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New Records of Scarabaeid Beetles (Coleoptera: Scarabaeidae) from Melghat Tiger Reserve, Maharashtra, India

Vaibhao G. Thakare*, Varsha S. Zade* and Kailash Chandra**

**Department of Zoology, Government Vidarbha Institute of Science and Humanities, Amravati, (MS), India.*

***Zoological Survey of India, New Alipore, Kolkata, (WB) India.*

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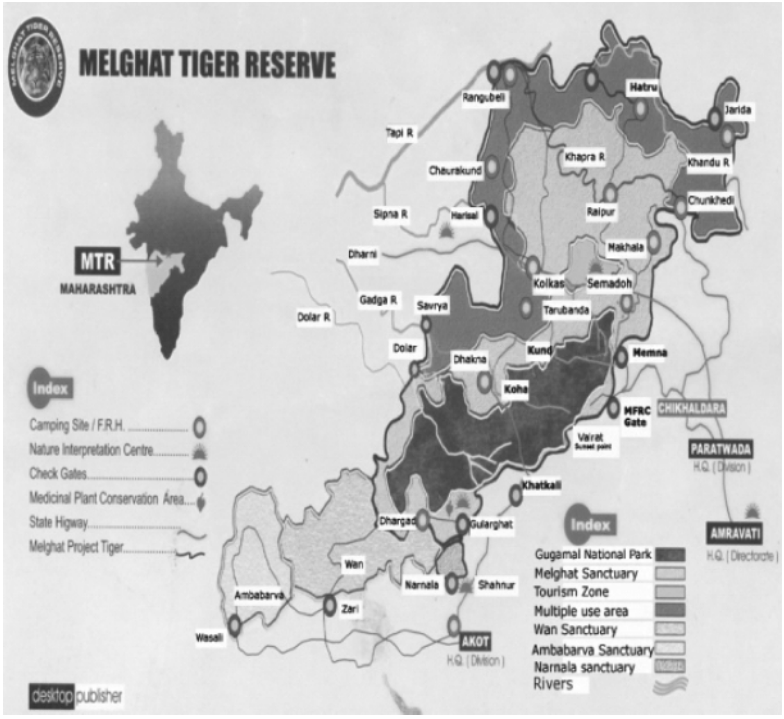
ABSTRACT : A study was conducted during 2009-10 in the protected area of the Melghat Tiger Reserve (MTR), Maharashtra. Twelve species under four subfamilies of family Scarabaeidae were reported for the first time from Melghat Tiger Reserve. Further study may increase the number of species of these beetles from Tiger Reserve.

Keywords : New records, Scarabaeid beetles, Melghat Tiger Reserve, Vidarbha, Maharashtra.

INTRODUCTION

The family Scarabaeidae is the largest family of insects which contains more than 30000 species in the world (Fincher et al., 1981). The scarab beetles of the order Coleoptera include both useful as well as harmful insects. The coprophagus beetles generally known as dung beetles play an important role in nature's sanitation by feeding on the dung and phytophagus beetles commonly known as chafers are pest of agricultural crops, plantation and forests (Chandra, 2000). Dung beetles are taxonomically as well as functionally very important component of terrestrial ecosystem (Kakkar and Gupta, 2009). 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 (Hingston, 1923). These insects are important for the dynamics of matter in ecosystem because they remove detritus of the soil surface (Haffter and Matthews, 1966). Dung beetles in different habitats have different structures (Davis and Sutton, 1998). Some dung beetles are generalists and are able to use manure of very specific animals. Hanski and Cambefort (1991) reported that mammal diversity, hence, influences diversity of dung beetles. Therefore, dung beetles can be used to assess animal biodiversity in agro-ecosystems. The first comprehensive account of scarabaeid beetles of the Indian region was published by Arrow (1910, 1917 & 1931) in three volumes of "Fauna of British India", where in 58 species were reported from Central India.

