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DIVERSITY OF SCARABAEID BEETLES (COLEOPTERA: SCARABAEIDAE) IN AND AROUND SOLAPUR REEGION, MAHARASHTRA

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ABSTRACT
Surveys and collection of beetles of the family Scarabaeidae in and around Solapur City of Maharashtra State was carried out during 2015 - 2017. During the study period, 59 species of scarabaeid beetles belonging to 35 genera representing 8 subfamilies: Aphodinae, Hybosorinae, Geotrupinae, Scarabaeinae, Melolonthinae, Rutelinae, Dynastinae and Cetoniinae were recorded. Subfamily Scarabainae represented maximum 25 species.

KEY WORDS: - *Scarabaeid beetles, fauna, Solapur Region, Maharashtra.*

INTRODUCTION:

Order Coleoptera is enormously rich in species and wide spread in many terrestrial and freshwater environments throughout the world. Almost all biologists are well familiar that beetles are most diverse in all animal groups, with 3,50,000 described species (New, 2007) and approximately 15,000 species were recorded from India (Personal discussion with Dr. R. M. Sharma, Scientist 'D', ZSI, Pune Maharashtra).

Family Scarabaeidae of the largest order Coleoptera includes useful as well as harmful i. e. pestiferous insects. It contains more than 30,000 species in the world (Fincher, 1981). The dung beetles, also known as coprophagous beetles, play key role in recycling of dung by feeding on it. Chafers i. e. phytophagous scarab beetles are pests of various agricultural crops, plantatioin and forests (Chandra, 2000).

Arrow (1910, 1917, 1931) published first comprehensive account of scarabaeid beetles of Indian region vide three volumes of fauna of British India, in which he reported 58 species from Madhya Pradesh. Balthasar (1963a, 1963b, 1964) had written monographs on subfamilies Scarabaeinae and Aphodinae of Palaearctic and Oriental regions. Newton and Malcolm (1985) reported 22 species of dung beetles of wild mammals in Kanha Tiger and Malcolm (1985) reported 22 species of dung beetles of wild mammals in Kanha Tiger Reserve. Shivayogeshwara and Veeresh (1983) reported 300 species of white grubs. Recently, Hill and Michaelis (1988) enlisted four beetles amongst their select-list of threatened insect; because of 'urbanization' (three species are of Scarabaeid).

Scarbaeid beetles already have attracted attention of researchers in other parts of Maharashtra, where considerable work has been done on various aspects. However, no research work has been undertaken in Solapur region on any of its aspects. Therefore, in the present paper

an attempt has made for first time to study fauna of Scarabaeid beetles.

MATERIALS AND METHODS

Collection of beetles:

Adult scarabaeid beetles were collected during 2015 and 2017 on their host plants/dung pads. Surveyed and collection were carried out at one month interval in the morning and evening. Fluorescent lamp

was also used to attract them. A bamboo pole measuring nearly 10 feet long was used to shake branches of their host plants (Lolage and Patil, 1988). Few representative beetles were collected, killed, pinned and preserved. These specimens were got identified from Dr. V.V. Ramamurthy, Scientist, Insect Identification Service, Division of Entomology, Indian Agricultural Research Institute, New Delhi - 110 012.

Subfamily: Hybosorinae

1. *Hybosorus orientalis* (Westwood)

Subfamily: Geotrupinae

1. *Boloboceras nigricans* (Westwood)

Subfamily: Scarabaeinae

1. *Catharcius molossus* (Linnaeus)
Catharcius pithecus (Fabricius)

RESULTS

In first attempt, scarabaeid beetles were collected through extensive surveys of Amba Reserved Forest. The study revealed presence of 59 species of beetles belonging to 38 genera scattered in 8 subfamilies *viz.* Aphodinae, Hybosorinae, Geotrupinae, Scarabaeinae, Melolonthinae, Rutelinae, Dynastinae and Cetoniinae. Subfamily Scarabaeinae was dominant with 25 species.

