

Taxonomic notes on *Amarodytes duponti* (Aubé, 1838) (Dytiscidae, Hydroporinae, Bidessini) with redescription of male genitalia

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Abstract

Taxonomic notes on Amarodytes duponti (Aubé, 1838) (Dytiscidae, Hydroporinae, Bidessini) with redescription of male genitalia.— The male genitalia of the water beetle *Amarodytes duponti* (Aubé, 1838) are described and illustrated. The species was collected in small pools of rainwater on the margins of a river. *A. duponti* is distinguished from other species of the genus by the presence of bi-segmented parameres. This species is related to *Bidessodes Régimbart*, *Hypodessus Guignot* and *Tepuidessus Spangler*.

Key words: Coleoptera, Dytiscidae, Bidessini, *Amarodytes duponti*, Brazil.

Resumen

Notas taxonómicas sobre Amarodytes duponti (Aubé, 1838) (Dytiscidae, Hydroporinae, Bidessini) con redescrípción de la genitalia masculina.— Se describe e ilustra la genitalia masculina del coleóptero acuático *Amarodytes duponti* (Aubé, 1838). Los especímenes fueron capturados en pequeñas pozas de origen pluvial, en los márgenes de un río. *A. duponti* se distingue de otras especies del género por presentar parámetros con dos segmentos. Esta especie está relacionada con *Bidessodes Régimbart*, *Hypodessus Guignot* y *Tepuidessus Spangler*.

Palabras clave: Coleópteros, Dytiscidae, Bidessini, *Amarodytes duponti*, Brasil.

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Introduction

The Neotropical genus *Amarodytes* Régimbart, 1900 is made up of 10 species, all from South America (Biström, 1988; Nilsson, 2001; Young, 1969). Although it has been considered a typical Bidessini to date, Biström (1988) places it in a separate group as "Insertae sedis" together with the also Neotropical genus *Hydrodessus* J. Balfour–Browne, taking into account the presence of one-segmented parameres. This characteristic is not present in other genera of Bidessini.

Following the study of an unidentified species of *Amarodytes*, Miller (2001) confirms its placement in the tribe Bidessini, based on the presence of a spermathecal spine. However, the phylogenetic analysis places *Amarodytes* sp. at the base of the tribe Bidessini, apart from the other genera, according to the author.

Amarodytes duponti described by Aubé (1838), was mentioned by several authors, cited in catalogues or lists of species (Gemminger & Harold, 1868; Zimmermann, 1920; Blackwelder, 1944; Tremouilles, 1995). Diagnoses can be found in Sharp (1882), Régimbart (1900) and Gschwendtner (1935). However, only external morphological characteristics have been considered and no description of male genitalia has been given or illustrated to date. Costa et al. (1988) described the larvae of a bidessine, which they claim to be *A. duponti*. An adult specimen of this species is also illustrated in their paper.

The analysis of the male genitalia of *A. duponti* allowed us to clearly observe the presence of two-segmented parameres, different from *A. percosioides* Régimbart, the type species of *Amarodytes*, which has simple parameres. Therefore, *A. duponti* is considered a typical Bidessini, according to the paramere segmentation, proposal by Biström (1988).

Results

Amarodytes duponti (Aubé, 1838)

Hydroporus Duponti Aubé, 1838: 568 (original description); Gemminger & Harold, 1868: 432.

Bidessus duponti (Aubé), Sharp, 1882: 369; Blackwelder, 1944: 76.

Amarodytes Duponti (Aubé), Régimbart, 1900: 527; Gschwendtner, 1935: 151.

Bidessus (Amarodytes) Duponti (Aubé), Zimmermann, 1920: 61.

Amarodytes duponti (Aubé), Young, 1969: 1; Biström, 1988: 36; Costa et al., 1988: 82; Tremouilles, 1995: 47; Nilsson, 2001: 110.

Type locality: "Brazil"

Description

Body form ovate, constricted between pronotum and elytra, with general coloration reddish–black, total length: 2.6 to 3.0 mm.