MAP OF STUDY AREA



STUDY AREA

A study was conducted during 2009-2010 in the protected area of the Melghat Tiger Reserve (MTR), Vidarbha region, Maharashtra. The geographical coordinates of the study area are 21°29. 96'N, 077°12.338' E. Melghat Tiger Reserve is located at southern off shoot of Satpuda hill range in Central India also called as Gawilgarh hill range in Maharashtra. The forest area of MTR is tropical and dry deciduous in nature dominated with teak trees (*Tectona grandis*).

RESULTS

Twelve species of family Scarabaeidae were recorded from the Melghat Tiger Reserve. *Heliocopris bucephalus* Fabricius, *Catharsius sagax* Quens., *Catharsius molossus* Linnaeus, *Copris imitans* Felsche, *Copris sinicus* Hope, *Onitis philemon* Fabricius, *Onitis subopacus* Arrow, *Onitis lama* Lansberge and *Oniticellus spinipes* Roth belonging to subfamily Scarabaeinae; *Oxycetonia versicolor* Fabricius (Subfamily Cetoniinae), *Anomala bengalensis* Blanchard, (Subfamily: Rutelinae) and *Phyllognathus dionysius* Fabricius (Subfamily: Dynastinae) were reported for the first time from Melghat Tiger Reserve, Maharashtra.

Subfamily : Scarabaeinae

***Heliocopris bucephalus* Fabricius**

1775. *Scarabaeus bucephalus* Fabricius, Syst. Ent., 24.

1931. *Heliocopris bucephalus* Arrow, *Faun. Brit.* India, (Lamellicornia:Coprinae) 3: 88.

Material examined : MTR, Kolkas, Forest Rest House, 03. × .2010 (2ex.); GPS- 21°29.897'N, 077°15.560. E

Diagnosis: Length, 39-55 mm, breadth, 24-30 mm. Body color black, with the elytra and lower surface usually deep red, parts of the lower surface and legs clothed with coarse rust-red hair. Broad and somewhat quadrate in shape, with the head and pronotum coarsely rugose, and the elytra very smooth and shining. The head is rather small, the clypeus moderately finely and the vertex more coarsely, transversely strigose, the front margin feebly excised in the middle and the lateral margins somewhat serrate behind. The pronotum is very unevenly rugose or reticulate, with a slight depressed area in the middle of the basal part, and the front angles rather smooth. The sides are strongly rounded, the front angles are not very blunt, and the hind angles are feebly indicated.

***Catharsius sagax* Queensland**

1806. *Copris sagax* Queensland, *Schonh. Syn. Ins*., I: 43.

1931. *Catharsius sagax*: Arrow, *Faun. Brit*. India (Lamellicornia: Coprinae) 3: 96.

Material examined : MTR, Jarida, 06. vii.2009 (2ex.); GPS- 21°39.987'N, 077°29.252' E ; Alt. 660m

Diagnosis: Length, 23-36 mm, breadth, 14-20 mm. Closely similar to *Catharsius molossus* L., but of rather smaller average size, with the elytra generally a little less dull and sooty, and the head without the smooth shining area adjoining the eye on each side. Males are rather narrower in shape, with the cephalic horn less erect and situated farther forward upon the head, and the upper margin of the thoracic declivity straighter, its lateral angles sharp but not at all produced. The conjunction of several distinctive features seems to indicate that this is specifically different from *Catharsius molossus*, although; only one character which can be relied upon to distinguish the females, viz., the absence in *Catharsius sagax* of a smooth area adjoining the eye, but the metasternum appears to be usually less strongly grooved in this sex.

***Catharsius molossus* Linnaeus**

1758. *Scarabaeus molossus* Linnaeus, *Syst. Nat*. ed. 10: 347.

1931. *Catharsis molossus* Arrow, *Faun. Brit*. India, (Lamellicornia: Coprinae) 3: 95-96.

Material examined : MTR, Kolkas, 15. v. 2009 (1ex.); GPS- 21°30.107'N,077°12.578' E.

