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A new species of *Hydaticus* LEACH, 1817 from New Caledonia (Coleoptera: Dytiscidae)

G. WEWALKA & M.A. JÄCH

Abstract

Hydaticus (*Prodaticus*) *manueli* sp.n. (Coleoptera: Dytiscidae), a member of the *H. sexguttatus* group, is described from New Caledonia and compared with other species of the same group, and with *H. bihamatus* AUBÉ, 1838, the only other New Caledonian *Hydaticus* LEACH, 1817 with similar colouration.

Key words: Coleoptera, Dytiscidae, *Hydaticus*, new species, taxonomy, New Caledonia.

Introduction

In November 2016, the junior author took part in an expedition to New Caledonia (Pacific Ocean) organized by the Muséum national d'histoire naturelle (Paris, France) under the program “La Planète Revisitée”. During this expedition he collected numerous new species of water beetles. Quite surprisingly, among these new species there was a rather large, vividly coloured species of the genus *Hydaticus* LEACH, 1817. During two follow-up missions of the same program (2017, 2018), Michaël Manuel (Paris, France) found eight additional specimens of the same species, which is described herein.

The new species belongs to the *Hydaticus sexguttatus* group, which is wide-spread in the Old World. This group was largely revised by WEWALKA (2015).

Material and methods

The study material (nine specimens) is deposited in the following institutions and private collections:

CGW	Coll. Günther Wewalka, Vienna, Austria
CMM	Coll. Michaël Manuel, Paris, France
MNHN	Muséum national d'histoire naturelle, Paris, France
NMW	Naturhistorisches Museum Wien, Vienna, Austria
ZSM	Zoologische Staatssammlung München, Germany

Abbreviations: TL (total body length), TL-h (total body length without head), MW (maximum body width).

Label data of the specimens are cited in quotation marks, additional information is provided between square brackets. A backslash “\” indicates separate labels.

The specimens were studied with a Leica MZ16 and with a Wild M3 binocular microscope. The aedeagus was studied in dry condition and drawn with the help of a drawing tube (Wild # 308700). The terminology to denote the orientation of the aedeagus follows MILLER & NILSSON (2003).

Two of the paratypes were preserved in alcohol and sent to Michael Balke (ZSM) for molecular studies.



Fig. 1: *Hydaticus manueli*, holotype.

Hydaticus (Prodatiscus) manueli sp.n.

TYPE LOCALITY: New Caledonia, North Province, Poum Community, residual pool in river bed; 20°12'18.7"S 164°5'29.2"E.

TYPE MATERIAL: **Holotype** ♂ (MNHN): "NEW CALEDONIA (NC 27) N-Prov., Poum Com. unnamed river 9.XI.2016, leg. M.A. Jäch \ ca. 7 km NE Poum ca. 15 m a.s.l. 20°12'18.3"S 164°5'27.7"E almost dried out lowland river" [printed white labels] \ "HOLOTYPE *Hydaticus manueli* sp.n. Wewalka & Jäch 2018" [printed red label].

Paratypes: 5 ♂♂, 1 ♀: "New Caledonia. Southern Prov. ca. 10 km NW Lafoa, ca. 3 km WNW Farino. 24 XI 2017. Manuel leg. \ S21°39'19" E165°44'55" Alt. 243 m. Small pools filled with decaying tree leaves, on rock bed of forest stream." [printed white labels] (CGW: 1 ♂; CMM: 2 ♂♂, 1 ♀; NMW: 1 ♂; ZSM: 1 ♂); 2 ♀♀: "New Caledonia. Southern Prov. ca. 1.8 km E Col des Roussettes. 3 XII 2017. Manuel leg. \ S21°25'28" E165°28'31" Alt. 233 m. Isolated pool, with many tree leaves and tree roots, gravel bottom, shaded, in stream bed." [printed white labels] (ZSM: 1 ♀; NMW: 1 ♀); 2 ♀♀: "New Caledonia. Southern Prov., Mont-Dore. 12 VI 2018. Manuel leg. \ S22°14'04" E166°34'50" Alt. 6 m. Small, shallow temporary and grassy marsh with *Melaleuca* trees; water slowly seeping from bank alongside road." [printed white labels] (MNHN: 1 ♀, CMM: 1 ♀).

DESCRIPTION: Habitus oblong-oval, broadest distinctly behind middle, moderately convex.

Measurements: TL: 12.2–13.3 mm; TL-h: 11.2–12.4 mm; MW: 6.2–6.9 mm; holotype: TL: 12.8 mm; TL-h: 12.2 mm; MW: 6.9 mm.

COLOURATION (Figs. 1, 2a, 4): Labrum and clypeus yellowish to reddish brown; frons and vertex black, with reddish brown anterior corners and with a subbasal reddish brown transverse mark sometimes separated into two marks. Antennae and maxillary palpi yellowish to reddish brown. Pronotum predominantly dark brown to dark reddish brown, at lateral sides more or less widely yellowish to reddish brown. Elytron dark brown to black with yellowish to reddish brown, more or less extended marks consisting of: a humeral mark connected with an irregular band along lateral side, an almost straight, transverse subbasal band not reaching suture, humeral mark or lateral band. Lateral band reaching one third to half of elytron width, containing dark longitudinal marks and irrorations mostly arranged in rows. Pronotum and epipleura yellowish to reddish brown. Ventral side predominantly dark brown to black (some specimens with an inconspicuous yellowish sublateral spot on ventrites 3 and 4). Anterior and middle legs reddish brown, hind legs reddish brown to dark brown.

