

An unusual new *Onthophagus* from New Guinea (Coleoptera: Scarabaeidae: Scarabaeinae)

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Abstract. A new dung beetle species with a combination of attributes unusual in the Papuasian context is described and illustrated: *Onthophagus rutriceps* sp. nov. from the Huon Peninsula of Papua New Guinea. The oldest known male remained undescribed for about 110 years, possibly because of its doubtful origin, but newly collected material confirmed the New Guinea occurrence of the species – prompting the present description.

Key words. Coleoptera, Scarabaeidae, *Onthophagus*, new species, New Guinea

Introduction

During a recent study of Papuasian dung beetle species of *Onthophagus* Latreille, 1802 in the Vladimír Balthasar Collection in the National Museum, Prague, our colleague Jiří Hájek came across with a medium-sized, unusually patterned male specimen which, judged from its general appearance in combination with the labels on the pin indicating a New Guinea origin, was dismissed as being probably mislabeled. Most robust Papuasian and Australian *Onthophagus* are unicolorous black or brown (some with a more or less metallic lustre), this single male being pigmented yellow-orange with symmetric brown-black markings and a blackish head, and indeed with an odd combination of structural features. Furthermore, the German collector of the specimen, Rudolf von Bennisen (1859–1912, first Governor of German New Guinea, 1899–1901, cf. HORN 1912, HORN & KAHLE 1935–1937, WIKIPEDIA 2012), had also been active collecting beetles in German colonial Africa. Similar deliberations must have led Balthasar to not describe this oddity in his 1969 New Guinea *Onthophagus* paper (BALTHASAR 1969) – he must have been uncertain, not normally being disposed to leave taxonomic novelties like this undescribed.

Then, to our surprise, came pictures and specimens of the same species, from recent collections made by Trond Larsen, working for Conservation International on the Huon Peninsula of Papua New Guinea – so the Bennisen specimen turned out to be Papuasian after all. The old handwritten label on the Bennisen specimen is not very clear, apart from implying a mountain

range (probably Kani-Gebirge, Fig. 15). It may thus well have come from broadly the same region, which at the time had numerous settlements along its coast as German colonial (or missionary) strongholds. We assume the location of Bennigsen's specimen to be a western outlier of the Finisterre Range. Whatever, as this unusual *Onthophagus* has no known direct relatives we believe that a separate description as a new species is warranted.

The symmetric colour pattern of the species varies in the extension of the black-brown markings, but is basically constant and unique in the Australasian context. The male has a stretched shovel-like clypeus, reminiscent of the Southeast Australian *O. macrocephalus* Kirby, 1818 (MATTHEWS 1972), a species unlikely to be related to our New Guinea *Onthophagus*. The "handle" on top of the pronotum is unusual in *Onthophagus*, certainly in the Papuasian context – major males of the otherwise very different Australian "fur clinger" *O. perame-linus* (Lea, 1923) have something similar to it (MATTHEWS 1972). The metasternum of our New Guinea novelty is sharply prow-shaped in front. The dorsal side is remarkably smooth, almost impunctate, and glabrous, and the elevation of the elytral interstriae is characteristic. Note, apart from other sexually dimorphic features, the differences in protibial ornamentation between the sexes. For the full list of identification attributes see the diagnosis hereafter.

Awaiting developments in a global supraspecific classification, our new *Onthophagus* is placed in the nominate subgenus. This paper is part of a series on Papuasian Scarabaeinae (KRIKKEN & HUIJBREGTS 2012 and sequels).

Material and methods

Body part measurements rounded off to 0.1 mm, approximate total body lengths (given for specimens as is) rounded off to 0.5 mm. Notation of length ratios for metatibial spur *versus* metatarsomeres 1 through 5 given with double *versus* single slashes. Two terminological remarks: *hemipunctures* have about half of their peripheral rim effaced, usually having a seta more or less decumbent to the effaced side; the adjective *propectoral* refers to the ventral elements of the prothorax. More technical information can be found in our larger companion papers (including KRIKKEN & HUIJBREGTS 2012).

