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Journal of Threatened Taxa

Building evidence for conservation globally

www.threatenedtaxa.org

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

NOTE

FIRST RECORD OF A TROGID BEETLE (COLEOPTERA: SCARABAEOIDEA: TROGIDAE) FROM THE WESTERN GHATS, INDIA

Aparna Sureshchandra Kalawate & S.S. Patole

26 June 2018 | Vol. 10 | No. 7 | Pages: 11988–11991

10.11609/jott.3951.10.7.11988-11991



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ISSN 0974-7893 (Print)

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Trogidae is a small, cosmopolitan family consisting of about 300 species (Scholtz 1986a; Smith 2003; Pittino 2006; Zidek 2013, 2017). The family name Trogidae was proposed by MacLeay (1819). Trogid beetles are commonly called hide beetles (Houston 2010), and keratin beetles (Strümpher et al. 2014). The beetles of this family are necrophagous (Scholtz 1986b) and are of forensic importance. These insects utilize a wide array of food containing keratinous material. They feed on carcasses and are the last among other groups of organisms to feed on the carcass. They have been reported feeding on bat guano in caves, locust eggs, fly maggots and also on products which contain animal keratin, like an old carpet, coat, etc. (Scholtz 1986b).

These are the only members of this type of feeding habit (keratinophagous) from Scarabaeoidea. Adults lay eggs in soil under the food source. The larvae feed on that food source after hatching. The larva completes three instars in about four weeks, it stops feeding and prepares a light cocoon of agglutinated soil, where the pupation takes place (Verdugo 2014), and pupates for about two weeks.

Many adults of this family are attracted to light at night. Trogids are considered primitive in the superfamily Scarabaeoidea (Crowson 1954, 1981). The insects of this family are of forensic importance, and are being utilized to estimate post-mortem intervals in legal investigations of the human body (Tabor et al. 2004). India harbours

**FIRST RECORD OF A TROGID BEETLE
(COLEOPTERA: SCARABAEOIDEA: TROGIDAE)
FROM THE WESTERN GHATS, INDIA**

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a very rich Trogidae fauna, but work carried out on this family is less in comparison to other parts of the world. The Oriental trogid fauna was studied by a few researchers (Blackburn 1904; Arrow 1927; Haaf 1954a,b; Scholtz 1980, 1986b, 1990; Pittino 2005) and the world trogid fauna was catalogued by Zidek (2013, 2017).

It includes five genera viz. *Trox* Fabricius, 1775; *Polynoncus* Burmeister, 1876; *Omorgus* Erichson, 1847; *Glyptotrox* Nikolaev, 2016 and *Phoberus* Macleay, 1819 (Zidek 2017). The first trogid was described and named as *Scarabaeus sabulosus* Linnaeus 257 years back (Strümpher et al. 2016). The subfamily Omorginae Nikolajev, 2005 is monophyletic, and the members of this subfamily have elongated antennal scape and the metatibial spur is as long as the first two tarsomeres (Strümpher et al. 2016). As per Strümpher et al. (2016), *Afromorgus* was described as a subgenus of *Omorgus* by Scholtz (1986a), which was elevated to the genus level by Pittino (2006), but again considered as a subgenus

DOI: <http://doi.org/10.11609/jott.3951.10.7.11988-11991> | **ZooBank:** urn:lsid:zoobank.org:pub:3B4BF797-968A-43A5-83D2-3EC6607B43A8

Editor: Anonymity requested.

Date of publication: 26 June 2018 (online & print)

Manuscript details: Ms # 3951 | Received 08 December 2017 | Final received 07 May 2018 | Finally accepted 25 May 2018

Citation: Kalawate, A.S. & S.S. Patole (2018). First record of a trogid beetle (Coleoptera: Scarabaeoidea: Trogidae) from the Western Ghats, India. *Journal of Threatened Taxa* 10(7): 11988–11991; <http://doi.org/10.11609/jott.3951.10.7.11988-11991>

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Funding: None.

Competing interests: The authors declare no competing interests.

Acknowledgements: The authors are grateful to the Director, Zoological Survey of India, Kolkata and the Officer-in-Charge, WRC, ZSI, Pune for facilities and encouragement. Thanks are extended to Riccardo Pittino, Natural History Museum of Milan, Italy and Werner Strümpher, Agricultural Research Council, Pretoria, South Africa for help in confirmation of identification. Authors are grateful to Ales Bezdek, Biology Centre CAS, Institute of Entomology, Branišovská 31, CZ-370 05 České Budějovice, Czech Republic for providing the relevant literature.