Diagnosis : Length, 23-37 mm, breadth, 14-22 mm. Black and opaque, partially clothed with reddish hair beneath. Broadly oval and very convex. The head is broad, the clypeus closely transversely rugulose, the ocular lobes densely and coarsely granular, and a small, smooth, shining area adjoining the inner margin of each eye. The pronotum is densely covered with fine round granules, except sometimes upon a small shining area upon each side in the male. The sides are rounded, the front angles broadly truncate, the hind angles almost obsolete, and the lateral scars large and deep. The elytra are very finely and lightly striate, with the intervals flat and microscopically coriaceous. The pygidium is finely punctured in the middle and finely granular at the sides. The metasternal shield is acutely angular in front, longitudinally grooved in its hinder part, finely and rather sparsely punctured, rather smooth and shining, and thinly clothed with erect hairs in front and at the sides, and the sides of the metasternum are very densely clothed. The front tibia bears three external teeth, the middle and hind tibiae are broad and crenate at the hind margin, and the terminal spur of the hind tibia is truncate at the extremity.

***Copris imitans* Felsche**

1910. *Copris imitans* Felsche, *Deutsche Ent. Zeits*., 347.

1931. *Copris imitans*: Arrow, *Faun. Brit*. India, (Lamellicornia: Coprinae) 3: 124.

Material examined: MTR, Tarubanda (Compt. no. 762), 12. x. 2010 (1ex.); GPS- N 21° 24' 546 E 077° 482 33'; Alt-505 m.

Diagnosis : Length, 13-15 mm, breadth, 7-8 mm. Black and shining, with the antennae, mouth-organs, and the bristles clothing the legs, reddish. Broadly oval and convex. The head is very smooth and shining, with a few punctures upon the vertex and ocular lobes. The clypeal margin is reflexed, a little emarginate in front, and produced upwards in the middle of the emargination as a short erect process. Another similar process, inclined a little backwards, arises behind the first and a little in front of the eyes. The pronotum is rather finely and evenly and fairly closely, but not densely, punctured, and has a conspicuous marginal membrane in the anterior emargination and a row of large, oval, annular impressions at the base. The elytra are deeply striate, the striae finely and closely and not conspicuously punctured, the intervals convex, with minute, rather scattered punctures. Each elytron has a small vertical flattening near the extremity. The pygidium is strongly punctured. The metasternal shield is very smooth and shining, with fine scattered punctures in the anterior part, and the sides of the metasternum are fairly strongly and not closely punctured.

***Copris sinicus* Hope**

1842. *Copris sinicus* Hope,* *Proc. Ent. Soc. Lond*. p.60.

1911. *Copris sinicus* Gill., *Ann. Soc. Ent. Belg*. Iv, p.314.

Material examined : MTR, Tarubanda (Compt. no.762), 12. X.2010 (2ex.); GPS- N 210 28' 198' E 0770 10 281'; Alt-505m.

Diagnosis : Length, 14-21 mm, breadth, 8-11 mm. Black and shining, with the antennae, mouth-organs, and the bristles upon the legs red. Oval and highly convex. The head is nearly semicircular, with the clypeus rugulose, the ocular lobes strongly punctured, and the vertex between the eyes lightly punctured, the clypeus deeply notched in the middle, with a slight lobe on each side of the notch. The pronotum is very shining, with a strong longitudinal groove along the middle. The elytra are fairly deeply striate, with the striae finely and closely punctured, the intervals almost flat and scarcely perceptibly punctured. The pygidium is not very strongly nor very closely punctured. The front tibia is broad and armed with four external teeth, the front femur is closely punctured, and the four posterior femora fairly closely upon the outer half. The front tibial spur is strongly hooked at the end. In male the head bears a slender compressed horn, with a minute tooth behind on each side at a short distance from the base.

***Onitis philemon* Fabricius**

1801. *Onitis philemon* Fabricius, *Syst. Eleut.*, I: 30.

1931.*Onitis philemon***.** Arrow, *Faun. Brit*. India, (Lamellicornia: Coprinae) 3: 393.

