" (1 ex. SAM); Same but "20.IV. 1902" (1 ex. SAM); "XII. 1892" (1 ex. SAM); "ECPr. Mt. Currie 6.V. 1956" (1 ex. AMS); "ECPr. Matatiele V. 1956" (13 exs. AMS); "ECPr. Humansdorp rd. nr. Churchill dam" (1 ex. AMS); "Albany VIII. 1946" (1 ex. AMS); "ECPr. Bedford 10.IX. 1957" (1 ex. AMS); "Van Wyks Fontein Colesberg 23.II. 1947" (1 ex. AMS); "Tweedale Spruit. Colesberg 25.II. 1947" (2 exs. AMS); "Norvaals Port, Colesberg 23.II. 1947" (2 exs. AMS); "Van Wyks Fontain, Colesberg 23.II. 1947" (1 ex. AMS); "Preddy van Zyl Bridge, Oarslos Spruit 25.II. 1947" (4 exs. AMS); "Middelburg Dam 22.II. 1947" (4 exs. AMS); "Cradock VII. 1946" (1 ex. AMS); "Port Elisabeth" (1 ex. SAM); "Klipfontein" (3 exs. SAM); "Bushman ld Henrichs" (3 exs. SAM); "Victoria West" (8 exs. BMNH); "Schusters Kraal 7 mi S Simonstown 400 ft 30.VII. 54" (1 ex. BMNH); "Elliot 11.V. 56" (1 ex. AMS); "Little Karroo Raubenheimer Dam 33.25SS-22.19E/21.X. 1993 EY 2886" (3 exs. MZH, 10 exs. TMP); Same but "EY: 2889 shorewashing" (1 ex. TMP); "Little Karroo Kamanasiberg 33.37S-22.33E/21.XI. 1992 EY: 2931" (1 ex. TMP); "Little Karroo Bauianskloof 33.38S-24.15E/27.X. 93 EY: 2913 UV-light at river" (1 ex. TMP); "13.XI. 1993, 32.19S,22,39E, Karoo N.P. pond and shore" (1 ex. MZH, 2 exs. MNB); "17.XI. 1997, 32.15,3S-22.29,9E, CPr. Karoo N.P., swamp at Puttenvlei, swamp vegetation treating, water catches" (1 ex. MNB); "Ettrich Farm nr Salem 3326DA, 33.31.5S-26.30.13E, shallow muddy weeded dam, 15.X. 1972" (5 exs. AMS); "3227AA Tylden., 32.6.24S-27.1.3E, 4.II. 1973" (3 exs. AMS); "3126CD Waverleg 31.48.22S-26.15.21E, 7.XII. 1972" (1 ex. AMS); "Farm Dam at Aktandria 3326CB, 33.38.16S-26.34.17E, muddy dam, weed 30.X. 1972" (2 exs. AMS); "Towns Riv., Ladismith to Montagu via Karreelakte Rd 3320DA, 28.IX. 72" (20 exs. AMS); "Tsitsikama Forest 33.58S-23.30E/10.III. 1992 light" (2 exs. TMP); "Harberville Forest 34.04S-23.10E/light 7.III. 1976 EY: 1321" (2 exs. TMP); "11.XI. 1997, 34.22,8S-20.19,5E, CPr. Potteberg Riv. banks, *Phragmites*, sievings" (1 ex. MNB); "Cape, Muizenberg 10-25.X. 1989" (2 exs. MAC); "WCPr. Robertson 25.XI. 1939" (5 exs. AMS); "Richterveld Stinkfontein dam 28.48S-17.17E/11.X. 1976 EY: 1272 shorewashing" (1 ex. TMP); "Kuboos Richtersveld XI. 1933/*H. oscillator* Shp det. Gschwendtner" (3 exs. MZH, 33 exs. TMP); "Kl. Namaland VII. 04" (1 ex. MNB); "Dam 22.II. 1947" (2 exs. AMS); "Riversdale Distr. Kaffirs Kuil 17.2. 1947" (1 ex. AMS); "Somerset West 28-29.XII. 1991/marshy area nr Firgrove" (2 exs. CRF); "CP 8 mi E Wilderness 13.III. 1968" (8 exs. USNM, 2 exs. MZH); "15 mi W Avontuur, Unionsdale 28.II. 51/*H. oscillator* Shp det. J. Omer-Cooper" (21 exs. LUZ); "2 mi S Bredasdorp 30.XII. 50" (2 exs. LUZ); "14.XI. 1993, 34,04S,20.27E, Bontebok N. P. lux" (1 ex. MZH, 3 exs. MNB); "2-3.I. 1993 Swellendam, Bontebok N.P." (2 exs. MNB, 1 ex. MZH); "34,04S-20,20E, CPr Bonte-bok, lux" (1 ex. MNB); "ECPr Pearston distr. Windmill

trough 4.VII. 1964" (1 ex. AMS); "Stream on Brandriver rd ca. 12 mi from junction with Ladismith-Barrydale rd, 3321cc, 30.IX. 1972" (16 exs. AMS); "Muddy road side pools on Brandriver Rd just after junction with Barrydale-Ladismith Rd 3320DD, 30.IX. 1972" (2 exs. AMS); "Farm Dam at Trompetter Drift 3326BB, 33.13.40S-26.57.11E, coll. at light in marginal vegetation 19.X. 1972" (1 ex. AMS); "Lindisfarne nr Fairford 3226BD, 32.24.45S-26.56.18E, pool 50 m fr stream 26.II. 1972" (5 exs. AMS); "3226 BD Fairford 32.24.55S-26.56.20E, Craig et Stuart 26.II. 1972" (22 exs. AMS); "14-16.XI. 1993, 34,04S-20,27E, CPr. Bontebok NP, lux" (3 exs. MNB); "1-2.XII. 1996, 34.04,5 S-20.27,3E, CPr, Bontebok NP, Breda Riv. Banks, sieving, shore washing" (1 ex. MNB); "4.IV. 1998, 33.13,9S-18.08,1'E WC West Coast NP, Abrahams kraal, waterhole, *Typha* litter" (1 ex. MNB); "WBr. SW Afr. Kl Namaland Steinkopf VII. 1894" (5 exs. MNB); "Caffr." (1 ex. MNHN); "S.A. VII." (1 ex. AMS).

LESOTHO: "Basutoland Mokhotlong 6.VI. 1951/7200 ft" (5 exs. LUZ); "Basutoland Hensley's Dam 8 mi SW Leribe 30.III. 1951" (1 ex. LUZ).

Country unknown: "Africa" (1 ex. BMNH).

Uncertain labelling: "Madagascar/Collect Duvivier" (1 ex. ISN).

DIAGNOSIS: Correct determination of *H. inquinatus* demands study of male genitalia. Penis narrows evenly towards apex, which is only slightly curved downwards (lateral aspect). *H. endroedyi* is probably the closest relative of *H. inquinatus*.

Description: Body: Length 4.42 - 5.33 mm, breadth 2.48 - 2.83 mm. Colour pattern of body (dorsal aspect) somewhat variable (Fig. 13B-D).

Head: Ferrugineous to pale ferrugineous, between eyes is a somewhat vague, darkened, interocular area. Frontally, finely to very finely margined; margin medially broken. Frontal outline rounded, medially somewhat concave (Fig. 13A). At inner margin of eyes is a narrow, densely punctate area. Frontal depressions rather shallow and vaguely delimited. Punctation fine to fairly fine, dense to fairly dense, slightly irregularly distributed. At pronotum and anterior to frontal margin are very fine and sparse punctures. Shiny, almost without reticulation (minute scattered fragments of microsculpture sometimes discernible). Antenna pale ferrugineous, apical segments slightly darkened.

Pronotum: Pale ferrugineous to ferrugineous, anteriorly and posteriorly with a vague darkened area. Punctation fine to rather fine, fairly dense but somewhat irregularly distributed, laterodiscally punctures somewhat sparser. Shiny, not microsculptured.

Elytra: Pale ferrugineous to ferrugineous, with blackish to dark ferrugineous, somewhat variable markings (Fig. 13B-D). In frontal half, elytral punctures of two kinds: diameter of finer punctures approximately 2 - 3 x smaller than that of coarser punctures. Both kinds of punctures almost equally dense. Posteriorly, punctures almost of equal size, dense. Rows of punctures indistinct; frontally discernible (mixed with adjacent punctures). Shiny, not reticulate. Epipleuron pale ferrugineous to ferrugineous, fairly distinctly but somewhat sparsely punctate and shiny, not reticulate.

Ventral aspect: Ferrugineous to dark ferrugineous. Punctation coarse to rather fine, fairly dense to dense, somewhat irregularly distributed. Metacoxal plates posteriorly and metathorax on each side of midline medially with impunctate areas. Shiny, not reticulate, except for sternites, finely microsculptured and slightly mat.

Legs: Pale ferrugineous to ferrugineous, hindlegs slightly darker. Pro- and mesotarsi slightly enlarged.

Male genitalia: Fig. 13E-G.

Female: Extent of dorsal microsculpture variable; externally similar to male, but posteriorly on elytra, finely microsculptured and submat; sometimes dorsal aspect of body totally mat to submat.

Distribution: Zambia, Zimbabwe, Namibia, Botswana, South Africa, Lesotho (Fig. 50). Uncertain record from Madagascar. Also reported from Kenya (e.g. RÉGIMBART 1906), Rwanda (ALWARTH 1921), Ethiopia, Tanzania, Congo (e.g. OMER-COOPER 1931), Uganda (GUIGNOT 1936), Democratic Republic of the Congo (Zaire) (GUIGNOT 1954b), Mozambique (OMER-COOPER 1956a) and Malawi (OMER-COOPER 1964). Unverified literature records are to be considered uncertain.

Synonymy: Type material of *H. inquinatus*, *H. oscillator* and *H. labiosus* have been compared morphologically, and they are found to be conspecific. The holotype of *H. coelamboides* has been examined by OMER-COOPER (1957a), who synonymized the species with *H. oscillator*. Because the holotype has been lost, we prefer to rely on this examination, and thus, *H. coelamboides*, being the younger taxon, is a junior synonym of *H. oscillator,* and accordingly, also of *H. inquinatus*. *H. inquinatus*, being the oldest of the available names, is the valid name of the species.

Herophydrus pallidus OMER-COOPER (Figs. 14, 51)

Herophydrus inquinatus var. *pallidus* OMER-COOPER 1931: 778 (orig. descr.); GSCHWENDTNER 1938: 8 (disc.).
Herophydrus inquinatus pallidus OMER-COOPER, GUIGNOT 1950b: 147, 148 (disc., descr.); 1959a: 362 (list. syn.).
Herophydrus pallidus OMER-COOPER, NILSSON & PERSSON 1993: 70, 94 (disc., faun., biol.); NILSSON 2001: 204 (cat.).
Herophydrus inquinatus var. *sobrinus* OMER-COOPER 1931: 779 (orig. descr.); GSCHWENDTNER 1932a: 13 (disc., descr., faun.); 1932c: 262 (faun.); 1933: 88 (disc.); GUIGNOT 1935: 39 (disc.); 1959a: 362 (syn. list.).
Herophydrus inquinatus sobrinus OMER-COOPER, GUIGNOT 1950b: 147, 148 (disc., descr.).
Herophydrus sobrinus OMER-COOPER, GUIGNOT 1959a: 344, 356 (descr., faun.); OMER-COOPER 1965: 143 (disc.); NILSSON & PERSSON 1993: 70, 94 (disc., faun., biol.); NILSSON 2001: 205 (cat.).
Herophydrus colasi GUIGNOT 1935: 38 (orig. descr.); GSCHWENDTNER 1938: 7, 8 (descr., disc.); GUIGNOT 1936: 29, 31 (descr., faun.); 1946a: 313 (faun.); 1950b: 146, 147, 148, 149 (descr., disc.); 1955b: 3 (disc.); 1959a: 345, 362 (descr., faun.); OMER-COOPER 1965: 143 (disc.); NILSSON & PERSSON 1993: 70 (syn. *H. pallidus*); NILSSON 2001: 204 (syn.).
Herophydrus cooperi GSCHWENDTNER 1938: 8, 10 (orig. descr.); GUIGNOT 1950b: 147, 148 (descr., disc.; female ab. of *H. colasi*, male syn. of *inquinatus* BOHEMAN); 1959a: 362 (female, syn. list.); NILSSON 2001: 203 (syn.); **syn.n.**
Herophydrus inquinatus ab. *cooperi* GSCHWENDTNER, GUIGNOT 1959a: 363 (descr., faun.); NILSSON & PERSSON 1993: 70. 71 (disc., syn. list.).
Herophydrus expressus GSCHWENDTNER 1938: 8, 10 (orig. descr.); GUIGNOT 1948b: 10 (faun.); NILSSON & PERSSON 1993: 70 (syn. *H. pallidus*); NILSSON 2001: 204 (syn.).
Herophydrus colasi ab. *expressus* GSCHWENDTNER, GUIGNOT 1950b: 147, 148 (disc.); 1955a: 28 (faun.); 1959a: 362 (descr.).

TYPE LOCALITY: of *pallidus*: Ethiopia, Addas, Hora Harsadi; of *sobrinus*: Ethiopia, Lake Zwai; of *colasi*: Kenya, Naivasha; of *cooperi*: Ethiopia, Hora Horeso; of *expressus*: Democratic Republic of the Congo (Zaire), Lake Albert National Park, Kaisimbi.

TYPE MATERIAL: **Lectotype** of *pallidus*, ♂, by present designation: "Type/Abyssinia 7000 ft. Hora Harsadi, Addas 2.XII. 1926 J. Omer-Cooper/J. Barrington 11a/Brit. Mus. 1933-136/*H. inquinatus* var. *pallidus* O-C. det. J. Omer-Cooper" (BMNH). - **Paralectotypes**: "Abyssinia 7000 ft. Hora Bishoftu Addas 2.XII. 1926 J. Omer-Cooper/*H. inquinatus* v. *pallidus* O-C. det. J. Omer-Cooper" (3 exs. BMNH). - **Lectotype** of *sobrinus*, ♂, by present designation: "Type/Abyssinia West Marsh Lake Zwai 5,500 ft. 2-3.XI. 1926 J. Omer-Cooper/Brit. Mus.1933-136/*H. inquinatus* var. *sobrinus* O-C. J. Omer-Cooper" (BMNH). - **Paralectotypes**: Same sampling data as lectotype (15 exs. BMNH, 3 exs. AMS); "Abyssinia Suc-Suci Lake Zwai 5,500 ft.12.XI. 1926 J. Omer-Cooper" (1 ex. AMS). - **Holotype** of *colasi*, ♂: "Afr. Or. Angl. (rift valley) Naivasha Alluaud & Jeannel Dec. 1911 - 1900 m - st. 14/male/type/det. dr. Guignot *Herophydrus colasi* Guign./*H. colasi* Guign." (MNHN). - **Paratypes**: Same sampling data as holotype (4 exs. MNHN). [Remark: There are additional specimens deposited in MNHN and listed as types of *H. colasi* but since the sampling data ("Nairobi" 1 ex., "Aberdare" 2 exs.) do not fit with original description they cannot be considered as types of this taxon.] - **Lectotype** of *cooperi*, ♂, by present designation: "type male Gschw./Abyssinia: Hora Horeso 7000 ft 1.XII. 1926 J. Omer-Cooper/*Herophydrus cooperi* Gschw. det.

Gschwendt./Coll. Gschwendtner/Type" (OLL). - **Paralectotype**, ♀: "type female Gschw./Abyssinia: 7000 ft. Hora Harsadi Addas 2.XII. 1926 J. Omer-Cooper/*Herophydrus cooperi* Gschw. det. Gschwendt./coll. Gschwendtner/ Type" (1 ex. OLL). - **Lectotype** of *expressus*, ♂, by present designation: "Holotypus/Musée du Congo S. Kaisimbi, Nyabirehe (2400) 22-II-35 G.F. de Witte Parc Nat. Albert 1183/Type male Gschw./R. DET B 4489/*Herophydrus expressus* det. Gschwendt." (MAC). - **Paralectotypes**: Same sampling data as lectotype (16 exs. ISN, 1 ex. MAC); "Ruhengeri (s. Kiril) 31-VIII-3-IX-1934 G.F. de Witte Parc Nat. Albert 561" (5 exs. ISN, 1 ex. MAC); "Ruhengeri (1800) R. Makungwa 30-31.VIII. 34 PNA, paratype" (1 ex. ISN); "Ruhengeri (s. Kirli) 31.VIII. 1934 PNA, paratype" (3 exs. ISN); "Ruhengeri (s. Kirli) 3.IX. 1934 PNA, paratype (2 exs. ISN); Ruhengeri r. Penge 4-5.X. 1934 PNA, paratype" (3 exs. ISN); "Ruhengeri sources Kirli (1800) 29.IX. 1934 PNA, paratype" (1 ex. ISN); "Lac Gando (2400) 9/2-III-1935 F. de Witte/Parc Nat. Albert/Paratype/*H. expressus* Gschw." (1 ex. MNHN); "NE Lac Gando 9-12.III. 1935 PNA, paratype" (1 ex. ISN); "NE Lac Gando (2400) 9-12.III. 1935 PNA, paratype" (47 exs. ISN); "Mudende (2400) prés Gando II-III-1935 G.F. de Witte/Paratype/*H. expressus* Gschw." (3 exs. ISN, 1 ex. MNHN) "Kalondo (1950) L. Ndaraga, Mokoto 22-29.III. 34, PNA, P-type" (1 ex, ISN).

ADDITIONAL MATERIAL EXAMINED:

ETHIOPIA: "L. Zwai W marsh 5500 ft. 2-3.XI. 1926" (3 exs. AMS, 3 exs. MNHN); "Hora Bishoftu 7,000 ft. 2.XII. 1926" (2 exs. AMS); "Hora Horeso 7,000 ft. 1.XII. 1926" (3 exs. AMS, 1 ex. BMNH); "Hora Bishoftu 7000 ft Addas 2.XII. 1926" (3 exs. AMS, 3 exs. ISN); "Hora Harsadi 7000 ft Addas 2.XII. 1926" (7 exs. AMS, 1 ex. ISN); "Hora Harsadi 30.XI. 1926" (1 ex. AMS); "Shoa Dukkam 6.I. 1989 2200 m, holes in drying river/*H. colasi* Guignot det. Nilsson" (1 ex. CNU).

KENYA: "Nairobi 2e sem. 1903/*H. colasi* n.sp. det. Guignot" (1 ex. MNHN; labelled incorrectly as paratype of *H. colasi*); "Forest Kinangop Mt. Aberdare, vers ouest 2600 m/Miss. Omo" (2 exs. MNHN; labelled incorrectly as paratypes of *H. colasi*); "Nairobi Nat. Park 22.III. 1953" (1 ex. BMNH); "Nairobi" (1 ex. ISN); "Nakuru Rift Valley XII. 1903" (4 exs. MNHN); "33 mi. NW Nakuru 8400 ft. 17.XI. 1962" (1 ex. BMNH); "Naivasha, Rift Valley/*H. ignoratus* Gschw. det. Guignot 1947" (2 exs. MNHN); "Naivasha Hells Gate NP 24.X. 1995/*H. colasi* Guign. det. Wewalka 96" (2 exs. CWV); "Naivasha Bank Papyrus-Grass, surface water 22.II. 1927" (2 exs. AMS); "5 km S Nyahururu 28.X. 1995/*H. colasi* Guignot det. Wewalka 96" (2 exs. CWV); "Ol Toroto Athi R. 5.VII. 1970" (1 ex. BMNH); "L. Tianbora 25.II. 70" (1 ex. BMNH); "L. Tianbora VII. 1970" (2 exs. BMNH); "Nyanza Veterinary Dam nr Kericho 5800 ft, 6.VI. 1957" (1 ex. BMNH, 1 ex. MZH); "Mte Kenia Naro Moro q. 1950 20.IX. 1976 /*H. colasi* Guign. det. Bilardo" (2 exs. MCG) "Naishi Pool 20.IV. 1929" (1 ex. AMS).

DEMOCRATIC REPUBLIC OF THE CONGO (Zaire): "PNA Ilega (Lac N Gando) 2400 m 12.III. 1935" (5 exs. ISN, 1 ex, MNHN, 1 ex. MZH); "PNA 25.VII. 1956/sect. Nord L. Edouard, Kasindi-Port (lieu-dit) 912 m" (1 ex. MAC); "PNA Lac Lukulu 1700 m, 15.VIII. 1935" (1 ex. ISN); "Katanga Kakyelo XI. 1930" (5 exs. MAC); "Kakyelo 1-9.XI. 1930" (1 ex. ISN, 5 exs. MAC, 3 exs. MNHN); "Ht Luapula Kakyelo 19.XI. 1930" (1 ex. AMS); "Katanga Lukatu 6-22.XII. 1930" (1 ex. ISN).

RWANDA: "N Ruanda Galago XI. 1907" (2 exs. MNB, 1 ex. MZH); "Mahembe 1400 m terr. Nyanza 13-15.I. 1953/*H. colasi* ab. *expressus* Gschw." (2 exs. ISN).

TANZANIA: "Kilimandjaro 1905-06/Natron sjöarna/12.VII./*H. colasi* Guign. det. Guignot 1947" (1 ex. MNHN, 3 exs. MNB); "Kilimandjaro 14.II. 1954" (1 ex. AMS); "L. Lekandiro Mournella 25.VII. 1965" (3 exs. BMNH).

DIAGNOSIS: A variable species, which therefore is difficult to separate by external features. Male genitalia must be examined. Penis apex (dorsal aspect) laterally rounded, without sharp extensions.

Description: Body: Length 4.42 - 5.75 mm, breadth 2.51 - 3.25 mm. Dorsal appearance as in Fig. 14C-E.

Head: Ferrugineous to pale ferrugineous, with dark, somewhat vague interocular marking. Frontal margin quite distinct, medially broken. Inner ends of margin often disappear before reaching frontal edge. Frontal outline rounded, medially slightly concave (Fig. 14A-B). Punctation rather fine to somewhat coarse, dense to fairly dense, somewhat irregularly distributed. At inner margin of eyes is a dense row of punctures. Anterior to foremargin and at pronotum are fine and sparse punctures. Frontal depressions quite broad and deep but with vague delimitation. Often shiny, almost without reticulation. Sometimes finely and partly indistinctly reticulated, slightly mat. Antenna pale ferrugineous to ferrugineous.

Pronotum: Pale ferrugineous to ferrugineous, laterally pronotum becomes gradually paler. Anteriorly and posteriorly, with a blackish to dark ferrugineous, somewhat vague marking. Sometimes pronotum with extensive dark colouration. Lateral outline rounded, almost evenly

curved to almost straight. Posterior corner with extreme apex rounded. Punctation fairly fine or fine to fairly coarse, quite dense, slightly irregularly distributed. Lateromedially, punctures sparsest. Shiny, not reticulated. Laterally scattered microsculpture may be discerned.

Elytra: Pale ferrugineous to ferrugineous, with black to dark ferrugineous, variable colour pattern (Fig. 14C-E). Punctation quite dense. On frontal half, elytral punctures of two different kinds: coarser punctures about 3 - 4 x larger than finer punctures. Both kind of punctures almost equally dense, or finer punctures a little denser than coarse punctures. Posteriorly, size of punctures almost equal. Rows of punctures at least frontally discernible, although mixed with adjacent punctures. Shiny, not reticulated. Epipleuron pale ferrugineous to ferrugineous to dark ferrugineous, quite distinctly punctate and shiny, not reticulate.

Ventral aspect: Blackish ferrugineous to ferrugineous. Fairly coarsely to rather finely punctate. Punctation quite dense, slightly irregularly distributed. Abdominal punctation finer, apical sternite almost impunctate. Metathorax on each side of midline medially and metacoxal plates posteriorly impunctate. Shiny, not microsculptured. Scattered reticulation may be discerned.

Legs: Pale ferrugineous to ferrugineous, hindlegs slightly darker. Pro- and mesotarsi rather narrow.

Male genitalia: Fig. 14F-H.

Female: Externally similar to male.

Distribution: Ethiopia, Kenya, Democratic Republic of the Congo (Zaire), Rwanda, Tanzania (Fig. 51).

Synonymy: Type material of all involved taxa (see under list of references above) have been examined. Morphological variation, especially in external characters, exists. These differences are, however, vague (geographic variation), and possibly of minor importance for justification of good species. Thus, for the time being, the taxa are regarded as belonging to one species. The names *H. pallidus* and *H. sobrinus* are introduced in the same article (OMER-COOPER 1931), and both are at present also available. *Herophydrus pallidus* is chosen as the valid name of this species.

Herophydrus quadrilineatus RÉGIMBART (Figs. 15, 52)

Herophydrus quadrilineatus RÉGIMBART 1895: 38 (orig. descr.); ZIMMERMANN 1920a: 74 (faun., list.); OMER-COOPER 1931: 779 (faun., descr., biol.); GUIGNOT 1959a: 343, 348, 351 (faun., descr.); 1961: 934 (biol.); ROCCHI 1975: 47 (faun.); NILSSON & PERSSON 1993: 70, 94 (faun.); NILSSON 2001: 204 (cat.).

TYPE LOCALITY: Ethiopia, Acachi.

TYPE MATERIAL: **Syntype**, ♀: "Acachi 12.2. 89 Ragazzi/Typus/*4-lineatus* Rég./*Herophydrus quadrilineatus* Rég./Syntypus *Herophydrus quadrilineatus* Régimbart, 1895" (MCG). No type found in MNHN, although GUIGNOT (1959a) states that the type is deposited in Paris.

ADDITIONAL MATERIAL EXAMINED:

ETHIOPIA: "Nr. Debra Berhan 2.VI. 1963/*H. quadrilineatus* Régb. det. Nilsson" (2 exs. MZH); "Sululta 11.VI. 1963/*H. quadrilineatus* Régb. det. Nilsson" (2 exs. MZH); "Arsi 13 km E Bekoji, Galama Mnts. 12.XI. 1988, 3100 m/*H. quadrilineatus* Régb. det. Nilsson" (11 exs. LUZ, 3 exs. CNU); Same as above, but "15.I." (3 exs. CNU); "Shoa Burajo 15 km A. Abeba 1.III.89, 2600 m/*H. quadrilineatus* Régb. det. Nilsson" (1 ex. CNU); "Grasslands of Berga, 40 km WMW of Addis Abeba, mt 2600, 4.IV. 1971/*H. quadrilineatus* Régb. det. Rocchi 74" (2 exs. CRF); "Mt. Zaquala 9000 ft 21-22.X. 1926" (4 exs. AMS, 4 exs. MNHN, 1 ex. ISN); "Wouramboulchi 9000 ft, 2-7.X. 1926" (9 exs. AMS, 1 ex. MNHN).

DIAGNOSIS: A fairly distinct species, characterized by the colour pattern of the head, elytra and ventral side of the body (head with distinct, broad, blackish interocular area; each elytron with

four longitudinal blackish markings; body ventrally almost totally black), by elytral punctation, which is not clearly separable into two size categories, and by shape of penis (long; narrows evenly towards distinct apex; in lateral view apex only slightly curved).

Description: Body: Length 4.48 - 4.92 mm, breadth 2.44 - 2.64 mm. Dorsal aspect as in Fig. 15B-C; colour pattern somewhat variable.

Head: Black to blackish-ferrugineous, anteriorly and posteriorly somewhat paler; pale ferrugineous to dark ferrugineous (pale areas vary in size). Frontal margin somewhat vague, but still clearly discernible: medially broken and ends do not reach frontal edge. Frontal outline rounded, medially somewhat concave (Fig. 15A). Frontal depressions pronounced and quite distinct, although not sharply delimited. Punctation fine, somewhat irregularly distributed. Narrow area at inner margin of eyes with dense punctation. Anterior to frontal margin punctures very fine; posteriorly, punctures absent. Frontomedial area shiny, not microsculptured. Other parts of head microsculptured; frontally, reticulation partly rather indistinct. Posteriorly, at pronotum, reticulation forms longitudinal lines. Antenna pale ferrugineous to ferrugineous, apical segment at least partly darkened.

Pronotum: Pale ferrugineous to ferrugineous. Anteriorly, with a rather narrow darkened area. Posteriorly, with a broad black to dark ferrugineous area. Dark colour pattern somewhat variable. Lateral outline of pronotum rounded. Posterior corners rounded. Punctation fine to very fine, irregularly distributed: lateromedially, punctures sparser; on small area, almost absent. Rather shiny; partly not reticulated. Microsculpture laterally clearly discernible; towards central part of pronotum, microsculpture gradually becomes finer (disappears in part).

Elytra: Pale ferrugineous, with blackish to dark ferrugineous, slightly variable markings (Fig. 15B-C). Punctation rather fine to fine, fairly dense; not distinctly of two different kinds. Discal, dorsolateral and lateral rows of punctures generally discernible, although partly indistinct (especially dorsolateral row). Shiny, not microsculptured. Epipleuron pale ferrugineous, rather finely punctate, shiny, not microsculptured.

Ventral aspect: Black to blackish-ferrugineous. Punctation fine to rather fine, somewhat irregularly distributed. Metathorax medially on each side of midline and metacoxal plates posteriorly impunctate. Abdominal punctures somewhat indistinct. Shiny, almost without microsculpture.

Legs: Ferrugineous to dark ferrugineous. Pro- and mesotarsi slightly enlarged.

Male genitalia: As in Fig. 15D-E.

Female: Dimorphous. Head and pronotum submat, distinctly reticulated, otherwise shiny and not reticulated, or total body surface reticulated, mat to submat.

Distribution: Ethiopia (Fig. 52).

Herophydrus vittatus RÉGIMBART (Fig. 16)

Herophydrus vittatus RÉGIMBART 1895: 43 (orig. descr.); ALLUAUD 1897: 210 (faun.); RÉGIMBART 1903: 4 (disc.); PESCHET 1917: 19, 55 (descr., faun.); ZIMMERMANN 1920a: 74 (faun., list.); VINSON 1956: 27 (faun., biol.); GUIGNOT 1959a: 345, 360 (descr., faun.); 1961: 930 (faun.); VINSON 1967: 314 (faun.); WEWALKA 1980: 729, 730 (faun., biol.); NILSSON 2001: 205 (cat.).

TYPE LOCALITY: Mauritius (Île de France).

TYPE MATERIAL: **Holotype**, sex uncertain (specimen in bad condition; originally pinned but later glued to a card; probably also dissected): "I. de France/Collection Régimbart" (MNHN).

ADDITIONAL MATERIAL EXAMINED:

MAURITIUS: "I. Maurice Montresor Ch. Alluaud 1893" (5 exs. MNHN); "Ins Mauritius Quellbach zum Riv. Gallets 2.V. 74/*H. vittatus* Rég. det. Wewalka 74" (1 ex. CWV); "Mauritius G. Antelme/*H. vittatus* Régb. det. J. Balfour-Browne" (1 ex. BMNH).

DIAGNOSIS: A distinct species, characterized by a comparatively small and broad body and shape of penis: in dorsal view, only a little narrowed towards obtuse apex, and in lateral view, penis slightly curved, except extreme apex; strongly bent. No frontolateral extensions discernible in dorsal view.

Description: Body: Length 3.60 - 4.20 mm, breadth 2.12 - 2.56 mm. Ovally oblong, dorsal colour pattern variable (Fig. 16B-C).

Head: Between eyes, broadly black to dark ferrugineous. Anteriorly, dark area gradually becomes somewhat paler; dark ferrugineous to ferrugineous. At pronotum, head pale ferrugineous to ferrugineous, posterior to eyes darkened, ferrugineous to dark ferrugineous. Frontal outline of head rounded, medially broken for a short distance. Inner ends of margin touch frontal edge (Fig. 16A). Frontal depressions quite distinct but their delimitation vague. Punctation fine to rather fine, dense, slightly irregularly distributed. On pronotum, punctures very fine, sparse. At inner part of eyes is a densely punctate, rather shallow furrow. Shiny, not microsculptured. Posteriorly, close to pronotum, with scattered, fine reticulation discernible. Antenna pale ferrugineous to ferrugineous.

Pronotum: Black to dark ferrugineous. With a vague, mediotransverse, slightly paler but vaguely delimited area; pronotum laterally ferrugineous. Lateral outline of pronotum curved. Posterior corner of pronotum quite broadly rounded, not pronounced. Punctation very fine to rather fine, fairly dense but slightly irregularly distributed. Mediolaterally, punctures somewhat sparse. Shiny, not reticulated.

Elytra: Pale ferrugineous to ferrugineous, with somewhat variable but quite distinct, black to dark ferrugineous colour pattern (Fig. 16B-C). Punctation fine to rather fine, quite dense. On anterior half, punctation forms two kinds of punctures: finer punctures denser, evenly distributed; coarser punctures irregularly distributed, sparse. Diameter of coarse puncture approximately 2 x diameter of finer puncture. Discal row of punctures anteriorly discernible, although rather indistinct (mixed with adjacent punctures). Dorsolateral row of punctures indistinct. Lateral row of punctures sparse, consists of some clearly discernible coarser punctures. Shiny, not microsculptured. Epipleuron pale ferrugineous to dark ferrugineous, distinctly punctate, shiny, not microsculptured.

Ventral aspect: Black to dark ferrugineous. Prothorax mainly ferrugineous. Punctation fine to rather fine, quite dense but partly irregularly distributed. Metathorax medially on each side of midline and metacoxal plates posteriorly impunctate. Shiny, almost totally without reticulation (scattered very fine microsculpture may be discerned).

Legs: Pale ferrugineous to ferrugineous. Pro- and mesotarsi fairly slender.

Male genitalia: Fig. 16D-F.

Female: Externally similar to male.

Distribution: Mauritius.

Herophydrus nigrescens sp.n. (Figs. 17, 53)

TYPE LOCALITY: South Africa, Zululand, St Lucia, Mission Rock.

TYPE MATERIAL: **Holotype**, ♂: "S. Afr., Zululand St. Lucia Mission Rock 28.22S-32.35E/18. 12. 1975, EY: 983 at black light by Endrödy-Younga" (TMP). - **Paratype**: "C.S.I.R. Water Research Zul. 2Q2 19.7. 56" (= Enzamene Pan near Hluhluwe W.D. Olliff 19.VII. 1956) (1 ex. AMS).

DIAGNOSIS: A distinct species, distinguishable from all other *Herophydrus* species by its almost totally dark body and by the penis, which anteriorly (lateral view) is slightly curved upwards.

Description: Body: Length 5.33 - 5.50 mm, breadth 3.08 - 3.33 mm. Habitus (Fig. 17B); dorsal colour pattern strongly delimited and rather vague.

Head: Between and posterior to eyes black to dark ferrugineous. Frontally and posteriorly paler. Frontal outline of head rounded, medially weakly concave. Frontal margin rather weakly developed, it disappears before reaching frontal edge (Fig. 17A). Frontal depressions quite distinct, although with vague delimitation. Punctation fine to rather fine, fairly dense but slightly irregularly distributed. Posteriorly, at pronotum, and anterior to frontal margin, head has very fine, sparse punctures. At eyes, narrow area with dense punctures. Rather shiny, posteriorly indistinct microsculpture may be discerned. Antenna pale ferrugineous, apically segments gradually slightly darker.

Pronotum: Black to dark ferrugineous, laterally slightly paler. Lateral outline of pronotum curved, posterior corners discernible, although not especially pronounced. Punctation fine to rather fine, fairly dense, somewhat irregularly distributed. Mediolaterally with small, impunctate area. Shiny, not microsculptured.

Elytra: Black to dark ferrugineous, with vague slightly paler areas (Fig. 17B). Punctation fairly dense; in anterior half, two different kinds. Coarser punctures with diameter about 2 x diameter of finer punctures. Coarser punctures distinctly sparser than finer punctures. Posteriorly, punctures almost of equal size. Rows of punctures indistinct or absent; discal row of punctures basally indistinct but discernible. Shiny, not microsculptured. Epipleuron ferrugineous, with scattered punctures and shiny.

Ventral aspect: Dark ferrugineous to black. Punctures fine to fairly fine, dense. Towards apex, punctures sparser and more indistinct. Metathorax medially on each side of midline has small impunctate area. Also metacoxal plates posteriorly impunctate. Shiny, almost lacking microsculpture.

Legs: Dark ferrugineous to ferrugineous, hindlegs somewhat darkened. Pro- and mesotarsi rather slender.

Male genitalia: Fig. 17C-E.

Female: Externally similar to male.

Distribution: South Africa (Natal) (Fig. 53).

Herophydrus bilardoi sp.n. (Figs. 18, 54)

TYPE LOCALITY: Botswana, Moremi Reserve.