The material examined is deposited in the following collections:

- CMNC Canadian Museum of Nature, Ottawa, Canada;
- NAIC National Agricultural Insect Collection, Boroka, Papua New Guinea;
- NMPC National Museum, Prague, Czech Republic;
- RMNH National Museum of Natural History / NCB Naturalis, Leiden, The Netherlands.

Description

Onthophagus rutriceps sp. nov.

(Figs. 1–17)

Type material. HOLOTYPE: male (RMNH), from "PAPUA NEW GUINEA: Morobe Prov.: Saruwaged Mtns., Huon Peninsula, YUS Transect, 5°57'28"S 146°52'25"E, 600-950m, July 2011, T. Larsen". PARATYPES: 13 males and females, same label data as holotype (NAIC, CMNC); 1 male, New Guinea [probably former German New Guinea: now Madang Prov.: Kani Mountains (cf. Fig. 15), year ca. 1900], v. Bennigsen [Igt.] (NMPC).

Diagnosis. Head of male with tip slightly bent upward, extended as “shovel”, apical crest shortly rounded; entire head surface lacking protrusions. Head of female shorter, with bisinuate, shortly reflexed clypeal apex and a pair of simple, pillar-like erect interocular horns; clypeofrontal ridge distinct, arcuate. Intercoxal lobe of metasternum just behind mesosternum with cariniform prow-shaped protrusion in both sexes (rounded in profile, pointed in ventral view). Head brown-black, remainder of body predominantly orange-yellow or more rufous, with symmetric brown-black markings. Pronotum of major males with forward-curved postdiscal projection (“handle”), anterior pronotal declivity broadly deplanate (but surface not delimited by extra ridges). Anterolateral angles of pronotum acute. Pronotal base medially obtusely angular. Elytral striae virtually impunctate, odd discal interstriae convex, intervening even discal interstriae less convex and broader; interstitial surface (like most of dorsum) with indistinct micropunctuation only. Legs robust. External protibial denticles of female not separated by serration, separating emarginations widely, evenly rounded; proximal serration limited; note other sexual differences in protibial shape (see below). Apical crests of meso- and metatibiae multi-sinuate-dentate, fringed with setae, lacking the more common shorter spines. Inner side of male protibial apex projecting angularly. Eyes darkish, foramina narrow, widely separated (interocular distance 10–11 single eye-widths). Dorsum virtually glabrous. Known body length 9–13 mm. Parameres (Fig. 14) tapering, bent downward, distal (downward) upper side (“roof”) narrow, parallel-sided.

Description (holotype, male). Body length ca. 13 mm. Habitus robust, convex; colour generally yellow to orange, with symmetric brown-black markings; largely shiny, several parts more or less matt (sericeous, microreticulate). Dorsal side and pygidium virtually glabrous, seemingly almost impunctate (micropunctuation and microsetae present, but inconspicuous); ventral side and legs with numerous long, yellowish setae.

Head black, shiny, with numerous inconspicuous micropunctures. Clypeus shovel-like: elongate forward, surface concave behind apex, sides marginate (well-defined margin finely punctate); lateral border virtually straight, converging to slightly reflexed tip, apical crest shortly rounded; clypeofrontal transition lacking ridge. Clypeogenal transition at border virtually continuous, fine suture curving from border onto frons; genal border very widely rounded, outer margin (anterior corner) crowded with fine punctation. Eye foramina narrowly elliptic, with ca 11 facet rows across widest point. Ratio interocular distance / maximum (transverse, single) eye width ca 10.

Pronotum moderately convex, broadly deplanate in front of short, forward-curved postdiscal projection; this projection slightly tapering, apex rounded, upper side of projection with slight longitudinal impression. Anterolateral surface of pronotum gradually, moderately declivous to very shallowly concave corner, anterolateral angle acute; anterior and lateral border of pronotum narrowly marginate; anterior section of lateral border virtually straight (full-face view), posterior section slightly sinuate; posterolateral angle rounded off to generally widely rounded, immarginate pronotal base; median section of base obtusely angular, finely marginate. Most of pronotal surface shiny orange, postdiscal projection and its immediate periphery black, basomedian surface also narrowly black; margins of pronotum narrowly infuscated; much of surface with inconspicuous micropunctuation.

