

An unusual new record of *Pseudoathyreus orientalis* (Laporte, 1840) (Coleoptera, Bolboceratidae, Athyreinae), an eremian species from the Deccan Peninsula, India and designation of its neotype

Aparna Sureshchandra Kalawate*

Zoological Survey of India, Western Regional Centre, Vidhya Nagar, Sector 29, Rawet road, Akurdi, Pune 411044, Maharashtra, India.

Email: aparna_ent@yahoo.co.in

ABSTRACT: *Pseudoathyreus orientalis* (Laporte, 1840) is newly reported from Deccan Peninsula. It is an unusual record of the earth-boring beetle from Gautala-Autramghat Wildlife Sanctuary (GAWLS), Jalgaon, Maharashtra, India. The description of the female adult with images and distribution map of the *P. orientalis* are provided. In an effort to stabilize the specific epithet and to fix the taxonomic status of this rare species, a neotype is designated. © 2025 Association for Advancement of Entomology

KEY WORDS: Distribution, light trap, earth-boring beetle

The tribe Athyreini is a small and lesser-known tribe of Bolboceratidae consisting of four genera (*Athyreus*, *Pseudoathyreus*, *Parathyreus*, and *Neoathyreus*) (Carpaneto *et al.*, 2000; Bai *et al.*, 2017). This tribe is less studied due to the fact that they are not attracted to the light frequently (Bai *et al.*, 2017). In recent past a few new species have been discovered (Boilly, 2014; Carpaneto and Romiti, 2020; Ferreira *et al.*, 2023; Celante *et al.*, 2024), but still studies are not sufficient on the diversity and ecology on this tribe. The first fossil beetle of the tribe Athyreini is described in 2016 by Bai *et al.* (2017) from Myanmar.

The Afro-Indian genus *Pseudoathyreus* Howden and Martínez, 1963 is known from Africa and Asia with ten extant species (Poggi *et al.*, 2019; Carpaneto *et al.*, 2000; Sommer *et al.*, 2020; Schoolmeesters, 2025). There are ten valid species

namely Afrotropical -*Pseudoathyreus damara* (Kolbe, 1907), *P. flavohirtus* (Walker, 1871), *P. fracticollis* (Fairmaire, 1882), *P. freyi* (Gomes Alves, 1957), *P. kordofanus* (Klug, 1843), *P. porcatus* (Castelnau, 1840), *P. rhodesianus* (Péringuey, 1908) and Oriental – *P. orientalis* (Castelnau, 1840). Here, *P. frontalis* (Parry, 1845), a second Asian species is not considered as valid (Carpaneto and Romiti, 2020). Carpaneto and Romiti (2020) has given two hypotheses on the validation of *P. frontalis*. In their words “*Pseudoathyreus frontalis* was described from NE India (Khasi Hills, Meghalaya) but the type material of this species is completely unknown to the curators of all the museums contacted and the original description (Parry, 1845) is very basic and scarcely detailed, and led us to suggest that this species could either be a junior synonym of *P. orientalis* or belong to another genus of

* Author for correspondence

bolboceratid beetle. The last hypothesis is more probable because the type locality falls within a moist tropical forest area whereas all other known distribution records for this species and for the other *Pseudoathyreus* species fall within drier habitats (at most arid savannas or semideserts)". For more details see Carpaneto and Romiti (2020). Thus, *P. orientalis* is the only valid species from Asia (Kral and Batelka 2017; Carpaneto and Romiti 2020).

An eremian beetle, *P. orientalis* is distributed in India and Pakistan (Carpaneto and Romiti, 2020; Sommer *et al.*, 2020). It is described from "Bengale" by Laporte in 1840 as *Athyreus orientalis*. During that time, Bengale was a part of the former Bengal Presidency, which included Bangladesh, fell under British India. The type of it seems to be untraceable (Carpaneto and Romiti 2020). Further, Carpaneto and Romiti (2020) reported that the non-type specimens of *P. orientalis* are kept either in the Natural History Museum of London (NHM) or in the Museum National d'Histoire Naturelle of Paris (MNHN). While searching the database of both the museum, the author found database of the non-type specimens housed in NHM, London (Natural History Museum 2014). In compliance with Article 74 of the International Code of Zoological Nomenclature (ICZN, 1999), a neotype for *P. orientalis* is designated in this study. This was done to stabilise the nomenclature by selecting a single specimen as the name bearing type.