Head without a cervical line; black with one pale cervical patch, near pronotum, pointed in part, with

two longitudinal lines of strongly printed punctures between the eyes and with microreticulation regular. Antennae slender, with 11 subconical antennomeres, the hind antennomer enlarged; coloration reddish brown, with hind antennomer darkened, clypeus not margined; Palpi with apical segment darkened, enlarged and bifid.

Pronotum with lateral margin curved, broader near the head, with basal striae oblique and deeply marked, and with a basal depression in the middle, without transverse carina, broad anteriorly, near the head; posterior edge broken, projected slightly backwards (fig. 1). Pronotum dark, with two pale transverse marks in the antero–lateral region, near the head; pubescent and regularly pointed.

Elytra without basal, sutural or accessory striae; but with oblique depression extending to suture; elytral apex slightly depressed, rounded, not truncate. Elytra pubescent, with punctuation very marked and regular, without micro–reticulation. Black, with three or four small pale marks, with the following arrangement: one basal–median small mark; two sub median lateral marks, sometimes joined, the external oval with one projection apical and the internal smaller, rounded; one third apical mark, small, sometimes absent (fig. 2).

Ventral side completely black, with punctuation very marked in the hind coxae and the two first abdominal sternite. Prosternum and mesosternum smooth, metasternum with punctures scattered and with some setae. Prosternal process with apical portion acuminate and deeply emarginate. Epipleura basally without a pit posteriorly delimited by a transverse carina, only slightly depressed and smooth, finely punctate and with short setae. Metacoxal lines slightly divergent in front. Abdominal sternites III and IV finely punctate and setae mainly in the middle; sternites IV–VI with hind margin pointed and with setae short. Anal sternite not emarginated, making it sexually dimorphic: in the male with punctures in the posterior edge and a group of setae present, not depressed; in the female only scattered punctures, without a group of setae and with depression rounded and folded in middle.

Fore and middle tarsi pseudotetramerous, the fourth segment concealed by the lobes of the third. Legs reddish brown, hind and middle tibia with long swimming setae.

Male genitalia: aedeagus subtriangular with apex narrow and very tapering in dorsal view (fig. 3A); slightly curved to the ventral side in lateral view (fig. 3B). Parameres two-segmented, with the superior segment smaller and narrower than the basal (fig. 3C).

Variation: some specimens possess a distinct elytral pattern consisting of three or four pale elongated marks in the basal region, sometimes joined; one lateral mark near the apex, sometimes absent and one small apical mark.

Material studied

Brazil, Gramado, State of Rio Grande do Sul, River Cai, 340 m of altitude, 25 II 2001 (37 exx.: 24

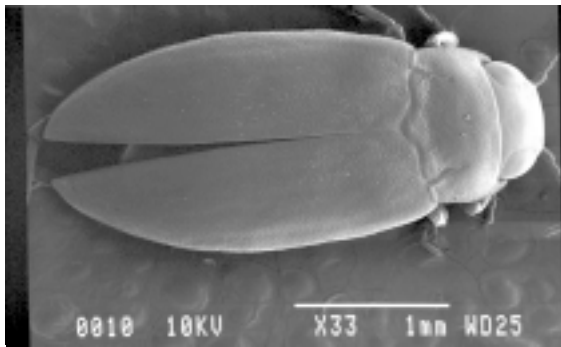


Fig. 1. Dorsal view of *Amarodytes duponti* (Aubé) (SEM).

Fig. 1. Vista dorsal de *Amarodytes duponti* (Aubé) (MEB).

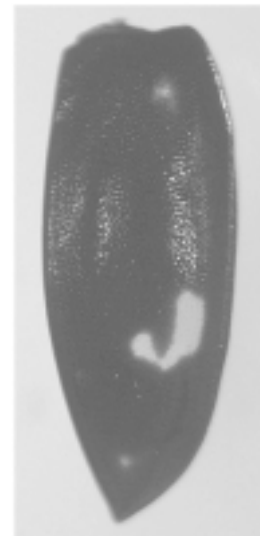


Fig. 2. Right elytra of *A. duponti* (Aubé).

