



Diversity of *Scarabaeoidea* (Coleoptera) in Painganga Wildlife Sanctuary, Yavatmal District, Maharashtra, India

Pradip Laxman Rudraswad^{1*}, Dinesh K Dabhadkar²

¹ Assistant Professor, Department of Zoology, S.S.M.M. College, Pachora, Maharashtra, India

² Assistant Professor, Department of Zoology, G.S. Gawande College, Umarched, Maharashtra, India

Corresponding Author: Pradip Laxman Rudraswad

DOI: <https://doi.org/10.66856/ijer.2026.11.3.11349>

Abstract

Scarabaeoidea represents an ecologically important group of beetles associated with a wide range of habitats and organic resources. The present preliminary study documents the diversity of scarabaeoid beetles recorded from Painganga Wildlife Sanctuary, Yavatmal District, Maharashtra, India. Field observations and specimen documentation were conducted during a one-year survey period from January 2025 to December 2025. A total of 29 species belonging to 16 genera were recorded. The assemblage represented three families Scarabaeidae, Geotrupidae and Hybosoridae—and eight subfamilies. Scarabaeidae was the most represented family, with 27 species, while Geotrupidae and Hybosoridae were represented by one species each. Within Scarabaeidae, Scarabaeinae was the most diverse subfamily, represented by 18 species. The findings provide a preliminary account of *Scarabaeoidea* diversity in sanctuary and provide baseline information for future seasonal, ecological and taxonomic studies.

Keywords: *Scarabaeoidea*, Coleoptera, Scarabaeidae, beetle diversity, Painganga Wildlife Sanctuary, Yavatmal, Maharashtra

Introduction

The order Coleoptera which includes beetles is the most diverse order of class Insecta from phylum Arthropoda. This is the largest group of comparable units among all animals. India being situated in tropics is well known for its richness in Coleopteran fauna. Beetles are found in almost every habitat and range in size from 1 to 100 mm. It represents about 40% of all insects and 30% of all animals (Choate, 2003). About 15088 species of coleopteran insects are known from the Indian region (Kazmi, 2004). Perhaps the single most important factor in the success of coleopterans is the development of elytra which protects the folded hind wings permitting occupying in encoded spaces and hidden habitats by adults. Beetles are tiny to very large insects of variable shape and colour but mostly strongly sclerotized, compact and more or less flattened. The compound eyes are normally conspicuous. Some species have reduced wings (Arnett, 1973). Beetles are more variable both ecologically and biologically. Most beetles are terrestrial herbivores; many are predatory, frequently with highly specialized life cycles. While the identity and activity of a few of the forest beetles are well known, most of those, other than the major pests, have been scanty attended by researchers. Their complex ecosystem role have not been determined. This is because of a general lack of emphasis on total ecosystem function and dynamics. It is general perspective know that lack of identification manuals has severely hindered studies of the whole beetle component of forest diversity (Scudder *et al.*, 2005). The beetle consists of economically significant and serious pests of agriculture, forest and fruit plants. In contrast, the dung beetles act as scavengers by feeding on dung and decaying vegetation and animal matters. Among the chafers, dynastines feed on stems or roots, cetonine feed on sap, fruit and flowers, while the scarabs under subfamily Rutelinae feed on foliage, fruit and flowers, and Melolonthine scarabs feed on foliage. Larvae of chafers feed

on soil humus, live inside the decay woods and debris in hollows of trees. The family Scarabaeidae is one of the largest family of insects which contains more than 30000 species in the world. The scarab beetles of the order Coleoptera include both useful as well as harmful insects. The coprophages beetles, generally known as dung beetles feeding on the dung and the phytophagous feed on agricultural crops, plantation and forests. Dung beetles are taxonomically and functionally a very important component of the terrestrial ecosystem. They are nature's scavengers, burying quantities of dung into the ground and thus cleaning up the earth surface of excreta left mostly by large and medium sized herbivorous mammals. A variety of factors may influence the presence and distribution of beetles in a given area, including fauna, flora, solar radiation, temperature, soil type, soil pH and most importantly the supply of excrement for food. These insects are important for the dynamics of matter in the ecosystem because they enhance the fertility remove detritus of the soil surface. The family Coccinellidae includes around 6,000 described species belonging to 360 genera (Seago *et al.*, 2011). Coleopteran species which to be collected and identified from the proposed study areas will help to represent patterns of diversity, richness, abundance, and variations in the beetle assemblage in the study area. The study no doubt will help in the conserving plans in the newly formed biosphere reserve and the maintenance of the biological health of the ecosystem. This information on the beetle diversity in Painganga Wildlife Sanctuary may be utilized in the future to assess diversity and conservation problems of the region. Painganga forest is in eastern Vidarbha region 25 km away from Umarched town of Yavatmal district of Maharashtra. It is located between 19° 36' to 19° 7' North latitudes and 77° 42' to 77° 7' East longitudes. The area is about 487 Sq. km with a vast variety of flora and fauna. There are five water reservoirs in the forest. The vegetation

consists of both natural forest i. e. evergreen semi-evergreen, drydeciduous, grassland and Teak (*Tectona Grandis*), Khair (*Acacia catechu*), Palas (*Butea monosperma*), and salai plantation behda (*Terminalia bellirica*), moha (*Madhuca longifolia*) (Kadam and Deosthale, 2015). This region is rich in diverse flora and fauna that flourished the diversity and abundance of exploration of beetles. The coleopteran diversity and their enlisting is an attempt to highlight their seasonality and relative abundance in the different habitats of the study area. The present study will undoubtedly be the first comprehensive effort to investigate the coleopteran diversity of Painganga Wildlife Sanctuary, district Yavatmal. Keeping in mind, the present research work is undertaken to study unexplored diversity and abundance of beetle fauna of Painganga forest, district Yavatmal.