Elytra broad, largely yellow, more or less shiny; base and apex with broad transverse brown-black marking; scutellum indistinct, shape of elytral base and apex unmodified; epipleuron black, orange midway, glabrous. Elytra with 8 fine, distinct, straight to slightly curved striae, stria 7 hardly sinuate in front, extending to shiny humeral umbone; stria punctures obsolete, hardly distinct. Elytral interstriae 1, 3, 5, 7, 8 convex, more shiny than less convex and broader interstriae 2, 4 and 6; interstitial micropunctuation hardly distinct.

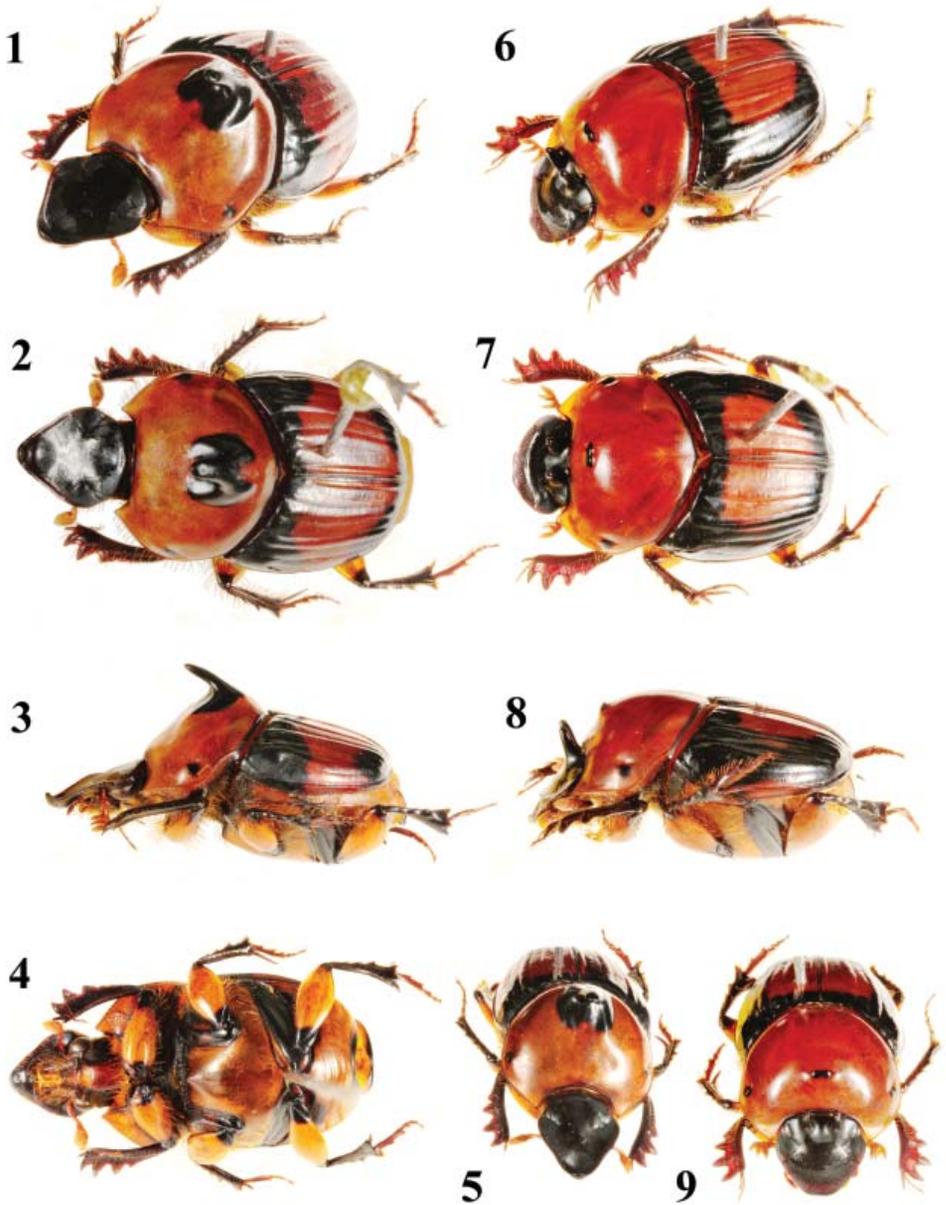
Antenna with 9 antennomeres; club lamellae unmodified, yellow-brown, covered with light pubescence; scapus in front with fine, longitudinal ridge. Mentum in front deeply excised; labial palpi with very small segment 4 distinct. Prosternum, mesosternum, mesepimeron black. Propectoral sides with fine coxal-marginal ridge widely curving forward, but not reaching border; surface abundantly hemipunctate-setose, laterally yellow. Intercostal lobe of metasternum distinctly prow-shaped in front, flanked by numerous fine seta-bearing punctures; metasternal disc shiny, yellowish, virtually glabrous, smooth (micropunctuation and their microsetae aside); flanks and adjacent metepisterna sericeous, and abundantly, finely hemipunctate-setose. Abdominal ventrites largely yellow, subsericeous, sides with row of fine, seta-bearing punctures; anal ventrite glabrous, medially black. Pygidium very slightly convex, yellow, shiny, apex black; margins narrowly raised, well defined, black; pygidial base with fine transverse ridge; surface with inconspicuous micropunctuation.