Fig. 2. Élitro derecho del *A. duponti* (Aubé).

males and 13 females), deposited in Laboratory of Entomology of Universidade do Vale do Rio dos Sinos, São Leopoldo, Brazil; Brazil, Rio Claro, State of São Paulo (2 males), deposited in Museum of Zoology of Universidade de São Paulo.

Distribution

Brazil, states of Rio Grande do Sul, São Paulo and Santa Catarina (Gschwendtner, 1935).

Ecologic notes

This species was collected in small rainwater pools

on the margins of a river. A plant-free rock substrate is characteristic of these pools. The specimens were collected with individuals of *Desmopachria nitida* Babington and *Copelatus longicornis* Sharp. Costa et al. (1988) stated that *Amarodytes duponti* was collected in pools in the rock bed of "Rio Claro", São Paulo, Brazil.

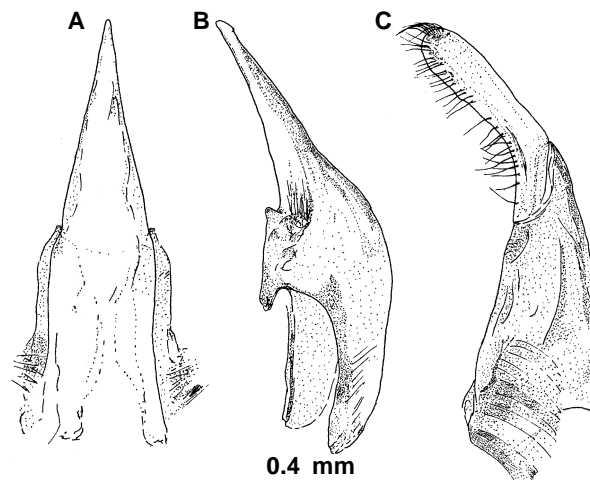


Fig. 3. *A. duponti* (Aubé): A. Aedeagus, dorsal view; B. Aedeagus, lateral view; C. Paramere, lateral view.

Fig. 3. *A. duponti* (Aubé): A. Edeago, vista dorsal; B. Edeago, vista lateral; C. Parámero, vista lateral.

Discussion

A. duponti differs from *A. percosioides*, type species of *Amarodytes*, mainly in the form of the aedeagus and parameres. In *A. duponti*, the aedeagus is subtriangular and parallel with the apex tapering and slightly curved in lateral view; the parameres are slender with two segments. In *A. percosioides*, the aedeagus is slender and subparallel, with the apex rounded and strongly curved in lateral view; the parameres are very broad and simple, and not segmented (Biström, 1988).

Other than genitalia, *A. duponti* differs from *A. percosioides* in its very narrow pronotum in relation to the elytra; the pronotum without a transverse carina with a concave centre; non-excavated epipleura, and the shape of the prosternal process.

This species appears to be closely related to genus *Bidessodes* Régimbart, *Hypodessus* Guignot and *Tepuidessus* Spangler, considering its external and internal morphologic characteristics, specially the presence of two-segmented parameres and lack of cervical line. It differs from these other genera based on the following characters: very marked pronotal striae, absence of elytral striae (basal, sutural and accessory), distinctive coloration and marks on the pronotum and elytra, an emarginated prosternal process, the epipleura not excavated and lacking transverse carinae, the anal sternite not emarginate, and genitalic characters.

New studies with the other species of the genus *Amarodytes* are necessary, in addition to other species of near genus in order to clarify important taxonomic aspects.

An alternative could be the creation of a new genus, that is justified based on the divergent characteristics of *A. duponti* in relation to the *A. percosioides* (type species of *Amarodytes*) and other genera of the Bidessini tribe, in addition to *Amarodytes* and *Hydrodessus*. Following the key proposed by Biström (1988), the species *A. duponti* would be classified as pertaining to the *Bidessodes* genus, but the analysis of different character diagnostics does not allow to include *A. duponti* in *Bidessodes*. A phylogenetic analysis of the genera of Bidessini, including *Amarodytes* and *Hydrodessus*, based on their species type, is necessary to discover relationships among them.

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