Materials and Methods

1. Study Area

The proposed research work will be conducted in the Painganga Wildlife Sanctuary of district Yavatmal. The Painganga Wildlife Sanctuary in Yavatmal, Maharashtra is an exotic sanctuary with area of about 487 Sq. km and vast variety of flora and fauna. There are having sahastrkund waterfall as water reservoir in the forest. It is located between 19°36' to 19°7' North latitudes and 77°42' to 77°7' East longitudes. The proposed study area is in the Yavatmal district of the Vidarbha region of the state of Maharashtra. The sanctuary lies in close proximity to the catchments area of Painganga river.

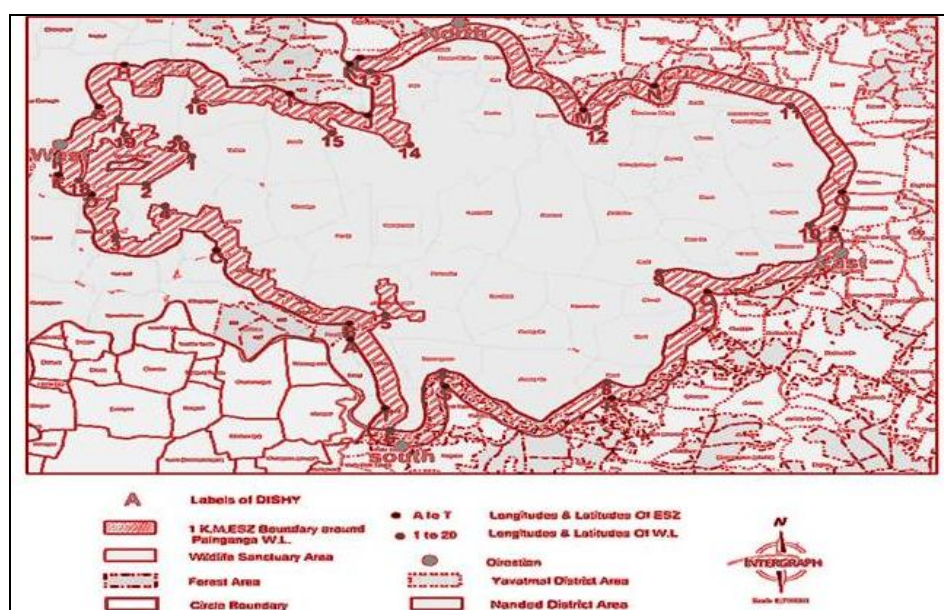


Fig 1: Map of Painganga Wildlife Sanctuary

2. Survey Duration

Field observations and specimen documentation were carried out for one complete annual cycle from January 2025 to December 2025. The year-long period was selected to encompass seasonal variation in scarabaeoid occurrence and habitat conditions.

3. Collection and Identification

The study was based on field observations and specimen documentation from selected sites within the study area. Specimens were identified using standard taxonomic literature and by comparing morphological characteristics. The recorded taxa were organized according to family, subfamily, genus and species. Because a standardized quantitative sampling effort was not available for all observations, the results are treated as a preliminary species inventory rather than an estimate of population abundance or sampling completeness.

Results

1. Survey Duration and Overall Diversity

The survey was conducted within a year, from January 2025 to December 2025. During this period, a total of 29 species belonging to 16 genera and three families of *Scarabaeoidea* were recorded from Painganga Wildlife Sanctuary. The recorded assemblage comprised Scarabaeidae, Geotrupidae

and Hybosoridae. Scarabaeidae was dominant with 27 species (93.1%), whereas Geotrupidae and Hybosoridae were represented by one species each (3.4%).

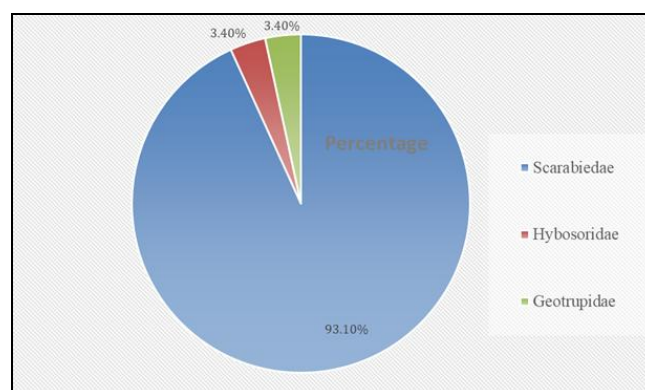


Fig 2: Family Wise Percentage Distribution

2. Subfamily Composition

At the subfamily level, Scarabaeinae was the most diverse group with 18 species (62.1%), followed by Melolonthinae with three species (10.3%), and Orphninae and Cetoniinae with two species each (6.9%). Rutelinae, Dynastinae, Geotrupinae and Hybosorinae were represented by one species each (3.4%).

