

Revision of a part of the *memnonius*-group of *Hydroporus* CLAIRVILLE, 1806 (Insecta: Coleoptera: Dytiscidae) with the description of nine new taxa, and notes on other species of the genus

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Abstract

Within the *memnonius*-group of *Hydroporus* CLAIRVILLE, 1806, the *H. memnonius*-, *H. melanarius*-, and *H. ferrugineus*-subgroups are introduced. The species of the *H. memnonius*-subgroup are characterised by an angularity of the female gonocoxae. Besides *Hydroporus memnonius* NICOLAI, 1822, this subgroup includes the species of the newly defined *H. normandi*- and *H. cantabricus*-complexes. The members of the *H. melanarius*- and *H. ferrugineus*-subgroups lack this angularity of the gonocoxae. The senior subgroup contains *Hydroporus melanarius* STURM, 1835, *Hydroporus longicornis* SHARP, 1871, and the species of the new *H. necopinatus*-complex, from which *Hydroporus necopinatus* sp.n. is described after specimens which have been incorrectly regarded as *Hydroporus cantabricus* SHARP, 1882, in the past. The *H. ferrugineus*-subgroup includes *Hydroporus ferrugineus* STEPHENS, 1829, *Hydroporus sanfilippoi* GHIDINI, 1958, and *Hydroporus obsoletus* AUBÉ, 1838. These species are characterised by their pattern of the elytra, and a newly introduced feature: the corrugated membrane of the median lobe is extended until the apex, this being in contrast to all other members of the *H. memnonius*-group.

A key to all species of the *H. memnonius*-group is presented, and their habitus and aedeagi are figured, but only the species of the *H. normandi*-, *H. cantabricus*- and *H. necopinatus*-complexes are treated in detail. Some additional notes on the other members are provided, as well as on species which might be mistaken for species of the *H. memnonius*-group because of their external resemblance. Of these *Hydroporus longulus* MULSANT & REY, 1861, and *Hydroporus nevadensis* SHARP, 1882, are treated in more detail.

Descriptions, distributional data and some notes about the biology are presented. Females of *Hydroporus brancoi* ROCCHI, 1981, have been described with matt surface; now shiny females from Portugal and Spain can be recorded. *Hydroporus normandi* RÉGIMBART, 1903, is recorded from Portugal, *Hydroporus hebaueri* HENDRICH, 1990, from Bulgaria, Montenegro, Hungary, Albania, as well as from Turkey, and *H. longulus* from Luxembourg, all for the first time.

Nine taxa are described as new: *Hydroporus brancoi gredensis* ssp.n. from central Spain and central Portugal (*H. cantabricus*-complex), *Hydroporus lluci* sp.n. from the Balearics, *Hydroporus normandi ifnii* ssp.n. from the High Atlas (Morocco), *Hydroporus normandi ifranensis* ssp.n. from the Moyen Atlas (Morocco), and *Hydroporus normandi alhambrae* ssp.n. from the Sierra Nevada in southern Spain (*H. normandi*-complex), *Hydroporus lenkoranensis* sp.n. from Azerbaijan, and *Hydroporus necopinatus* sp.n. with its three subspecies *H. necopinatus necopinatus* ssp.n. from Portugal and northern Spain, *H. necopinatus robertorum* ssp.n. from western France, and *H. necopinatus roni* ssp.n. from southern England (*H. necopinatus*-complex).

Lectotypes are designated for the following species-level names: *Hydroporus obsoletus* AUBÉ, 1838, *Hydroporus longulus* MULSANT & REY, 1861, *Hydroporus celatus* CLARK, 1862, *Hydroporus productus* FAIRMAIRE, 1880, *Hydroporus cantabricus* SHARP, 1882, *Hydroporus nevadensis* SHARP, 1882, and *Hydroporus normandi* RÉGIMBART, 1903.

Key words: Coleoptera, Dytiscidae, *Hydroporus*, *H. memnonius*-group, revision, lectotypes, new taxa, descriptions, first records.

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Zusammenfassung

Die Gattung *Hydroporus* CLAIRVILLE, 1806, wird üblicherweise in verschiedene Arten-Gruppen aufgeteilt, darunter auch die *H. memnonius*-Gruppe. Die Abgrenzung dieser Gruppe gegenüber weiteren wird jedoch von den jeweiligen Autoren recht unterschiedlich gehandhabt, in einigen Fällen werden auch Arten dazugerechnet, die wohl nicht in die *H. memnonius*-Gruppe gehören. Es ist nicht das Ziel der vorliegenden Arbeit, die Gattung *Hydroporus* neu zu strukturieren, hierzu wären umfangreiche Untersuchungen der Phylogenie der Gattung notwendig. Deshalb wird die *H. memnonius*-Gruppe im folgenden beibehalten, wobei zu ihrer Charakterisierung - bis auf eine Einschränkung - die von NILSSON & HOLMEN (1995: 4 ff.) übernommen wird. Es wird ein Bestimmungsschlüssel für die Arten angeboten, die üblicherweise zu dieser Gruppe gezählt werden, allerdings werden *Hydroporus kraatzii* SCHAUM, 1868, *Hydroporus libanus* RÉGIMBART, 1901, und *Hydroporus glasunovi* ZAITZEV, 1905, aus ihr ausgeschlossen.

Innerhalb der *H. memnonius*-Gruppe werden die *H. memnonius*-, *H. melanarius*- und *H. ferrugineus*-Untergruppen neu eingeführt. Die letzten beiden Untergruppen umfassen die Arten *Hydroporus melanarius* STURM, 1835, und *Hydroporus longicornis* SHARP, 1871, beziehungsweise *Hydroporus ferrugineus* STEPHENS, 1829, *Hydroporus sanfilippoi* GHIDINI, 1958, und *Hydroporus obsoletus* AUBÉ, 1838. Diese Arten werden - wie übrigens auch *Hydroporus memnonius* NICOLAI, 1822 - in der vorliegenden Arbeit nicht ausführlich behandelt, sie werden jedoch in den Bestimmungsschlüssel für die *H. memnonius*-Gruppe aufgenommen und sowohl ihr Habitus als auch die Genitale abgebildet.

Die Weibchen der Arten der *H. memnonius*-Untergruppe sind durch einen winkligen Vorsprung an der Innenseite der Gonocoxen ausgezeichnet. Zu dieser Untergruppe zählen *H. memnonius* und die Arten der ebenfalls neu eingeführten *H. cantabricus*- und *H. normandi*-Komplexe.

Der *H. cantabricus*-Komplex wird von den Arten *Hydroporus cantabricus* SHARP, 1882, aus dem Kantabrischen Gebirge in Nordspanien und *Hydroporus brancoi* ROCCHI, 1981, gebildet, wobei letzterer in die Unterarten *Hydroporus brancoi brancoi* aus Nordportugal und Nordspanien und *Hydroporus brancoi gredensis* ssp.n. aus Zentralspanien und Zentralportugal unterteilt wird.

Der *H. normandi*-Komplex umfaßt *Hydroporus productus* FAIRMAIRE, 1880, aus Algerien (und Tunesien?), *Hydroporus lluci* sp.n. von den Balearen und *Hydroporus normandi* RÉGIMBART, 1903. Letztere Art wird in die folgenden Unterarten aufgespalten: *Hydroporus normandi normandi* aus Südfrankreich, dem Süden Portugals und weiten Teilen Süd- und Nordostspaniens, *Hydroporus normandi alhambrae* ssp.n. aus der Sierra Nevada in Südspanien, *Hydroporus normandi ifranensis* ssp.n. aus dem Mittleren Atlas (Marokko) sowie *Hydroporus normandi ifnii* ssp.n. aus dem Hohen Atlas (Marokko).

Bei der Untersuchung der Syntypen des *H. cantabricus* stellte sich überraschenderweise heraus, daß diese Art - trotz großer äußerlicher Ähnlichkeit - hinsichtlich der Form der männlichen und weiblichen Genitale deutlich von allen anderen Exemplaren abweicht, die von den verschiedensten Koleopterologen bisher als *H. cantabricus* angesehen wurden. Deshalb wird diese bisher unerkannte Art als *Hydroporus necopinatus* sp.n. beschrieben. Sie kommt in drei Unterarten vor: *Hydroporus necopinatus necopinatus* ssp.n. aus Portugal und Nordspanien, *Hydroporus necopinatus robertorum* ssp.n. aus Westfrankreich und von einigen britischen Kanalinseln sowie *Hydroporus necopinatus roni* ssp.n. aus Dorset in Südengland. *H. necopinatus* sp.n. bildet zusammen mit *Hydroporus hebaueri* HENDRICH, 1990, aus Südosteuropa und der Türkei sowie *Hydroporus lenkoranensis* sp.n. aus Aserbaidshan den neu eingeführten *H. necopinatus*-Komplex innerhalb der *H. melanarius*-Untergruppe.

Die Arten der *H. cantabricus*-, *H. normandi*- und *H. necopinatus*-Komplexe werden ausführlich behandelt. Weiterhin wird kurz auch auf andere Arten eingegangen, die wegen ihrer äußerlichen Ähnlichkeit leicht mit *H. cantabricus* beziehungsweise mit den Arten des *H. necopinatus*-Komplexes verwechselt werden können. Diese sind *Hydroporus nigrata* (FABRICIUS, 1792), *Hydroporus gyllenhalii* SCHÖDTE, 1841, *Hydroporus longulus* MULSANT & REY, 1861, und *Hydroporus nevadensis* SHARP, 1882. Da die beiden letzteren Arten über lange Zeit besonders viel Anlaß zu Verwechslungen mit den Arten des *H. necopinatus*-Komplexes geboten haben, werden sie eingehender behandelt.

Hydroporus normandi kann zum ersten Mal aus Portugal gemeldet werden, *H. hebaueri* erstmalig aus Ungarn, Montenegro, Bulgarien, Albanien und der Türkei. Weiterhin kann davon ausgegangen werden, daß auf diese Art sämtliche bisherigen Meldungen des *H. cantabricus* aus Ungarn, Bulgarien und der Türkei zu beziehen sind. Für *H. longulus* liegt ein erster Nachweis aus Luxemburg vor. Von *H. brancoi* wurden ursprünglich die weibliche Exemplare mit matten Flügeldecken und Pronotum beschrieben; nun werden erstmalig auch solche mit glänzender Oberfläche gemeldet.

Lectotypen werden designiert für *Hydroporus obsoletus* AUBÉ, 1838, *Hydroporus longulus* MULSANT & REY, 1861, *Hydroporus celatus* CLARK, 1862, *Hydroporus productus* FAIRMAIRE, 1880, *Hydroporus cantabricus* SHARP, 1882, *Hydroporus nevadensis* SHARP, 1882, und *Hydroporus normandi* RÉGIMBART, 1903.

Introduction

The present work has been initiated by the study of large numbers of *H. memnonius*-group species which have been collected during the last years by diverse colleagues and the present author. FRANCISCOLO (1979: 368), FRESNEDA & HERNANDO (1988: 27) and GARCIA-AVILÉS & SOLER (1990: 35) already discovered that *Hydroporus memnonius* NICOLAI, 1822, and *Hydroporus normandi* RÉGIMBART, 1903, show a characteristic angularity of the female gonocoxae. During my studies I have observed that other species show this feature also, but - on the other hand - that some species of the *H. memnonius*-group lack this feature. Afterwards, the dissection of the syntypes of *Hydroporus cantabricus* SHARP, 1882, surprisingly revealed that it is - despite a high external similarity - different from all specimens referred in the past to this species after SHARP's description (1882: 457). Consequently all other species of the *H. memnonius*-group have been studied, and indeed, further new characteristics have been detected which obliged me to divide the group into several new subgroups and species complexes:

H. memnonius-group

H. memnonius-subgroup

H. memnonius NICOLAI, 1822

H. cantabricus-complex

H. normandi-complex

H. melanarius-subgroup

H. melanarius STURM, 1835

H. longicornis SHARP, 1871

H. necopinatus-complex

H. ferrugineus-subgroup

H. ferrugineus STEPHENS, 1829

H. sanfilippoi GHIDINI, 1958

H. obsoletus AUBÉ, 1838

The species of the *H. cantabricus*-, *H. normandi*- and *H. necopinatus*-complexes are treated in detail below, for the rest of the *H. memnonius*-group species some notes are provided only, but nevertheless they are included into a key to all species of the group, and their habitus and aedeagi are figured.

Material, methods and acknowledgements

Around 2600 specimens have been studied, many of them collected by the author himself, but an important part has been made available by diverse colleagues and museums. The following acronyms for collections from which material has been studied are used in the text:

Acronyms

BML	British Museum, London, Great Britain (S. Hine)
CAL	coll. A. Lagar, Barcelona, Spain
CAM	coll. Dr. A. Millán, Murcia, Spain
CAN	coll. Dr. A. Nilsson, Umeå, Sweden
CBB	coll. F. Balfour-Browne, in part deposited in CRA
CCH	coll. C. Hernando, Barcelona, Spain
CDB	coll. Dr. D. Bilton, Plymouth, Great Britain
CDP	coll. J. Díaz Pazos (Lugo, Spain) and C. de Paz (A Coruña, Spain)
CFA	coll. F. Angelini, Francavilla Fontana, Italy
CFB	coll. Dr. F. Bameul, Bordeaux, France
CFP	coll. F. Pederzani, Ravenna, Italy
CGC	coll. G. Challet, Florida, USA
CGF	coll. Dr. G. Foster, Ayr, Great Britain
CGW	coll. Dr. G. Wewalka, Vienna, Austria
CHB	coll. H. Bußler, Feuchtwangen, Germany
CHF	coll. Dr. H. Fery, Berlin, Germany, property of the NMW
CHH	coll. H. Hebauer, Rain, Germany
CIR	coll. Dr. I. Ribera, Barcelona, Spain
CJE	coll. J.-F. Elder, La Meauffe, France
CJF	coll. J. Fresneda, Llesp, El Pont de Suert, Spain
CJGA	coll. J. García-Avilés, Madrid, Spain
CJGG	coll. Dr. J. Garrido-González, Vigo, Spain
CJS	coll. J. Stastny, Liberec, Czech Republic
CLH	coll. L. Hendrich, Berlin, Germany
CMB	coll. M. Balke, Berlin, Germany
CMT	coll. M. Toledo, Brescia, Italy
COV	coll. O. Vorst, Utrecht, The Netherlands
CPL	coll. P. Leblanc, Troyes, France
CPM	coll. P. Mazzoldi, Brescia, Italy
CPR	coll. P. Richoux, Villeurbanne, France
CRA	coll. Dr. R. Angus, Surrey, Great Britain
CRCA	coll. R. Carr, Maidstone, Great Britain
CRCO	coll. Dr. R. Constantin, Saint Lô, France
CSR	coll. S. Rocchi, Firenze, Italy
DEI	Deutsches Entomologisches Institut, Eberswalde, Germany (Dr. L. Zerche)
HNHM	Hungarian Natural History Museum, Budapest, Hungary (Dr. Gy. Szél)
INAT	Institut National Agronomique de Tunisie, Tunis, Tunisia (Dr. M. Jarraya)
IRSN	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium (M. Cludts, Dr. K. Desender)
MGHN	Musée Guimet d'Histoire Naturelle, Lyon, France (J. Clary)

- MNB Museum für Naturkunde, Humboldt-Universität, Berlin, Germany (Dr. F. Hieke, Dr. M. Uhlig, B. Jaeger)
- MNHN Muséum National d'Histoire Naturelle, Paris, France (Dr. H. Perrin)
- MRTO Museo Regionale di Scienze Naturali, Torino, Italy (Dr. M. Daccordi)
- MZFI Museo Zoologico de "La Specola", Firenze, Italy (S. Rocchi)
- NMB coll. Dr. M. Brancucci, deposited in the Naturhistorisches Museum Basel, Switzerland
- NMW Naturhistorisches Museum Wien, Austria (Dr. M. Jäch)
- SMNS Staatliches Museum für Naturkunde Stuttgart, Germany (Dr. W. Schawaller)
- ZMAN Zoological Museum, Instituut voor Taxonomische Zoölogie, Amsterdam, The Netherlands (B. Brugge)
- ZSM Zoologische Staatssammlung, Munich, Germany (Dr. M. Baehr, M. Kühbandner)

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In the listings of studied material the number of specimens is given first, followed by the label texts, which - if cited exactly - are provided with quotation marks, and the collection where the specimen is kept. In some cases the handwriting is noted after the label text. Where this is not specified the author was either unknown or considered unimportant or the text was printed. Simple museum labels are cited exceptionally. Comments in square brackets are those of the present author.

Besides the male genitalia those of the females of all species have been studied and some of them figured. These have been drawn wet, because the shape of the medium lobe and particularly that of the gonocoxae can be considerably altered during drying. Gonocoxae and gonocoxosterna have been extracted from the rest of the copulatory apparatus and put for some hours in KOH. After removing the non-sclerotised parts the gonocoxae were put into glycerine for studying them thoroughly in a proper orientation.

Notes: In a normal orientation of a female specimen (dorsal surface upwards) the gonocoxae are situated above the gonocoxosterna, both above the last visible abdominal sternite. If the tergites are removed the gonocoxae and gonocoxosterna can be extracted. These usually are turned over and their ventral side observed. Thus what is called "perpendicular view" in Figures 78 - 80 is the ventral side of these parts of the female genitalia, their dorsal side being below.

The following abbreviations are used in the text: **hw** (handwriting), **TL** (total length), and **MW** (maximum width). In the measurements the minimum and maximum values are given, and in some additional cases the mean value and standard deviation (in brackets).

Notes on biology and distribution

There is little information in the literature about the habitats preferred by most of the representatives of the subgroups studied. *Hydroporus memnonius* seems not to demand special ones, it has been found by the author in an altitude of about 2200 m (Briançon, France) as well as at sea-level, in large rivers as well as in small brooks and springs, in rather warm water (above 23°C) and under ice (Corsica, Lac de Creno). NILSSON & HOLMEN (1995: 69) state: "It occurs in small water-bodies, often rich in mosses or decaying leaves, in forests or open country. Frequently encountered in springs and spring-fed streams". D. Bilton finds that "the species is particularly frequent in sites rich in detritus, often in woodland, or experiencing some degree of shade; mainly in small pools" (personal communication). See also the remarks in F. BURMEISTER (1939: 224).

I have found *H. normandi* (probably including the larvae) in large numbers only in very small springs, directly at the place where the water comes out of the terrain, or in small spring-fed pools ("seepages"). Only sporadically are specimens found in larger streams or ponds, and if so, in very small numbers. Thus semisubterranean habits are assumed for *H. normandi*. *Hydroporus brancoi* ROCCHI, 1981, seems to prefer small and strongly vegetated bog pools, not necessarily fed by running water. D. Bilton personally communicated "areas with some flow - e.g. bog pools through which there is a seep of water".

Concerning *Hydroporus necopinatus* sp.n. Robert Angus kindly submitted the following observations: "In England it is apparently confined to Studland Heath and adjacent areas (Dorset), where it occurs in the spring in *Sphagnum* and other mosses at the edges of small pools. In northern Spain (Barcenillas) it occurs in the mossy edges of pools surrounded by open poplar woodland, in company with *Graptodytes bilineatus* (STURM, 1835) and *Helophorus lapponicus* THOMSON, 1854 (Helophoridae). In the Tours region of central France (Sorigny) it occurred in a wood-fen pool in company with numerous *Helophorus* species." See also the remarks on *Hydroporus necopinatus roni* ssp.n. (under the name *H. cantabricus*) in FOSTER (1999: 13). I have found *H. necopinatus necopinatus* ssp.n. in large numbers in the Serra da Estrêla, Portugal, in a temporary pond with negligible vegetation. And finally HENDRICH (1990: 248) reports a limnocrone and a strongly vegetated ditch for *Hydroporus hebaueri* HENDRICH, 1990.

While *H. memnonius* is distributed over large parts of Europe, North Africa, and eastwards to Turkmenistan (NILSSON & HOLMEN 1995: 69), the members of the *H. cantabricus*- and *H. normandi*-complexes have a strictly western Mediterranean distribution: south-western France, Iberian Peninsula, the Balearics, Morocco and Algeria. The distribution of the representatives of the *H. necopinatus*-complex have a large disjunction in central Europe, with *H. necopinatus* sp.n. ranging across much of the Atlantic coast from England to Portugal, and, on the other side, *H. hebaueri* and *H. lenkoranensis* sp.n. from south-eastern Europe over Turkey to the Caspian Sea.

Notes: FRANCISCOLO (1979: 376, footnote) reports the record of a single specimen from Genova, northern Italy, which he first believed to be *H. normandi* or *H. cantabricus*, but later decided this to be another species, without noting which one. Unfortunately I have not been able to study this specimen.

Systematics

The species of the *H. memnonius*-group are treated in different ways by the diverse authors:

ZIMMERMANN (1931: 99, 138), dealing with the species of the whole Palearctic, arranges them in his section V, part of *Hydroporus* i.sp., which he characterises by: pronotum with lateral beading broad; metacoxal processes with posterior margin not sinuate (sic!); pronotum basally not broader than elytra at their base. He provides for his *H. memnonius*-group (l.c. p. 138, 145): elytra and pronotum unicoloured black (sic!); pronotum with sides subparallel in posterior half, and elytra more or less parallel, habitus thus rather parallel; dorsal surface weakly vaulted, more or less flat. His group contains *H. memnonius*, *H. cantabricus*, *H. occultus* SHARP, 1882, *H. productus* FAIRMAIRE, 1880, *H. melanarius*, and *H. longicornis*. *H. ferrugineus*, *H. kraatzii* SCHAUM, 1868, and *H. obsoletus* are standing in his section VI, which he characterises by the posterior margin to the metacoxal processes more or less concavely sinuate besides the middle. Such species have been treated by many subsequent authors as belonging to the subgenus *Sternoporus* FALKENSTRÖM, 1930, together with e.g. *H. longulus* MULSANT & REY, 1861, *H. nevadensis* SHARP, 1882, *H. regularis* SHARP, 1882, *H. jurjurenensis* RÉGIMBART, 1895, and *H. libanus* RÉGIMBART, 1901.

GUIGNOT (1947: 79, 80), dealing with the French fauna only, defines his *H. memnonius*-group within *Hydroporus* s.str. as follows: puncturation of elytra not fine and dense, microreticulated, puncture lines on elytra present ("except sometimes *cantabricus*"); pronotum with lateral beading distinct, and with sides subparallel posteriorly; elytra with sides straight and almost parallel in anterior half. He includes *H. memnonius*, *H. normandi*, *H. cantabricus*, *H. obsoletus*, and *H. ferrugineus* in his *H. memnonius*-group. *Hydroporus longicornis*, *H. kraatzii*, and *H. melanarius* stand in the subgenus *Hydroporinus* GUIGNOT, 1945 (l.c. p. 84). In his work on the African species GUIGNOT (1959: 384) adds *H. productus* to his *H. memnonius*-group.

ZAITZEV (1953: 153) for the fauna of the ancient USSR does not introduce different groups into his key of *Hydroporus* s.str., but he puts *Hydroporus glasunovi* ZAITZEV, 1905, *H. obsoletus*, and *H. libanus* close to *H. memnonius*.

FRANCISCOLO (1979: 327, 366) in his Italian Fauna more or less follows GUIGNOT (1947) in his keys. His seventh group in *Hydroporus* s.str. (l.c. p. 366) contains *H. memnonius*, *H. obsoletus*, *H. ferrugineus*, and *H. sanfilippoi* GHIDINI, 1958. The author notes *H. cantabricus* and *H. normandi* as belonging to his group for regions outside Italy (l.c. p. 374).

NILSSON & HOLMEN (1995: 40 ff.) introduce a set of new characteristics in their key for the northern European species of *Hydroporus* s.str. and define their *H. memnonius*-group as follows: elytra on disc microreticulated, immaculate but often diffusely paler laterally and/or basally; prosternum rugose anteriorly; prosternal process flat or concave medially, without base prolonged anteriorly as a distinct convexity; lateral margin of elytra not distinctly ascending towards humeral angle; head ventrally dark rufous or black; genae darker than gula, except if elytra black; disc of pronotum with microsculpture; metacoxal lines clearly diverging anteriorly; lateral pronotal beading broad, in lateral view broader than lateral elytral beading; posterior margin to the metacoxal processes more or less sinuate; body subparallel to broadly oval in outline; male antennomere 5 only slightly broader than 4; male protibia not modified. They include in their group *H. memnonius*, *H. kraatzii*, *H. melanarius*, *H. longicornis*, and *H. obsoletus*.

I have come to the conclusion that the *H. memnonius*-group as defined by these different authors is strongly inhomogeneous and needs to be divided into several subgroups. On the other hand, NILSSON & HOLMEN's key (1995: 40 ff.) is applicable not only to the northern *H. memnonius*-group members, but also to more southern ones, especially to all species of the *H. cantabricus*-, *H. normandi*- and *H. necopinatus*-complexes. Particularly this is due to the fact that these authors (l.c. p. 43) renounce the subparallel body outline as a characteristic for the *H. memnonius*-group, and thus *H. cantabricus* and the species of the *H. necopinatus*-complex with their more oval habitus can be included without problems.

Therefore I propose to use NILSSON & HOLMEN's definition of the *H. memnonius*-group (1995: 40 ff.), but to restrict it to species with the gula paler than the genae (in mature specimens). In this way *H. kraatzii* with its black gula is excluded, a result which seems to be desirable for two other reasons: the posterior margin to the metacoxal processes is strongly sinuate and medially protruded backwards (see fig. 9, and fig. 7 in BALKE & FERY 1993: 96), and the median lobe is asymmetric in dorsal view, with the apex deflected to the left (see fig. 237 in NILSSON & HOLMEN 1995: 54). The species thus should be placed near the following species.

