



## Notes on Afrotropical *Catharsius* species described by Edgar von Harold (Coleoptera: Scarabaeidae, Scarabaeinae)

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### Abstract

The type material of the Afrotropical *Catharsius* species described by E. von Harold is studied. Lectotypes are designated for *C. camillus*, *C. dux*, *C. harpagus*, and *C. pandion*. Habiti, aedeagi and original labels of the primary types are illustrated. *Catharsius mossambicanus* Ferreira, 1960 is here considered a junior synonym of *C. pandion* Harold, 1877. An all-referent male is designated and illustrated for *C. dux* Harold, 1878 in order to illustrate males of this species in which females are undistinguishable from *C. duciformis* Ferreira, 1959.

**Key words:** Scarabaeinae, *Catharsius*, primary types, von Harold, Africa

### Résumé

Le matériel type des espèces afrotropicales du genre *Catharsius* décrites par E. von Harold est étudié. Des lectotypes sont désignés pour *C. camillus*, *C. dux*, *C. harpagus*, et *C. pandion*. On figure les habitus, édéages et les étiquettes de tous les types primaires. *Catharsius mossambicanus* Ferreira, 1960 est maintenant considéré synonyme junior de *C. pandion* Harold, 1878. Enfin, un alloréférent mâle est désigné et illustré pour *C. dux* afin de bien préciser quel est le mâle de cette espèce dont les femelles sont identiques à celles de *C. duciformis* Ferreira, 1959.

### Introduction

As part of a recent effort to identify dung beetle specimens collected in Quirimbas National Park in northern Mozambique, type material of some species belonging to the genus *Catharsius* described by Edgar von Harold were studied by the senior author. We summarize here the results of this study and designate lectotypes and illustrate diagnostic characters in order to clarify the status of species treated herein and to facilitate further study on the group by the junior author. Among the 553 species of dung beetles (Scarabaeinae) described by Harold, 8 taxa were described as *Catharsius* in three different publications (1877, 1878, 1881). Of these 8 species, two are now assigned to different genera. *Catharsius peregrinus* Harold, 1878 is currently assigned to the monobasic genus *Copridaspidus* Boucomont, 1920 and *Catharsius pollicatus* Harold 1878 currently placed in the genus *Metacatharsius* Montreuil, 1998. Of the 6 remaining species, one (*Catharsius coronatus* Harold, 1877) is from the Indomalayan region and excluded from the current note which deals with Afrotropical species.

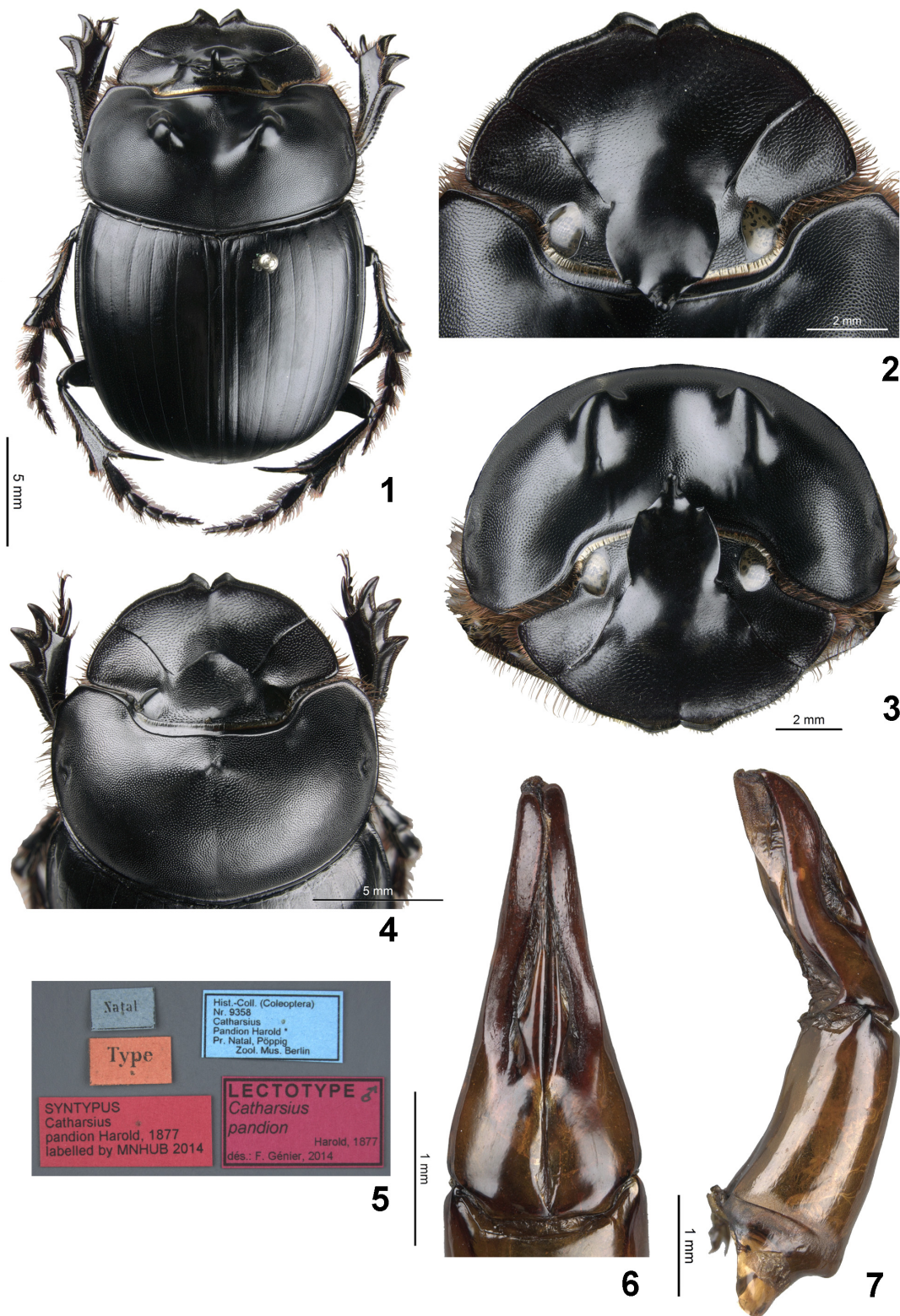
Species are treated in order of appearance in the original publications. Format. All label data are transcribed verbatim. Each label text is in square brackets ([ ]) followed by the media description and each text line is separated by a slash (/). All specimens studied here are deposited in the collection of the Museum für Naturkunde der Humboldt-Universität, Berlin, Germany (ZMHB). The heading of each species treatment refers to Harold's type name, not to the current status of the species.