Checklist of Scarabaeid beetles Solapur Region, Maharashtra

Subfamily: Aphodinae

1. *Aphodius sp.*
2. *Aphodius sp.*
2. *Chironitis arrowi* (Janssens)
3. *Copris repertus* (Walker)
4. *Copris sp.*
5. *Drepanocerus setosus* (Wiedeman)
6. *Heliocopris bucephalus* (Fabricius)
7. *Heliocopris tyranus* (Thomson)
8. *Liatongus rhadamistus* (Fabricius)
9. *Onitis philemon* (Fabricius)
10. *Onthophagus acuticollis* (Gillet)
11. *Onthophagus agnus* (Gillet)
12. *Onthophagus amplexus* (Sharp)
13. *Onthophagus catta* (Fabricius)
14. *Onthophagus cervus* (Fabricius)
15. *Onthophagus dama* (Fabricius)
16. *Onthophagus nasalis* (Arrow)
17. *Onthophagus pectolus*

18. (Fabricius)
19. *Onthophagus sp.*
20. *Onthophagus sp.*
21. *Onthophagus unifaciatus* (Schaller)
22. *Phalops divisus* (Wiedeman)
23. *Scarabaeus sp.*
24. *Sisyphus neglectus* (Gory)
25. *Synapsis gilleti* (Arrow)

Subfamily: Melolonthinae

1. *Holotrichia sp.*
2. *Holotrichiafissa* (Brenske)
3. *Holotrichia serrata* (Fabricius)
4. *Leucopholis lepidophora* (Blanchard)
5. *Maladera sp.*
6. *Maladera sp.*
7. *Apogonia sp.*
8. *Brahmina crinicollis* (Burmester)

Subfamily: Rutelinae

1. *Adoretus sp.*
2. *Adoretus sp.*
3. *Anomala bengalensis* (Blanchard)
4. *Anomala lineatopennis* (Blanchard)
5. *Anomala sp.*
6. *Anomala varicolor* (Gyllenhal)
7. *Mimela vemalate* (Fairmaire)
8. *Prodoretus sp.*
9. *Rhyniptia indica* (Burmester)

Subfamily: Dynastinae

1. *Het~ronynchus lioderes* (Redtenbacher)
2. *Oryctes rhinoceros* (Linnaeus)
3. *Phyllognathus dionysius* (Fabricius)
4. *Xylotrupes giedon* (Linnaeus)

Subfamily: Cetoniinae

1. *Anatona stillata* (Newman)
2. *Anthracophora crucifera* (Olivier)
3. *Chiloloba orientalis* (D & R)
4. *Clinteria sp.*
5. *Clinteria sp.*
6. *Coemochilus campbelli* (Saunders)
7. *Glycyphana horsfieldi* (Hope)
8. *Oxycetonia versicolor* (Fabricius)
9. *Rhomborrhina glaberrima* (Westwood)

DISCUSSION

Chandra and Ahirwar (2005) studied Scarabaeid beetle fauna of Bandhavgarh National Park, Madhya Pradesh which revealed, in all 44 species in 24 genera and eight subfamilies. Chandra (2000) reported 94 taxa of scarabaeid beetles belonging to 9 subfamilies from Madhya Pradesh, India. Kumar

et al. (2009) investigated faunal composition of Scarabaeids associated with rose cultivation in Bangalore district of Karnataka State, India. During the field survey, thirteen species of scarabaeid beetles belonging to nine genera representing three subfamilies viz. Melolonthinae, Rutelinae and Cetoniinae were recorded. In the present study, in all 59 species of scarabaeid beetles belonging to 38 genera scattered in 8 subfamilies were reported.

Pinero and Avila (2004) studied dung insect community composition of South-Eastern Spain. The study revealed that, beetles assemblage was very diverse including 135" species from nine families. Percent of scarabaeid beetle was 21.1 %. Sowig and Wassmer (1994) reported 43 species of coprophagous beetles from sheep dung. Their study revealed that, there was an extreme difference in species composition between spring and autumn. Sabu et al. (2006) thoroughly studied guild structure, diversity and succession of dung beetles with special reference to Indian elephant dung in South-Western Ghats forests. In all twenty one dung beetle species belonging to 3 major functional guilds were recorded. Estrada et al. (1993) reported 21 species of dung beetles from mammalian herbivore and omnivore dung in tropical rain forest of Los Tuxtlas, Mexico. The present study revealed 25 species of dung beetles from cattle dung in Solapur region.

In future, thorough surveys and collection will be made to study population dynamics and various ecological aspects in relation to scarabaeid beetles of Solapur regionand surrounding area.

CONCLUSION

In the present study, 59 species of scarabaeid beetles belonging to 38 genera of eight subfamilies were reported. Subfamily Scarabainae was dominant with 25 species followed by subfamily Rutelinae, Cetoniinae, Melolonthinae, Dynastinae, Aphodinae, Hybosorinae and Geotrupinae with 9, 9, 8, 4, 2, 1, and 1 species respectively.

This study will be helpful to investigate role of coprophagous and phytophagous beetles in the forest ecosystem. It is also useful to study guild structure, diversity and their succession. Moreover, it also helps in formulation and implementation of control strategies of phytophagous scarabs of forest areas.

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