Table 1: Taxonomic composition of 29 species of *Scarabaeoidea* recorded from Painganga Wildlife Sanctuary.

S. No.	Family	Subfamily	Scientific name	Authority
1	Scarabaeidae	Orphninae	<i>Orphnus impressus</i>	(Wiedemann, 1823)
2	Scarabaeidae	Orphninae	<i>Orphnus parvus</i>	(Arrow, 1912)
3	Geotrupidae	Geotrupinae	<i>Baloboceras orientalis</i>	(Westwood, 1848)
4	Scarabaeidae	Scarabaeinae	<i>Catharsius molossus</i>	(Linnaeus, 1758)
5	Scarabaeidae	Scarabaeinae	<i>Catharsius sagax</i>	(Smith, 1858)
6	Scarabaeidae	Cetoniinae	<i>Chiloloba acuta</i>	(Wiedemann, 1823)
7	Scarabaeidae	Cetoniinae	<i>Clinteria klugi</i>	(Hope, 1831)
8	Scarabaeidae	Scarabaeinae	<i>Copris sinicus</i>	(Hope, 1831)
9	Scarabaeidae	Scarabaeinae	<i>Copris imitans</i>	(Hope, 1831)
10	Scarabaeidae	Scarabaeinae	<i>Heliocopris bucephalus</i>	(Fabricius, 1775)
11	Scarabaeidae	Melolonthinae	<i>Holotrichia serrata</i>	(Fabricius, 1787)
12	Hybosoridae	Hybosorinae	<i>Hybosorus orientalis</i>	(Westwood, 1845)
13	Scarabaeidae	Scarabaeinae	<i>Onitis lama</i>	(Lansberge, 1886)
14	Scarabaeidae	Scarabaeinae	<i>Onitis philemon</i>	(Fabricius, 1775)
15	Scarabaeidae	Scarabaeinae	<i>Onitis subopacus</i>	(Arrow, 1931)
16	Scarabaeidae	Scarabaeinae	<i>Onthophagus abreu</i>	(Arrow, 1931)
17	Scarabaeidae	Scarabaeinae	<i>Onthophagus catta</i>	(Fabricius, 1787)
18	Scarabaeidae	Scarabaeinae	<i>Onthophagus dama</i>	(Fabricius, 1798)
19	Scarabaeidae	Scarabaeinae	<i>Onthophagus gazella</i>	(Fabricius, 1787)
20	Scarabaeidae	Scarabaeinae	<i>Onthophagus hindu</i>	(Arrow, 1931)
21	Scarabaeidae	Scarabaeinae	<i>Onthophagus pactolus</i>	(Fabricius, 1787)
22	Scarabaeidae	Scarabaeinae	<i>Onthophagus quadridentatus</i>	(Fabricius, 1798)
23	Scarabaeidae	Scarabaeinae	<i>Onthophagus ramosus</i>	(Wiedemann, 1823)
24	Scarabaeidae	Scarabaeinae	<i>Onthophagus turbatus</i>	Walker, 1858
25	Scarabaeidae	Rutelinae	<i>Anomala bengalensis</i>	(Blanchard, 1851)
26	Scarabaeidae	Dynastinae	<i>Phyllognathus dionysius</i>	(Fabricius, 1792)
27	Scarabaeidae	Melolonthinae	<i>Schizonycha ruficollis</i>	(Fabricius, 1781)
28	Scarabaeidae	Melolonthinae	<i>Schizonycha fuscescens</i>	Blanchard, 1850
29	Scarabaeidae	Scarabaeinae	<i>Tiniocellus spinipes</i>	(Roth, 1851)

3. Species-wise Descriptions

1. *Orphnus impressus* (Wiedemann, 1823)

It is a small to medium-sized scarab beetle (Scarabaeidae: Orphninae) recorded from forest floors, grasslands, and organically rich soils of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval, dark brown to black body with a distinctly sculptured and impressed pronotum, short lamellate antennae, and strong legs adapted for burrowing. Adults are mainly nocturnal and ground-dwelling, often found in loose soil, leaf litter, or decaying organic matter, while larvae develop in soil rich in decomposing plant material. Ecologically, *O. impressus* functions as a detritivore, contributing to decomposition, nutrient recycling, and soil aeration, and serves as an indicator of healthy, organic-matter-rich forest floor habitats within the dry deciduous ecosystem of the sanctuary.

2. *Orphnus parvus* (Arrow, 1912)

It is a small-sized scarab beetle (Scarabaeidae: Orphninae) recorded from forest floors, grasslands, and organically rich soils of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval body with dark brown to black coloration, a finely sculptured pronotum, short lamellate antennae, and sturdy legs adapted for burrowing. Adults are mainly nocturnal and ground-dwelling, frequently encountered in loose soil, leaf litter, and decomposing organic matter, while larvae develop in soil rich in decayed plant material. Ecologically, *O. parvus* functions as a detritivore, contributing to organic matter breakdown, nutrient recycling, and soil aeration, and serves as an indicator of healthy, litter-rich microhabitats within the dry deciduous forest ecosystem of the sanctuary.