TYPE MATERIAL: **Holotype**, ♂: "Botswana Moremi Reserve 6-10-82 A. Bilardo" (CRF). - **Paratypes**: Same data as holotype (3 exs. MCG, 4 exs. MZH, 6 exs. CRF, 5 exs. CWV); "Botswana Moremi Reserve Xakanaxa 7-10-82 A. Bilardo C. Conci/Museo Genova coll. N. Sanfilippo (dono 1995)" (1 ex. MCG); "Botswana Botletle River Makalamabedi 10-10-82 A. Bilardo" (2 exs. CRF); "Botswana Mopipi 13-10-82 A. Bilardo" (1 ex. CRF).

DIAGNOSIS: A fairly distinct species, which can only be confused with *H. natator* - further study will reveal whether the two taxa are conspecific, now only known by the two extremes. For separation of the two new taxa, see diagnosis of *H. natator* below. The new species also resembles *H. sjostedti* but it can be immediately distinguished by clear differences in dorsal colour pattern of body.

Description (only differences from *H. sjostedti* noted): Body: Length 4.44 - 5.08 mm, breadth 2.60 - 2.92 mm. Dark colour on dorsal aspect quite extensive; pale areas small (Fig. 18B).

Head: Posterior to eyes also darkened. Frontal part of head as in Fig. 18A. Medial punctation somewhat sparse.

Elytra: Colour pattern somewhat vaguely delimited (Fig. 18B). Punctures on frontal half of elytron almost uniform.

Male genitalia: As in Fig. 18C-E.

Female: Body as in male or rarely totally submat, finely reticulated. Pro- and mesotarsi somewhat narrower than in male.

Distribution: Botswana (Fig. 54).

Etymology: The new species is named after Dr. Armando Bilardo, Italy, who collected the entire type material in Botswana.

Herophydrus guineensis (AUBÉ) (Figs. 19, 55)

Hyphidrus guineensis AUBÉ 1838: 455 (orig. descr.).

Herophydrus guineensis (AUBÉ), SHARP 1882: 393 (descr., faun.); BRANDEN 1885: 39 (faun.); RÉGIMBART 1889: 57 (disc.); SEVERIN 1892: 472 (type disc.); RÉGIMBART 1895: 35, 47, 48 (faun.); JAKOBSON 1908: 419 (faun.); RÉGIMBART 1906: 237 (faun.); 1908: 3 (faun.); SAHLBERG 1913: 41 (faun.); PESCHET 1917: 19 (faun.); ZIMMERMANN 1919: 152 (list.); 1920a: 73 (faun., list.); PESCHET 1922: 374 (faun.); RÉGIMBART 1922: 529 (faun.); PESCHET 1925:35 (faun.); ZIMMERMANN 1926:29 (faun.); 1930: 117, 118 (descr., faun.); OMER-COOPER 1931: 780 (descr., faun., biol.); GSCHWENDTNER 1932b: 56 (faun.); 1932c: 263 (disc., given as *H. guincensis*); 1935: 21 (faun.); GUIGNOT 1936: 29 (faun.); 1943: 96 (disc., faun.); 1946a: 312 (faun., biol.); 1947: 77 (descr., faun.); CAPRA 1952: 6 (faun.); GUIGNOT 1952: 1194, 1195 (disc.); 1953: 234 (faun.); 1954b: 18 (faun.); OMER-COOPER (Joseph) 1954: 252, 253, 261 (faun.); GUIGNOT 1955c: 863 (faun.); 1956a: 86 (faun.); 1956b: 318 (faun.); OMER-COOPER 1956a: 21 (faun., biol.); GUIGNOT 1959a: 344, 351, 352 (descr., faun.); 1959b: 151 (faun.); 1961: 924 (faun.); BERTRAND 1963: 434 (faun.); BRUNEAU DE MIRÉ & LEGROS 1963: 872, 888 (faun., biol.); LEGROS 1972: 463 (faun.); GUÉORGUIEV 1973: 105 (faun.); ROCCHI 1975: 47 (faun.); ALFIERI 1976: 34 (faun.); EL-SHERIF et al. 1978: 95, 96, 97 (faun., biol.); FRANCISCOLO 1979: 318 (descr., faun.); MEDLER 1980: 155 (faun., list.); FORGE 1981: 496, 499 (descr., faun.); ANGELINI 1984: 61 (faun.); BURMEISTER 1986: 69 (faun.); BURMEISTER et al. 1987: 166 (faun., biogeogr.); MACHADO 1987: 33 (type species); ABO-GHALIA et al. 1992: 361 (faun., ecol.); SALEH et al. 1992: 196 (faun.); ZALAT et al. 1992: 267 (descr., faun.); ROCCHI & SCHEMBRI 1992: 123, 124 (faun.); NILSSON & PERSSON 1993: 70, 94 (faun., biol.); NILSSON 2001: 203 (cat.).

Hydroporus turgidus ERICHSON 1843: 220 (orig. descr.); BRANDEN 1885: 39 (syn. *H. guineensis* AUBÉ); RÉGIMBART 1889: 57 (syn.); 1895: 47 (syn.); 1906: 237 (syn.); 1908: 3 (syn.); ZIMMERMANN 1920a: 73 (syn.); RÉGIMBART 1922: 529 (syn.); ZIMMERMANN 1930: 118 (syn.); OMER-COOPER 1931: 780 (syn.); OMER-COOPER (Joseph) 1954: 261 (syn.); GUIGNOT 1959a: 352 (syn.); NILSSON & PERSSON 1993: 70 (syn.).

Hydroporus ruficeps BOHEMAN 1848: 253 (orig. descr.); ZIMMERMANN 1920a: 93 (syn.); OMER-COOPER 1956a: 363, 364 (syn.); 1957: 66 (syn.); FERREIRA 1963: 152 (syn.); OMER-COOPER 1964: 368 (syn.); 1965: 143 (syn.); **syn.n.**

Hydroporus mutatus GEMMINGER & HAROLD 1868: 437 (replacement name for *Hydroporus ruficeps* BOHEMAN, preoccupied by *Hydroporus ruficeps* AUBÉ, 1838); SHARP 1882: 802 (descr., faun.); ZIMMERMANN 1920a: 93 (faun.).

Herophydrus mutatus (GEMMINGER & HAROLD), OMER-COOPER 1956a: 19, 21 (faun., biol.); 1956b: 363 (disc., faun.); 1957: 63, 66 (descr., faun.); GUIGNOT 1959a: 423 (descr., faun.; given as *Canthyporus mutatus*);

FERREIRA 1963: 152 (faun.); OMER-COOPER 1964: 367, 368 (descr., faun., biol.); 1965: 141, 143 (descr., faun.); PEDERZANI 1986: 107 (faun.); CURTIS 1991: 186 (faun., biol.); **syn.n.**

Hydroporus ferrugineus LUCAS, 1846: 98 (orig. descr.); BRANDEN 1885: 39 (syn. *H. guineensis*, faun.); RÉGIMBART 1895: 47 (syn.); ZIMMERMANN 1919: 152 (syn.); 1920a: 73 (syn.); PESCHET 1925: 35 (syn.); ZIMMERMANN 1930: 118 (syn.); OMER-COOPER 1931: 780 (syn.); OMER-COOPER (Joseph) 1954: 261 (syn.); GUIGNOT 1959a: 352 (syn.).

Hydroporus barbarus SCHAUM, WHITE 1847: 34 (replacement name for *H. ferrugineus* LUCAS, faun.); BRANDEN 1885: 39 (syn. *H. guineensis*); RÉGIMBART 1895: 47 (syn. *H. guineensis* AUBÉ); ZIMMERMANN 1919: 152 (syn.); 1920a:73 (syn.); PESCHET 1925: 35 (syn.); ZIMMERMANN 1930: 118 (syn.); OMER-COOPER 1931: 780 (syn.); OMER-COOPER (Joseph) 1954: 261 (syn.); GUIGNOT 1959a: 352 (syn.).

Hydroporus hyphydroides PERRIS 1864: 277 (orig. descr.); BRANDEN 1885: 39 (syn. *H. guineensis*); RÉGIMBART 1889: 57 (syn. *H. guineensis*); 1895: 47 (syn.); 1906: 37 (syn.); 1908: 3 (syn.); ZIMMERMANN 1919: 152 (syn.); 1920a: 73 (syn.); RÉGIMBART 1922: 529 (syn.); PESCHET 1925: 35 (syn.); ZIMMERMANN 1930: 118 (syn.); OMER-COOPER 1931: 780 (syn.); OMER-COOPER (Joseph) 1954: 261 (syn.); GUIGNOT 1959a: 352 (syn.); NILSSON & PERSSON 1993: 70 (syn.).

Hydroporus inflatus REICHE, 1869:24 (replacement name for *H. ferrugineus* LUCAS); BRANDEN 1885: 39 (syn. *H. guineensis*).

Herophydrus umbrosus ZIMMERMANN 1926: 29 (orig. descr.); 1930: 118 (syn. *H. guineensis* AUBÉ); GUIGNOT 1946a: 313 (faun. disc.); 1959a: 352 (syn.); NILSSON & PERSSON 1993: 70 (syn.).

TYPE LOCALITY: of *guineensis*: Senegal; of *turgidus*: Egypt; of *ruficeps* and *mutatus*: South Africa, Port Natal; of *ferrugineus, barbarus* and *inflatus*: Algeria, Lac Houbeira; of *hyphydroides*: France, Corsica; of *umbrosus*: Tanzania, Wembere-Steppe.

TYPE MATERIAL: **Lectotype** of *guineensis*, by present designation: "Senegal coll. Chevrolat Det. Sharp 82 coll. R.I.Sc.N.B. Sénégal/Type/det. Aubé 1838 *Hyphidrus guineensis* Dupont/Sharp rev. 1882 *Herophydrus guineensis* Aubé" (ISN). - **Paralectotype**: "Coll. Chevrolat det. Sharp 82 Coll. R.I.Sc.N.B. Sénégal/Type/*Hyphidrus guineensis* Dup. type Senegalia Buquet/Sharp rev. 1882 *Herophydrus guineensis* Aubé" (1 ex. ISN; in bad condition; species?). - **Holotype** of *turgidus*: "100076/*turgidus* Er. Angola Schönh./Type/Hist. Coll. (Coleoptera) Nr. 10076 *Hydrovatus* (!) *turgidus* Er. Angola-Aegypt Zool. Mus. Berlin" (MNB). - **Lectotype** of *ruficeps* (and *mutatus*), ♂, designated by OMER-COOPER (1956b): "Caffraria/J. Wahlb./Type/*Hydroporus ruficeps* Boh./*Herophydrus mutatus* Gemm. & Har. = *ruficeps* Boh. det. J. Omer-Cooper 5.12.1955 Type" (RMS). - Type material of *ferrugineus, barbarus* and *inflatus* not seen. - **Syntypes** of *hyphydroides*: "9639/Coll. R.I.Sc.N.B. France Corse coll. Perris coll. Pandelle/coll. A. Fauvel (ex. coll. Pandelle) *Hydroporus hyphydroides* Perris" (2 exs. ISN). - **Syntypes** of *umbrosus*: "Wembäre Steppe .VII. 11./*Herophydrus umbrosus* det. A. Zimmermann/*umbrosus* Zimm. n.sp." (2 exs. MNB on one pin; upper specimen complete, specimen below broken, anterior body-half missing).

ADDITIONAL MATERIAL EXAMINED (African):

ALGERIA: "Flaque sur basse de Sable/Miss. Saharienne" (3 exs. MNHN); "Miss. Saharienne/1-6.I. 1928" (1 ex. MNHN); "Algeria" (1 ex. MZH, 3 exs. ISN).

TUNISIA: "Tunis" (1 ex. MZH).

LIBYA: "Libysche (Wüste ?)" (6 exs. MNB).

EGYPT: "Caire" or "Cairo" (3 exs. MNB, 18 exs. MNHN, 9 exs. MZH; 2 exs. NMW); "Cairo Tümpel 20.III. 1888" (1 ex. MNB); "Maragi 24.VI. 1935" (4 exs. BMNH, 1 ex. MZH); "Bir Hooker" (3 exs. MNHN); "Ramlé" (3 exs. MNHN, 1 ex. MZH); "Heliopolis" (3 exs. MZH); "Helouan 15.II.-14.III. 1963/*H. guineensis* Aubé Persson det." (8 exs. LUZ); "Saqquara" (1 ex. ISN); "Fayum Medinet/*H. guineensis* (Aubé) det. Fery 2000" (1 ex. NMW); "Bahargia Oase bei Bahiti 4.IV. 1989/*H. guineensis* (Aubé) Fery det. 2000" (1 ex. NMW); "Egypt" (4 exs. ISN, 1 ex. LUZ, 3 exs. MNB, 1 ex. MNHN).

GAMBIA: "R. Tanji 3 km SW Brufut, at light 19.00-21.00, 28.II. 1977" (1 ex. LUZ).

SENEGAL: "R. Cazamance" (1 ex. MNHN); "R. Cazamance, Carabane" (2 exs. MNHN); "Mboro VIII. 1971" (3 exs. MNHN, 1 ex. MZH); "Kayar VIII. 1971" (1 ex. MNHN, 1 ex. MZH); "Sebikotane VIII. 1971" (1 ex. MNHN); "Somone VIII. 1971" (1 ex. MNHN); "Fr. Äquat. Afr. Dagaud" (2 exs. MNB).

MALI: "Kogoni X. 1956" (1 ex. MAC, 1 ex. MZH); "Badoumbé" (3 exs. MNHN); "10.II. 2000, 50 km E Djenne 13,50N-4,25W/*H. guineensis* Aubé det. Wewalka 2001" (1 ex. NMW).

ETHIOPIA: "Wollo Pr., Tiss Abba Lima 15-20.III. 74" (1 ex. MAC); "Addis Abeba, VI-VII. 1911/*H. guineensis* Aubé det. Nilsson 90" (5 exs. MNB); "Coco Artificial Lake 6.VI. 1963" (1 ex. MZH); "Abyss. Raffray/*H. guineensis* Aubé det. Sharp" (1 ex. MCG).

SUDAN: "Upper Nile Malakal 5-20.I. 1963" (13 exs. MZH); same but only "1962" (1 ex. MZH); "Nilo Blanco Malakal 1.VI. 1921/*H. guineensis* Aube det. Guignot 51" (1 ex. MCG); "Darfur nr Safaha 30.IV. 1963" (2 exs.

MZH); "Blue Nile Singa-Roseiras 15-17.XI. 1962" (1 ex. MZH); "Sudan" (2 exs. MNB); "Aegypt. Sudan 1914/20.IV./*H. guineensis* (Aubé) Fery det. 2000" (1 ex. NMW).

SOMALIA: "Giohar 24.IV. 1968/*H. guineensis* Aubé det. Pederzani" (1 ex. CRF); "P. Sancucas" (2 exs. MNHN); "Som. It. Arenaga IX. 1923/*H. guineensis* Aubé det. Guignot 51" (1 ex. MCG); "Som. It. Bidi-Scionde Basso Giuba 1923/*H. guineensis* Aubé det. Guignot 51" (1 ex. MCG).

CHAD: "Farcha 18.VI. 1962" (2 exs. MNHN, 1 ex. MZH); "N'Guimi/X. 1918" (6 exs. MNHN, 2 exs. MZH).

NIGERIA: "NC St nr Daura 15.V. 1973" (1 ex. MZH); "L Alo Maiduguri 11.IV. 1963" (1 ex. AMS).

CAMEROON: "Maroua, lum. X-XI. 1965" (1 ex. MAC).

REPUBLIC OF THE CONGO: "Matadi" (1 ex. MNHN); "Boma" (1 ex. MNHN).

DEMOCRATIC REPUBLIC OF THE CONGO (Zaire): "Albertville UV, 14.VIII. 1953" (1 ex. ISN); "PNG Ndelele, K. 117/14S, 19.III. 1952, 3199" (1 ex. MAC); "PNG I/6/3, 11.I. 1950" (1 ex. ISN); "PNG I/c/2, 3.II. 1950" (1 ex. ISN); same but "25.II. 1950" (1 ex. ISN); "PNG I/a/M, 17.III. 1950" (2 exs. ISN); "PNG I/o/2, 25.III. 1950" (2 exs. ISN); same but "22.III. 1950" (1 ex. ISN); "PNU Mabwe (585 m) 31.I.-3.II. 1949" (1 ex. ISN); "Kivu Kavimvira (Uvira) à la lum. I. 56" (1 ex. MAC); same but "VI. 1955" (1 ex. MAC); same but "1-15.V. 55" (1 ex. MAC); "Kivu Ruzizi, marais de Nyangara 7.XII. 1957" (5 exs. MAC, 2 exs. MZH); "Bamania Boma" (7 exs. ISN, 1 ex. SAM); "Rugigi" (2 exs. MNHN); "Katanga Kakyelo 1-9.XI. 1930" (1 ex. ISN); "Katanga Kasenga 3-13.III. 1931" (1 ex. ISN).

KENYA: "B. Kavirondo Victoria IX-X. 1903" (1 ex. MNHN); "Kawirondo Bay II. 94" (7 exs. MNB, 1 ex. MZH); "L. Victoria Kisumu" (1 ex. AMS); "Tsavo N.P. affl. Fl. Athi 17.VII. 1968" (2 exs. CRF, 2 exs. MCG); "Amboseli Res. stagno zona S.E. 24.VII. 1968" (1 ex. MCG); "Lorian II. 1920/*H. guineensis* Aubé det. Peschet 23" (6 exs. MCG); "Bulessa 1920" (2 exs. MCG); "Bulessa Gwaso Nyiro I. 1920" (6 exs. AMS); "Mandera 22.X. 1970" (3 exs. BMNH).

TANZANIA: "Mufundi Distr. Mafinga 1900, 4-16.I. 1993" (1 ex. MCG); "Tabora VI. 61" (1 ex. TMP); "Simbiti" (5 exs. MNB); "Pori Ugogo-Usandawe 27.VIII. 1893" (8 exs. MNB); "Bagamoyo" (1 ex. MAC, 1 ex. MZH); "Himo 10 km S strada per Tanga 22.VII. 1968/*H. guineensis* Aubé det. Sanfilippo" (10 exs. MCG); "L. Rukwa 1946" (1 ex. ISN); "Rukwa Kipangati 28.XI. 1950, sulphurous pools, shallow, in rich woodland" (7 exs. LUZ); "Rukwa Distr. Msamvia-R. 11.V. 1950" (2 exs. LUZ); "Rukwa Tumba 28.II. 1951" (1 ex. LUZ); "Himo 10 km S Sud, stagno pr. la strade per Tanga 22.VII. 1968" (1 ex. CRF); "Zanzibar, Pemba IX. 1955" (1 ex. AMS).

MALAWI: "Dambo below Livingstonia, lake shore 21.X. 1948" (1 ex. AMS); "R. Nsipe 28.IX. 1948" (1 ex. AMS); "Ft. Johnstone, Dally's, swamp nr L. Nyaso 7.VI. 1946" (1 ex. BMNH); "L. Shriwa 6.XI. 1948" (1 ex. AMS).

ANGOLA: "Distr. Huila Lumuna-Loengue/X. 1914/*H. guineensis* Aubé det. Peschet 24" (1 ex. MNHN); "Distr. Huila/IX. 1914" (1 ex. MNHN); "3 mi N Sta Clara 30.III. 1972/at light" (1 ex. BMNH); "Rocadas R. Cuenene 19-22.II. 1972/at light" (1 ex. BMNH); "Namakunda V. 1948, 16.15E,18.50S" (21 exs. BMNH, 5 exs. MZH).

ZAMBIA: "Magoye II. 1990/*H. guineensis* Aubé det. Rocchi" (1 ex. CRF); "Luangwa Valley Chibembe Dint. 6.X. 1984" (10 exs. MCG); "Luangwa Valley Mfuwe Dint. 9.X. 1984" (5 exs. MCG); "23.III. 1993, 13.06.03S-31.47.32E, Luangwa NP Mfuve Crocodile Farm 450 m, lux" (1 ex. MNB); "Mweru-Wantipa I. 1945" (1 ex. ISN, 1 ex. MZH); "R. Cuando" (1 ex. MNHN).

ZIMBABWE: "Wankie Game Res." (1 ex. AMS); "Wankie Game Res. 2. IX. 1948 water hole" (2 exs. AMS); "11.XII. 1993, 17.53S-25.49E, lux, Victoria Falls, Zambesi NP-Camp" (1 ex. MNB); same but "11-12.XII. 93" (2 exs. MNB).

NAMIBIA: "Caprivi Zipfel, Katima Mulilo 15-24.I. 1995" (1 ex. CHB); "E Capriwi Katima Mulilo, lux 17.29S-24.17E, 3-8.III. 1992" (2 exs. MNB); "Damaral. Oshikongo V. 1948, 15.55E-17.25S" (2 exs. BMNH, 1 ex. MZH); "Kaokoweld Sanitatas about 85 mi. WSW Ohopoho 14-16.VI. 1951" (2 exs. AMS); "Ikuma R. Ovambol. 11.VI. 1937" (1 ex. MZH, 2 exs. TMP); "N Etosha Pan 7.VII. 1937" (1 ex. MZH, 7 exs. TMP).

BOTSWANA: "Mopipi 13.X. 1982" (11 exs. MCG, 2 exs. CRF, 1 ex. CWV); "Kuke Park 20.59S,22.25E, 14-15.IV. 1972" (1 ex. BMNH); "Chobe N.P. Kasane 3.X. 82" (1 ex. MCG); "Kasane 1.I. 1994" (1 ex. NMW); "11.III. 1993, 18.33.55S-24.03.53E, Chobe NP Sauti Camp, lux" (8 exs. MNB, 2 exs. MZH); "8-9.III. 1993, 19.27.01S-23.38.46E, 5 km NW San-ta-Wani Safari Lodge, lux" (4 exs. MNB, 1 ex. MZH); "N'Kate Makarikari 6-23.VIII. 1930/*H. guineensis* Aubé det. Gschwendtner" (2 exs. TMP); "Nata R. Makarikari 24-27.8. 30" (6 exs. TMP); "Tsotsorogo Pan 17.VI.-9.VII. 30/*H. guineensis* Aubé det. Gschwendtner" (65 exs. TMP); "Kasane 25-28.VII. 30/*H. guineensis* Aubé det. Gschwendtner" (1 ex. TMP); "Serowe, sevage [!] ponds, Farmer's Brigade 1.VI. 1987, SE22.26BD" (1 ex. MZH); "Serowe, merc. vap. light/XI. 94" (1 ex. CRF); "Botletle R. Toromoja 12.X. 1982" (1 ex. CRF); "Botletle R., Makalambedi 10.X. 1982" (7 exs. MCG).

MOZAMBIQUE: "Delag. Bay" (1 ex. MNHN); "Umbuluzi R. nr. Gobe 4.XII. 1948" (5 exs. AMS); "Infilane nr. L. Marques 3.XII. 1948" (4 exs. AMS); "Meponda VIII. 55" (1 ex. TMP); "Vallée du Pungové Guengère/XII. 1906" (1 ex. MNHN).

SOUTH AFRICA: "N. Zulul. Ndumu Game Res. 26.54S-32.17E/2.XII. 1992 EY:2875 UV light at vlei" (7 exs. TMP, 2 exs. MZH); "Olifants Camp KNP 26.XI. 66" (1 ex. TMP); "Punda Milia KNP 21-23.XI. 61" (1 ex. TMP); "Shingwedzi KNP 19-20.XI. 61" (1 ex. TMP); "28.XI. 1995 Kwazulu-Natal Mkuze Game Res. 27.36S-32.13E" (1 ex. MNB); "5.XII. 1995 Kwazulu Natal Hluhluwe Game Res. 28.02S-32.05E" (1 ex. MNB).

Location unclear: "Diaka" (1 ex. MNHN); "Unyanjembe VI. 1911/*H. guineensis* Aubé det. Zimmermann" (1 ex. MNB); "Tripolitaine Ain Zara" (1 ex. MNHN); "Jkurha" (2 exs. MNB); "Sumbu" (1 ex. SAM); "Masiene X. 1924 G. v. Dam" (1 ex. TMP); "P. Sancurar 21.II. 1896 V. Bottega/*H. tugidus* Er." (6 exs. MCG). - ? (6 exs. ISN, 4 exs. MNB, 5 exs. MNHN, 3 exs. TMP).

(Not African): France: "Corse" (1 ex. ISN); Italy: "Sicilia TP Foce F. Belice 4.VII. 1980" (3 exs. CRF); "Sicilia Bivierre dé Gela lato sud 19.V. 1963" (1 ex. CRF); Israel: "Huqoq Bteha 30.VII. 1985/*H. guineensis* (Aubé) Fery det. 2000" (3 exs. NMW); same but "7.IV. 1986" (3 exs. NMW); "En Agraria Bteha 30.VII. 1985/*H. guineensis* (Aubé) Fery det. 2000" (1 ex. NMW); "En Yezer 27.VIII. 1985/*H. guineensis* (Aubé) Fery det. 2000" (4 exs. NMW); "Samakh Mdg. 12.IV. 1986/*H. guineensis* (Aubé) Fery det. 2000" (1 ex. NMW); "Hula Res. 21.III. 1985/*H. guineensis* (Aubé) Fery det. 2000" (1 ex. NMW); same but "20.III." (3 exs. NMW); "Hula 100 Dun. 13.IV. 1986/*H. guineensis* (Aubé) Fery det. 2000" (1 ex. NMW); "Caucase" (3 exs. NMW).

DIAGNOSIS: A widely distributed, medium-sized and morphologically quite variable species. *H. guineensis* is generally characterized by its dark-coloured body (colour pattern indistinct or vague) and by elytral punctation, which is irregularly sized but does not form distinct size classes. Unfortunately, the genital structures also exhibit some variation. In dorsal view, the penis narrows somewhat unevenly towards a fairly narrow truncate apex; apicolateral corners sharp and generally clearly visible. Further investigation will hopefully reveal whether *H. guineensis*, as here interpreted, is in fact a complex of separate species or not.

Description: Body: Length 4.16 - 4.80 mm, breadth 2.36 - 2.80 mm. Dorsal aspect (Fig. 19B). Dorsal colour pattern vague, generally hardly visible.

Head: Dark ferrugineous to ferrugineous, between eyes sometimes with vaguely darkened area. Posterior to eyes sometimes darkened. Frontal outline rounded, medially slightly concave. Frontal margin quite distinct; margin disappears medially and its ends do not reach frontal edge (Fig. 19A). Punctation fine to rather fine, dense. Posteriorly, broadly almost impunctate. Anterior to frontal margin punctures very fine, hardly visible. Shiny, almost without reticulation. Scattered, minute areas with fine microsculpture discernible. Frontal depressions clearly visible but their delimitation vague. Antenna pale ferrugineous.

Pronotum: Lateral outline almost straight to slightly rounded. Posterior corner with extreme apex rounded. Dark ferrugineous to ferrugineous, frontally and posteriorly, sometimes with vague darkened areas. Punctation fine to rather fine, dense. Mediodiscally, punctures a little sparser and finer. Shiny, mainly not reticulated. Laterally with scattered, very fine microsculpture.

Elytra: Blackish ferrugineous to ferrugineous. Laterally sometimes slightly paler but without distinct colour pattern. Punctation rather fine to fine, dense. Size of punctures irregular, not of two distinct kinds. Discal row of punctures anteriorly generally discernible; other rows indistinct or absent. Shiny, not reticulated. Epipleuron pale ferrugineous to ferrugineous, distinctly and quite evenly punctate. Shiny.

Ventral aspect: Blackish ferrugineous to ferrugineous. Punctation fine to rather fine, fairly dense, except metathorax medially on each side, broad area posteriorly on metacoxal plates, and metepisternum impunctate. Punctation finest posteriorly on abdomen. Shiny, reticulation almost totally absent. Scattered, fine microsculpture may be discerned on metathorax and posteriorly on metacoxal plates.

Legs: Dark ferrugineous to ferrugineous. Pro- and mesotarsi slender.

Male: Externally similar to female. Genitalia as in Fig. 19C-H.

Female: Externally similar to male.

Distribution: Algeria, Tunisia, Libya, Egypt, Gambia, Senegal, Mali, Chad, Sudan, Ethiopia, Somalia, Nigeria, Cameroon, Republic of the Congo, Democratic Republic of the Congo (Zaire), Kenya, Tanzania, Malawi, Angola, Zambia, Zimbabwe, Namibia, Botswana, Mozambique,

South Africa (Fig. 55). Guinea is given e.g. by ZIMMERMANN (1920a). Additional unverified records for Ivory Coast and Burkina Faso (= Upper Volta) by GUIGNOT (1943), and Mauritania (GUIGNOT 1955c). Outside Africa, known from: Corse, Malta, Sardinia, Sicily, Israel and the Arabian Peninsula (FRANCISCOLO 1979).

Synonymy: *H. mutatus* is here, with some hesitation (slight morphological differences exist), added as a new junior synonym to *H. guineensis*. The other junior synonyms, listed above and maintained, are results of earlier studies.

Herophydrus natator sp.n. (Figs. 20, 56)

TYPE LOCALITY: Botswana, Chobe River, Kabulabula.

TYPE MATERIAL: **Holotype**, ♂: "V.-L. Kal. Exp. Kabulabula Chobe River 11-24/7/1930/*H. inquinatus* Boh. det. L. Gschwendtner" (TMP). - **Paratypes**: Same data as holotype (13 exs. TMP, 4 exs. MZH, 1 ex. NMW); "V.-L. Kal. Exp. Tsotsorogo Pan 17/6/-9/7/30/*H. inquinatus* Boh. det. L. Gschwendtner" (1 ex. TMP); "V.-L. Kal. Exp. Kasane 25-28/7/1930/*H. inquinatus* Boh. det. L. Gschwendtner" (1 ex. TMP); "Botswana Chobe Nat. Park Kasane 3-10-82 A. Bilardo/Museo Genova coll N. Sanfilippo (dono 1995)" (11 exs. MCG, 4 exs. MZH). - Angola: "Moupa (= Mupa) VIII: 1933/?" (1 ex. MNHN); "Namibia -Exp. ZMB 1992 Kavango:Popa Falls 18.07S, 21.35E, lux 26.II.-3.III. 92 leg. M. Uhlig" (1 ex. MNB, 1 ex. MZH); "Namibia -Exp. ZMB 1992 E Caprivi: Katima Mullo 17.29S, 24.17E, lux 3-8.III. 92 leg. U. Göller" (1 ex. MNB); "Namibia -Exp. ZMB 1992 East Caprivi Mudumu NP: Buffalo trails camp, lux ca. 18.10S,23.26E, 12.III. 992 leg. Uhlig" (2 exs. MNB, 1 ex. MZH); "Namibia -Exp. ZMB 1992 East Caprivi: Mudumu NP: Makatwa 18.10S,23.26E, 8-13.III. 92 lux, leg. M. Uhlig" (3 exs. MNB, 1 ex. MZH); "Namibia 2-3.X. 1993 18.14S,21.43E Kavango: Mahango Game Reserve leg. F. Koch" (1 ex. MNB, 1 ex. MZH).

ADDITIONAL MATERIAL EXAMINED:

NAMIBIA: "2-3.X. 1993 18.14S,21.43E Kavango: Mahango Game Reserve leg. F. Koch" (5 exs. MNB; not paratypes because teneral specimens). - Association to *H. natator* uncertain: "S. Sudan, muddy pond on road to Gaingill 30.35E, 7.11N, 22.XI. 1954" (1 ex. AMS).

DIAGNOSIS: Very close to *H. bilardoi* n.sp. described above. External diagnostic characters are size and shape of body: *H. natator* is slightly larger and more slender than *H. bilardoi*. For correct separation of the two species, examination of male genitalia is needed: penis (dorsal aspect) of *H. bilardoi* apically has more pronounced lateral expansions. See also under diagnosis of *H. bilardoi*.

Description: Body: Length 5.08 - 5.50 mm, breadth 2.83 - 3.08 mm. Colour pattern of dorsal aspect slightly variable (generally as in Fig. 20B).

Head: Frontal aspect as in Fig. 20A.

Male genitalia: Fig. 20C-E.

Female: Pro- and mesotarsi rather slender. Body dorsally rarely submat-mat, finely microsculptured (reticulation least developed on head).

Distribution: Angola, Namibia, Botswana and uncertain record from Sudan (Fig. 56).

Herophydrus kalaharii GSCHWENDTNER restored species (Figs. 21, 57)

Herophydrus kalaharii GSCHWENDTNER 1935: 20 (orig. descr.); GUIGNOT 1950a: 147, 148 (descr., disc., syn. *H. inquinatus* (BOHEMAN)); GUIGNOT 1959a: 363 (syn.); OMER-COOPER 1965: 143 (syn.); NILSSON & PERSSON 1993: 71 (syn.); NILSSON 2001: 203 (syn.).

Herophydrus catersi GUIGNOT 1955b: 2 (orig. descr.); NILSSON 2001: 203 (cat.); **syn.n.**

TYPE LOCALITY: of *kalaharii*: Botswana, Chobe River, Kabulabula; of *catersi*: Democratic Republic of the Congo (Zaire), Shaba Province, Kando.

TYPE MATERIAL: **Lectotype** of *kalaharii*, ♂, by present designation: "V.-L. Kal. Exp. Kabulabula Chobe River 11-24.7. 1930/Holotypus, male, *Herophydrus kalaharii* Gschwendtner/Type male/*Herophydrus kalaharii* Gschw. det. Gschwendt." (TMP). - **Paralectotype**, ♀: Same sampling data as lectotype (1 ex. OLL). - **Lectotype** of *catersi*, ♂, by present designation: "Holotypus/Coll. Mus. Congo Katanga: Kando (Mutaka) 15.VIII.-10.X. 1958 R.P.Th. de Caters/Dr. F. Guignot det., 1955 *Herophydrus* s.str. *catersi* n.sp. Type, male" (MAC). - **Paralectotypes**: Same sampling data as lectotype (2 exs. MAC).

DIAGNOSIS: *H. kalaharii* is a well-delimited species, particularly characterized by comparatively robust body, peculiar elytral colour pattern and shape of penis; downwards curved corners of penis apex strongly developed.

Description: Body: Length 5.00 - 5.75 mm, breadth 2.96 - 3.20 mm. Broadly oblong, with quite distinct and slightly variable colour pattern (Fig. 21B).

Head: Pale ferrugineous. With distinct, quite broad, dark ferrugineous interocular marking. Frontal outline rounded, medially slightly concave. Frontal margin quite distinct, medially for a short distance broken; inner ends of margin generally do not reach frontal edge (Fig. 21A). Punctation fine to rather fine, dense to somewhat sparse; somewhat irregularly distributed. Head posteriorly impunctate. Narrow area between frontal margin and frontal edge with very fine, sparse punctures. At inner margin of eyes is a dense row of punctures. Frontal depressions shallow but still discernible. Shiny, almost without reticulation. Posteriorly and at eyes, fragmentary microsculpture. Antenna pale ferrugineous.

Pronotum: Lateral outline curved to almost straight. Extreme apex of posterior corners rounded. Pale ferrugineous to ferrugineous, anteriorly and posteriorly with a blackish to dark ferrugineous area. Punctation fine to rather fine, somewhat irregularly distributed. Medially, punctures sparse; mediolaterally with an impunctate area. Shiny, not reticulate.

Elytra: Pale ferrugineous, with blackish to dark ferrugineous and distinct markings (Fig. 21B). Punctation fine to rather fine, size somewhat irregular but punctures not forming different size classes. Punctation quite dense and almost evenly distributed. Rows of punctures anteriorly discernible but indistinct (mixed with ordinary punctation). Shiny, not microsculptured. Epipleuron pale ferrugineous to ferrugineous, distinctly punctate and shiny, not reticulate.

Ventral aspect: Pale ferrugineous to dark ferrugineous. Punctation fine to very fine, dense to slightly sparse. Metacoxal plates posteriorly and metathorax medially on each side of midline impunctate. Shiny, almost without microsculpture.

Legs: Pale ferrugineous to ferrugineous, hindlegs darker. Pro- and mesotarsi somewhat enlarged.

Male genitalia: (Fig. 21C-E).

Female: Externally, almost same as male; pro- and mesotarsi narrower. Abdomen very finely reticulated, submat.

Distribution: Democratic Republic of the Congo (Zaire), Botswana (Fig. 57).

Synonymy: Examination of the type material of *H. kalaharii* immediately revealed that it shall not be regarded as a synonym of *H. inquinatus* as earlier stated (species restoration). Studies of the type material of *H. catersi* showed that this nominal species is conspecific with *H. kalaharii*. As *H. catersi* is the younger name, the valid name of this species is thus *H. kalaharii*.

