

A new pest record of an endemic shining leaf chafer (Coleoptera: Scarabaeidae: Rutelinae) from the Deccan peninsular region of Maharashtra

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ABSTRACT

The genus *Anomala* (Coleoptera: Scarabaeidae: Rutelinae), also called shining leaf chafer. These beetles exhibit a characteristic life cycle where the larvae, or grubs, feed on the roots of crops and adults on stem regions, often becoming significant agricultural pests. In India, *Anomala* species are prevalent across various agro-ecosystems. This study reports the first documented occurrence of *Anomala communis* (Burmeister, 1844) in the Deccan Peninsula region of Maharashtra, India. The grubs of *A. communis* are known to damage the roots of various crops, including groundnut, maize, and guava. Adults are attracted to light traps and are active during the monsoon months, with peak emergence observed from June to August. The expansion of *A. communis* into Maharashtra underscores the need for integrated pest management strategies to mitigate its impact on agriculture. In this paper some Integrated Pest management strategies are also suggested.

Keywords: polyphagous, pests, scarab beetles, Scarabaeoidea.

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INTRODUCTION

The Scarabaeidae family is among the largest and most diverse within the Coleoptera order, with a global distribution encompassing approximately 36,467 species under 24 subfamilies and 110 tribes (Schoolmaesters, 2025) and in India 2,250 species were recorded (Bhunja *et al.*, 2025). This family is primarily divided into two subgroups: Laparosticti (dung beetles) and Pleurosticti (chafers) (Sreedevi *et al.*, 2022). Rutelinae subfamily under Pleurosticti chafers primarily feeds on fresh leaves but some genera are frequent flower visitors that consume pollen or nectar (Sawada, 1991). The larvae of these beetles, are white grubs that dwell in soil, feeding on living plant roots, thereby posing significant threats to crops (Sreedevi *et al.*, 2022). The Rutelinae subfamily, described by MacLeay in 1819, includes around 4,975 species across 260 genera and seven tribes globally. The tribe Adoretini was established by Burmeister in

1844 and consists of 28 genera, 5 subtribes, and 651 living species (Schoolmaesters, 2025).

Globally 1,183 species present in *Anomala* genus (Schoolmaesters, 2025) and 109 species reported from India (Gupta *et al.*, 2024). The species of *Anomala* feeds on almost all types of vegetables such as cabbage, cauliflower, brinjal, tomato, capsicum, cucurbits, okra, peas, potatoes, garlic, and flowers like rose, carnation, gladiolus, marigold and chrysanthemum are grown from August to April (Singh *et al.*, 2002). The alternate and third instar grubs feed on the roots and underground stems of the host plants. The damage caused by white grubs is significant for commercially valuable crops such as sugarcane, groundnut, potato and highland rice (Ranga Rao *et al.*, 2006). Despite the large number of species and their importance as agricultural pests, the genus *Anomala* still lacks a thorough taxonomic study, indicating the need for further research and attention.

MATERIALS AND METHODS

The specimen was collected by light trap using 160-watt mercury bulb method. The collected specimen was euthanized by ethyl acetate vapours and preserved as dry in the insect packets. The specimen brought to the laboratory, and was relaxed, pinned and preserved in the fumigated entomological box. Examined the morphological characters of the specimen under Leica S9i Stereo-zoom microscope. The identified specimen had been deposited at National Zoological Collection, Zoological Survey of India, Western Regional Centre, Pune, Maharashtra, India (ZSI-WRC). The identification of the specimen was done as per available literature (Arrow, 1917). A Garmin GPS was used to obtain the geographic coordinates during collection. The geographic coordinates for the distributional records of other species shown in the map are approximate and have been obtained from Google Earth. By using the open-source GIS software QGIS version 3.22.7 the map of the distribution locality (Fig. 1b) was generated. In our study, although the beetles were collected using light traps, we observed characteristic leaf skeletonization on *Samanea saman* (Jacq.) Merr. (Mimosaceae) tree within the campus, indicating possible adult feeding activity on it.

RESULTS AND DISCUSSION

Material examined: A female of *Anomala communis* (Burmeister, 1844) (Fig 1) (Coleoptera: Scarabaeoidea: Rutelinae), India, Maharashtra, Zoological survey of India, WRC, Pune campus, 25.v.2025, coll. A.S. Kalawate, (ZSI-WRC-ENT-1/5087).

