

Full Length Research Paper

# New distributional record of five species of *onthophagus* (coleoptera: scarabaeidae: scarabaeinae) from central india

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The paper presents new record of five species of genus *Onthophagus* Latreille viz. *Onthophagus* (*Onthophagus*) *abacus* Boucomont, *O. (O.) armatus* Blanchard, *O. (O.) rudis* Sharp, *O. (O.) gratus* Arrow and *O. (Proagoderus)* *amplexus* Sharp, from Central India. The description of external male genitalia of these species except *O. (O.) rudis* Sharp is provided for the first time.

**Key Words:** Coleoptera; Central India; New records; *Onthophagus*; Scarabaeidae.

## INTRODUCTION

The genus *Onthophagus* is the predominant genus of the subfamily Scarabaeinae and tribe Onthophagini (Smith, 2006). Latreille (1802) introduced the name *Onthophagus* from the largest of the Scarabaeinae genera and indicated the types for all the genera formed out of Linnaean *Scarabaeus*. Scarabaeinae currently include around 5700 valid species united in 227 genera and 12 tribes. Of these, the tribe Onthophagini is the most diverse and includes 2500 species, slightly under half of the described species in the entire Scarabaeinae (Davis *et al.*, 2008). Onthophagini have a worldwide distribution and include about 30 genera, of which the sub cosmopolitan and mega-diverse genus *Onthophagus* Latreille, 1802, comprises 2300 described species (Schoolmeesters *et al.*, 2008). The first comprehensive account on the dung beetles of India was published in the 'Fauna of British India, including Ceylon and Burma (Lamellicornia : Coprinae)', wherein 17 species of these beetles were included from Central India (Arrow, 1931). Later monographic work on the Scarabaeinae fauna of the Oriental and Palaearctic region was published by Balthasar (1963), where in 551 species of the genus *Onthophagus* distributed in 15 subgenera were included. Subsequently, Chandra and Ahirwar (2007) reported 23

species of the genus *Onthophagus* from Madhya Pradesh and Chhattisgarh. Recently Chandra & Gupta (2011a & b) added three species of the genus from Madhya Pradesh. While working on the unidentified collections from Central India, five species of the genus *Onthophagus* viz. *Onthophagus* (*Onthophagus*) *abacus* Boucomont, *O. (O.) armatus* Blanchard, *O. (O.) rudis* Sharp, *O. (O.) gratus* Arrow and *O. (Proagoderus)* *amplexus* Sharp were identified and found to be new record to the fauna of Central India and their external male genitalia were studied. Many more species are expected to be reported from central India, if more intensive surveys of unexplored areas are being undertaken. Classification and nomenclature for the species of the Genus *Onthophagus* is followed after Balthasar (1963).

## MATERIALS AND METHODS

Specimens studied includes the unidentified collections of dung beetles present in Central Zone Regional Station, Zoological Survey of India (ZSI) Jabalpur, collected from Pench Tiger Reserve (Seoni), Jabalpur and Mandla of Madhya Pradesh and Amarkantak Biosphere Reserve (Bilaspur) of Chhattisgarh. Male specimens were dissected and external male genitalia were removed. Specimens were cleaned and softened in a dish of hot water, the abdomen was separated from the body, and

the aedeagus was extracted from the abdomen. The abdomen was then glued to the body to keep the specimen intact. The aedeagus was further cleaned and disarticulated in hot water solution of 10% KOH and then removed to glycerin for dissection. All parts of the aedeagus were washed in 95% ethanol after examination stored in a glass vial containing 70% alcohol. Genitalia and whole insects were studied and photographed using Leica M205 binocular stereo microscope. The specimens were then identified with the help of available literature (Arrow, 1931 and Balthasar, 1963) and compared with the reference collections present in ZSI, Jabalpur. Specimens were deposited in Zoological Survey of India, Jabalpur.

## RESULTS AND DISCUSSION

Altogether five species of the genus *Onthophagus* viz. *Onthophagus (Onthophagus) abacus* Boucomont, *O. (O.) rudis* Sharp, *O. (O.) gratus* Arrow, *O. (Proagoderus) amplexus* Sharp and *O. (O.) armatus* Blanchard, were studied and reported for the first time from Central India, the first four new to the beetle fauna of Madhya Pradesh while last one is recorded for the first time from Chhattisgarh. Systematic account of studied species along with material examined, diagnostic features, and distribution in India as well outside India with the description of external male genitalia are discussed and illustrated.