Herophydrus obscurus SHARP (Figs. 22, 58)

Herophydrus obscurus SHARP 1882: 394 (orig. descr.); BRANDEN 1885: 39 (faun.); SEVERIN 1892: 472 (disc., type); RÉGIMBART 1894: 229 (descr., faun.); 1895: 45 (descr., faun.); ZIMMERMANN 1920a: 74 (faun.); 1926: 29 (disc.); GUIGNOT 1950a: 129 (disc.); 1959a: 344, 357 (descr., faun.); OMER-COOPER 1962: 294 (faun.); 1965: 141, 143 (descr., faun.); NILSSON 2001: 204 (cat.).

TYPE LOCALITY: South Africa, Cape Town.

TYPE MATERIAL: **Lectotype**, ♂, by present designation: "Type/Cape Town/S Africa/Sharp Coll. 1905-313/Type 187 male *Herophydrus obscurus* n. sp./South Africa" (BMNH). - **Paralectotypes**: "Type/Cape Town/S Africa/Sharp Coll. 1905/Type 187 female" (1 ex. BMNH); "187 var./cotype/Cape Good Hope/Sharp Coll. 1905-313/Pr. bon. spec./*H. obscurus* Shp" (1 ex. BMNH); "Coll. Chevrolat Det. Sharp 82 no. 187 Coll. R.I.Sc.N.B. South Africa Cape Town/Type/Sharp det., 1882 *Herophydrus obscurus* Shp" (1 ex. ISN).

ADDITIONAL MATERIAL EXAMINED:

SOUTH AFRICA: "C. Pr./Kleinmond 24-26.IX. 1993" (1 ex. ITA); "C. Pr. Hopefield 31.X. 1950, nr. 19" (4 exs. AMS, 9 exs. LUZ); "C. Pr. 15 mi. W Avontuur, S Uniondale 28.II. 1951" (1 ex. AMS, 30 exs. LUZ); "C.Pr. 2 mi. S Bredasdorp 30.XII. 1950 nr 100" (2 exs. LUZ); "C. Pr. Skurfteberg, Alfreds Berg Pass NNW Ceres 12.II. 51, nr. 181" (6 exs. LUZ); "Storms R. VII. 1946" (4 exs. AMS); "Upper sources Olifants R. Ceres" (3 exs. SAM); "E C. Pr. Humansdorp, pond nr Churchill dam 7.I. 1956/*H. obscurus* Shp det. Omer-Cooper" (5 exs. AMS); "E C. Pr. Humansdorp, muddy pond 5.IX. 1955/*H. obscurus* Shp det. Omer-Cooper" (6 exs. AMS); "Humansdorp Groot R. 14.II. 1947" (1 ex. AMS); "C.Pr. Humansdorp 13.II. 1947" (1 ex. ISN); "W. C. Du Toits Mts 8 km SE Franschhoek, 33.55S-19.08E, 28.II. 97" (1 ex. MZH, 1 ex. NMW); "C. Pr. 30 km W Hermanus 6.I. 94" (2 exs. MZH, 7 exs. CWV); "W C. Pr. Caledon distr. 18.XI. 1947" (1 ex. AMS); "SW Cape Verlorevlei farm 32.19S-18.22E/28.VIII. 1981 EY: 1857 shorewashing" (1 ex. TMP); "SW Cape Nuweberg 10 km NE, 34.00S-19.06E/13.XI. 1973 EY:240 shore washing" (4 exs. MZH, 9 exs. TMP); "SW Cape Gansbaai 34.35S-19.21E/25.II. 1981 EY:1749, veget. sand, night" (1 ex. TMP); "C. Pr. 10 km N Cape Town 8.I. 94" (1 ex. CWV); "Cape Town" (9 exs. SAM); "Cape Flats Princess Vlei 13.VII. 1946" (2 exs. AMS); "Cape Skips Kop Pool 4.VII. 1946" (2 exs. AMS); "Cape Wyburg 14.II. 1962" (1 ex. AMS); "C. Pr. Stream Opp. Golf Course Wynberg 13.VII. 1946/*H. obscurus* Sharp det. Guignot 1950" (1 ex. AMS); "C. Pr. Cape peninsula vlei 3 mi NE Kommetjie 2.II. 1951, nr. 165" (1 ex. LUZ); "C. Pr. pond nr Elim 4.XII. 95 (2 exs. CRF); "Capl. Simonstown Tümpel der Zeckro Vley 12.VII. 1903" (2 exs. MNB); "C. Pr. 5.I. 93 Stellenbosch Assegaaibosch N. Res." (1 ex. MNB, 1 ex. MZH); "Somerset West 28-29.XII. 1991/marshy area nr Firgrove/*H. obscurus* Shp det. Mazzoldi 92" (2 exs. CRF); "Gt Winterhoek Tulbagh Distr. 3800 ft" (1 ex. SAM); "Grabouw 17.III. 1976, light trap" (1 ex. SAM); "Cape" (2 exs. SAM); label data unknown (6 exs. AMS); "Dr. Purcell" (15 exs. SAM); "*Europhilus* (?) *punctatissimus* Buq/10082" (1 ex. MNB; determination uncertain). - Uncertain labelling: "Transvaal: Belfast 29.XI. 1948 J. O-C". (1 ex. BMNH).

DIAGNOSIS: *H. obscurus* is a well-defined species. It is characterized by a vague dorsal colour pattern (sometimes almost absent) and by shape of male genitalia; basally quite broad, narrows anteriorly, with distinct frontolateral processes and in lateral view with apex distinctly curved.

Description: Body: Length 3.76 - 4.80 mm, breadth 2.12 - 2.69 mm. Outline in dorsal aspect as in Fig. 22B.

Head: Pale ferrugineous to ferrugineous. Sometimes with a vague darkened interocular area. Frontal outline rounded, medially slightly concave. Frontally, finely to very finely margined; margin medially broken (Fig. 22A). Inner margin of eye has a densely punctate, narrow and shallow furrow. Frontal depressions clearly discernible, although vaguely delimited. Punctation fine to rather fine, quite evenly distributed. Areas anterior to frontal margin and close to pronotum, very finely and sparsely punctate. Shiny, almost totally not reticulate; at eyes and posteriorly, very fine, scattered microsculpture. Antenna pale ferrugineous, apical segments at least apically somewhat darkened.

Pronotum: Lateral outline curved. Posterior corner quite distinct, although extreme apex rounded. Ferrugineous to pale ferrugineous. Posteriorly and anteriorly, often with a darkened, sometimes vague area. Punctures fine to rather fine, fairly dense and slightly irregularly distributed; laterodiscally with a minute impunctate area. Shiny, not reticulated.

Elytra: Ferrugineous to pale ferrugineous; often almost without colour pattern (sometimes with vague, longitudinal colour pattern). General colouration darkest at suture and pronotum; palest laterally. Punctation quite dense in frontal half; of two different kinds: fine and somewhat coarse (finer punctures slightly denser and about 2 - 3 x smaller than coarser punctures). In posterior half, punctures of one kind, denser. Discal, dorsolateral and lateral row of punctures fine, hardly

visible; mixed with adjacent punctation. Shiny, without reticulation, except in posterior half: with fine microsculpture. Epipleuron pale ferrugineous to ferrugineous, distinctly but somewhat sparsely punctate, shiny and not reticulate.

Ventral aspect: Ferrugineous to dark ferrugineous. Punctation fine to fairly coarse, dense to fairly dense and slightly irregularly distributed. Metathorax medially on each side and metacoxal plates posteriorly impunctate. Shiny, not reticulate (scattered, fine microsculpture may be discerned). Apical sternites finely microsculptured.

Legs: Ferrugineous to pale ferrugineous. Pro- and mesotarsi slightly enlarged.

Male genitalia: As in Fig. 22C-E.

Female: Dimorphous. Externally similar to male or rarely body submat, finely microsculptured, except for anterodiscal part of pronotum and part of head, which are shiny; not reticulated or with indistinct reticulation.

Distribution: South Africa (Fig. 58). Transvaal record regarded as uncertain.

Herophydrus wewalkai sp.n. (Figs. 23, 59)

TYPE LOCALITY: Namibia, Okavango, Tondoro.

TYPE MATERIAL: **Holotype**, ♂: "South West Africa, Tondoro/Okavango 14-19.I. 1975 leg. H. Roer/Lichtfang/Museum Koenig Bonn/*Herophydrus* spec. ? n.sp." (ZFMB). - **Paratypes**: "SWA/Namibia Nyangara/Okavango 14-22.I. 1985 leg. H. Roer/Museum Koenig Bonn" (1 ex. CWV, 1 ex. MZH); "Namibia -Exp. ZMB 1992 Kavango Popa Falls, in Kavango 18.07S-21.35E, 13.III. 92 leg. F. Koch" (1 ex. MNB); "Namibia Bunja/Okavango 24-27.2. 1991/leg. H. Roer/Museum Koenig Bonn" (1 ex. ZFMB); "Angola, Chute de Lucala à Duque de Bragnaca (9.16S, 15.12 E) Malange 19.VI. 1957 H. Bertrand" (1 ex. MNHN); "S. Africa Johannesburg Transvaal leg. Zumpt, Comm. Inst. Ent. Coll. No. 12157, *H. inquinatus* Boh. J. Balfour-Browne det." (1 ex. MNB).

DIAGNOSIS: A distinct species characterized by a fairly large body, almost uniform dorsal colour pattern of body, fine and quite dense, irregularly sized elytral punctation (not of two size categories) and especially by peculiarly shaped penis; apex pointed and without frontolateral extensions and (lateral view) more than half of the penis from apex posteriorly straight.

Description: Body: Length 5.25 - 5.33 mm, breadth 2.83 - 2.92 mm. Oval, dorsal colour pattern distinct (Fig. 23B).

Head: Pale ferrugineous to ferrugineous; one of studied specimens with a vague darkened area between eyes. Frontal outline rounded, medially slightly concave. Finely margined; medially margin broken, very indistinct (Fig. 23A). Frontally, two shallow depressions. Punctures fine to rather fine, fairly dense. At pronotum, punctures almost absent. Inner margin of eyes has a dense row of punctures. Rather shiny, almost without microsculpture, except posteriorly and anterior to frontal margin, where head finely reticulated. Antenna slender, pale ferrugineous to ferrugineous.

Pronotum: Pale ferrugineous to ferrugineous, anteriorly and posteriorly distinctly darkened, blackish. Lateral outline slightly curved to almost straight. Extreme apex of posterior corner of pronotum rounded. Punctation fine to rather fine, fairly dense. Laterodiscally, has a minute impunctate area. Shiny, not microsculptured.

Elytra: Pale ferrugineous to ferrugineous, with distinct, slightly variable, blackish markings (Fig. 23B). Punctation fine to rather fine, dense. Size of punctation irregular, but punctures do not form two distinct kinds of punctation. Discal row of punctures in frontal half discernible, although mixed with ordinary punctures. Rows otherwise indistinct or absent. Shiny, not reticulate. Epipleuron pale ferrugineous to ferrugineous, with fine to rather fine, somewhat sparse punctures. Shiny, not reticulate.

Ventral aspect: Pale ferrugineous to ferrugineous. Punctures coarse to fine, quite dense. Metathorax medially and metacoxal process posteriorly with impunctate areas. Shiny, reticulation almost absent.

Legs: Ferrugineous to dark ferrugineous. Pro- and mesotarsi slightly enlarged.

Male genitalia: As in Fig. 23C-E.

Female: Abdomen submat, finely microsculptured. Pro- and mesotarsi only slightly narrower than in male.

Distribution: Angola, Namibia, South Africa (Fig. 59).

Etymology: The new species is named after Professor Dr. Günther Wewalka, Vienna, who was the first to observe this new taxon.

Herophydrus musicus (KLUG) (Figs. 24, 60)

Hydroporus musicus KLUG 1834: Tab. 33, Fig. 12 (orig. descr.).
Coelambus musicus (KLUG), SHARP 1882: 397 (descr., faun.).
Herophydrus musicus (KLUG), RÉGIMBART 1895: 43 (descr., faun.); JAKOBSON 1908: 419 (faun.); SAHLBERG 1913: 41 (faun.); ZIMMERMANN 1919: 152 (list.); 1920a: 74 (faun.); PEYERIMHOFF 1931: 20 (faun.); BALFOUR-BROWNE 1951: 184 (faun.); GUIGNOT 1959a: 343, 346, 351 (descr., faun.); 1961: 925, 926, 932 (faun., biol.); BERTRAND 1963: 434 (faun.); BRUNEAU DE MIRÉ & LEGROS 1963: 872, 883 (faun.); GUÉORGUIEV 1965: 105 (faun.); 1967: 473 (faun.); BERTRAND 1968: 54 (faun.); NILSSON 2001: 204 (cat.).
Hypophorus musicus (KLUG), ZAITZEV 1972: 135 (129) (descr., faun.).
Herophydrus musicus (KLUG), ALFIERI 1976: 34 (faun., disc.); VAZIRANI 1977: 47, 97 (list., faun.); BRANCUCCI 1979a: 157 (faun.); 1979b: 198 (faun.); GUEORGUIEV 1981: 403 (faun.); ANGELINI 1984: 61, 115 (faun.); BURMEISTER et al. 1987: 165, 167, 171 (faun., biol.); MACHADO 1987: 33, 67, 70 (faun., biol.).
Herophydrus (*Hyphoporus*) *musicus* (KLUG), RICO et al. 1990: 59 (faun., list.).
Herophydrus musicus (KLUG), BALKE et al. 1990: 362, 369 (faun., biol.); ROCCHI & SCHEMBRI 1992: 122, 124 (faun.), MILLÁN et al. 1993: 23, 24, 28, 33 (faun.); MILLER et al. 1997: 27 (faun.); ALARIE et al. 2001: 195 (larvae descr., disc., biol., faun.).
Hydroporus fractilinea SOLSKY 1874: 134 (orig. descr.); NILSSON 2001: 204 (syn.).
Coelambus interruptus SHARP 1882: 398 (orig. descr.); GUIGNOT 1959a: 346 (syn. *H. musicus*); NILSSON 2001: 204 (syn.).

TYPE LOCALITY: of *musicus*: Egypt, Sinai; of *fractilinea*: Uzbekistan, Samarkand; of *interruptus*: Mesopotamia.

TYPE MATERIAL: **Lectotype** of *musicus*, ♂, by present designation: "Aegypt/10084/Hist. Coll. 10084 Aegypt Zool. Mus. Berlin" (MNB). Remark: The specimen is not labelled as type material, but is the only specimen kept in the historic collection with suitable label-data. - **Syntypes** of *fractilinea* not seen. - **Lectotype** of *interruptus,* by present designation: "Type/Mesopotamia Milligen 1137/Sharp Coll. 1905-313/*Herophydrus interruptus* Shp Type" (2 exs., same label, BMNH). - **Paralectotypes**: Same relevant data but labelled as "Cotype" (3 exs. BMNH).

ADDITIONAL MATERIAL EXAMINED:

SPAIN: "Canarias, Tfe Erjos/*H. musicus* (Kl.) Nilsson det. 93" (8 exs. LUZ); "Can. Tfe Erjos 6.IV. 81/*H. musicus* (Kl.) Nilsson det. 93" (2 exs. LUZ); "Can. Tfe Los Cereates de Abajo 13.IV. 81" (13 exs. LUZ); "Can. Tfe B. Tahodio 5-21.IV. 67" (5 exs. LUZ); "Can. Tfe Buenavista 18.II. 64" (1 ex. LUZ); "Can. Tfe Los Silos 23.I. 75" (3 exs. LUZ); "Can. Tfe Bajamar 30.I. 77" (10 exs. LUZ); "Can. Tfe Pte de S Juan 16-22.I. 1949" (6 exs. MZH); "Can. Tfe" (1 ex. MZH); "Gr. Can. Las Palmas 11.VI. 1971" (16 exs. LUZ); "Gr. Can. Tamarac. 2.IX. 73" (17 exs. LUZ); "Gr. Can. S. Bartolome 9.IV. 73" (1 ex. LUZ); "Gr. Can. Fafago 26.VI. 74" (6 exs. LUZ); "Gr. Can. 10 km SW Ayacata verso Mogàn m. 900 C. Ca Laghetto arttificiale fondo sabbioso e alghe 10.VI. 1976" (2 exs. CRF); "Gr. Can. Tarifa" (3 exs. MZH); "Gr. Can. Maspalomas 9-10.III. 1950" (3 exs. MZH); "Can. Gomera Vallehermoso, pool Los Chapines 31.XII. 81" (7 exs. LUZ).
ALGERIA: "Biskra" (1 ex. MZH); "Sahara Tiguelguemine (Moudir)/*H. musicus* (Kl.) Peyerimhoff det". (1 ex. LUZ); "Alg. m. Djanet 19-29.V. 1972" (1 ex. CRF); "SE Alg. Amgid 13-17.II. 1914" (1 ex. MNB); (Algeria ?) "Miss. Saharienne"/(illegible text)/"*H. musicus* Kl. Peyerimhoff" (3 exs. MNHN).
TUNISIA: "Tunis" (2 exs. MNB).

LIBYA: "Tripolis" (1 ex. MNB).
EGYPT: "Caire" (6 exs. ISN, 8 exs. MNHN, 45 exs. MZH); "Alexandria" (1 ex. MNHN); "Luxor" (3 exs. MZH); "Heluan" (9 exs. MZH); "Fajun" (1 ex. MZH); "Sidi-gabir/*H. musicus* Kl. det. Rocchi 74" (1 ex. CRF); "Heliopolis" (2 exs. MZH); "Aegypt" (3 exs. ISN, 2 exs. MNB).
(Non-African):
SPAIN: "Murcia Quipar 15.VII. 1989" (9 exs. CRF).
SYRIA: "10083/Hist. Coll. 10083 Syria Ehrenb. Zool. Mus. Berlin" (4 exs. MNB, incorrectly labelled as type material).
IRAQ: "Mesopotamia Milligen 1137 female var. *major*" (2 exs. BMNH).
IRAN: "Sistan Shahr-i 4.X. 1977" (1 ex. CRF).
TURKMENISTAN: "Imam Baba" (1 ex. CRF).
PAKISTAN: "8-19.IV. 1993 W Balochistan Tutbut" (3 exs. CRF).
YEMEN: "Marib 24.IV. 1992" (1 ex. MZH).

DIAGNOSIS: A distinct species easily recognized by its small body size and shape of penis; almost parallel-sided and lacks frontolateral processes (dorsal view).

Description: Body: Length 2.88 - 3.60 mm, breadth 1.68 - 2.20 mm. Dorsal aspect as in Fig. 24B.

Head: Pale ferrugineous, sometimes posteriorly narrow darkened area. Frontal outline rounded, medially slightly concave. Frontal margin medially for a short distance broken. Inner ends of margin do not distinctly touch anterior edge (Fig. 24A). Rarely frontal margin unbroken, although very weakly developed medially (observed in non-African material). Frontal depressions rather shallow but quite distinctly delimited. Punctation fine to rather fine, somewhat scattered and irregularly distributed. At inner eye margin is a densely punctate, narrow furrow. Shiny, not reticulate. Antenna pale ferrugineous.

Pronotum: Lateral outline curved to almost straight. Extreme posterior corner moderately rounded. Pale ferrugineous, anteriorly and posteriorly in middle fairly narrow darkened area. Punctation dense to fairly dense, slightly irregularly distributed. Punctures discally sparsest. Shiny, not microsculptured.

Elytra: Pale ferrugineous, with dark ferrugineous to blackish, quite distinct but somewhat variable markings (Fig. 24B). Rarely dark stripes strongly reduced, almost absent (elytra pale ferrugineous to ferrugineous; darkened narrow area at suture). Punctation rather fine to fine, quite densely distributed. Size of punctures somewhat variable but generally not distinctly of two size categories. If such are distinguished, diameter of coarse punctures about 2 - 3 x diameter of finer punctures. Rows of punctures rather indistinct, hardly discernible. Shiny, not microsculptured. Epipleuron pale ferrugineous to ferrugineous, quite distinctly punctate, shiny, not reticulate.

Ventral aspect: Blackish to dark ferrugineous. Prothorax distinctly paler, pale ferrugineous. Punctation coarse to rather fine, quite dense but somewhat irregularly distributed. Metacoxal plates posteriorly impunctate. Rather shiny, almost without reticulation (metacoxal plates posteriorly finely reticulated).

Legs: Pale ferrugineous. Hindlegs at least partly darker. Pro- and mesotarsi slightly enlarged.

Male genitalia: Fig. 24C-E.

Female: Ventral aspect of body with its colour mainly pale ferrugineous; without darkened areas. Pro- and mesotarsi somewhat narrower than in male.

Distribution (in Africa): Spain (Canary Islands: Gran Canaria, Tenerife and La Gomera), Algeria, Tunisia, Libya, Egypt (Fig. 60). GUIGNOT (1959a) reports the species in northern Africa from Morocco to Egypt. Additional literature record is from Chad (BRUNEAU DE MIRÉ & LEGROS 1963).

Herophydrus sjostedti RÉGIMBART (Figs. 25, 61)

Herophydrus sjostedti RÉGIMBART 1908: 3 (orig. descr.); ZIMMERMANN 1920a: 74 (faun., list.); GUIGNOT 1936: 31 (descr., faun.); 1946a: 313 (faun.); 1959a: 343, 347, 351 (descr., faun.); NILSSON 2001: 204 (cat.).

TYPE LOCALITY: Tanzania, Usambara, Tanga.

TYPE MATERIAL: **Lectotype**, ♂, by present designation: "Type/Usambara/Sjösdt./*Herophydrus sjöstedti* Régb. type n.sp." (RMS). - **Paralectotypes**: "Usambara/Sjösdt" (2 exs. RMS); "Tanga/Sjösdt" (1 ex. MNB, 1 ex. RMS).

ADDITIONAL MATERIAL EXAMINED:

TANZANIA: "Himo 10 km S strada per Tanga 22.VII. 68" (1 ex. MCG); "Morogoro 28.VII. 1909" (10 exs. MNB, 4 exs. MZH); "Mombo, Lichtfang, Inst. Amani" (1 ex. MNB); "Usambara" (3 exs. MNHN); "D-O. Afrika" (2 exs. MNB, 1 ex. MZH); "O. Afr. nördl. Massai-Land XII. 1893" (7 exs. MNB, 1 ex. MNHN, 1 ex. MZH).
KENYA: "Voi IX. 1909" (2 exs. MNHN).

DIAGNOSIS: A distinct species characterized by almost constant colour pattern of body, elytral punctation (in frontal half, punctures almost equal, not forming distinct size classes) and by shape of male genitalia (apex distinct, in dorsal view with sharp lateral extensions).

Description: Body: Length 3.80 - 4.50 mm, breadth 2.24 - 2.52 mm. Habitus in dorsal view (Fig. 25B).

Head: Pale ferrugineous to ferrugineous. Between eyes is a broad, dark ferrugineous area. Frontal outline rounded, medially slightly concave. Head anteriorly distinctly margined; margin medially broken and fine margin ends curved; touch frontal edge (Fig. 25A). Frontal depressions quite shallow but clearly discernible. Punctation fine to rather fine, fairly dense, somewhat irregularly distributed; posteriorly punctures absent, anterior to frontal margin punctures very fine and sparse. Shiny, almost without microsculpture. Very fine reticulation discernible at eyes. Antenna unicoloured, pale ferrugineous to ferrugineous.

Pronotum: Ferrugineous to pale ferrugineous; anteriorly and posteriorly blackish to dark ferrugineous. Lateral outline slightly rounded to almost straight. Punctation fine to rather fine, fairly dense. Medially punctation finer, partly absent (mediolaterally, a minute, impunctate area). Shiny, not microsculptured.

Elytra: Pale ferrugineous to ferrugineous, with blackish to dark ferrugineous, only slightly variable but distinctive markings (Fig. 25B). Punctation quite dense; on anterior half, not distinctly double but fine to rather fine punctures appear mixed. Posteriorly, punctures almost of one size. Rows of punctures almost absent; sometimes very indistinct rows may be discerned in anterior half of elytron. Shiny, not microsculptured. Epipleuron pale ferrugineous to ferrugineous, punctures quite large but shallow. Shiny, not microsculptured.

Ventral aspect: Ferrugineous to dark ferrugineous. Punctation coarse to rather fine, somewhat irregularly distributed (dense to absent). Metacoxal plates posteriorly and metathorax medially on each side of midline impunctate. Abdomen apically with finer, partly rather indistinct punctures. Rather shiny, not microsculptured, except apical sternite, with fine reticulation.

Legs: Pale ferrugineous to ferrugineous, hindlegs slightly darker. Pro- and mesotarsi slender.

Male genitalia: Fig. 25C-E.

Female: Four apical sternites submat, finely microsculptured.

Distribution: Kenya, Tanzania (Fig. 61).

Herophydrus ovalis GSCHWENDTNER (Figs. 26, 62)

Herophydrus ovalis GSCHWENDTNER 1932c: 263 (orig. descr.); GUIGNOT 1959a: 344, 350, 351 (descr., faun.); FERREIRA 1967a: 534 (faun., list.); NILSSON 2001: 204 (cat.).

Herophydrus wahlbergi OMER-COOPER 1956b: 363 (orig. descr.); 1965: 142, 144 (descr., faun.); NILSSON 2001: 204 (cat.); **syn.n.**

TYPE LOCALITY: of *ovalis*: Democratic Republic of the Congo (Zaire), Shaba Province, Kakyelo; of *wahlbergi*: South Africa (Cafraria).

TYPE MATERIAL: **Holotype** of *ovalis*, ♂: "Holotypus/Musée du Congo Katanga: Kakyelo 1-9-XI-1931 G.F. de Witte/R. Dét. 2096B/*Herophydrus ovalis* Gschw. det. Gschwendt." (MAC). - **Holotype** of *wahlbergi*, ♀: "Caffraria/J. Wahlb./Type/Type/*Herophydrus wahlbergi* n.sp. det. J. Omer-Cooper/4656 E 91 +/*wahlbergi*" (RMS).

ADDITIONAL MATERIAL EXAMINED:
BOTSWANA: "Chobe N.P. Kasane 3.X. 1982/*H. ovalis* Gschwendtner det. Bilardo" (1 ex. CRF).

DIAGNOSIS: Correct identification requires study of male genitalia. Penis apex rather narrow, almost arrow-shaped. Elytra dark ferrugineous to ferrugineous, with paler colour pattern vague or lacking.

Description: Body: Length 4.56 - 5.58 mm, breadth 2.76 - 3.20 mm. Somewhat elongated, body outline laterally rounded (Fig. 26B).

Head: Pale ferrugineous. Medially between eyes is a vague ferrugineous spot. Frontal outline rounded, medially slightly concave. Frontal border fine and rather weakly developed, still clearly discernible. Medially border line broken (Fig. 26A). At eyes is a narrow and quite shallow furrow. Frontal depressions rather shallow, clearly visible. Punctation fine to very fine, irregularly distributed, sparse to dense. At pronotum, punctures almost absent. Quite shiny, posterior to eyes and between eyes, a fine reticulation is discernible. Antenna pale ferrugineous.

Pronotum: Lateral outline slightly rounded. Posterior corner pronounced, but extreme apex rounded. Pale ferrugineous, frontally and mediobasally with vague, ferrugineous areas. Punctation fine to rather fine, dense. Discally with slightly sparser punctures. Shiny, without microsculpture (laterally scattered reticulation may be discerned).

Elytra: Dark ferrugineous, laterally sometimes with discernible, vague, pale ferrugineous area. Punctation fine to fairly fine, dense. Size of punctures somewhat variable; not distinctly of two different kinds. Rows of punctures indistinct or absent; mixed with adjacent punctation. Shiny, not microsculptured. Epipleuron pale ferrugineous, quite distinctly punctated and shiny, not microsculptured.

Ventral aspect: Pale ferrugineous to ferrugineous. Punctation coarse to rather fine, dense. Coarsest laterally on metathorax and finest on apical sternites. Shiny, not microsculptured.

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

Male genitalia: Fig. 26C-E.

Female: Externally similar to male.

Distribution: Democratic Republic of the Congo (Zaire), Botswana, South Africa (Fig. 62). Additional uncertain record from Angola (e.g. GUIGNOT 1959a).

Synonymy. The holotypes of *H. ovalis* and *H. wahlbergi* have been compared. They are considered conspecific, and thus, *H. ovalis*, being older, is the valid name of the species.

Herophydrus sudanensis GUIGNOT (Figs. 27, 63)

Herophydrus sudanensis GUIGNOT 1952: 1193, 1194 (orig. descr.); 1959a: 340, 341 (descr., faun.); NILSSON 2001: 205 (cat.).

TYPE LOCALITY: Mali, Diafarabé.

TYPE MATERIAL: **Holotype**, ♂: "Diafarabé J. Daget." (Not studied; according to original description in IFAN but not traced there (Dr. Niang, pers. comm.)). - **Paratype**: "Diafarabé Soudan Fr./zone inondie par le Niger J. Daget/female/Paratype" (1 ex. MNHN).

ADDITIONAL MATERIAL EXAMINED:

(?) ALGERIA (location uncertain): "Miss. Saharienne Augerias Draper 1928/983 Flaque sur baue de sable 19.II. 1928" (1 ex. MNHN).

GUINEA BISSAU: "Bafata Cussalinta 4.IV. 1993/*H. ritsemai* Régimbart det Nilsson 93" (1 ex. CNU).

GUINEA: "Rep. Guinea 10.14.27N-10.27.41W, Faranah Sidakoro base-vie I. 1996/*H. sudanensis* Guignot det. Rocchi 96" (2 exs. CRF).

IVORY COAST: "Comoe NP, N8.5-W3.5/1.III. 99 Felsentümpel 3 Altes Lager" (4 exs. CRW/NMW).

GHANA: "N. Reg. Nyankpala 183 m, N9.25-W1.00/E-Y nr. 412 shore washing 10.II. 1970/*H. sudanensis* Guignot det. Wewalka 77" (1 ex. CWV).

NIGERIA: "NW St. Badeggi rice fields 8-9.VIII. 1973" (1 ex. MZH); "Zaria" (1 ex. CRF); "Stream nr Zaria 4.IV. 1963" (10 exs. AMS); "Kontagora, pools nr river bed 3.IV. 1963" (14 exs. AMS); "Kontagora 3.IV. 1963" (6 exs. AMS); "Stream, Kontagora-Kaduna rd 3.IV. 1963" (6 exs. AMS); "Pools, bridge over (?) of R. Niger, Kaduna-Kontagora, 3.IV. 1963" (2 exs. AMS); "5 m. L. Barnard rd nr Maiduguri 29.IV. 1963" (1 ex. AMS).

SUDAN: "Bahr el Ghazal, Khor Kyom 18.II. 1963" (5 exs. MZH, 1 ex. NMW); "Muddy pond on rd to Gaingil 30.35E-7.11N, 22.XI. 54" (1 ex. AMS).

CHAD: "Kiem-Kaga ou Kiembaga (rég. Boisée) miss. Chari-Tchad V. 1904" (1 ex. MNHN); "Est de Ft Archambault, Dar Goulla Mamoun III. 1904" (3 exs. MNHN, 1 ex. MZH); "Est de Ft Archambault, itineraire Ndele-Mamoun, riv. Boungoul III. 1904" (1 ex. MNHN).

Location unknown: "Uamgbt Bosum im Kojali 13.IV. 1914 Tessmann" (1 ex. MNB).

DIAGNOSIS: Externally resembles *H. guineensis* but immediately separated by having distinct, unbroken frontal margin on head, as is the case also in *H. tribolus* and *H. ritsemae*. *Herophydrus sudanensis* is distinguished from these two closely related species as follows: 1. *H. tribolus* has a distinct furrow posterior to head frontal margin and frontolateral extensions of penis project forward. *H. sudanensis* lacks furrow on head and frontolateral extensions project backward. 2. *H. ritsemae* has two kinds of punctures on frontal half of elytra and outline of penis apex not pointed in dorsal view, whereas elytral punctures do not form distinct size classes in *H. sudanensis* and penis apex pointed in dorsal view.

Description: Body: Length 4.28 - 4.80 mm, breadth 2.52 - 2.75 mm. Ovally oblong (Fig. 27B). Dorsal colour pattern indistinct, hardly discernible.

Head: Dark ferrugineous to ferrugineous. Frontal outline rounded, medially only slightly concave. Frontal margin fine, medially very fine but not broken (Fig. 27A). Frontal depressions clearly discernible, but shallow and rather narrow. Punctation fine, quite dense, somewhat irregularly distributed. Posteriorly, at pronotum, almost impunctate. Comparatively broad area between frontal margin and frontal edge very finely punctate. At inner margin of eyes with a dense row of punctures. At eyes, very fine reticulation. Antenna slender, pale ferrugineous to ferrugineous.

Pronotum: Dark ferrugineous, laterally pronotum becomes gradually paler or has a somewhat vague transverse paler area. Lateral outline slightly curved to almost straight. Punctation fine to rather fine, dense. Mediodiscally, punctures sparser. Shiny, not reticulate, except laterally; very finely microsculptured.

Elytra: Blackish ferrugineous to ferrugineous. Darkest at suture but without a distinct colour pattern. Punctation rather dense and quite evenly distributed. Fine to rather fine, on frontal half, puncture size variable but does not form two different kinds of punctures. Sutural region narrowly slightly elevated. Rows of punctures indistinct, hardly visible. Shiny, not reticulate. Epipleuron dark ferrugineous to ferrugineous, punctation fairly distinct, shiny, not reticulated.

Ventral aspect: Dark ferrugineous to ferrugineous. Punctation fine to fairly coarse. Fairly dense. Metacoxal plates posteriorly impunctate. Metathorax medially on each side of midline only with

small impunctate areas. Finely reticulated. Abdomen and metacoxal plates posteriorly shiny, partly not microsculptured (with scattered fine microsculpture).

Legs: Dark ferrugineous to ferrugineous. Pro- and mesotarsi quite slender.

Male genitalia: As in Fig. 27C-E.

Female: Externally similar to male.

Distribution: Guinea-Bissau, Guinea, Mali, Chad, Ghana, Ivory Coast, Nigeria, Sudan (Fig. 63). Additional uncertain record is for Algeria.

Herophydrus ritsemae RÉGIMBART (Figs. 28, 64)

Herophydrus ritsemae RÉGIMBART 1889: 57 (orig. descr.); 1895: 48 (descr., faun.); ZIMMERMANN 1920a: 74 (faun., list.); PESCHET 1925: 35 (faun.); BALFOUR-BROWNE 1950: 361 (faun.); GUIGNOT 1953a: 234 (faun.); 1953b: 2 (disc.); 1954b: 17 (disc.); OMER-COOPER 1964: 367 (descr., faun., biol.); FERREIRA 1967: 534 (faun., list.); MEDLER 1980: 155 (faun., list.); NILSSON et al. 1995: 503 (faun., misidentification); NILSSON 2001: 204 (cat.).

Herophydrus ritsemai GUIGNOT 1959: 340 (unjustified emendation); NILSSON 2001: 204 (syn.).

TYPE LOCALITY: of *ritsemae*: Angola, Humpata.

TYPE MATERIAL: **Lectotype**, ♂, by present designation: "P. J. v.d. Kellen Humpata Afr. trop./*Herophydrus ritsemae* Régb. n.sp. type/type" (RNHL). - **Paralectotypes**: Same data as lectotype (2 exs. MNHN, 2 exs. RNHL).

ADDITIONAL MATERIAL EXAMINED:

CAMEROON: "N'Gaoundéré (Ranch de N'Gaoundaba) III. 76" (2 exs. MNHN).

SUDAN: "Equatoria Nzara 22.IV. 1986/*H. ritsemae* Régimbart det. Wewalka 88" (2 exs. CWV).

DEMOCRATIC REPUBLIC OF THE CONGO (Zaire): "Lualaba, Kolwezi, R Dilolo 1953" (9 exs. MAC, 3 exs. MZH); "Kolwezi/VIII. 1953" (2 exs. MNHN); "Elisabethville, lum. 1956-1957" (1 ex. MNHN); "Elisabethville à la lum. IX. 58-V. 59" (1 ex. MAC, 1 ex. MZH); "Kivu Lac Kisale" (1 ex. MAC); "PNG I/aM, 17.III. 1950, 319/*H. sudanensis* Guignot det. Guignot 55" (1 ex. MAC); "Ht Luapula-Kakyelo XI. 1930" (1 ex. MNHN); "Katanga Kakyelo 1-9.XI. 1930" (3 exs. ISN).

