

Notes of the Synonymy of *Macrocrates bucephalus* HOPE et WESTWOOD (Coleoptera, Lucanidae, Lucaninae)

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Abstract *Macrocrates* individuals with yellow elytra are reconfirmed as a phenotype of *M. bucephalus* by examining the male and female genitalia as additional materials. Based on the result, we conclude that the synonymy of *M. formosus* is confirmed following a good treatment.

Key words: Brazil, phenotype, stag beetles, taxonomy, *Macrocrates*.

Introduction

Macrocrates bucephalus (HOPE et WESTWOOD, 1845) and yellow elytral *Macrocrates* species as *Macrocrates formosus* (DIDIER, 1926) were described from Brazil. Later, BENESH (1955) synonymized *M. formosus* under *M. bucephalus*, and WEINREICH (1963) and FUJII (2012) followed this treatment. The specimen having yellow elytra is only recorded as the type specimen of *M. formosus* in the original description and the female one has not been recorded. After a detailed examination of the male and female genitalia of a good number of yellow elytral specimens of *M. bucephalus*, we conclude that the synonymy of *M. formosus* is confirmed following a good treatment. In this paper, we record the yellow elytral specimens with detailed localities and provide photos of their male and female genitalia.

List of acronyms

OXUM	HOPE Entomological Collections, University Museum, Oxford
MNHN	National Museum of Natural History, Paris, France
EPGC	Everardo and Paschoal GROSSI Private Collection, Nova Friburgo, Brazil

Macrocrates bucephalus (HOPE et WESTWOOD, 1845)

(Figs. 1–9, 11–14)

Lucanus bucephalus HOPE et WESTWOOD, 1845: 15.

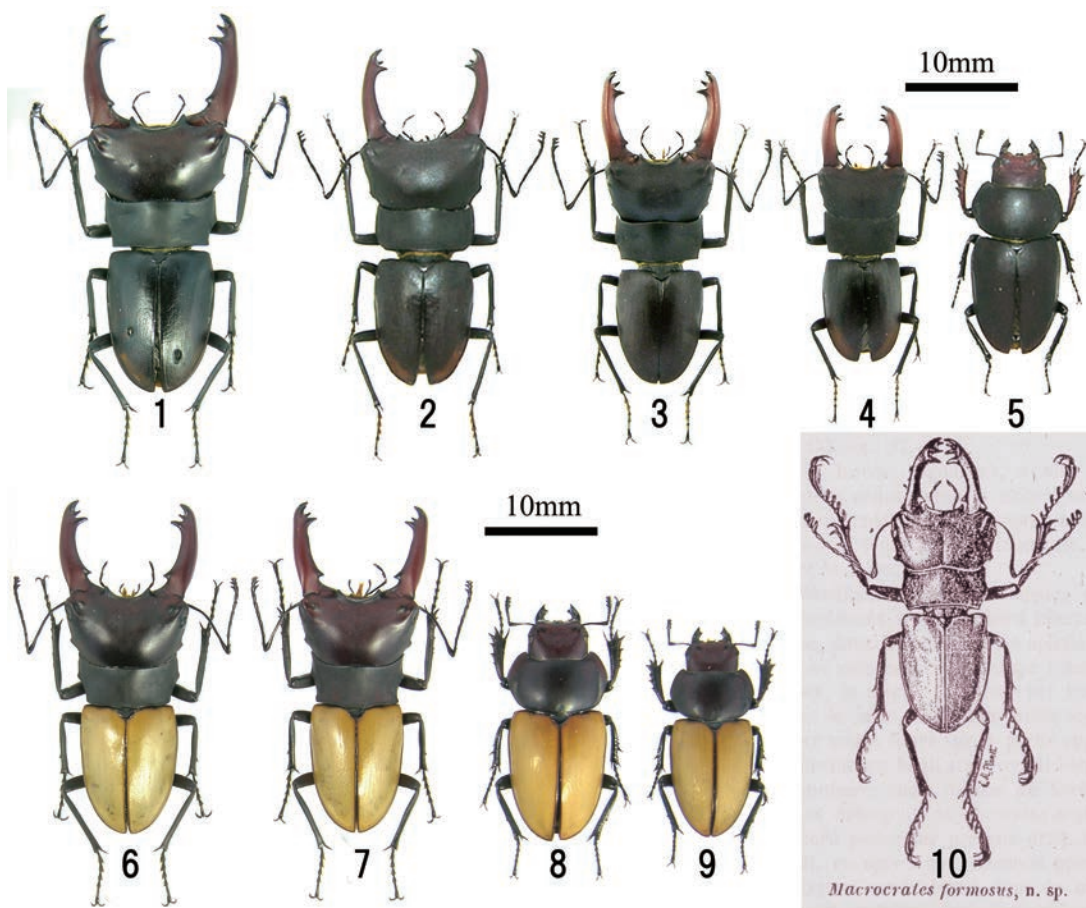
Lucanus longicornis BURMEISTER, 1847: 382; PARRY, 1864: 86.