I have not been able to study specimens of *H. libanus*, according to WEWALKA (1989: 148), however, this species obviously does not belong to the *H. memnonius*-group, but is close e.g. to *H. longulus*, *H. dobrogeanus* IENISTEA, 1962, and *H. jacobsoni* ZAITZEV, 1927. All these species again have the posterior margin to the metacoxal processes strongly sinuate (see Fig. 9), an asymmetric median lobe in dorsal view, and a black gula.

Finally *H. glasunovi* is totally misplaced in the *H. memnonius*-group. It has the lateral margin of the elytra distinctly ascending towards the humeral angle, and the elytra are not microreticulated. With its microreticulated last abdominal segment it should be best placed among the species of the *H. planus*-group (WEWALKA 1992), or NILSSON & HOLMEN's (1995: 40 ff.) *H. fuscipennis*-group respectively.

Notes: As indicated above the species of the *H. memnonius*-group are seen as belonging to different subgenera of *Hydroporus* by the respective authors. In particular this is due to the different interpretation of the marking of the posterior sinuation of the metacoxal processes and, in addition, of the significance of this characteristic for defining distinct subgenera. It is not the intention of this work to discuss this difficult systematic problem in detail, and thus for information about the *Hydroporus* subgenera the reader is referred to the following works: BALFOUR-BROWNE (1934: 247 ff.), WOLFE & MATTA (1981: 150 ff.), FOSTER & ANGUS (1985: 4), NILSSON (1987: 501), and PEDERZANI (1995: 38, 66); the most consequent being NILSSON (1989: 113) who regards *Sternoporus* and *Hydroporinus* as junior subjective synonyms of *Hydroporus* s.str.

Key to the *Hydroporus memnonius*-group

In the following key all species - except the three mentioned above - are included which have been treated as belonging to the *H. memnonius*-group by different authors. Notes on other species which might be confused in particular with *H. cantabricus* and the species of the *H. necopinatus*-complex are provided in section IV of the present work.

- 1 Elytra dark brown or black, margins of pronotum and elytra often shining through paler. Habitus subparallel or elongate oval. Pronotum posterolaterally with an area of larger punctures on each side, but these areas are rather small and weakly impressed only if at all. Males with first pro- and mesotarsal article developed (Figs. 10, 11) (except *H. longicornis*). Corrugated membrane on dorsal surface of median lobe ends distinctly before the apex. Ventral surface of median lobe with small bristles (except *H. longicornis*). Females with or without angularity on inner side of gonocoxae. 2
- Elytra paler, with diffuse darker areas. Habitus subparallel. Pronotum posterolaterally with an area of larger punctures on each side, these areas extended and deeply impressed. Males with first pro- and mesotarsal article not developed. Corrugated membrane on dorsal surface of median lobe reaches the apex. Ventral surface of median lobe without bristles. Females without angularity on inner side of gonocoxae (Fig. 80) (*H. ferrugineus*-subgroup). 18
- 2 Females with a distinct angularity on inner side of gonocoxae (Figs. 78, 79). Habitus subparallel, except *H. cantabricus* which is more oval elongate. Median lobe less curved near the base, more evenly curved in basal two thirds, more or less straight in apical third only (see e.g. Figs. 31, 39); parameres broadly triangular, apical part rather short (see e.g. Figs. 32, 40) (*H. memnonius*-subgroup). 3
- Females without angularity on inner side of gonocoxae (Fig. 80). Habitus subparallel or oval elongate. Median lobe more curved near the base, more or less straight in apical half (see e.g. Figs. 52, 58, 62); parameres more narrowly triangular, apical part longer (see e.g. Figs. 53, 63) (*H. melanarius*-subgroup). 12
- 3 Large species (TL 3.3 - 4.5 mm); antennae darkened distally; median lobe in dorsal view with a tongue-like apex (Fig. 31); gonocoxae in perpendicular view with angularity distinct, in view on inner side triangular (Fig. 78); females dimorphic, surface matt or shiny. *H. memnonius*
- Smaller species (TL 3.0 - 3.8 mm); articles of antennae not or indistinctly darkened distally; median lobe in dorsal view with apex not tongue-like; angularity of the gonocoxae in perpendicular view less prominent, in view on inner side more or less rectangular (Fig. 79). 4
- 4 Punctuation of elytra coarse, puncture lines less distinct; median lobe in dorsal view tapering to the apex from far before the tip. Females dimorphic or not (*H. cantabricus*-complex). 5
- Punctuation of elytra fine; puncture lines distinct; median lobe in dorsal view tapering shortly before the apex only. Females not dimorphic, shiny (*H. normandi*-complex). 7
- 5 Habitus less elongate, more oval, pronotum less parallel posteriorly (Fig. 2). Elytral puncture lines hardly recognisable. Females shiny. *H. cantabricus*
- Habitus more parallel, pronotum subparallel posteriorly (Figs. 3, 4). Elytral puncture lines recognisable. Females dimorphic, shiny or matt (*H. brancoi*). 6
- 6 Habitus less parallel (Fig. 3), elytra more vaulted. Punctuation on disc of pronotum sparse and less coarse; puncture lines of elytra less distinct. Females often strongly microreticulated, matt. *H. brancoi brancoi*
- Habitus more parallel (Fig. 4), elytra flatter. Punctuation on disc of pronotum denser and coarser; puncture lines of elytra more distinct. Females mostly shiny. *H. brancoi gredensis* ssp.n.

- 7 Elytra with puncturation very fine and sparse; species from Algeria (Tunisia?); median lobe as in Fig. 48. *H. productus*
- Puncturation of elytra fine or coarser; species from other regions than Algeria. 8
- 8 Habitus in dorsal view more pointed backwards, maximum width in the first third of the elytra; metacoxal lines weakly divergent anteriorly (Fig. 8); species from the Balearics; median lobe as in Fig. 50. *H. iluci* sp.n.
- Habitus in dorsal view less pointed backwards, maximum width between first and second third of the elytra; metacoxal lines more divergent anteriorly (Fig. 7); species from southern France, the Iberian Peninsula, and Morocco (*H. normandi*). 9
- 9 Subspecies from the Iberian Peninsula and France. 10
- Subspecies from Morocco. 11
- 10 Puncturation of elytra usually coarser. Setae on dorsal and ventral surface nearly imperceptible. Subspecies from France, Portugal, and Spain (except the Sierra Nevada); median lobe as in Fig. 39. *H. normandi normandi*
- Puncturation of elytra rather fine. Setae on dorsal and ventral surface rather evident; subspecies from Sierra Nevada (southern Spain); median lobe as in Fig. 46. *H. normandi alhambrae* ssp.n.
- 11 Subspecies from Lac d'Ifni (High Atlas, Morocco). Puncturation of elytra fine; median lobe as in Fig. 44. *H. normandi ifnii* ssp.n.
- Subspecies from Ifrane (Moyen Atlas, Morocco). Puncturation of elytra a little coarser; median lobe as in Fig. 42. *H. normandi ifranensis* ssp.n.
- 12 Metacoxal processes posteriorly without suberect setae. Elytra mostly shiny, being less strongly microreticulated. With the exception of some specimens of *H. necopinatus roni* ssp.n. habitus less subparallel, sides of elytra more rounded (*H. necopinatus-complex*). 13
- Metacoxal processes posteriorly with dense suberect setae. Elytra strongly microreticulated, almost matt. Habitus subparallel. 17
- 13 Species from the Western European Atlantic coast (*H. necopinatus* sp.n.). 14
- Species from south-eastern Europe and Asia. 16
- 14 Subspecies from Dorset in southern England; body outline in some specimens more subparallel, resembling that of *H. melanarius*; median lobe in lateral view with straight apical part shorter (Fig. 56). *H. necopinatus roni* ssp.n.
- Subspecies from south-western Europe; body outline only exceptionally subparallel, usually with sides more rounded; median lobe in lateral view with straight apical part longer. 15
- 15 Subspecies from the Iberian Peninsula; median lobe in lateral view strongly curved at the base and with straight apical part rather long (Fig. 52). *H. necopinatus necopinatus* ssp.n.
- Subspecies from south-western France and some Channel Isles; median lobe in lateral view less curved at the base and with straight apical part of medium size (Fig. 54) *H. necopinatus robertorum* ssp.n.
- 16 Species from south-eastern Europe and Turkey; median lobe in dorsal view converging to the apex in the whole apical half (Fig. 60). *H. hebaueri*

- Species from Azerbaijan; median lobe in dorsal view converging to the apex in apical third only (Fig. 62). *H. lenkoranensis* sp.n.
- 17 Habitus broad (Fig. 23); elytral puncture lines indistinct. Median lobe in dorsal view evenly narrowed to apex (Fig. 58). Males with first pro- and mesotarsal article developed. *H. melanarius*
- Habitus narrower (Fig. 24), elytral puncture lines recognisable. Median lobe in dorsal view strongly narrowed before apex (Fig. 64). Males with first pro- and mesotarsal article not developed. *H. longicornis*
- 18 Pronotum with posterolateral impressions near each angle coarsely and densely punctured and subrugose. Coarser puncturation on elytra sparse, irregularly spread; puncture lines almost imperceptible. Sides of pronotum posteriorly less subparallel (Fig. 25). Median lobe as in Fig. 66. *H. obsoletus*
- Pronotum with posterolateral impressions not subrugose and not so close to the posterior angles. Puncturation on elytra coarse, but dense and regularly spread; puncture lines perceptible. Sides of pronotum posteriorly distinctly subparallel. 19
- 19 Habitus parallel and narrow (Fig. 27); median lobe and paramere as in Figs. 70, 71 *H. sanfilippoi*
- Habitus broader, sides of elytra in their middle more convex (Fig. 26); median lobe and paramere as in Figs. 68, 69. *H. ferrugineus*

Description of the species

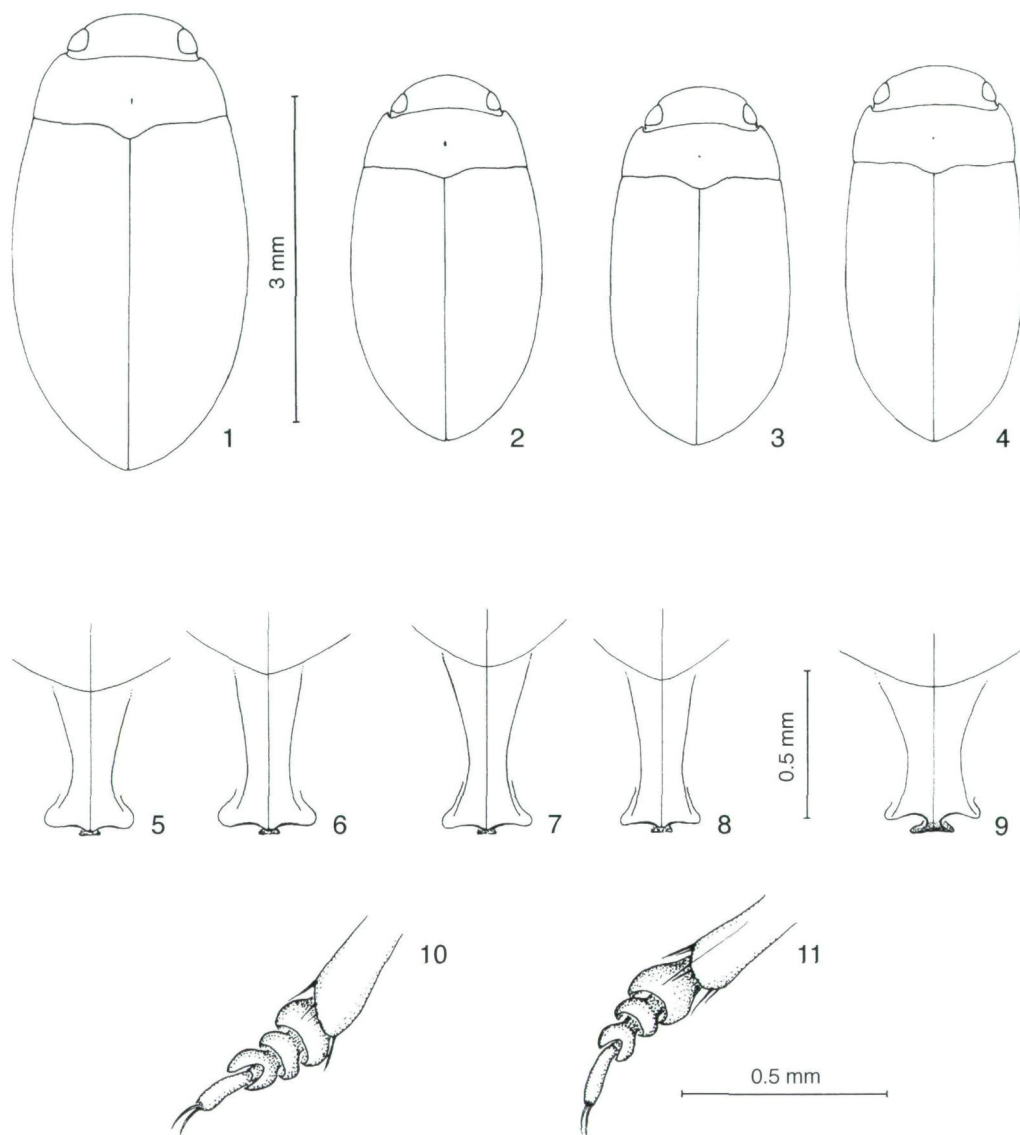
The author has tried to keep the description of the species complete, but as short as possible. Thus characteristics which are common for the whole *H. memnonius*-group (see above), and those which are used in the key are not repeated in the descriptions unless very prominent. Those of the ventral surface (including the legs) in particular are mostly of little diagnostic worth for the species and subspecies of the *H. memnonius*-subgroup and the *H. necopinatus*-complex, and thus are given here:

Ventral surface black in most parts, prosternum, epipleura, prosternal process, and posterior part of the metacoxal processes mostly brown. Often hind margins and sides of sternites shining through brown also. Legs more or less uniformly brown.

Posterior margin to the metacoxal processes medially prolonged backwards (Figs. 5 - 8), slightly concavely sinuate along the sides, but not nearly as strong as e.g. in *H. nevadensis* (see Fig. 9); metacoxal lines diverging anteriorly.

The males have the first pro- and mesotarsal article strongly developed (Figs. 10, 11), as SHARP (1882: 456) already observed in *H. occultus* (= *productus*) ("the basal joint of the intermediate tarsus being rather large"). The two following articles are enlarged also, but of variable size and with differences to the females less prominent. The claws of the protarsi more or less equal those of the females.

Notes: When studying the male genitalia in detail the author made an observation which seems not to have been reported in the literature until now: All members of the *H. memnonius*- and the *H. melanarius*-subgroups (except *H. longicornis*) have the ventral side of the median lobe provided with punctures and very small bristles, which are assumed to have a sensorial function. These bristles, however, can be only observed with a



Figs. 1 - 11: Habitus of (1) *Hydroporus memnonius* (specimen from Bohemia), (2) *H. cantabricus*, (3) *H. brancoi brancoi*, (4) *H. brancoi gredensis* ssp.n.; Metacoxal processes of (5) *H. brancoi brancoi*, (6) *H. brancoi gredensis* ssp.n., (7) *H. normandi normandi*, (8) *H. lluci* sp.n., (9) *H. nevadensis* (as an example of metacoxal processes with the posterior margin strongly sinuate and medially protruded backwards); Protarsus (10) and mesotarsus (11) of *H. brancoi brancoi*.

magnification of 80x or more. This feature is lacking in the members of the *H. ferrugineus*-subgroup. These observations may be new, but are not surprising when remembering the bristles and even long hairs on the median lobe's ventral surface in many Dytiscidae, e.g. such Hydroporini as *Hygrotus* STEPHENS, 1828 (FERY 1992, 1995).

I. The *Hydroporus memnonius*-subgroup

The species of the *H. memnonius*-subgroup - except *H. cantabricus* - have a rather parallel outline in dorsal view. Mature specimens are dark brown coloured, often with parts of the clypeus as well as the sides, anterior and posterior margins of the pronotum diffusely paler. The sides of the elytra are paler in different extent also and in some species its base and suture are paler too. The whole surface is microreticulated, but shiny at least in the males.

Males with median lobe in lateral view more or less evenly curved in distal two thirds, almost straight in apical third, with a small sinuation on ventral side shortly before apex. In dorsal view more or less symmetric, but in many individuals a very slight asymmetry can be observed which, however, depends on preparation and if the lobe is studied wet or dry. Nevertheless, this resembles species e.g. as *H. longulus*, in which, however, the asymmetry is considerably more marked. The parameres are more or less broadly triangular with the apex relatively short.

Females without conspicuous external differences to the males, dorsal surface - with the exception of the matt morphs of *H. memnonius* and *H. brancoi* - shiny also, sometimes with microreticulation a little stronger. FRANCISCOLO (1979: 368) already has observed a particular form of the gonocoxae in *H. memnonius*: "di forma assolutamente unica in tutto il genere, a paravalviferi piegati all'interno quasi ad angolo retto". This characteristic has been observed in *H. normandi* also, and figured by FRESNEDA & HERNANDO (1988: 27) and GARCIA-AVILÉS & SOLER (1990: 35), the first authors even showing the gonocoxae from three different directions and in cross-section. I have found this angularity of the gonocoxae in *H. brancoi*, *H. cantabricus*, *H. productus* and in *H. lluci* sp.n. also, and use it to define the *H. memnonius*-subgroup within the *H. memnonius*-group.

In these species the gonocoxae have a cross-section which is more or less triangular (see e.g. Figs. 78, 79), while the other species of the *H. memnonius*-group - and further *Hydroporus* studied - have the gonocoxae with a flat oval cross-section (see e.g. Fig. 80). The inner side of the gonocoxae is provided with an angularity, which in perpendicular view - except in *H. memnonius* - usually cannot be observed. If, however, the gonocoxae are lifted up a little in the middle or particularly if the inner surface is observed, they show a strong angularity, below which a large opening is situated (Figs. 78, 79). E.-G. Burmeister (Munich) kindly has communicated the signification of this opening. Into this insert trachea and nervous tracts as well as the protractor of the bursa copulatrix (M43), the retractor, and the levator of the gonocoxae (M21) (Fig. 81). For an explanation of the signification of these muscles and detailed information about the general structure of the female genitalia see E.-G. BURMEISTER (1976, 1980).

Notes on *Hydroporus memnonius* NICOLAI, 1822

Hydroporus memnonius is not studied as intensively as the other species of the subgroup. This is due to the high variability and wide distribution of the species, which will be the reason for the many described taxa seen as junior synonyms at present, and which suggest a separate treatment with much more investigations. I have examined about 260 specimens from France (including Corsica), Italy (including Sardinia), Great Britain,

Denmark, Germany, Austria, Czech Republic, Croatia, and Greece. From most localities males were dissected, but I have not been able to find differences, neither in the genitalia nor in other characteristics, which justify the assumption of different taxa. Nevertheless, the species needs further investigations including specimens from the whole area of its distribution and not only from those countries mentioned above.

The species has been described by NICOLAI (1822: 33), its type locality being Halle in Germany. According to HORN & al. (1990: 281), however, the collection of Ernst August Nicolai (1800-1874) must be assumed to be lost. For a list of synonyms see ZIMMERMANN (1931: 147). Further authors which have dealt with this species include: AUBÉ (1838: 302, 306), SHARP (1882: 457, 458), RÉGIMBART (1895: 28), ZIMMERMANN (1920: 92), GUIGNOT (1933: 360; 1947: 103), FRANCISCOLO (1979: 373), NILSSON & HOLMEN (1995: 68), and ÁDÁM (1996: 23).

Diagnosis: Largest species of the *H. memnonius*-subgroup. Habitus oval elongate (Fig. 1), lateral body outline almost continuous. Dorsal surface brown to dark brown or even blackish, head anteriorly and frontal fascia, margins of pronotum, and sides of elytra paler rufous; often elytral base and suture paler also. According to SCHAEFLEIN (1972: 40) northern populations are darker than more southern ones. Matt females with pale areas reduced. Whole upper surface microreticulated, on head more impressed, thus here matt, on pronotum and elytra less impressed, thus distinctly shiny, except the matt morph. Puncturation on head fine, more or less uniformly distributed; on disc of pronotum puncturation finer and sparser, on elytra and sides of pronotum coarser. Elytral puncture lines recognisable. Articles of antennae mostly darkened distally beginning with the fourth or fifth.

♂♂: Median lobe of aedeagus (Fig. 31) in dorsal view with a characteristic tongue-like apex; in lateral view strongly rounded near the base. Paramere Fig. 32.

♀♀: Angularity of gonocoxae in perpendicular view more distinct than in other members of the *H. memnonius*-subgroup (Fig. 78a), in view on inner side more or less triangular (Fig. 78b). Matt morph with whole dorsal surface strongly microreticulated, punctures on elytra smaller.

Measurements: TL 3.30 - 4.50 mm (including smaller specimens from Southern Europe).

Distribution: According to the literature (e.g. ZIMMERMANN 1931: 148, ZAITZEV 1953: 171, GUIGNOT 1959: 388, NILSSON & HOLMEN 1995: 69) this species is found in large parts of Europe, North Africa, and in Asia eastwards to Turkmenistan and Kamchatka. It seems, however, to be absent from the Iberian Peninsula south of the Pyrenees (RICO & al. 1990: 70).

I.a The *Hydroporus cantabricus*-complex

The complex includes two species which are distributed in the centre and north of the Iberian Peninsula (Fig. 82). Their elytral puncturation is rather coarse, and the inner puncture lines not very distinct. Although both seem to be very closely related, *H. cantabricus* can be easily recognised by the less parallel body outline and the almost imperceptible elytral puncture lines. Articles of antennae not darkened, only exceptionally last

articles shining through a little darker distally. The females have the angularity of the gonocoxae in perpendicular view less distinct than *H. memnonius* (Fig. 79 a), in view on the inner side more or less rectangular (Fig. 79 b).

***Hydroporus cantabricus* SHARP, 1882**

Hydroporus cantabricus SHARP, 1882: 457. - GANGLBAUER 1892: 477 (partim). - GOZIS 1910-1915: 181, 182 (footnote by E. BARTHE) (partim). - ZIMMERMANN 1919: 168 (partim). - FUENTE 1921: 79 (248) (partim). - GUIGNOT 1933: 362 (partim). - GUIGNOT 1947: 103 (partim). - IENISTEA 1978: 297 (partim). - RICO & al. 1990: 62 (partim).

Hydroporus longulus MULSANT & REY: SEIDLITZ 1887: 75 (partim). - GOZIS 1910-1915: 180 (partim).

Type locality: "Europe, Reynosa", Spain, Santander province (Reynosa = Reinosa).

Lectotype (present designation): ♂, "Hydroporus cantabricus Ind. typ. D.S." [hw Sharp, text on glue-card], "Cotype" [round label, yellow margin, most probably mounted by J. Balfour-Browne], "Reynosa" [hw Sharp], "Sharp Coll., 1905-313", "Lectotype (left), Hydroporus cantabricus Sharp, des. H. Fery 1999" [red]; together with one female paralectotype on one glue-card, the lectotype on the left side (BML).

Paralectotypes: 1 ♀, see above. 2 ♂♂, both on one glue-card, one specimen of a lighter brown colour because immature, "Hydroporus cantabricus, Ind. typ. D.S., Reynosa D.S." [hw Sharp, text on glue-card], "Sharp Coll., 1905-313" (BML). 1 ♂, "Europe" [printed], "Sharp Coll., 1905-313", "H. cantabricus, Reynosa" [hw Sharp], "Type 395" [hw Sharp] (BML). 1 ♂, totally dissected, "Europe" [printed], "Sharp Coll., 1905-313", "395 Reynosa" [hw Sharp] (BML). 1 ♂, "395" [hw Sharp], "Hispania, Reynosa" [printed], "Sharp Coll., 1905-313", "246." [printed], glue-card and pin as in the other types, specimen very immature (BML). All paralectotypes with the respective red label.

Additional material studied: Spain: 1 ♂, 1 ♀, "Spain, G.R. Crotch" [printed], "Sharp Coll., 1905-313", the female with additional "Hydroporus cantabricus, G.G. Kibby det. 1982" (BML).

Diagnosis: Habitus oval elongate (Fig. 2), sides of elytra convex, maximum width of elytra before the middle. Pronotum with sides less parallel near base, maximum width at base. Dorsal surface on principle coloured as in *H. brancoi*, but pale margins less prominent; in any case pronotum of a lighter brown than elytra. Head rufous brown, as the pronotum, diffusely darkened between the eyes. Head microreticulated, punctures almost uniformly distributed. Punctures on disc of pronotum more distinct than in *H. brancoi*, microreticulation more strongly impressed, less shiny. Elytra with puncturation coarse, not double, more or less as in *H. brancoi brancoi*; puncture lines recognisable, but rather indistinct.

Ventral surface with puncturation on metacoxal plates, sides of metasternum and first two abdominal sternites coarse. Metasternum and first two sternites not or indistinctly microreticulated, metacoxal plates and last sternites with distinct reticulation. Metacoxal lines more or less as in *H. brancoi brancoi* (Fig. 5). Antennae brown, not darkened distally.

♂♂: Median lobe of aedeagus Fig. 33; paramere Fig. 34.

♀♀: The two females studied show no conspicuous external differences to the males.