Material examined : MTR., Semadoh, 02. vii. 2010 (3ex.);GPS- N 21° 30.119' E 077° 19 .012' Alt.- 1731 ft.

Diagnosis : Length, 14-19 mm, breadth, 8-11 mm. Green-coppery or bronzy-black, moderately shining. Oval, neither very elongate nor very convex. Head rugulose, with the ocular lobes rather smooth, the clypeus parabolic, with an extremely feeble emargination of the front edge in the middle, and separated from the forehead by an interrupted curved carina, with a short transverse carina just before it and a conical tubercle just behind it. Pronotum fairly strongly and closely but unevenly punctured, without well-marked median line; lateral margin straight in front, strongly rounded in the middle, and gently sinuate behind, with the front angles rectangular and the hind angles obsolete, the base obtusely angulate in middle. The elytra moderately strongly striate and intervals very finely and sparsely punctured. The 1st, 3rd, and 5th intervals a little narrower and usually a little more elevated than the 2nd and 4th. Pygidium very feebly and sparsely punctured. In male; the clypeus granulate. Fore legs elongate, the tibia slender, strongly curved in front, armed with four feeble teeth externally, finely serrate internally in the basal.

***Onitis subopacus* Arrow**

1875. *Onitis virens* Lansb., *Ann. Soc. Ent*. Belg. Xvii, p. 133.

Material examined : MTR, Semadoh (Forest Rest House), 07. vii. 2009 (1ex.); GPS- N 21° 29.875' E 077° 18 .881' ; Alt.- 1679 ft.

Diagnosis : Length, 16-21 mm, breadth, 9-12 mm. Black or pitchy- black, with a slight metallic lustre, the head and prothorax moderately shining and the elytra rather dull. Oval, rather narrow, smooth, and moderately convex. The clypeus is elliptical, with its margin entire and closely and finely transversely rugulose, separated from the vertex, which is granulate and more shining, by a broadly interrupted carina. There is a short transverse clypeal carina in front of the interrupted carina and a conical tubercle behind it. The pronotum is rather closely but not very strongly punctured, usually with an incomplete smooth median longitudinal line, the basal margin with a deep pit on each side of the middle. The elytra are finely striate and the 1st, 3rd and 5th intervals are usually slightly convex. The pygidium is opaque and scarcely or not at all punctured. The metasternal shield is smooth and shining behind, and its front angles, as well as the sides of the metaeternum are closely clothed with reddish hair.

***Onitis lama* Lansberge**

1875. *Onitis lama* Lansb. *Ann. Soc. Ent. Belg*. Xviii, p.123

Material examined : MTR, Kolkas, 07. vii. 2009 (1ex.), GPS- 21°31'.107'N, 077°12.588'; Alt. 1447 ft.

Diagnosis : Length, 19-24mm; breadth, 11-13 mm. Black and shining with the legs and lower surface clothed with reddish hair. Rather narrowly oval and very convex. The head bears an entire strongly elevated and slightly arcuate frontal carina upon the clypeus, and a trisinuate carina upon the vertex extending from eye to eye. The pronotum is distinctly and moderately closely punctured in front and extremely, minutely behind. The elytra are very smooth, with fine striae, the sutural interval bearing a few punctures and the posterior edge bearing a short fringe of yellow hairs. The pygidium is opaque and smooth with very minute scanty punctures.

***Oniticellus spinipes* Roth**

1851. *Oniticellus spinipes* Roth., *Arch. F. Nat.*, xvii, i:128.

1931. *Oniticellus spinipes*: *Arrow, Faun. Brit.* India, (Lamellicornia: Coprinae) 3: 378.