3. *Baloboceras orientalis* (Westwood, 1848)

It is a medium-sized scarab beetle (Scarabaeidae) recorded from forest floors, grasslands, and organically rich soils of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a robust, oval body, dark brown to black coloration, and distinctly clubbed lamellate antennae adapted for detecting organic matter in soil. Adults are mainly nocturnal and ground-dwelling, often found burrowing in loose soil or active after rainfall, while larvae develop in soil rich in decomposing plant material and dung. Ecologically, *B. orientalis* functions as an important detritivore, contributing to decomposition, nutrient recycling, and soil aeration, and serves as an indicator of healthy, organic-matter-rich habitats within the dry deciduous ecosystem of the sanctuary.

4. *Catharsius molossus* (Linnaeus, 1758)

It is a large, robust dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing areas within Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a strongly convex, dark brown to black body, powerful forelegs adapted for digging, and lamellate antennae suited for locating dung. Adults are primarily nocturnal and coprophagous, actively burying dung beneath the soil for feeding and brood ball construction, while larvae develop within these dung provisions. Ecologically, *C. molossus* plays a crucial role in dung removal, nutrient recycling, soil aeration, and suppression of dung-breeding pests, making it an important functional component and indicator of healthy grassland-forest interface ecosystems within the sanctuary.

5. *Catharsius sagax* (Smith, 1858)

It is a large dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a robust, strongly convex dark brown to black body, powerful fossorial forelegs adapted for digging, and lamellate antennae specialized for detecting dung. Adults are primarily nocturnal and coprophagous, actively collecting and burying dung to form brood chambers in the soil, where larvae complete their development. Ecologically, *C. sagax* plays a vital role in dung removal, nutrient recycling, and soil aeration, while also reducing parasite and pest buildup, making it an important functional indicator of healthy forest–grassland ecosystems within the sanctuary.

6. *Chiloloba acuta* (Wiedemann, 1823)

It is a medium-sized scarab beetle (Scarabaeidae) commonly recorded from open grasslands, forest edges, agricultural fields, and light-rich areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an elongate-oval, moderately convex body, pale brown to reddish-brown coloration, and well-developed lamellate antennae. Adults are mostly nocturnal and frequently attracted to artificial lights, while larvae (white grubs) develop in soil, feeding on roots and decaying organic matter. Ecologically, *C. acuta* contributes to soil turnover and nutrient recycling through its larval activity and forms an integral part of the terrestrial food web, reflecting functional grassland and forest-edge ecosystems within the sanctuary.

7. *Clinteria clugi* (Hope, 1831)

It is a medium-sized flower chafer beetle (Scarabaeidae: Cetoniinae) recorded from forest edges, flowering shrubs, and open woodland habitats of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an oval, moderately convex body with a glossy metallic green to coppery sheen, smooth elytra often marked with pale patches, and lamellate antennae. Adults are diurnal and floricolous, frequently observed feeding on nectar, pollen, and soft floral tissues, while larvae develop in soil rich in decaying organic matter and leaf litter. Ecologically, *C. clugi* contributes to pollination-related interactions and organic matter decomposition, forming an important component of the beetle assemblage and reflecting healthy flowering vegetation and litter-rich microhabitats within the dry deciduous ecosystem of the sanctuary.

8. *Copris sinicus* (Hope, 1831)

It is a medium-sized dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing zones of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a robust, oval, dark brown to black body, lamellate antennae, and strong fossorial forelegs adapted for digging and dung burial. Adults are mainly nocturnal and coprophagous, actively rolling or burying dung beneath the soil to construct brood chambers in which larvae develop. Ecologically, *C. sinicus* plays a significant role in dung decomposition, nutrient recycling, soil aeration, and reduction of dung-breeding pests, making it an important functional indicator of healthy forest–grassland interface ecosystems within the sanctuary.

9. *Copris imitans* (Hope, 1831)

It is a medium-sized dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a robust, oval, dark brown to black body, well-developed lamellate antennae, and strong fossorial forelegs adapted for digging. Adults are primarily nocturnal and coprophagous, actively collecting and burying dung to form subterranean brood chambers where larval development takes place. Ecologically, *C. imitans* plays an important role in dung removal, nutrient recycling, soil aeration, and suppression of dung-breeding pests, contributing significantly to soil health and ecosystem functioning in the dry deciduous forest–grassland mosaic of the sanctuary.

10. *Heliocopris bucephalus* (Fabricius, 1775)

It is a very large and robust dung beetle (Scarabaeidae) recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a massive, strongly convex dark brown to black body, powerful digging forelegs, and well-developed lamellate antennae; males often exhibit prominent cephalic structures associated with sexual dimorphism. Adults are nocturnal and highly coprophagous, excavating deep tunnels beneath dung pats to construct large brood chambers where dung is stored for larval development. Ecologically, *H. bucephalus* plays a crucial role in rapid dung removal, nutrient recycling, soil aeration, and improvement of soil fertility, making it a key functional species and an indicator of healthy large-mammal-supported ecosystems within the dry deciduous landscape of the sanctuary.