Measurements: TL: 3.25 - 3.50 mm (3.36 ± 0.10 mm), MW: 1.65 - 1.80 mm (1.72 ± 0.05 mm), TL/MW: 1.92 - 2.00 (1.95 ± 0.03).

Distribution: Spain, Santander province, Cantabrian mountains, Reinosa (Fig. 82). So far known only from the locus typicus.

Notes: IENISTEA (1978: 297) records *H. cantabricus* among other localities from the Canaries, which seems to be undoubtedly erroneous even if *H. necopinatus* sp.n. is being referred to; most probably the Channel Isles are meant (Channel Isles = Kanar-Inseln, Canaries = Kanar. Inseln in German!).

It seems to be remarkable that *H. cantabricus* is so far only known from the locus typicus although the region around Reinosa has been visited by numerous collectors. At Pico de Tres Mares (ca. 30 km W Reinosa) *H. brancoi* has been found; from Soncillo (ca. 30 km E Reinosa), Barcenillas (ca. 70 km ENE Reinosa) and La Costana (ca. 15 km ENE Reinosa) *H. necopinatus necopinatus* sp.n. is recorded. The author wonders if *H. cantabricus* is restricted to an unusually small region or prefers so far unknown habitats. In addition it must be taken into consideration that in the last century collectors have not been very precise when indicating localities. Finally it might be assumed that the specimens studied are nothing else than strongly deviating *H. brancoi*. This idea, however, shall be rejected for the moment because not a single specimen shows transitions to this species. In any case further collections of *H. cantabricus* are strongly required.

Hydroporus brancoi ROCCHI, 1981

The species is divided into two subspecies which can be distinguished by their different body outline. Specimens of *H. brancoi gredensis* from the Serra da Estrêla, however, show tendencies to the other subspecies. The situation is complicated by the existence of shiny and matt female morphs, which so far have not been found together. This is why localities where matt females have been found, and those with shiny ones are given separately in the listings below.

Hydroporus brancoi brancoi ROCCHI, 1981

?*Hydroporus normandi* RÉGIMBART: SCHOLZ 1920: 14 (partim). - RÉGIL CUETO 1985: 15. - GARRIDO GONZÁLEZ & RÉGIL CUETO 1989: 323.

Hydroporus brancoi ROCCHI, 1981: 150. - FERY 1987: 68. - FERY & HENDRICH 1988: 150. - RICO & al. 1990: 83. - GARRIDO GONZÁLEZ & RÉGIL CUETO 1994: 24 (first record from Spain). - GARRIDO GONZÁLEZ & al. 1994: 360.

Type locality: Portugal, Minho district, Serra de Soajo.

Holotype (♂): male sex symbol, "Portogallo, Minho - Mt - 800, Serra de Soajo, 26.6.[19]77, T. Branco", "Hydroporus brancoi Rocchi, Rocchi S. det. 1981", "Holotypus" [red], "La Specola, Firenze, 7293" (MZFI). **Allotype** (♀): same data as the holotype, but female sex symbol, "Allotypus", "La Specola, Firenze, 7294" (MZFI). **Paratypes:** 1 ♂, 1 ♀, same data as the holotype, but "Paratypus" [red] (CHF). According to ROCCHI (1981: 150) further paratypes in CSR, CFP, CGW, coll. Balfour-Browne, and coll. Sanfilippo (Museo Civico di Storia Naturale, Genova). All female paratypes studied are matt.

Additional material studied: Portugal: Localities with matt females: 1 ♂, male sex symbol, "Portogallo, Minho - Mt - 800, Serra de Soajo [ca. 40 km ESE Valença], 26.6.[19]77, T. Branco" (no paratype label) (CRA). 41 exs., "29.3.[19]86, Portugal, Minho, S. [= Serra] d. Soajo, Sistelo [ca. 30 km ESE Valença], ca. 800 m, Wiese [= meadow], Fery leg." (CHF). 1 ♀, "30.1.[19]94, Portugal, Minho (Viana), Serra de Arga, 800 m, Rinnsal [= rivulet], Fery leg." (CHF). 3 ♀♀, "10.3.1997 (P), Minho, Sra de Arga, NE Viana Cast., 800 m, Fery leg." (CHF). 3 ♂♂, 1 ♀, "3/v/1993 Portugal. Minho, Serra de Arga Senhora do Minho, pools @ 750 m" (CDB). 1 ♂, 1 ♀, "12. Ponte de Lima, Alto Minho, grassy paths flooded by stream, G.N. Foster, 10 January 1991" (CGF). **Localities with shiny females:** 1 ♀, "9. Carreço [ca. 5 km N Viana do Castelo], Alto

Minho, Portugal, slightly brackish coastal pool, G.N. Foster, 8 January 1991" (CGF). 2 ♂♂, 2 ♀♀, "22.3.[19]89, Portugal, Vila Real, Umg. [= near] Escariz, Rinnsal [= rivulet], Wiese [= meadow], Fery leg." (CHF). **Spain: Localities with matt females:** 1 ♀, "12.8.[19]89, España, Prov. Pontevedra, Estacas [ca. 20 km SE Pontevedra], Quelle [= spring], Wiese [= meadow], Fery leg." (CHF). 1 ♂, 3 ♀♀, "4/iii/1993 D.T. Bilton, Spain-Galicia-Prov. Pontevedra, E of Arrabal, 500 m, Hydroporus" (CDB). 2 ♂♂, 2 ♀♀, "2/iii/1993 D.T. Bilton, Spain-Galicia-Pontev., beside N550 S of Padron, spring pool" (CDB). 1 ♂; 1 ♀, "España [sic!]/León, Cofiñal [ca. 60 km SE Oviedo], 17, 12.VI.[19]86, leg. J. Garrido", "Hydroporus brancoi Rocchi, det: L. Hendrich 1989" (CLH). 5 ♀♀, "Hisp. León, 11.8.[19]90, Cofiñal a Pto. las Señales, 1250 m, Fresneda & Leblanc" (CHF). 4 ♂♂, "Hisp. León, 12.8.[19]90, Cofiñal a Pto. las Señales, 1250 m, Fresneda & Leblanc" (CHF). 2 ♀♀, "Cofiñal (León), 12/06/[19]86, J. Garrido leg." (CHF). 1 ♂, "29/v/1993, Spain Leon, Puerto de las Senales, ponds @ 1700 m" (CDB). 1 ♂, "16/vi/1993, Spain León, pools above Puerto de las Senales 1700 m" (CDB). **Localities with shiny females:** 3 ♂♂, 3 ♀♀, "30.9.1995 (E) La Coruña, La Curota [ca. 40 km SW Santiago de Compostela], Garrido leg." (CJGG, CHF). 1 ♂, "La Curota, 440 m, Peninsula de Barbanza, Coruña, UTM 29TNH0020, 30.9.1995, J Garrido & C E Sáinz-Cantero" (CGF). 1 ♀, "Env. [= near] Pontevedra, Gallice, 18-30.VII, H. Coiffait 1959" (CHF). 2 ♀♀, idem; together with one female of *H. gyllenhalii* on the same pin (MNHN). 4 ♂♂, 3 ♀♀, "España: Lugo: Muras, Castrosol [ca. 14 km S Vivero]. Musgos [= moss], (P-4) rio Landro, leg. C. de Paz 13.03.1989", "H. brancoi, C. de Paz det. 1989" (CDP). 3 ♀♀, "30TTN9758 Collada de Valdeteja [ca. 40 km N León], Leon, bog pools, 9.6.1990, coll. G.N. Foster" (CGF). 1 ♂, 1 ♀, "11.6.[19]90, España, Prov. León, N León, Valverdin [ca. 40 km N León], Rinnsal [= rivulet], Fery leg." (CHF). 3 ♂♂, 1 ♀, "Pico de Tres Mares [ca. 30 km W Reinosa], Cantabria, springfed pool 8.6.1990, coll. M.D. Eyre" (CGF). 39 ♂♂, 56 ♀♀, "4.6.[19]90, España, Prov. Zamora, 8 km W Castrocontrigo [ca. 30 km WSW La Bañeza], Rinnsal [= rivulet], Fery leg." (CHF). 7 ♂♂, 10 ♀♀, "6.6.[19]90, España, Prov. Lugo, S Fonsagrada [ca. 40 km ENE Lugo], Rinnsal (CHF). **Localities with males only:** 1 ♂, "San Martin, 760 m, Sierra de Suido (Or/Po) [ca. 30 km SE Pontevedra], UTM 29TNG5886, 23.11.1995, J Garrido & C E Sáinz-Cantero" (CGF). 1 ♂, "Caboalles [ca. 70 km SW Oviedo], Paganetti", "normandi Rég." (MNHN). 2 ♂♂, "Valverdin, León, 9.VI.[19]90. R. Carr", "H. normandi group, det. G.N. Foster 1991" (CRCA). 1 ♂, "Umg. [= near] Pontevedra, lg. H. Franz", "Prov. Pontevedra, Hispania bor.", "Hydroporus brancoi Rocchi, det. G. Wewalka 1998" (CGW). 2 ♂♂, "España: Lugo. Ourol, Ferreira [ca. 10 km S Vivero], rio Besteburiz, (P-10) afl. r. Landro, musgos [= moss], C. de Paz leg. 13.06.1989", "H. brancoi, C. de Paz det." (CDP). 2 ♂♂, "España: Lugo. Ourol, Lobeiras [ca. 10 km SSE Vivero]. Rio das Balsadas, (P-12) afl. r. Landro, C. de Paz leg. 17.04.1989", "H. brancoi, C. de Paz det." (CDP). 1 ♂, "España: Lugo. Muras, Vilariño [ca. 15 km SSW Vivero]; arr. Torres Vellas, (P-9) afl. rio Landro, musgos [= moss], C. de Paz leg. 13.02.1989", "H. brancoi, C. de Paz det." (CDP). 1 ♂, "España: Lugo. Muras, Viveiró [ca. 20 km S Vivero]. Macrofitos, (P-3) rio Landro, C. de Paz leg. 17.04.1989", "H. brancoi, C. de Paz det." (CDP). **Doubtful or inexact localities:** 1 ♂, a small label with an illegible sign, maybe a question-mark, "Koltze" [hw Wehncke, Koltze was a collector], "Hispania" [hw Wehncke], "Je ne sais pas quoi vous dire au sujet de cet Hydropore; il n'est certainement le *H. nevadensis* typique, et en effet je n'ai rien qui lui ressemble [sic!] plus." [a very large label, hw Fairmaire?], "Wehncke ex Muséum Paris, ex Coll. R. Oberthur" (MNHN).

Notes: SCHOLZ (1920: 14) reports a specimen of *H. normandi* from Caboalles, Paganetti leg. This specimen is untraceable in the collection Scholz today (personal communication by M. Wanat, Museum of Natural History, Wrocław, Poland). Nevertheless the one specimen with the same data from the MNHN undoubtedly belongs to *H. brancoi* and not to *H. normandi*.

Diagnosis: Habitus subparallel (Fig. 3), but sides of elytra a little convex, maximum width of elytra before middle. Lateral outline of body with slight discontinuance at bases of pronotum and elytra, but on average less distinct than in *H. brancoi gredensis* ssp.n. Elytra dark brown, head paler, pronotum also, often still paler than head, contrasting to the dark elytra, and thus giving the specimens a bicoloured aspect. Matt females with upper surface darker overall. Margins of the pronotum, suture, base and margins of elytra often of a lighter brown. Pronotum posteriorly subparallel in most specimens, with maximum width at base or directly before. Microreticulation on pronotum a little more impressed than on elytra. In most specimens inner puncture lines indistinct, indicated by some larger punctures only, a little more distinct near base. Disc of pronotum

with punctures smaller and sparse. Punctuation on elytra coarse, not distinctly double, although diameter of punctures varying a little. External puncture lines near base often more distinct than inner ones.

On ventral surface abdominal segments with distinct paler spots at their sides in some specimens. Metacoxal lines diverging forwards (Fig. 5). Metasternum, metacoxal plates and first two sternites covered with coarse punctures, near the middle sparser and smaller. The whole ventral surface shining; microreticulation of metasternum and first two sternites indistinct, on metacoxal plates and last sternites distinct. Antennae light brown, not darkened distally.

♂♂: Median lobe of aedeagus Fig. 35; paramere Fig. 36.

♀♀: Dimorphic, matt morph with upper surface strongly microreticulated, punctures on elytra smaller, puncture lines more prominent. Shiny morph without conspicuous external differences to males.

Measurements: TL: 3.00 - 3.55 mm (3.30 ± 0.16 mm), MW: 1.50 - 1.75 mm (1.63 ± 0.07 mm), TL/MW: 1.92 - 2.11 (2.03 ± 0.05) (specimens from northern Portugal only).

Notes: Records of *H. normandi* from northern Spain (RÉGIL CUETO 1985: 15; GARRIDO GONZÁLEZ & RÉGIL CUETO 1989: 323) most probably refer to *H. brancoi brancoi*.

Distribution: West and north-west of the Iberian Peninsula (Fig. 82); mountain ranges in northern Portugal, and in Spain from Galicia to the Cantabrian mountains. Matt females dominating in northern Portugal.

Hydroporus brancoi gredensis ssp.n.

Type locality: Spain, Avila province, Sierra de Gredos, near "Gredos", SW Hoyos del Espino.

Holotype (♂): "9.7.[19]88, España, Prov. Avila, S. [= Sierra] de Gredos, Gredos, Quelltümpel [spring pool], 1800 m, Fery leg.", "Holotype, *Hydroporus brancoi gredensis* ssp.n., Fery det. 1999" [red] (NMW).

Paratypes: 41 exs., same data as the holotype (CHF). 1 ♂, "Hoyos del Espino, Sierra de Gredos, province Avila, 4.8.[19]89, Aguilera leg." (median lobe absent) (CJF). The paratypes with the respective red label.

Additional material studied: **Spain:** 1 ♂, 1 ♀, "23: Spain: Madrid, at about 2000 m on Mount Peñalara [ca. 20 km SE Segovia]: 20 April 1985" (CGF). 1 ♂, "Esp: S. Guadarrama, Lozoyuela [ca. 50 km W Segovia] 14.6.[19]91, leg. H. Hebauer" (CHH). **Portugal:** 1 ♀ (matt), "21.7.[19]87, Portugal, Serra da Estrêla, Umg. [= near] Torre, ca. 1900 m, Moortümpel [= bog pool], Fery leg." (CHF). 1 ♀ (matt), idem, but "6.7.[19]88" (CHF). 1 ♂, 1 ♀ (shiny), "28/iii/1993, Portugal - Beira Alta, Serra de Estrela. Snow melt pools below peak on W. slope D.T. Bilton" (CDB).

Diagnosis: Habitus narrower, more parallel than in *H. brancoi brancoi* (Fig. 4); elytra between inner puncture lines flatter. Dorsal surface mainly coloured as in the nominotypical subspecies, but paler margins of pronotum and elytra more prominent. Sides of pronotum often with maximum width distinctly before base, thus a little converging backwards. Lateral outline of body with discontinuance between bases of pronotum and elytra on average more distinct than in the nominotypical subspecies. Disc of pronotum with punctures coarser and less sparse; punctuation on elytra coarse, denser than in *H. brancoi brancoi*; puncture lines in most specimens distinct, external lines still more distinct. Microreticulation less impressed, thus surface more shiny.

Ventral surface as in the nominotypical subspecies, but metacoxal lines longer and less diverging forwards than in the nominotypical subspecies (Fig. 6).

Notes: The specimens from Portugal are a little more vaulted, and have the metacoxal lines slightly more diverging forwards. The microreticulation of the two matt females' dorsal surface is weaker than in the matt morph of the nominotypical subspecies and thus more shiny. This is why these specimens from central Portugal might be considered as intermediate.

♂♂: Median lobe of aedeagus (Fig. 37) and paramere (Fig. 38) without significant differences to the nominotypical subspecies, but median lobe on average more curved basally.

♀♀: Without conspicuous external differences to males. So far the matt morph has been found in the Serra da Estrêla only.

Measurements: TL: 3.15 - 3.80 mm (3.45 ± 0.15 mm), MW: 1.55 - 1.75 mm (1.63 ± 0.06 mm), TL/MW: 2.00 - 2.18 (2.11 ± 0.04).

Distribution: Cordillera Central: Sierra de Gredos and Sierra de Guadarrama in Spain; Serra da Estrêla, Portugal (Fig. 82).

Derivatio nominis: The subspecies is named after the Sierra de Gredos, a wonderful mountain range in central Spain, where it has been found by the author in large numbers.

1.b The *Hydroporus normandi*-complex

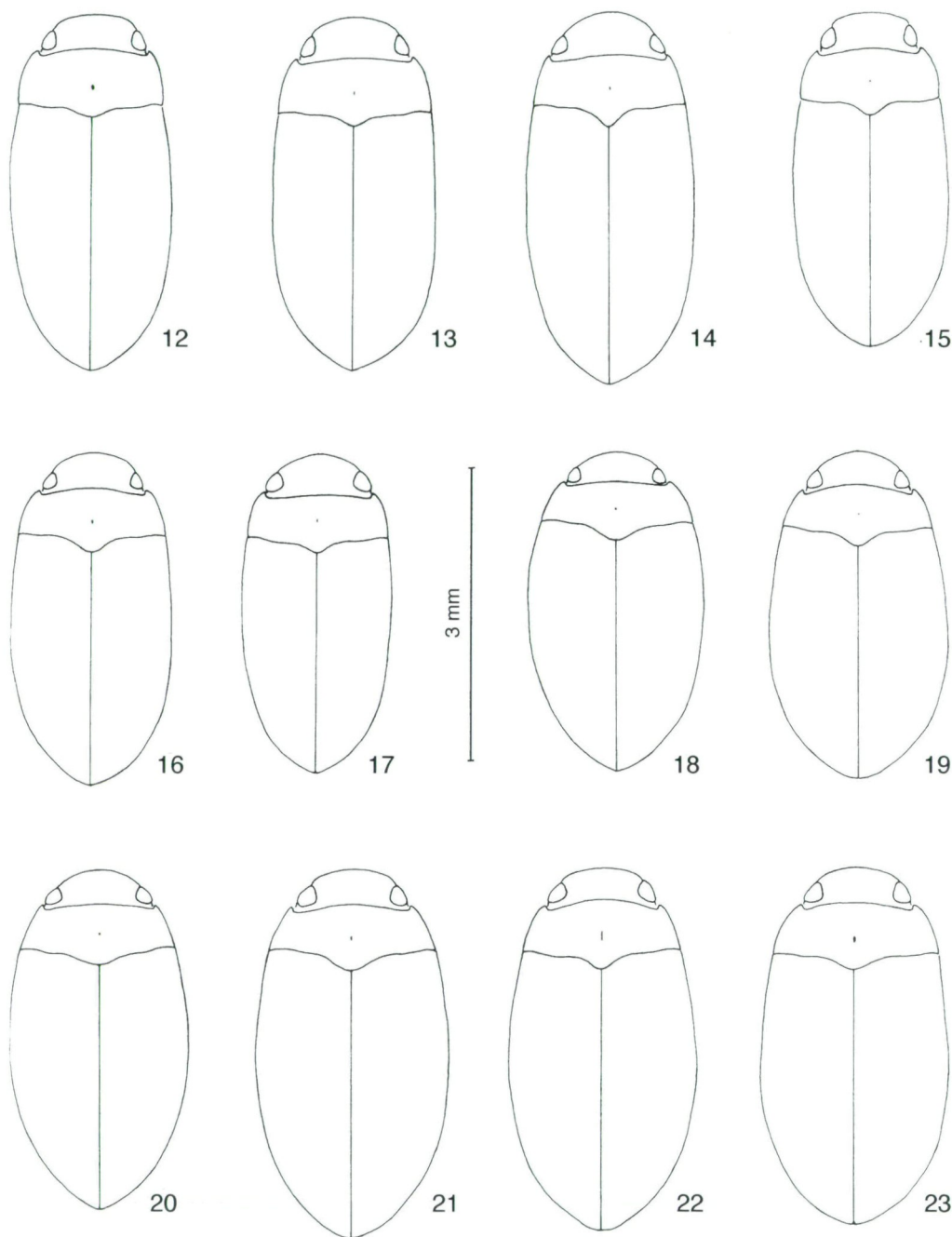
The complex includes three closely related species which are distributed in Northern Africa, in the south and north-east of the Iberian Peninsula, and in southern France (Fig. 82). As far as is known the species of this complex and those of the *H. cantabricus*-complex have an allopatric distribution. The puncturation on the elytra is fine, the inner puncture lines are distinct. The articles of the antennae are unicoloured reddish brown and only exceptionally indistinctly darkened distally. As in the species of the *H. cantabricus*-complex, the females have the angularity of the gonocoxae in perpendicular view less distinct than *H. memnonius* (Fig. 79a), in view on the inner side more or less rectangular (Fig. 79b).

It must be stated that the taxa of the whole *H. normandi*-complex are rather alike, and I have been tempted to treat them all as subspecies of *H. productus*. The apparent geographical isolation of *H. productus* and *H. lluci* sp.n., however, caused me to regard these as valid species nevertheless. Future collections, particularly in Northern Africa, may result in a more conservative treatment of the *H. normandi*-complex.

In the following the description of *H. normandi normandi* is kept rather comprehensive, those of the other members of the *H. normandi*-complex shorter, mostly emphasising the differences only.

Hydroporus normandi RÉGIMBART, 1903

A rather variable species with respect to body outline, puncturation and reticulation of dorsal surface and even shape of median lobe (see Figs. 39, 41). If single specimens from different localities are studied - and in the past there have been very few specimens



Figs. 12 - 23: Habitus of (12) *Hydroporus normandi normandi* (specimen from Los Pozuelos), (13) *H. normandi ifranensis* ssp.n., (14) *H. normandi ifnii* ssp.n., (15) *H. normandi alhambrae* ssp.n., (16) *H. productus*, (17) *H. lluci* sp.n., (18) *H. necopinatus necopinatus* ssp.n., (19) *H. necopinatus robertorum* ssp.n., (20) *H. necopinatus roni* ssp.n., (21) *H. hebaueri*, (22) *H. lenkoranensis* sp.n., (23) *H. melanarius*.

from each - one might be tempted to erect different species. This is why RIBERA & al. (1996a: 130; 1996b: 5) treated the taxon provisionally as a species complex. Recently, however, large numbers of specimens became available from some localities which enabled me to study the wide range of variability of *H. normandi*. Only the populations from the Sierra Nevada, and the High and Moyen Atlas show some constant and deviating characteristics which allow a separation from populations originating from other regions.

Hydroporus normandi normandi RÉGIMBART, 1903

Hydroporus normandi RÉGIMBART, 1903: 254. - FUENTE 1904: 382. - GOZIS 1910-1915: 188. - ZIMMERMANN 1919: 169. - ZIMMERMANN 1920: 95. - SCHOLZ 1920: 14 (partim). - FUENTE 1921: 79 (248). - PARDO 1933: 2. - GUIGNOT 1933: 358 (partim). - HOULBERT 1934: 86. - SAINTE-CLAIRE DEVILLE. 1935: 69. - GUIGNOT 1947: 102 (partim). - IENISTEA 1978: 297 (partim). - LAGAR & al. 1979: 11, 14. - FRESNEDA & HERNANDO 1988: 26. - RICO & al. 1990: 73 (partim).

Hydroporus occultus ab. *Normandi* RÉGIMBART: ZIMMERMANN 1931: 148 (partim).

Hydroporus normandi s.lat., RIBERA & al. 1996a: 130.

Hydroporus normandi cplx, RIBERA & al. 1996b: 5.

Type locality: Spain, Ciudad Real province, Pozuelo de Calatrava, ca. 25 km SE Ciudad Real.

Lectotype (present designation): ♀, "Pozuelo de Calatrava (Ciudad Real), Hispania" [hw Régimbart], "J.M. de la Fuente" [hw Régimbart], "Normandi Rég." [hw Régimbart], "Lectotype, *Hydroporus normandi* Régimbart, des. H. Fery" (MNHN). **Paralectotypes:** According to RÉGIMBART (1903: 255) two further syntypes should exist, one from Pozuelo de Calatrava, and one from Port-Vendres (France, Oriental Pyrenees), collected by H. Normand in 1902. I have not been able to locate these syntypes which have to be treated as paralectotypes whenever becoming available. GUIGNOT (1933: 359) stated that he has studied only one female from Camargue (see **Additional material studied**). This is why the present author concludes that the syntype from Port-Vendres has not been present in the collection Régimbart since that time, because Guignot has often worked with Régimbart's material. I have studied the collection Normand (INAT) also, but without any success.