ANGOLA: "Marais du L Carumbo, R. Gauche 17.IX. 1957" (5 exs. MNHN, 2 exs. MZH); "L. Carumbo, 7.52S-19.55E, 21.VIII. 1957" (3 exs. MNHN, 1 ex. MZH); "Marais du Catumbo (est) 21.VIII. 1957" (4 exs. MNHN, 1 ex. MZH); "Etang du Canzar 7.38S-21.38E, 12.VII. 1957" (6 exs. MNHN, 1 ex. MZH); "Rives L. Calundo 105 km est Luso XII. 1954" (1 ex. MNHN); "Alto Cuilo Etang Tchifuca 5.VI. 1954" (1 ex. MNHN); "Riv. Luhembe +\- 8.00S-20.25E, affl. Chiapa VI. 1955" (1 ex. MNHN); "Lac Quipemba 10.12S-17.24E, 22.VI. 1957" (2 exs. MNHN); "Fossées marécageaux vallée du Chicapa près Chingufo, 7.39S-20.31E, 3.VII. 1957" (4 exs. MNHN, 1 ex. MZH); "De Dongo au Cubango (Benguela) Miss. Rohan-Chabot 1914/*H. ritsemae* Régimbart Peschet det. 24" (1 ex. MNHN).

ZAMBIA: "Abercorn I. 1960" (1 ex. MAC).

MALAWI: "Nyasal. Zomba Plat., reservoir 3.XI. 1948" (3 exs. AMS).

NAMIBIA: "Kavango Mahango Game Res., piknik site, lux 24.XI. 1993" (1 ex. MNB); same but "2-3.X. 1993, 18.14S-21.43E" (1 ex. MNB).

BOTSWANA: "Chobe N.P. Kasane 3.X. 1982" (1 ex. CRF, 3 exs. MCG, 1 ex. MZH).

DIAGNOSIS: *H. ritsemae* strongly resembles the two species *H. sudanensis* and *H. tribolus*. Regarding separation from *H. sudanensis*, see diagnosis of this species above. From *H. tribolus,* the species *H. ritsemae* is separated by its lack of a furrow posterior to head foremargin. The shape of the penis apex is also clearly different in these two species.

Description: Body: Length 4.50 - 5.33 mm, breadth 2.64 - 3.08 mm. Outline in dorsal aspect (Fig. 28B).

Head: Pale ferrugineous to ferrugineous; palest frontally and change of colour gradual. Frontal outline rounded, medially weakly concave. Frontal border distinct and complete (medially unbroken); without adjacent furrow (Fig. 28A). At eyes (inner part) is a narrow but quite distinct furrow. Frontal depressions quite distinct. Punctation rather fine, somewhat irregularly

distributed; densest anteriorly and posteriorly between eyes. At pronotum, fine (hardly discernible) and sparse punctures. Shiny, almost totally without microsculpture; posterior to eyes has indistinct reticulation. Antenna pale ferrugineous.

Pronotum: Lateral outline rounded. Posterior corners rounded, not pronounced. Laterally pale ferrugineous and medially ferrugineous (change of colour gradual). Punctation fine to rather fine, somewhat irregularly distributed. At edges, dense punctures; discally, punctation distinctly sparser to somewhat sparser. Shiny, not microsculptured.

Elytra: Ferrugineous to dark ferrugineous, laterally with a vague, pale ferrugineous area (Fig. 28B). Punctation dense to fairly dense. In frontomedial half, punctures of two kinds: finer punctures a little denser than coarse punctures. Coarse punctures 2 - 3 x larger than fine punctures. Posteriorly and laterally, the size of punctures is variable. Discal and lateral rows of punctures clearly discernible, although mixed with adjacent punctation. Shiny, without microsculpture. Epipleuron pale ferrugineous and with slightly indistinct (shallow) punctures; shiny, not microsculptured.

Ventral aspect: Pale ferrugineous to ferrugineous. Punctation on metathorax fine to fairly coarse, irregularly distributed; sparse to fairly dense. On metacoxa, rather fine, somewhat sparse, and on abdomen, fine to very fine, somewhat sparse. Metathorax and -coxa with fine microsculpture (reticulation partly reduced). Abdomen shiny, almost totally without microsculpture.

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

Male genitalia: Fig. 28C-F.

Female: Pro- and mesotarsi slightly narrower than in male. Spermatheca could not be found in the single examined female.

Distribution: Cameroon, Sudan, Democratic Republic of the Congo (Zaire), Angola, Zambia, Malawi, Namibia, Botswana (Fig. 64). An additional unverified literature record is from Nigeria (MEDLER 1980). Records from Republic of the Congo and Guinea Bissau are incorrect due to misinterpretation.

Herophydrus tribolus GUIGNOT (Figs. 29, 65)

Herophydrus tribolus GUIGNOT 1953b: 2 (orig. descr.); 1954b: 17 (descr., faun.); 1959a: 340, 342 (descr., faun.); NILSSON 2001: 205 (cat.).

TYPE LOCALITY: Democratic Republic of the Congo (Zaire), Upemba National Park, Dipwa River.

TYPE MATERIAL: **Holotype**, ♂: "Holotypus/Congo Belge P.N.U. R. Dipwa (1900 m)" (in original description given as 1700 m) "17-I-1948 Mis. G.F. de Witte: 1239a/Coll. Mus. Congo (ex. coll. I.P.N.C.B.)/*Herophydrus tribolus* Type male/Guignot det., 1952 *Herophydrus tribolus* Guign. Type male" (MAC). - **Paratypes**: Same sampling data as holotype, but "P.N.U. Lusinga (1760 m) 28.XI.-6.XII. 1947, 1100a" (1 ex. MAC); same but "Lusinga (Kambwa Kanono) 31-V-1945 G.F. de Witte 46/Coll. R.I. Sc.N.B./Guignot det. 52 *H. tribolus* n.sp./Paratype" (1 ex. ISN); same data as holotype but labelled as paratype (1 ex. ISN; not mentioned in original description); same sampling data as holotype but provided with signum "1242a" (1 ex. ISN, 1 ex. MAC; not mentioned in original description).

ADDITIONAL MATERIAL EXAMINED:

DEMOCRATIC REPUBLIC OF THE CONGO (Zaire): "PNU Mukana (1810 m) 20.XII. 48" (1 ex. ISN); "Kundelungu Riv. Lualala 22.X. 1951" (1 ex. ISN); "PNU Lusinga (Riv. Luwa) 1.VI. 1945" (1 ex. MNHN).

DIAGNOSIS: Closest relatives are *H. sudanensis* and *H. ritsemae*. For separation of *H. tribolus*, see diagnoses of the two species.

Description (only differences from *H. ritsemae* noted): Body: Length 5.25 - 5.58 mm, breadth 3.00 - 3.17 mm. Dorsal aspect (Fig. 29B).

Head: Pale ferrugineous to ferrugineous. Posterior to eyes dark ferrugineous. Between eyes is a vague darkened spot. Posterior to distinct frontal border is a furrow (Fig. 29A). In general, punctures slightly coarser than in *H. ritsemae*.

Pronotum: Punctures in general slightly coarser than in *H. ritsemae*.

Elytra: Ferrugineous to pale ferrugineous. Sometimes posteriorly, vague, longitudinal, darkened spots discernible (Fig. 29B). Discal row of punctures not visible or very indistinct. Epipleural punctures quite distinct.

Ventral aspect: Ferrugineous to dark ferrugineous. Punctures in general slightly coarser.

Male genitalia: Fig. 29C-F.

Female: Pro- and mesotarsi slightly narrower than in male. No sclerotized spermatheca detected in dissected female specimen.

Distribution: Democratic Republic of the Congo (Zaire) (Fig. 65).

Herophydrus hyphoporoides RÉGIMBART (Figs. 30, 66)

Herophydrus hyphoporoides RÉGIMBART 1895: 46 (orig. descr.); ZIMMERMANN 1920a: 73 (list., faun.); GUIGNOT 1959a: 344, 351, 354 (descr., faun.); ROCCHI 1991: 78 (faun.); NILSSON 2001: 203 (cat.).

TYPE LOCALITY: Madagascar, Antsianaka.

TYPE MATERIAL: **Lectotype**, ♂, by present designation: "Madagascar Antsianaka Perrot Fréres 1er semestre 1892/male/cotype" (MNHN). - **Paralectotypes**: Same data as lectotype (3 exs. MNHN).

ADDITIONAL MATERIAL EXAMINED:

MADAGASCAR: "Antsianaka 1er semestre 1892" (1 ex. MNB); "Suberbieville/*H. poecilius* Régb. Det. Wewalka" (1 ex. CWV); "Ananarivo Sikora" (2 females ISN; determination uncertain). [Note: In the original description (RÉGIMBART 1895), a variety from Imerina Plateau, Madagascar, represented by two specimens is discussed - at least one of them belongs to another *Herophydrus* species.]

DIAGNOSIS: See diagnosis under *H. assimilis* below. Relative to the two other closely related species *H. hyphoporoides* is characterized by the apex of the penis: in dorsal aspect, penis apex most narrow.

Description: Body: Length 4.75 - 5.00 mm, breadth 2.75 - 3.08 mm. Oval, dorsal colour pattern rather indistinct and somewhat variable (Fig. 30B).

Head: Dark ferrugineous to ferrugineous; distinctly darkened area absent. Frontal outline rounded, medially slightly concave. Frontal margin complete, not broken medially (Fig. 30A). Punctation fine to rather fine, quite dense but somewhat irregularly distributed. At pronotum, punctures distinctly finer, somewhat sparser. Frontal depressions clearly visible, although vaguely delimited. At inner margin of eyes is a rather dense row of punctures. Shiny, without microsculpture, except anteriorly and posterior to eyes; finely microsculptured. Antenna pale ferrugineous to ferrugineous.

Pronotum: Lateral outlines somewhat curved. Posterior corners clearly visible, although not strongly pronounced. Ferrugineous, posteriorly and anteriorly blackish to dark ferrugineous (darkened areas not distinctly delimited). Punctation rather fine to fine, fairly dense; mediolaterally is a small impunctate area. Shiny, not microsculptured.

Elytra: Blackish to dark ferrugineous, with rather indistinct paler markings (Fig. 30B). Punctation dense, almost evenly distributed. Size of punctation variable; fine to very fine, but not forming

distinct size classes. Rows of punctures indistinct or totally absent (mixed with ordinary punctures). Shiny, not reticulated. Epipleuron dark ferrugineous to ferrugineous, distinctly punctate, shiny, not reticulated.

Ventral aspect: Black to dark ferrugineous. Punctures coarse to fine, dense to fairly dense. Metathorax medially on both sides of midline, and posteriorly on metacoxal plates, impunctate. Predominantly shiny; only with minute scattered reticulated areas. Apical sternite distinctly transversely depressed.

Legs: Ferrugineous to dark ferrugineous. Pro- and mesotarsi somewhat enlarged. Metafemur has a distinct process (Fig. 30C).

Male genitalia: Fig. 30D-F.

Female: Metafemur simple, lacks distinct process. Apical sternite only weakly depressed transversely.

Distribution: Madagascar (Fig. 66).

Herophydrus assimilis RÉGIMBART (Figs. 31, 67)

Herophydrus assimilis RÉGIMBART 1895: 47 (orig. descr.); ZIMMERMANN 1920a: 73 (faun., list.); GUIGNOT 1950a: 129 (disc.); 1959a: 344, 351, 355 (descr., faun.); ROCCHI 1991: 85 (faun.); NILSSON 2001: 203 (cat.).

Herophydrus picturatus RÉGIMBART 1903: 4 (orig. descr.); ZIMMERMANN 1920a: 74 (faun., list.); GUIGNOT 1959a: 343, 350 (faun.); BERTRAND & LEGROS 1971: 243 (faun.); ROCCHI 1991: 85 (faun.); NILSSON 2001: 204 (cat.); **syn.n.**

TYPE LOCALITY: of *assimilis*: Madagascar, Antsianaka; of *picturatus*: Madagascar, Toliara (Tullear).

TYPE MATERIAL: **Syntype** of *assimilis*, ♀: "Madagascar Antsianaka Perrot Freres 1er semestre 1892/Type/ Museum Paris M. Régimbart 358-94/female/*assimilis* Rég./unique type?" (MNHN). [Note: According to the original description, type material consists of two specimens, of which we have located only one, a female. No type designation is made because unlocated specimen may be a male.] – **Syntype** of *picturatus*, ♀: "Museum Paris Madagascar Env. de Tullear Bastard 1897/*picturatus* Rég. var.(?)" (1 ex. MNHN). [Note: Since only one specimen, a female, has been examined, we prefer not to designate it as a lectotype.]

ADDITIONAL MATERIAL EXAMINED:

MADAGASCAR: "Madagascar Sud Pays Androy (N)" (3 exs. MNHN);" Env. Tullear Bastard 1897/*H. assimilis* Régb. var. Régimbart det." (2 exs. MNHN); "Suberbieville/*H. picturatus* Régb. det. Wewalka 94" (2 exs. CWV).

DIAGNOSIS: *H. assimilis* belongs to a group of three species characterized by unbroken head foremargins, by male metafemur having a medial extension, and by penis basally having lateral expansions. From the other two similar species, *H. hyphoporoides* and *H. verticalis*, *H. assimilis* is distinguished by having a broader apex of penis (dorsal aspect). [Note: The association between sexes thus far to be considered slightly uncertain.]

Description: Body: Length 3.98 - 4.44 mm, breadth 2.28 - 2.56 mm. Shape of body oval, somewhat globular (Fig. 31B). Dorsal colour pattern very indistinct; paler areas indistinctly delimited and hardly visible (in non-type males, dorsal colour pattern clearly visible; Fig. 31B).

Head: Blackish to brownish, medioposteriorly and anteriorly slightly paler; dark ferrugineous to pale ferruginous. Frontal outline rounded, medially straightened, slightly concave. Frontal margin rather fine and medially, although rather indistinct, unbroken (Fig. 31A). Frontal depressions quite deep, rather indistinctly delimited. Punctation fine to rather fine, quite dense, but slightly irregularly distributed. Close to pronotum, punctures somewhat finer. Anterior to frontal margin with fine, sparse punctures. At inner margin of eyes is a densely punctate narrow area. Shiny to

rather shiny, scattered very fine reticulation may be discerned (large areas not reticulate). Antenna pale ferrugineous.

Pronotum: Lateral outline slightly curved; posterior corner discernible, although not strongly pronounced. Blackish to dark ferrugineous, with a vague paler mediotransverse area (in non-type males, mediotransverse area pale ferrugineous to ferrugineous; quite distinctly delimited). Punctation fine to rather fine, fairly dense, somewhat irregularly distributed (mediolateral punctures sparse). Shiny, not reticulate.

Elytra: Black to dark ferrugineous, often with vague, hardly visible paler markings (in non-type males, pale elytral markings clearly discernible, Fig. 31B). Punctation fine to rather fine, size of punctures slightly irregular but not divided into different size categories. Punctation fairly dense, quite evenly distributed. Rows of punctures very indistinct, mixed with adjacent punctures. Shiny, not reticulate. Epipleuron dark ferrugineous to ferrugineous, distinctly punctate, shiny and not reticulate.

Ventral aspect: Black to dark ferrugineous. Punctation fine to fairly coarse, quite dense but somewhat irregularly distributed: metathorax on each side of midline medially and metacoxal plates posteriorly impunctate. Shiny, not reticulate (scattered microsculpture may be discerned).

Legs: Blackish ferrugineous to ferrugineous. Pro- and mesotarsi slender. Metafemur medially (posterior aspect) strongly enlarged (Fig. 31C).

Male genitalia: Fig. 31D-E.

Female: Pro- and mesotarsi slightly more slender than in male.

Distribution: Madagascar (Fig. 67).

Synonymy: With slight hesitation, ordinary male specimens have been associated with female type material. If this solution turns out to be correct, *H. assimilis* (older and thus valid name) and *H. picturatus* are conspecific.

Herophydrus verticalis SHARP (Figs. 32, 68)

Herophydrus verticalis SHARP 1882: 393 (orig. descr.); KOLBE 1883: 425 (descr., faun.); BRANDEN 1885: 39 (faun.); RÉGIMBART 1895: 46, 47 (descr., disc., faun.); ZIMMERMANN 1920a: 74 (list., faun.); GUIGNOT 1950a: 129 (disc.); 1959a: 344, 351, 354 (descr., faun.); ROCCHI 1991: 85 (faun.); NILSSON 2001: 205 (cat.).

TYPE LOCALITY: Madagascar, interior part.

TYPE MATERIAL: **Holotype**, ♀ (unique): "Type/Madagascar/Sharp Coll. 1905-313/Madagascar (interior) 1167 *H. verticalis*/*H. verticalis* S.J. Hine 1996" (BMNH).

ADDITIONAL MATERIAL EXAMINED:

MADAGASCAR: "Ambositra" (1 ex. ISN, 2 exs. MNHN); "Ambositra/coll. Guignot" (1 ex. MNHN); "Madagascar/*H. verticalis* Sharp" (1 ex. MNHN); "nr 1700 stazione pescicoltura/5.X. 1989 Manjakantompo/*H. hyphoporoides* Réwg. det. Rocchi 1989" (4 exs. CRF, 1 ex. MCG); "Env. Ambatolampy (25 km Sud) 14.VII. 1970/*H. verticalis* Shp det. Bilardo" (1 ex. CRF); "Env. Antsirabe (q. 1600 c.a.) 15.VII. 1970/*H. verticalis* Sharp det. Bilardo" (1 ex. MCG); "Tananarive Tümpel b. Manjakatompo 10.X. 1958/*H. verticalis* Sharp det. Mouchamps" (1 ex. NMW); "Sikora [collector]" (1 ex. NMW); "Plat. Imerina pr. Tananarive (Sikora)" (1 ex. MNHN); "Suberbieville" (1 ex. MAC); "Madagascar" (6 exs. ISN, 4 exs. MNHN, 1 ex. TMP).

DIAGNOSIS: See under the diagnosis of *H. assimilis* and *H. hyphoporoides*. *H. verticalis* is characterized by penis apex (dorsal view) being intermediate in breadth in comparison with the two similar species.

Description: Body: Length 4.28 - 5.42 mm, breadth 2.68 - 3.08 mm. Dorsal outline and colour pattern (slightly variable) as in Fig. 32B.

Head: Dark brown. Frontally with a narrow, vague ferrugineous area. Posteriorly between eyes, at pronotum, pale ferrugineous. Frontal outline rounded, medially slightly concave. Frontal border complete, although border and anterior outline medially for a very short distance confluent (touch each other) (Fig. 32A). At inner margin of eyes is a shallow furrow provided with dense punctures. Rather finely and densely punctate. Punctures slightly irregularly distributed. Anterior to frontal border and narrowly at pronotum with very fine, sparse punctures. Frontal depressions shallow but clearly discernible. Head posterior to frontal border finely microsculptured, slightly mat. At eyes and posteriorly, scattered, fine reticulation. Mid-region is largely shiny, not microsculptured. Basal 3 - 4 segments of antenna are pale ferrugineous to ferrugineous. Segments 4 - 11 apically darkened, brownish.

Pronotum: Lateral outline slightly rounded. Blackish to dark brown, lateromedially with vague, pale area. Punctation fine to rather fine, quite dense; laterodiscally with a moderate, impunctate area. Shiny, almost completely not microsculptured.

Elytra: Black to dark brown to dark ferrugineous, with minute, vague, pale ferrugineous areas (Fig. 32B). Punctation rather fine, almost of equal size, dense and quite evenly distributed. Discal row of punctures indistinct, only anteriorly discernible. Dorsolateral row of punctures not visible. Lateral row of punctures irregular, rather indistinct. Rather shiny, not microsculptured. Epipleuron dark ferrugineous to pale ferrugineous, rather finely and somewhat sparsely punctate, without microsculpture.

Ventral aspect: Black to dark brown to dark ferrugineous. Punctation rather fine to fairly coarse, dense to fairly dense and quite evenly distributed. Metathorax posteriorly at midline and on both sides medially impunctate. Metacoxal plates posteriorly impunctate. Shiny, almost totally without microsculpture.

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

Male: Genitalia as in Fig. 32C-E.

Female: Pro- and mesotarsi rather slender. Spermatheca not found.

Distribution: Madagascar (Fig. 68).

Herophydrus discrepatus GUIGNOT **new status** (Figs. 33, 69)

Herophydrus (*Dryephorus*) *gigas discrepatus* GUIGNOT 1954a: 5 (orig. descr.); 1954b: 19 (descr., faun.); NILSSON 2001: 203 (cat.).

TYPE LOCALITY: Democratic Republic of the Congo (Zaire), Upemba National Park, Mubale.

TYPE MATERIAL: **Holotype**, ♂: "Holotypus/Congo belge PNU Mubale tete source (1750 m) 7-IV-1948 Mis. G. F. de Witte 1481a/Coll. Mus. Congo/ex. coll. I.P.N.C.B./Type/Dr. F. Guignot det. 1953 *Herophydrus gigas* ssp. *discrepatus* Guignot Type" (MAC). - **Paratypes**, studied: Same sampling data as holotype (2 exs. MNHN, 1 ex. ISN, 1 ex. MAC).

ADDITIONAL MATERIAL EXAMINED:

TANZANIA: "Tanganyika Longil Lake Momella 27.VII. 1965" (4 exs. BMNH, 1 ex. MZH); "Lake Lekandiro Momella 25.VII. 1965" (1 ex. BMNH, 1 ex. MZH); "Momella flood pool 3.VI. 1972" (5 exs. BMNH).

DIAGNOSIS: Similar to *H. nodieri* (see under diagnosis below). *H. discrepatus* is characterized by exhibition of the following features: 1. Head almost without reticulation, 2. Penis apex (lateral view) narrow and 3. male protarsi enlarged.

Description (only differences from *H. nodieri* noted): Body: Length 5.85 - 6.17 mm, breadth 3.44 - 3.52 mm. Habitus as in Fig. 33B; dorsal colour pattern quite distinct but somewhat variable.

Head: Between eyes is a broad blackish area. Posterior to eyes also darkened. Shiny, posterior to eyes is a scattered, very fine microsculpture. Frontal aspect as in Fig. 33A.

Pronotum: Black to blackish-ferrugineous. Frontolaterally, vague ferrugineous to dark ferrugineous areas. Partly submat with fine reticulation except, on basal and medial areas.

Elytra: Black to dark ferrugineous, with pale, somewhat vague markings (Fig. 33B).

Legs: Pro- (Fig. 33C) and mesotarsi somewhat enlarged, equally broad.

Male: Genitalia as in Fig. 33D-E.

Female: Body almost totally submat, finely microsculptured. Pro- and mesotarsi slender.

Distribution: Democratic Republic of the Congo (Zaire) and Tanzania (Fig. 69).

Herophydrus gigantoides sp.n. (Figs. 34, 70)

TYPE LOCALITY: Democratic Republic of the Congo (Zaire), Shaba Province, Kolwezi.

TYPE MATERIAL: **Holotype**, ♂: "Kolwezi Haut Katanga/V. Allard VIII. 1953" (MNHN). - **Paratypes**: Same data as holotype (3 exs. MNHN, 1 ex. MZH).

DIAGNOSIS: See under diagnosis of *H. gigas* below.

Description: Body: Length 6.00 - 6.67 mm, breadth 3.67 - 3.92 mm. Habitus (Fig. 34B). Dorsal aspect black, except head dark ferrugineous and minor lateral areas of pronotum and elytra have vague dark ferrugineous areas.

Head: Frontal margin weakly developed, only laterally at eyes discernible (Fig. 34A). Shiny, mainly lacking microsculpture; posteriorly has scattered, very fine reticulation.

Pronotum: Rather shiny, scattered, very fine reticulation discernible.

Male genitalia: As in *H. gigas* but penis apex pointed (Fig. 34C).

Female: Externally similar to male.

Distribution: Democratic Republic of the Congo (Zaire) (Fig. 70).

Herophydrus gigas RÉGIMBART (Figs. 35, 71)

Herophydrus gigas RÉGIMBART 1895: 38 (orig. descr.); ZIMMERMANN 1920a: 73 (list., faun.); GSCHWENDTNER 1938: 7 (faun.); GUIGNOT 1936: 32, 33 (descr., faun.); BALFOUR-BROWNE 1950: 362 (faun.); GUIGNOT 1954b: 18 (faun.); OMER-COOPER 1956a: 21 (faun., biol.); 1956b: 364 (disc.); 1957: 62, 63 (descr., faun.); GUIGNOT 1959a: 366, 369 (descr., faun.); OMER-COOPER 1964: 367, 373 (descr., faun., biol.); 1965: 142, 145 (descr., faun., disc.); PEDERZANI 1988: 107 (faun.); CURTIS 1991: 186 (faun., biol.); NILSSON 2001: 203 (cat.).

Herophydrus erythraeus var. *bifasciatus* GSCHWENDTNER 1932c: 263 (orig. descr.).

Herophydrus erythraeus ab. *bifasciatus* GSCHWENDTNER, GUIGNOT 1936: 32 (descr.).

Herophydrus bifasciatus GSCHWENDTNER, GUIGNOT 1952b: 3 (descr., faun.); 1959a: 365, 367 (descr., faun.); NILSSON 2001: 203 (cat.).

Herophydrus basifasciatus (misspelling) GSCHWENDTNER, GUIGNOT 1954b: 20 (disc.).

TYPE LOCALITY: of *gigas*: Zimbabwe, Harare (Salisbury); of *bifasciatus*: Democratic Republic of the Congo (Zaire), Shaba Province, Kansenia.

TYPE MATERIAL: **Syntype** of *gigas*, ♀: "Zambese Salisbury (Marshall)/*gigas* Rég." (MNHN, not designated lectotype because a male syntype may exist). – **Holotype** of *bifasciatus*, ♂: "Holotypus/Musée Du Congo Katanga: Kansenia 15-IX-15-X-1930 G.F. de Witte/Type male Gschw./R. Dét 2019-i/*Herophydrus bifasciatus* Gschw. det. Gschwendtner" (MAC). - **Paratypes**: Same sampling data as holotype (1 ex. MAC, 1 ex. ISN); same sampling data as holotype but "VI-1925" (1 ex. MAC).

ADDITIONAL MATERIAL EXAMINED:

GUINEA BISSAU: "Bafata Cussalinta 21.III. 1993/*H. nodieri* Régb. det. Nilsson 93" (1 ex. CNU, 1 ex. CRF); "Bafata 10 km S Bambadinea 9.IV. 1993/*H. nodieri* Régb. det. Nilsson 93" (1 ex. CNU); "Oio 34 km E Mansoa 4.IV. 1993/*H. nodieri* Régb. det. Nilsson 93" (2 exs. CNU).

NIGERIA: "Stream 64 km from Bida on Jebba road 15.IX. 1963" (1 ex. AMS).

DEMOCRATIC REPUBLIC OF THE CONGO (Zaire): "PNU, R. Dipwa 1900 m 7.I. 1948 de Witte 1241a" (2 exs. ISN, paratypes of *H. janssensi*); "Lualaba Kolwezi R. Dilolo" (2 exs. MAC); "Kolwezi R. X. 1953" (1 ex. MAC, 1 ex. MZH); "Elisabethville, lum." (1 ex. MAC); "Katanga Kakyelo 1-9.X. 1930/*H. erythraeus* Régb. det. Gschwendtner" (3 exs. ISN); "Ht Luapula Kakyelo 1-9.XI. 1930" (2 exs. MNHN); "Alto Uelle, Dungu IV. 1927/H. *nodieri* Régb. det. Guignot 1951" (1 ex. MCG).

ANGOLA: "Mare Thifuca 5.VI. 1954" (1 ex. MNHN); "Alto Cuilo Etang Chifuca 5.VI. 1954" (3 exs. MNHN, 2 exs. MZH).

ZIMBABWE: "Salisbury" (7 exs. SAM).

DIAGNOSIS: The closest relative is probably *H. gigantoides*. *H. gigas* and *H. gigantoides* are separated by study of penis apex; in *H. gigas,* frontal outline of penis is smooth and rounded, while the corresponding feature in *H. gigantoides* is pointed. From other species with "capped" penis, *H. gigas* is separated by its apically broad penis (lateral aspect). Another useful feature (in many cases) in *H. gigas* is the dorsal colour pattern of body; generally distinct, black and yellowish to pale brownish. Male head is reticulated, except frontally, where it is shiny and partly without reticulation. Male protarsus is somewhat enlarged.

Description (only differences from *H. nodieri* noted): Body: Length 5.00 - 7.42 mm, breadth 3.08 - 4.17 mm. Body shape (Fig. 35B). Rarely is body dorsally almost totally black to blackish-ferrugineous, pale areas vague and not extensive; head then clearly paler.

Head: Frontal aspect as in Fig. 35A. Small area frontally in middle has very indistinct reticulation.

Elytra: Dark ferrugineous to blackish, with quite distinct, variable colour pattern (Fig. 35B-C). Colour pattern sometimes vague, rarely hardly visible.

Male genitalia: As in Fig. 35D-F.

Female: Entire head submat, finely reticulated. Frontal part of pronotum with fine microsculpture. Pro- and mesotarsi narrower than in male.

Distribution: Guinea Bissau, Nigeria, Democratic Republic of the Congo (Zaire), Angola, Zimbabwe (Fig. 71). Additional, unverified literature records are from Zambia (BALFOUR-BROWNE 1950), Mozambique (OMER-COOPER 1956a), Botswana (OMER-COOPER 1957), Rwanda (GUIGNOT 1959a), Malawi, Tanzania: Zanzibar (OMER-COOPER 1964), Namibia and South Africa (OMER-COOPER 1965).

Synonymy: Type material of *H. gigas* and *H. bifasciatus* have been examined and are found to be conspecific, despite existing minor morphological differences. *H. gigas*, being the older of the two, is the valid name of the species.

Herophydrus janssensi GUIGNOT (Figs. 36, 72)

Herophydrus (*Dryephorus*) *janssensi* GUIGNOT 1952b: 2 (orig. descr.); 1954b: 19 (descr., disc., faun.); 1959a: 365, 367, 368 (descr., faun.); NILSSON 2001: 203 (cat.).

TYPE LOCALITY: Democratic Republic of the Congo (Zaire), Upemba National Park, Dipwa River.

TYPE MATERIAL: **Holotype**, ♂: "Holotypus/Congo Belge PNU R. Dipwa (1900 m) 17-I-1948 Mis. G.F. de Witte: 1239a/*Herophydrus janssensi* Guign. Type/Guignot det., 1952 *Herophydrus janssensi* Guign. Type" (MAC). - **Paratypes**: Same sampling data as holotype (2 exs. MAC, 2 exs. MCG, 3 exs. ISN, 1 ex. AMS); Same data but provided with code "1241a" (109 exs. ISN; two additional exs. belong to *H. nodieri* and two more to *H. gigas*);

Same data but "Mukana (1810 m) 20.XII. 1948, 2290a" (4 exs. ISN); Same data but "Kabwekanono p.t.s. Lufwa affl. dr. Lufira (1815 m) 12.I. 1948, 1199a" (2 exs. ISN).

DIAGNOSIS: *H. janssensi* is distinguished from similar species by exhibiting the following features: 1. Dorsal colour pattern of body distinct, black and yellowish, 2. Large body, 3. Head mat, strongly reticulated, 4. Male protarsi enlarged and 5. Penis apex slender in lateral view.

Description: Body: Length 6.58 - 7.25 mm, breadth 3.67 - 4.08 mm, robust (Fig. 36B).

Head: Testaceous to pale ferrugineous, medially has a vague, darkened spot, which anteriorly sometimes reaches the frontal margin. Frontal outline rounded, medially slightly concave. Frontal border weakly developed, medially hardly visible or absent (Fig. 36A). At eyes (inner part) is a narrow, fine, slightly indistinct furrow. Frontal depression shallow. Punctation quite fine, slightly irregularly distributed; dense to somewhat sparse, close to pronotum, punctures much finer and sparser. Submat, finely microsculptured. Narrow, delimited, frontal margin almost without reticulation; quite shiny. Antenna pale ferrugineous.

Pronotum: Lateral outline somewhat rounded. Posterior corners pronounced but their extreme apex rounded. Blackish to dark ferrugineous, laterally has vague, dark ferrugineous to ferrugineous area. Punctation quite fine and dense. Somewhat irregularly distributed; mediolaterally, punctures distinctly sparser. Submat, entirely quite distinctly microsculptured.

Elytra: Black to blackish ferrugineous, with distinctly delimited but slightly variable, pale ferrugineous areas (Fig. 36B). Punctation quite fine and dense, almost evenly distributed. Size of punctures only slightly variable, not of two different kinds. Rows of punctures hardly visible; mixed with adjacent punctation. Submat to shiny. Finely microsculptured. Laterally and apically, reticulation becomes indistinct, partly absent. Epipleuron pale ferrugineous, sparsely punctate. Microsculpture partly reduced, indistinct.

Ventral aspect: Black to blackish-ferrugineous. Apex of abdomen and metathorax partly ferrugineous. Prothorax pale ferrugineous. Punctation fine to very fine, irregularly distributed, partly quite dense or hardly visible. Submat, finely microsculptured.

Legs: Pale ferrugineous to ferrugineous. Pro- and mesotarsi enlarged, distinctly flattened.

Male genitalia: Fig. 36C-E.

Female: Body totally microsculptured, mat to submat. Pro- and mesotarsi moderately enlarged, distinctly narrower than in male.

Distribution: Democratic Republic of the Congo (Zaire) (Fig. 72).

Herophydrus heros SHARP (Figs. 37, 73)

Herophydrus heros SHARP 1882: 392 (orig. descr.); KOLBE 1883: 409 (descr., faun.); BRANDEN 1885: 39 (faun.); SEVERIN 1892: 472 (disc.); RÉGIMBART 1895: 34, 36, 37 (descr., disc., faun.); 1904: 2 (disc., faun.); 1905: 203 (disc., faun.); ZIMMERMANN 1919: 152 (faun.); 1920a: 73 (faun., list.); 1930: 117 (descr., disc.); GSCHWENDTNER 1932a: 13 (disc.); GUIGNOT 1936: 32, 33 (descr., faun.); OMER-COOPER 1956b: 364 (disc.); GUIGNOT 1959a: 365, 367, 368 (descr., faun.); BERTRAND & LEGROS 1971: 243 (faun.); ROCCHI 1991: 85 (faun.); NILSSON 2001: 203 (cat.).

TYPE LOCALITY: Madagascar.

TYPE MATERIAL: **Lectotype**, ♂, by present designation: "*Hydroporus heros* Type Madagascar, D.S./Type/Madagascar/Sharp Coll. 1905-313/Type 61 *Hydroporus heros*" (BMNH). - **Paralectotypes**: "*Herophydrus heros* Ind. Typ. Madagascar D.S./Cotype/Sharp Coll. 1905-313" (2 exs. BMNH); "Madagascar Coll. Chevrolat det. Sharp 82/Type/Sharp det. 1882 *Herophydrus heros* Sharp" (2 exs. ISN). - "Cotype/*Hyphydrus bocerus* Dej. Madagascar Type 61/Sharp Coll. 1905-313/*Herophydrus heros* Shp co-type" (1 ex. BMNH).

ADDITIONAL MATERIAL EXAMINED:

MADAGASCAR: "Antsianaka 1er semestre 1892" (1 ex. MNB, 1 ex. MNHN); "Antsianaka 2e semestre 1890" (1 ex. MNHN); "Antsianaka" (2 exs. MNHN); "Tananarive (Sikora)" (2 exs. MNHN); "Sikora 91/*H. heros* Shp det. Régimbart 1891" (4 exs. ISN); "Env. Tananarive 1934" (5 exs. ISN); "Foret de Fito" (20 exs. MNHN, 5 exs. MZH); "Suberbieville" (1 ex. CWV); "E. Mad. 18-20.I. 1995 pr. Andilamena 950-1000 m, 5 km S Ampamoho, light, leg. G. Dunay & J. Janak" (3 exs. NMW); "Diego I. 30" (2 exs. NMW); "Diego I. 31" (2 exs. NMW); "Madag." (6 exs. MNB, 1 ex. MNHN); "Ullr." (2 exs. NMW).

DIAGNOSIS: See diagnosis of *H. nodieri* below. *Herophydrus heros* is characterized by the following combination of features: 1. Head shiny, almost without reticulation, 2. Male protarsus slightly enlarged, 3. Penis apex slender (lateral aspect) and 4. Body (dorsal view) slightly more narrow than in similar species *H. nodieri*.

Description: Body: Length 5.75 - 6.42 mm, breadth 3.33 - 3.66 mm. Ovally oblong, dorsal aspect with somewhat variable colour pattern (Fig. 37B-D).

Head: Ferrugineous to dark ferrugineous, medially between eyes is a somewhat vague dark area. Posterior to eyes also darkened. Frontal outline rounded, medially slightly concave. Very weakly developed frontal margins visible near eyes (Fig. 37A). Frontal depressions clearly discernible, but their delimitation is vague. Punctation fine to rather fine, dense to rather sparse; punctures somewhat irregularly distributed. At pronotum, punctures very fine and sparse. Shiny, almost without reticulation. Antenna slender, pale ferrugineous.