11. *Holotrichia serrata* (Fabricius, 1798)

It is a medium-sized scarab beetle (Scarabaeidae) commonly recorded from grasslands, forest edges, agricultural fields, and scrub habitats of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an oval, moderately convex body, reddish-brown to dark brown coloration, and well-developed lamellate antennae. Adults are predominantly nocturnal and are frequently attracted to lights, feeding on foliage of various trees and shrubs, while larvae (white grubs) live in the soil and feed on plant roots and organic matter. Ecologically, *H. serrata* plays a dual role as a soil-dwelling decomposer during its larval stage and as a folivorous insect in the adult stage, contributing to nutrient cycling and soil processes, and forming an important component of the terrestrial food web within the dry deciduous ecosystem of the sanctuary.

12. *Hybosorus orientalis* (Westwood, 1845)

It is a small to medium-sized scarab beetle belonging to the family Hybosoridae, commonly recorded from forest floors, grasslands, and organically rich soils of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an oval, moderately convex body, dark brown to black coloration, and lamellate antennae, with strong legs adapted for burrowing. Adults are mainly nocturnal and ground-dwelling, often found in soil, leaf litter, decaying organic matter, or dung-enriched substrates, while larvae develop in soil rich in decomposing material. Ecologically, *H. orientalis* functions as a detritivore,

contributing to decomposition, nutrient recycling, and soil aeration, and serves as an indicator of healthy, organic-matter-rich microhabitats within the dry deciduous forest ecosystem of the sanctuary.

13. *Onitis lama* (Lansberge, 1886)

It is a medium-sized dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an elongateoval, moderately convex dark brown to black body, well-developed lamellate antennae, and strong fossorial forelegs adapted for digging and dung manipulation. Adults are mainly nocturnal and coprophagous, actively feeding on dung and constructing shallow subterranean chambers for brood development. Ecologically, *O. lama* plays an important role in dung removal, nutrient recycling, and soil aeration, contributing to improved soil structure and reduced parasite load, and serves as a functional indicator of healthy forest–grassland interface ecosystems within the sanctuary.

14. *Onitis philemon* (Fabricius, 1775)

It is a medium-sized dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an elongateoval, moderately convex dark brown to black body, lamellate antennae, and strong fossorial forelegs adapted for digging. Adults are primarily nocturnal and coprophagous, actively feeding on and burying dung to form brood chambers in the soil where larval development occurs. Ecologically, *O. philemon* plays an important role in dung decomposition, nutrient recycling, soil aeration, and reduction of dung-breeding pests, contributing significantly to soil health and ecosystem functioning within the dry deciduous forest–grassland mosaic of the sanctuary.

15. *Onitis subopacus* (Arrow, 1931)

It is a medium-sized dung beetle (Scarabaeidae) recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an elongate-oval, moderately convex body with dull dark brown to black coloration, lamellate antennae, and strong fossorial forelegs adapted for digging and dung manipulation. Adults are mainly nocturnal and coprophagous, actively feeding on dung and constructing shallow underground brood chambers for larval development. Ecologically, *O. subopacus* contributes to dung removal, nutrient recycling, and soil aeration, and plays a supportive role in maintaining soil health and reducing parasite buildup, reflecting functional forest–grassland interface ecosystems within the sanctuary.

16. *Onthophagus abreu* (Arrow, 1931)

It is a small to medium-sized dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval body with dark brown to black coloration, well-developed lamellate antennae, and strong forelegs adapted for digging; minor sexual dimorphism may be present in head or pronotal armature. Adults are primarily nocturnal and coprophagous, actively utilizing fresh dung for feeding and constructing small brood chambers in the

soil where larvae develop. Ecologically, *O. abreu* plays an important role in rapid dung decomposition, nutrient recycling, soil aeration, and suppression of dung-breeding pests, contributing significantly to soil fertility and functioning of the dry deciduous forest–grassland mosaic of the sanctuary.

17. *Onthophagus catta* (Fabricius, 1787)

It is a small to medium-sized dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval body with dark brown to black coloration, lamellate antennae, and strong fossorial forelegs adapted for digging; males may show slight cephalic or pronotal armature indicative of sexual dimorphism. Adults are primarily nocturnal and coprophagous, rapidly colonizing fresh dung and constructing small subterranean brood chambers in which larvae develop. Ecologically, *O. catta* plays an important role in dung removal, nutrient recycling, soil aeration, and reduction of dung-breeding pests, making it a key functional component of the dry deciduous forest–grassland mosaic ecosystem of the sanctuary.

18. *Onthophagus dama* (Fabricius, 1798)

It is a small to medium-sized dung beetle (Scarabaeidae) commonly encountered in forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval body with dark brown to black coloration, well-developed lamellate antennae, and strong fossorial forelegs adapted for digging; males may exhibit minor cephalic or pronotal armature. Adults are primarily nocturnal and coprophagous, rapidly exploiting fresh dung and constructing small subterranean brood chambers for larval development. Ecologically, *O. dama* plays an important role in dung decomposition, nutrient recycling, soil aeration, and suppression of dung-breeding pests, thereby contributing significantly to soil health and ecosystem functioning in the dry deciduous forest–grassland mosaic of the sanctuary.

19. *Onthophagus gazella* (Fabricius, 1787)

It is a small to medium-sized dung beetle (Scarabaeidae) commonly recorded from grasslands, forest fringes, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval body, dark brown to black coloration, lamellate antennae, and strong fossorial forelegs adapted for digging; males often exhibit distinct cephalic horns showing sexual dimorphism. Adults are primarily diurnal to crepuscular and coprophagous, rapidly colonizing fresh dung and constructing small underground brood chambers for larval development. Ecologically, *O. gazella* plays a crucial role in rapid dung removal, nutrient recycling, soil aeration, and suppression of dung-breeding pests, making it an important functional species and indicator of active nutrient cycling in the dry deciduous forest–grassland mosaic ecosystem of the sanctuary.

