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## Two new species of *Hydrovatus* Motschulsky, 1853 from Niokolo-Koba National Park, Senegal

(Insecta Coleoptera Dytiscidae)

### Riassunto

[*Due nuove specie di Hydrovatus Motschulsky, 1853 del Parco Nazionale Niokolo-Koba, Senegal (Insecta Coleoptera Dytiscidae)* ]

Si descrivono *Hydrovatus morettoi* n. sp. e *Hydrovatus deceptor* n. sp. del Senegal. Queste specie furono raccolte alla luce nel Parco Nazionale Niokolo-Koba assieme ad altre undici specie congeneri, dando un'ulteriore testimonianza della grande biodiversità di quell'area.

### Abstract

*Hydrovatus morettoi* n. sp. and *Hydrovatus deceptor* n. sp. from Senegal are described and figured. They were collected at light in the Niokolo-Koba National Park, together with eleven other species of *Hydrovatus*, giving a further evidence of the great biodiversity of that locality.

Key words: *Hydrovatus*, Dytiscidae, new species, Senegal, Niokolo-Koba National Park.

### Introduction

The genus *Hydrovatus* Motschulsky, 1853 is made up by an impressive number of species (BISTRÖM, 1996). Moreover, many of them are definitely similar to each other, so that their identification turns out to be very difficult. However, among a wide amount of specimens belonging to several different species of this genus, collected at light in the Niokolo-Koba National Park, Senegal, we found two sets of specimens displaying peculiar combinations of traits that allow their classification as new species. Their description is given here below.

### *Hydrovatus morettoi* n. sp.

**Diagnosis:** A *Hydrovatus* belonging to the group 4 of species in BISTRÖM (l.c.) and characterised by the shape of: i) antennae; ii) clypeal outline; iii) puncturation of elytra; iv) male fore claws and v) aedeagus.

**Type locality:** Senegal, Tambacounda, Niokolo-Koba National Park, Poste de Niokolo, N 13° 01', W 12° 43'.

**Type material:** Holotype male, labelled: Senegal, Tambacounda, Niokolo-Koba National Park, Poste de Niokolo, N 13°01', W 12° 43', XI.2011, leg. P. Moretto. The holotype bears a red printed label “*Hydrovatus moretto* Schizzerotto & Pederzani, 2015 – HOLOTYPE”. It is deposited in the collection of the Zoological Museum “La Specola”, University of Florence, Italy<sup>1</sup> [nr. 17676].

Paratypes: 30 paratypes in the following collections: Museum “La Specola” (Florence) [nr. 17677]; coll. A. Schizzerotto (Trento); coll. F. Pederzani (Ravenna); coll. A. Bilardo (Cassano-Magnago). All specimens labelled as the holotype.

**Description:** Holotype: Length 2.58 mm, width 1.75 mm. Paratypes: Length 2.48 to 2.72 mm, mean length 2.63 mm; width 1.71 to 1.84 mm, mean width 1.76 mm.

Fairly globular and slightly elongate (ratio of mean length to mean width 1.49). Body outline continuous. Shiny, piceous. Apex of elytra acuminate, as usual in the genus.

Head dark brown, shiny, with small scattered punctures. Frontal outline medially straightened, clypeal rim hardly discernible only in the middle. Antenna fairly short, with stout and flattened segments.



Figs 1-2. Habitus of: 1. *Hydrovatus moretto* n. sp. ♂; 2. *Hydrovatus deceptor* n. sp. ♂. (The two species are figured with the same magnification)

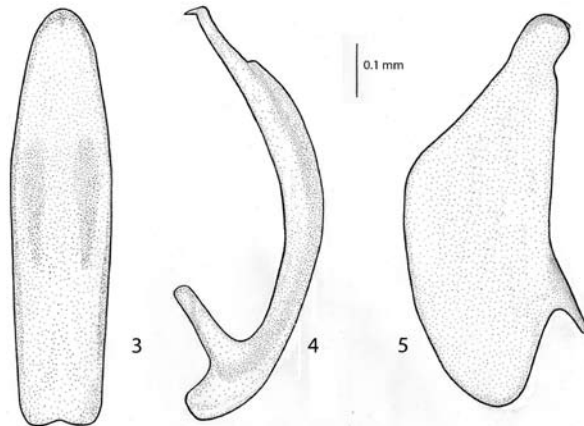
Pronotum brown with lighter sides, blackish anteriorly and posteriorly, shiny, with light polygonal microreticulation discernible only on a restricted lateral area

<sup>1</sup> Museo di Storia Naturale dell’Università degli Studi di Firenze, Sezione di Zoologia “La Specola”, via Romana, 17 50125 Firenze, Italia.

near the base. Shallow and scattered punctures present in the whole pronotal disc, definitely greater and more impressed at posterior angles. Maximum width of pronotum at base, which is as large as the base of elytra. Lateral rims quite wide and impressed.