SCULPTURE: Head with fine dense punctation and scattered stronger punctures; additionally with strong punctures concentrated in two spots in anterior third and two near the eyes, and with longitudinal rows of strong punctures along postero-medial margins of eyes; without microreticulation. Pronotum with very fine, dense punctation, and scattered stronger punctures; with a row of strong punctures along anterior margin, scattered strong punctures near lateral margins and oblique rows of stronger punctures near posterior margin on both sides of middle; with very fine microreticulation. Elytron with very fine punctation, scattered stronger punctures, and with fine microreticulation. Ventral surface with fine microreticulation; metacoxae and ventrites with fine scattered punctation, without stronger punctures; metacoxae with few smooth wrinkles.

MALE: Median lobe, lateral view (Fig. 2c): dorsal outline in apical two thirds straight, but ventral margin strongly attenuate toward pointed apex; ventral view as in Fig. 2b; right lateral lobe in lateral view as in Fig. 2d. Apex of last ventrite more or less truncate.

FEMALE: Colour and surface sculpture more or less as in males, but in the females examined the transverse subbasal yellowish elytral band is (at least on average) very slightly wider. Pro- and mesotarsomeres not modified. Apex of last ventrite evenly rounded.

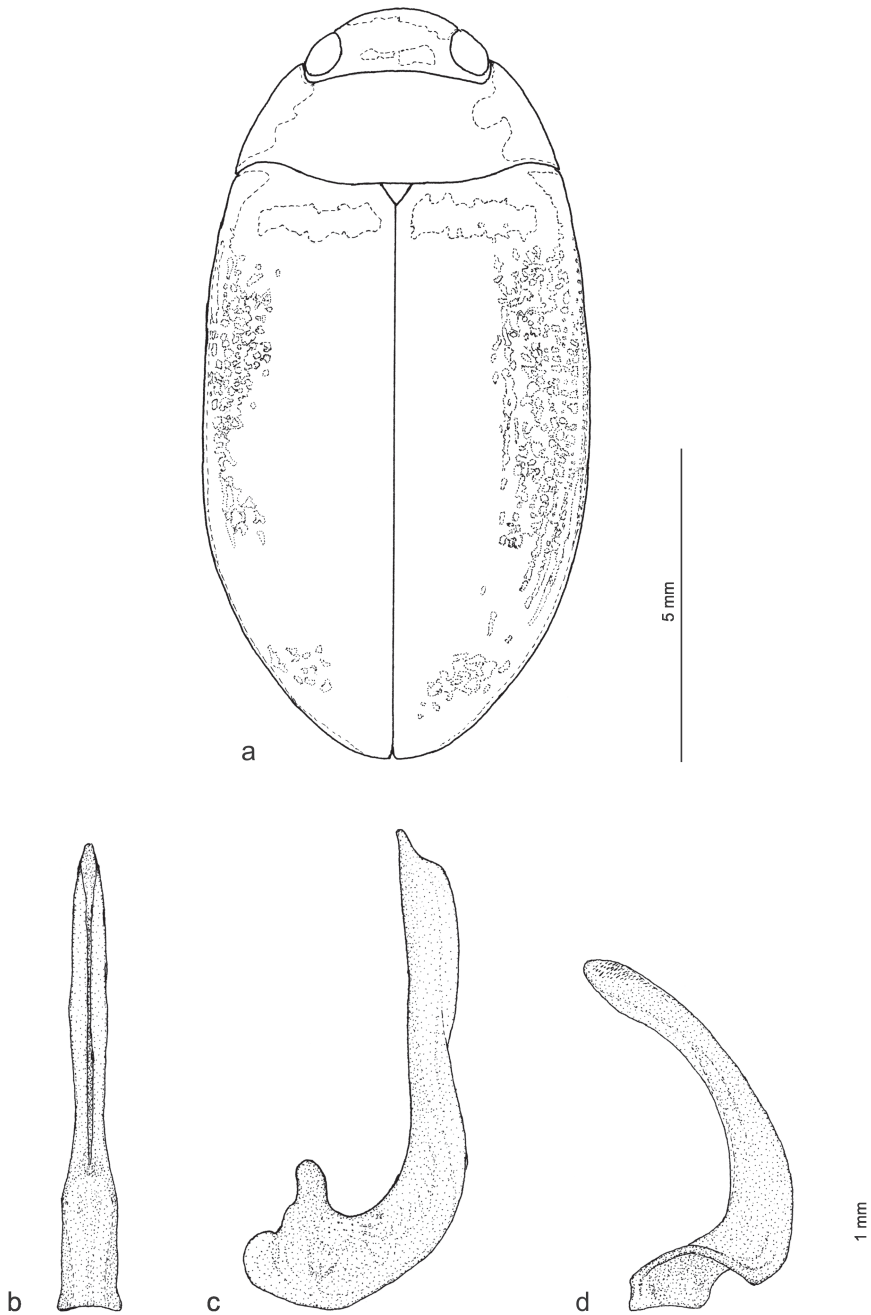


Fig. 2: *Hydaticus manueli*: a) variation of colour pattern of dorsal surface; b–d) aedeagus: b) median lobe in ventral view, c) same, in lateral view, d) left paramere in lateral view.