Legs robust, tibiae and tarsi generally shiny brown, femora largely yellow (base and apex infuscated); coxae largely black. Protibia with 3+1 broad external denticles, separated by some serration; proximal serration consisting of ca. 5 separate small denticles, remainder of proximal edge continuous; apico-external denticle oblique to tibial axis; terminal spur slightly curved, elongate-tapering; protibial underside with longitudinal crest, ending apico-internally at accrete, projecting angle; protarsus unmodified. Profemoral underside with numerous punctures bearing long seta, mesofemoral underside with fewer seta-bearing punctures, metafemoral underside glabrous. Meso- and metatibiae dilated distad to oblong, sinuate-dentate apical crest, which is fringed with long setae; external tibial side with 3 distinct sets of seta-bearing fossorial protrusions, remaining surface with numerous long setae. Terminal spurs on meso- and metatibiae elongate-tapering, their tips blunted-curved (metatibial spurs of holotype largely worn away). Tarsi generally slender, with unmodified sickle-shaped claws; meso- and metatarsomeres 1 long, straight, unmodified; length proportions of metatarsomeres 1–5 in approximate integers: 30/10/7/5/12.

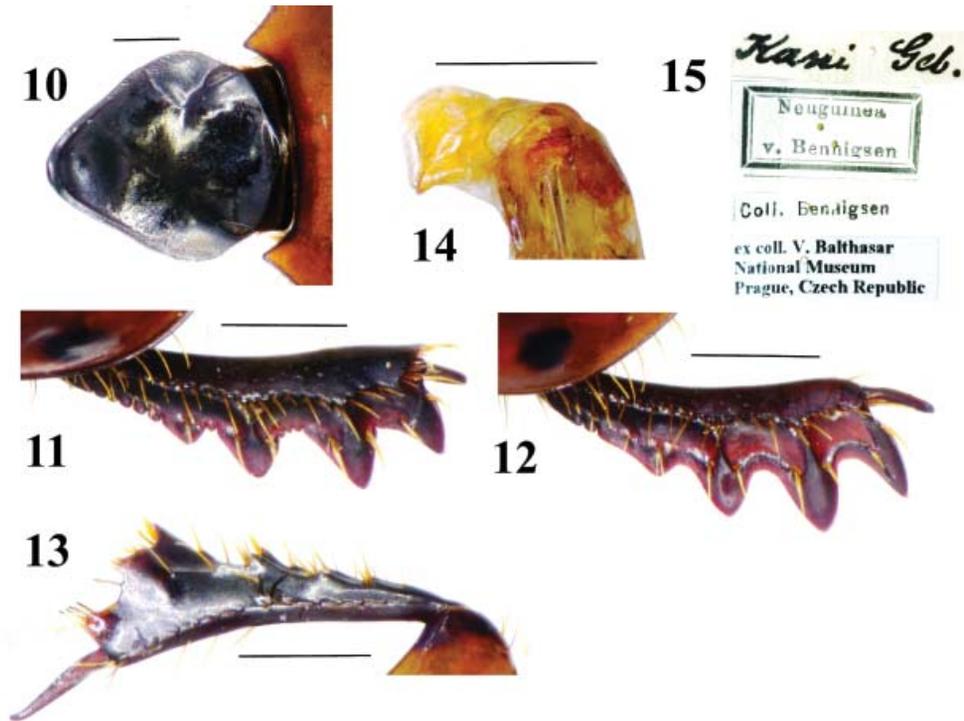
Body part measurements of male holotype in mm (dorsal view): Maximum width of head 3.3. Median length of pronotum 4.6, maximum width 6.2. Sutural length of elytra 4.4, maximum width combined 6.6.