20. *Onthophagus hindu* (Arrow, 1931)

It is a small to medium-sized dung beetle (Scarabaeidae) recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha

(Maharashtra). The species is characterized by a compact, oval body with dark brown to black coloration, well-developed lamellate antennae, and strong fossorial forelegs adapted for digging; males may exhibit minor cephalic or pronotal armature indicative of sexual dimorphism. Adults are primarily nocturnal and coprophagous, rapidly colonizing fresh dung and constructing small subterranean brood chambers for larval development. Ecologically, *O. hindu* plays an important role in dung decomposition, nutrient recycling, soil aeration, and reduction of dung-breeding pests, contributing significantly to soil health and ecosystem functioning within the dry deciduous forest–grassland mosaic of the sanctuary.

21. *Onthophagus pactolus* (Fabricius, 1787)

It is a small to medium-sized dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval body with dark brown to black coloration, well-developed lamellate antennae, and strong fossorial forelegs adapted for digging; males may exhibit slight cephalic or pronotal armature showing sexual dimorphism. Adults are primarily nocturnal and coprophagous, rapidly colonizing fresh dung and constructing small subterranean brood chambers where larval development occurs. Ecologically, *O. pactolus* plays an important role in dung removal, nutrient recycling, soil aeration, and suppression of dung-breeding pests, contributing to soil fertility and overall ecosystem functioning in the dry deciduous forest–grassland mosaic of the sanctuary.

22. *Onthophagus quadridentatus* (Fabricius, 1798)

It is a small to medium-sized dung beetle (Scarabaeidae) commonly encountered in forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval body with dark brown to black coloration, well-developed lamellate antennae, and strong fossorial forelegs adapted for digging; males typically exhibit four distinct cephalic teeth or projections, reflecting marked sexual dimorphism. Adults are primarily nocturnal and coprophagous, rapidly colonizing fresh dung and forming small subterranean brood chambers for larval development. Ecologically, *O. quadridentatus* plays an important role in dung decomposition, nutrient recycling, soil aeration, and suppression of dung-breeding pests, thereby contributing significantly to soil fertility and ecosystem functioning within the dry deciduous forest–grassland mosaic of the sanctuary.

23. *Onthophagus ramosus* (Wiedemann, 1823)

It is a small to medium-sized dung beetle (Scarabaeidae) commonly recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval body with dark brown to black coloration, well-developed lamellate antennae, and strong fossorial forelegs adapted for digging; males often exhibit branched or ramified cephalic horns showing clear sexual dimorphism. Adults are primarily nocturnal and coprophagous, rapidly colonizing fresh dung and constructing small subterranean brood chambers for larval development. Ecologically, *O. ramosus* plays an important

role in dung removal, nutrient recycling, soil aeration, and suppression of dung-breeding pests, contributing significantly to soil fertility and ecosystem functioning in the dry deciduous forest–grassland mosaic of the sanctuary.

24. *Onthophagus turbatus* (Walker, 1858)

It is a small to medium-sized dung beetle (Scarabaeidae) recorded from forest floors, grasslands, and grazing areas of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a compact, oval body with dark brown to black coloration, lamellate antennae adapted for dung detection, and strong fossorial forelegs specialized for digging; males may exhibit minor cephalic armature indicative of sexual dimorphism. Adults are primarily nocturnal and coprophagous, rapidly colonizing fresh dung and constructing small subterranean brood chambers in which larval development occurs. Ecologically, *O. turbatus* contributes to efficient dung removal, nutrient recycling, soil aeration, and suppression of dung-breeding pests, playing an important functional role in maintaining soil health and ecosystem processes within the dry deciduous forest–grassland mosaic of the sanctuary.

25. *Anomala bengalensis* (Blanchard, 1851)

It is a medium-sized scarab beetle (Scarabaeidae) commonly recorded from grasslands, forest edges, agricultural fields, and scrub habitats of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an oval, moderately convex body with a shiny metallic green to bronze dorsal surface and well-developed lamellate antennae. Adults are mostly nocturnal and are often attracted to lights, feeding on foliage of various plants, while larvae (white grubs) live in soil and feed on roots and decaying organic matter. Ecologically, *A. bengalensis* plays a dual role as a soil-dwelling decomposer during its larval stage and as a herbivore in the adult stage, contributing to nutrient cycling and soil turnover, and forming an important component of the terrestrial food web within the dry deciduous ecosystem of the sanctuary.

26. *Phyllognathus dionysius* (Fabricius, 1792)

It is a medium-sized rhinoceros beetle (Scarabaeidae: Dynastinae) recorded from forest floors, grasslands, and organically rich soils of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by a robust, oval, dark brown to black body, smooth and strongly convex dorsal surface, and powerful legs adapted for digging; males may show slight cephalic or pronotal armature. Adults are predominantly nocturnal and ground-dwelling, often encountered in soil, leaf litter, or near decaying plant matter, while larvae develop in decomposing organic substrates and soil. Ecologically, *P. dionysius* functions as an important decomposer, contributing to organic matter breakdown, nutrient recycling, and soil aeration, and forms a significant component of the forest floor fauna within the dry deciduous ecosystem of the sanctuary.