Elytra piceous, quite shiny, with light microreticulation; puncturation very small and sparse. Regular discal rows made up by medium-size punctures and clearly visible from base up to distal third.

Ventral side testaceous-ferruginous, shiny, not microreticulate, with a few punctures on metacoxal area, almost impunctate on abdomen. No stridulatory apparatus. Prosternal process obviously triangular. Legs testaceous-ferruginous. Male. Habitus as in figure 1. Maxillary palpus not modified. Antennae modified: all segments fairly stout and flattened, almost as wide as long, apical segment definitely asymmetric. First three segments of protarsi a bit widened. Outer protarsal claw thickened and hook-shaped. Median lobe of aedeagus as in figs 3 and 4. Penis in dorsal view broad, stocky; in lateral view strongly curved at base, with distal third narrower, subparallel and slightly curved upwards, apex distinctly bent downwards, more abruptly so than in most species of the group 4 (BISTRÖM, l.c.); apical tooth short. Paramere broad (fig. 5) with apical structure well sclerotized; apical hook hardly detectable, sometimes concealed; outline of ventral side almost straight up to apical fourth, then sinuate to apex.



Figs 3-5. *Hydrovatus morettoii* n. sp. ♂: aedeagus. 3. Penis in dorsal aspect; 4. Penis in lateral aspect; 5. Paramere. (measure bar = 0.1 mm)

Female. Antennae similar to, but definitely thinner than those of male; elytral puncturation shallower than in male; regular rows of elytral punctures clearly visible, as in male; foreclaws not modified. Spermatheca large, kidney-shaped.

**Ecology:** unknown, because the specimens of *H. morettoii* n.sp. were collected at light. See remark below.

**Etymology:** the new species is dedicated to its collector, Philippe Moretto (Toulon, France).

***Hydrovatus deceptor* n. sp.**

**Diagnosis:** A *Hydrovatus* belonging to the group 4 of species in BISTRÖM (1996) and characterised, besides a slightly rhombic outline of the body, by the shape of: i) antennae; ii) male fore claws and iii) aedeagus.

**Type locality:** Senegal, Tambacounda, Niokolo-Koba National Park, Poste de Niokolo, N 13° 01', W 12° 43'.

**Type material:** Holotype male, labelled: Senegal, Tambacounda, Niokolo-Koba National Park, Poste de Niokolo, N 13°01', W 12° 43', XI.2011, leg. P. Moretto. The holotype bears a red printed label "*Hydrovatus deceptor* Schizzerotto & Pederzani, 2015 – HOLOTYPUS". It is deposited in the collection of the Zoological Museum "La Specola" of the University of Florence, Italy, [nr. 17678].

Paratypes: 10 paratypes ♂♂ in the following collections: coll. Museum "La Specola" (Florence) [nr. 17679]; coll. A. Schizzerotto (Trento); coll. F. Pederzani (Ravenna); coll. A. Bilardo (Cassano-Magnago). All specimens labelled with same data as the holotype.

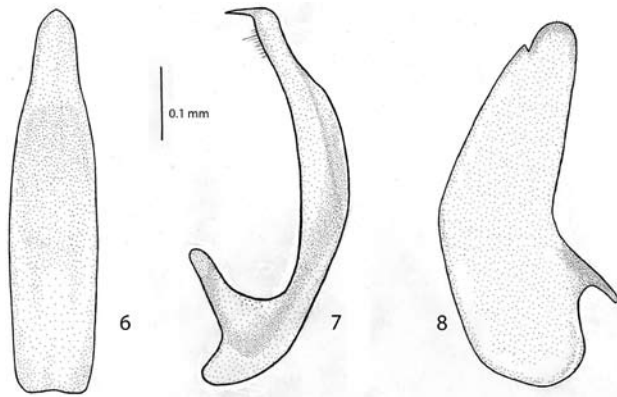
**Description:** Holotype: length 2.21 mm, width 1.52 mm. Paratypes: Length 2.09 to 2.23 mm, mean length 2.17 mm; width 1.45 to 1.52 mm, mean width 1.48 mm. Globular (ratio of mean length to mean width 1.46), rather mat, body outline in dorsal view continuous and slightly rhomb-shaped. Apex of elytra acuminate, as usual in the genus.

Head brown, shiny, with scattered punctures. Frontal outline medially rounded, clypeal rim discernible only in the middle. Antenna (male) peculiarly modified: very large, stout and flattened.