Fig. 3: Map of New Caledonia showing distribution of *Hydaticus manuli*.



Fig. 4: Living specimen (♀) of *Hydaticus manuli*, now a paratype, collected near Col des Roussettes (South Province).

DIFFERENTIAL DIAGNOSIS and AFFINITIES: *Hydaticus manueli* belongs to the *H. sexguttatus* group. It somewhat resembles *H. fractifer* WALKER, 1858 from Sri Lanka in size, habitus and elytral pattern (see WEWALKA 2015: fig. 9), but the aedeagus is very different (see WEWALKA 2015: fig. 31).

The median lobe in lateral view is similar to that of *H. hendrichi* WEWALKA, 2015 (see WEWALKA 2015: fig. 32) from Papua (Indonesia), but the latter species is very different in size and colouration (see WEWALKA 2015: fig. 10).

The new species shares the following characters with species of the *H. pacificus* and the *H. sexguttatus* groups: (i) elytral sculpture, including three rows of impressions, consisting of groups of punctures, the admedian one quite regular and dense, the intermediate one less dense and the lateral one indicated only by few impressions, additionally with a band of strong punctures along lateral margin; (ii) male pro- and mesotarsomeres I–III dilated, with ventral suckers: nine on protarsomere I, seven on protarsomere II, six on protarsomere III, seven on mesotarsomere I and four on mesotarsomeres II and III each; (iii) male protarsomere I with a dense fringe of setae along basal margin, and with a row of few accessory spinous setae on dorsal surface; male protarsomere II with a field of short dense fine setae being part of a stridulation device on the dorsal surface.

It should be mentioned here, that one of the New Caledonian *Hydaticus* species, *H. bihamatus* AUBÉ, 1838, although being a member of the *H. bihamatus* group, somewhat resembles *H. manueli* in the dorsal colour pattern. HENDRICH et al. (2010: 184) assigned the New Caledonian specimens to the subspecies *H. bihamatus goryi* AUBÉ, 1838, described from Australia. Further studies are necessary to find out whether the New Caledonian specimens really belong to *H. b. goryi*, or whether they represent a distinct subspecies, *H. b. clairvillei* MONTROUZIER, 1860 (described from New Caledonia), or whether they represent even a distinct endemic species. In any case, *H. manueli* can be distinguished from New Caledonian specimens of *H. bihamatus* quite easily by the more extended dark colouration of the pronotum, and especially by the yellowish transverse subbasal elytral band, which is laterally not curved backwards and not connected with the humeral mark or the lateral band, and by the median lobe (Fig. 2b–c), which is enlarged apically and more sinuate in lateral view in *H. bihamatus* (see WEWALKA 2015: fig. 22).

HABITAT: The holotype was collected in a residual pool in an almost dried out lowland river with fine gravel (Fig. 5) flowing through forest; in the pool the gravel was mixed with mud and numerous decaying leaves.

The paratypes were found in three locations: near Farino in a small shaded rock pool at the margin of a forest stream (Fig. 6); near Col des Roussettes in a shaded isolated pool next to a stream – this pool had a gravelly bottom and was filled with bamboo leaves; and near La Coulée (Le Mont-Dore Community) in a small shallow temporary and grassy marsh with *Melaleuca* trees.

ETYMOLOGY: The species is dedicated to Prof. Dr. Michaël Manuel (Paris, France), who collected the paratypes.

DISTRIBUTION (Fig. 3): New Caledonia: North Province (Poum) and South Province (Farino, Col des Roussettes, La Coulée near Nouméa).

Discussion

Hydaticus manueli is the fourth species of this genus recorded from New Caledonia (see HENDRICH et al. 2010), where it is the only species of the *H. sexguttatus* group.

Further molecular analyses are necessary to clarify the phylogenetic relationships of the new species within the *H. sexguttatus* group.



Fig. 5: Type locality of *Hydaticus manueli*. New Caledonia, North Province, ca. 7 km NE Poum. Photograph: M.A. Jäch.

Fig. 6: Habitat of *Hydaticus manueli*. New Caledonia, South Province, ca. 3 km WNW Farino. Photograph: M. Manuel.

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Prof. Dr. Günther WEWALKA
Starkfriedgasse 16, A – 1190 Wien, Austria (g.wewalka@gmx.at)

Dr. Manfred A. JÄCH
Naturhistorisches Museum Wien, Burgring 7, A – 1010 Wien, Austria (manfred.jaech@nhm-wien.ac.at)

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