## SYSTEMATIC ACCOUNT:

Order: COLEOPTERA Linnaeus, 1758  
 Suborder: POLYPHAGA Emery, 1886  
 Family: SCARABAEIDAE Latreille, 1802  
 Subfamily: SCARABAEINAE Latreille, 1802  
 Tribe: ONTHOPHAGINI Burmeister, 1846  
 Genus *Onthophagus* Latreille, 1802  
 1802. *Onthophagus* Latreille, *Hist. Nat. Crust. Et. Ins.*, 3 : 141.  
 Type Specimen: *Scarabaeus taurus* Linnaeus (Europe)

### *Onthophagus (Onthophagus) abacus* Boucomont, 1921

1921. *Onthophagus abacus* Boucomont, *Bull. Soc. Ent. France* : 44.  
 1931. *Onthophagus abacus*, Arrow, *Faun. Brit. India, Colept. Lamll., (Coprinae) III* : 193.  
 1963. *Onthophagus (Onthophagus) abacus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis. Region* (Coleoptera : Lamellicornia), *Coprinae, II* : 260.  
**Material examined:** Madhya Pradesh, Pench Tiger Reserve, Seoni, Karmajhiri, 4.vi.2001 (1 ex. ♂), Coll. K.

Chandra.

**Diagnosis:** (Plate 1, Fig. 2) Dark metallic blue, with the elytra black. Short, broad and very highly convex, opaque above with a clothing of fine, short, decumbent pale setae. Clypeus closely transversely rugose with margin rounded and strongly reflexed, separated by a nearly straight strongly elevated carina. Posterior margin of the head produced backward and upward as a rounded carina. Pronotum entirely covered with large, closely packed granules sometimes with a smooth median line. Pronotum bears a very slight tubercular elevation on each side.

**External male genitalia:** (Plate 1, Fig. 1) Phallobase more than thrice in length to parameres. Parameres almost triangular in shape and of small sized with their tip gradually pointed at the apex.

**Distribution:** India: Madhya Pradesh (Seoni), Maharashtra, Uttar Pradesh and South India. **Elsewhere:** Bangladesh.

### *Onthophagus (Onthophagus) armatus* Blanchard, 1853

1853. *Onthophagus armatus* Blanchard, *Voy Pole Sud* : 98.  
 1931. *Onthophagus armatus*, Arrow, *Faun. Brit. India, Colept. Lamll., (Coprinae) III* : 293.  
 1963. *Onthophagus (Onthophagus) armatus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis. Region* (Coleoptera : Lamellicornia), *Coprinae, II* : 277-278.

**Material examined:** Chhattisgarh, Amarkantak Biosphere Reserve, Bilaspur, Chhapparwa FRH, 12.vi.2008 (2 ex. ♂), Coll. Y. N. Gupta & Party.

**Diagnosis:** (Plate 1, Fig. 4) Black without hair above. Antennae and mouth-organs yellow. Broad, oval compact, and moderately convex. Clypeus finely punctured with its front margin strongly reflexed and bluntly biangulate in the middle, and separated by a nearly straight carina from the flat and feebly punctured forehead. The posterior margin of the head produced backward as a broad smooth lamina, gently curving upward, its outer angles forming a pair of short horns, which curve strongly towards each other. Pronotum finely and not closely punctured. Elytra deeply striate.

**External male genitalia:** (Plate 1, Fig. 3) Phallobase a little longer than parameres. Parameres almost rectangular in shape with its apex sharply pointed.

**Distribution:** India: Assam and Chhattisgarh (Bilaspur). **Elsewhere:** Java Myanmar, Philippines, Sunda Islands, Taiwan, Marina islands, Guam and Tonkin.

### *Onthophagus (Proagoderus) amplexus* Sharp, 1875

1875. *Onthophagus amplexus* Sharp, *Col. Hefte*, xiv : 53.  
 1931. *Onthophagus amplexus*, Arrow, *Faun. Brit. India, Colept. Lamll., (Coprinae) III*:238-239.

## Plate - 1



Fig. 1, *Onthophagus (Onthophagus) abacus*  
Boucomont



Fig. 2, *Onthophagus (Onthophagus) abacus*  
Boucomont



Fig. 3, *Onthophagus (Onthophagus) armatus*  
Blanchard



Fig. 4, *Onthophagus (Onthophagus) armatus*  
Blanchard



Fig. 5, *Onthophagus (Proagoderus)*  
*amplexus* Sharp



Fig. 6, *Onthophagus (Proagoderus)*  
*amplexus* Sharp

1963. *Onthophagus (Proagoderus) amplexus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis. Region* (Coleoptera: Lamellicornia), Coprinae, II : 271.