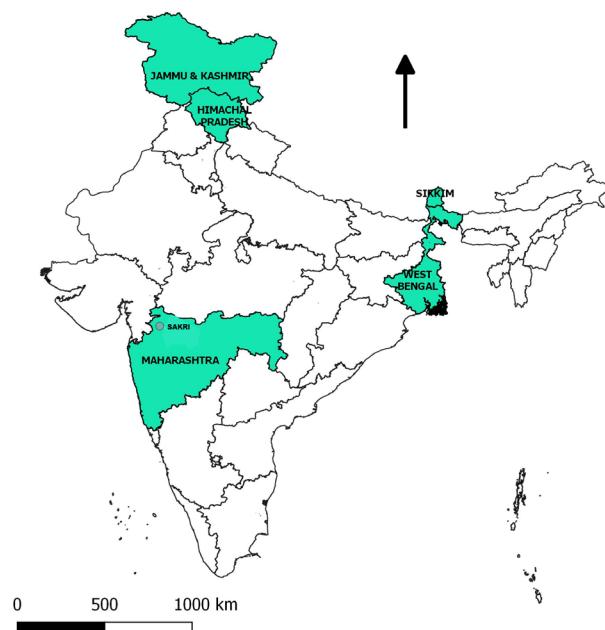


Figure 1. New collection locality and first record in the Western Ghats of the trogid beetle *Omorgus (Afromorgus) italicus* (Reiche, 1853).

of *Omorgus* (see Zidek 2013). At present, 13 species of Trogidae are known from India (Zidek 2013, 2017) (Table 1). The present study documents the occurrence of the trogid beetle from Maharashtra for the first time (Table 1), they have been reported from the other parts of India. As mentioned earlier, the work on this family of beetles of forensic importance is negligible in India. The objective of the present study is to provide a new distributional record of *Omorgus (Afromorgus) italicus*.

The material (single male) was collected from Sakri Taluka, Dhule District, Maharashtra, India, by the second author. The specimen was brought to the laboratory, dried and pinned. The dried specimen was studied under Leica EZ 4 HD stereozoom microscope. The identification was done with the help of relevant literature (Haaf 1954a; Reiche 1853; Scholtz 1986b, 1990). The structure of the genitalia was compared with the line diagram of genitalia given by Haaf (1954a). The terminology used for describing morphological features and male genitalia follows Scholtz (1986b, 1990). The identified specimen was labeled, duly registered and deposited in the collection of Zoological Survey of India, Western Regional Centre, Pune, Maharashtra, India (ZSI-WRC-ENT-1/2638). The known distribution of this species was verified from the checklist of the world Trogidae (Zidek 2013, 2017). The survey locality has been mentioned under material examined and also shown in Fig. 1. The survey locality map was prepared using the open-free access QGIS software.

Male aedeagus was dissected from the abdomen and kept in 10% KOH solution (at room temperature) for 30 minutes for softening of the sclerotized portion. The specimens were studied, photographed and measured using a Leica EZ 4 HD stereozoom microscope with Leica application suite, Version 3.0.0.

Systematic account of the species along with material examined, description and distribution in India as well as outside India with the description of male genitalia are discussed and illustrated here.

Systematic account

Order Coleoptera Linnaeus, 1758

Suborder: Polyphaga Emery, 1886

Superfamily Scarabaeoidea Latreille, 1802

Family Trogidae MacLeay, 1819

Subfamily Omorginae Nikolajev, 2005

Genus: *Omorgus* Erichson, 1847

Subgenus: *Omorgus (Afromorgus)* Scholtz, 1986

Omorgus (Afromorgus) italicus (Reiche, 1853)

(Image 1)

Trox italicus Reiche, 1853; *Annales de la Société Entomologique de France* (3)1: 87–90.

Material examined: ZSI-WRC-ENT-1/2638, 07.vii.2016, 01 male, Sakri, Dhule, (20.9913°N & 74.3188°E, elevation 422m), coll. S.S. Patole.