*Catharsius pandion* Harold, 1877

(Figs. 1–7)

*Catharsius pandion* Harold, 1877: 97

*Catharsius mossambicanus* Ferreira, 1960: 56 **new synonymy**



**FIGURES 1–7.** *Catharsius pandion* Harold (Figs. 1–3, 5–7. lectotype ♂, Fig. 4. paralectotype ♀). 1. habitus, dorsal view; 2. head, dorsal view; 3. head and pronotum, frontal view; 4. head and pronotum, dorsal view; 5. labels; 6. parameres, dorsal view; 7. aedeagus, lateral view.

**Type locality.** Natal (South Africa)

Seven syntypes (4♂♂, 3♀♀) are present in the collection of the Museum für Naturkunde der Humboldt-Universität. *Catharsius pandion* belongs to a complex of closely related species and in order to provide a primary type with the most diagnostic characters a large male is selected from the syntypic series as lectotype (**present designation**). This species bears the following labels (Fig. 5): [Natal] blue card; [Type] red card; [Hist.-Coll. (Coleoptera)/Nr. 9358/ Catharsius/ Pandion Harold/ Pr. Natal Pöppig/ Zool. Mus. Berlin] blue card; [SYNTYPUS/ Catharsius/ pandion Harold, 1877/ labelled by MNHUB 2014] red card; [LECTOTYPE ♂/ *Catharsius/ pandion/ Harold, 1877/ dés. F. Génier, 2014*] red card.

The remaining 3♂♂, 3♀♀ have the same data and are designated as paralectotypes.

**Remark.** The male lectotype has been dissected and the aedeagus extracted (Figs. 6–7). Following the examination of Harold's type specimens, we suspected that the species *Catharsius mossambicanus* Ferreira, 1960 would be a junior subjective synonym of *C. pandion*. We tried to locate the holotype of *C. mossambicanus* for comparison but it was not in the Museu de História Natural (formerly Museu Dr. Alvaro de Castro) in Maputo (Mozambique) where the original description states it was deposited. Ferreira's description is based on two male specimens. It was possible to locate a paratype, which was deposited in the National Museum in Bloemfontein. Subsequently, in material sent from the Ditsong Museum, another specimen also labeled as a paratype was found. This second specimen is a well-developed male whose label data match that of the holotype as stated in the original description. Evidence now suggests that the second specimen labelled as a paratype and deposited in the Ditsong Museum is actually the holotype. This second specimen, was dissected and matches perfectly the lectotype of *Catharsius pandion*. The other specimen, the actual paratype, is small and very teneral. The male holotype illustration provided by Ferreira also matches well developed males of *C. pandion*. We therefore establish the following synonymy: *Catharsius pandion* Harold, 1877 = *Catharsius mossambicanus* Ferreira, 1960, **new synonymy**.

Interestingly, this synonymy is leaving undescribed the species *C. pandion sensu* Ferreira (*nec* Harold). This taxon will be described along with a second species of the *pandion* complex in a forthcoming publication.

