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Scarabaeoidea (Coleoptera) fauna of Medical hills Jabalpur, Madhya Pradesh

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Abstract
The present paper deals with the Coleoptera species collected from Medical hills of district Jabalpur of Madhya Pradesh. A total of five species belonging to three subfamilies of Scarabaeoidea are reported. The five species are *Clinteria Kulgi*, *Heterorrhina elegans*, *Aphodius moestus*, Species *Adoretus sp. 1* and Species *Adoretus sp. 2*.

Keywords: scarabaeoidea, pronotum, elytra, Jabalpur, medical hills

1. Introduction
Coleoptera is the largest among the insect orders and superfamily Scarabaeoidea is one of the largest superfamilies of Coleoptera. This superfamily consists of 12 families and 43 subfamilies which are further classified into 118 tribes and 94 subtribes (Smith, 2006) [7]. About 35,000 species of superfamily Scarabaeoidea and 27800 species of family Scarabaeidae has been reported so far worldwide (Ratcliffe and Jameson, 2004) [6]. The family Scarabaeidae embraces beneficial (Dung beetles) as well as harmful (Chafers). Dung beetles play vital role in the ecosystem functioning and perform other functions like soil aeration, nutrient cycling and seed dispersal (Mittal, 1993; Estrada and Estrada, 1991; Larsen, 2004) [5, 3, 4]. Chafer beetles are phytophagous hence destroy a significant percentage of economy by consuming commercial crops. A total of 58 species of scarab beetles have been reported from Madhya Pradesh in the "Fauna of British India" (Arrow, 1910; Arrow, 1931) [1, 2].
Jabalpur district lies in the eastern half of Madhya Pradesh- the central Indian state. Geographically it lies between 23^0 $10'$ North latitude and 79^0 $59'$ East longitudes with a total geographic area of 5211 sq. km. The district lies in the catchment of Narmada- the longest river of Central India. Narmada has its tributaries, viz. Hiran, Gour, Ken and Sone touching the district. Jabalpur with a forest cover of 1078 sq. km i.e. about 20.69 per cent of its geographical area (State of Forest Report, 2003), serves as the corridors for Bandhagrah Tiger Reserve, Kanha Tiger Reserve, Pench Tiger Reserve and Bilaspur Tiger Reserve. The present paper deals with the Scarab beetles collected from Medicals hills of Jabalpur.

2. Methodology
Two sampling methods namely sweep net and hand picking were employed for the collection of Scarab beetles from Medical hills of district Jabalpur of Madhya Pradesh. The beetles were collected during the months of September and October of 2016. Thirty four individuals belonging to five species of Scarabaeoidea were recorded.

3. Results
During the study period five species of beetles belonging to three subfamilies viz. Aphodiinae, Cetoniinae and Rutelinae were recorded. The five species were *Clinteria Kulgi*, *Heterorrhina elegans*, *Aphodius moestus*, Species *Adoretus sp. 1* and Species *Adoretus sp. 2*. The systematic list and systematic account is as under.

3.1 Systematic list
Order	Coleopter
Suborder	Polyphaga
Family	Scarabaeidae
Subfamily	Cetoniinae
Genus	Burmeister, 1842

1. Species *Clinteria Kulgi* Hope, 1831
   Genus *Heterorrhina* Westwood, 1842
2. Species *Heterorrhina elegans* Fabricius, 1781
   Subfamily Aphodiinae Genus *Aphodius* Hellwig 1798
3. Species *Aphodius moestus* Fabricius 1801
   Subfamily Rutelinae Genus *Laporte* 1840
4. Species *Adoretus sp. 1*
5. Species *Adoretus sp. 2*

3.2 Systematic account
Genus Burmeister, 1842
1. *Clinteria Kulgi* Hope, 1831
1831. *Cetonia Kulgi* Hope. Grays Zool. Misc., 25
1910. *Clinteria Kulgi* Arrow. Fauna of British India (Lamillicornia: Cetoniinae), 1:87.