It is a species of dry habitats (deserts, semideserts or moist arid savannas) and supposed to be a desert species. But, during this study a single female specimen of *P. orientalis* was collected from GAWLS, Jalgaon, located in the north-west region of the state of Maharashtra, India. The report of this species from GAWLS forms the first record of *P. orinetalis* from Deccan Peninsula part of Maharashtra. The vegetation of this sanctuary is classified as dry deciduous forest ecoregion of Central Deccan Plateau characterized with extreme hot summers. The main river here is the Tapti, which unlike other rivers in the state that flow eastward towards the Bay of Bengal, flows

westward from its headwaters in eastern Maharashtra to empty into the Arabian Sea. In Jalgaon District, the average annual rainfall is around 690mm and the temperature ranges from 10 to 48 °C, making it a diverse climate with scorching summers of up to 45 °C. GAWLS lies in the Satmala and Ajanta hill ranges of the Western Ghats. The sanctuary does not fall under the desert ecoregion, but has extreme hot summers with less rainfall and semi-arid climate. Since, GAWLS does not fall under desert eco-region, this discovery is an unusual record. As mentioned earlier, studies on this group is less and so there are chances of many more range extension record of this species from India.

The specimen was collected using a light trap installed in the sanctuary in the night. The collected specimen was killed with ethyl acetate vapours. Further, it was relaxed, pinned, and dry preserved in the laboratory. The identification of the specimen was done with the help of Král and Batelka (2017) and Sommer *et al.* (2020). The specimen was studied under a Leica S9i stereozoom microscope with photographic facility. The images were stacked using Combine ZP software and then processed with Adobe Photoshop CS Version 8. The identified specimen labelled as neotype was duly registered and deposited in the National Zoological Collection, Zoological Survey of India, Western Regional Centre, Pune, Maharashtra, India (ZSI-WRC). The detailed collection locality is given under material examined and also shown in Fig. 1. The map of the collection locality was prepared using the open, free access QGIS software version 3.22.0. The location coordinates have been taken from googleearth for the distribution localities. The collection coordinates for Maharashtra have been recorded using Garmin GPS in the field.

Taxonomy

Insecta: Scarabaeoidea;

Family Bolboceratidae Mulsant, 1842

Subfamily Athyreinae Lynch-Arribálzaga 1878

Tribe Athyerini Lynch-Arribálzaga, 1878

Genus *Pseudoathyreus* Howden and Martínez, 1963

Pseudoathyreus orientalis (Laporte, 1840) (Figs. 1, 2)

Athyreus orientalis Laporte, 1840. *Hist. Nat. Ins. Col.*: 103. Neotype (female), here designated, deposited at ZSI-WRC (Fig. 2).

Type locality: “Bengale” (Erstwhile Bengal Presidency and present-day West Bengal and Bangladesh).

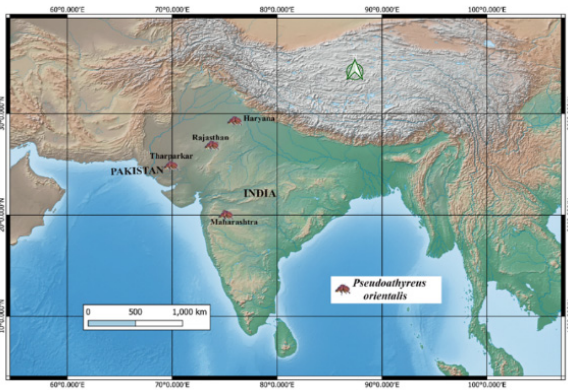


Fig. 1 Map showing distribution of *Pseudoathyreus orientalis* (Laporte, 1840)



Fig. 2 Adult habitus of *Pseudoathyreus orientalis* (Laporte, 1840): A, Dorsal view, B, Lateral view

Diagnosis: Female (Fig. 2A–C): Length: 13mm, width: 8mm. Body convex, brown, shiny dorsally. Fronto-clypeal carina elevated with two lateral teeth. Eye-canthus rectangular with raised portion. Pronotal margins raised covered with thick, long setae. The margin between lateral fossae gradually elevated to small, tubercle on midline. Anteriorly pronotum with concavity sloping, with median longitudinal groove. Inner carina interrupted at middle. Two separate aligned fragments forming outer carina. Underside of the body covered with yellow long and dense setae.

Material examined: One female, with “Neotype ♀” Bhaskaracharya Forest House, Patnadevi, Chalisgaon, Jalgaon (20.318° N 74.975° E), 24.09.2019, P.S. Bhatnagar lgt. (ZSI-WRC-Ent-1/4954).