Description: (Image 1 A, B) Length about 14mm, width about 7mm; Colour: Black

Head finely granulated with two tubercles close together in the middle of the forehead, tubercles rounded and raised; eyes entirely hidden under the projection of the head; clypeus triangular, margins slightly reflexed, apex slightly pointed, with anterolaterally two deep, shiny pits; frons throughout coarsely punctate, two rounded tubercles on frons, tubercles coarsely punctate; anterolaterally two deep almost triangular pits on the genae; antennal scape arcuate, stout, exceeding to half of the antenna, with yellowish long setae; dark reddish-brown pedicel, attached subapically; antennal club tawny.

Pronotum punctate throughout, sides broad; the pronotal width narrower than the elytral width; lateral margins of pronotum smooth, setose, anterolaterally with thin margin; posteriorly furrowed; the discal area raised in the middle, punctate; posteriorly two raised tubercles on each side of the disc.

Elytra almost parallel, rounded dorsally and truncate apically; lateral margins smooth, with short setae; sutural margin slightly raised; humeral callus prominent; elytra with ten ridges or costae, costae interrupted by

Table 1. List of species from Trogidae family reported from India (Adopted from Zidek (2013, 2017)).

	Name of species	Distribution
1	<i>Glyptotrox brahminus</i> (Pittino, 1985)	China, India (Himachal Pradesh, Punjab, Sikkim, West Bengal), Malaya, Vietnam.
2	<i>Omorgus (Afromorgus) frater</i> Pittino, 2005	India, Pakistan, Sri Lanka.
3	<i>Omorgus (Afromorgus) granulatus</i> (Herbst, 1783)	Afghanistan, India (Himachal Pradesh, West Bengal, central and southern states), Pakistan.
4	<i>Omorgus (Afromorgus) haagi</i> (Harold, 1872)	India (West Bengal), Pakistan.
5	<i>Omorgus (Afromorgus) incluses</i> (Walker, 1858)	China, India, Sri Lanka.
6	<i>Omorgus (Afromorgus) inermis</i> Pittino, 2005	Southern India, Sri Lanka, southern Vietnam.
7	<i>Omorgus (Afromorgus) omacanthus</i> (Harold, 1872)	India (Sikkim, Uttar Pradesh, West Bengal, central states).
8	<i>Omorgus (Afromorgus) pauliani</i> (Haaf, 1954)	China, India (Sikkim, West Bengal), Indonesia, Nepal, Sri Lanka, Cambodia, northern Vietnam, Annam, Indonesia.
9	<i>Omorgus (Afromorgus) testudo</i> (Arrow, 1927)	India, Pakistan.
10	<i>Omorgus (Afromorgus) indicus</i> (Harold, 1872)	China, India (West Bengal, Tamil Nadu, Cochin), Thailand.
11	<i>Omorgus (Afromorgus) procerus</i> (Harold, 1872)	Arabia, Chad, Egypt, Ethiopia, central India, Iran, Mali, Niger, Nigeria, Pakistan, Senegal, Somalia, Sudan.
12	<i>Omorgus (Afromorgus) rimulosus</i> (Haaf, 1957)	British India, Coromandel (= southeastern coast of the Indian subcontinent).
13	<i>Omorgus (Afromorgus) italicus</i> (Reiche, 1853)	India (Himachal Pradesh, Maharashtra, Jammu & Kashmir, Sikkim, West Bengal), China, Pakistan, Italy.

small transverse tubercles; the tubercles of odd costae moderately more elevated than even ones; intervals are smooth, finely punctate; pygidium concealed by elytra.

Scutellum hastate, constricted at the base (Image 1C).

Protibia appears slightly bifid, robust, coarsely punctate, dorsally setose; apical spur hooked, robust, pointed, long reaching to first 4 tarsal segments; meso and metatibia with two spurs; metatibial spur reaching first tarsal segment; meso and metatarsi setose (Image 1D).