Additional material studied: Spain: 92 exs., "26.5.[19]90, España, Prov. Ciudad Real, Los Pozuelos de Calatrava, Rinnsal [= rivulet]" (CHF). 1 ex., "1.9.[19]92, España, Prov. Ciudad Real, Los Pozuelos de Calatrava, Rinnsal" (CHF). **Notes:** Los Pozuelos de Calatrava is not the locus typicus, but situated ca. 40 km SW Ciudad Real and ca. 60 km W Pozuelo de Calatrava. 1 ♀, Spain, Ciudad Real, Ruidera, Laguna Blanca [ca. 100 km E Ciudad Real], 4.11.1998, Millán leg. (CAM). 69 exs., "15.2.[19]90, España, Prov. Malaga, Ronda, S El Burgo, Rinnsal, Quelle [= rivulet, spring], Fery leg." (CHF). 40 exs., idem, but "30.5.[19]90" (CHF). 1 ♂, "10: Spain: Malaga: 1 km S of Rio Grande and Tolox turn off: stream: 16 April 1985" (CGF). 13 exs., "19/v/1994 Spain Malaga, spring on 3331, 5 km E of Grazalema D.T. Bilton leg." (CDB, CIR). 1 ex., "MA. [= Malaga] Spain", on reverse "Fen north east of Algeciras, April 1962"; a very immature specimen (CRA). 4 exs., "ESP-Alicante, Alcoy 11.5.[19]92, leg. H. Hebauer" (CHH). 1 ♀, "20.2.[19]90, España Prov. Guadalajara, Setiles, östl. [= E] Molina de Aragon, Tümpel [= pond], Fery & Fresneda leg." (CHF). 1 ♂, idem, but "15.7.[19]91" (CHF). 2 ♀♀, "E-Prov. Cuenca, N Laguna del Marquesado, 1350 m, 23.4.1984, W. Schawaller leg." (SMNS). 1 ♀, "Aº [= Arroyo = brook] Moreno y Zarcilla, Zuheros [ca. 50 km SE Cordoba], Cordoba, 5-3-[19]83, M. Baena leg." (CJF). 1 ♀, Spain, Albacete, Ojos de Villaverde [ca. 60 km of Albacete], 1000 m, 23.5.1998, Millán leg. (CAM). 1 ♀, Spain, Albacete, Ontalafia [ca. 25 km SW Albacete], 500 - 600 m, 23.5.1998, Millán leg. (CAM). 26 exs., Spain, Albacete, Ruidera [ca. 100 km E Ciudad Real], Arroyo Ossera, 1.11.1998, Millán leg. (CAM). 1 ♂, "2.3.[19]97, Riopar ALB [ca. 80 km SW Albacete, ca. 20 km S Alcaraz], Rio de la Vega, AM & IR leg. [= A. Millán & I. Ribera]" (CIR). 1 ♂, 1 ♀, "1506[19]97, Paterna de Madera, Ayo. Fuenfria: fuente, ALB [ca. 80 km SW Albacete, ca. 15 km SE Alcaraz], Ribera & Millán leg." (CIR). 2 exs., "9.vii.[19]97, Robledo ALB [= Albacete], Ojos de Villaverde [ca. 60 km of Albacete], Ribera & Millán leg." (CIR). 1 ♂, "19.III.1997, Spain, Murcia, Lorca: rbla. Torreavilla, Hernando & Ribera leg." (CIR). 1 ♂, "0707[19]96, Pitillas [ca. 40 km S Pamplona] NAV [= Navarra], Laguna: drenaje, IR & PA [= I. Ribera & P. Aguilera]"

leg." (CIR). 1 ♂, "1.v.[19]97, Castellfollit de R. [= Castellfullit de Riubregós, ca. 40 km W Manresa], Torrent Bo, BAR [= Barcelona], P. Aguilera leg." (CIR). 2 ♀♀, "2404[19]90 Castellfollit de Riubr., BAR Torrent Bo, 2 22914 IR & PA leg.", "Hyd. normandi cplx, I. Ribera det. 1994" (CIR). 1 ex., "TAR [= Tarragona] Caseres, riu Algars [ca. 50 km E Alcaniz], 1904[19]98, Ribera leg." (CIR). 8 exs., "Tordera [ca. 40 km NE Barcelona], 28.3.1984", "Esp. - Cataluna, leg. H. Hebauer" (CHH, NMB, CHF). 10 exs., "Vidreras [ca. 50 km NE Barcelona], 31.3.1984", "Esp.-Cataluna, leg. H. Hebauer" (CHH, CHF). 1 ex., "El Prat Llobregat [SW Barcelona], 25.2.1986, Lagar leg." [hw Lagar], "Hydroporus normandi Rég., A. Lagar det." [hw Lagar] (CJF). 2 ♂♂, 1 ♀, "E [= Spain] Barcelona, El Prat de Llobregat [SW Barcelona], 14-IV-1994, O. Vorst" (COV). 1 ♂, "Espagne, Barcelona, Prat-del-Llobregat, étang Cal l'Arrana, 14-5-[19]94, Constantin" (CRCO). 1 ♂, 2 ♀♀, "2307[19]94 Gallocanta [ca. 40 km S Calatayud] ZAR [= Zaragoza], Cloaca [= sewer], 4 26330 IR & PA leg.", "Hydroporus productus cf, I. Ribera det. 1994" (CIR, CGF). 1 ♂, 1 ♀, "2904[19]94, Torredembarra [ca. 10 km ENE Tarragona] TRA [= Tarragona], Els Muntanyans: cañizal, 2 33819, IR [= I. Ribera] leg.", "Hydroporus Innormandi [sic!] cplx, I Ribera det. 1995" (CIR). 1 ex. "El Puig, Valencia (Hispania), Torres Sala [collector]", "Hydroporus normandi Rég., Lagar det. 1967" (CAL). 1 ♂, "Sima del Campo, El Pozuelo, Cu., 8.1979 J. Abad", "Hydroporus normandi Rég., A. Lagar det." (CAL). 2 ♂♂, 2 ♀♀, "Vallvidrera, B., Charca bajo la presa del Pantano, 3.8.1979", "A. Lagar Ll. Lucas", "Hydroporus normandi Rég., A. Lagar det." (CAL). 4 exs., idem, but "17.8.1979", "E. Balasch, D. Diaz, A. Lagar", "Hydroporus normandi Rég., A. Lagar det." (CAL). 1 ex., "Riera del Pantano, Vallvidrera B., 19.6.1977, E. Balasch leg.", "Hydroporus normandi Rég., Lagar det. 1977" (CAL). 1 ♂, "Piscifactoria [= pisciculture], Pont de Suert, 4-5-[19]83, Fresneda leg." (CJF). 1 ♂, "El Pont de Suert, Lleida (ESP), 4/5/[19]83 Fresneda leg.", "H. normandi Reg." (CPL). 1 ♂, 1 ♀, "Piscifactoria, El Pont de Suert, Lleida, 4-V-[19]83, España, Fresneda" (CSR, CHF). 2 ♀♀, "Catalonia, piscifactoria, El Pont de Suert, 23-3-[19]84, Fresneda leg." (CJF). 1 ♂, 1 ♀, "Hispania, Lerida, El Pont de Suert, Piscifactoria, Fresneda leg., 23.3.1984" (CCH). 1 ♀, "Pont de Suert, Lleida", "23-III-[19]84, Fresneda leg.", "Hydroporus (s.str.) normandi Rég., C. Hernando det." (CMB). 1 ♂, "Piscifactoria, El Pont de Suert, 23-III-1984, Fresneda leg." (CJF). 1 ♂, 1 ♀, "Hispania, Lleida, El Pont de Suert, Piscifactoria, Fresneda leg., Febr. 1986" (CHF). 1 ♀, "Embassament de Barruera, Lleida, 8-X-1987, Fresneda leg." (CJF). 1 ♂, 1 ♀, "Hispania, Lerida, Barruera, 4.12.1987, Fresneda leg.", "Hydroporus normandi Rég., J. Fresneda det. 1989" (CPL). 3 ♂♂, 3 ♀♀, "Panta de Barruera, Lleida, 4-12-1987, Fresneda leg." (CJF, CHF). 1 ♂, 1 ♀, "Hispania, Lleida, Barruera, Fresneda leg., III.1988" (CJF). 1 ♀, "Panta de Cardet, Barruera, Lleida, Fresneda leg., 10.3.[19]88" (CJF). 6 ♂♂, 3 ♀♀, "Spanien, Umg. Tremp [ca. 100 km N Lleida], 9.1969, leg. Schlüter", "Hydroporus normandi Rég., det: L. Hendrich 1989" (CLH). **Portugal (first record):** 1 ex., "Lusit. [= Lusitania]", "Rosenschöld", "Samml. A. Zimmermann" (ZSM). 1 ♂, "5, richly vegetated pond, Raposeira, Faro, G. N. Foster, 2.1.1995", Foster leg." [specimen without head] (CGF). 1 ♀, "Dampond, Raposeira, Faro, 1.4.1996, leg. GN Foster" (CGF). **France:** 1 ♀, "St. Maries, détritus de la plage, 9.11.1926", "Camargue, L. Puel", female sex symbol, coll. Buysson (MNHN). **Notes:** This is the specimen which has been cited by GUIGNOT (1933: 359). 1 ♀, "Gallia m.", "Hydroporus productus Fairm., det. G. Wewalka [19]73", "coll. M. Brancucci" (NMB). **Doubtful or inexact localities:** 1 ex., "Pyrenäen [= Pyrenees]" [hw Zimmermann], "Hydroporus normandi, Zool. Staatss. München"; specimen without genitalia (ZSM).

Diagnosis: Habitus subparallel, sides a little rounded, with maximum width between first and second third of elytra (Fig. 12). Upper surface in large extension dark brown (the lectotype has a lighter brown, because it is a little immature). Whole upper surface microreticulated, but shiny, on elytra reticulation a little more distinct than on head and pronotum. Head with labrum, clypeus and posterior part of frons paler, vertex black; anterior and posterior margin of pronotum paler, often sides also; elytra with sides, base, apex, and often suture paler also, but in some specimens these paler areas strongly reduced or even absent. Apical third of elytra provided with sparse and very thin golden hairs of about 0.05 - 0.10 mm length, on sides reaching more forwards; this hardly recognisable pubescence present on sides of pronotum also, but still sparser. Head on average broad, with interocular distance slightly larger than the half of the pronotal width between hind angles. Clypeus broadly rounded anteriorly, with some scattered small punctures, and two large grooves near anterior margin of the eyes. On frons punctures a little denser and partly coarser. Pronotum with a line of coarse punctures behind the anterior

margin; on sides and before base with irregularly distributed coarse punctures also, posterolaterally denser; disc with some scattered small punctures only. Pronotum in dorsal view subparallel in posterior half, in many specimens a little converging to base before hind angles, thus in these specimens point of maximum width shortly before base. Elytra with two distinct puncture lines, inner one a little irregular near base, external one with punctures deeply impressed near shoulder; with a line of coarse punctures also beside the margin. Between puncture lines elytra with rather large punctures of a diameter which equals about the half that of the puncture lines; in addition some scattered small punctures.

Metacoxal plates in large parts and abdomen microreticulated, metasternum smooth. Puncturation on sides of metasternum, metacoxal plates, and on the two first abdominal sternites very coarse, but not dense; on metacoxal plates and first abdominal sternite often less coarse. Third and fourth sternites with punctures smaller, fifth and sixth sternites with punctures progressively coarser. Microreticulation of the sixth sternite stronger. Metacoxal plates and last abdominal sternites at their sides provided with thin sparse hairs, and more or less longitudinal or even oblique, but usually short scratches. Legs uniformly pale brown. Antennae light brown, articles not or very weakly darkened distally.

♂♂: Median lobe of aedeagus Fig. 39, variants of the apex in dorsal view Fig. 41. Paramere Fig. 40.

♀♀: Without conspicuous external differences to males. Microreticulation of elytra in a few individuals slightly more distinct than in males.

Measurements: TL 3.00 - 3.80 mm, MW 1.40 - 1.70 mm; specimens from Los Pozuelos only: TL 3.25 - 3.80 mm (3.52 ± 0.14 mm), MW 1.55 - 1.65 mm (1.58 ± 0.04 mm), TL/MW 2.10 - 2.33 (2.23 ± 0.07).

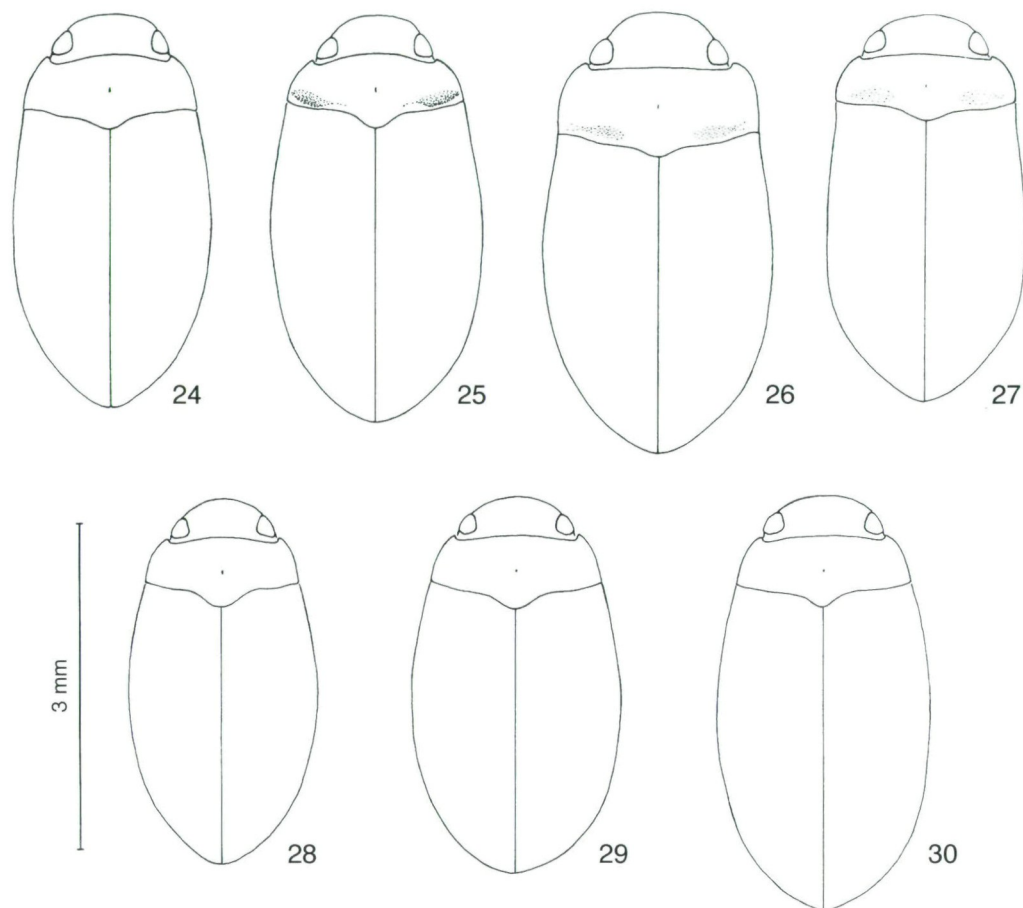
Notes: Most specimens from El Pont de Suert, Lleida province, show some characteristics which almost induced me to describe another subspecies. These features are: smaller size, habitus in dorsal view rather stout, less pointed backwards; microreticulation of elytra more impressed, thus surface less shining; metacoxal lines less divergent anteriorly and less close in posterior third. Under these specimens, however, a few are found which have these characteristics less distinct and thus range within the normal variability of *H. normandi normandi*. The specimens from Tresp (ca. 50 km SE El Pont de Suert) are even closer to "normal" *H. normandi normandi*. Future collections and investigations may result in a differing view of these populations.

Distribution: Southern France, southern Portugal; in Spain distributed in the north-eastern provinces, and south of the central mountain ranges; in the Sierra Nevada replaced by *H. normandi alhambrae* ssp.n. (Fig. 82). Further collections of *H. normandi* in France and Portugal are strongly required.

Hydroporus normandi ifranensis ssp.n.

Type locality: Morocco, Moyen Atlas, environs Ifrane, Oued Tzkad.

Holotype (♂): "Oued Tzkad [S Ifrane], Ifrane, Maroc, V-1988, C. Hernando leg.", "*Hydroporus productus* Fairm., C. Hernando leg.", "Holotype, *Hydroporus normandi ifranensis* ssp.n., Fery det. 1999" [red] (NMW).



Figs. 24 - 30: Habitus of (24) *Hydroporus longicornis*, (25) *H. obsoletus*, (26) *H. ferrugineus*, (27) *H. sanfilippii*, (28) *H. longulus* (specimen from Briançon, France), (29) *idem*, lectotype of *H. celatus*, Great Britain, (30) *H. nevadensis* (specimen from Sierra Nevada).

Paratypes: 1 ♂, 1 ♀, same data as the holotype (CHF). 3 ♀♀, "Marruecos [Morocco], IV.1990, Moyen Atlas, Ifrane, Oued Tzkad, C. Hernando leg.", "*Hydroporus productus*, C. Hernando det." (CHF). 2 ♀♀, "*H. productus* Marr. [= Marruecos = Morocco], C. Hernando leg." (CIR). 1 ♂, "*H. productus* - Marruecos, C. Hernando leg." (CGF); a rather immature and exceptionally small specimen (see below). The paratypes with the respective red label.

Notes: R. Gerecke (Tübingen, Germany) kindly communicated that he has found one specimen near Azrou (10.4.1999; ca. 20 km SW Ifrane) in a very slowly flowing spring (helocrene) beside the road to Timahdite. This specimen has been used by I. Ribera for DNA analyses.

Diagnosis: Habitus (Fig. 13) and coloration like that of the nominotypical subspecies. Pubescence very sparse. Sides of pronotum posteriorly subparallel, but not converging to the base. Punctuation of elytra and pronotum a little finer than in *H. normandi normandi*, but coarser than in *H. normandi ifnii* ssp.n. Puncture lines with punctures a little less coarse and less impressed, particularly anteriorly.

♂♂: Median lobe of aedeagus Fig. 42; in dorsal view more pointed to apex than in the nominotypical subspecies. Paramere Fig. 43.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.45 - 3.55 mm (3.49 ± 0.03 mm), MW 1.60 - 1.65 mm (1.60 ± 0.02 mm), TL/MW 2.14 - 2.19 (2.18 ± 0.02); one specimen with TL 3.00 mm only, not included in the statistical analysis of measurements.

Distribution: Morocco, environs Ifrane, Moyen Atlas (Fig. 82). So far known only from the locus typicus.

Derivatio nominis: The subspecies is named after the locus typicus Ifrane in the Moyen Atlas.

Hydroporus normandi ifnii ssp.n.

Hydroporus productus FAIRMAIRE: KOCHER 1958: 19.

Type locality: Lac d'Ifni, Toubkal massif, High Atlas, ca. 80 km S Marrakech.

Holotype (♂): "Lac Ifni, (Scoutana), I.VI", "Miss Lecerf & Talbot, Grand Atlas, 28.IV a 9.VI. 1927", male sex symbol, "Exemplaire dessiné", "occultus Sh, = occultus Frm, t. Peyerim. [hw Théry?], Thery misit" [hw Guignot?], "Holotype, *Hydroporus normandi ifnii* ssp.n., Fery det. 1999" [red], coll. Guignot (MNHN).

Paratypes: 1 ♂, "Lac Ifni, (Scoutana), I.VI", "Grand Atlas, 28.IV a 9.VI. 1927", "productus Frm, occultus Shp" [hw Peyerimhoff?], coll. Peyerimhoff (MNHN). 1 ♀, "Lac Ifni, (Scoutana), I.VI", "Miss Lecerf & Talbot, Grand Atlas, 28.IV a 9.VI. 1927", "Lecerfé [?], Type Thery [?]" [hw Théry?], "occultus verus., teste Peyerimhoff" [hw Peschet?], coll. Peschet (MNHN). 1 ♂, "Lac d'Ifni (Maroc) Antoine, 2400, VII.[19]29", "H. productus Frm, dp. Peyer." [hw Peyerimhoff?] (MNHN). 1 ♂, "Lac d'Ifni, 2300 m, Lepiney, 2-3-VII-[19]38, 618", coll. Peyerimhoff (MNHN). The paratypes with the respective red label.

Diagnosis: Habitus flatter than in the nominotypical subspecies (Fig. 14). Pronotum and head paler than elytra. Specimens on average larger, maximum width more anteriorly situated, between first and second quarter of elytra, a little more pointed backwards. Pronotum posteriorly with sides less parallel, more or less converging from base to anterior angles; punctures on disc very fine and sparse; larger punctures near margins smaller and in posterior angles less dense. Elytral puncturation distinctly finer and sparser than in *H. normandi normandi*, alike weakly punctured specimens of *H. normandi alhambrae* ssp.n.; punctures of almost equal size. Puncture lines with punctures smaller and sparser.

Puncturation on metacoxal plates and first two abdominal segments less coarse and dense than in the nominotypical subspecies, less extended on metacoxal plates.

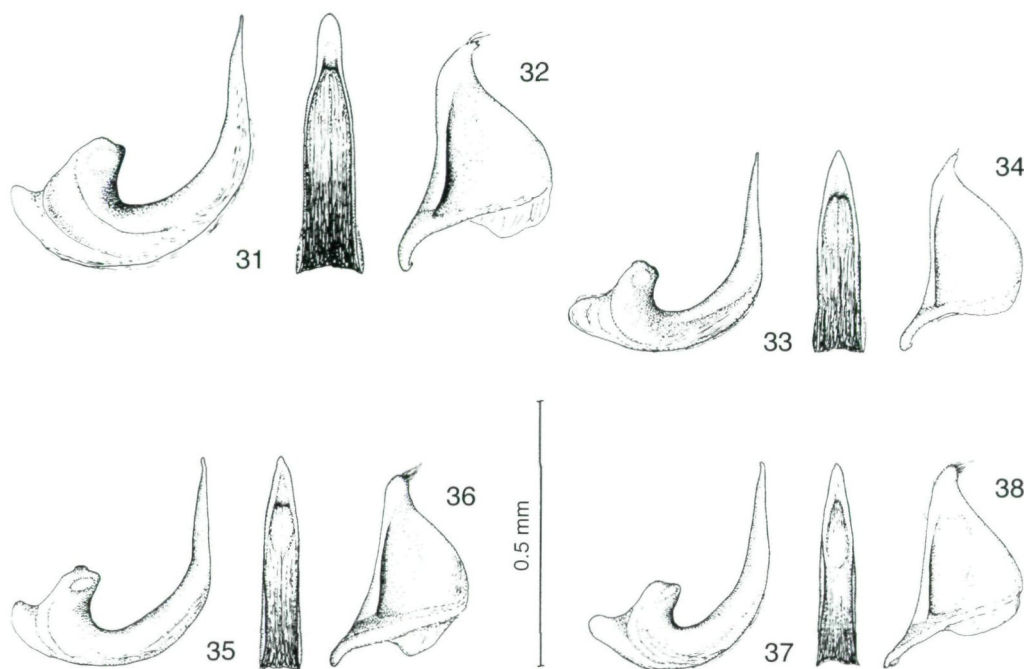
♂♂: Median lobe of aedeagus Fig. 44; paramere Fig. 45.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.60 - 3.70 mm (3.65 ± 0.05 mm), MW 1.65 - 1.70 mm (1.65 ± 0.02 mm), TL/MW 2.19 - 2.25 (2.22 ± 0.02).

Distribution: Morocco, High Atlas (Fig. 82). So far known only from the locus typicus.

Derivatio nominis: The subspecies is named according to the locus typicus Lac d'Ifni, in the Toubkal massif of the High Atlas (noun in the genitive case).



Figs. 31 - 38: Median lobe of aedeagus in lateral and dorsal view of (31) *Hydroporus memnonius*, (33) *H. cantabricus*, (35) *H. brancoi brancoi*, (37) *H. brancoi gredensis* ssp.n.; Paramere of (32) *H. memnonius*, (34) *H. cantabricus*, (36) *H. brancoi brancoi*, (38) *H. brancoi gredensis* ssp.n.

Hydroporus normandi alhambrae ssp.n.

Notes: Although *H. normandi* has been collected in the Sierra Nevada since many years it seems not to have been recorded from there in the literature.

Type locality: Spain, Granada province, Sierra Nevada, Capileira, ca. 30 km SE Granada.

Holotype (♂): "29.5.[19]90, España, Prov. Granada, S. [= Sierra] Nevada, Umg. [= near] Capileira, Rinnsal [= rivulet], ca. 2000 m, Fery leg.", "Holotype, *Hydroporus normandi alhambrae* ssp.n., Fery det. 1999" [red] (NMW). **Paratypes:** 137 exs., same data as the holotype (CHF). 7 exs., same data as the holotype, but "12.7.[19]87" (CHF). 61 exs., "5.8.[19]85, España, Sierra Nevada (And.) [= Andalucía], südl. [= S] Veleta, Rinnsal, 2000 m, Fery leg." (NMB, CGW, CLH, CAN, CHF). 273 exs. "E/Andalucía/Sierra Nevada, Capileira, Bco. [= brook] del Tejar, 1550 m, 5.-8.IX.1991, leg. et Coll. Hendrich" (CLH, CPM). 22 exs. "E/Andalucía/Sie. Nevada, Capileira, Bco. del Tejar, 1550 m, 5.-8.9.1991, leg: Hendrich" (CLH). 5 exs. "E/Andalucía/Sie. Nevada, Capileira, Bco. del Tejar, 1550 m, 5.-8.9.1991, leg: Hendrich" (CJS). 1 ♀, "Spanien, 20.7.[19]66, Lag. Yeguas, Sierra Nevada, leg. Ledoux" (NMB). 2 exs. "Spanien, 20.7.[19]66, Lag. Yeguas, Sierra Nevada, leg. Ledoux" (CFA). 5 exs., "Laguna de la Yeguas, Hisp., Sierra Nevada, leg. Ledoux, 20.8.[19]66" (CGW, CHF). 5 ♂♂, 5 ♀♀, "6: Spain: Granada: 2400 - 2700 m on S side of Sierra Nevada above Pampaneira: 15 April 1985" (CGF). 12 exs., "6: Spain: Granada: 2400 - 2700 m on S side of Sierra Nevada above Pampaneira: 15 April 1985, R.B. Angus & G.N. Foster" (CRA). 14 exs., "22/iv/1993 Spain Andalucía Granada, nr Capileira, Seepages, @ 2,000 m, D. Bilton leg." (CDB, CHF). 7 exs., "E-Andalucía, Pico Veleta, 4.VII.1990, I. Mazzoldi. P.", "Small brooklet on grassy slope, m 2000" (CPM, CSR). 1 ♂, "Spain. GR. [= Granada], Clayey stream by Granada - Malaga Rd., 15 km W of Granada, 21.v.1974, R.B. Angus." (CRA). The paratypes with the respective red label. **Notes:** Some of the paratypes had been determined by the author or other collectors as *H. productus* in the past and have a respective label.