**Material examined:** Madhya Pradesh, Jabalpur, railway colony, 04.vii.2004 (2 ex. 1♀, 1♂), 24.vii.2004 (1 ex. ♂) Coll. Subhash Chandra.

**Diagnosis:** (Fig. 6) Oval and compact. Clypeal carina short and vertex bears a pair of long slender horns,

strongly curved outward, united by a continuous carina and enclosing part of a circle. The anterior part of pronotum deeply hollowed and very smooth and shining in the cavity, and the posterior margin of the cavity reduced obliquely forward in the middle, forming a strongly compressed knife-like horn. Elytra rather indefinitely striate with intervals slightly convex, closely and deeply punctured.

**External male genitalia:** (Plate 1, Fig. 5) Phallobase

Plate - 2



Fig. 7, *Onthophagus (Onthophagus) gratus*  
Arrow



Fig. 8, *Onthophagus (Onthophagus) gratus*  
Arrow



Fig. 9, *Onthophagus (Onthophagus) rudis*  
Sharp

twice in length as parameres. Parameres broad at the base and robust with its tips blunt and not at all pointed.

**Distribution:** India: Punjab, Madhya Pradesh (Jabalpur) and Uttarakhand. **Elsewhere:** China, Java and Sumatra.

***Onthophagus (Onthophagus) gratus* Arrow, 1931**

1931. *Onthophagus gratus* Arrow, *Faun. Brit. India, Colept. Lamll. (Coprinae) III* : 212. 1963. *Onthophagus (Onthophagus) gratus*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis. Region* (Coleoptera : Lamellicornia), Coprinae, II : 373.

**Material examined:** Madhya Pradesh, Mandla, keolan survey, near to river 12.vii.2008 (5 ex.), Coll. Akhilesh.

**Diagnosis:** (Plate 2, Fig. 8) Pronotum bright green or blue, the elytra (except the basal and sutural margins) orange yellow, tarsi and mouth-organs red. Upper surface and pygidium fairly closely clothed with yellowish setae. Head short and moderately broad, with sides rounded. Clypeus granular and evenly rounded, separated by a curved carina from the granular forehead, and vertex bears a straight carina. Pronotum strongly, evenly, and fairly closely asperate punctate in the posterior part, punctures replaced anteriorly by rather more closely set granules. Elytra finely striate, intervals

flat. Pygidium rather strongly and closely punctured.

**External male genitalia:** (Plate 2, Fig. 7) Phallobase thrice in length as parameres. Parameres broad at the base and slightly tapered distally, with apical one third parts strongly bent ventrally with its tips sharply pointed.

**Distribution:** India: Jharkhand and Madhya Pradesh (Mandhla).

### ***Onthophagus (Onthophagus) rudis* Sharp, 1875**

1875. *Onthophagus rudis* Sharp, *Col. Hefte*, xiv : 58.

1931. *Onthophagus rudis*, Arrow, *Faun. Brit. India, Colept. Lamell. (Coprinae) III* : 185.

1963. *Onthophagus (Onthophagus) rudis*, Balthasar, *Mon. der Scarabaeidae und Aphodiidae der Palaeark. und Orientalis. Region* (Coleoptera : Lamellicornia), *Coprinae*, II : 505.

**Material examined:** Madhya Pradesh, Jabalpur, railway colony, 08.vii.2004 (1 ex. ♀), Coll. Subhash Chandra.

**Diagnosis:** (Plate 2, Fig. 9) Dark greenish-brown and slightly metallic. Oval not broad, strongly constricted at the waist, shining beneath and opaque above. Surface above and beneath clothed with very fine recumbent setae. Head flat not broad, closely and evenly rugose, without carinae with clypeus little produced, blunt and slightly reflexed in the middle. Pronotum convex, densely covered with fine oval granules, with a small smooth pit on each side in front of the shoulder and a slight depression in the middle of the base. Elytra striate, with intervals flat and closely covered with minute elongate granules.

**Distribution:** India: Assam, Bihar and Madhya Pradesh (Jabalpur). **Elsewhere:** Borneo, China, Myanmar, Philippines, Indonesia, Java, Sumatra, Nias, Thailand, Vietnam, Sunda Islands, Yunnan and Sechuan.

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