27. *Schizonycha ruficollis* (Fabricius, 1775)

It is a medium-sized scarab beetle (Scarabaeidae) commonly recorded from grasslands, forest edges, scrub habitats, and agricultural fringes of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an elongate-oval, moderately convex body,

reddish-brown pronotum contrasting with darker brown elytra, and well-developed lamellate antennae. Adults are predominantly nocturnal and often attracted to lights, feeding on foliage of various host plants, while larvae (white grubs) inhabit the soil and feed on roots and decaying organic matter. Ecologically, *S. ruficollis* plays a dual role as a folivore in the adult stage and a soil-dwelling decomposer during larval development, contributing to nutrient cycling, soil turnover, and functioning of the dry deciduous forest–grassland mosaic ecosystem of the sanctuary.

28. *Schizonycha fuscescens* (Blanchard, 1850)

It is a medium-sized scarab beetle (Scarabaeidae) recorded from grasslands, forest margins, scrub habitats, and agricultural fringes of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an elongate-oval, moderately convex body with uniform brown to dark brown coloration, finely setose dorsal surface, and well-developed lamellate antennae. Adults are mainly nocturnal and frequently attracted to lights, feeding on foliage of shrubs and trees, while larvae (white grubs) develop in soil, feeding on plant roots and decomposing organic matter. Ecologically, *S. fuscescens* plays a dual role as a folivore during the adult stage and as a soil-dwelling decomposer in the larval stage, contributing to nutrient cycling, soil turnover, and maintenance of ecosystem processes in the dry deciduous forest–grassland mosaic of the sanctuary.

29. *Tiniocellus spinipes* (Fabricius, 1787)

It is a small to medium-sized darkling beetle (Tenebrionidae) recorded from dry deciduous forest floors, scrublands, and leaf-litter habitats of Painganga Wildlife Sanctuary, Yavatmal, Vidarbha (Maharashtra). The species is characterized by an elongate, narrow body, dark brown to black coloration, and distinctly spined legs adapted for ground movement and defense. Adults are predominantly nocturnal, remaining concealed under stones, logs, or leaf litter during the day and becoming active at night to feed on decaying plant matter and organic debris. Ecologically, *T. spinipes* functions as a detritivore, contributing to organic matter breakdown, nutrient recycling, and soil enrichment, and forms an integral component of the forest floor food web within the dry deciduous ecosystem of the sanctuary.

Discussion

The one-year inventory conducted recorded 29 species of *Scarabaeoidea*, encompassing 16 genera and three families. The strong representation of Scarabaeidae is consistent with the broad diversity of scarab beetles in the Indian subcontinent. The dominance of Scarabaeinae is also notable because many members of this subfamily are associated with dung and decomposing organic resources. The recorded assemblage is broader than the traditional concept of 'true dung beetles'. The inclusion of Cetoniinae, Melolonthinae, Rutelinae and Dynastinae, together with Geotrupidae and Hybosoridae, demonstrates the value of using the superfamily name *Scarabaeoidea* for the complete inventory. Different subfamilies have different feeding and habitat associations; therefore, future work should avoid treating all recorded taxa as dung beetles. The year-long survey from January to December 2025 provides a useful baseline for the sanctuary. However,

because the present record does not include standardized quantitative sampling effort for every sampling occasion, comparisons of abundance and seasonal population trends should be made cautiously. Future studies should include standardized trapping and collection effort, replicated seasonal sampling, habitat-wise comparisons, abundance estimates and detailed feeding-guild analysis.

Conclusion

The preliminary one-year survey conducted from January 2025 to December 2025 documented 29 species of *Scarabaeoidea* belonging to 16 genera, three families and eight subfamilies in Painganga Wildlife Sanctuary. Scarabaeidae was the dominant family and Scarabaeinae was the dominant subfamily in the recorded assemblage. The inventory provides baseline information on the local scarabaeoid fauna and can support future taxonomic, ecological and conservation studies. More extensive standardized seasonal surveys are recommended to assess species richness, abundance, habitat association and temporal changes in the scarabaeoid community.

Acknowledgements

The authors are thankful to the concerned forest and wildlife authorities and to all individuals who supported field observations, field documentation and data recording in the Painganga Wildlife Sanctuary study area. The authors also acknowledge the Department of Zoology S.S.M.M college pachora and the local people for their cooperation and support during the study.