Distribution: India (Haryana: Kurukshetra (Mittal, 1981; Ghosh *et al.*, 2020), Maharashtra (new record reported in the present study), Rajasthan (Frey, 1956), West Bengal (Laporte, 1840; Carpaneto *et al.*, 2000; Král and Batelka, 2017)) and Pakistan (Sommer *et al.*, 2020).

ACKNOWLEDGEMENTS

The author is thankful to the Director, Zoological Survey of India, Kolkata and the Office-in-Charge, ZSI-WRC, Pune for facilities and encouragement. The author extends her gratitude to the survey team of ZSI-WRC, Pune. Thanks, are extended to the Maharashtra Forest Department for permission and permit and logistic support during the survey. This work was supported by the Annual Programme of Research of Zoological Survey of India, Ministry of Environment, Forest & Climate Change (MOEFCC).

REFERENCES

- Bai M., Nie R., Zhang W., Ren D., Shih C. and Yang X. (2017) The first fossil *Athyreini* beetle (Coleoptera: Geotrupidae). *Organisms Diversity & Evolution* 17: 157–162. doi: 10.1007/s13127-016-0292-4.
- Boilly O. (2014) Descriptions of a new *Neoathyreus* from French Guiana and the male of *Athyreus conspicuus* (Coleoptera, Scarabaeoidea,

- Geotrupidae). Bulletin de la Societe Entomologique de France 119(3): 307–310.
- Carpaneto G.M., Mignani R. and Piattella E. (2000) A taxonomic overview of the genus *Pseudoathyreus*, and redescription of two related species from southern Africa (Coleoptera: Geotrupidae: Bolboceratinae). The Coleopterists Bulletin 54: 239–247.
- Carpaneto G.M. and Romiti F. (2020) Species delimitation by a geometric morphometric analysis within the genus *Pseudoathyreus* and description of a new species (Coleoptera: Scarabaeoidea: Bolboceratidae). Fragmenta entomologica 52(1): 11–18. doi: 10.4081/fe.2020.399.
- Celante G.L., Carvalho A.G., Jahyny B.J.B., Araújo K.B.S. and Dos Santos P.B. (2024) A new species of *Athyreus* MacLeay, 1819 (Coleoptera: Geotrupidae: Bolboceratinae: Athyreini) from northeastern Brazil. Zootaxa 5512(3): 389–401.
- Ferreira A.D.S., Grossi P.C. and Vaz-De-Mello F.Z. (2023) A new remarkable species of *Athyreus* MacLeay (Coleoptera, Scarabaeoidea, Geotrupidae, Bolboceratinae) from Brazil. Journal of Insect Biodiversity 41(2): 55–62.
- Frey G. (1956) Liste der von S. Nathan in der Wüste Thar im Jahre 1955 gesammelten Lamellicornien mit der Beschreibung einer neuen *Catharsius* Art. Entomologische Arbeiten aus dem Museum G. Frey. 7: 654–656.
- Ghosh J., Das P., Ghosh S., Bhunia D., Kushwaha R., Gupta D. and Chandra K. (2020) Insecta: Coleoptera. In: Fauna of Haryana, State Fauna Series 24, Zoological Survey of India, Kolkata. pp221–275.
- Král D. and Batelka J. (2017) Order Coleoptera, superfamily Scarabaeoidea. Arthropod Fauna of the UAE 6: 78–168.
- Laporte F.L. (1840) Histoire Naturelle des Insectes Coléoptères. Tome deuxième. P. Duménil, Paris. pp564.
- Mittal I.C. (1981) Scarabaeids of Haryana and surrounding areas. Bulletin of Entomology 22(1-2): 35–40.
- Parry F. (1845) A Decade, or Description of ten new Species of Coleoptera, from the Kasya Hills, near the boundary of the Assam District. Transactions of the Entomological Society of London 4: 84–87.
- Poggi R., Rey A. and Carpaneto G.M. (2019) La travagliata storia di una specie dimenticata: “*Athyreus citernii* Gestro, 1904” (Coleoptera, Scarabaeoidea, Bolboceratidae). Annali del Museo Civico di Storia Naturale “Giacomo Doria” 112: 17–30.
- Sommer D., Hrůzová L. and Král D. (2020) First country record of *Pseudoathyreus orientalis* (Coleoptera: Bolboceratidae: Athyreinae) from Pakistan. Journal of Insect Biodiversity 15(1): 22–25.

(Received January 30, 2025; revised ms accepted May 14, 2025; published June 30, 2025)