Pronotum: Black, lateromedially slightly paler, blackish-ferrugineous to ferrugineous. Lateral outline rounded to almost straight. Punctation fine to rather fine, dense. Lateromedially, punctures somewhat sparser. Shiny, reticulation indistinct. Scattered fragments of microsculpture may be discerned.

Elytra: Black to blackish-ferrugineous, with quite distinct but variable markings (Fig. 37B-D). Punctation fine to rather fine, size of punctures variable; punctures not forming two different kinds. Punctation dense, almost evenly distributed. Rows of punctures absent or hardly visible; discal row of punctures anteriorly irregular but generally discernible. Shiny, not reticulate. Epipleuron blackish to dark ferrugineous, quite densely punctate, shiny, not reticulate.

Ventral aspect: Black to dark ferrugineous, prothorax partly dark ferrugineous. Punctures fairly coarse to fine, mainly dense but somewhat irregularly distributed: metacoxal plates posteriorly and metathorax at each side close to midline impunctate. Rather shiny and mostly without reticulation. Fine microsculpture discernible on metacoxal plates.

Legs: Dark ferrugineous to ferrugineous. Pro- and mesotarsi slightly enlarged and flattened.

Male: Genitalia as in Fig. 37E-G.

Female: Pronotum laterally has scattered but clearly visible microsculpture. Ventral aspect submat, with extensive microsculpture.

Distribution: Madagascar (Fig. 73).

Herophydrus nodieri (RÉGIMBART) (Figs. 38, 74)

Coelambus nodieri RÉGIMBART 1895: 37 (orig. descr.); ZIMMERMANN 1920a: 69 (list., faun.).

Herophydrus nodieri (RÉGIMBART), GSCHWENDTNER 1932a: 13 (disc.); GUIGNOT 1936: 32, 33 (descr., faun.); 1946a: 312, 315 (faun., biol.); BALFOUR-BROWNE 1947: 137 (faun.); LEGROS 1953: 1563 (faun.); OMER-COOPER 1956a: 21, 24 (faun., biol., disc.); GUIGNOT 1951:22 (desig.); 1955a: 29 (faun.); 1955c: 863 (faun., biol.); 1956a: 86 (faun.); 1959a: 366, 370 (descr., faun.); MEDLER 1980: 154 (list., faun.); NILSSON & PERSSON 1993: 71 (faun.); NILSSON et al. 1995: 503 (faun.); NILSSON 2001: 204 (cat.).

Herophydrus erythraeus RÉGIMBART 1904: 2 (orig. descr.); 1905: 203 (descr.); ZIMMERMANN 1919: 152 (faun.); 1920a: 73 (list., faun.); OMER-COOPER 1931: 778 (descr., faun., biol.); GSCHWENDTNER 1932a: 13 (disc.);

1932c: 264 (disc.); GUIGNOT 1936: 32 (descr., faun.); 1954b: 20 (disc.); OMER-COOPER 1956b: 364 (disc.); GUIGNOT 1959a: 365, 366 (descr., faun.); OMER-COOPER 1964: 367, 372 (descr., faun., biol.); FERREIRA 1967: 535 (faun., list.); BARTOLOZZI et al. 1984: 75 (faun.); NILSSON & PERSSON 1993: 71, 94 (faun., biol.); NILSSON 2001: 203 (cat.); **syn.n.**

TYPE LOCALITY: of *nodieri*: Mali, Badoumbé; of *erythraeus*: Eritrea, Halibaret.

TYPE MATERIAL: **Lectotype** of *nodieri*, ♂, designated by GUIGNOT (1951): "Ht. Senegal Badoumbé Dr. Nodier I à V - 1882/male/type" (MNHN). - **Paralectotypes**: "Ht. Senegal Badoumbé/*Herophydrus nodieri* Régimb. n.sp." (1 ex. MNHN, 2 exs. SAM). – (?) type material: "Ht. Senegal Malou/cotype" (1 ex. MNHN, 1 ex. ISN; labelled as type but not mentioned in the original description). - **Syntype** of *erythraeus*, ♀: "Halibaret, Col. Erythrée Dr. Tellini /Halibaret/*H. erythraeus* Rég. n.sp." (1 ex. MNHN, not designated lectotype because additional syntypes may exist).

ADDITIONAL MATERIAL EXAMINED:

SENEGAL:"Dakar V. 1939" (1 ex. ISN).

MALI: "Badoumbé" (6 exs. MNHN, 3 exs. SAM); "Kogoni 15.XII. 1956" (2 exs. MNHN).

SIERRA LEONE: "Freetown 1945/*H. gigas* Régb. det. Wewalka 84" (1 ex. CWV); "Musaia 16.I. 1946/Hippo mud pan" (1 ex. BMNH, 1 ex. MZH).

NIGERIA: "NC St. Zaria 2-3.VIII. 1973" (1 ex. MZH).

CHAD: "Moyen Chari Ft Archambault Bakaré ou Boungoul V. 1904" (1 ex. MNHN, 1 ex. MZH).

DEMOCRATIC REPUBLIC OF THE CONGO (Zaire): "PNU Lusinga (galleria) 7-20.VI. 1945" (1 ex. MNHN); "PNU Nasombwe (1120 m) 7-9.VII. 1948" (1 ex. ISN); "PNU Mabwe (585 m) 31.I.-3.II. 1949/*H. nodieri* Régb. det. Guignot" (1 ex. ISN); "PNU Mabwe (585 m) 2.II. 1949" (1 ex. ISN); "PNU Ganza pr. R. Kamandula (800 m) saline 1.VI. 1949" (2 exs. ISN); "PNU Mukana 1810 m, 15.III. 1948" (1 ex. ISN); "PNU R. Dipwa (1900 m) 17.I. 1948, 1241a/paratype/*H. janssensi* Guignot" (2 exs. ISN); "Lualaba Kolwezi R. Dilolo" (2 exs. MAC); "E-ville, lum." (1 ex. MAC); "Shaba Jadotville IX. 1952" (1 ex. ISN); "PNA Env. Gabiro" (1 ex. MAC); "PNA 26.VIII. 1957, sect. Nord, marais Buyansha sur R. Semliki 905 m" (1 ex. MAC, 1 ex. MZH); "PNA Bitshumbi 9-12.X. 1933" (1 ex. ISN).

SUDAN: "Darfur nr Safaha 30.IV. 1963" (1 ex. MZH).

ERITREA: "Asmara 5.VI. 1901" (1 ex., not lectotype because not included in original type material, and 7 exs., not paralectotypes MZF); "Asmara II. 1901" (6 exs. MZF, not type material); "Asmara, env. Mai Bela" (1 ex. MNHN, not type material); "Adi Ugri, env. Mai Tacala" (3 exs. MNHN, not type material); "Adi Ugri V. 1901" (3 exs. MZF, not type material); "Asmara/*H. erythraeus* Régb. det. Nilsson" (3 exs. MZH); "Asmara/*H. erythraeus* Régb. det. Wewalka 73, 83" (3 exs. MNB, 1 ex. CWV).

ETHIOPIA: "Water hole N of Makki R, 6000 ft 28.XI. 1926/*H. nodieri* Régb. Guignot det. 50" (1 ex. AMS).

KENYA: "Ngong Forestry St. 13.IV. 1968 Spangler" (90 exs. USNM, 10 exs. MZH, 1 ex. NMW); "Mt Kenia Naro Moru Q 1950, 20.IX. 1976/*H. gigas* Régb. det. Pederzani" (1 ex. MCG); "25 km SE Nyeni Karatina 4.XI. 1995/*H. nodieri* Régb. det. Wewalka" (1 ex. CWV); "5 km S Nyahururu 28.X. 1995/*H. nodieri* Régb. det. Wewalka" (1 ex. CWV); "Keekorok Lodge 30.I. 1973/*H. gigas* Régb. det. Wewalka 73" (1 ex. CWV); "Kibwezi" (1 ex. MNB).

TANZANIA: "Iringa 1500 m, 17.XII. 1975" (1 ex. ITA); "Massai Nyika Burunge Ende VI. 1893 Neumann/*H. neumanni* Régb." (1 ex. MNB); "Irangi VII. 1893/*H. neumanni* Régb." (1 ex. MNHN).

ANGOLA: "Chute de Luacala à Duque de Bragnaca, 19.16 S,15.12E/Malange 19.VI. 1957" (1 ex. MNHN); "Humpata" (2 exs. MNHN); "Namakunda V. 1948, 16.15E,18.50S" (1 ex. BMNH).

ZAMBIA: "Watergreen Farm Chongwe Walley 60 km E Lusaka 4.VIII. 1986/*H. gigas* Régb. det. Pederzani" (1 ex. MCG); "Luangwa Walley Chibembe Dint. 6.X. 1984" (1 ex. MCG); "Luangwa Walley Mfuwee Dint. 9.X. 1984" (1 ex. MCG).

MOZAMBIQUE: "Meponda VIII. 1955" (1 ex. TMP); "Rikatla" (4 exs. MAC, 1 ex. MZH).

ZIMBABWE: "1-5.XII. 1993, 20,13S/31,00E, Kyle Recr. Park at L Mufirikwi, lux" (1 ex. MNB); "28.XI.-1.XII. 1993, 20,33S/28,30E Matopos NP lux" (1 ex. MNB); "Matebekla Matopos NP ca 1300 m ü N 28-30.XI. 1993, 20,33S/28,30E, lux" (2 exs. MNB, 1 ex. MZH).

BOTSWANA: "Tsotsoroga Pan 17.VI.-9.VII. 1930" (1 ex. MNHN, 23 exs. TMP); "N'Kate Makarikari 6-23.VIII. 1930/*H. gigas* Régb. det. Gschwendtner" (31 exs. TMP); "Nata R. Makarikari 24-27.VIII. 1930/*H. gigas* Régb. det. Gschwendtner" (12 exs. TMP); "Chobe N.P. Kasane 3.X. 1982/*H. gigas* Régb. det. Bilardo" (2 exs. CWV, 1 ex. CRF); "Botletle R. Makalamabedi 10.X. 1982/*H. gigas* Régb. det. Bilardo" (2 exs. CRF); "Serowe Farmer's Brigade, sewage ponds X. 1988/*H. gigas* Régb. det. Rocchi" (1 ex. CRF).

NAMIBIA: "Kaokoweld Gauko-Otavi 20 mi SSW Ohopoho 5.VI. 1951" (1 ex. LUZ).

SOUTH AFRICA: "Trsvl Waterberg Distr./22.VIII. 1948" (1 ex. MNHN); "Krüger Park Olifants Camp 23.58S-31.58E/8.XII. 1988 light collection" (1 ex. TMP); "Trsvl Shilowane" (5 exs. MAC, 1 ex. MZH); "Zululand St. Lucia Missionrock 28.22S-32.35E/18.XII. 1975 EY: 983 at blacklight" (1 ex. MZH, 1 ex. TMP); "Zulul. Mtubatuba distr. Dukuduku 5.VII." (1 ex. LUZ).

DIAGNOSIS: *H. nodieri* is difficult to separate from closely related species such as *H. gigas*, *H. heros* and *H. discrepatus*. From *H. gigas,* the species is distinguished by its distinctly narrower penis (lateral aspect). From *H. heros* and *H. discrepatus,* by male protarsi, which are rather slender in *H. nodieri,* while enlarged in the two other species. From *H. gigantoides, H. nodieri* is easily separated by the rounded penis apex (dorsal aspect) (in *H. gigantoides,* penis apex pointed). Finally, *H. janssensi* can be distinguished from *H. nodieri* by its mat and reticulated male head (in *H. nodieri,* male head almost without reticulation). Further study will reveal whether the taxon *H. nodieri* as here delimited is in fact a species complex or not.

Description: Body: Length 5.83 - 6.50 mm, breadth 3.16 - 3.75 mm. Dorsal aspect as in Fig. 38B-C. Dorsal colour pattern often indistinct, hardly recognizable and vague.

Head: Pale ferrugineous to dark ferrugineous. Sometimes has a mediofrontal darkened spot, which anteriorly is vaguely delimited. Posterior to eyes often darkened. Frontal outline rounded, medially slightly concave. Frontal margin weakly developed, visible only for a short distance at eyes (Fig. 38A). Frontal depressions quite distinct. At inner margin of eye are dense punctures forming a narrow furrow. Punctation fine to rather fine, quite dense and slightly irregularly distributed. Head posteriorly almost impunctate. Shiny, not reticulated. Antenna pale ferrugineous, joints unicoloured.

Pronotum: Black to dark ferrugineous to ferrugineous. Sometimes frontally and posteriorly has vague, indistinct darkened areas; between areas and laterally paler. Lateral outline of pronotum almost straight, anteriorly for a short distance distinctly curved inwards. Posterior corner of pronotum quite pronounced, although extreme apex rounded. Punctation fine to rather fine, dense and slightly irregularly distributed; mediolaterally, punctures sparser. Shiny, not reticulated, except mediolaterally; scattered fine microsculpture may be discerned.

Elytra: Dark ferrugineous and almost unicoloured or black to dark ferrugineous, often with vague paler markings (Fig. 38C). Punctation quite dense and evenly distributed. Size of punctures somewhat irregular but hardly of two different kinds. Coarser punctures may be approximately 2 x larger than the finest punctures. Discal row of punctures clearly visible from base of elytron to approximately the middle. Dorsolateral and lateral rows of punctures indistinct, hardly discernible. Rather shiny, not microsculptured. Epipleuron dark ferrugineous, distinctly and quite densely punctate, shiny and not reticulate.

Ventral aspect: Dark ferrugineous, abdomen posteriorly blackish. Punctation fine to quite coarse, in part fairly dense. Apically on abdomen punctures finer. Metathorax, a short distance from midline, and metacoxal process posteriorly, impunctate. Shiny, not reticulate, except four apical sternites submat, finely microsculptured. Scattered, indistinct microsculpture also discernible on metathorax and posteriorly on metacoxal plates.

Fig. 1 (opposite page): One of the 36 shortest trees without zero-length branches from the NONA search. Unambiguous character change is shown at each branch with character numbers above and state numbers below branches; filled dots indicate unique character state transformations, and open dots indicate homoplasious characters state transformations. Bremer support values >1 are given in bold to the left of their respective nodes. Nodes marked with a black square were collapsed in the strict consensus tree, which has a length of 124, CI 0.30 and RI 0.57. Of the genus names, only *Herophydrus* has been abbreviated.

Legs: Ferrugineous, hindlegs darker, dark ferrugineous. Pro- and mesotarsi rather slender.

Male genitalia: Fig. 38D-F.

Female: Externally generally similar to male. Pronotum sometimes finely microsculptured, submat.

Distribution: Senegal, Sierra Leone, Mali, Nigeria, Chad, Democratic Republic of the Congo (Zaire), Sudan, Eritrea, Ethiopia, Kenya, Tanzania, Angola, Zambia, Mozambique, Zimbabwe, Botswana, Namibia and South Africa (Fig. 74). Additional unverified literature records include Uganda (GUIGNOT 1936), Niger (LEGROS 1953), Rwanda (GUIGNOT 1955a), Mauritania (GUIGNOT 1955c), Guinea-Bissau (NILSSON et al. 1995) and, under the name *H. erythraeus,* Malawi (OMER-COOPER 1964).

Synonymy: Study of type material confirms the synonymy of *H. nodieri* and *H. erythraeus*. The name *H. nodieri* is the older of the two and thus, the valid name of this taxon.

Phylogeny and classification

The NONA search returned 360 trees of minimum length 98 (CI 0.38, RI 0.70). Only 36 of these trees remained after trees with unsupported nodes had been filtered out. One of these 36 trees is shown in Fig. 1, which is presented to be as congruent with the current classification as possible. In this tree, the 12 nodes that were not present in all 36 trees have been marked. Collapsing these nodes yields the strict consensus tree. In all trees, *Chostonectes gigas* is the sister species of all the species belonging to the tribe Hygrotini sensu NILSSON & HOLMEN (1995). As the Hygrotini node has the highest Bremer support value recorded in the tree, i.e. 5, it is relatively well-supported (by characters nos. 8, 9, 12, 14 and 20). However, the monophyly of Hygrotini sensu NILSSON & HOLMEN (1995) was questioned by MILLER (2001), who found representatives of both Hydrovatini and Hyphydrini nested within this clade.

Monophyly of the genus *Herophydrus,* as currently delimited, was not supported in our study. The species of *Hygrotus (Coelambus)* and *Hyphoporus* are in the consensus tree basal to a clade including all *Herophydrus* species, *Heroceras descarpentriesi* and *Hygrotus* s.str. As *Heroceras descarpentriesi* is part of a basal polytomy of this clade, lack of resolution does not permit a clear statement of its taxonomic position relative to *Herophydrus*. The genus *Herophydrus* is in any case paraphyletic, however, as the two *Hygrotus* s.str. species included group with *Herophydrus cleopatrae*. Although this clade is only supported by the two homoplastic characters 1 and 11, there is no doubt that *Hygrotus* s.str. in our tree is nested within *Herophydrus*.

As can be seen from the cladogram, our matrix contained many ambiguous characters. The low resolution found within *Herophydrus* is also due to the low number of characters relative to the number of taxa included. With respect to Hygrotini, our results provide a strong indication that the current generic classification is not firmly based. The long-standing debate on the status of *Coelambus*, by different authors regarded as a valid genus, junior synonym or subgenus of *Hygrotus*, needs to be widened to also include the other genera of the tribe (SHARP 1882, ANDERSON 1971). Future work on this problem should include more species than we have, especially of the large genus *Hygrotus* s.l., and if possible, additional sets of characters. It should be noted here that larval characters suggest that the West Palearctic genus *Stictonectes* groups with *Hygrotus* s.l., and not with other genera of Hydroporini (ALARIE et al. 1999). Moreover, MILLER's (2001) analysis indicates that future analysis should be based on a wider taxon sampling outside the genera presently assigned to Hygrotini.

The three best supported clades within *Herophydrus* are: (*assimilis* + *hyphoporoides* + *verticalis*), supported by the three male characters 22, 23 and 29, all three species being confined

to Madagascar, (*discretus* + *gigantoides* + *gigas* + *heros* + *janssensi* + *nodieri*) supported especially by the capped penis, and (*rufus* + *tribolus*) supported by the two homoplastic characters 5 and 9. The clade including *H. nodieri* largely corresponds to the subgenus *Dryephorus* GUIGNOT. Consequently, *Herophydrus* s.str. (sensu GUIGNOT 1959a), including all other species, is not monophyletic in our tree. Lack of resolution at the base of *Herophydrus* makes it difficult to suggest a natural species-group classification of the genus.

We stress the need for further study of the generic classification of the Hygrotini, at the same time admitting that the phylogenetic signal of the characters we have studied is not sufficiently strong to warrant a change of the classification currently in use. It is, however, evident, that this classification is not firmly based and should be viewed only as a provisional arrangement.

World checklist of the genus *Herophydrus*

The number of specimens studied, including type material, is given in parentheses after the name of each species; species not occurring in Africa are marked with an asterisk.

assimilis RÉGIMBART, 1895 (9)
  picturatus RÉGIMBART, 1903

bilardoi sp.n. (23)

capensis RÉGIMBART, 1895 (28)

**cleopatrae* (PEYRON, 1858)
  gouini (GUIGNOT, 1953)
  galileae WEWALKA, 1984

confusus RÉGIMBART, 1895 (7)

discrepatus GUIGNOT, 1954 (15)

endroedyi sp.n. (92)

gigantoides sp.n. (5)

gigas RÉGIMBART, 1895 (35)
  bifasciatus GSCHWENDTNER, 1932

gschwendtneri OMER-COOPER, 1957 (44)

guineensis (AUBÉ, 1838) (548)
  turgidus (ERICHSON, 1843)
  ferrugineus (LUCAS, 1846)
  barbarus (SCHAUM, 1847)
  ruficeps (BOHEMAN, 1848)
  hyphydroides (PERRIS, 1864)
  mutatus (GEMMINGER & HAROLD, 1868)
  inflatus (REICHE, 1869)
  umbrosus ZIMMERMANN, 1926

heros SHARP, 1882 (61)

hyphoporoides RÉGIMBART, 1895 (8)

ignoratus GSCHWENDTNER,1952 (194)

inquinatus (BOHEMAN, 1848) (648)
  oscillator SHARP, 1882
  coelamboides RÉGIMBART, 1895
  labiosus GUIGNOT, 1950

janssensi GUIGNOT, 1952 (124)

kalaharii GSCHWENDTNER, 1935 (5)
  catersi GUIGNOT, 1955

**morandi* GUIGNOT, 1952

musicus (KLUG, 1834) (222)
  fractilinea (SOLSKY, 1874)
  interruptus (SHARP, 1882)

muticus (Sharp, 1882) (249)

natator sp.n. (55)

nigrescens sp.n. (2)

nodieri (RÉGIMBART, 1895) (284)
  erythraeus RÉGIMBART, 1904

obscurus SHARP, 1882 (150)

obsoletus RÉGIMBART, 1895 (1)

ovalis GSCHWENDTNER, 1932 (3)
  wahlbergi OMER-COOPER, 1956

pallidus OMER-COOPER, 1931 (213)
  sobrinus OMER-COOPER, 1931
  colasi GUIGNOT, 1935
  cooperi GSCHWENDTNER, 1938
  expressus GSCHWENDTNER, 1938

pauliani GUIGNOT, 1950 (5)

quadrilineatus RÉGIMBART, 1895 (44)

ritsemae RÉGIMBART, 1889 (77)
  ritsemai GUIGNOT, 1959

rohani PESCHET, 1924 (69)
  paradoxus GSCHWENDTNER, 1932

**rufus* (CLARK, 1863)
  rotundatus (GSCHWENDTNER, 1931)

sjostedti RÉGIMBART, 1908 (38)

spadiceus SHARP, 1882 (104)
  lineolatus KOLBE, 1883
  biseriatus RÉGIMBART, 1895
  poecilus RÉGIMBART, 1903

sudanensis GUIGNOT, 1952 (64)

tribolus GUIGNOT, 1953 (9)

variabilis variabilis RÉGIMBART, 1906 (46)
  dilutus GUIGNOT, 1936

variabilis secundus GUIGNOT, 1954 (17)

**vaziranii* (NILSSON, 1999)
  kashmirensis (VAZIRANI, 1970)

verticalis SHARP, 1882 (28)

vittatus RÉGIMBART, 1895 (8)

wewalkai sp.n. (7)

Acknowledgements

We express our sincere thanks to all colleagues and friends who in various ways have kindly assisted in this work: Dr. Chuck Bellamy (Pretoria), Dr. Ben Brugge (Amsterdam), Dr. Marcel Cludts (Brussels), Dr. Margie Cochrane (Cape Town), Dr. Roy Danielsson (Lund), Dr. Marc De Meyer (Tervuren), the late Dr. Sebastian Endrödy-Younga (Pretoria), Dr. Hans Fery (Berlin), Mag. Fritz Gusenleitner (Linz), Dr. Sibylle Gussman (Pretoria), Dr. Lars Hendrich (Berlin), Mr. Stuart Hine (London), Dr. Manfred A. Jäch (Vienna), Dr. Jan Krikken (Leiden), the late Dr. Per Lindskog (Stockholm), Dr. Ferdinand de Moor (Grahamstown), Dr. Abdoul Aziz Niang (Dakar), Mlle Helene Perrin (Paris), Dr. Roberto Poggi (Genova), Mr. Norbert Reintjes (Würzburg), Dr. Claudia Reitstätter (Linz), Dr. Saverio Rocchi (Florence), Dr. Hans Silfverberg (Helsingfors), Dr. Paul J. Spangler (Washington, D.C.), Dr. Manfred Uhlig (Berlin) and Prof. Dr. Günther Wewalka (Vienna). We also thank Mr. Johannes Bergsten (Umeå), and Dr. Jyrki Muona (Helsinki) for comments on earlier drafts of this manuscript. English language revision was done by Carol Ann Pelli, Hon. BSc, of the Language Revision Service of the University of Helsinki.

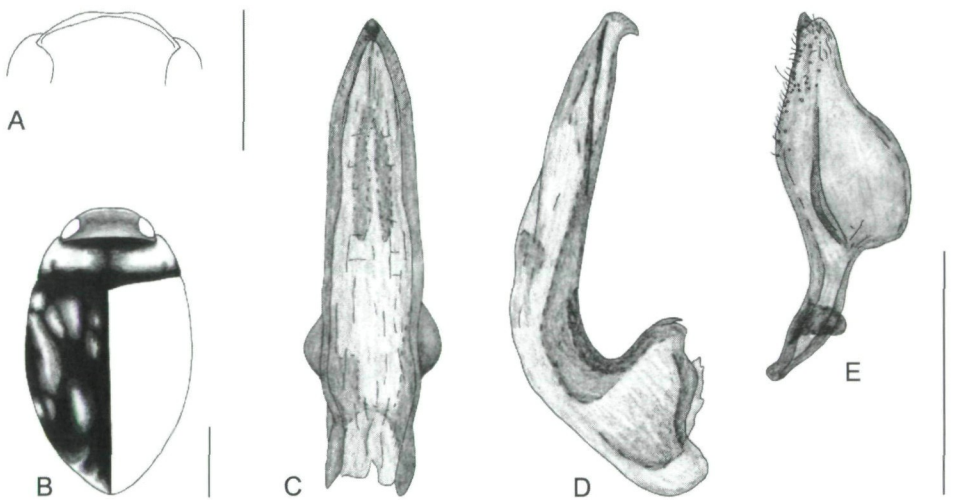


Fig. 2: *Herophydrus pauliani*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm) and C-E (0.4 mm).

Fig. 3: *Herophydrus confusus*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.5 mm).

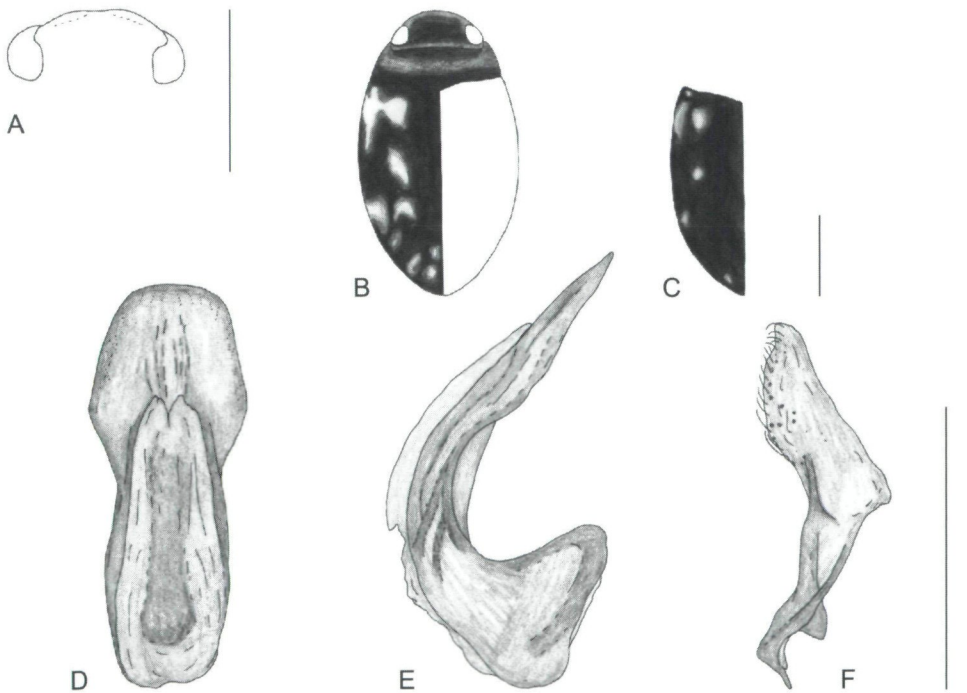


Fig. 4: *Herophydrus rohani*. A) head, B-C) habitus and elytron, D) penis, dorsal aspect, E) penis apex, dorsal aspect, F) paramere. Scale bars: A (1 mm), B-C (1 mm), D-F (0.4 mm).

Fig. 5: *Herophydrus obsoletus*. A) head, B) habitus. Scale bars: A (1 mm), B (1 mm).

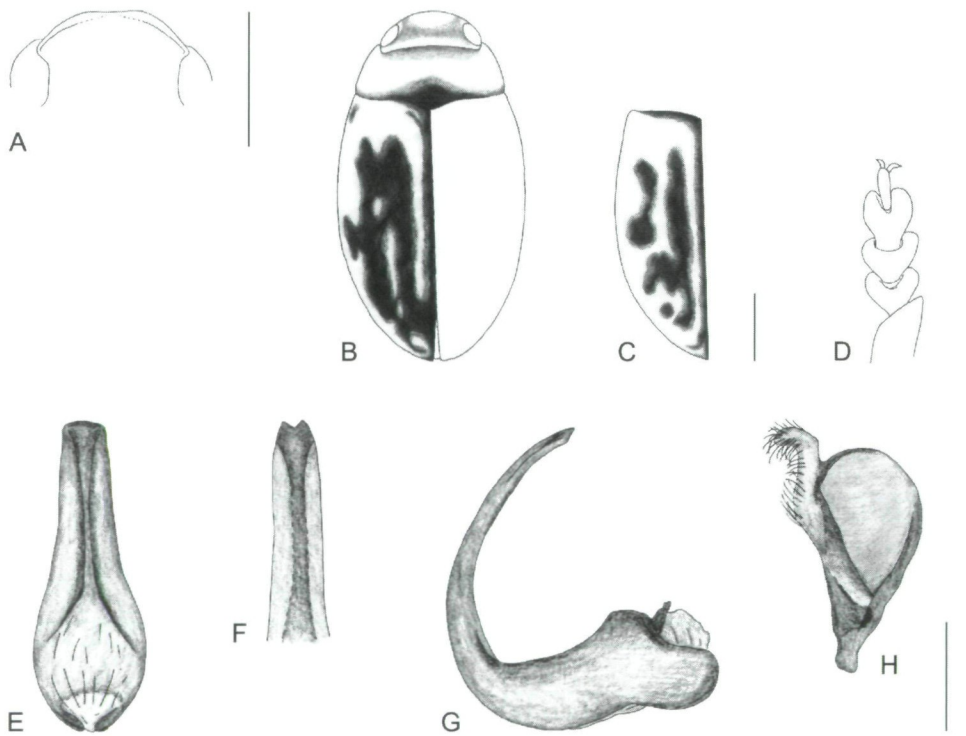


Fig. 6: *Herophydrus capensis*. A) head, B-C) habitus and elytral colour pattern (variation), D) male protarsus, E) penis, dorsal aspect, F) penis apex, dorsal view, G) penis, lateral aspect, H) paramere. Scale bars: A (1 mm), B-C (1 mm) and D-H (0.5 mm).

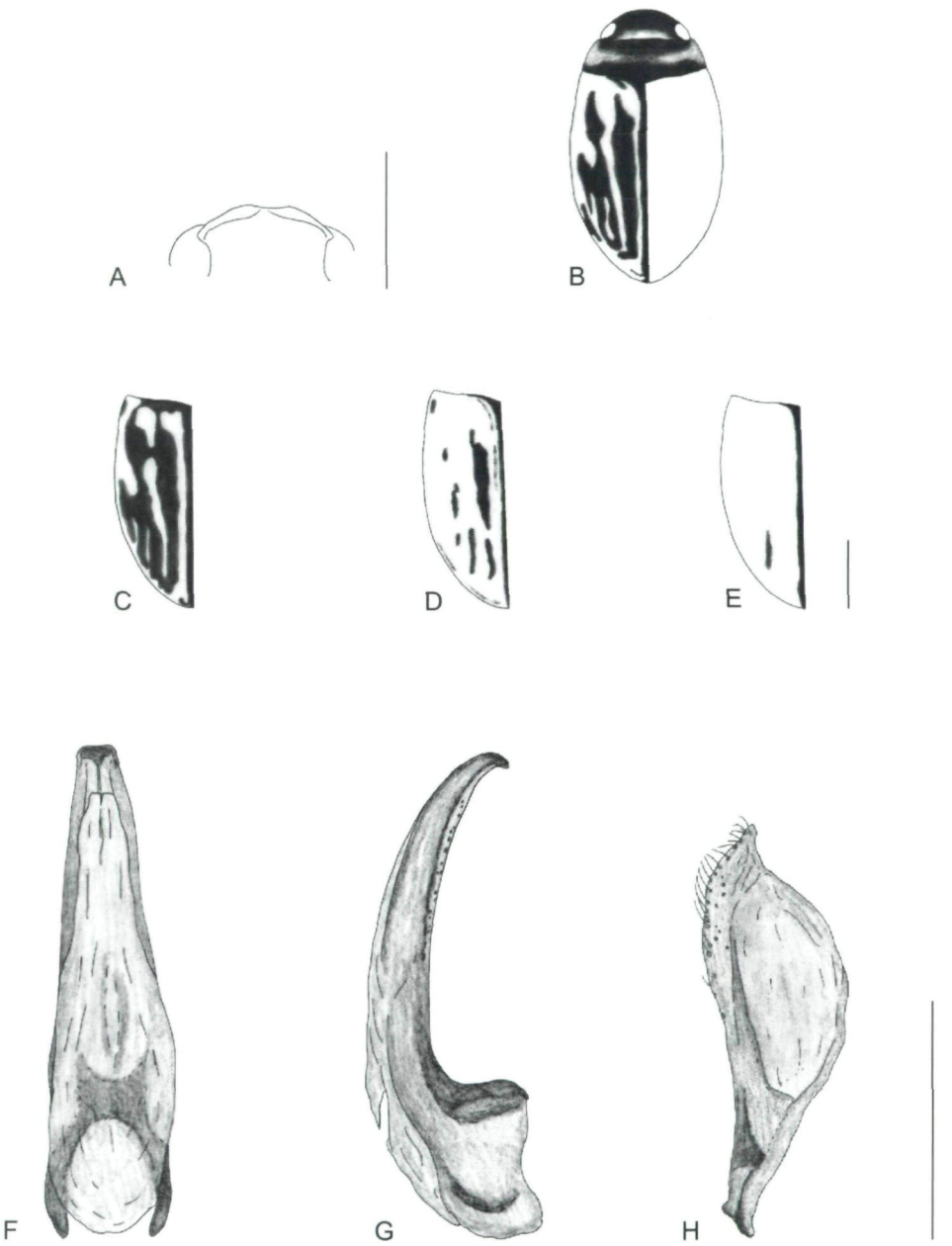


Fig. 7: *Herophydrus muticus*. A) head, B-E) habitus and elytral colour pattern (variation), F) penis, dorsal aspect, G) penis, lateral aspect, H) paramere. Scale bars: A (1 mm), B-E (1 mm), F-H (0.4 mm).