Diagnosis: On the average smaller than the nominotypical subspecies (Fig. 15). Elytra with puncturation less coarse and impressed, nevertheless punctures not as small as in *H. productus*. This rather fine puncturation, however, may have induced some collectors to determine specimens to this species. Pubescence more distinct, almost whole elytra and pronotum covered with very thin golden setae, only sparser on disc of pronotum and middle of elytra in anterior third. This setation, however, is rather difficult to recognise, because it is typically mostly adhered to the surface due to preparation.

Ventral surface more or less as in the nominotypical subspecies. The setae, however, are distinctly more recognisable, and present on the metasternum also, the scratches longer than in most populations of the nominotypical subspecies. The rim at the sides of the prosternal process with setae more distinct also. Legs of a darker brown, femora often partially darkened.

♂♂: Median lobe of aedeagus in dorsal view rather narrow (Fig. 46). Paramere Fig. 47.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.05 - 3.60 mm (3.29 ± 0.13 mm), MW 1.40 - 1.60 mm (1.53 ± 0.05 mm), TL/MW 2.05 - 2.25 (2.14 ± 0.05).

Distribution: Southern Spain, Sierra Nevada (Fig. 82).

Derivatio nominis: The subspecies is named after the famous Alhambra, situated at the north-western slope of the Sierra Nevada (noun in the genitive case).

Hydroporus productus FAIRMAIRE, 1880

Hydroporus productus FAIRMAIRE, 1880: 248. - SHARP 1882: 807. - RÉGIMBART 1895: 28. - BEDEL & PEYERIMHOFF 1925: 355 (footnote), 372. - ZIMMERMANN 1919: 169 (partim). - ZIMMERMANN 1920: 99. - ZIMMERMANN 1931: 148. - GUIGNOT 1933: 359. - GUIGNOT 1947: 102. - GUIGNOT 1959: 385.

Hydroporus occultus SHARP, 1882: 456. - RÉGIMBART 1895: 29. - ZIMMERMANN 1919: 169 (partim). - ZIMMERMANN 1920: 96. - ZIMMERMANN 1931: 148 (partim).

Hydroporus occultus ab. *Normandi* RÉGIMBART: ZIMMERMANN 1931: 148 (partim).

Type material:

Hydroporus productus: **Lectotype (present designation):** ♂, "414", "productus Fairm. Alg." [hw Fairmaire], "Muséum Paris, 1906, Coll. Léon Fairmaire", "Lectotype, *Hydroporus productus* Fairmaire, des. H. Fery 1999" [red] (MNHN). No further syntypes found. **Type locality:** Algeria, Batna.

Hydroporus occultus: **Holotype** (♂): "Type" [round, red margin, most probably mounted by J. Balfour-Browne], "Type 400" [hw Sharp], "Algeria", "Sharp Coll., 1905-313", "H. *occultus* n.sp., Algeria" [hw Sharp], "Holotype, *Hydroporus occultus* Sharp, H. Fery 1999" [red] (BML). **Type locality:** Algeria.

Additional material studied: **Algeria:** 43 exs., "Environs de Biskra [ca. 300 km SE Algiers], de Vauloger", one specimen with additional "*Hydroporus productus* Fairm. (vidit Régimbart)", coll. Oberthür (MNHN). 1 ♀, "env. de Biskra" [hw Régimbart?], "de Vauloger" [hw Régimbart?], "*Hydroporus productus* Frm", female sex symbol, coll. Régimbart (MNHN). 1 ♂, "Environs de Biskra, de Vauloger", "productus Fairm., *occultus* Shp" [hw Régimbart], coll. Régimbart (MNHN). 1 ♀, "Environs de Biskra, de Vauloger", "H. *productus* Frm.", "Collect. Hauser" (NMW). 2 ♂♂, 1 ♀, "Algeria, Oase [= oasis] Biskra", "Collect. Hauser" (NMW). 2 ♂♂, "Environs de Biskra, de Vauloger", "*Hydroporus productus*" [hw Zimmermann] (ZSM). **Tunisia:** 1 ex., "productus 7252 Fairm." [hw Normand, a label in the box], after this label the specimen with "T. Le Kef [ca. 180 km SW Tunis], 4-1937 Dr. Normand", "Marais d'Abida en fauchant" [hw Normand] (INAT). I have not been able to study this specimen in detail.

Diagnosis: Species on average smaller than *H. normandi normandi* (Fig. 16). Coloration on principle the same, but often head paler than elytra, and in many specimens pronotum also paler. Surface more shiny. Sides of pronotum posteriorly subparallel or slightly converging forwards. Punctuation of pronotum very fine and sparse, that of the head subequal to that of *H. normandi normandi*. Punctuation of elytra still finer and sparser than in *H. normandi alhambrae* ssp.n., more or less as in *H. normandi ifnii* ssp.n. Diameter of punctures distinctly smaller than that of those of the puncture lines, although these are rather small also.

Notes: With respect to the punctuation FAIRMAIRE (1880: 248) provided: "... et sa ponctuation excessivement fine, à peine visible, mais assez serrée." This has induced ZIMMERMANN (1931: 149) - who had not seen the type of *H. productus* - to treat both taxa as different species. SHARP (1882: 456) obviously did not know this species when describing *H. occultus*, and reproduced the original description of *H. productus* only at the end of his work (l.c. p. 807).

Ventral surface with punctuation on metacoxal plates and first sternites finer and sparser than in *H. normandi normandi*.

♂♂: Median lobe of aedeagus Fig. 48; paramere Fig. 49.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.20 - 3.55 mm (3.40 ± 0.09 mm), MW 1.50 - 1.65 mm (1.58 ± 0.04), TL/MW 2.08 - 2.21 (2.15 ± 0.04).

Distribution: Algeria (Fig. 82); probably present in Tunisia also (with question mark in Fig. 82).

Hydroporus lluci sp.n.

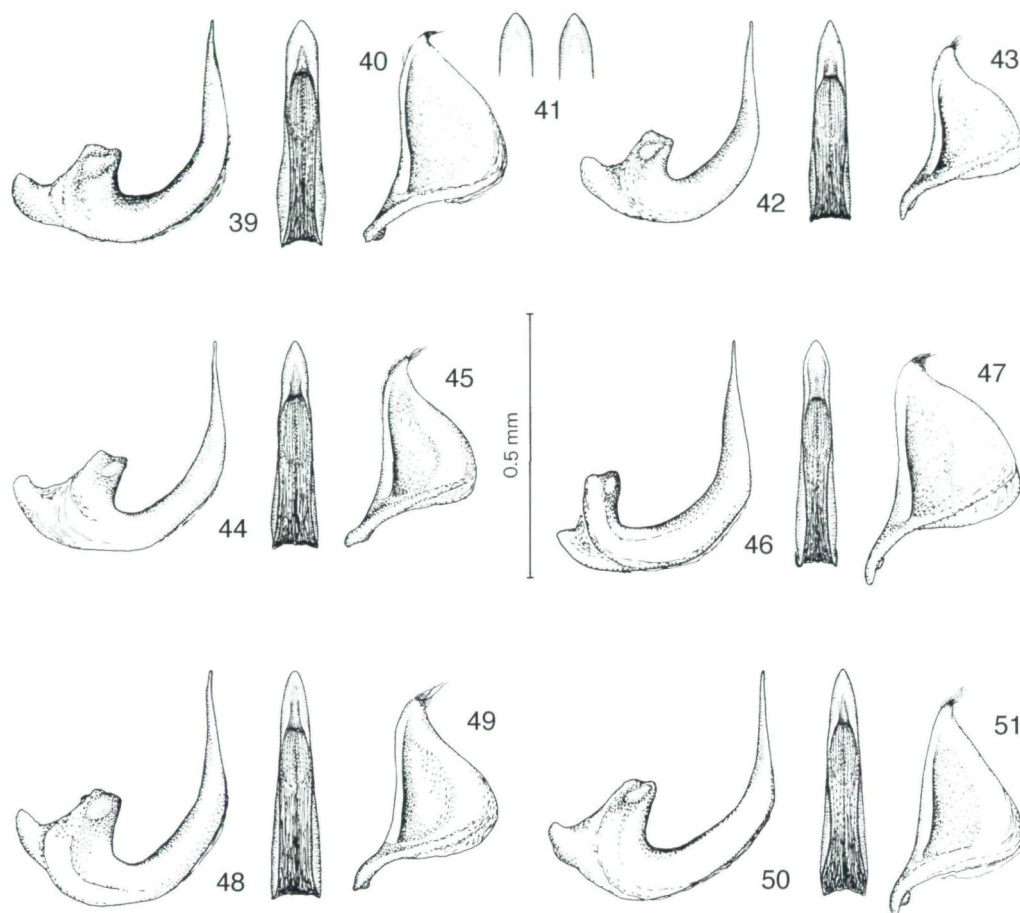
Hydroporus productus FAIRMAIRE: GARCIA-AVILÉS & SOLER 1990: 33.

Type locality: Spain, Balearics, Majorca, Lluc.

Holotype (♂): "2/4.1.1990, E [= Spain], Mallorca, nr [= near] Lluc, on C 710, pools with Schoenoplectus, G. Foster leg.", "Holotype, *Hydroporus lluci* sp.n., Fery det. 1999" [red] (NMW). **Paratypes:** 2 ♂♂, 6 ♀♀, same data as the holotype (CGF, CHF). 1 ♂, 1 ♀, "nr Lluc on C 710, Mallorca 2/4.1.1990, pools with Schoenoplectus, leg. G.N. Foster" (CGF). 1 ♀, "Mallorca, Fte Escorca, 18.7.1983, C. Montes" (CGF). 2 ♂♂, 1 ♀, "0201[19]90, Escorca PMA [= Palma de Mallorca], Monestir de Lluc, 3 G.N. Foster leg.", "Hydroporus lnormandi [sic!] cplx, G.N. Foster det. 1990" (CIR). 1 ♀, "Mallorca, La Puebla San Miguel, 30.3.[19]88, Leg. H. Bußler", "Hydroporus normandi Rég., det. H. Bußler" (CHB). 1 ♂, 1 ♀, "Mallorca (PM 11), 2-II-1988, Torrent d'Almadrà, *Hydroporus productus*" (CJGA). 1 ♀, "Mallorca (PM 66), 20-II-1988, Torrent de ses Torretes, *Hydroporus productus*" (gonocoxosterna absent) (CJGA). 1 ♂, "12.2.[19]90, España, Prov. PM (Mallorca), O [= E] Solter, Torella, Rinnsal, Quelle [= riuulet, spring], Fery leg." (CHF). The paratypes with the respective red label.

Additional material studied: **Spain:** 1 ♀, "Menorca (M31), 6-III-1988, Torrent d'Es Puntarró, *Hydroporus productus*" (genitalia absent) (CJGA).

Diagnosis: Habitus elongate, sides of elytra almost parallel, less curved than in *H. normandi normandi*, with maximum width in the middle of the first third of elytra, sides converging a little backwards before curving to apex (Fig. 17). Species with an appearance generally more delicate and flatter than that of *H. normandi*. Colour somewhat lighter brown, particularly with sides of elytra paler; extension of black colour on frons of head smaller, and pronotum having a paler appearance than disc of the elytra. This



Figs. 39 - 51: Median lobe of aedeagus in lateral and dorsal view of (39) *Hydroporus normandi normandi*, (41) *idem*, variants of the apex, (42) *H. normandi ifranensis* ssp.n., (44) *H. normandi ifnii* ssp.n., (46) *H. normandi alhambrae* ssp.n., (48) *H. productus*, (50) *H. lluci* sp.n.; Paramere of (40) *H. normandi normandi*, (43) *H. normandi ifranensis* ssp.n., (45) *H. normandi ifnii* ssp.n., (47) *H. normandi alhambrae* ssp.n., (49) *H. productus*, (51) *H. lluci* sp.n.

effect of coloration, nevertheless, may be due to a slight immaturity of the specimens studied. Head on average narrower, interocular distance slightly smaller than half of the pronotal width between hind angles. Clypeus more evenly rounded anteriorly. Pronotum in dorsal view almost subparallel in posterior half, but not converging to base, thus point of maximum width at base. Punctuation of elytra on average finer and a little sparser, puncture lines less prominent.

Ventral surface with metacoxal lines less diverging anteriorly (Fig. 8) than in *H. normandi*. Punctuation on first two sternites distinctly denser. Prosternal process lighter brown.

♂♂: Median lobe of aedeagus as in Fig. 50; paramere Fig. 51.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.05 - 3.80 mm (3.35 ± 0.19 mm), MW 1.40 - 1.75 mm (1.53 ± 0.09 mm), TL/MW 2.14 - 2.25 (2.20 ± 0.03).

Notes: The obvious geographical isolation induced me to treat this population as a species rather than a subspecies. It has been erroneously assigned to *H. productus* by GARCIA-AVILÉS & SOLER (1990), a mistake which will be due to the incorrectly reproduced figure of the median lobe in FRESNEDA & HERNANDO (1988: 27) (personal communication by J. Fresneda).

Distribution: Spain, Balearics, Majorca and Menorca (Fig. 82).

Derivatio nominis: The species is named after the Patron of the Monestir de Lluc (Catalan spelling for Monastery of Luke) in the north of Majorca, close to which the majority of the specimens have been found by G.N. Foster (Ayr, Great Britain). He kindly has made available his material and proposed the use of this name.

II. The *Hydroporus melanarius*-subgroup

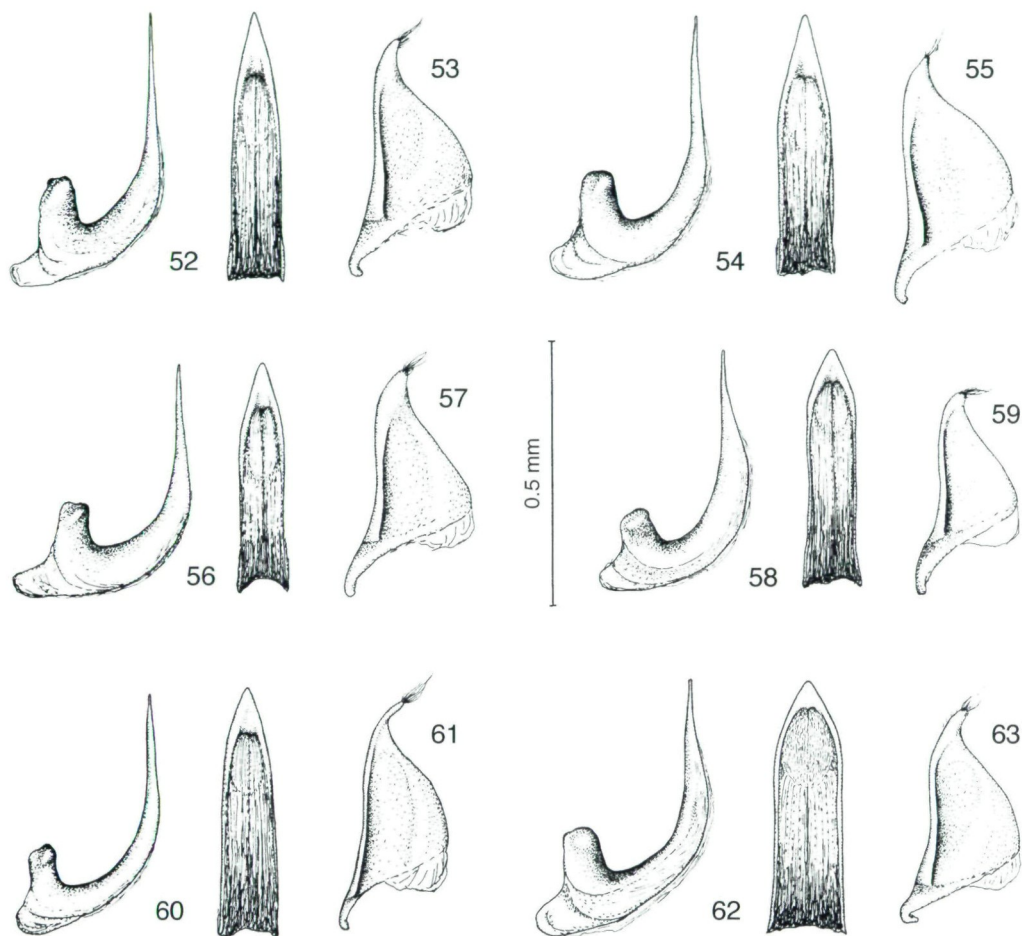
The members of the *H. melanarius*-subgroup are more or less coloured like the species of the *H. memnonius*-subgroup. The males have the median lobe in lateral view strongly bent in distal third, and almost straight in apical half, the parameres are less broadly triangular, the apex longer than in the *H. memnonius*-subgroup. In contrast to the representatives of the *H. memnonius*-subgroup the gonocoxae are flat oval in cross-section and lack an angularity (see e.g. Fig. 80). Besides the species of the *H. necopinatus*-complex, *H. melanarius* and *H. longicornis* belong to the *H. melanarius*-subgroup, but these are not treated in detail below. Both can be recognised by the dense suberect setae on the posterior part of the metacoxal processes, the strongly microreticulated, almost matt elytra, and their subparallel habitus (Figs. 23, 24). The median lobes of aedeagus and the parameres are given in Figs. 58, 59 and Figs. 64, 65 respectively.

Notes: In contrast to the otherwise externally close *H. melanarius*, the males of *H. longicornis* have the first pro- and mesotarsal article not unusually developed, and the median lobe of aedeagus is rather long and its ventral side is not provided with bristles. In this respect the species shows affinities to the *H. ferrugineus*-subgroup, in particular to *H. obsoletus*. On the other hand *H. longicornis* (the type species of *Sternoporus* FALKENSTRÖM, 1930) seems also to be closely related to the species with strongly sinuate posterior margin to the metacoxal processes, and the shape of its median lobe resembles that of *H. jacobsoni*. In addition I have studied a very few specimens from south-eastern Europe which seem to lack the suberect setae on the metacoxal processes. These problems, however, are not discussed in detail in the present work.

Notes: I have not been able to locate any syntype of *Hydroporus melanarius* STURM, 1835, in the collection of the ZSM.

The *Hydroporus necopinatus*-complex

The members of the *H. necopinatus*-complex have two centres of distribution, one from Portugal over northern Spain and western France to the south of Great Britain (Fig. 83), the other from south-eastern Europe over Turkey to Azerbaijan. The species in general



Figs. 52 - 63: Median lobe of aedeagus in lateral and dorsal view of (52) *Hydroporus necopinatus necopinatus* ssp.n., (54) *H. necopinatus robertorum* ssp.n., (56) *H. necopinatus roni* ssp.n., (58) *H. melanarius* (specimen from Bohemia), (60) *H. hebaueri*, (62) *H. lenkoranensis*; Paramere of (53) *H. necopinatus necopinatus* ssp.n., (55) *H. necopinatus robertorum* ssp.n., (57) *H. necopinatus roni* ssp.n., (59) *H. melanarius*, (61) *H. hebaueri*, (63) *H. lenkoranensis* sp.n.

have an elongate oval outline in dorsal view which strongly resembles that of *H. cantabricus*. The upper surface is dark brown, microreticulated but usually shiny, and rather strongly punctured (see below, however, for some deviating specimens of *H. necopinatus roni* ssp.n.). The elytral puncture lines are imperceptible except for a few larger punctures near the base. In some specimens some normal elytral punctures are a little closer where usually a puncture line is assumed. Antennae brown, articles often slightly darkened distally. Without dissection the species of this complex cannot be distinguished with certainty, neither one from another nor from *H. cantabricus* which belongs to the *H. memnonius*-subgroup. The females show no conspicuous external differences to the males. So far matt morphs have not been reported, but in some specimens the microreticulation is more strongly impressed.

Hydroporus necopinatus sp.n.

This new species has been treated in the past as *H. cantabricus* by all authors since SHARP's description (1882: 457). This mistake is due to the immense similarity of the external characteristics and omitting the study of the male and female genitalia. The author subdivides the taxon into three subspecies using the size of their median lobes, and, in addition, considering their geographical distribution which so far seems to be divided into three well defined areas.

Although in general the body outline of *H. necopinatus* sp.n. in dorsal view is not sub-parallel, I have studied specimens which have the sides less rounded - exceptionally in specimens from the Iberian peninsula, but progressively more frequent in France, and particularly in *H. necopinatus roni* ssp.n. from England. Additionally in France and England most of these specimens have the upper surface rather matt, and thus resemble *H. melanarius*. They can be distinguished from this species by the lack of the dense sub-erect setae on the posterior part of the metacoxal processes, and the shape of the median lobe of aedeagus. The reader is referred to FOSTER & ANGUS (1985: 8, 12) who have intensively studied English specimens in particular and point to the possibility to confuse *H. melanarius* and *H. necopinatus* sp.n. (under the name *H. cantabricus*). These authors offer the length of the extremity of the median lobe in dorsal view (distance between the orifice at the anterior margin of the corrugated membrane to the tip of the median lobe) as a characteristic for distinguishing the two taxa: short in *H. melanarius* (0.057 - 0.090 mm), long in *H. necopinatus* sp.n. (0.094 - 0.136 mm).

Derivatio nominis: The species is given the Latin name *necopinatus* which means "unexpected".

Hydroporus necopinatus necopinatus ssp.n.

Hydroporus cantabricus SHARP: GANGLBAUER 1892: 477 (partim). - GOZIS 1910-1915: 181, 182 (footnote by E. BARTHE) (partim). - ZIMMERMANN 1919: 168 (partim). - ZIMMERMANN 1920: 82 (partim). - FUENTE 1921: 79 (248) (partim). - ZIMMERMANN 1931: 150 (partim). - GUIGNOT 1933: 362 (partim). - GUIGNOT 1947: 103 (partim). - IENISTEA 1978: 297 (partim). - RÉGIL CUETO 1985: 15. - FOSTER 1986: 12. - GONZÁLEZ & NOVOA 1988: 63. - RICO & al. 1990: 62 (partim). - GARRIDO GONZÁLEZ & RÉGIL CUETO 1994: 23.

Hydroporus longulus MULSANT & REY: SEIDLITZ 1887: 75 (partim). - GOZIS 1910-1915: 180, 182 (footnote by E. BARTHE) (partim).

Type locality: Portugal, Serra da Estrêla, Torre.

Holotype (♂): "21.7.1987, Portugal, Serra da Estrêla, Umg. [= near] Torre, ca. 1900 m, gr. Lache [= pool], Fery leg.", "Holotype, *Hydroporus necopinatus necopinatus* ssp.n., Fery det. 1999" [red] (NMW).

Paratypes: 71 exs., same data as the holotype (CGC, CMT, CHF). 1 ♂, same data as the holotype, but found in a nearby fen bog (CHF). 4 ♂♂, 3 ♀♀, "28/iii/1993, Portugal - Beira Alta, Serra da Estrela, Valley below Estrela peak - snow melt pools. D.T. Bilton" (most probably the same locality as that of the holotype; personal communication by D.T. Bilton) (CDB, CHF). 1 ♂, "22/vi/1993 Portugal Beira Alta, Serra da Estrela, Large sandy lochan on plateaux NW of main summit, D. Bilton leg." (CDB). The paratypes with the respective red label.

Additional material studied: **Portugal:** 6 exs., "3/v/1993 Portugal, Minho, Serra de Arga, Senhora do Minho, Pools @ 750 m" (CDB). 1 ♂, 1 ♀, "4/v/1993 Portugal Minho, Temporary pools along Lima, 5 km E of Viana do Castelo" (CDB). 2 exs., "5/v/[1]993 Portugal Viana do Castelo, Serra de Arga Pools on sum-

mit @ 750 m, D.T. Bilton leg." (CMT). 1 ♂, 1 ♀, "11. Vila Mou [near Ponte de Lima], Alto Minho, acid pools in Rio Lima floodplain, G.N. Foster 9 January 1991" (CGF). 1 ♀, "11.2.[19]96 Portugal, Viana do Castelo, Serra de Arga, 800 m Tümpel [= pond], Fery leg." (found together with *H. gyllenhalii*) (CHF). 1 ♂, 2 ♀♀, "10.3.1997 (P) [= Portugal] Minho, Sra de Arga, NE Viana Cast., 800 m, Fery leg." (CHF). **Spain:** 3 ♂♂, 2 ♀♀, "Rebordáns-Pontevedra, Galicia - Spain, 26.4.1986, X. Gonzalez leg." (CJF, CHF). 3 ♂♂, 2 ♀♀, "ESP: Galicia, Pontevedra, Rebordáns-Tui, 8.v.1986, Xaime Gonzalez leg.", "*H. cantabricus*, M. Balke det. 1987" (CHF). 2 ♀♀, female sex symbol, "España: Coruña. Ames Bertamiráns [ca. 10 km W Santiago], rio Sar (S-3), C. de Paz leg. 01.04.1986", "*Hydroporus cantabricus*, C. de Paz det. 1989"; specimens very immature, genitalia not exactly identifiable (CDP). 1 ♂, "Villaverde de Pontones [ca. 15 km SE Santander], b. Santander lg. H. Franz" (CGW). 2 ♂♂, "9. Carreço [ca. 5 km N Viana do Castelo], Alto Minho, Portugal, slightly brackish coastal pool, G.N. Foster, 8 January 1991" (CGF). 7 exs., "29: Spain: Burgos: Barençillas [incorrect spelling! = Barcenillas de Cerezos!] 2 km SE of Espinosa de los Monteros [ca. 80 km SWW Bilbao]: field ponds: 22 April 1985, R.B. Angus & G.N. Foster" (CRA, CAN). 2 ♂♂, "29: Spain: Burgos: Barençillas 2 km SE of Espinosa de los Monteros: field ponds: 22 April 1985" (CGF, CHF). 1 ♂, "S Spain" (on glue card), on reverse "La Costana [ca. 15 km ENE Reinosa], near Reinosa, 30.V.1974, R.B. Angus" (CRA). 2 ♂♂, 3 ♀♀, "4.4.1999, Spain, Burgos, ca. 2 km W Soncillo, ca. 30 km E Reinosa, ponds on meadow, Fery leg." (CHF). 1 ♂, "Espania/Leon 362, Meroy [ca. 70 km NW León] 9.7.1988, leg. J. Garrido" (CLH); this specimen has been used for the scanning electron microscope figures in HENDRICH (1990: 245). **Doubtful or inexact localities:** 1 ♂, 1 ♀, "*Hydroporus cantabricus*, Portugal", "7242 cantabricus" (CFP). 1 ♂, "Portugal, Sequens '95", "Coll. D. v. d. Hoop" (ZMAN); the specimen has the median lobe in lateral view less curved at the base. This is why it cannot be assigned without doubt to *H. necopinatus* sp.n. or even to one of its subspecies. 1 ♂, "*Hydroporus cantabricus* Sharp, J. Clermont" [hw Clermont?], "Hispania, Clermont, S. de Gredos" (ZMAN); this specimen stands in the collection of the ZMAN together with one male of *H. nigrita*: "*Hydroporus cantabricus* Sharp, J. Clermont" [hw Clermont?], "Hispania, S. de Gredos, Clermont" [hw Clermont?]. The record of *H. necopinatus* sp.n. from the Sierra de Gredos strongly needs confirmation.