Macrocrates bucephalus: BURMEISTER, 1847: 381–382; DOHRN, 1862: 155; PARRY, 1864: 44, pl. 10, fig. 9; HEYNE, 1908: 54, pl. 8, fig. 3; BOILEAU, 1913: 237, pl. 1; DIDIER, 1926: 83; LUEDERWALDT, 1934: 388; 1935: 509, pl. 3, fig. 39; BLACKWELDER, 1944: 196; DIDIER & SEGUY, 1952: pl. 94; 1953: 131; BENESH, 1955: 57–60; 1960: 54; WEINREICH, 1963: 198–202, pl. 13, figs. 7–8; NAGAI, 1985: 185; MAES, 1992: 62; MIZUNUMA & NAGAI, 1994: 278; KRAJCIK, 2001: 29; 2003: 111; MIZUNUMA, NAGAI & SUZUMURA, 2010: 284, pl. 189, fig. 824; FUJII, 2012: 243–255, pls. 6–10.

Lucanus longicornis BURMEISTER, 1847: 382; PARRY, 1864: 86.

Macrocrates formosus DIDIER, 1926: 83; LUEDERWALDT, 1935: 513, pl. 3, fig. 38.

Holotype, male at OXUM (Col: 269).



Figs. 1–5. *Macrocrates bucephalus*, melanic form. — 1, ♂ from near Curitiba, Paraná, Brazil; 2, ♂ from Urubici, Santa Catarina, Brazil; 3, ♂ from São Joaquim, Santa Catarina, Brazil; 4, ♂ from Urubici, Santa Catarina; 5, ♀ from Urubici, Santa Catarina.

Figs. 6–9. *Macrocrates bucephalus*, yellow form, from Parque Estadual do Pico Paraná -PR, Brazil. — 6 & 7, ♂; 8 & 9, ♀.

Fig. 10. *Macrocrates formosus*, holotype (after DIDIER (1926)).

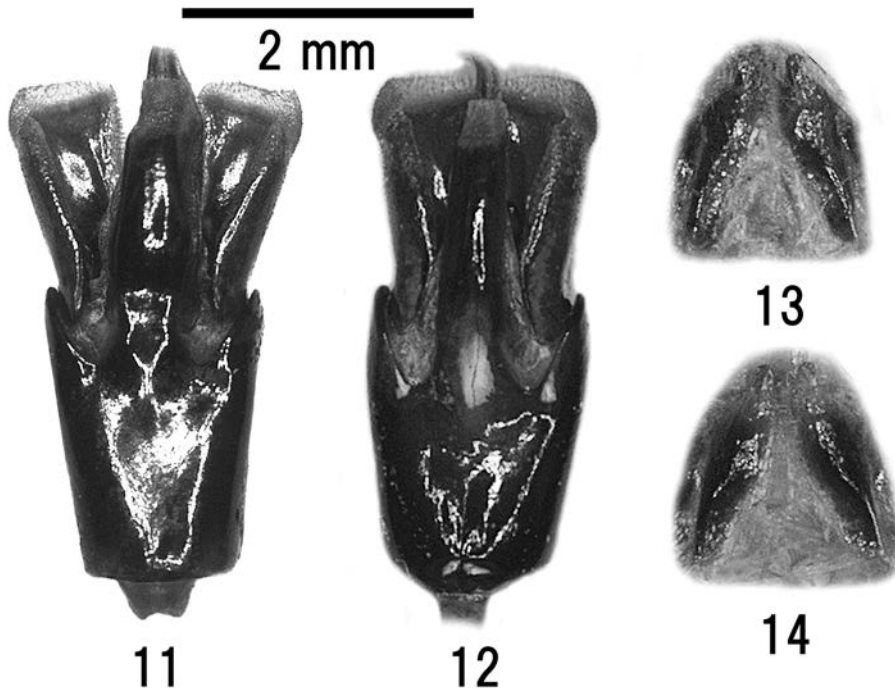
Type locality. Brasília meridionali.