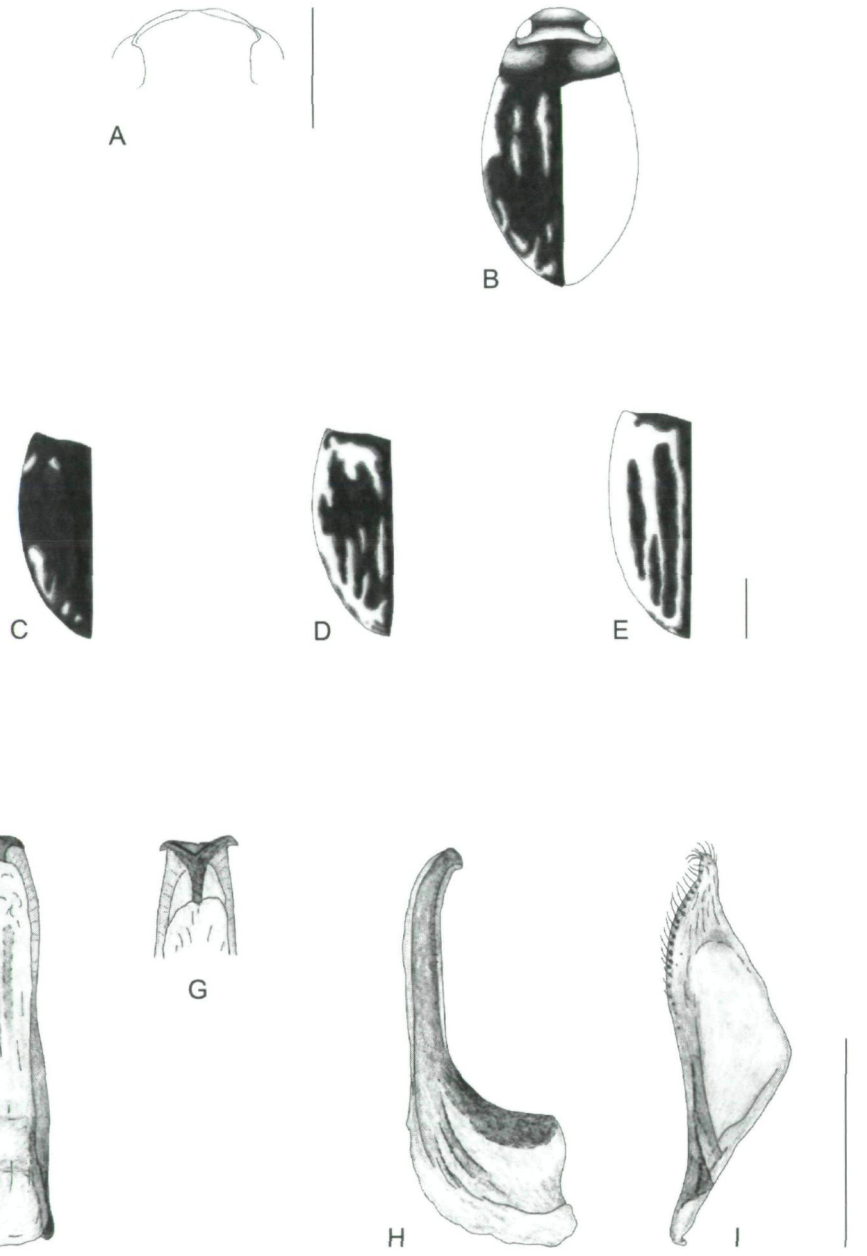


Fig. 8: *Herophydrus spadiceus*. A) head, B-E) habitus and elytral colour pattern, F) penis, dorsal aspect, G) penis, dorsoapical aspect, H) penis, lateral aspect, I) paramere. Scale bars: A (1 mm), B-E (1 mm), F-I (0.4 mm).

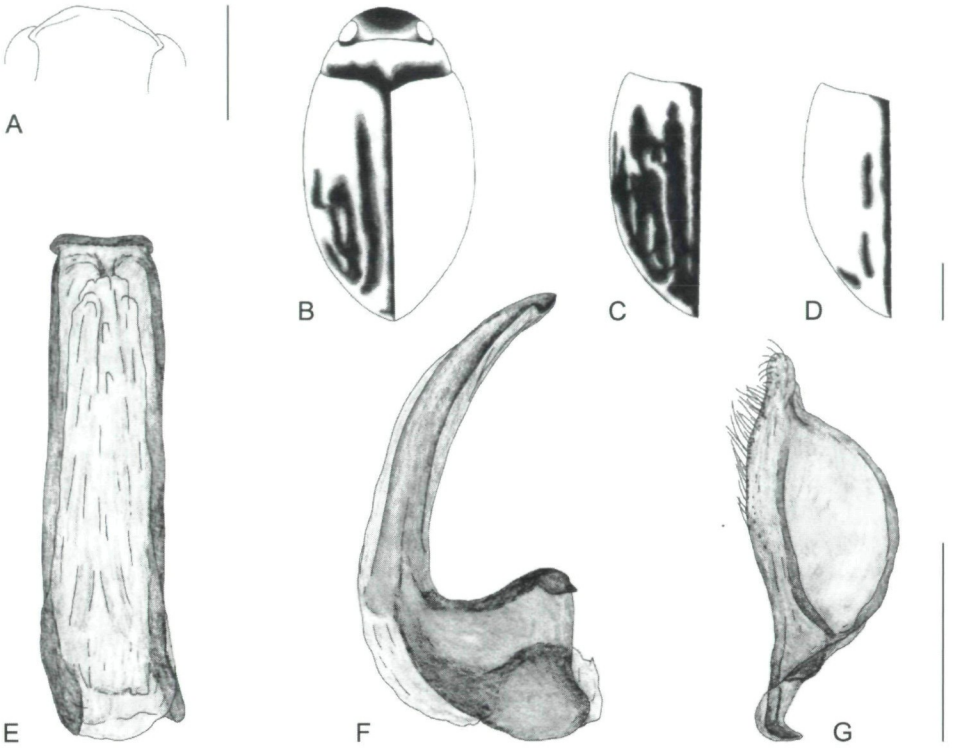


Fig. 9: *Herophydrus variabilis*. A) head, B-D) habitus and elytral colour pattern, E) penis, dorsal aspect, F) penis, lateral aspect, G) paramere. Scale bars: A (1 mm), B-D (1 mm), E-G (0.4 mm).

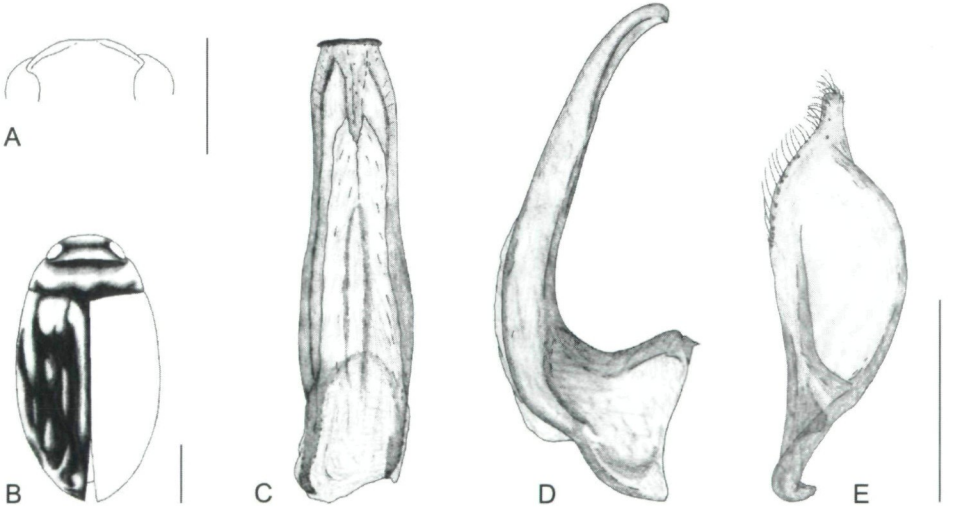


Fig. 10: *Herophydrus endroedyi*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

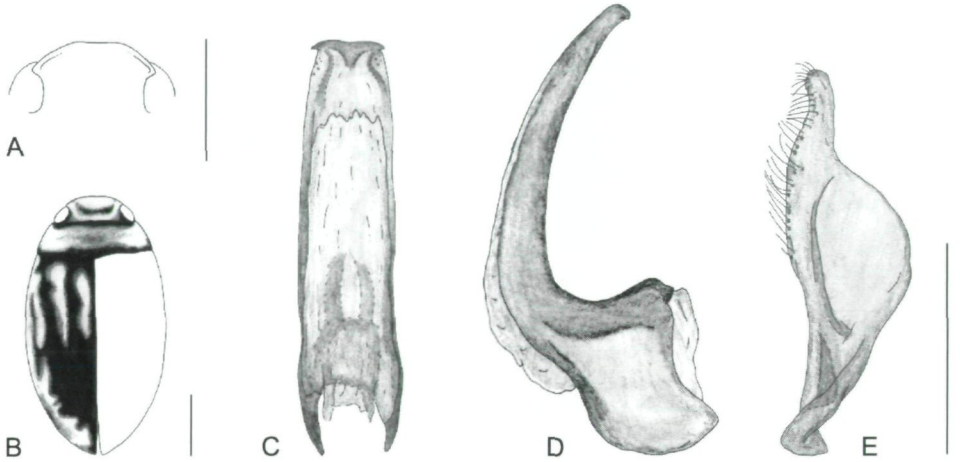


Fig. 11: *Herophydrus gschwendtneri*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

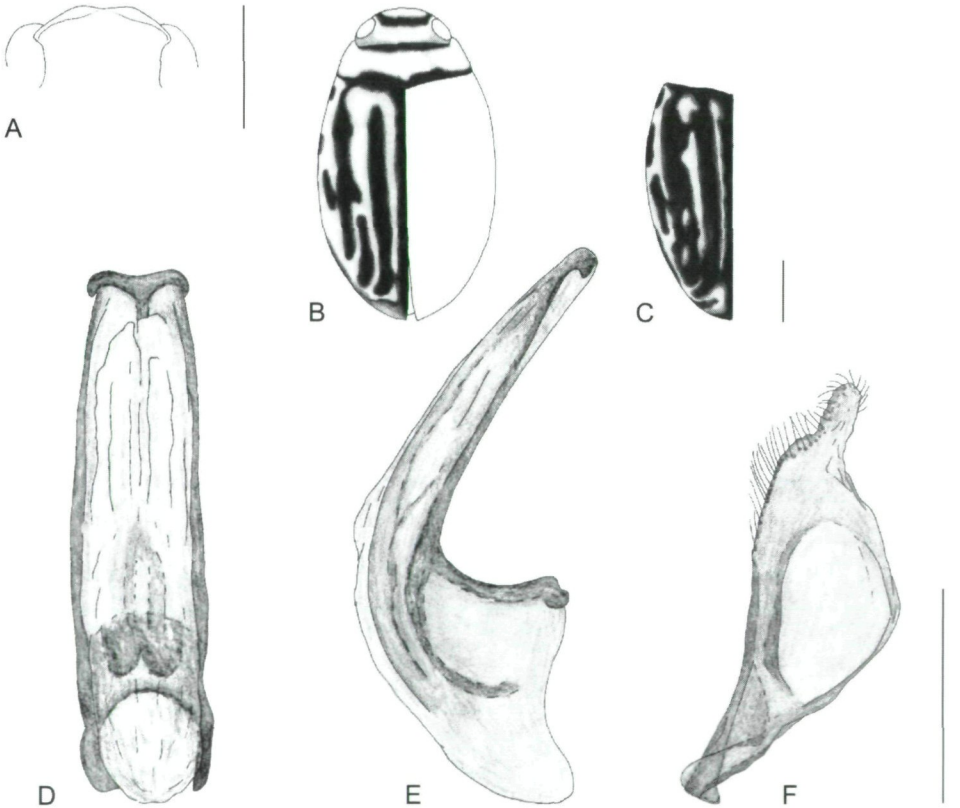


Fig. 12: *Herophydrus ignoratus*. A) head, B) habitus, C) elytral colour pattern (variation), D) penis, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A (1 mm), B-C (1 mm), D-F (0.4 mm).

Fig. 13: *Herophydrus inquinatus*. A) head, B-D) habitus and elytral colour pattern (variation), E) penis, dorsal aspect, F) penis, lateral aspect, G) paramere. Scale bars: A (1 mm), B-D (1 mm), E-G (0.4 mm).

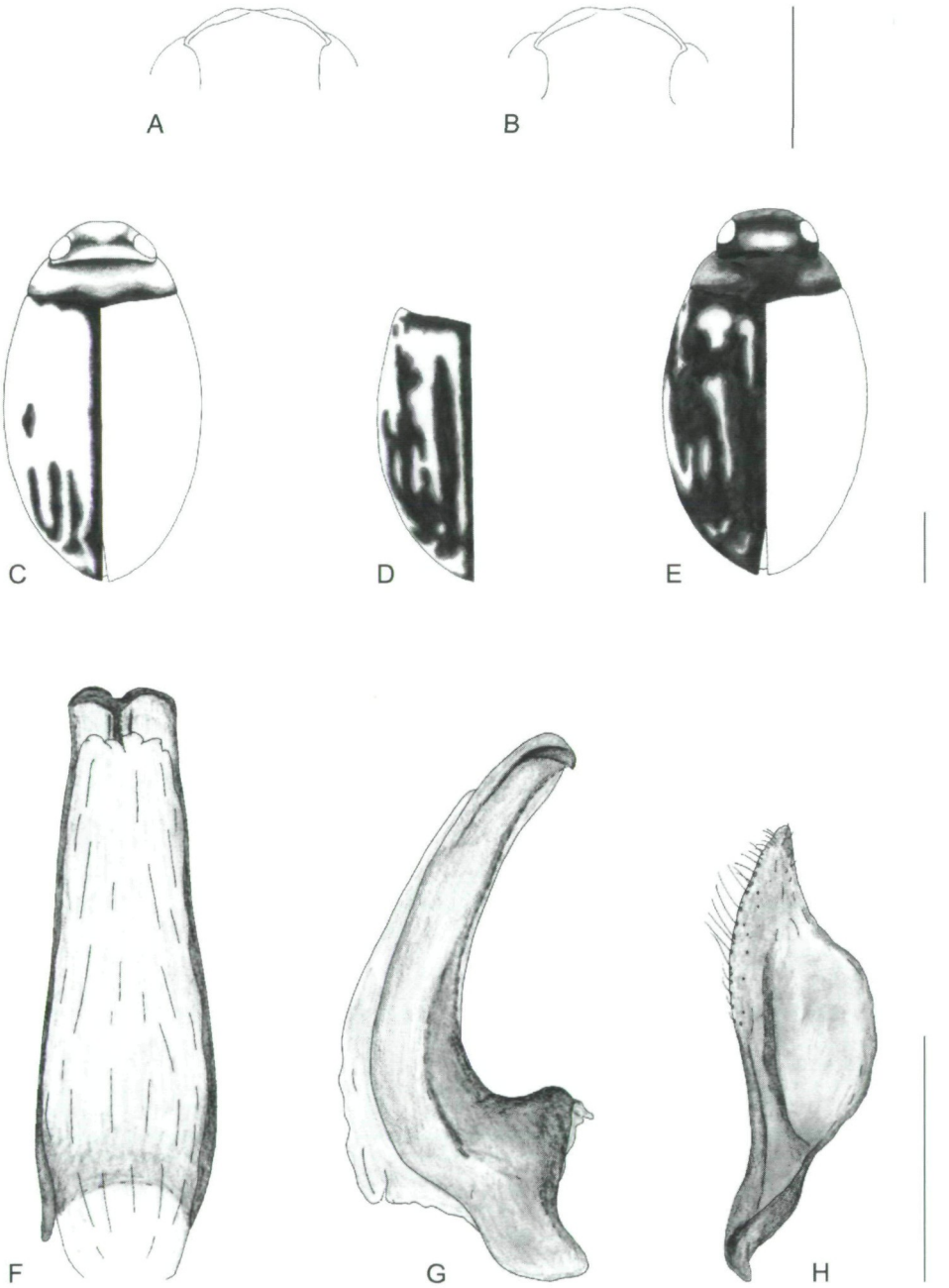


Fig. 14: *Herophydrus pallidus*. A-B) head, C-E) habitus and dorsal colour pattern, F) penis, dorsal aspect, G) penis, lateral aspect, H) paramere. Scale bars: A-B (1 mm), C-E (1 mm), F-H (0.4 mm).

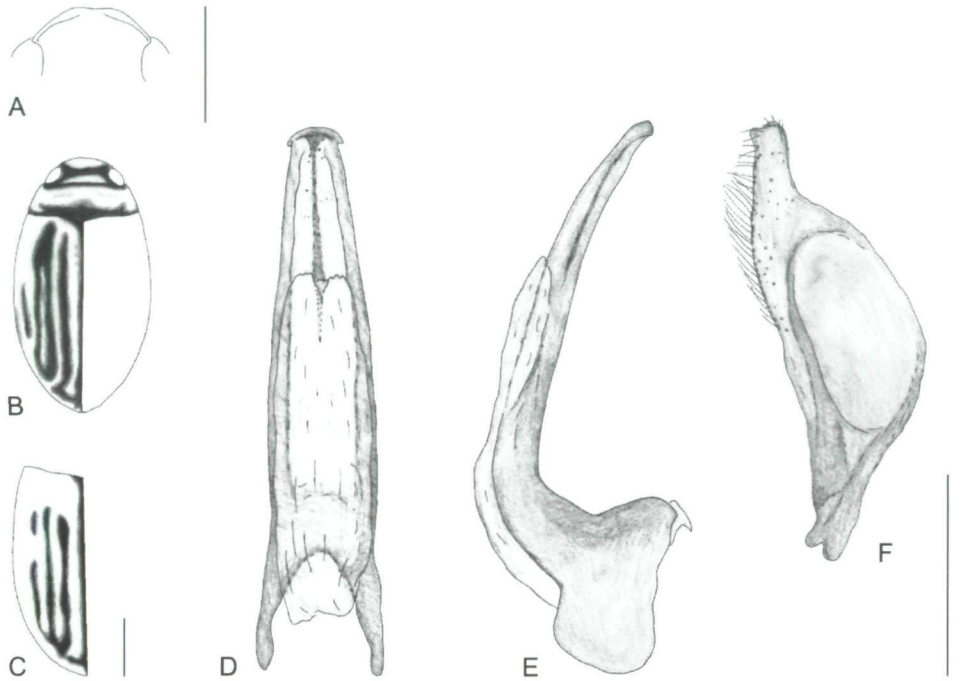


Fig. 15: *Herophydrus quadrilineatus*. A) head, B) habitus, C) elytral colour pattern (variation), D) penis, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A (1 mm), B-C (1 mm), D-F (0.4 mm).

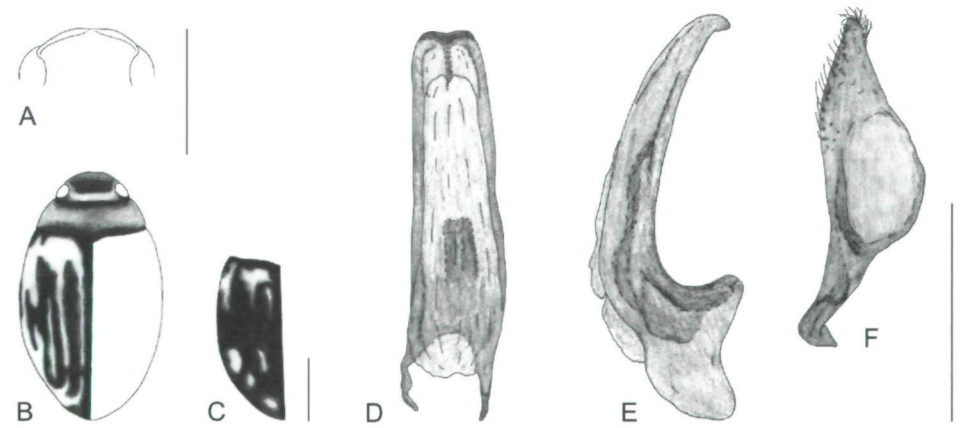


Fig. 16: *Herophydrus vittatus*. A) head, B-C) habitus and elytral colour pattern, D) penis, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A (1 mm), B-C (1 mm), D-F (0.4 mm).

Fig. 17: *Herophydrus nigrescens*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

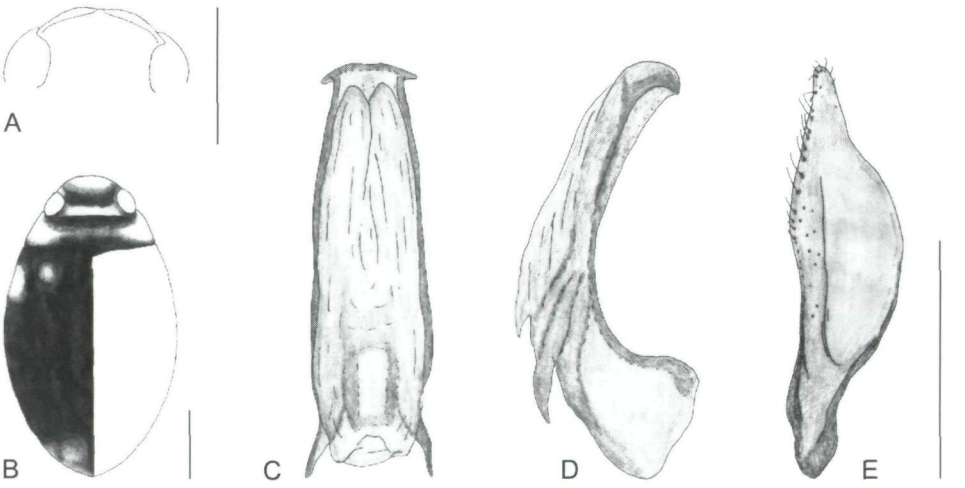


Fig. 18: *Herophydrus bilardoi*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

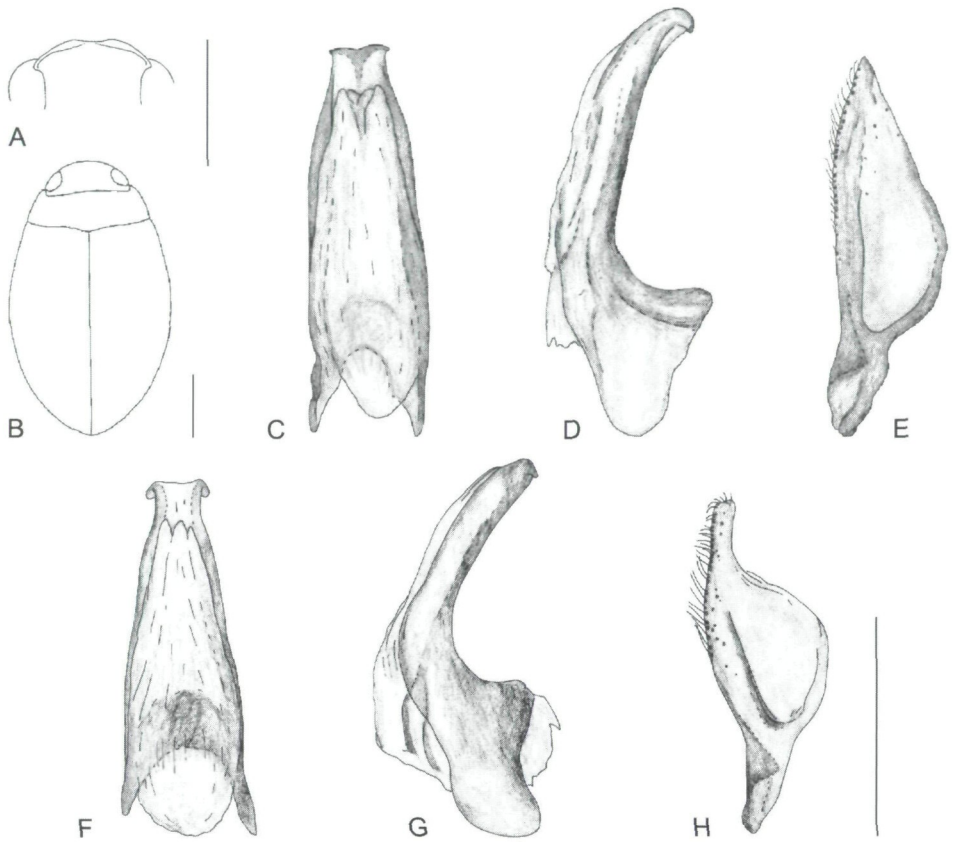


Fig. 19: *Herophydrus guineensis* (A-E) and *H. mutatus* (F-H) (synonymy uncertain). A) head, B) habitus, C, F) penis, dorsal aspect, D, G) penis, lateral aspect, E, H) paramere. Scale bars: A (1 mm), B (1 mm), C-H (0.4 mm).

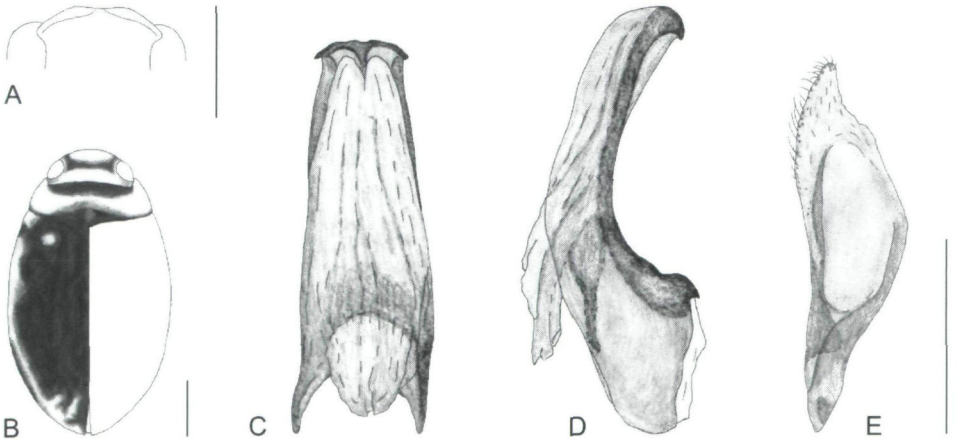


Fig. 20: *Herophydrus natator*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

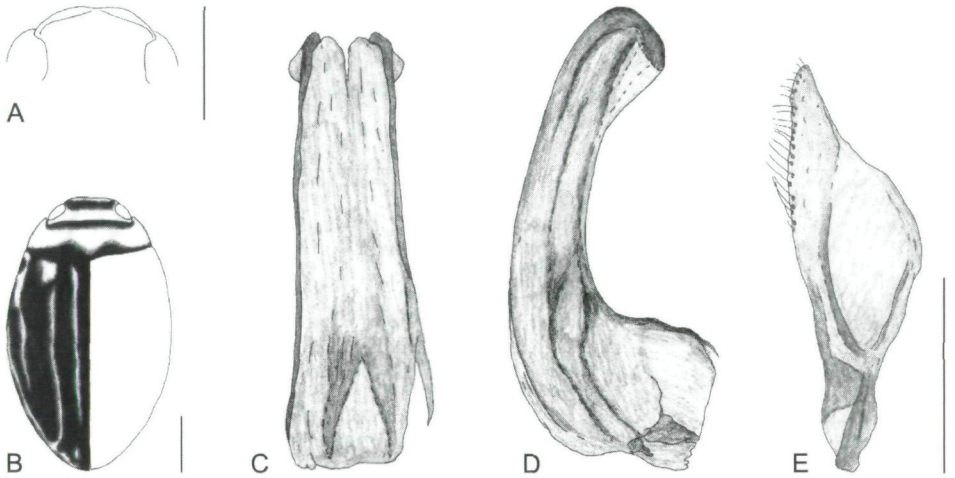


Fig. 21: *Herophydrus kalaharii*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

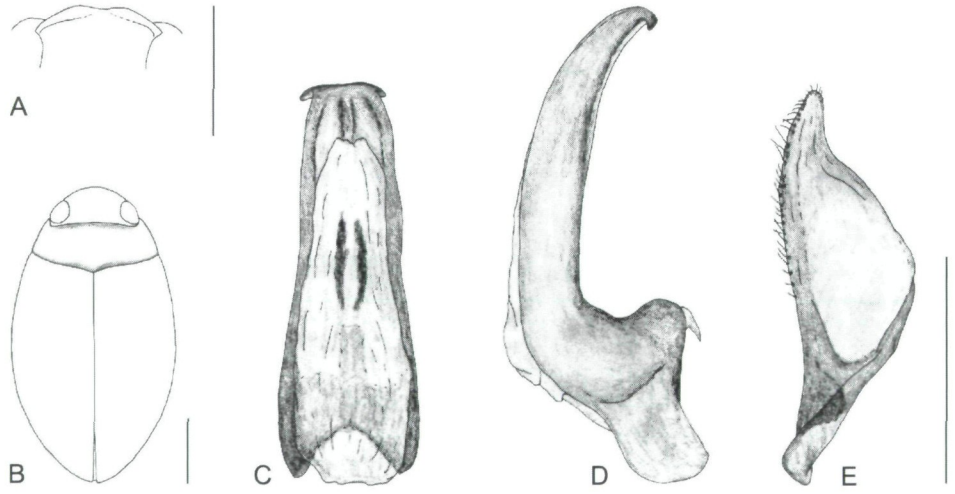


Fig. 22: *Herophydrus obscurus*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

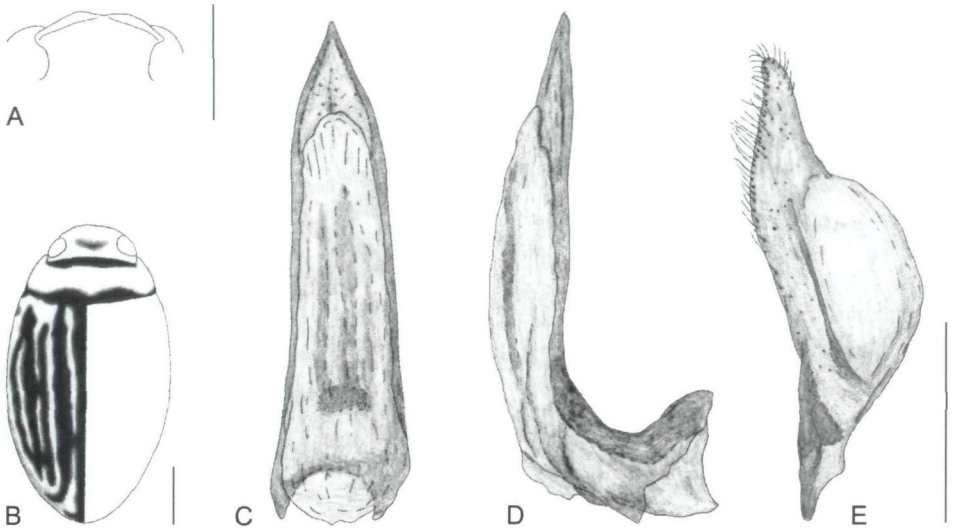


Fig. 23: *Herophydrus wewalkai*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

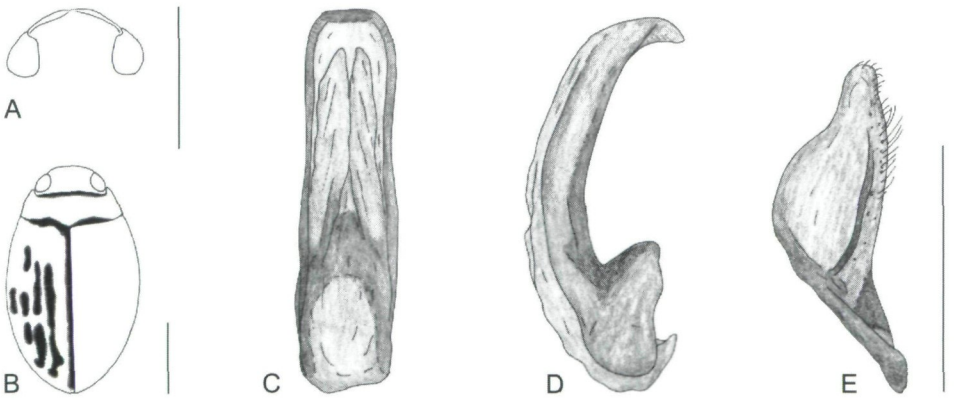


Fig. 24: *Herophydrus musicus*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

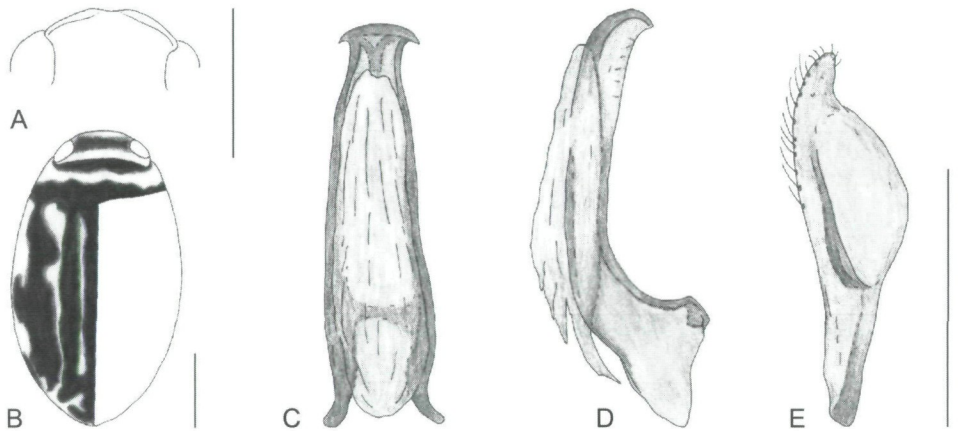


Fig. 25: *Herophydrus sjostedti*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

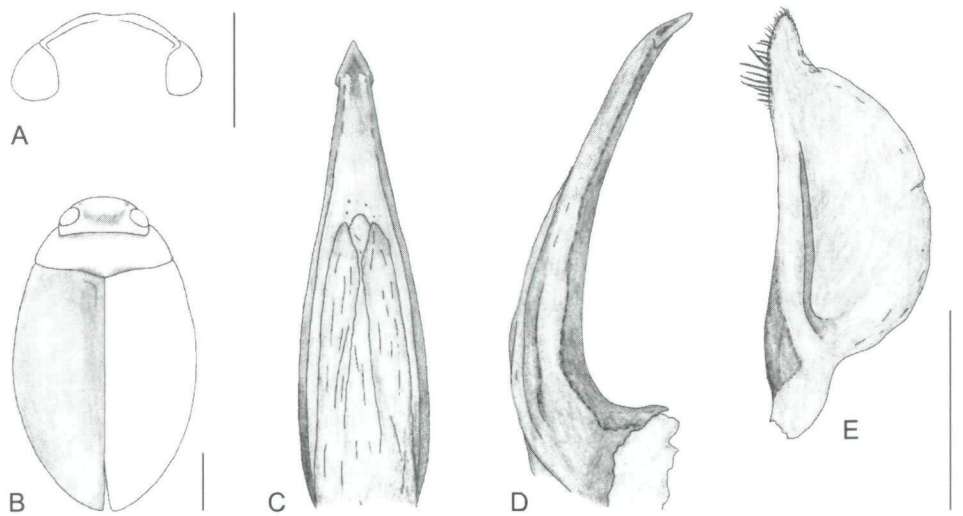


Fig. 26: *Herophydrus ovalis*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

Fig. 27: *Herophydrus sudanensis*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.5 mm).

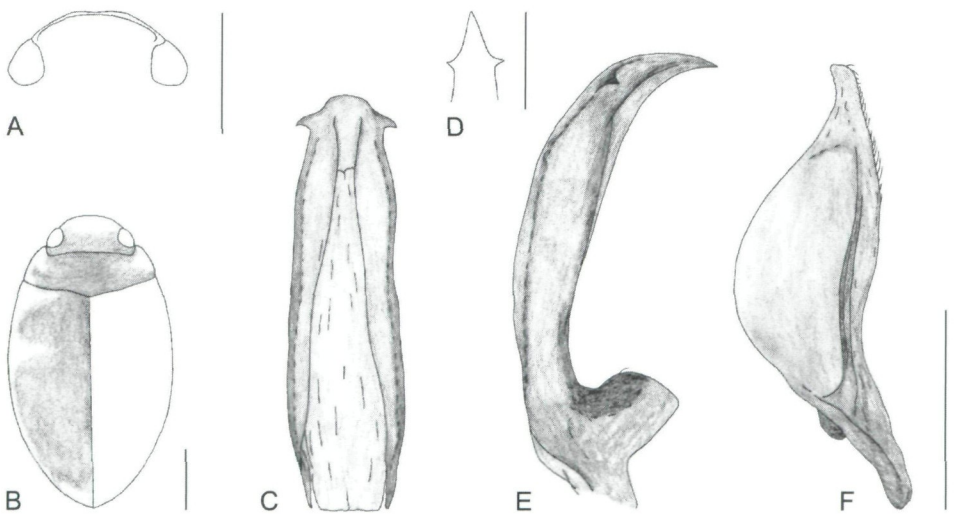


Fig. 28: *Herophydrus ritsemae*. A) head, B) habitus, C) penis, dorsal aspect, D) penis apex, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A (1 mm), B (1 mm), D (0.5 mm), C, E-F (0.5 mm).

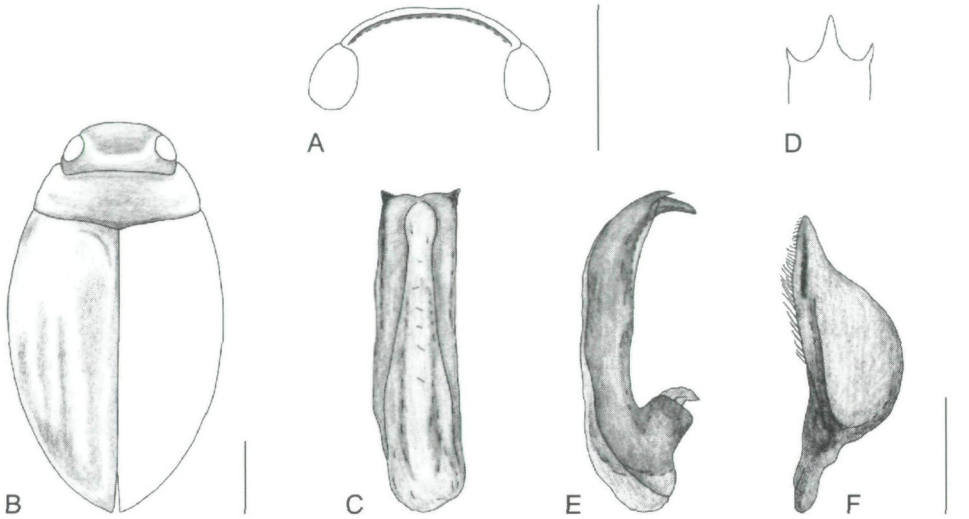


Fig. 29: *Herophydrus tribolus*. A) head, B) habitus, C) penis, dorsal aspect, D) penis apex, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A (1 mm), B (1 mm), C-F (0.5 mm).