Notes: BERTRAND (1949: 26; 1968: 67) reports *H. cantabricus* from the Lac de Panticosa in Huesca province (northern Spain, Pyrenees) in an altitude of 1639 m, a record which is cited by RIBERA & AGUILERA (1996: 31) and RIBERA & al. (1996b: 5). I have studied the collection Bertrand in the MNHN, but not been able to find the specimen(s). The record strongly needs confirmation because a confusion with e.g. *H. longulus* cannot be excluded. In any case for the moment the record can be attached neither to *H. cantabricus* nor to one of the subspecies of *H. necopinatus* sp.n.

Diagnosis: Habitus oval elongate, not distinctly subparallel, more rounded (Fig. 18), but body outline somewhat variable. Dorsal surface dark brown or black; head with anterior margin and a small transversal area on frons of a lighter brown, remainder - in contrast to *H. cantabricus* - dark brown. Sides of pronotum with a lighter brown margin, otherwise dark as elytra; sides of elytra diffusely paler. Only exceptionally elytral suture, and anterior and posterior margin of pronotum paler, these specimens seem to be immature. Surface microreticulated, but in all specimens studied shiny. Punctures on head small, more or less evenly distributed. Sides of pronotum with coarse punctures, on disc punctures smaller and less dense. Puncturation of elytra coarse, not double. Internal and external puncture lines virtually absent, in some specimens a few isolated larger punctures only, or two punctures of normal size grouped together. Sides of pronotum more or less evenly curved, with maximum width at base. Maximum width of elytra between anterior and central third.

Ventral surface with puncturation on metacoxal plates, metacoxae except the middle and first two sternites coarse, sides of third sternite also rather coarsely punctured. Microreticulation weaker than in *H. cantabricus*, on metacoxae and first sternites absent or at least almost imperceptible, on metacoxal plates weak, on last sternites rather distinct. Metacoxal lines diverging forwards. Antennae brown, in some specimens slightly darkened distally.

♂♂: Median lobe of aedeagus in lateral view stronger curved basally, straight apical part longer than in both other subspecies (Fig. 52). Paramere Fig. 53.

♀♀: Without conspicuous external differences to males.

Measurements: TL 2.95 - 3.8 mm (3.27 ± 0.21), MW 1.5 - 2.00 mm (1.72 ± 0.12 mm), TL/MW 1.85 - 1.95 (1.91 ± 0.03).

Notes: Records of *H. cantabricus* from northern Spain (RÉGIL CUETO 1985: 15; GARRIDO GONZÁLEZ & RÉGIL CUETO 1994: 23) most probably refer to *H. necopinatus necopinatus* ssp.n.

Distribution: Central and northern Portugal, northern and north-western Spain (Fig. 83).

Hydroporus necopinatus robertorum ssp.n.

Hydroporus cantabricus SHARP: GANGLBAUER 1892: 477 (partim). - GOZIS 1910-1915: 181, 182 (footnote by E. BARTHE) (partim) - ZIMMERMANN 1919: 168 (partim). - ZIMMERMANN 1920: 82 (partim). - ZIMMERMANN 1931: 150 (partim). - GUIGNOT 1933: 362 (partim). - HOULBERT 1934: 87. - SAINTE-CLAIRE DEVILLE. 1935: 69. - GUIGNOT 1947: 103 (partim). - IENISTEA 1978: 297 (partim). - FOSTER 1986: 12.

Hydroporus celatus CLARK: BEDEL 1881: 240, 267.

Hydroporus longulus MULSANT & REY: SEIDLITZ 1887: 75 (partim). - GOZIS 1910-1915: 180, 182 (footnote by E. BARTHE) (partim).

Type locality: France, Manche, Bois-l'Abbé, Forêt de Cerisy, ca. 16 km NEE Saint Lô.

Holotype (♂): "Manche, Bois-l'Abbé, Forêt de Cerisy, ornière et flaque, 18-4-[19]93, Constantin" (FR50, 30UXV532519), "Holotype, *Hydroporus necopinatus robertorum* ssp.n., Fery det. 1999" [red] (NMW).

Paratypes: France: 37 ♂♂, 29 ♀♀, same data as the holotype (CRCO, CHF). 9 ♂♂, 12 ♀♀, "Manche, Bois-l'Abbé, Forêt de Cerisy, ornière et flaque, 21-4-[19]93, Constantin" (FR50, 30UXV532519) (CRCO, CHF). 7 ♂♂, 9 ♀♀, "Manche, Bois-l'Abbé, Forêt de Cerisy, ornière av. herbes, 27-5-[19]93, Constantin" (FR50, 30UXV532519) (CRCO). 13 ♂♂, 15 ♀♀, "Manche, Bois-l'Abbé, Forêt de Cerisy, ornière av. feuille, 2-3-[19]94, Constantin" (FR50, 30UXV535514) (CRCO, CHF). 3 exs., "Calv. - Ft de Cerisy, chemin d. Mathurins, ornière sur coupe, 27-8-[19]94, Constantin" (FR14, 30UXV514535) (CRCO). 14 exs., "Manche, Bois-l'Abbé, Forêt de Cerisy, ornière av. feuille, 28-5-[19]95, Constantin" (FR50, 30UXV53 52) (CRCO, CHF). 19 ♂♂, 25 ♀♀, "Manche, forêt de Cerisy, chemin de Neubourg, 21-3-1999, R. Constantin" (CRCO). 5 ♂♂, 2 ♀♀, "Forêt de Pirou [35 km NWW Saint Lô, 6 km SSW Lessay], Manche, 21.IV.[19]76, R. Constantin leg." (l'Eventard, FR50, 30UXV065474) (NMB, CRCO). 1 ♀, "Manche, env. Lessay, forêt de Pirou, mare av. Sphagnum, 21.4.[19]76, Constantin" (l'Eventard, FR50, 30UXV065474) (CRCO). 1 ♂, 1 ♀, "Manche, env. Lessay, forêt de Pirou, mare av. Sphagnum, 24.9.[19]76, Constantin" (l'Eventard, FR50, 30UXV065474), "cantabricus Sharp, C. Legros det." (CRCO). 1 ♀, "Manche, env. Lessay, forêt de Pirou, mare av. Sphagnum, 20.12.[19]87, Constantin" (l'Eventard, FR50, 30UXV065474) (CRCO). 1 ♂, 2 ♀♀, "Forêt de Pirou, Manche, 16-12-[19]88, R. Constantin leg." (l'Eventard, FR50, 30UXV065474) (CRCO). 13 exs., "Manche, Pirou, Forêt pr. Eventard, trou pr. tourbière, 6-2-[19]93, Constantin" (FR50, 30UXV065474) (CRCO, CPR). 2 exs., "Ft de Pirou, Manche 21.IV.[19]76, R. Constantin", "*Hydroporus cantabricus* Sharp, det. M. Brancucci [19]87" (CLH, CHF). 3 ♂♂, 1 ♀, "Forêt de Pirou, Manche 27.XII.1987, R. Constantin leg.", "*Hydroporus cantabricus* Sharp, R. Constantin det. [19]88" (CHF). 1 ♂, "Forêt de Pirou, 3.vi.[19]95, R. Carr" (CRCA). 1 ♂, "Manche, lande Lessay, 1 km West Corbuchon, fossé av. Sphagnum, 20.6.[19]87, Constantin" (FR50, 30UXV11 45) (CRCO). 2 exs., "Lessay, tourbière de Mathon, 8-5-[19]91, 50, R. Constantin" (CRCO). 6 exs., "Lessay, tourbière d. Mathon, 11-5-[19]91, 50 - R. Constantin" (FR50, 30UXV078526) (CRCO). 1 ex., "Manche, Lessay, tourbière de Mathon, trou à Sphagnum, 16-5-[19]92, Constantin" (FR50, 30UXV078526) (CRCO). 1 ex., "Manche, Lessay, tourbière pr. aéroport, 6-6-[19]92, Constantin" (FR50, 30UXV078526) (CRCO). 1 ♂, "Manche, Lessay, 1 km West aéroport, grande tourbière, 9-1-[19]93, Constantin" (FR50, 30UXV095512) (CRCO). 1 ♂, "Manche, Lessay, bord de l'Ay au Nord de Mathon, 20-3-[19]93, Constantin" (FR50, 30UXV076530) (CRCO). 2 ♀♀, "Manche Sud: Ger, Ft de la

Lande-Pourri [40 km E Avranches, 52 km SSE Saint Lô], pt ruisseau, lisier, 5-9-[19]92, Constantin" (FR50, 30UXU62 91) (CRCO). 3 exs., "Manche, Gatteville le Phare [24 km E Cherbourg], 25-IV-1993, J.F. Elder" (FR50, 30UXA23 05) (CJE). 1 ♂, 1 ♀, "Manche, Beaubigny, ruisseau du Doué [26 km SSW Cherbourg], marécage à Iris, 15-5-[19]93, Constantin" (FR50, 30UWV856747) (CRCO). 3 exs., "Manche, Bois Le Hommet-d'A. [= d'Arthenay, 12 km NW Saint Lô], 27-III-1994, J.F. Elder" (FR50, 30UXV30 52) (CJE). 4 exs., "Manche, Millières, La Bézanterie [28 km NWW Saint Lô], tourbière, fossé 25-2-[19]95, Constantin" (FR50, 30UXV122515) (CRCO). 1 ♂, "Francia Millieres, La Bézanterie, 3.6.[19]95 V. Volpe", "Hydroporus cantabricus, det. Rocchi [19]96" (CSR). 1 ex., "Manche, La Feuillie, Lande 3 km ouest [28 km NWW Saint Lô], tourbière av. Pines, 11-12-[19]94, Constantin" (CRCO). 1 ex., "Orne, Ft du Perche [44 km E Alençon], l'Etoile, Randonnai, 19 Juin 1997, J.F. Elder" (FR61, 31UCP28 91) (CJE). 1 ex., "Muneville le B. [Bingard], Corbuchon [28 km W Saint Lô], 22/III/[19]92" (FR50, 30UXV11 45) (CJE). 1 ♀, "France", "Sharp Coll., 1905-313", "Forêt de Cinglais [14 km S Caen], 27/VI [18]89" [hw Régimbart?], "cantabricus, Sh. Calvados" [hw Régimbart?] (BML). 1 ♀, "G.C. Champion Coll., B.M. 1927-409" (same pin and glue-card as in the specimen from "Forêt de Cinglais" above) (BML). 2 ♂♂, 2 ♀♀, "France", "Sharp Coll., 1905-313" (same pin and glue-card as in the specimen from "Forêt de Cinglais" above) (BML). 1 ♀, "cantabricus, Shp. Calvados" [hw Régimbart?], "G.C. Champion Coll., B.M. 1927-409" (same pin and glue-card as in the specimen from "Forêt de Cinglais") (BML). 1 ♂, mounted on a new glue-card, below the original glue-card (same as in the specimen from "Forêt de Cinglais" above), "France", "Sharp Coll., 1905-313", "H. cantabricus Shp., diss. G.N. Foster, 10/1977" [hw Foster] (BML). 13 exs., "fêt [= forêt] de Cinglais, (Calvados)", seven of them with "Hydroporus cantabricus Sharp.", six with "Hydroporus cantabricus Sharp., dét. Fauvel" (IRSN). 5 exs., "foret de Cinglais" (IRSN). 1 ex., "f. de Cinglais, mares 6,8,9" [hw Fauvel?], "Coll. A. Fauvel, Hydroporus cantabricus Sh., R.I.Sc.N.B. 17.671" (IRSN). 3 exs., "Forêt de Cinglais, Dubourgais" (CLH). 3 exs., "Fort. de Cinglais, Dubourgais" [yellow], "Museum Paris, 1983, Coll. Cl. Legros" (MNHN). 1 ex., "Fort. de Cinglais, Dubourgais" [yellow] (NMW). 1 ex., "Fort de Cinglais", "Sharp 457." (NMW). 13 exs., "Ft de Cinglais, Calvados, Dubourgais", "Museum Paris, 1983, Coll. Cl. Legros", one specimen with "♂ disséqué" and "cantabricus Sharp." (MNHN). 1 ♂, "Ft de Cinglais" [hw Régimbart?], coll. Régimbart (MNHN). 1 ex., (abdomen without inner parts) "ex Winkler, Boll. Imp. N. 50.3.3.56" [label with red margin], "foret de Cinglais, Dubourgais" [label with red margin], "Hydroporus cantabricus Sharp., det. Franciscolo", "Hydroporus cantabricus Shp., det. V. Guéorguiev 1972" (MRTO). 1 ♂, "Calvados", small brown round label, "Coll. Odier., B.M. 1921-288." (BML). 2 ♀♀, both on one pin, "Calvados", "Coll. Odier., B.M. 1921-288." (BML). 5 exs., "Calvados", "Hydroporus cantabricus Sharp, Coll. Reitter", one specimen with additional "cantabricus, Calvados, Fauvel" (HNHM). 2 exs., both on the same pin, "Cantabricus Sh. Calvados", "ex Musæo des Gozis.", "Museum Paris, ex Coll. R. Oberthur" (MNHN). 4 exs., all on the same pin, "Cantabricus Sh., ex typ. Calvados", Hydroporus cantabricus Sharp, Calvados", "Ex Musæo S. de Uhagon, 1904", "Museum Paris, ex Coll. R. Oberthur" (MNHN). 1 ex., "Fauvel, Calvados", "Hydroporus cantabricus", "Ex Musæo des Gozis.", "Museum Paris, ex Coll. R. Oberthur" (MNHN). 1 ♀, "cantabricus, Sh. ex typ. Calvados" [hw Régimbart?], "Coll. Odier., B.M. 1921-288." (BML). 1 ex., "cantabricus Sharp Calvados" (MNB). 2 exs., "1318", "Calvados, Fauvel", "Coll. Séverin, Détermin., Régimb. 1891", "Régimbart det., 1891: Hydroporus cantabricus Shp." (IRSN). 6 exs., "Calvados, Fauvel", "cantabricus" (ZSM). 1 ♂, "Calvados" [hw Régimbart?], "Coll. G. Tempère, Ex coll., E. Giraud" (CFB). 1 ♂, "cantabricus", "Fauvel, Calvados, coll. Everts" [hw Everts?], "Fauvel, Calvados" [rose label, hw Fauvel?] (ZMAN). 1 ♂, "Fauvel, Calvados" [rose label, hw Fauvel?], "in coll. Everts: Hydroporus cantabricus Sharp" (ZMAN). 1 ♀, "Fauvel, Calvados", "Ganglbauer, Fauvel, Calvados" [rose-red label], "in coll. Everts: Hydroporus cantabricus Sharp" (ZMAN). 4 exs., "Fauvel [18]97, Calvados", "cantabricus", "Co-Typus" [red], one specimen with additional "cantabricus, Calvados" (NMW). 5 exs., "Fauvel [18]89, Calvados", "Co-Typus" [red], one specimen with additional "cantabricus, Sharp Calvados" (NMW). 1 ex., "Calvados, Frankreich", "5." [pink], "Bernh. don." (NMW). 1 ♂, 2 ♀♀, "Calvados, Wencker [?] [round label, hw Leprieur?], "Cantabricus Sh., = celatus Bed." [green label, hw Leprieur], "ex Leprieur", "Muséum Paris, Coll. M. Pic" (MNHN). 1 ♂, "Morlaix [ca. 60 km ENE Brest, Finistère, Bretagne], E. Hervé", "Hydroporus celatus", "c. Epplsh., Steind. d." (NMW). 1 ♀, "Morlaix , E. Hervé", "Coll. Odier., B.M. 1921-288." (BML). 1 ♂, 1 ♀, "Brigognan [ca. 40 km NNE Brest, Bretagne], Finist. [= Finistère] 9.[19]02", "Coll. Odier., B.M. 1921-288." (BML). 2 exs., "Dans mares superficielles de la lande rase", "Menesguen [ca. 7 km SSW Crozon] (Finistère) 26-V-[19]63, J. Barbier", "Museum Paris, 1983, Coll. Cl. Legros" (MNHN). 2 exs., "Antrain s/Couesnon [ca. 50 km NNE Rennes, Ille-et-Villaine, Bretagne]" [hw Fauvel?] (IRSN). 4 exs., "St Barbant [48 km NW Limoges], (Hte Vienne), 19-4-[18]93, L. Mesmin", coll. Régimbart (MNHN). 1 ♂, "St Barbant, (Hte Vienne), 28-3-[18]92, L. Mesmin", coll. Régimbart (MNHN). 1 ex., "St Barbant, (Hte Vienne), 19-4-[18]93, L. Mesmin", "H. cantabricus Shp" [hw

Régimbart], "Regimbart", "Museum Paris, ex Coll. R. Oberthur" (MNHN). 1 ex., "St Barbant, (Hte Vienne), 19-4-[18]93, L. Mesmin", "Hydroporus cantabricus Shp, celatus Bedel" [hw Régimbart?], "Dr Régimbart", "Museum Paris, ex Coll. R. Oberthur" (MNHN). 1 ex., "St Barbant, (Hte Vienne), 19-4-[18]93, L. Mesmin", "Hydroporus cantabricus Sharp, Coll. Reitter" (HNHM). 3 exs. "St. Barbant., Hte. Vienne.", "Collect. Hauser", "Hydroporus cantabricus Sharp, Fery det." (NMW). 1 ex., "St Barbant, (Hte Vienne), 28-3-[18]92", "Collect. Hauser", "H. cantabricus Sharp." (NMW). 1 ♂, 1 ♀, both on one pin, "Haute Vienne, L. Bleuse", on reverse "St Barbant, 20-10, 1894", "Hydroporus cantabricus, Sharp", and a small green rectangular label (MNHN). 1 ♀, "Haute Vienne, L. Bleuse", on reverse "St Barbant, 20-10, 1894", "cantabricus Shp" [hw Régimbart], on reverse "Nov. 1903" [hw Régimbart], a small rectangular label (MNHN). 1 ex., "Ht Vienne", "Hydroporus cantabricus Sh., det. Dr. Ihssen" (ZSM). 1 ♀, "Gironde, Vaulogé [sic! = collector Vauloger?]", "Cantabricus Shp, Celatus Bedel" [hw Régimbart], coll. Régimbart (MNHN). 1 ♂, "Gironde, Cassy [between Andernos-les-Bains and Lanton], 3.5.1961, C. Jeanne", "Hydroporus cantabricus, det. Rocchi [19]80" (CSR). 1 ex., "Lacanau [WNW Bordeaux] (33) [= Gironde], 2/5/[19]86", "H. cantabricus" (CPL). 1 ex., "F/Gironde, Lacanau 3.5.[19]86, leg. P. Leblanc" (CLH). 5 exs., "Mérignac [W Bordeaux], Gironde, VI-1945-Coiffait" [hw Coiffait?], "Museum Paris, 1960, Coll. F. Guignot" (MNHN). 1 ♂, "Mérignac, Gironde, VI-1945-Coiffait" [hw Guignot], "Hydroporus cantabricus Sharp, Fery det." (CHF). 1 ♂, "Beutre [district of Mérignac], 24.8.[19]11", "cantabricus, garde'l. [= "kept one specimen"]" [hw Régimbart?], "Coll. G. Tempère, ex coll., E. Giraud" (CFB). 3 ♀♀, on reverse of the glue card "7914", "Gironde, Hostens [ca. 40 km S Bordeaux], 13-9-[19]75, G. Tempère" (CFB). 1 ♂, "France (Gironde), Hostens", "Marais du Cla, 12-4-[19]97 F. Bameul" (CFB). 1 ♂, "Gironde, Bordeaux, H. Coiffait, 27.7.[19]47", "Det Dr Guignot, Hydroporus cantabricus Sharp - 1947" [hw Guignot] (CFB). 1 ♀, on reverse of the glue card "1ul 84 [?]", "Env. de Bordeaux, Léognan [S Bordeaux], 27-5-[19]78, G. Tempère" (CFB). 1 ♂, "Francia, Arcachon, 5.II.1952, leg. Ardoïn", "Hydroporus cantabricus, det. M. Brancucci" (NMB). 3 ♂♂, "Landes, Belhade [ca. 50 km S Bordeaux], 4-5-[19]58, G. Tempère", two specimens with "7023" on reverse of the glue card (CFB). 3 ♂♂, 3 ♀♀, on reverse of the glue card "9180", "Landes, Biscar[r]osse [ca. 60 km S Bordeaux], 11-5-[19]72, G. Tempère" (CFB). 10 exs., "30: France: 1 km S of Sorigny [ca. 10 km S Tours, Indre-et-Loire]: flooded meadows and pools: 24 April 1985, R.B. Angus G.N. Foster" (CRA). 3 ♂♂, "30: France: 1 km S of Sorigny: flooded meadows and pools: 24 April 1985, Indre et Loire." (CGF, CHF). 2 exs., "Sarlat [ca. 120 km E Bordeaux, Dordogne], 5.1986, entomon collections", "H. cantabricus" (CHH). 10 exs., "F/Dordogne, St. Michel en Montaigne [31T BK6573, 48 km E Bordeaux], 20.5.[19]87, Secq leg." (CLH). 2 ♂♂, 2 ♀♀, "St Michel de Montaigne, Dordogne, France, 20-5-[19]87, M. Secq leg." (CJF). 4 exs. "Gallia Dordogne, Montignac [ca. 50 km ESE Périgeux], H 86" (CLH). 1 ex., "Montcaret [31T BK6871, 48 km E Bordeaux] (24), 27/5/[19]86, A. Secq leg.", "H. cantabricus" (CPL). 1 ex., "Montcaret (24), 27/5/[19]86, M. Secq leg." (CJE). 1 ex., "Montcart [sic!](24) [= Dordogne], 27.6.1986, leg. M. Secq" (CLH). 1 ♂, 2 ♀♀, "Le Blanc, le Condreau [Indre, 54 km ENE Poitiers, near river Creuse], 12.8.[18]89", coll. Régimbart (MNHN). The UTM co-ordinates have been provided by R. Constantin. All paratypes with the respective red label.

Additional material studied: **France:** 1 ♂, "Le Blanc, Condreau, 12.5.[18]89", "H. cantabricus, Rég. vidit"; on the same pin below this specimen and these labels another ♂ with "Bagnoles de l'Orne [ca. 80 km S Caen]", "Cantabricus Sharp" (IRS). **Great Britain:** 1 ♂, "Jersey" (on glue card), on reverse "Jersey, 17.9.1932, F. Balfour-Browne" (CBB). 1 ♂, "Les Landes, Jersey, A.C. Warne, 1986" (CGF). 1 ♀, "Guernsey, 5.VI.32, F. Balfour-Browne", female sex symbol, "Museum Paris, 1960, Coll. F. Guignot" (MNHN). **Notes:** The specimen from Jersey has a median lobe which clearly equals those of French specimens. The female from Guernsey, however, cannot be assigned to one of the subspecies. Nevertheless, I assume that it belongs to *H. necopinatus robertorum* ssp.n. also. **Doubtful or inexact localities:** 1 ♂, "Corse?" [hw Régimbart?], "Museum Paris, Coll. Maurice Régimbart, 1908" (MNHN). 2 exs., "Gallia" (NMW). 1 ♂, 2 ♀♀, "Spanien [= Spain], Calvados", "Samml. A. Zimmermann"; according to the shape of the one male's median lobe of aedeagus the specimens belong to the French subspecies (ZSM).

Diagnosis: Habitus on average a little more parallel (Fig. 19). A very few specimens - particularly females - stronger microreticulated and less shiny. Other external characteristics as in the nominotypical subspecies.