Material examined : MTR, Belkund (Comp. no. 813), 15. X. 2010 (1ex.); GPS- N 21° 23.111' E 077° 06. 935' ; Alt.- 619m

Diagnosis : Length, 5.5-7.5 mm; breadth, 3-4 mm. Opaque dark brown, with the legs and the middle of the metasternum shining, the head slightly coppery, the pronotum sometimes very feebly metallic, its margins and parts of the elytra vaguely reddish. Elongate-oval, very flat above. The head is without carinae or elevation,, slightly shining in front and rugose behind, with rather deep and moderately large punctures sparsely scattered in front and more closely behind. The clypeus is feebly emarginate in the middle. The pronotum is densely and subrugosely punctured, with an impressed longitudinal line upon the basal half, rather deep behind. The sides are strongly rounded considerably before the middle, nearly straight from the middle, the front angles blunt, the hind angles obsolete and the base gently rounded. The elytra are finely striate, the intervals flat and minutely granulate. The pygidium is thinly setose and a little hollowed at the apex and on each side of the base. The metasternum is opaque and the shield is shining, punctured at the sides, and smooth in the middle, with a depression behind.

Subfamily : Cetoniinae

***Oxycetonia versicolor* Fabricius**

1775. *Cetonia versicolar* Fabricius, *Syst. Ent.*,: 51.

1910. *Oxycetonia versicolar*: Arrow, *Faun. Brit.* India, (Lamellicornia: Cetoniinae), I: 164.

Material examined : MTR, Belkund (Comp. no. 868), 14. X. 2010 (2ex.); GPS- N 21° 23.034' E 077° 06 871'; Alt.- 512 m.

Diagnosis : Length, 13-15 mm; breadth, 6-8 mm. The form is oval and convex and the upper surface devoid of hairs and setae. The head is long and rugosely punctured and the clypeus very sharply bidentate. The pronotum is strongly and not densely punctured, with the sides angulated in the mioddle. The scutellum is triangular and moderately sharp at the apex. The elytra are strongly punctuate-striate with the sides strongly sinuated behind the shoulders and the apical angles short but not produced. The pygidium is coarsely punctured and setose the metasternum rugose and hairy and the abdomen sparingly but coarsely punctured.

Subfamily : Rutelinae

***Anomala bengalensis* Blanchard**

1851. *Anomala bengalensis*, Blanch. *Cat. Coll. Ent. Mus. Paris*, P. 182

Material examined : MTR, Raipur, 02. vii. 2009 (1ex.), GPS- N 21° 33.913' E 077° 17.573' ; Alt.- 691m.

Diagnosis : Length, 19-23 mm; breadth, 10-11 mm. Pale testaceous yellow with the head, the extreme edge of the pronotum, scutellum and elytra, the hind tibae and all the tarsi dark. The shape is moderately elongate and rather scantily clothed with the hair beneath. The head is rather finely punctuate-rugose with the clypeus broadly and transeversely rectangular, its front margin strongly reflexed and almost straight. The pronotum is very minutely punctured with the sides strongly rounded, The elytra are moderately, closely and deeply punctured; some of the punctures forming longitudinal rows. The pygidium is strongly punctured at the sides and apex and minutely coriaceous in the middle of the basal part.

Subfamily : Dynastinae

***Phyllognathus dionysius* Fabricius**

1792. *Scarabaeus dionysius* Fabricius, *Ent. Syst*. I, p.20.

1910. *Oryctes dionysius*, Arrow, *Fauna Brit*. Ind. Lamell. I, p.307.

1969. *Oryctes dionysius*, Endrodi, *Ent. Arb. Mus. Frey*, 20, p.451.

Material examined : MTR, Raipur, 02.vii.2009 (1ex.); GPS- N 21° 33.647' E 077° 17.807'; Alt.-688m.

Diagnosis : Length, 16 -23 mm; breadth, 9-13mm; Body compact and globose; chestnut-red, shining above and clothed with tawny hairs beneath. Head densely and rather rugosely punctate. Pronotum strongly and finely punctate, rugosely in front; elytra strongly and moderately closely punctate with annular puncture, some arranged in longitudinal rows. In male, cephalic horn broad, strongly inclined backwards, triangular at extremity with apex acute; pronotum deeply excavated from front to almost hind margin, with sides slightly curved outwards and prominent anteriorly in middle.

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