References

1. Arjun J, Tamuli K, Boruah K, Borah N, Saikia J, Nath R, *et al.* Diversity and abundance of beetles in Lakhimpur, Assam, India. *Bioscience Biotechnology Research Communications*. 2022;15(4):525-531.
2. WF K. The fauna of British India, including Ceylon and Burma: Coleoptera Lamellicornia (Cetoniinae and Dynastinae). *Nature*. 1911;85(2154):467-468. <https://doi.org/10.1038/085467b0>
3. Chaudhary KO. Diving into diversity: aquatic beetles of Sukhna Wildlife Sanctuary, Chandigarh, India. *Journal of Threatened Taxa*. 2024;16(11):26124-26130.
4. Gazette OF INDIA. Ministry of Environment, Forest and Climate Change: Painganga Wildlife Sanctuary. Part III/ Extra ordinary / Sec. 3. 2016:13-30.
5. Ghagargunde PG, Paingankar MS. Diversity of beetles from the Mul region of Chandrapur District, Maharashtra, India. *Indian Journal of Applied and Pure Biology*. 2024;39(3):1840-1845.
6. Chaudhary KO. Diving into diversity: aquatic beetles of Sukhna Wildlife Sanctuary, Chandigarh, India. *Journal of Threatened Taxa*. 2024;16(11):26124-26130. <https://doi.org/10.11609/jott.8963.16.11.26124-26130>
7. Hanski I, Cambefort Y. Competition in dung beetles. In: Hanski I, Cambefort Y, editors. *Dung beetle ecology*. Princeton: Princeton University Press; 1991. 305-329.
8. Kadbe A, Masram S, Rathod P, Tetwar P. A comprehensive review: Biodiversity and distribution of Coleoptera in Indian ecosystems. *International Journal of Entomology Research*. 2025;10(4):136-140. <https://www.entomologyjournals.com/assets/archives/2025/vol10issue4/10101.pdf>

9. Mangalawede SS, Dasar NR. Preliminary study on composition and diversity of beetles (Order: Coleoptera) in Nigadi Village of Dharwad Taluka, Karnataka, India. *International Journal of Entomology Research*. 2024;9(5):44-49.
10. Olambe AS, Tayade DV, Dabhadkar DK. A checklist of dragonflies and damselflies (Odonata: Insecta) of Painganga Wildlife Sanctuary of Yavatmal District, Maharashtra (India). *Vidyabharati International Interdisciplinary Research Journal*. 2025;20(1):1-6.
11. Pande GS, Parge FV, Kalawate AS. A baseline account of scarabaeid beetles of area within and around historic Ahmednagar city (Maharashtra) India. *Flora and Fauna*. 2023;29(2):366-370.
<https://doi.org/10.33451/florafauna.v29i2pp366-370>
12. Paunikar S, Kushwaha S. Studies on beetles (Insecta: Coleoptera) diversity and distribution in the different elevation zones of forest areas of North-West Himalaya of India. *International Journal of Global Science Research*. 2023;10(1):2015-2028.
13. Prajapat R, Meena P, Kumawat N, Meena S. Diversity and seasonal fluctuation of Coleoptera community in the reserve forests of Aravalli Range at Jaipur, Rajasthan, India. *Environment and Ecology*. 2025;43(1):89-96.
14. Ruptake KS, Ahire DK. Diversity of beetles (Insecta: Coleoptera) in and around Sangamner Tehsil, Tal. Sangamner, Dist. Ahmadnagar. *AEGAEUM Journal*. 2023;11(3):80-89.
15. Saxena DR, Karim FA, Tupkar NJ, Giripunje NH. Studies on biodiversity and abundance of beetles and bugs in and around *Umred area*, District Nagpur, Maharashtra, India. *Journal of Xi'an University of Architecture and Technology*. 2021;13(12):1096-1109.
16. Sreedevi K, Carolyn J, Nagesh M. Diversity of scarab fauna (Coleoptera: Scarabaeidae) – Importance and implications. *Indian Journal of Plant Genetic Resources*. 2022;35(3):389-392.
17. Sundareswari C, Sudarmani DNP, Jaya DURKGAS. Species diversity, richness and evenness of ladybird beetles from selected agricultural ecosystems of Sivakasi, Tamil Nadu, India. *Bulletin of Environment, Pharmacology and Life Sciences*. 2022;12(1):156-159.
18. Vazirani TG. Contribution to the study of aquatic beetles (Coleoptera) 2. A review of the subfamilies Noterinae, Laccophilinae, Dytiscinae and Hydroporinae (in part) from India. *Oriental Insects*. 1968;2(3-4):211-341.
19. Vazirani TG. The fauna of India: Coleoptera. Family Gyrinidae and Family Haliplidae. Calcutta: Zoological Survey of India; 1984.
20. Venkataramana SP, Nagalakshmi P. Beetle diversity (Insecta: Coleoptera) in and around Sri Lankamalleswara Reserve Forest, Kadapa – Eastern Ghats of Southern Andhra Pradesh, India. *Indian Journal of Applied and Pure Biology*. 2024;39(2):982-988.
21. Sheth SD, Ghate HV. A report of an aquatic beetle *Eretes griseus* (Fabricius, 1781) (Coleoptera: Dytiscidae: Dytiscinae: Eretini) from the Western Ghats and other parts of Maharashtra, India. *Journal of Threatened Taxa*. 2014;6(12):6571-6575.
<https://doi.org/10.11609/jott.o4036.6571-5>
22. Yadav R, Saxena K. Diversity and richness of dung beetles (Coleoptera: Scarabaeidae) in three different habitats of Udaipur Region, Rajasthan. *International Journal of Entomology Research*. 2025;10(1):1-4.
23. Olambe AS, Tayade DV, Dabhadkar DK. A checklist of dragonflies and damselflies (Odonata: Insecta) of Painganga Wildlife Sanctuary of Yavatmal District, Maharashtra (India). *International Interdisciplinary Journal*. 2025;20(1):1-6.