Distribution. South Brazil. Santa Catarina: Urubici, São Joaquim. Paraná: Quatro Barras, Parque Estadual do Pico Paraná.

Body size. Length: ♂♂, 23.0–33.0 mm (including mandibles); ♀♀, 18.0–22.0 mm (including mandibles). Width: ♂♂, 8.0–13.0 mm; ♀♀, 7.0–9.0 mm.

Specimens examined. 2 ♂♂, 1 ♀, Urubici, Santa Catarina, Brazil, 26.II.2009; 20 ♂♂, 19 ♀♀, Urubici, Santa Catarina, Brazil, III.2011; 1 ♂, São Joaquim, Santa Catarina, Brazil, 22.III.2012; 1 ♂, Near Curitiba, Paraná, Brazil, III.2014; 6 ♂♂, 4 ♀♀, Parque Estadual do Pico Paraná -PR, Brazil, III.2014, (EPGC).

Several specimens listed above from Urubici and Parque Estadual do Pico Paraná have yellow



Figs. 11–14. Genitalia of *Macrocrates bucephalus*. — 11, Male, melanic form, from Urubici, Santa Catarina, Brazil; 12, male, yellow form, from Parque Estadual do Pico Paraná -PR, Brazil; 13, female, melanic form, from Urubici, Santa Catarina, Brazil; 14, female, yellow form, from Parque Estadual do Pico Paraná -PR, Brazil.

elytra. All the specimens were collected by GROSSI who had a project approved by the government, thus obtained all necessary permissions to do research in the national conservation area.

Notes. The genus *Macrocrates* was established by BURMEISTER (1847) based on *Lucanus bucephalus* (HOPE et WESTWOOD, 1845), and the holotype of *M. bucephalus* was examined and illustrated by WEINREICH (1963). *Macrocrates formosus* was described by DIDIER (1926), but the morphological difference between it and *M. bucephalus* was only in the elytral color. Consequently, BENESH (1955) treated *M. formosus* as a junior synonym of *M. bucephalus* and this treatment was also followed by WEINREICH (1963).

In this work we were able to study many specimens of *Macrocrates* with yellow elytra (Figs. 6–9) in detail. These specimens seem to be a non-melanic form of *M. bucephalus* with yellow elytra, as in *M. formosus* (DIDIER, 1926). Some of the *Macrocrates* specimens with yellow elytra and melanic elytra were found at the same locality (Urubici, Santa Catarina).

We have examined the male and female genitalia of the specimens of *Macrocrates* with yellow elytra by comparing with those of *M. bucephalus* with melanic elytra. The detailed description of the male and female genitalia of *M. bucephalus* were shown by FUJII (2012), whilst those of the forms of *M. bucephalus* with photos (Figs. 11–14) are shown in this study. Through studying the male and female genitalia of the forms of *M. bucephalus*, we only find slight differences in the male genitalia, which are too weak that we consider them as just an individual variation. From these results, we conclude that the yellow elytra *Macrocrates* can only be recognized as a phenotype of *M. bucephalus*,

and a non melanic form of it, in other words, the synonymy of *M. formosus* is confirmed following a good treatment.

In addition, we note that the holotype of *M. formosus* has been lost from Muséum national d'histoire Naturelle, Paris (MNHN), thus we could not examine it.

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要 約

藤居孝聡・Paschoal Coelho GROSSI：オオズクワガタ属（鞘翅目クワガタムシ科）の一種について、———最近得られた追加標本に基づいて雌雄交尾器を含む形態を検討した結果、鞘翅の色が黄色く *Macrocrates formosus* の特徴を示すオオズクワガタは、*M. bucephalus* の一表現型であることが再確認された。なお、*M. formosus* のタイプ標本は、パリ国立自然史博物館から持ち出されて行方不明になっている。そのため現状では、鞘翅が黄色い *M. bucephalus* と *M. formosus* のタイプ標本を比較検討することができない。

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