Body part measurements of female paratype pictured (dorsal view): Maximum width of head 3.2. Median length of pronotum 4.2, maximum width 5.8. Sutural length of elytra 4.3, maximum width combined 6.3. Length proportions of terminal spur *versus* metatarsomeres 1–5 in approximate integers: 25/32/10/6/5/11.

Variation and sexual dimorphism. Females with pair of long, erect pillar-like horns between eyes, tip of horns rounded off, horns circular on cross-section, their base set slightly away from eye foraminal edge (distance from eyes virtually equal to distance between them). Clypeus short, edge generally rounded, but tip distinctly bisinuate, margin narrowly reflexed.



Figs. 1–9. Habitus of *Onthophagus rutriceps* sp. nov., male holotype (1–5), female paratype (6–9), body length ca. 13 and 10 mm, respectively. Oblique, dorsal, lateral, ventral, frontodorsal views.



Figs. 10–15. Body parts and labels of *Onthophagus rutriceps* sp. nov., male holotype (10–11), female paratype (12–13), male paratype (14, 15, ex NMPC). 10 – head, full-face view; 11–12 – protibia upper side; 13 – metatibia underside; 14 – parameres, lateral view; 15 – text of four labels (Bennigsen male). Scale lines equal 1 mm.



Figs. 16–17. Field photos. *Onthophagus rutriceps* sp. nov., male left (16), female right (17). (Photo T. H. Larsen).

Clypeofrontal ridge distinct, widely evenly arcuate, angularly reaching distinct clypeogenal suture. Clypeal surface transversely braided rugulate, frons in front of horns transversely rugulate-punctate. Pronotal discal protrusion shifted forward, somewhat transverse, not projecting forward as “handle”; anterior discal surface more convex than in male; pronotal punctation minute, generally more distinct than in male. Female protibia lacking apico-internal projection; upper side with well defined depressed parts externally delimited by extra ridge along non-serrate inter-dental emarginations.

Male clypeal extension and length of pronotal projection less in smaller males, real minors with reduced, simply prominent discal protrusion. Extension of elytral brown-black markings varies, basal and apical markings may be broadly connected over lateral declivity. Pronotum may be entirely yellow-orange. Frontal horns of minor females shorter, but still very distinct.

Colours vary slightly: yellow may be more rufous, black may be brownish-black. Approximate body length 9–13 mm.

Biology. *Onthophagus rutriceps* sp. nov. occurred from 700–950 m a. s.l. in primary rainforest. Although the species was most abundant at about 700 m, it was not collected at lower elevation (600 m), which may have been due to habitat disturbance. It did not occur at all above 950 m. Despite trapping with rotting fruit and carrion at the same sites, the species was only attracted to pitfall traps baited with human dung (T. H. Larsen, pers. comm. 2012).

Etymology. Latin contraction, meaning shovel-headed *Onthophagus*.

Distribution. Papua New Guinea: Huon Peninsula and possibly adjacent regions.

Acknowledgements

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