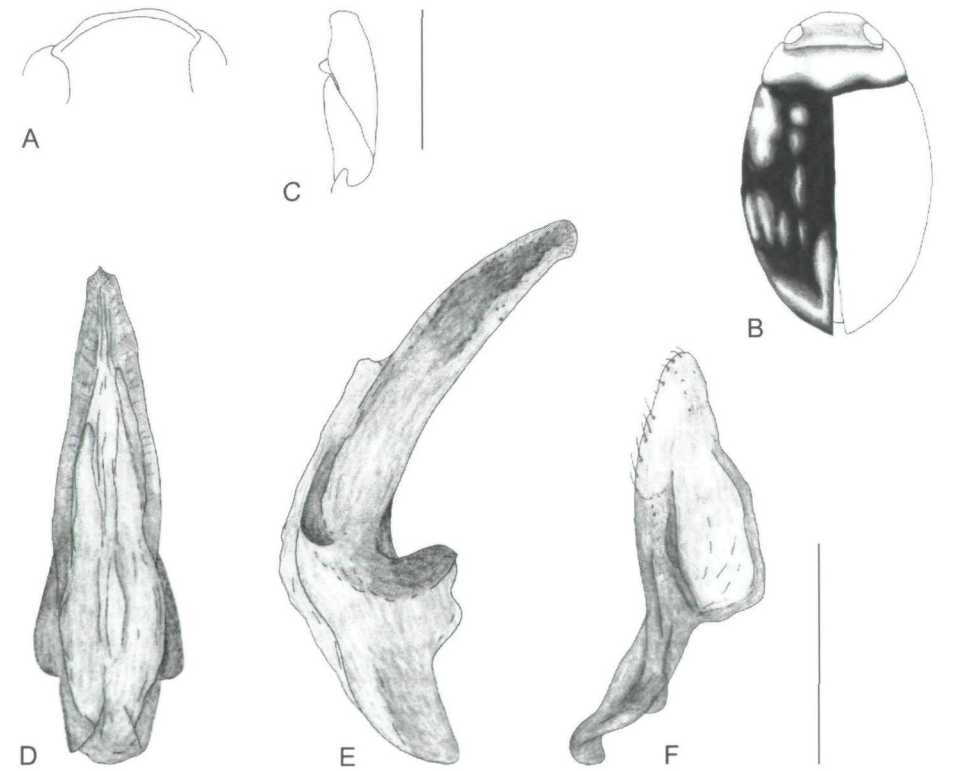


Fig. 30: *Herophydrus hyphoporoides*. A) head, B) habitus, C) male metafemur, D) penis, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A, C (1 mm), B (1 mm), D-F (0.4 mm).

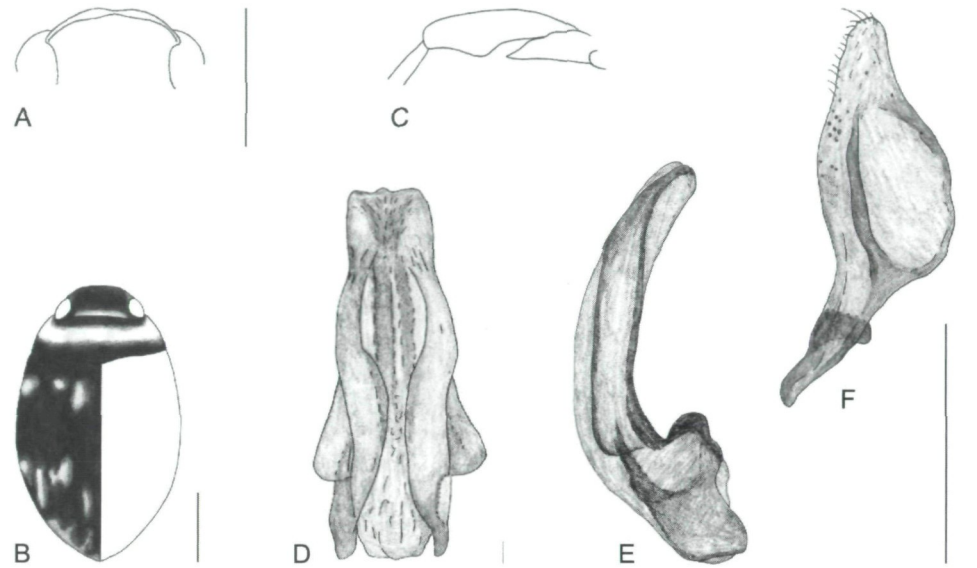


Fig. 31: *Herophydrus assimilis*. A) head, B) habitus, C) male metafemur, D) penis, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A, C (1 mm), B (1 mm), D-F (0.4 mm).

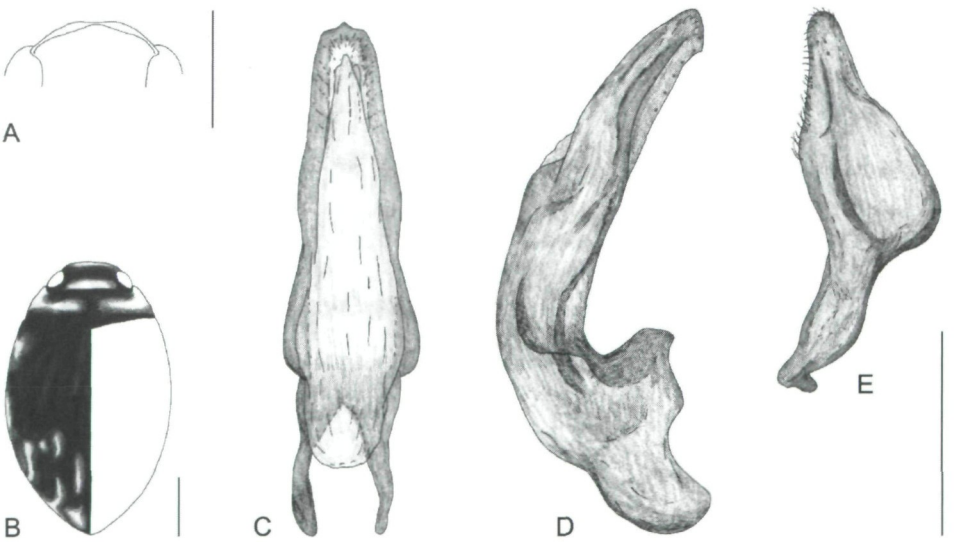


Fig. 32: *Herophydrus verticalis*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.4 mm).

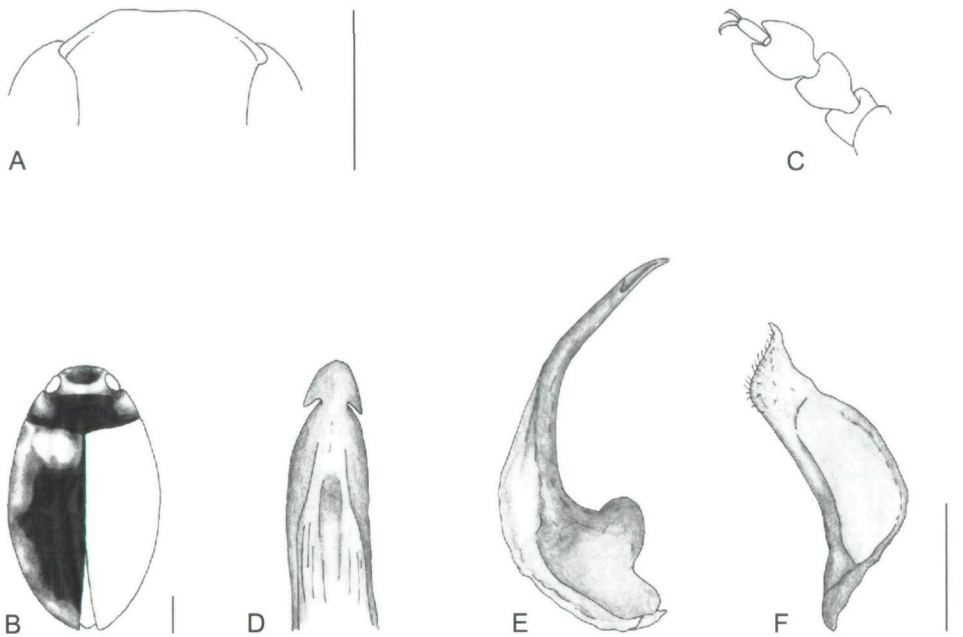


Fig. 33: *Herophydrus discrepatus*. A) head, B) habitus, C) male protarsus, D) penis, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A (1 mm), B (1 mm), D-F (0.5 mm).

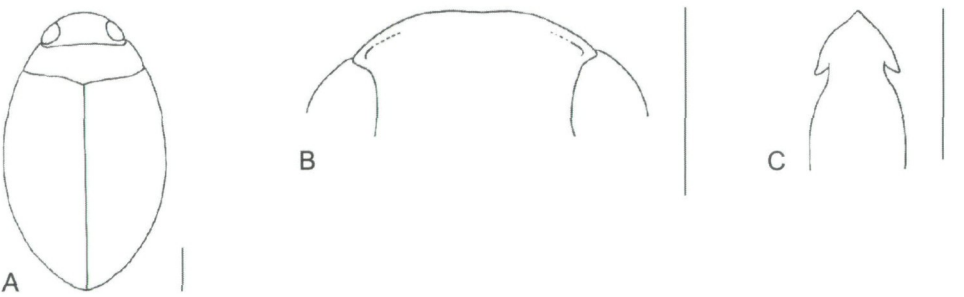


Fig. 34: *Herophydrus gigantoides*. A) head, B) habitus, C) penis (apical part), dorsal aspect. Scale bars: A (1 mm), B (1 mm), C (0.5 mm).

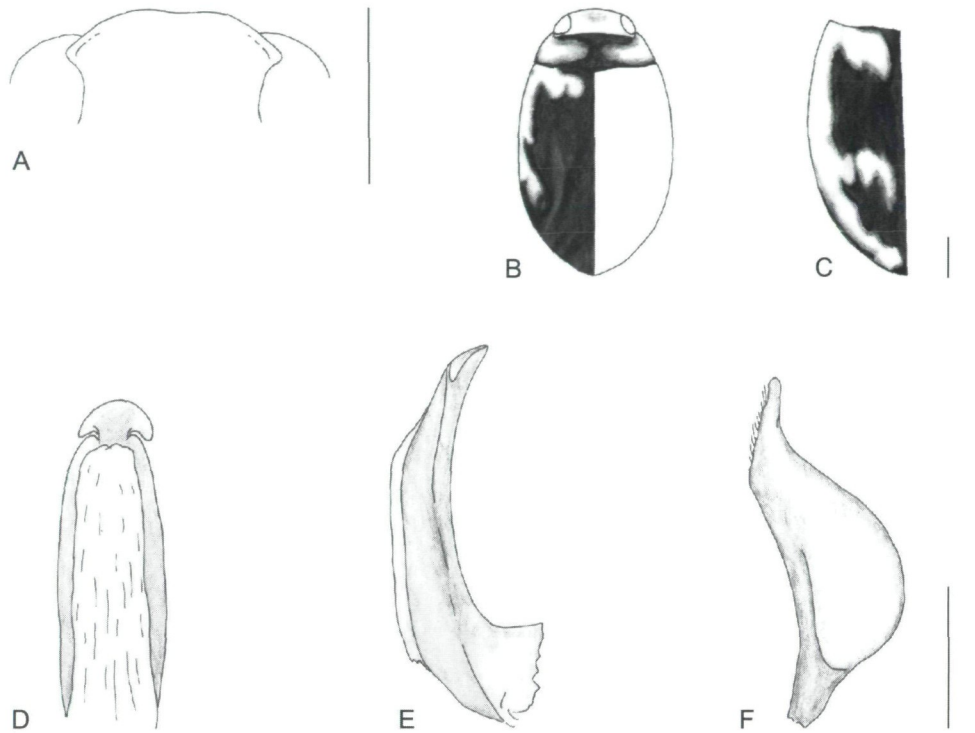


Fig. 35: *Herophydrus gigas*. A) head, B-C) habitus and elytral colour pattern (variation), D) penis, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A (1 mm), B-C (1 mm), D-F (0.5 mm).

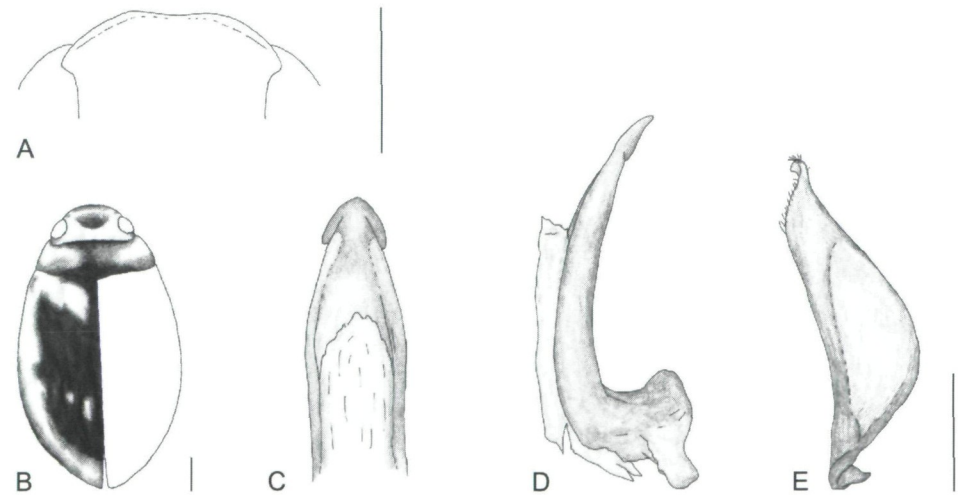


Fig. 36: *Herophydrus janssensi*. A) head, B) habitus, C) penis, dorsal aspect, D) penis, lateral aspect, E) paramere. Scale bars: A (1 mm), B (1 mm), C-E (0.5 mm).

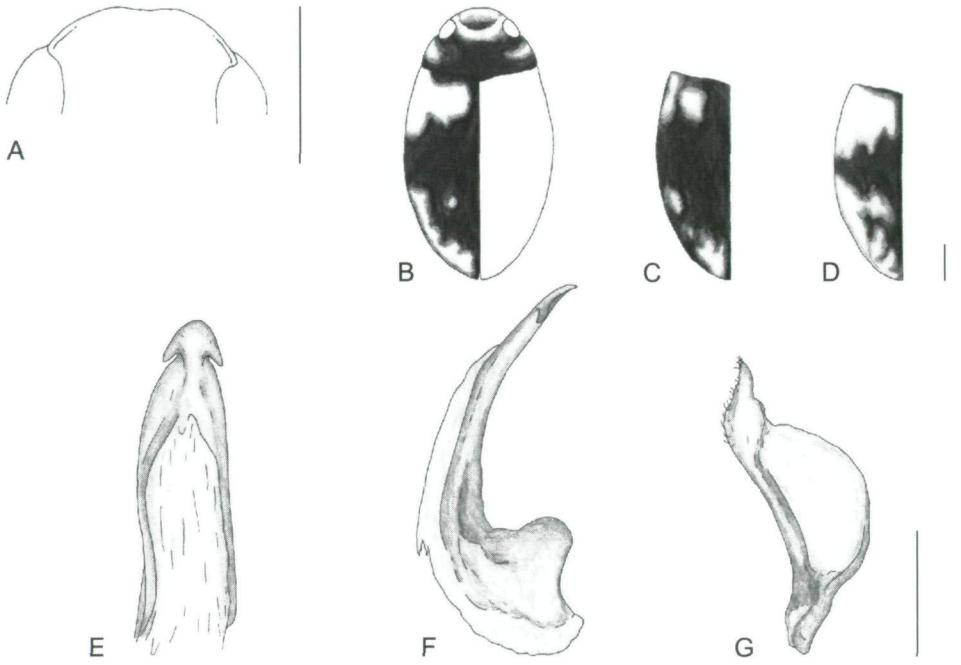


Fig. 37: *Herophydrus heros*. A) head, B) habitus, C-D) elytral colour pattern, E) penis, dorsal aspect, F) penis, lateral aspect, G) paramere. Scale bars: A (1 mm), B-D (1 mm), E-G (0.5 mm).

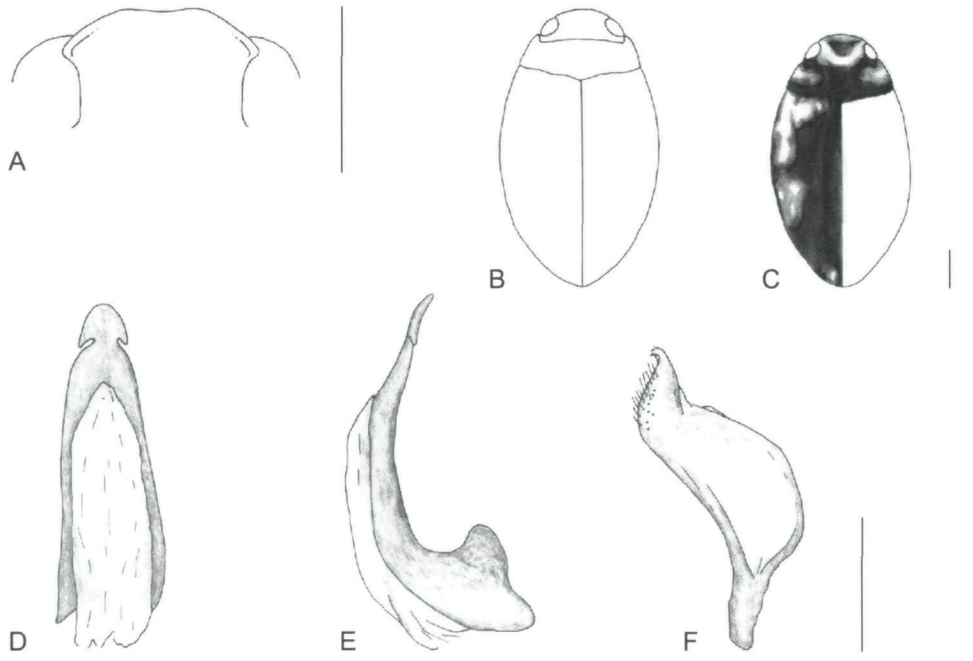


Fig. 38: *Herophydrus nodieri*. A) head, B-C) habitus and dorsal colour pattern, D) penis, dorsal aspect, E) penis, lateral aspect, F) paramere. Scale bars: A (1 mm), B-C (1 mm), D-F (0.5 mm).

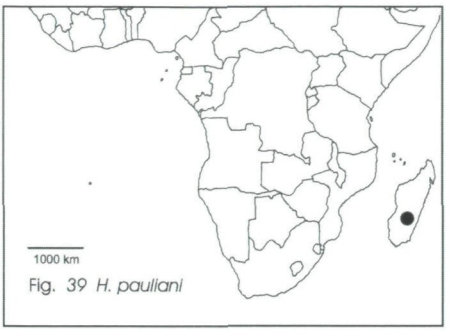


Fig. 39 *H. pauliani*

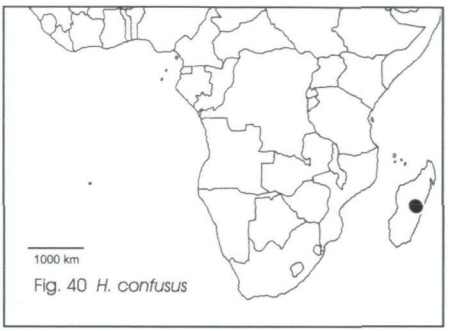


Fig. 40 *H. confusus*

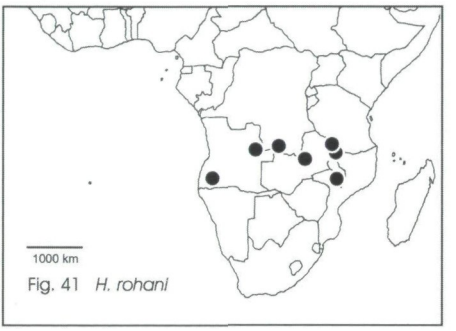


Fig. 41 *H. rohani*

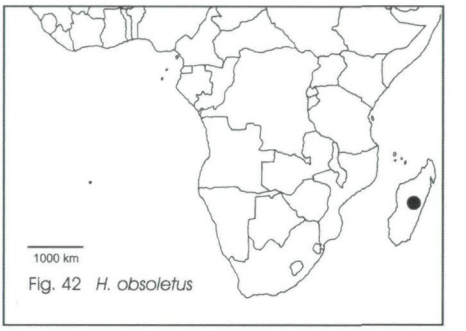


Fig. 42 *H. obsoletus*

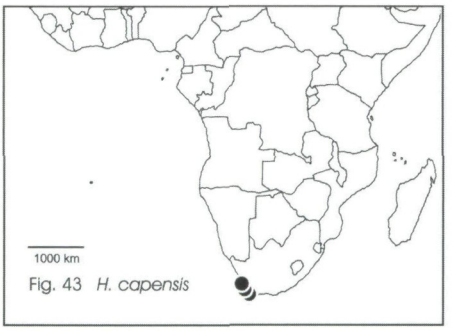


Fig. 43 *H. capensis*

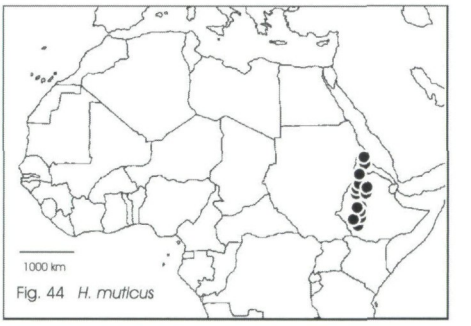


Fig. 44 *H. muticus*

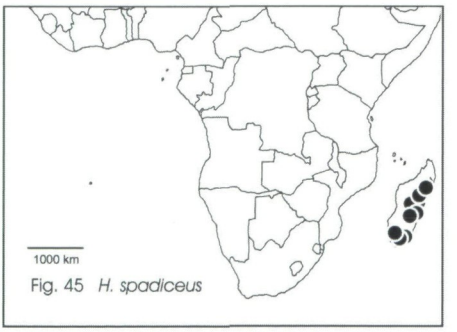


Fig. 45 *H. spadiceus*

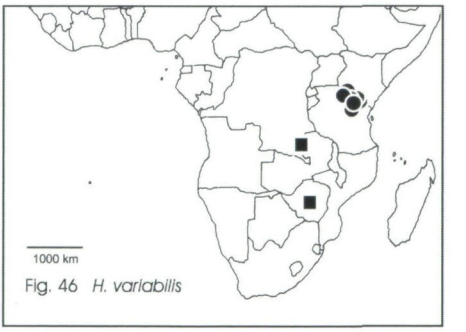


Fig. 46 *H. variabilis*

Figs. 39 - 46: Distribution of *Herophydrus* based mainly on verified records, 39) *H. pauliani*, 40) *H. confusus*, 41) *H. rohani*, 42) *H. obsoletus*, 43) *H. capensis*, 44) *H. muticus*, 45) *H. spadiceus*, 46) *H. variabilis*. Dots in Fig. 46 represent *H. v. variabilis*; squares represent *H. v. secundus*.

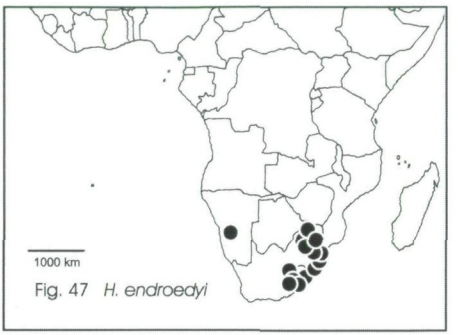


Fig. 47 *H. endroedyi*

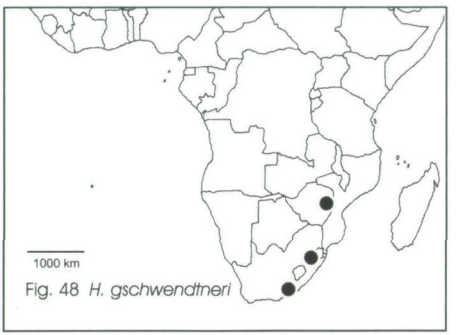


Fig. 48 *H. gschwendtneri*

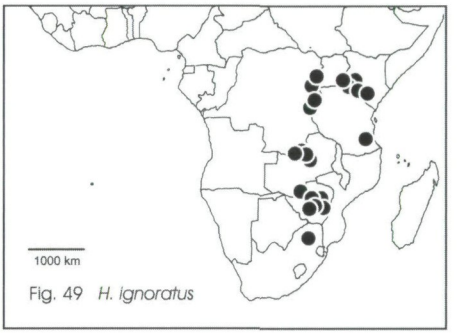


Fig. 49 *H. ignoratus*

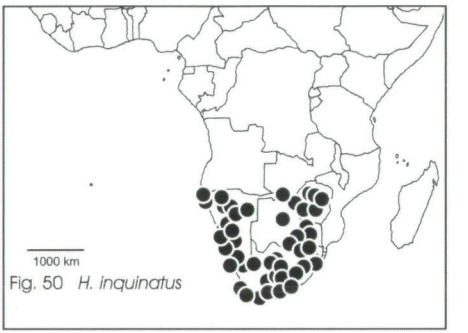


Fig. 50 *H. inquinatus*

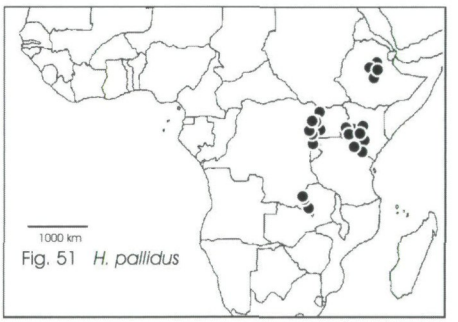


Fig. 51 *H. pallidus*

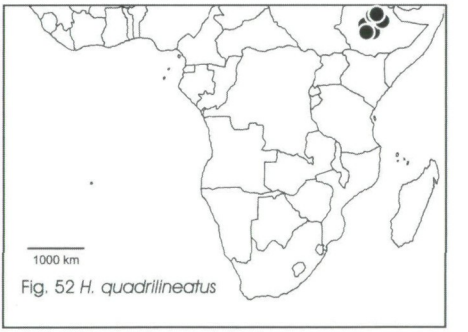


Fig. 52 *H. quadrilineatus*

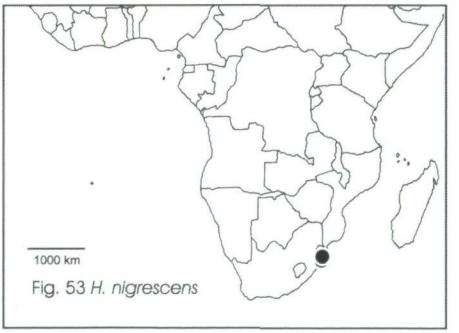


Fig. 53 *H. nigrescens*

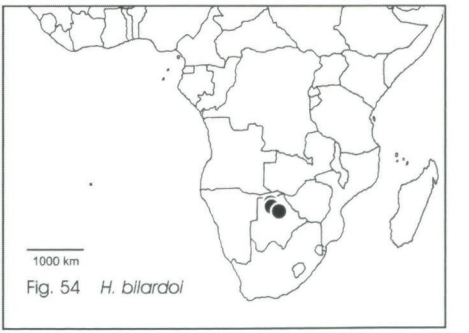


Fig. 54 *H. bilardoi*

Figs. 47 - 54: Distribution of *Herophydrus* based mainly on verified records, 47) *H. endroedyi*, 48) *H. gschwendtneri*, 49) *H. ignoratus*, 50) *H. inquinatus*, 51) *H. pallidus*, 52) *H. quadrilineatus*, 53) *H. nigrescens*, 54) *H. bilardoi*.

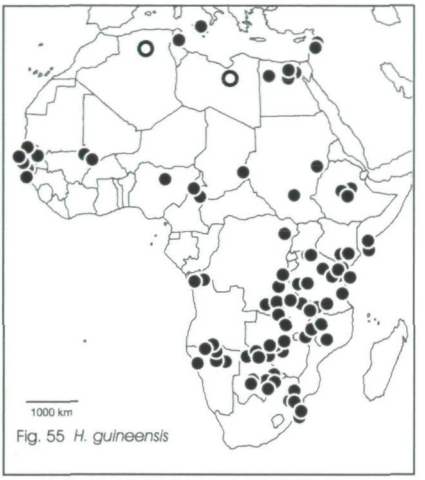


Fig. 55 *H. guineensis*

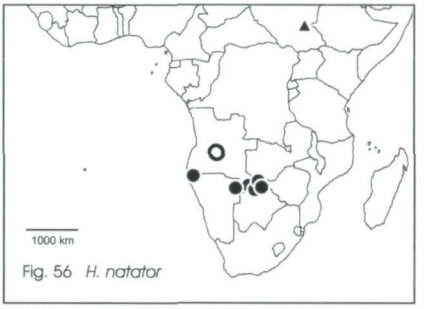


Fig. 56 *H. natator*

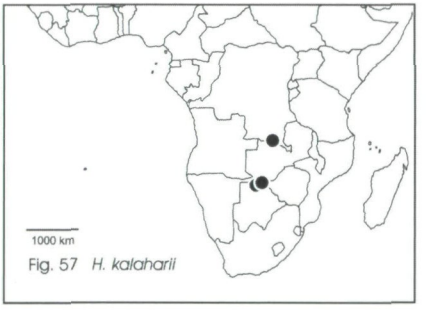


Fig. 57 *H. kalaharii*

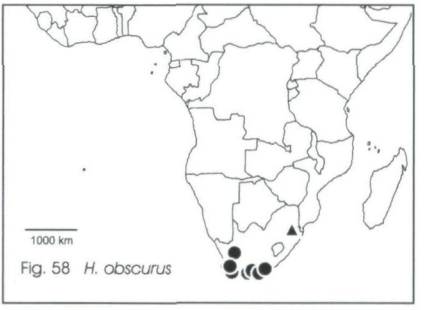


Fig. 58 *H. obscurus*

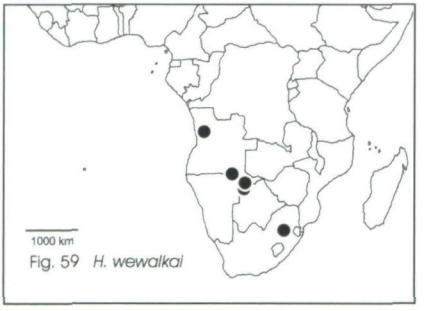


Fig. 59 *H. wewalkai*

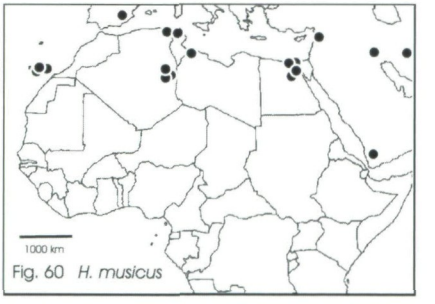
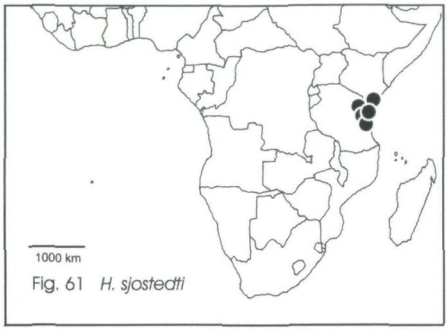
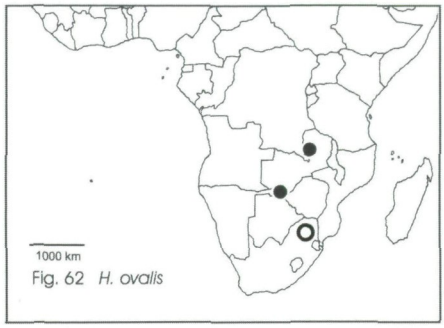
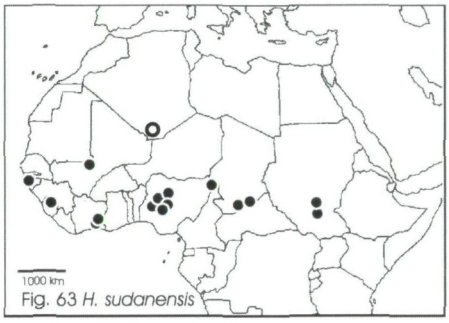


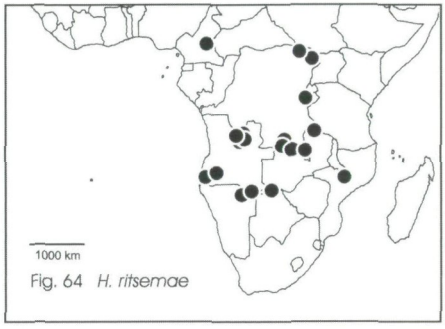
Fig. 60 *H. musicus*

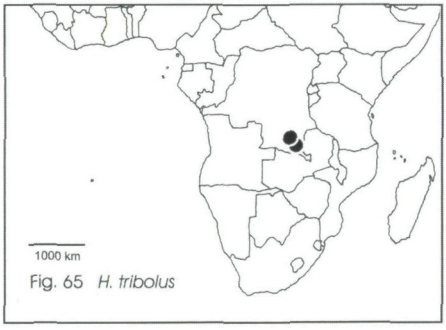
Figs. 55 - 60: Distribution of *Herophydrus* based mainly on verified records, 55) *H. guineensis*, 56) *H. natator*, 57) *H. kalaharii*, 58) *H. obscurus*, 59) *H. wewalkai*, 60) *H. musicus*, non-African records examined are also mapped. Triangles indicate uncertain records, open circles are national records with exact location unknown.

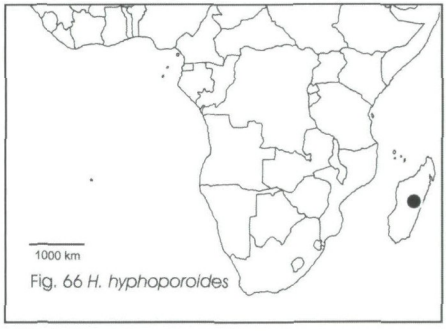


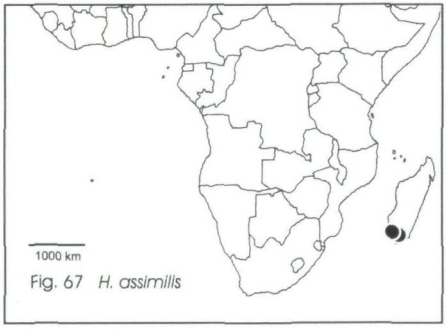


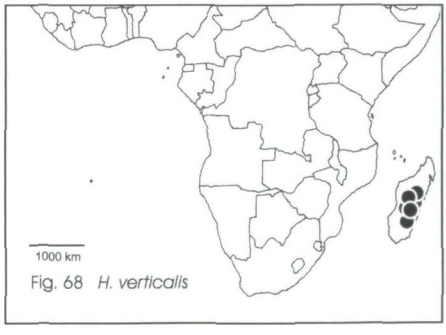












Figs. 61 - 68: Distribution of *Herophydrus* based mainly on verified records, 61) *H. sjostedti*, 62) *H. ovalis*, 63) *H. sudanensis*, 64) *H. ritsemae*, 65) *H. tribolus*, 66) *H. hyphoporoides*, 67) *H. assimilis*, 68) *H. verticalis*; open circles are national records with exact location unknown.