Diagnosis
Moderately elongate, depressed, black or deep reddish-chocolate, pronotum with broad marginal band, arising in the front angles and curved slightly in near the hind angles, a spot on mesosternal epimerons, elytron with an irregular transverse median band, sometimes divided into two spots, a spot anterior to this, two apical spots, patches on the sides of the

sternum and abdomen and a patch on each side of the pygidium (Fig. 1).

Distribution
India: Haryana, Karnataka, Madhya Pradesh, Maharashtra, Uttar Pradesh, Uttarakhand, Tamil Nadu and West Bengal. Elsewhere: Nepal and Sri Lanka.

Genus *Heterorrhina* Westwood, 1842
2. *Heterorrhina elegans* Fabricius, 1781
1781. *Cetonia elegans* Fabricius, *Spec. Ins*. I: 56.
1910. *Heterorrhina elegans*, Arrow, *Faun. Brit. India*, (Lamellicornia: Cetoniinae) I: 93-94

Diagnosis
Prothorax with puncture along sides; scutellum without punctures; clypeus with few punctures; forehead with lobed ridges longitudinally; sternal process blunt and narrow; hind tibia fringed with hairs; hind tibia with tuft of hairs on the tip; males with longer tarsi than females; elytra, legs and antennae blackish (Fig. 2).

Distribution
India: Bihar, Jharkhand, Karnataka, Pondicherry, Madhya Pradesh and Tamil Nadu. Elsewhere: Myanmar and Sri Lanka.
Genus ***Aphodius*** Hellwig 1798

3. *Aphodius moestus* Fabricius, 1801
1801. *Aphodius moestus* Fabricius, *Syst. Eleuth.*, 1: 78.
1857. *Aphodius moestus:* Boh. *Ins. Eleuth.*, 1: 351.
1991. *Aphodius moestus:* Biswas and Chatterjee, *Fauna of Orissa*, 3: 261.

Diagnosis
Pale yellow with head, disc of pronotum, scutellum and elytra with fourth interval in last half and sixth in anterior two third black, smooth and moderately shining (Fig. 3).

Distribution
India: Andhra Pradesh, Orissa, Madhya Pradesh, Kerala. Elsewhere: Bangladesh, Sri Lanka, East and South Africa, Madagascar, Nepal.
Genus *Laporte* 1840

4. *Adoretus sp. 1*
Diagnosis
Bright yellow; Clothed with short uniformly white setae; Head large and rugose; Elytra densely punctured; Symmetrical pair of paramers curved at junction and fused medially with a depression, inverted "u" shape at apex; enlarged Phallobase, articulation between phallobase and parameres eminent (Fig. 4).

Distribution
India: Andhra Pradesh, Bihar, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Sikkim, Rajasthan, Tamil Nadu and West Bengal. Elsewhere: Many parts of the globe.
Genus *Laporte* 1840

5. *Adoretus sp. 2*
Diagnosis
Bright reddish yellow; Pronotum densely punctured; Phallobase broader at base, parameres are symmetrical making right angles to the phallobase, wider and slightly curved at base, narrowed towards apex (Fig. 5).

Distribution
India: Andhra Pradesh, Bihar, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Sikkim, Tamil Nadu and West Bengal. Elsewhere: Many parts of world.

4. Conclusion
Dung beetles play vital role in the ecosystem functioning as they are part and parcel of many food webs and ecological guilds and perform other functions like soil aeration, nutrient cycling and seed dispersal. On the other hand Chafer beetles are phytophagous, consuming commercial crops hence financial loss. The paper reports five species of Scarabaeoidea namely *C. Kulgi*, *H. elegans*, *A. moestus*, Species *Adoretus sp. 1* and Species *Adoretus sp. 2* from Medical hills of Jabalpur district.

Fig 1: Photographs of the beetle species of Scarabaeidae family.

5. Acknowledgement
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