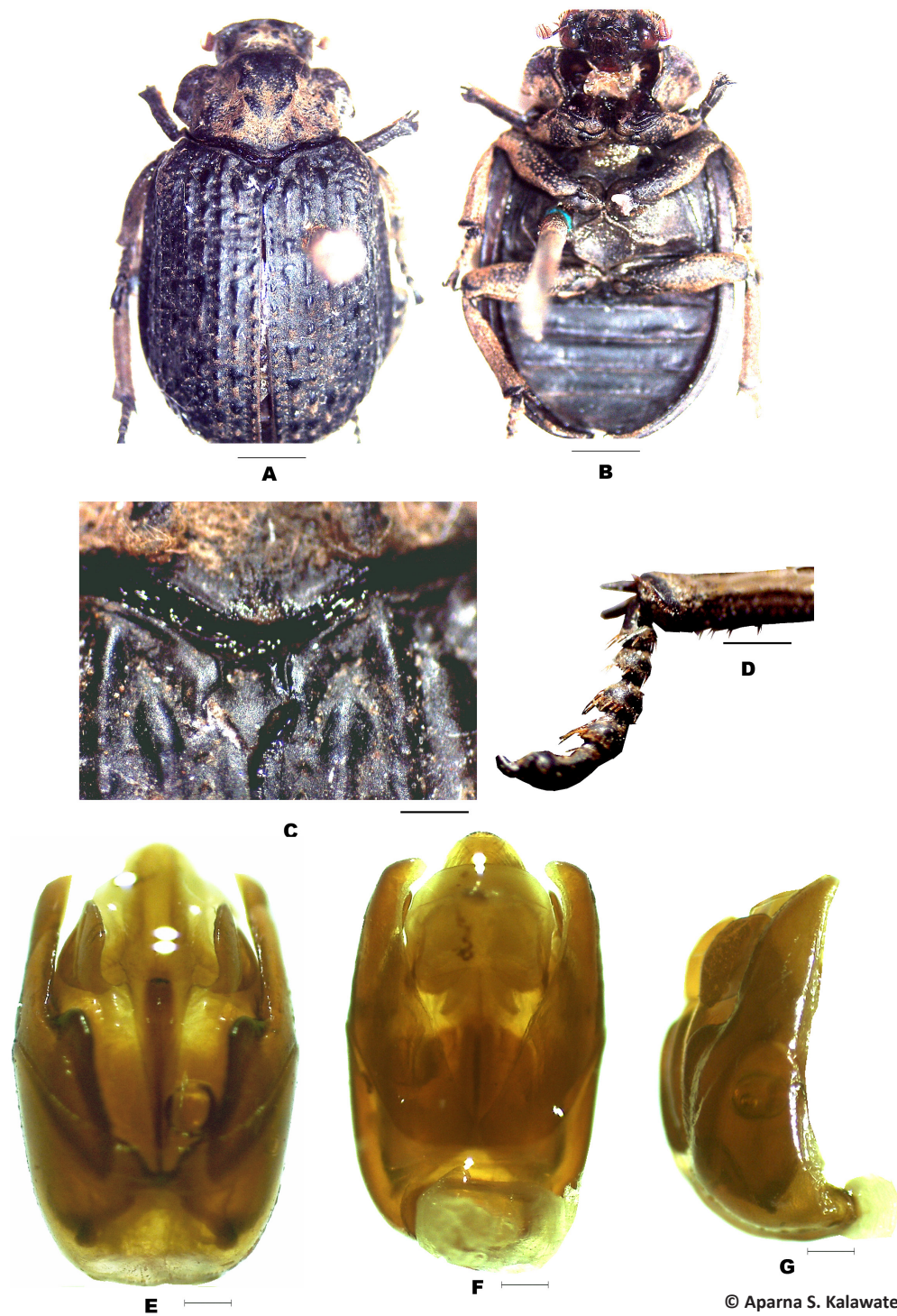
Male genitalia (Image 1E–G), trilobed; aedeagus robust; pars basalis fused dorsally; median lobe (complex) with ridges, knobs, foveae.

Known distribution until this study: India (Himachal Pradesh, Jammu & Kashmir, Sikkim, West Bengal), China, Pakistan, Italy.

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Image 1. *Omorgus (Afromorgus) italicus*

A - dorsal habitus, B - ventral Habitus, C - shape of scutellum; D - mesotarsus; male genitalia (E-G); E - Dorsal view; F - ventral view, G - lateral view. Scale = 2mm (A-D); 0.5mm (E-G).

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ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

June 2018 | Vol. 10 | No. 7 | Pages: 11831–11998

Date of Publication: 26 June 2018 (Online & Print)

DOI: 10.11609/jott.2018.10.7.11831-11998

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