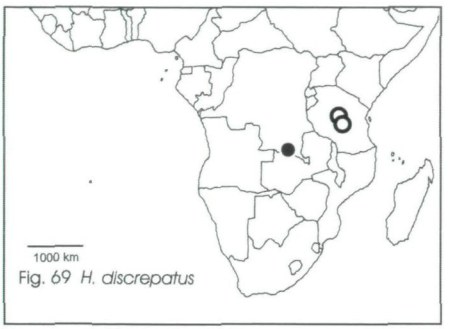


Fig. 69 *H. discrepatus*

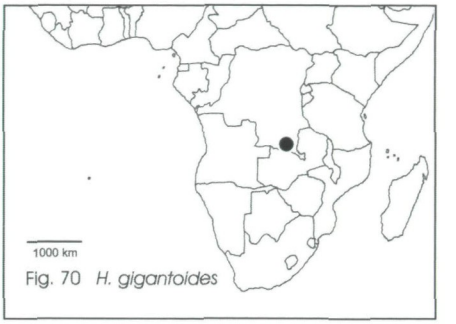


Fig. 70 *H. gigantoides*

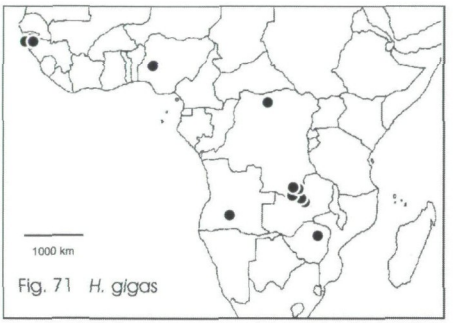


Fig. 71 *H. gigas*

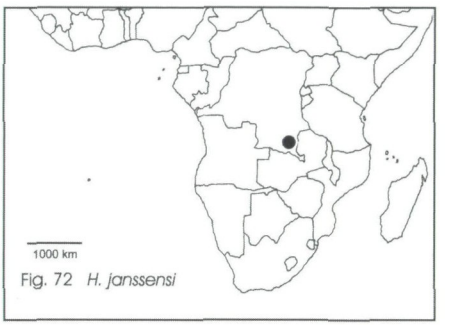


Fig. 72 *H. janssensi*

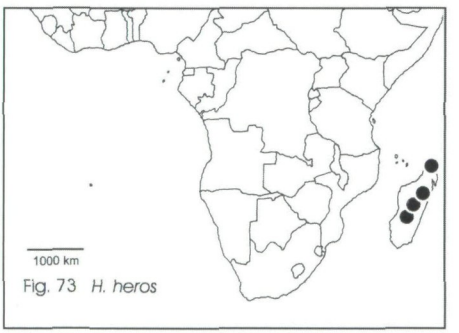


Fig. 73 *H. heros*

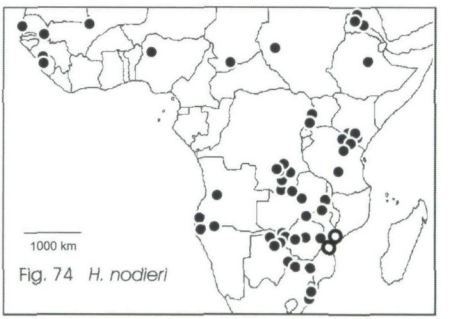


Fig. 74 *H. nodieri*

Figs. 69 - 74: Distribution of *Herophydrus* based mainly on verified records, 69) *H. discrepatus*, 70) *H. gigantoides*, 71) *H. gigas*, 72) *H. janssensi*, 73) *H. heros*, 74) *H. nodieri*, open circles are national records with exact location unknown.

References

ABO-GHALIA, A.H., ZALAT, S.M. & SALEH, R. 1992: Relation between aquatic insect fauna from Ismailia region (Egypt) and water properties. - Ain Shams Science Bulletin 30: 359-372.

ALARIE, Y., CUPPEN, J.G.M., HENDRICH, L. & NILSSON, A.N. 2001: Description of larvae of *Herophydrus musicus* (Klug) and analysis of relationships with members of the genus *Hygrotus* Stephens (Coleoptera: Dytiscidae, Hydroporinae). - Aquatic Insects 23: 193-207.

ALARIE, Y., NILSSON, A.N. & HENDRICH, L. 1999: Larval morphology of the Palaearctic genera *Deronectes* Sharp and *Scarodytes* Gozis (Coleoptera: Dytiscidae: Hydroporinae), with implications for the phylogeny of the *Deronectes*-group of genera. - Entomologica Scandinavica 30: 173-195.

ALFIERI, A. 1976: The Coleoptera of Egypt. - Mémoires de la Société Entomologique d'Egypte 5: 31-37.

ALLUAUD, C. 1897: Énumération des Dytiscidae et Gyrinidae des îles Mascareignes et Séchelles. - Bulletin de la Société Entomologique de France 1897: 210-214.

ALWARTH, K. 1921: Coleoptera. Dytiscidae, Gyrinidae. 5. - Wissenschaftliche Ergebnisse der Deutschen Zentral-Afrika Expedition 1907-1908. 5 (Zoologie 3): 441-447.

ANDERSON, R.D. 1971: A revision of the Nearctic representatives of *Hygrotus* (Coleoptera: Dytiscidae). - Annals of the Entomological Society of America 64: 503-512.

ANGELINI, F. 1984: Catalogo topografico dei Coleoptera Haliplidae, Hygrobiidae, Dytiscidae e Gyrinidae d'Italia. - Memorie della Società Entomologica Italiana 61A (1982): 45-126.

AUBÉ, C. 1838: Hydrocanthares et Gyriniens. In: Dejean P.F. Species géneral des Coléoptères de la collection de M. Le Comte Dejean. Vol. 6. Paris: Méquignon Père et Fils, XVI + 804 pp.

BALFOUR-BROWNE, J. 1947: New and interesting aquatic Coleoptera from the Sudan. - Proceedings of the Royal Entomological Society of London (B)16: 133-142.

BALFOUR-BROWNE, J. 1950: On the aquatic Coleoptera of Northern Rhodesia (Dytiscidae, Gyrinidae and Palpicornia). - Occasional Papers of the National Museum of Southern Rhodesia 2(16): 359-399.

BALFOUR-BROWNE, J. 1951: Coleoptera: Haliplidae, Dytiscidae, Gyrinidae, Hydraenidae, Hydrophilidae. 16. - British Museum (Natural History) Expedition to SW Arabia 1937-8 1(16): 179-220 + pls. 10, 11.

BALKE, M., HENDRICH, L. & CUPPEN, J.G.M. 1990: Wasserkäfer von den Islas Canarias (Coleoptera: Haliplidae, Dytiscidae, Gyrinidae, Hydrochidae, Hydrophilidae, Hydraenidae, Dryopidae). - Entomofauna. Zeitschrift für Entomologie 11: 349-373.

BARTOLOZZI, L., VANNI, S., WHITMAN-MASCHERINI, S. & BERTIN, G. 1984: Cataloghi del Museo Zoologico "La Specola" dell'Università di Firenze. 1. Insecta Coleoptera: Tipi. - Atti della Società Toscana di Scienze Naturali Memoire (B) 91: 71-110.

BERTRAND, H. 1951: Remarques sur la biogeographie de quelques coleopteres aquatiques de l'Afrique du Nord. - Compte rendu de la Société biogéographie 28: 114-118.

BERTRAND, H. 1963: Familles: Haliplidae, Dytiscidae, Gyrinidae (Hydrocanthares). Contribution à l'étude des premiers états des coléoptères aquatiques de la region éthiopienne. 5. - Bulletin de l'Institut Fondamental d'Afrique Noire (A) 25: 389-466.

BERTRAND, H. 1968: Apercu sur la distribution géographique des coléoptères aquatiques dans l'Afrique tropicale. - Compte rendu sommaire des séances. Société biogéographie 394: 53-64.

BERTRAND, H. 1970: Tableau de determination des larves de coleopteres aquatiques de la region ethiopienne (Familles et genres). - Annales de l'Université d'Abidjan (E) 2 (1969): 7-49.

BERTRAND, H. & LEGROS, C. 1967: Coléoptères hydrocanthares récoltés en Afrique du Sud et Rhodésies (Bertrand, 1959). - Bulletin du Muséum National d'Histoire Naturelle Paris 39: 861-870.

BERTRAND, H. & LEGROS, C. 1971: Hydrocanthares (excl. Gyrinidae) recueillis a Madagascar (Mission Bertrand, 1960). - Cahiers Office de la recherche scientifique et technique Outre-Mer (O.R.S.T.O.M.) (Sér. Hydrobiologie) 5: 241-249.

BISTRÖM, O. 1997: Taxonomic revision of the genus *Hydrovatus* Motschulsky (Coleoptera, Dytiscidae). - Entomologica Basiliensia 19(1996): 57-584.

BISTRÖM, O. 2002: *Pseudhydrovatus* Peschet, 1924, junior synonym of *Hydrovatus* Motschulsky, 1853 (Coleoptera, Dytiscidae). - Aquatic Insects 24: 53-54.

BOHEMAN, C.H. 1848: Insecta Caffraria annis 1838-1845 a J.A.Wahlberg collecta. 1(1). Coleoptera (Carabici, Hydrocanthari, Gyrinii et Staphylinii). - Holmiae: Norstedtiana, VIII + 297 pp.

BRANCUCCI, M. 1979a: Coleoptera: Fam Haliplidae, Dytiscidae, Gyrinidae. Insects of Saudi Arabia. - Fauna of Saudi Arabia 1: 156-161.

BRANCUCCI, M. 1979b: Dytiscidae aus dem Himalaja (Col.). - Entomologica Basiliensia 4: 193-212.

BRANDEN, C. VAN DEN 1885: Catalogue coléoptères carnassiers aquatiques (Haliplidae, Amphizoidae, Pelobiidae et Dytiscidae). - Annales de la Société Entomologique de Belgique 29(1): 5-116.

BRUNEAU DE MIRÉ, P. & LEGROS, C. 1963: Les coléoptères hydrocanthares du Tibesti. - Bulletin de l'Institut Français d'Afrique Noire (A) 25: 838-894.

BURMEISTER, E.-G. 1986: Einige für Sardinien neue und bemerkenswerte Wasserkäferarten (Coleoptera, Hydradephaga, Dytiscidae). - Nachrichtenblatt der Bayerischen Entomologen 35: 69-73.

BURMEISTER, E.-G., DETTNER, K. & HOLMEN, M. 1987: Die Hydradephaga Sardiniens (Insecta, Coleoptera: Gyrinidae, Haliplidae, Noteridae, Hygrobiidae, Dytiscidae). - Spixiana 10: 157-185.

CAPRA, F. 1952: Appendice. - Doriana. Annali del Museo Civico Naturale "G. Doria" 1: 6-8.

CLARK, H. 1863: Descriptions of new East-Asiatic species of Haliplidae and Hydroporidae. - Transactions of the Royal Entomological Society of London (3) 1: 417-428.

CURTIS, B.A. 1991: Freshwater macro-invertebrates of Namibia. - MADOQUA, Nature conservation and tourism branch, South West Africa administration, Windhoek, 17: 163-187.

EL-SHERIF, S.I., LATIF ISA, A. & LUTFALLAH, A.F. 1978: Survey of aquatic insects in rice nurseries and fields. - Agricultural Research Review, Cairo 54: 93-98.

ERICHSON, G.W.F. 1843: Beitrag zur Insecten-Fauna von Angola, in besonderer Beziehung zur geographischen Verbreitung der Insecten in Afrika. - Archiv für Naturgeschichte 9: 199-267.

FARRIS, J.S. 1988: Hennig86. Version 1.5. Published by the author. Port Jefferson, New York.

FERREIRA, M.C. 1963: Catálogo dos coleópteros de Mocambique. - Revista de entomologia Mocambique 6: 1-532.

FERREIRA, M.C. 1967: Catálogo dos coléopteros de Angola. - Revista de entomologia Mocambique 8: 415-1317.

FERY, H. 2001: Taxonomic notes on *Herophydrus* Sharp, 1882 (Insecta: Coleoptera: Dytiscidae) and other Hydroporinae. - Annalen des Naturhistorischen Museums in Wien 103 B: 353-359.

FORGE, P. 1981: Coléoptères. 21. - In Durand, J.-R. & Léveque, C. (eds.): Flora et faune aquatiques de l'Afrique Sahelo-Soudanienne. 2. - Paris, pp. 487-516.

FRANCISCOLO, M. 1979: Coleoptera Haliplidae, Hygrobiidae, Gyrinidae, Dytiscidae. - Fauna d'Italia 14: 1-804.

GEMMINGER, M. & HAROLD, E. DE 1868: Familia III. Dytiscidae. Catalogus Coleopterorum. II. - Monachii, pp. 425-467.

GOLOBOFF, P. 1998: NONA. Version 2.0. Fundación e Instituto Miguel Lillo. Tucumán, Argentina.

GSCHWENDTNER, L. 1931: Neue Dytiscidae aus Formosa. - Entomologischer Anzeiger 11: 21.

GSCHWENDTNER, L. 1932a: Neue Dytiscidae aus Belgisch Kongo. 3. Teil (Anhang). - Revue de Zoologie et Botanique Africaines 23: 12-17.

GSCHWENDTNER, L. 1932b: Neue Dytiscidae aus Belgisch Kongo. - Revue de Zoologie et Botanique Africaines 22: 54-62.

GSCHWENDTNER, L. 1932c: Neue Schwimmkäfer aus Belgisch-Kongo. 2. Teil. - Revue de Zoologie et Botanique Africaines 22: 259-268.

GSCHWENDTNER, L. 1933: Neue Schwimmkäfer aus Belgisch Kongo. 4. Teil. - Revue de Zoologie et Botanique Africaines 23: 84-95.

GSCHWENDTNER, L. 1935: Wissenschaftliche Ergebnisse der Vernay-Lang Kalahari-Expedition, März bis September, 1930. Haliplidae et Dytiscidae. - Annals of the Transvaal Museum 17: 15-25.

GSCHWENDTNER, L. 1938: Haliplidae und Dytiscidae. - Exploration du Parc National Albert. Mission G.F. de Witte (1933-1935) 13: 3-32.

GUÉORGUIEV, V.B. 1965: Sur la faune des coléoptères Hydrocanthares d'Iran. - Bulletin de l'Institut de Zoologie et Musée 19: 101-117 (in Bulgarian).

GUÉORGUIEV, V.B. 1967: Österreichische entomologische Expeditionen nach Persien und Afghanistan. - Annalen des Naturhistorischen Museums in Wien 70: 473-477.

GUÉORGUIEV, V.B. 1973: Notes sur les coléoptères Hydrocanthares de la Corse avec une analyse zoogéographique. - Nouvelle Revue d'Entomologie 3: 103-106.

GUÉORGUIEV, V.B. 1981: Résultat de l'expédition zoologique du musée national de Prague en Turquie. - Acta Entomologica Musei Nationalis Pragae 40: 399-424.

GUIGNOT, F. 1935: Douzième note sur les Hydrocanthares. - Bulletin de la Société Entomologique de France 1935: 36-40.

GUIGNOT, F. 1936: Mission scientifique de l'Omo 4(31). Coleoptera. 10. Haliplidae et Dytiscidae (1re partie). - Mémoires du Muséum National d'Histoire Naturelle Paris 8(1938): 1-76.

GUIGNOT, F. 1943: Dytiscidae et Gyrinidae de la Côte d'Ivoire et du Soudan Française (Mission Alluaud-Chappuis, de février 1930 à avril 1931). - Revue Française d'Entomologie 9: 81-103.

GUIGNOT, F. 1946a: Coleoptera Dytiscidae. 2. Mission Scientifique de l'Omo 6, fasc. 58. - Mémoires du Muséum National d'Histoire Naturelle (nouv. sér.) 19(1945): 215-322.

GUIGNOT, F. 1946b: Génotypes des Dytiscoidea et des Gyrinoidea. - Revue Française d'Entomologie 13: 112-118.

GUIGNOT, F. 1947: Coléoptères Hydrocanthares. - Faune de France 48: 1-287.

GUIGNOT, F. 1948a: Vingt-sixième note sur les Hydrocanthares. Dytiscides et gyrinides nouveaux ou peu connus du Congo belge. - Bulletin de Musée royal d'Histoire naturelle de Belgique 24(12): 1-14.

GUIGNOT, F. 1948b: Dytiscidae et Gyrinidae. - Exploration du Parc National Albert. Mission H. Damas (1935-1936) 16: 1-44.

GUIGNOT, F. 1950a: Description de deux dytiscides nouveaux de Madagascar (Coléoptères). - Le Naturaliste Malgache 2: 127-129.

GUIGNOT, F. 1950b: Trentième note sur les Hydrocanthares (Col.). - Bulletin de la Société Entomologique de France 55(1949): 146-153.

GUIGNOT, F. 1951: Trente-septième note sur les Hydrocanthares (Col.). - Bulletin de la Société Entomologique de France 56: 21-25.

GUIGNOT, F. 1952a: Dytiscides et gyrinides de Fernando-Poo et du Soudan français. - Bulletin de l'Institut Français d'Afrique Noire (A) 14: 1191-1195.

GUIGNOT, F. 1952b: Nouveaux dytiscides du Parc National de l'Upemba. - Bulletin de l'Institut royal des Sciences naturelles de Belgique 28(22): 1-6.

GUIGNOT, F. 1952c: Description de deux nouveaux dytiscides. - Bulletin de la Société Entomologique de France 57: 43-44.

GUIGNOT, F. 1953a: Hydrocanthares capturés à la lumière dans le Haut-Katanga. - Revue de Zoologie et Botanique Africaines 47: 233-237.

GUIGNOT, F. 1953b: Nouveaux dytiscides du Parc National de l'Upemba. Diagnoses provisoires (suite) (1). - Bulletin de l'Institut royal des Sciences naturelles de Belgique 29(18): 1-4.

GUIGNOT, F. 1954a: Nouveaux dytiscides du Parc National de l'Upemba. Diagnoses provisoires (suite et fin). - Bulletin de l'Institut royal des Sciences naturelles de Belgique 30(9): 1-8.

GUIGNOT, F. 1954b: Dytiscidae (Coleoptera, Adephaga). - Exploration du Parc National de l'Upemba. Mission G.F. de Witte (1946-1949) 33: 3-59.

GUIGNOT, F. 1954c: Origine du peuplement de l'Afrique, et particulièrement du Congo Belge, en Hydrocanthares. - Annales du Musée Royal du Congo Belge Série 8 (Sciences Zoologiques) 1: 375-377.

GUIGNOT, F. 1955a: Contribution à l'étude de la faune entomologique du Ruanda-Urundi (Mission P. Basilewsky 1953). IV. Coleoptera Haliplidae, Dytiscidae et Gyrinidae. - Annales du Musée Royal du Congo Belge Série 8vo (Sciences Zoologiques) 36: 27-37.

GUIGNOT, F. 1955b: Dytiscidae nouveaux du Musée Royal du Congo belge. - Revue de Zoologie et Botanique Africaines 52: 1-7.

GUIGNOT, F. 1955c: Contribution à l'étude du peuplement de la Mauritanie. Dytiscides (2e note). - Bulletin de l'Institut Français d'Afrique Noire (A) 17: 859-866.

GUIGNOT, F. 1956a: Coléoptères Dytiscidae et Gyrinidae du Soudan française. - Bulletin de l'Institut Française d'Afrique Noire (A) 18: 83-92.

GUIGNOT, F. 1956b: Hydrocanthares capturés à la lumière au Congo belge. - Revue de Zoologie et Botanique Africaines 53: 317-323.

GUIGNOT, F. 1959a: Revision des Hydrocanthares d'Afrique (Coleoptera Dytiscoidea). 2. - Annales du Musée Royal du Congo Belge Série 8vo (Sciences Zoologiques) 78: 323-648.

GUIGNOT, F. 1959b: Haliplidae et Dytiscidae (Coleoptera Hydrocanthares). - Résultats Scientifique de l'Exploration Hydrobiologique des Lacs Kivu, Edouard et Albert (1952-1954) 3(1957)(2): 133-169.

GUIGNOT, F. 1961: Revision des Hydrocanthares d'Afrique (Coleoptera Dytiscoidea). 3. - Annales du Musée Royal du Congo Belge Série 8vo (Sciences Zoologiques) 90: 659-995.

HARRISON, A.D. & HYNES, H.B.N. 1988: Benthic fauna of Ethiopian mountain streams and rivers. - Archiv für Hydrobiologie Supplement 81(1): 1-36.

HOULBERT, C. 1934: Faune entomologique armoricaine. Coléoptères, Hydrocarabiques. - Bulletin de la Société des Sciences de Bretagne 11: 1-147.

JAKOBSON, G.G. 1905-1915: Zhuki Rossii i Zapadnoy Evropy. 11 fasc. - Petersburg: 1024 pp. [No. 6, pp. 401-480 from 1908.]

KLUG, J.C.F. 1834: Symbolae physicae seu icones et descriptiones insectorum quae ex itinere per Africam borealem et Asiam occidentalem Friderici Guilelmi Hemprich et Christiani Godofredi Ehrenberg. Decas quarta. - Berolini: Officina Academica, 42 pp.

KOLBE, H.J. 1883: Über die madagascarischen Dytisciden des Königl. entomologischen Museums zu Berlin. - Archiv für Naturgeschichte 49(1): 383- 427.

LEGROS, C. 1953: Contribution à l'étude de la zone d'inondation du Niger (mission G. Remaudière, 1950). 7. Coléoptères, Haliplidae, Dytiscidae, Hydrophilidae, Spercheidae. - Bulletin de l'Institut Française d'Afrique Noire (A) 15: 1561-1565.

LEGROS, C. 1972: Contribution à l'étude biologique du Sénégal septentrional. 21. Coléoptères Hydrocanthares. - Bulletin de l'Institut Française d'Afrique Noire (A) 34: 457-471.

LUCAS, H. 1846: Histoire naturelle des animaux articulés. Deuxième partie. Insectes. In: Exploration scientifique de l'Algérie pendant les années 1840, 1841, 1842. Sciences physiques. Zoologie. II(1-2)(1849). - Paris: Imprimerie Nationale, 590 pp.

MACHADO, A. 1987: Los ditíscidos de las Islas Canarias (Coleoptera, Dytiscidae). - La Laguna: Instituto de Estudios Canarios, pp. 81.

MEDLER, J.T. 1980: Insects of Nigeria - Check list and bibliography. - Memoirs of the American Entomological Institute 30: 1-919.

MILLÁN, A., VELASCO, J. & SOLER, A.G. 1993: Los coleópteros Hydradephaga de la cuenca del río Segura (SE de la Península Ibérica). Estudo corológico. - Boletin de la Asociacion Española de Entomologia 17: 19-37.

MILLER, K., BILTON, D. & FERY, H. 1997: The water beetles of Cyprus. 1. Hydradephaga. - Latissimus 9: 25-29.

MILLER, K.B. 2001: On the phylogeny of the Dytiscidae (Insecta: Coleoptera) with emphasis on the morphology of the female reproductive system. - Insect Systematics & Evolution 32: 45-92.

NILSSON, A.N. 1999b: Hydradephaga publication list and list of taxa described by the late Dr T G Vazirani. Latissimus 11: 16-21.

NILSSON, A.N. 2001: Dytiscidae (Coleoptera). – World Catalogue of Insects 3: 1-395.

NILSSON, A.N. & ANGUS, R.B. 1992: A reclassification of the *Deronectes*-group of genera (Coleoptera: Dytiscidae) based on a phylogenetic study. - Entomologica Scandinavica 23: 275-288.

NILSSON, A.N. & HOLMEN, M. 1995: The aquatic Adephaga (Coleoptera) of Fennoscandia and Denmark. II. Dytiscidae. - Fauna Entomologica Scandinavica 32: 1-188.

NILSSON, A.N. & PERSSON, S. 1993: Taxonomy, distribution and habitats of the Dytiscidae (Coleoptera) of Ethiopia. - Entomologica Fennica 4: 57-94.

NILSSON, A.N., PERSSON, S. & CUPPEN, J.G.M. 1995: The diving beetles (Coleoptera, Dytiscidae) of Guinea Bissau in West Africa. - Journal of African Zoology 109: 489-514.

NILSSON, A.N. & ROUGHLEY, R.E. 1997: A classification of the family Dytiscidae (Coleoptera). - Latissimus 8: 1-4.

NILSSON, A.N., ROUGHLEY, R.E. & BRANCUCCI, M. 1989: A review of the genus- and family-group names of the family Dytiscidae Leach (Coleoptera). - Entomologica Scandinavica 20: 287-316.

NIXON, K.C. 1999: WinClada. Version 0.9.99i. Published by the author. Ithaca, New York.

OMER-COOPER, Joseph 1954: Results of the Armstrong College expedition to Siwa oasis (Libyan desert), 1935, under the leadership of prof. J. Omer-Cooper. Dytiscidae (Coleoptera). - Bulletin de la Société Fouad I-er d'Entomologie 38: 251-290.

OMER-COOPER, Joy. 1931: 42. Report on the Dytiscidae (Coleoptera), Mr. Omer-Cooper's investigation of the Abyssinian fresh waters (Hugh Scott Expedition). - Proceedings of the Zoological Society of London 1931: 751-801.

OMER-COOPER, Joy. 1956a: Some records of Dytiscidae (Col.) from Mozambique. - Sociedade de Estudos de Mocambique 101: 19-32.

OMER-COOPER, Joy. 1956b: Notes on some species of Dytiscidae from Boheman's collection in the Riksmuseum at Stockholm with the description of a new species of *Herophydrus*. - Arkiv för Zoologi 9(13): 363-364.

OMER-COOPER, Joy. 1957: Dytiscidae (Coleoptera) collected in the Transvaal (Rhodes University Expedition 1948). - Memoires of the Entomological Society of Southern Africa 5: 1-90.

OMER-COOPER, Joy. 1962: The distribution of the Cape Province Dytiscidae and speculations as to their possible origins. - Annals of the Cape Provincial Museums 2: 292-296.

OMER-COOPER, Joy. 1964: Dytiscidae (Coleoptera) of Nyasaland and Southern Rhodesia. 7. Hydroporinae, Hydroporini. - Journal of the Entomological Society of Southern Africa 26: 366-378.

OMER-COOPER, Joy. 1965: Chapter 2. Coleoptera: Dytiscidae. A review of the Dytiscidae of Southern Africa being the results of the Lund University Expedition 1950-1951, with which are incorporated all other records known to the author. - South African Animal Life 11: 59-214.

PEDERZANI, F. 1988: Dytiscidae collected in Zambia and description of *Hyphydrus fluviatilis* n.sp. and *Hyphydrus zambiensis* n.sp. (Coleoptera Dytiscidae). - Atti dell'Accademia Roveretana degli Agiati, Contributi della Classe di Scienze Matematiche, Fisiche e Naturali (B) 26(1986): 103-118.

PERRIS, M.E. 1864: Description de quelques espèces nouvelles de Coléoptères et notes diverses. - Annales de la Société Entomologique de France (4) 4: 275-310.

PESCHET, R. 1917: Coléoptères des Îles Mascareignes et Séchelles. Missions scientifiques de MM. Ch. Alluaud (1892, 1893 et 1897) et P. Carié (1910-1913). - Annales de la Société Entomologique de France 86: 1-56.

PESCHET, R. 1922: Dytiscidae et Gyrinidae recueillis par le marquis S. Patrizi en Afrique Orientale Anglaise. - Annali del Museo Civico di Storia Naturale Giacomo Doria Genova (3) 9: 374-377.

PESCHET, R. 1923: Dyticidae et Haliplidae nouveaux (Col.). - Bulletin de la Société Entomologique de France 1923: 175-181

PESCHET, R. 1924: Mission Rohan-Chabot dans l'Angola et dans la Rhodésia (1914). Description de dytiscides nouveaux. - Bulletin du Muséum National d'Histoire Naturelle Paris 30: 140-144.

PESCHET, R. 1925: Haliplidae, Dytiscidae, Gyrinidae. - Mission Rohan-Chabot Angola et Rhodesia 4(3): 27-46.

PEYERIMHOFF, P. de 1931: Mission scientifique du Hoggar, Coléoptères. - Mémoires de la Société d'Histoire Naturelle de l'Afrique du Nord 2: 1-173.

RÉGIMBART, M. 1887: Dytiscidae et Gyrinidae collectés dans le royaume de Scioa (Abyssinie), par Mr. le Dr. Ragazzi en 1885. - Annali del Museo Civico di Storia Naturale Giacomo Doria Genova (2) 4: 636-641.

RÉGIMBART, M. 1889: Dytiscidae et Gyrinidae nouveaux ou rares de la collection du Musée Royal de Leyde. - Notes from the Leyden Museum 11: 51-63.

RÉGIMBART, M. 1894: Haliplidae, Dytiscidae & Gyrinidae. Voyage de M.E. Simon dans l'Afrique australe (Décembre-Mars 1893). - Annales de la Société Entomologique de France 63: 227-240.

RÉGIMBART, M. 1895: Revision des Dytiscidae et Gyrinidae d'Afrique, Madagascar et îles voisines. - Mémoires de la Société Entomologique de Belgique 4: 1-244.

RÉGIMBART, M. 1903: Coléoptères aquatiques (Haliplidae, Dytiscidae, Gyrinidae et Hydrophilidae) recueillis dans le sud de Madagascar par M. Ch. Alluaud. - Annales de la Société Entomologique de France 72: 1-51.

RÉGIMBART, M. 1904: Escursione del dott. Achille Tellini nell'Eritrea, Ottobre 1902 - Febbraio 1903. Coleotteri Acquatici. - Udine: privately printed, 4 pp.

RÉGIMBART, M. 1905: Dytiscidae, Gyrinidae et Hydrophilidae. Materiali per lo studio della fauna Eritrea raccolti nel 1901-03 dal Dr. A. Andreini tenente medico. - Bolletino della Società Entomologica Italiana 36(1904): 201-226.

RÉGIMBART, M. 1906: Dytiscidae, Gyrinidae, Hydrophilidae. Voyage de M. Ch. Alluaud dans l'Afrique orientale. - Annales de la Société Entomologique de France 75: 235-278.

RÉGIMBART, M. 1908: Coleoptera. 1. Dytiscidae, Gyrinidae, Hydrophilidae. In: Sjöstedt Y. Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru und der umgebenden Massaisteppen Deutsch-Ostafrikas 1905-1906. 7(1). Uppsala, 12 pp.

RÉGIMBART, M. 1922: Dytiscides, gyrinides et hydrophilides. - Voyage de M. Le Baron Maurice Rotschild en Éthiopie et en Afrique orientale Anglaise (1904-1905). 2. pp. 528-536, Paris.

REICHE, L. 1869: *Hydroporus inflatus* p. 19. In: Reiche L. & Lallemant C. Catalogue des Coléoptères de l'Algérie et contrées voisines avec descriptions d'espèces nouvelles. - Mémoires de la Société Linnéenne de Normandie 15(1865-1869)(4): 1-44.

RICO, E., PEREZ, L.C. & MONTES, C. 1990: Lista faunística y bibliográfica de los Hydradephaga (Coleoptera: Haliplidae, Hygrobiidae, Gyrinidae, Noteridae, Dytiscidae) de la Península Ibérica e Islas Baleares. - Listas Flora Fauna Aguas Continentales Peninsula Iberica 7: 1-216.

ROCCHI, S. 1975: Coleotteri ditiscidi dell'Africa orientale. - Monitore Zoologico Italiano (N.S. Suppl. 6) 3: 45-56.

ROCCHI, S. 1991: Contributo alla conoscenza degli Haliplidae e dei Dytiscidae del Madagascar con descrizione di due nuove specie (Coleoptera). - Frustula Entomologica (N.S.) 14(27): 71-89.

ROCCHI, S. & SCHEMBRI, S. 1992: I coleotteri idroadefagi delle isole Maltesi. - Bolletino della Società Entomologica Italiana, Genova 124: 121-126.

SAHLBERG, J. 1913: Coleoptera mediterranea orientalia, quae in Aegypto, Palaestina, Syria, Caramania atque in Anatolia occidentali anno 1904 collegerunt John Sahlberg et Unio Saalas. - Öfversigt af Finska Vetenskaps-Societetens Förhandlingar 55A (19): 1-281.

SALEH, R., ZALAT, S. & ABO-GHALIA, A. 1992: Relative population density and seasonal abundance of some aquatic insects in Ismailia governorate. - Journal of the Egyptian German Society of Zoology 9(D) Invertebrates & Parasitology: 189-201.

SATÔ, M. & BRANCUCCI, M. 1984: Synonymic notes on some Japanese Dytiscidae (Coleoptera). – Akitu N.S. 67: 1-6.

SEVERIN, G. 1892: Les collections d'articulés du musée royal d'histoire naturelle de Belgique. - Annales de la Société Entomologique de Belgique 36: 469-478.

SHARP, D. 1882: On aquatic carnivorous Coleoptera or Dytiscidae. - Scientific Transactions of the Royal Dublin Society (2) 2: 179-1003.

SOLSKY, S.M. 1874: Zestkokrilije (Coleoptera), I (Cicindeletae-Scaphididae). In: Fedtshenko A.P. Puteschestvie v Turkestan. Series 5, vol. 2 (Zoogeografiteskie Issledovanija. Part 5). Moskva: M. Stasyulevicha, S.-Peterburg, 4 + IV + 222 + 1 pp.

VAZIRANI, T.G. 1969: Contributions to the study of aquatic beetles (Coleoptera). V. Revision of Indian species of *Hyphoporus* Sharp (Dysticidae). - Bulletin du Muséum National d'Histoire Naturelle (2) 41(1): 203-225.

VAZIRANI, T.G. 1970: Contributions to the study of aquatic beetles (Coleoptera). VI. A review of Hydroporinae: Dytiscidae in part, from India. - Oriental Insects 4: 93-129.

VAZIRANI, T.G. 1977: Catalogue of Oriental Dytiscidae. - Records of the Zoological Survey of India (Miscellaneous Publication Occasional Paper) 6(1976): 1-111.

VINSON, J. 1956: Catalogue of the Coleoptera of Mauritius and Rodriguez. 1. - The Mauritius Institute Bulletin 4 (I): 1-67.

VINSON, J. 1967: Liste des coléoptères des Mascareignes. - The Mauritius Institute Bulletin 4 (V): 311-352.

WEWALKA, G. 1980: Results of the Austrian hydrobiological mission, 1974, to the Seychelles-, Comores- and Mascarene Archipelagos. 7: Dytiscidae, Gyrinidae (Coleoptera). - Annalen des Naturhistorischen Museums in Wien 83: 723-733.

WEWALKA, G. 1984: Neue und bemerkenswerte Schwimmkäfer aus dem Nahen Osten (Dytiscidae, Col.). - Koleopterologische Rundschau 57: 129-140.

WHITE, A. 1847: Nomenclature of coleopterous insects in the collection of the British Museum. Part II. Hydrocanthari. - London: Edward Newman, 59 pp.

WOLFE, G.W. 1985: A phylogenetic analysis of plesiotypic hydroporine lineages with an emphasis on *Laccornis* Des Gozis (Coleoptera: Dytiscidae). - Proceedings of the Academy of Natural Sciences of Philadelphia 137: 132-155.

ZAITZEV, F.A. 1972: Fauna of the USSR. Coleoptera. Families: Amphizoidae, Hygrobiidae, Haliplidae, Dytiscidae, Gyrinidae. - Jerusalem: Israel Program for Scientific Translations, 401 pp.

ZALAT, S., SALEH, R. & ABO-GHALIA, A. 1992: Taxonomic and ecological keys of aquatic insects in Ismailia region. - Journal of the Egyptian German Society of Zoology 9(D) Invertebrates and parasitology: 259-275.

ZIMMERMANN, A. 1919: Die Schwimmkäfer des Deutschen Entomologischen Museums in Berlin-Dahlem. - Archiv für Naturgeschichte 83(A 12)(1917): 68-249.

ZIMMERMANN, A. 1920a: Dytiscidae, Haliplidae, Hygrobiidae, Amphizoidae. - In Schenkling, S. (ed.): Coleopterorum Catalogus, Part 71. - Berlin: W. Junk, 326 pp.

ZIMMERMANN, A. 1920b: Bemerkenswerte Neuerwerbungen des Zoologischen Museums in Hamburg. Haliplidae, Dytiscidae et Gyrinidae. - Entomologische Blätter 16: 224-234.

ZIMMERMANN, A. 1926: Schwimmkäfer-Material aus Deutsch-Ost-Afrika, gesammelt von Geh. Regierungsrat Methner in den Jahren 1902-1916. - Entomologische Blätter 22: 18-31.

ZIMMERMANN, A. 1930: Monographie der paläarktischen Dytisciden, I. Noterinae, Laccophilinae, Hydroporinae (1. Teil). - Koleopterologische Rundschau 16: 35-118.

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