Diagnostic character: Testaceous yellow, brownish-black spot on each shoulder and apical callus of each elytron; extreme margin of the elytra, scutellum margins, elytral suture blackish. Clypeus small and eyes large; The scutellum finely punctured, and the elytra deeply and regularly punctate-striate, the second stria dividing near the scutellum. Pygidium finely punctured.

Distribution: Karnataka (Arrow, 1917; Naveena *et al.*, 2022), Tamil Nadu (Arrow, 1917; Sharmila *et al.*, 2019; Berliner *et al.*, 2023), Kerala (Arrow, 1917; Correya, 2023), Maharashtra (present study).

Remarks: Endemic to India.

Ghats. As we are reporting here a new pest of tuber

vegetable and grasses from Maharashtra, we are suggesting some already recommended practices to control this pest like: summer ploughing to expose pupae and adults; installing light traps to monitor the ETL pest between 7 PM and 9 AM in April and May; applying entomogenous fungus *Metarhizium anisopliae* to the soil; In the morning, adult beetles are hand-picked; in July and August, third-instar grubs are hand-picked. These recommended practices of Integrated Pest Management have to be followed by the farmers to avoid the pest reaching the ETL in this region.

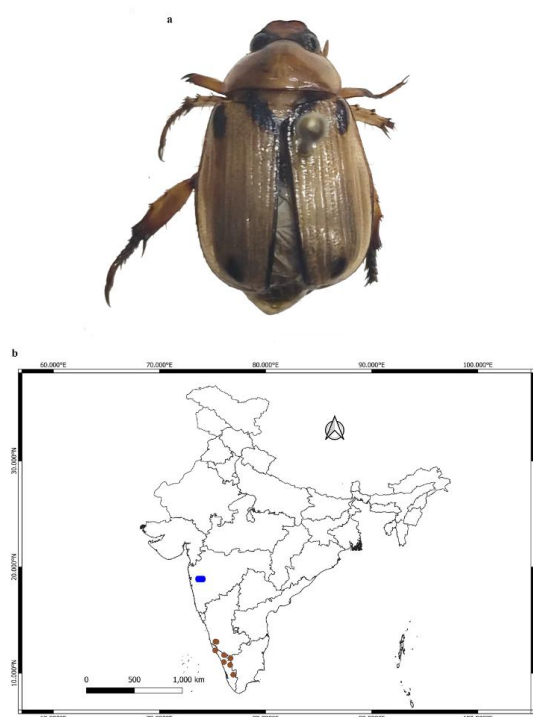


Figure 1. *Anomala communis*: a. dorsal female habitus, b. map showing the distributional records of *A. communis* from India shown in red circle and blue rectangle showing the new record from Maharashtra.

This beetle is earlier recorded from the Western Ghats part of Southern India (Karnataka, Kerala and Tamil Nadu) and thought to be endemic to the southern India. But in this study, it has been recorded from the Deccan part of Maharashtra, India confirming its record outside of the Southern India and the Western Ghats. Prior to this finding, there were no records of this species in the Deccan region, possibly due to limited research on this particular beetle. *A. communis* is a polyphagous and univoltine beetle, with both its grubs and adults feeding on the

roots and foliage of various crops, respectively. The expansion of this species into the Deccan region underscores the necessity for increased awareness and integrated pest management strategies to mitigate its impact on agriculture.

The grubs of *Anomala* are known to feed on the developing roots and tubers of potato and nearby grasses, while the adults feed on foliage. In this study, beetles were collected using light traps, and the presence of leaf skeletonization on the rain tree (*S. saman*) present in the campus suggests possible adult feeding activity.

Some species of entomopathogenic nematodes (EPNs) like, *Steinernema siamkayai*, *Steinernema carpocapsae*, *H. indica*, *H. bacteriophora*, and *Oscheius* sp. native isolates were suggested for this white grub management (Sharmila *et al.*, 2023). This paper is a short attempt to induce data for the users like agronomists, growers, scholars and experimenters as the beetles are phytophagous pests.

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Author contributions

Idea conceptualization, writing original draft, collection of specimens, map preparation by A.S.K; T.K done writing original draft, collecting details; Specimen pinning, identification, photograph, done by S.S.A., P.G.M, A.R.G. and J.J.

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