Pronotum brown, paler at sides and in the middle, with a narrow anterior blackish band and a broader posterior one. Scattered punctures present in the whole pronotal disc, definitely larger and more impressed at base. Maximum width of pronotum at base, which is as large as the base of elytra. Lateral rims quite wide and impressed. Elytra brown, sometimes blackish at base and along suture, with fairly dense, medium sized puncturation and obsolete microreticulation. Discal rows of punctures nearly undetectable.

Ventral side testaceous-ferruginous, shiny, not microreticulated, with large punctures on metasternum and metacoxae, nearly impunctate on abdomen. No stridulatory apparatus. Prosternal process obviously triangular. Legs testaceous-ferruginous.

Male: habitus as in figure 2. Maxillary palpus not modified. Antennae modified, with segments 4 to 11 fairly stout and flattened, almost as wide as long; 7<sup>th</sup> and 8<sup>th</sup> segments even broader than long. First three segments of protarsi a bit widened. Outer protarsal claw large and sickle-shaped. Median lobe of aedeagus as in figs 6 and 7, in dorsal view stocky and bottle-shaped, in lateral view strongly curved at base, with distal third narrower, subparallel and slightly curved upwards; apex distinctly bent downwards forming an apical tooth. Paramere broad (fig. 8) with a peculiar pre-apical indentation on the dorsal side; apical structure well sclerotized, but apical hook not detectable; outline of ventral side slightly concave in the middle.



Figs 6-8. *Hydrovatus deceptor* n. sp. ♂: aedeagus. 6. Penis in dorsal aspect; 7. Penis in lateral aspect; 8. Paramere. (measure bar = 0.1 mm)

Female: no females undoubtedly attributable to this species were observed among dozens of female specimens belonging to different species of similar size and shape (e.g. *Hydrovatus baptus* Guignot ) collected at light in the same place and date. Therefore the female of *H. deceptor* n. sp. is not described<sup>2</sup>.

**Ecology:** unknown, because the specimens of *H. deceptor* n. sp. were collected at light. See remark below.

**Etymology:** the adjective *deceptor* (deceptive) means the new species may be confused at first sight with several others, but for the peculiar antennae of male.

### **Taxonomic position of the new species**

In spite of the apical hook of paramere hardly visible (but apex of paramere well sclerotized) and the penis apex strongly bent downwards in both species, in our opinion the two new species should be placed, as stated earlier, in the species group 4 of BISTRÖM (1996: 95). Their identification is helped by the combination of features listed in the diagnosis.

### **Remark**

Although caught in the same locality, each new species was found in just one of the two samples collected in November 2011. This event could be explained considering that different species fly in different days or hours.

### **Other species of *Hydrovatus* found in association**

It could be worth noting that the two new species were caught together with several other congeneric species, namely, in alphabetic order: *H. angusticornis*

<sup>2</sup> The description of the female will be possible only after collection of this species alone, or by genetic tests on fresh material in case of future collections.

Biström, *H. baptus* Guignot, *H. exochomoides* Régimbart, *H. fulvicollis* Guignot, *H. nimbaensis* Guignot, *H. noumeni* Bilardo & Rocchi, *H. occidentalis* Guignot, *H. parallelipennis* Régimbart, *H. regimbarti* Zimmermann, *H. senegalensis* Régimbart, and *H. suturalis* Bilardo & Pederzani. Some of these species were not identified by comparison with reliable reference specimens, therefore their identification rests a little bit tentative, being based upon literature. The above list is provided mainly to the purpose of highlighting the great biodiversity of the Niokolo-Koba National Park. Bearing this limit in mind, it could be, nonetheless, interesting to mention that the penis of *H. baptus* from Niokolo-Koba is in good accordance with the figures in BISTRÖM (l.c.: 350) but differs a bit from specimens of *H. baptus* collected in Gabon (BILARDO & PEDERZANI, 1978 and BILARDO & ROCCHI, 2002). The problem will be investigated later. The males we identified as *H. occidentalis* have peculiarly long antennae and also these specimens require further study.

*H. suturalis* was caught in a great number of specimens (identified by comparison with the relevant holotype) that possess nearly unicoloured brown elytra, lacking the sutural darker band that gave the name to this species.

### Acknowledgements

We thank Philippe Moretto (Toulon, France) for his invaluable field activity, which made available the material dealt with in this article. We are also indebted to Saverio Rocchi (Florence) and to Michele Lanzinger, Valeria Lencioni and Mauro Gobbi (MUSE, Trento, Italy) for their kind cooperation.

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