### ***Catharsius harpagus* Harold, 1877**

(Figs. 8–12)

*Catharsius harpagus* Harold, 1877: 97

**Type locality.** Delagoa Bay (Mozambique)

Three specimens are in the collection. A male and a female are from recent collecting (1963) and have been seen by M.C. Ferreira. The remaining specimen is a syntype. Harold's description is clear in stating a length range of "22–30 mill." in the original description excluding the possibility of a unique specimen studied. Harold also stated "Specimina typica in Museo Berolinensi asservantur" for the type deposition. It is possible that the remaining specimens studied by Harold are deposited in different collection(s). Fortunately, the syntype studied is a well-developed male. This specimen is designated as lectotype (**present designation**) and bears the following labels (Fig. 10): [Delagoa/ Bay] white paper; [72066] white paper; [Type] red card; [D. O. Africa/ 36] red handwriting on white paper; [O.-Afrika/ Delagoa boy/ Felsche] handwriting on blue paper; [SYNTYPUS/ Catharsius/ harpagus Harold, 1877/ labelled by MNHUB 2014] red card; [LECTOTYPE ♂/ *Catharsius/ harpagus/ Harold, 1877/ dés. F. Génier, 2014*] red card.

**Remark.** The male lectotype has been dissected and the aedeagus extracted (Figs. 11–12). This species is currently valid with no synonyms. No change in the taxonomic status of this species is required.

### ***Catharsius camillus* Harold, 1877**

(Figs. 13–17)

*Catharsius vitulus* Boheman, 1857: 223

*Catharsius camillus* Harold, 1877: 97



**FIGURES 8–12.** *Catharsius harpagus* Harold (lectotype ♂). 8. habitus, dorsal view; 9. head, dorsal view; 10. labels; 11. parameres, dorsal view; 12. aedeagus, lateral view.

**Type locality.** Cap b. sp. (South Africa)

As for *C. pandion*, the syntypic series consist of seven specimens (4♂♂, 3♀♀). In order to provide a primary type with the most diagnostic characters a large male is selected from the syntypic series as lectotype (**present designation**). This specimen bears the following labels (Fig. 15): [Krebs!] handwriting on green card; [Camillus/

Harold/ Cap b. sp.] handwriting on green card; [9352] white paper; [Type] red card; [SYNTYPUS/ Catharsius/ camillus Harold, 1877/ labelled by MNHUB 2014] red card; [LECTOTYPE ♂/ Catharsius/ camillus/ Harold, 1877/ dés. F. Génier, 2014] red card.



**FIGURES 13–17.** *Catharsius camillus* Harold (lectotype ♂). 13. habitus, dorsal view; 14. head, dorsal view; 15. labels; 16. parameres, dorsal view; 17. aedeagus, lateral view.

**Remark.** The male lectotype has been dissected and the aedeagus extracted and figured (Fig. 16–17). *Catharsius camillus* is currently a junior subjective synonym of *Catharsius vitulus* Boheman, 1857. It should be pointed out that Harold’s original description state Port Natal (=Durban) as the type locality which conflict with the original specimen labels. Because *C. camillus* is synonymous with *C. vitulus*, we believe that the proper type locality would be most likely Cap. b. sp., in its former sense which included all of western South Africa. Although inaccurate it would more or less coincide with the southern distribution range of *C. vitulus* (A. Davis pers. comm.). All 6 paralectotypes bear a “Capland” printed label further supporting this interpretation.

### ***Catharsius dux* Harold, 1878**

(Figs. 18–26)

*Catharsius dux* Harold, 1878: 101

#### **Type locality.** Regn. Lunda (Angola)

In the very brief description given by Harold there is a length range which indicates that more than one specimen was studied. The range is “38–40 mill.” and most likely fits the size of the two female syntypes. Furthermore, Harold states that the sex described is female. Both specimens are labelled as “Lunda, Pogge”. The largest female specimen is selected as lectotype (**present designation**) and bear the following labels (Fig. 20): [Pogge!] handwriting on green card; [dux/ Harold/ Regn. Lunda] handwriting on green card; [60062] white card; [Type] red card; [1285] green card; [SYNTYPUS/ Catharsius/ dux Harold, 1878/ labelled by MNHUB 2014] red card; [LECTOTYPE ♀/ *Catharsius/ dux/ Harold, 1878/ dés. F. Génier, 2014*] red card.