♂♂: Median lobe of aedeagus in lateral view less curved basally, with straight apical part shorter than in the nominotypical subspecies, but longer than in *H. necopinatus roni* ssp.n. (Fig. 54). Paramere Fig. 55.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.00 - 3.80 mm (3.31 ± 0.21 mm), MW 1.55 - 1.90 mm (1.73 ± 0.11 mm), TL/MW 1.87 - 1.98 (1.92 ± 0.03).

Distribution: Western France, and the British Channel Isles of Guernsey and Jersey (Fig. 83).

Notes: GANGLBAUER (1892: 477) records *H. cantabricus* among others from Belgium and Thuringia (Germany), ZIMMERMANN (1919: 168) reports one specimen from Corsica, but does not repeat this record in a following work (1931: 150) (I have not been able to locate this specimen in the collection of the ZSM.); these records seem to be undoubtedly erroneous (see e.g. HORION 1941: 393). Records in GUIGNOT (1933: 363) from Le Lioran (Cantal) and from Auvergne (both in south-western France) need confirmation.

Derivatio nominis: This subspecies is dedicated to my friends Robert Constantin (Saint Lô, France), and Robert Angus (Surrey, Great Britain), both specialists in Dytiscidae, who have supported this work in an exceptional manner. I also don't want to forget my grandson Robert, who has collected his first beetles now.

Hydroporus necopinatus roni ssp.n.

Hydroporus cantabricus SHARP: GUIGNOT 1933: 362 (partim). - GUIGNOT 1947: 103 (partim).
- BALFOUR-BROWNE 1940: 324 (footnote). - FOSTER & ANGUS 1985: 12.

Hydroporus celatus CLARK: SEIDLITZ 1887: 75 (partim).

?*Hydroporus longulus* MULSANT & REY: GANGLBAUER 1892: 476 (partim). - GOZIS 1910-1915: 180, 182 (footnote by E. BARTHE).

Type locality: England, Studland Heath in Dorset, between Bournemouth and Swanage.

Holotype (♂): "GB: Dorset, Studland Heath, 1/6-[19]86 R. Angus", "*Hydroporus cantabricus* Sh., ♂, det. A. Nilsson", "Holotype, *Hydroporus necopinatus roni* ssp.n., Fery det. 1999" [red] (NMW). **Paratypes:** 4 ♂♂, 4 ♀♀, same data as the holotype, all specimens additionally with the respective sex symbol on the last label (CAN). 1 ♂, "VC9 [= Dorset]" (on glue card), on reverse "Studland Heath, May 1986" (CRA). 2 ♂♂, "VC9" (on glue card), on reverse "Studland Heath., 5/3/[19]67", "cantabr" (CRA). 1 ♂, "VC9" (on glue card), on reverse "Studland Heath., May 1986, R.B. Angus" (CRA). 1 ♀, "VC9" (on glue card), on reverse "Studland Heath., 26.9.[19]85, R.B. Angus" (CRA). 1 ♂, "VC9" (on glue card), on reverse "Studland Heath., 29.V.[19]86" (CRA). 1 ♂, 1 ♀, "VC9" (on glue card), on reverse "Studland Heath., 29/5/[19]86, Chromosome prep.?, 6/6/86 R.B. Angus"; the female with an additional female sex symbol on the glue card (CRA). 3 ♂♂, "England: Dorset, Hartland Moor SY9485, G N Foster 27.9.1979" (CGF, CHF). 1 ♂, on glue card "DT. [= Dorset]", on reverse of glue card "Southaven [= South Haven = Studland Heath], 16-V-[19]37", "Southaven, DT. 12.v.1937 [sic!], Ex coll. J. B-B." [red ink], "*Hydroporus cantabricus* Sharp, J. Balfour-Browne det." (BML). 1 ♂, idem, but with "12-V-[19]37" and without determination label (BML). The paratypes with the respective red label.

Additional material studied: **Great Britain:** 1 ex., "VC9" (on glue card), on reverse "Studland Heath., R.B. Angus, May 1986", a very destroyed and immature specimen, sex not detectable (CRA).

Diagnosis: Habitus variable; for instance the holotype has a rather rounded body outline (Fig. 20), but other specimens are even more parallel than the specimen of *H. necopinatus robertorum* ssp.n. in Fig. 19. Some females, but also a few males, stronger microreticulated and almost matt, resembling *H. melanarius*. Other external characteristics as in the nominotypical subspecies.

♂♂: Median lobe of aedeagus in lateral view less curved basally, with straight apical part rather short (Fig. 56). Paramere Fig. 57.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.15 - 3.55 mm (3.35 ± 0.10 mm), MW 1.65 - 1.85 mm (1.75 ± 0.05 mm), TL/MW 1.83 - 1.99 (1.91 ± 0.04).

Distribution: Southern England, the subspecies so far is known from Dorset only (Fig. 83).

Derivatio nominis: The species is dedicated to the water beetle specialist Ron Carr (Maidstone, Great Britain), who has strongly supported this work.

Hydroporus hebaueri HENDRICH, 1990

Hydroporus cantabricus SHARP: APFELBECK 1904: 337. - GUIGNOT 1933: 362 (partim). - IENISTEA 1978: 297 (partim). - GUÉORGUIEV 1981: 406 (partim). - GUÉORGUIEV 1987: 71 (partim). - ÁDÁM 1996: 59.

?*Hydroporus longulus* SHARP: GUÉORGUIEV 1971: 13.

Hydroporus hebaueri HENDRICH, 1990: 244.

Type locality: North-eastern Greece, Nikiforos, near Drama.

Holotype (♂): a male sex symbol, "GR - Drama, Nikiforos 4.6.[19]89, leg. H. Hebauer", "Holotypus, *Hydroporus hebaueri* n.sp., det. Hendrich 1990" [red] (MNB). **Paratypes:** 25 exs., same data as the holotype, but with the respective red paratype label (CHF). According to HENDRICH (1990: 244) 140 additional specimens with the same data as the holotype and 8 ♂♂ and 11 ♀♀ from the same locality but "13.6.1988" in the following collections: MNB, NMB, CGW, CMB, CNS, CFP, CHH, CLH.

Additional material studied: **Greece:** 1 ♂, 1 ♀, "16.4.[19]84, Corfu, Messonghi, Tümpel [= pond], Fery leg." (CHF). **Bulgaria (first record):** 1 ♀, "Stanza Bulg., Dr. Purkyne lgt., VII.1934", "*Hydroporus memnonius* Nic., det. Hlisnikowski 1952", "*Hydroporus cantabricus* Sharp, det. G. Wewalka [19]76" (MRTO). **Montenegro (first record):** 1 ♂, 17.06.84, Ulcinj (ca. 120 km SE Dubrovnik, near the Albanian border), Gräf leg. (CHF). **Albania (first record):** 1 ♀, "Velipoja, Alb. [= Albania] occ.", "*Hydroporus cantabricus* Shp. 7242 Winkler" (CFP). 9 ♂♂, 7 ♀♀, "Mustajbeg, Velipoja, Albania", "*cantabricus*"; this locality could not be found on any map (ZSM, NMW, CGW, CHF). **Hungary (first record):** 1 ♂, "Csakvar [ca. 50 km SW Budapest] 1924", "*memnonius* Nic., det. F. Schubert"; specimen strongly immature (NMW). The following - mostly immature - material from the HNHM stands after a label "*Neoporus cantabricus*" (translation of the label texts by Z. Csabai): 2 ♂♂, "Hu. [= Hungary] c. Ócsa [SE Budapest], 1953, Nagyerdő, É. [= North part of "Great-Forest"] V.18", "csatornából hálózva" [= netted from channel], "legit Hámori S.- né" (HNHM). 1 ♂, "Hu. c. Ócsa, 1953, Nagyerdő, É.", "vizihálóval [= netted from water], V.18", "legit Zsirkó G." (HNHM). 3 ♀♀, "Hu. c. Ócsa, 1952, Turjáni erdő, DK" [SE part of Turjáni forest], "fűzfák töve, rostálva [= shifted from stock of willows (*Salix*)] X.30.", "legit Dr. Kaszab" (HNHM). 2 ♂♂, 3 ♀♀, "Hu. occ. [= Transdanubia], 1951., Velencei-hegys." [Velencei-mountains, W Budapest, above Lake Velence], "Nadap, Medep heg" [= a hill in Velencei mountains], "kiszáradt forrás, rostálva [= sifted from a dry spring] X.25.", "legit Dr. Kaszab" (HNHM). 2 ♂♂, 1 ♀, "Siófok [city near Lake Balaton] (Ung. [= Hungary]), Lichtneckert", specimens collected between 1890 and 1920 (HNHM). 1 ♂, 1 ♀, "Siófok, Lichtneckert" (HNHM). 1 ♀, "coll. Csala-pusztá [?], Lichtneckert" (HNHM). 1 ♀, "Kiskunsági N.P., Tabdi [village in central Hungary (Great Plain)], turjános [locality near the village], fűhálózás [= netted from grass]", "1978. V.24, leg. Kaszab & Endrődi" (HNHM). 1 ♀, "Kiskunsági N.P., Tabdi, turjános, pocsolya [= puddle], ripicol", "1977.V.11, leg. Hámori", "No. 212" (HNHM). 1 ♀, "Kiskunsági N.P., Tabdi, turjános, vizihálózva [netted from water]", "1977.V.11, leg. Hámori", "No. 207" (HNHM). **Turkey (first record):** 1 ♂, 1 ♀, "TR - 28.7.1988, 40 km e Edirne, leg. Jäch (28)" (NMW, CGW). 1 ♂, "Apfelbeck, Byzant., S. Stephano [SW Istanbul]", "*cantabricus*, Costantinop", "*cantabricus*", "*Hydroporus hebaueri* Hendrich, Fery det." (MNB). 3 ♂♂, 10 ♀♀, "Apfelbeck, Byzant., S. Stephano", "*cantabricus*"; all specimens rather immature (NMW, CHF). **Doubtful or inexact localities:** 1 ♂, "Turquie, Scutari", "Museum Paris, Coll. Maurice Régimbart, 1908"; most probably near lake Scutari, Albania/Montenegro (MNH). 1 ♀, "Csal...rta, 1926.VI." [almost illegible], "*memnonius* Nic., det. F. Schubert"; locality most probably in Hungary (NMW).

Diagnosis: Habitus oval elongate (Fig. 21). This species cannot be distinguished from *H. necopinatus* sp.n. with certainty by external characteristics, as HENDRICH (1990: 248) has already stated. This author points out some differences in the prosternal process, but these are hardly to recognise and in addition rather variable as I have found. For a detailed description see HENDRICH (1990).

♂♂: HENDRICH (1990: 245) compares the median lobe of aedeagus of *H. hebaueri* with that of *H. necopinatus* sp.n. (under the name *H. cantabricus*). According to his figures the lobe in dorsal view before the apex is almost parallel, than more abruptly tapering to the tip than in *H. necopinatus* sp.n. I have found this characteristic rather variable; in lateral view, however, the median lobe of *H. hebaueri* is constantly thinner in basal half than in *H. necopinatus* sp.n. (Fig. 60). Paramere Fig. 61.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.3 - 3.9 mm, MW 1.65 - 2.0 mm, TL/MW 1.85 - 2.00 (after HENDRICH 1990: 247).

Distribution: Greece, Montenegro, Albania; also in Bulgaria, Hungary, and Turkey, but considering the few specimens studied from these countries I can come only to a preliminary decision at the moment. Records of *H. cantabricus* from Hungary (ÁDÁM 1996: 59), Bulgaria (GUÉORGUIEV 1987: 71), and Turkey (GUÉORGUIEV 1981: 406) most probably refer to *H. hebaueri*.

Hydroporus lenkoranensis sp.n.

Type locality: Azerbaijan, Lenkoran, ca. 160 km SSW Baku.

Holotype (♂): "Lenkoran, Leder, (Reitter)", "*Hydroporus cantabricus* Sharp?, det. G. Wewalka [19]76", "*Hydroporus libanus* Rég., det. V. Guéorguiev 1978", "Holotype, *Hydroporus lenkoranensis* sp.n., Fery det. 1999" [red] (MRTO). **Notes:** The holotype lacks the right hind leg and parts of the right antenna.

Diagnosis: Habitus oval elongate (Fig. 22), a little flatter and broader than in the other members of the *H. necopinatus*-complex, resembling somewhat a small *H. memnonius*. Dorsal surface brown coloured, maybe because the specimen is slightly immature; mature specimens probably darker brown or black on dorsal as well as on ventral surface. Anterior margin of head and vertex paler. Disc of pronotum and parts of elytra behind the middle diffusely darkened. Punctuation of head as in *H. necopinatus*, on pronotum less coarse, particularly on disc punctures small and sparse. Elytra with punctures a little smaller also, puncture lines not recognisable. Maximum width of pronotum at base; sides not subparallel, almost evenly curved forwards. Maximum width of body between anterior and central third of elytra.

Ventral surface with metasternum and metacoxal plates dark brown. Prosternum, prosternal process, epipleura, and posterior part of metacoxal processes brown. Sternites paler brown than metacoxal plates, on sides and posterior margins still paler. Punctuation as in *H. necopinatus*; microreticulation on metasternum and first sternites absent, on metacoxal plates only at sides and nearly imperceptible. Beginning with the third sternite reticulation progressively more prominent. Metacoxal lines weakly diverging forwards. Gula rufous, genae not black, but darker than gula. Antennae brown, articles not darkened distally.

♂♂: Median lobe of aedeagus shorter in lateral view slightly curved upwards apically, in dorsal view broad, corrugated membrane extended apically (Fig. 62). Paramere Fig. 63.

♀♀: So far unknown.

Measurements: TL 3.55 mm, MW 1.85 mm, TL/MW 1.92.

Distribution: Azerbaijan, Lenkoran. So far known only from the locus typicus.

Derivatio nominis: The species is named according to the locus typicus Lenkoran.

Notes: The status of this new species must be regarded as preliminary until further material will become available. In particular the gonocoxae of the female must be studied, because at present it cannot be excluded that *H. lenkoranensis* sp.n. belongs to the *H. memnonius*-subgroup and not to the *H. necopinatus*-complex.

III. Notes on *Hydroporus obsoletus* AUBÉ, 1838

Hydroporus obsoletus AUBÉ, 1838: 298. - SHARP 1882: 482. - ZIMMERMANN 1931: 154. - GUIGNOT 1933: 355. - GUIGNOT 1947: 101. - GUIGNOT 1959: 384. - FRANCISCOLO 1979: 369. - NILSSON & HOLMEN 1995: 69.

Type locality: "Hispania".

Lectotype (present designation): ♂, "obsoletus mihi, h. [= habitat] in Hispania" [hw Dejean], "Ex Musæo Dejean", "D. Sharp Monogr.", "Museum Paris, ex Coll. R. OBerthur [sic!]", "Lectotype, *Hydroporus obsoletus* Aubé, des. H. Fery 1999" [red] (MNHN). According to AUBÉ (1838: 299) this author has studied three additional specimens found in Greece and Syria respectively. I have not been able to find these in the collection Aubé (MNHN).

Diagnosis: I have studied about 200 specimens from Morocco, Spain, Portugal, France (Corsica), Italy and Greece. Males from all localities were dissected and lacked differences in the genitalia. Habitus oval elongate to subparallel (Fig. 25); sides of elytra weakly rounded, pronotum weakly subparallel posteriorly, more or less evenly rounded and converging from posterior to anterior angles; body outline continuous. Coloration of upper surface varying; usually pronotum dark brown with sides and base lighter brown; elytra paler brown, with sides lighter, and with diffuse and poorly delimited light areas near base; in some specimens with additional light vittae in anterior half and near apex. Pronotum with puncturation on disc and middle of base very fine and sparse, near sides and anterior margin coarser and denser; near each posterior angle of pronotum with a very characteristic coarsely and densely punctured subrugose impression by which the species can be easily identified. Punctures on elytra coarse, sparse, and irregularly spaced, interspersed with some very small punctures. Puncture lines almost imperceptible. According to SHARP (1882: 482) and GUIGNOT (1933: 356) southern populations have a finer puncturation, those from northern Africa, and central and northern Europe being lighter coloured.

Ventral surface in large parts black to dark brown. Legs paler brown. Antennae brown, articles darkened distally.

♂♂: Median lobe of aedeagus (Fig. 66) ventrally without bristles. Paramere Fig. 67. As in the other members of the *H. ferrugineus*-subgroup (and in *H. longicornis* from the *H. melanarius*-subgroup) the first pro- and the first mesotarsal article are not strongly developed.



Figs. 64 - 71: Median lobe of aedeagus in lateral and dorsal view of (64) *Hydroporus longicornis* (specimen from Bavaria), (66) *H. obsoletus* (specimen from Salamanca), (68) *H. ferrugineus* (specimen from Briançon), (70) *H. sanfilippo*; Paramere of (65) *H. longicornis*, (67) *H. obsoletus*, (69) *H. ferrugineus*, (71) *H. sanfilippo*.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.30 - 4.20 mm.

Distribution: According to the literature this species is distributed in Tunisia, Algeria, Morocco, Portugal (including Madeira), France, Italy, Germany, Ireland, Great Britain, Denmark, Norway, Sweden, Croatia, Greece, Turkey, and Syria. F. BURMEISTER (1939: 225) records the species from Switzerland also.

IV. Notes on species other than from the *Hydroporus memnonius*-group

Some species which do not belong to the *H. memnonius*-group can be mixed up easily on a first glance with *H. cantabricus* and the species of the *H. necopinatus*-complex. The present author provides some remarks on these species to facilitate their identification. Special attention is paid to *H. longulus* and the closely related *H. nevadensis* because with these species the confusion has been extreme in the past. In addition the opportunity is taken to designate lectotypes for *H. longulus*, *H. celatus* and *H. nevadensis*.

GUIGNOT (1933: 363, 382; 1947: 104) refers to the strong resemblance of *H. cantabricus* with *H. longulus* and *Hydroporus gyllenhalii* SCHIÖDTE, 1841 (sub *Hydroporus piceus*

STEPHENS, 1828). *Hydroporus gyllenhalii* usually is placed amongst those species which have the lateral beading of the pronotum narrow. This characteristic, however, particularly in this species, can be misinterpreted. In addition the genae are darker than the gula, and thus indeed it can be easily mistaken with *H. cantabricus* and the members of the *H. necopinatus*-complex. The species, however, can be recognised by the lateral margin of the elytra which is more ascending towards the humeral angle, the posterior margin to the metacoxal processes which is straight, the coarser punctuation of the elytra and the pronotum, and the dark articles of the antennae. The males have the median lobe with a shape which is totally different from the species treated in the present work (see e.g. Fig. 230 in NILSSON & HOLMEN 1995: 54).

Another species which might cause confusion is *Hydroporus nigrita* (FABRICIUS, 1792). This species, however, has a black gula and a different median lobe (see e.g. fig. 206 in NILSSON & HOLMEN 1995: 52). In addition *H. nigrita* has a more oval habitus, smaller punctures on the elytra, and the posterior margin to the metacoxal processes straight.

BEDEL (1881: 267) reported specimens from Calvados (undoubtedly *H. necopinatus robertorum* ssp.n.), determined by Sharp as *Hydroporus celatus* CLARK, 1862, (afterwards cited by a few authors as *Hydroporus celatus* BEDEL, e.g. GOZIS (1910-1915: 180, 182) (footnote by E. BARTHE)). According to BALFOUR-BROWNE (1940: 320), FOWLER (1887: 183) was the first to treat *H. celatus* as a junior synonym of *H. longulus* "but on the Continent many authors were slow in accepting this view ...". Nevertheless this view was already anticipated by SCHAUM & KIESENWETTER (1868: 67), and adopted by GANGLBAUER (1892: 476), and is widely accepted today. In contrast to the members of the *H. memnonius*-group *H. longulus* and the closely related *H. nevadensis* have a black gula (at least in mature specimens) and metacoxal processes with a posterior margin which is strongly sinuate and medially protruded backwards (see e.g. Fig. 9). The first pro- and the first mesotarsal article are not unusually enlarged.

Hydroporus longulus MULSANT & REY, 1861

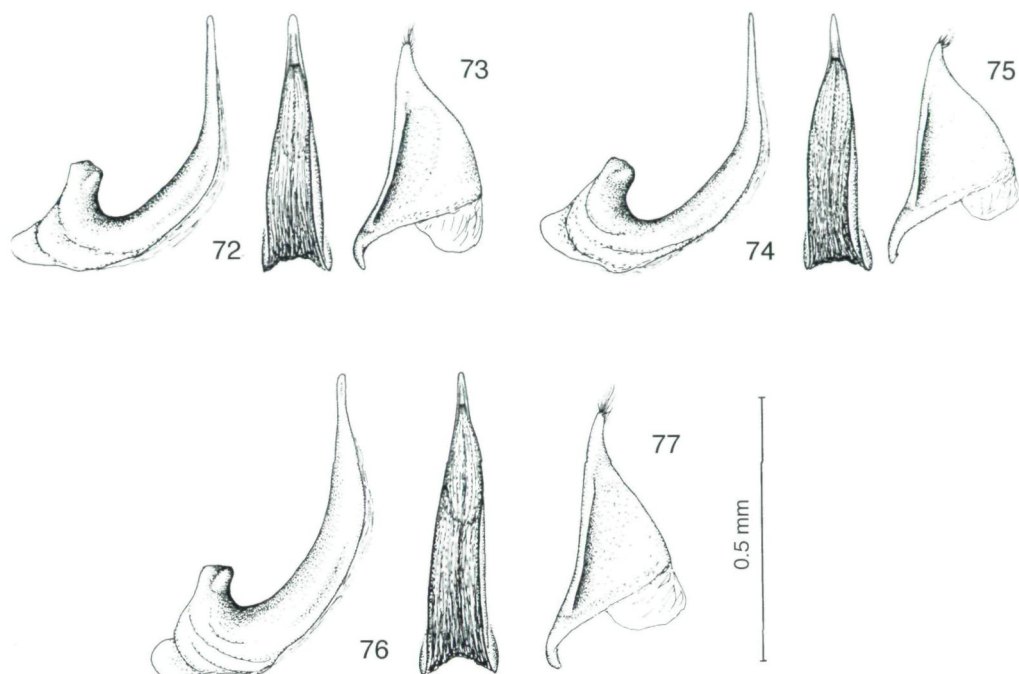
Hydroporus longulus MULSANT & REY, 1861: 305. - SHARP 1882: 800. - FOWLER 1887: 183. - GANGLBAUER 1892: 476. - GUIGNOT 1933: 379 (partim). - GOZIS 1910-1915: 180, 182 (footnote by E. BARTHE) (partim). - BALFOUR-BROWNE 1934: 251. - BALFOUR-BROWNE 1940: 319. - FRANCISCOLO 1979: 385. - FOSTER & ANGUS 1985: 12. - RICO & al. 1990: 83 (partim).

Hydroporus celatus CLARK, 1862a: 93 (no description). - CLARK 1862b: 473 (original description). - BEDEL 1881: 240, 267 (partim). - SHARP 1882: 481. - FUENTE 1921: 79 (partim).

Type material:

Hydroporus longulus: **Lectotype (present designation)**: ♂, a golden coloured round label of 2 mm diameter, a male sex-symbol, and "Lectotype, *Hydroporus longulus* Mulsant & Rey, des. H. Fery 1990" [red] (MGHN). The legend in a catalogue of C. Rey, held in the MGHN, indicates that the golden coloured label refers to "Mont-Dore". **Paralectotypes**: 2 exs. (not dissected), same golden coloured label as in the lectotype, without sex-symbol; in addition the respective red paralectotype label. **Type locality**: France, Mont-Dore.

Hydroporus celatus: **Lectotype (present designation)**: ♂, on reverse of the glue card "55-49, celatus. Type", "Power., Leicester", "H. celatus., Type., Clark.", "J.A. Power, B.M. 1896-69.", "Lectotype, *Hydroporus celatus* Clark, des. H. Fery 1999" [red] (BML). **Paralectotype**: ♂, on reverse of the glue card "56-53, celatus: Type", "Power., Black Park. [Uxbridge, London]", "H. celatus., Type., Clark.", "J.A. Power, B.M. 1896-69.", and the respective red paralectotype label (BML). **Type locality**: Great Britain,



Figs. 72 - 77: Median lobe of aedeagus in lateral and dorsal view of (72) *Hydroporus longulus* (specimen from Briançon), (74) idem, lectotype of *H. celatus*, Great Britain, (76) *H. nevadensis* (specimen from Sierra Nevada); Paramere of (73) *H. longulus*, (75) idem, lectotype of *H. celatus*, (77) *H. nevadensis*.

Leicester, Bradgate Park. I have not been able to locate the two other syntypes, one from Leicester also, the other from Tilgate Forest (see CLARK 1862b: 474). **Notes:** Both types have the posterior margin to the metacoxal processes strongly sinuate and medially protruded backwards, a dark gula (the paralectotype is weakly immature and has the gula a little paler than the genae), and the median lobe in dorsal view distinctly asymmetric; the paralectotype with apex of median lobe in dorsal view a little more rounded than in Fig. 74. The lectotype lacks some articles of the right antenna and the left mesotarsus, the paralectotype has the right antenna deformed.