**Remark.** The type locality was previously cited in error as “Guiné” by Ferreira, (1960). This type locality most likely came from a misinterpretation of “im inneren Guinea” as cited in Harold’s original description. At the end of the 19<sup>th</sup> century “Guinea” was a very vague term for the “Gulf of Guinea”. Harold’s (1879) gave a detailed account of A.V. Homeyer and P. Pogge’s journey into “Angola und im Luanda-Reiche” or former pre-colonial confederation of the Lunda Kingdom (Moretto, 2014). The original syntype labels state “Regn. Lunda” as the locality where Pogge collected the specimens. Harold gives the collecting sites for Pogge on a line approximately along the 10<sup>th</sup> parallel from 17 to 22° of longitude. Most of this itinerary is located within Angola and for a short distance in the Democratic Republic of the Congo. Therefore, the exact type locality lies somewhere in the Malanje, North or South Lunda provinces of Angola.

The current cited distribution range of this species is from Guinea in West Africa to Mozambique and Namibia in Southern Africa. Such wide distribution is rare among Afrotropical dung beetle species. For now, we can confirm the presence of this species from Cameroon (Northwest Region), Congo, Democratic Republic of the Congo, Angola and Zambia (examined specimens and pers. comm. P. Moretto). We consider records outside this range dubious and probably based on mislabeled or misidentified specimens. All other countries cited by Ferreira are most likely misidentifications of *Catharsius gorilla* Thomson.

Quedenfeldt (1884) described the male of *C. dux* from a series of specimens collected in Malange (=Malanje), Angola. In order to remain as conservative as possible and conform to the current accepted species concept we retain this interpretation which does not challenge the valid status of *C. duciformis*. Although not regulated by ICZN, we “link” a male specimen with specific diagnostic characters to the female lectotype of this species (see Dechambre, 2002). This is especially important for nomenclatural stability as the female specimens of this species are undistinguishable from females of *Catharsius duciformis* Ferreira, 1959. To our knowledge, *C. dux* and *C. duciformis* have never been collected from the same locality. Furthermore, the parapatric distribution pattern of *C. dux* and *C. duciformis* is also problematic for species recognition. This allreferent, a well-developed male specimen (fig. 22–26), is from northwest Zambia and bears the following label data (Fig. 24): [ZAMBIE NW Prov./ 10Km N Mwinilunga/ 06-XII-2012/ S11°34’ E24°24’/ leg. Josso Juhel Minetti]; [ALLOREFERENT ♂/ *Catharsius/ dux/ Harold, 1878/ dés.: F. Génier & J.-F. Josso, 2015*]. The allreferent male is deposited together with the lectotype female (ZMHB).



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**FIGURES 18–21.** *Catharsius dux* Harold (lectotype ♀). 18. habitus, dorsal view; 19. head, dorsal view; 20. labels; 21. head and pronotum, frontal view.



**FIGURES 22–26.** *Catharsius dux* Harold (alloreferent ♂). 22. habitus, dorsal view; 23. head, dorsal view; 24. labels; 25. parameres, dorsal view; 26. aedeagus, lateral view.





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**FIGURES 27–33.** *Catharsius brutus* Harold (Figs. 27–31. holotype ♂, Figs. 32–33. non teneral specimen). 27. habitus, dorsal view; 28. head, dorsal view; 29. labels; 30. parameres, dorsal view; 31. aedeagus, lateral view; 32. parameres, dorsal view; 33. aedeagus, lateral view.

## ***Catharsius brutus* Harold, 1881**

(Figs. 27–33)

*Catharsius brutus* Harold, 1881: 263

### **Type locality.** Sansibar (Tanzania)

The unique specimen on which Harold based his description is a well-developed male, it is very teneral and missing both posterior legs. The holotype bear the following labels (Fig. 29): [Hildabrdt.] handwriting on green card; [60753] white card; [Type] red card; [Brutus/ Harold/ Sansibar] handwriting on green card; [Catharsius brutus/ HAR./ M.C. Ferreira det., 1960] part handwriting on white card; [HOLOTYPUS/ Catharsius/ brutus Harold, 1881/ labelled by MNHUB 2014] red card.

**Remark.** This is the last species of *Catharsius* described by Harold. The original description is based on a specimen collected during the expedition of J.M. Hildebrandt in the “Districten von Taita und Ukamba auf einer Tour von Mombassa nach dem Kenia”. The holotype label states “Sansibar” as the specimen locality which is south of the area described in the title of the publication. However, the title also state “vorzüglich” (especially) which seems to indicate that the expedition went to some other nearby area as well. The island of Zanzibar is approximately 200 km South of Mombassa. *Catharsius brutus* is cited from Kenya, Tanzania (Zanzibar) and Uganda. Recent collecting in Cabo Delgado Province (Mozambique) indicates that the species is present further south as well. Unconfirmed records indicate that the species occurs also in central Mozambique, Mt. Mulange (S. Malawi) and Chirinda Forest (E. Zimbabwe) (pers. comm. A. Davis). We are adding photographs of a well sclerotized aedeagus (Figs. 32–33) to accompany the distorted aedeagus of the holotype (Figs. 30–31).

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