Additional material studied: **France:** 2 exs., a light brown round label of 2 mm diameter with a black puncture, one specimen with an additional female sex-symbol. The round label refers to "Montagnes du Beaujolais" (MGHN). 1 ♀, "Cauterets, Hautes Pyrenées", "Hydroporus cantabricus Sharp, J. Clermont" [hw Clermont?] (ZMAN). 3 exs., "Gerardmer (Vosges)", on reverse "IV 1919", "Hydrop. cantabricus" (IRSN). 1 ♀, "Kiesenwetter", "M Doré, ...", "Sammlung Cl. Müller" (ZSM). 15 exs., Hautes Alpes, Le Bourget, near Briançon, ca. 2100 m, small ponds, 13.8.1980, Fery leg. (CGW, CHF). 8 exs., Oriental Pyrenees, Col de Puymorens, ca. 1900 m, rivulet, 17.8.1985, Fery leg. (CGW, CHF). 1 ♂, 1 ♀, "Ax Thermes, A. Jean", "Hydroporus longulus Muls., Wewalka [19]83" (NMW, CGW). 1 ♂, Atlantic Pyrenees, Forêt d'Iraty, near Larrau, ca. 1300 m, spring, 29.6.1992, Fery leg. (CHF). 1 ♂, "Pierrefitte (Ht. Pyr.)", 2.6.[19]30, L. Schaefer", "Hydroporus longulus Muls., det. H. Schaefflein" (CGW). 2 exs., Blanot (71) [= Saône et Loire], 7.7.1998, Queney leg. (CHF). **Luxembourg (first record):** 1 ♀, "Luxemburg, C. v. Nidek", "Lellingen, 14-IX-1976" (CGW). **Spain:** 1 ♂, "E: Girona, Sr. Montseny, Coll. Formich. 1000 m, 21.IX.1989, leg. Schawaller" (SMNS). 1 ♂, Pyrenees, Huesca province, Bonansa, near El Pont de Suert, brooklet, 16.6.1990, Fery leg. (CHF). 4 exs., Pyrenees, Lleida province, Senet, Coll de la Gelada, 19.6.1994, Fresneda leg. (CHF). **Italy:** 1 ♂, "Macugnaga, Peq.[?] Sama, 7.1967", "Hydroporus longulus, det. Pederzani" (CGW). **Great Britain:** 2 ♀♀, "VC69 [= Westmorland and the northern part of Lancashire, now the southern half of Cumbria]" (on

glue card), on reverse "Wetherlam [a mountain at the northern end of Coniston Water, English Lake District], 11/7/[19]63" (CRA). 1 ♀, "VC69" (on glue card), on reverse "Wetherlam, 11/7/[19]63", "Hydroporus longulus", on reverse "J. B-B det., 20/11/[19]63" (CRA). 1 ♀, "VC69" (on glue card), on reverse "Wetherlam, 10/4/[19]64" (CRA). 1 ♀, "VC69" (on glue card), on reverse "Spring. Nr., Finsthwaite [about 3 km W of the S end of lake Windermere], 3/10/[19]64" (CRA). 1 ♂, "VC62 [= Northeast Yorkshire]" (on glue card), on reverse "Fen Bog., Newtondale [a glacial outwash channel through the North York Moors, ending at Pickering], 20.7.[19]84, R.B. Angus" (CRA). 1 ♀, "VC94 [= Banffshire, NE Scotland]", on reverse "Buck of Cabrach [a mountain on the Morayshire/Banffshire border], 15/6/[19]61", "Hydroporus longulus", on reverse "J. B-B det., 20/11/[19]63" (CRA). 1 ♂, "VC70 [= Cumberland, the N half of Cumbria]" (on glue card), on reverse "Flush, Angle, 15/9/[19]63 Tarn. [Angle Tarn is in the Lake District, just above the head of Great Langdale]", "Hydroporus longulus", on reverse "J. B-B det., 20/11/[19]63" (CRA). 1 ♂, "VC34 [= Gloucestershire]" (on glue card), on reverse "Forest of Dean, Cannop, 30/5/[19]65 [in Gloucestershire, against the Welsh border]", "longulus" (CRA). 1 ♀, "VC17 [= Surrey]" and a female sex symbol (on glue card), on reverse "Royal Holloway Coll., Englefield Green [about 10 km E of Windsor], 25/5/[19]80" (CRA). 1 ♂, "TQ 8235, Hemstead Forest, 15.VIII.[19]82, R. Carr", "H. longulus" (CRCA). 1 ♂, "TQ 7939, Cranbrook, 26.VI.[19]82, R. Carr", "H. longulus" (CRCA). 1 ♂, "TQ 4132, Hindleap Warren, 16.V.[19]81, R. Carr", "H. longulus" (CRCA). **Belgium:** 1 ex., (abdomen absent) "For. Soign. [= Forêt de Soignes, Brussels, see GUIGNOT 1947: 111] X.47, Sent du Bocq, R. van Dorsselaer", "Hydroporus longulus Muls., det. R. van Dorsselaer", "Hydroporus longulus Muls., det. V. Guéorguiev 1973" (MRTO). **Austria:** 1 ♂, "Austria/Osttirol, Kartitscher Sattel, IX.1979, leg. H. Schaefflein", "Hydroporus longulus, det. H. Schaefflein" (CGW). 3 exs., Tirol, Paznauntal, Galtür, Zeiniskoppe, ca. 1900 m, rivulet, 8.7.1979, Fery leg. (CHF). 7 exs., Vorarlberg, near Partenen, ca. 1100 m, rivulet on meadow, 7.7.1973, Fery leg. (CHF). **Doubtful or inexact localities:** 3 exs., "Fauvel [18]97, Calvados", "longulus", one specimen with additional "longulus, Calvados" (NMW).

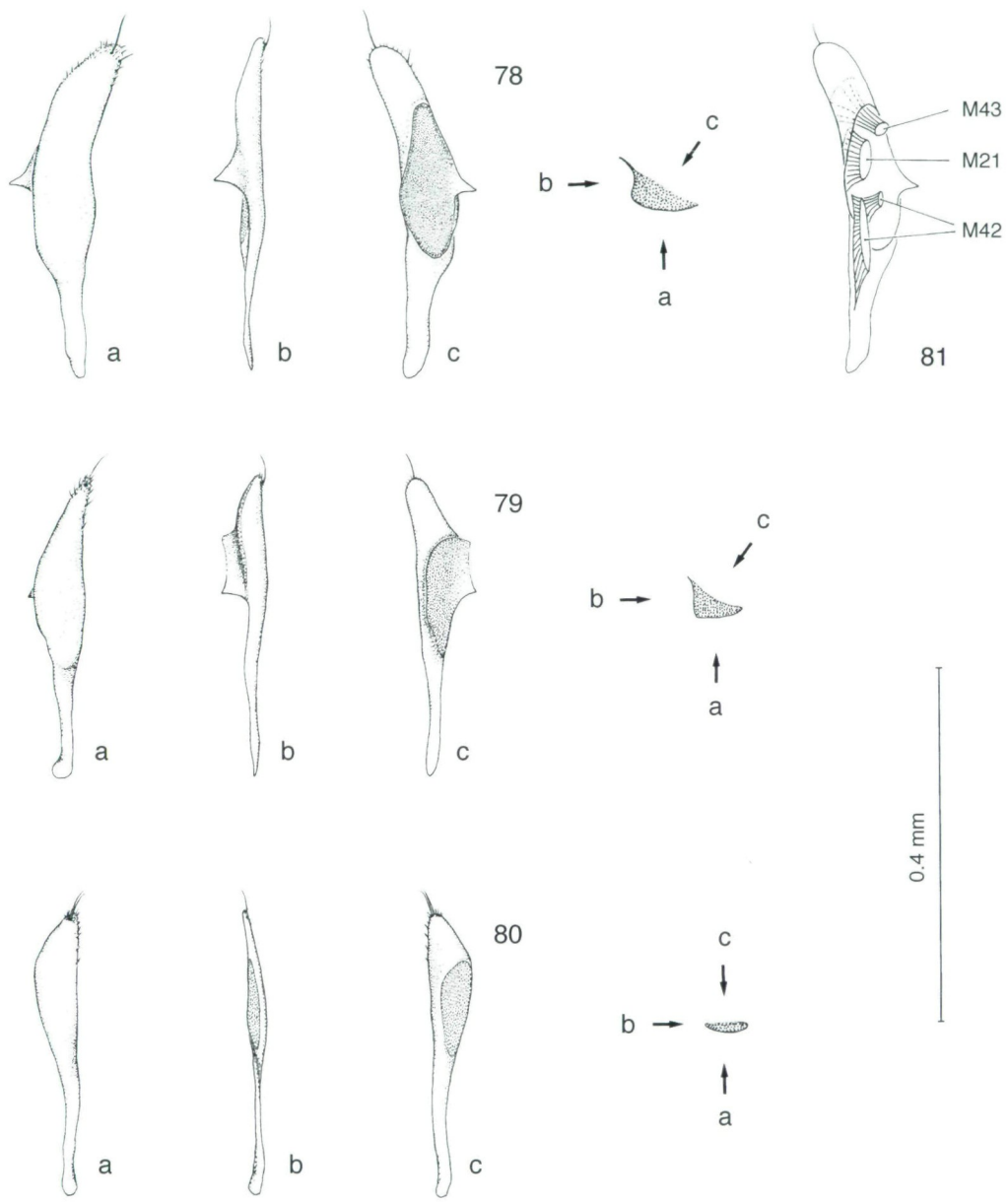
Diagnosis: Habitus oval elongate (Figs. 28, 29); dorsal surface black, head on vertex dark brown, margin of pronotum, and apex of elytra shining through dark brown. Surface distinctly microreticulated. Sides of pronotum posteriorly subparallel, maximum width at base. Lateral body outline more or less continuous. Margin of pronotum with beading broad. Lateral margin of elytra not distinctly ascending towards humeral angle. Punctuation of head more or less uniform; on disc of pronotum fine and sparse, on sides and before base coarser, particularly near the posterior angles, here with a subrugose impression. Elytral punctuation rather coarse, almost uniformly, puncture lines distinct.

Ventral surface black in large parts, epipleura black or dark brown, prosternal process and posterior part of metacoxal processes brown in most specimens studied. Gula black as well as genae. Posterior margin to the metacoxal processes strongly sinuate and medially protruded backwards (see e.g. Fig. 9). The two preceding characteristics being in strong contrast to *H. necopinatus* sp.n., and very useful to distinguish between both species. Metacoxal lines distinctly diverging forwards. Punctuation on sides of metasternum, metacoxal plates and first two sternites coarse, centre of metasternum with some small punctures only. Legs of a lighter brown, femora often darkened. Antennae with articles rather short, shorter than in *H. necopinatus* sp.n., in some specimens uniformly coloured, in others darkened distally beginning with the third or fourth article.

♂♂: Median lobe of aedeagus in dorsal view strongly asymmetric (Figs. 72, 74). Paramere Figs. 73, 75.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.20 - 3.80 mm; specimens from the French Alps (Briançon): TL 3.25 - 3.55 mm (3.35 ± 0.09 mm), MW 1.65 - 1.80 mm (1.71 ± 0.03 mm), TL/MW 1.89 - 2.05 (1.95 ± 0.05); specimens from Great Britain: TL 3.05 - 3.80 mm (3.36 ± 0.18 mm), MW 1.65 - 2.00 mm (1.78 ± 0.09 mm) TL/MW 1.81 - 1.94 (1.89 ± 0.05).



Figs. 78 - 81: Gonocoxa in different views: (a) perpendicular (ventral side), (b) inner side, (c) dorsal side, and in cross-section of (78) *Hydroporus memnonius*, (79) *H. normandi*, (80) *H. necopinatus* sp.n.; (81) Dorsal side of gonocoxa with rudiments of the different muscles (schematic) of *H. memnonius* (personal communication by E.-G. Burmeister).

Notes: The species is strongly variable with respect to total length, body outline, reticulation of dorsal and ventral surface, and even shape of the median lobe of aedeagus. SHARP (1882: 481) states: "... in Britain some of the specimens are duller and more

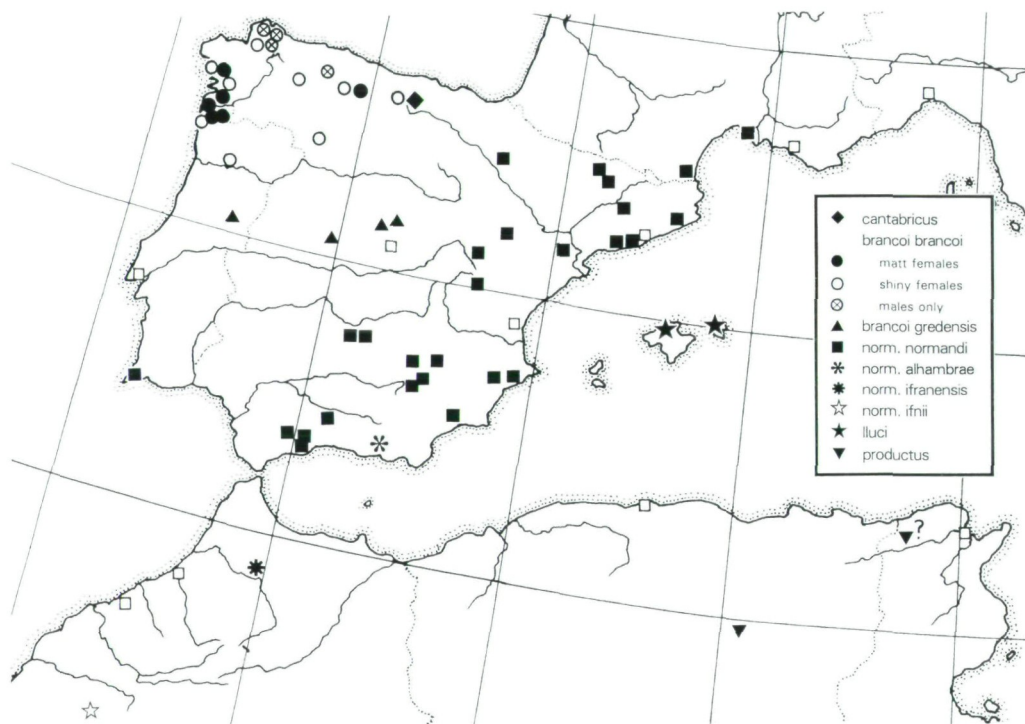


Fig. 82: Distribution of the species of the *H. cantabricus*- and *H. normandi*-complexes (for the question mark see the description of *Hydroporus productus*).

distinctly punctured than others, and in some the elytra are rufescent towards the extremity, and there is also a good deal of differences in size ...". BALFOUR-BROWNE (1940: 320) denies variations in microsculpture, but it is not clear if he has compared with continental specimens. ZIMMERMANN (1931: 55) reports specimens from western Germany which are broader in body outline, have the dorsal surface with stronger microreticulation, less shiny, and the pronotum with disc more coarsely and densely punctured. See also the remarks in GUIGNOT (1947: 111). I have not been able to study German specimens, but found the same variation in the investigated British specimens, which have a more stout body outline.

Distribution: According to ZIMMERMANN (1931: 57), GUIGNOT (1947: 111), and FRANCISCOLO (1979: 385) this species is distributed in Spain, Portugal, France, Italy, Great Britain, Belgium, The Netherlands, Germany, Austria, Switzerland, Montenegro, Bosnia, Bulgaria, Greece, and Morocco. GUIGNOT (1947: 111) denies the existence of the species in Corsica. According to my studies the species is replaced by *H. nevadensis* on the Iberian Peninsula south of the Pyrenees. Records of *H. longulus* from the Sierra Nevada (SAÍNZ-CANTERO & ALBA-TERCEDOR 1991: 218) undoubtedly apply to *H. nevadensis*, those from northern Spain (León province) (RÉGIL CUETO 1985: 15; GARRIDO GONZÁLEZ & RÉGIL CUETO 1994: 24) most probably also. When considering additionally the diverse closely related species which have been described in the last years (*H. dobrogeanus*, *Hydroporus pfefferi* WEWALKA, 1974, *Hydroporus gueorguievi*

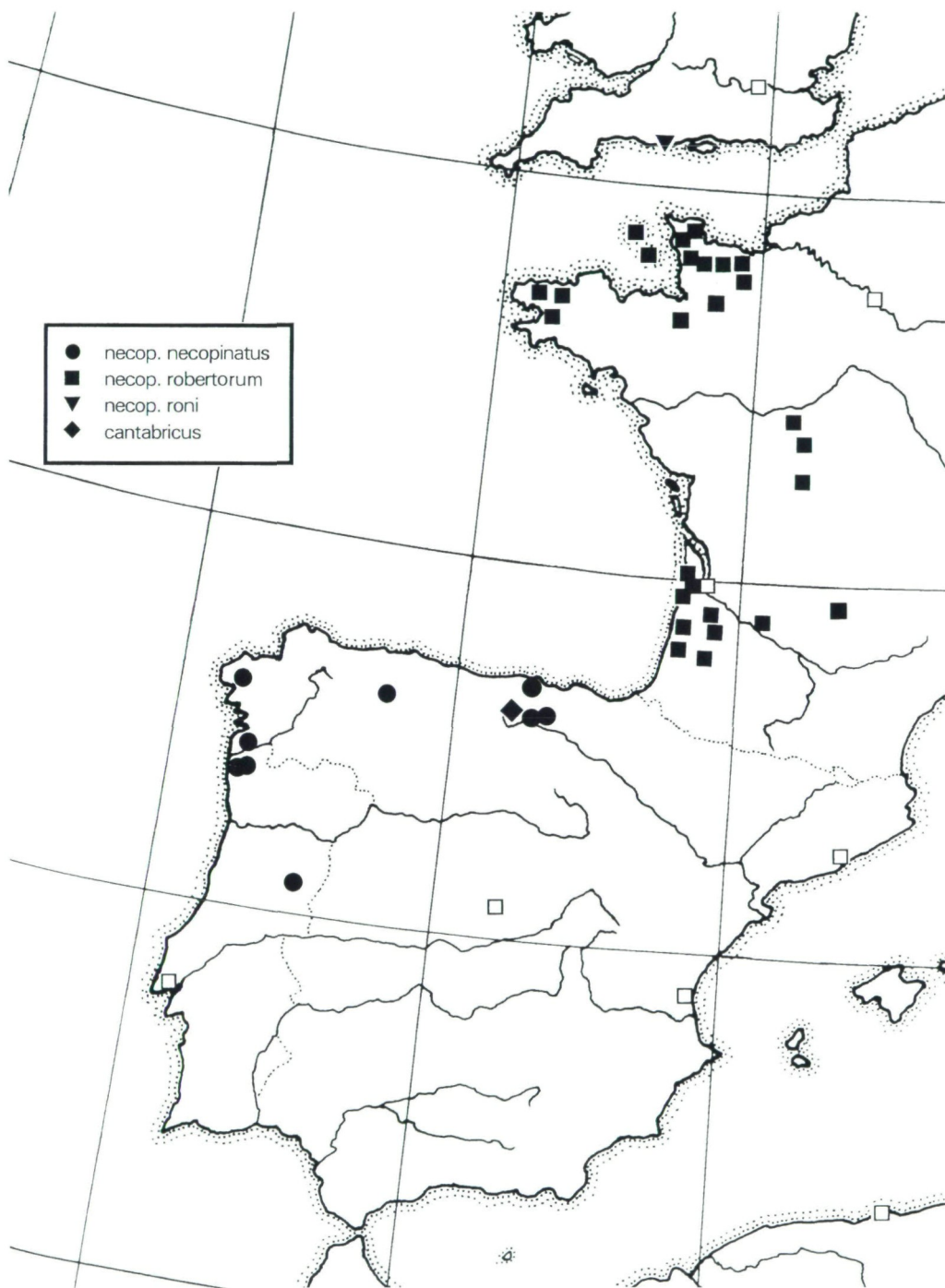


Fig. 83: Distribution of the species of the *H. necopinatus*-complex (with *H. cantabricus* for comparison).

WEWALKA, 1975, and *Hydroporus constantini* HERNANDO & FRESNEDA, 1996) records at least from eastern Europe and particularly from Morocco have to be verified.

Hydroporus nevadensis SHARP, 1882

Hydroporus nevadensis SHARP, 1882: 481. - SEIDLITZ 1887: 76. - ZIMMERMANN 1931: 152. - ROCCHI 1981: 151. - RICO & al. 1990: 84.

Hydroporus cantabricus var. *nevadensis* SHARP: SCHAUFUSS 1916: 123. - FUENTE 1921: 79.

Hydroporus longulus MULSANT & REY: ZIMMERMANN 1931: 151 (partim). - Régil Cueto 1985: 15. - SÁINZ-CANTERO & ALBA-TERCEDOR 1991: 218. - GARRIDO GONZÁLEZ & RÉGIL CUETO 1994: 24.

Type locality: Spain, Sierra Nevada.

Lectotype (present designation) (♂) and **Paralectotypes** (2 ♀♀): specimens on one glue-card, the left marked with a female sex-symbol, the middle one with a male sex-symbol; the right one without marking is a female also. "Type, H.T." [round label, red margin, printed, most probably mounted by J. Balfour-Browne], "Sierra Nevada, 17.7.[18]79 D.S., 1151" [hw Sharp], "Sharp Coll. 1905-313.", "Hydroporus nevadensis Sharp, type" [hw? not hw Sharp!], "Lectotype (middle), Hydroporus nevadensis Sharp, des. H. Fery 1990" [red], "Paralectotypes (left and right sides), Hydroporus nevadensis Sharp, des. H. Fery 1990" [red] (BML). The male in the middle is selected as lectotype, both females as paralectotypes.

Additional material studied: **Spain:** 1 ♂, "Collado de S. Lorenzo, (La Rioja), 24.6.[19]94, Garrido leg." (CJGG). 8 exs., Granada, Sierra Nevada, S Veleta, near Capileira, rivulet, ca. 2000 m, 5.8.1985, 12.7.1987, and 29.5.1990, Fery leg. (CHF). 96 exs., Teruel, Sierra de Albarracín, near Orihuela del Tremedal, rivulets, ponds and ditches, ca. 1500 - 1700 m, 5.8.1984, 2.8.1985, 9.7.1987, 9.7.1989, and 19.5.1990, Fery leg. (CGW, CHF). 27 exs., Avila, Sierra de Gredos, "Gredos", spring pool and brooklet, ca. 1800 m, 9.7.1988, 3.8.1989, 9.7.1995, and 20.7.1999, Fery leg. (CHF). 1 ex., Avila, Sierra de Gredos, Navalguijo, E El Barco de Avila, brooklet, 3.8.1989, Fery leg. (CHF). 2 exs., Jaen, Sierra de Cazorla, Rio Aguacebas Grande, 30.6.1988, Fery leg. (CHF). 1 ex., Salamanca, Sierra de Gata, near Puerto Viejo, brooklet, 7.7.1988, Fery leg. (CHF). 1 ex., Oviedo, Torga, SW Cangas de Narcea, near Luiña, brooklet, 20.8.1989, Fery leg. (CHF). 1 ex., Oviedo, S Arenas, Tielve, brooklet, ca. 1800 m, 25.7.1991, Fery leg. (CHF). 1 ex., León, Posada de Valdeon, brooklet, ca. 1100 m, 16.8.1989, Fery leg. (CHF). 34 exs., León, 50 km NW León, Arienza, rivulet, 5.6.1990, Fery leg. (CHF). 1 ex., Zamora, 8 km W Castrocontrigo, rivulet, 4.6.1990, Fery leg. (CHF). 12 exs., Burgos, SE Arlanzon, NE Pineda de la Sierra, brooklet, 22.5.1990, Fery leg. (CHF). 30 exs., Burgos, Sierra de Demanda, S Fresneda de la Sierra, ca. 1900 m, springpools, 2.10.1995 and 24.7.1996, Fery & Fresneda leg. (CHF). 1 ex., Lugo, S Fonsagrada, rivulet, 6.6.1990, Fery leg. (CHF). 1 ex., Santander, Piedras Luengas, 1350 m, 12.6.1990, Cuppen leg. (CHF). 7 exs., La Rioja, Sierra de Demanda, 20 km SSW Escaray, rivulet, ca. 1950 m, 16.7.1995, Fery leg. (CHF). 1 ♂, "3.4.1999, Spain, Burgos, nr Hornillayuso, ca. 10 km SSW Espinosa de los Monteros, spring, Fery leg." (CHF). **Portugal:** 1 ♂ "Portugal 26.7.[19]98, Sa. da Estrêla, Torre: summit IR leg" (CIR). 12 exs., Guarda, Serra da Estrêla, near Penhas Douradas, brooklets, ca. 1000 - 1150 m, 21.7.1987, 4.8.1989, and 22.7.1991, Fery leg. (CHF). 2 exs., Guarda, Serra da Estrêla, near Torre, bog pool, 1900 m, 21.7.1987, Fery leg. (CHF). 6 exs., Vila Real, near, Escariz, rivulet on meadow, 22.3.1989, Fery leg. (CHF). 1 ex., Minho, Serra da Soajo, near Sistelo, spring, 12.8.1989, Fery leg. (CHF).

Diagnosis: The species equals *H. longulus* in most respects, it is, however, on average larger and has a more elongate appearance because the sides of the elytra are less rounded (Fig. 30). The dorsal surface is distinctly shiny, because the microreticulation is less impressed than in *H. longulus*. The gula is black and the posterior margin to the metacoxal processes with the same shape as in *H. longulus* (Fig. 9).

♂♂: Median lobe of aedeagus in dorsal view asymmetric as in *H. longulus*, in lateral view with apex broader (Fig. 76). Paramere Fig. 77.

♀♀: Without conspicuous external differences to males.

Measurements: TL 3.25 - 3.90 mm; specimens from Sierra Nevada only: 3.20 - 3.80 mm (3.62 ± 0.19 mm), MW 1.65 - 1.95 mm (1.83 ± 0.10 mm), TL/MW 1.94 - 2.02 (1.98 ± 0.02).

Distribution: Mountain ranges in Portugal and Spain except the Pyrenees.

References

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