

Diversity of Beetles from the Mul region of Chandrapur District (M.S.) India

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Abstract

On Earth Coleopteran beetles insect group is most diverse and rich in species. Out of total described species of animals approximately 25% that is more than 3,80,000 are beetles. In future many beetle species will be described. Limited studies are available on Coleopteran beetles of Central India and very few reports are available on diversity and distribution of beetles from vidarbha region. Beetle surveys will provide better insights in to diversity of Coleopteran beetles in Gadchiroli and Chandrapur districts. This work is done in Mul city of Chandrapur district, state Maharashtra, India and the area around the city. Using various trapping techniques, beetles were captured from various locations and identified up to the family level and tallied monthly. Total 42 species included into 14 families and 32 genera were reported during the study. Species of Carabidae family reported highest whereas Cerambycidae, Cleridae, Geotrupidae, Meloidae, Staphylinidae family reported lowest. Greatest diversity of beetles were seen during the monsoon season. Very little known about beetles in the world. This study will be helpful to check diversity loss and to decide conservation strategies. Due to lack of literature on beetle diversity of Mul region this data will provide scope for further research.

Key words : Beetle, Diversity, Mul region.

Insects are foremost division of the world biodiversity, they constitute biggest group as compared to other animal groups. Insects play important role in various ecological activities on planet earth¹¹. In the world there are 3,50,000 beetles species which comes

under order Coleoptera⁸, which is 40% of all known insect species and comprises 25% of total identified animals⁹. Compared with other forms of life coleopteran species are maximum in number with tremendous diversity hence it is principal order of class Insecta. In India

there are 17,431 species of beetles, out of these 51 species are reported from state of Maharashtra¹⁵.

Beetles breed in large numbers and feed on almost all parts of plant hence they treat as pest of agricultural crop plants like tobacco plants, wood plants, fruit plants and fruits, they also consume households, stored products and forest plants as well. Many cerambycid beetles are stem-borers; their larvae can seriously harm trees, devaluing timber and, occasionally, causing tree death. Numerous types of forest trees and shrubs are also harmed by Ambrosia beetles (Scolytidae and Platypodidae)^{1,6,7}. About 75% beetle species guzzle plant leaves, it doesn't mean all beetles are harmful, some beetles are beneficial to human beings as they control population of pest. Adults and Larvae of Ladybird beetles a member of Coccinellidae family guzzle small insect pests like mealybugs, aphids, scale insects, whereas ground beetles commonly feed on eggs of various flies, caterpillars of some insect pests. Dung beetles control the population of cattle dung breeding pestilent flies and parasitic worms². Due to immense diversity beetles can be used as indicators of environmental change.

Even while numerous revisionary studies have since been conducted from various geographic locations, no such survey, particularly from the Mul region has been done yet. Consequently, a preliminary attempt was made to research the beetle fauna of Mul region, Tehsil Mul, District Chandrapur, Maharashtra. A better understanding of beetle biodiversity can inform the creation of conservation measures, yield qualitative and

quantitative data improve our understanding of the world, and provide many applications.

Location of Mul is 20.09 N 79.67 E and average elevation of it is 198 metres. The study area is surrounded by deciduous forest where tick wood plants constitute the major parts along with various other plants. Major crop of Mul region is rice, out of total rice production of Chandrapur district 90 percent rice is produced from this area. One of the most old and biggest national park in Maharashtra state, Tadoba tiger reserve and wildlife sanctuary rich in diverse flora and fauna which comes in Chandrapur district is close to Mul city. Due to rich rice fields, dense deciduous forest, nearby Uma river basin, and lack of previous literature about beetle diversity of the Mul region, this study area is undertaken for work.

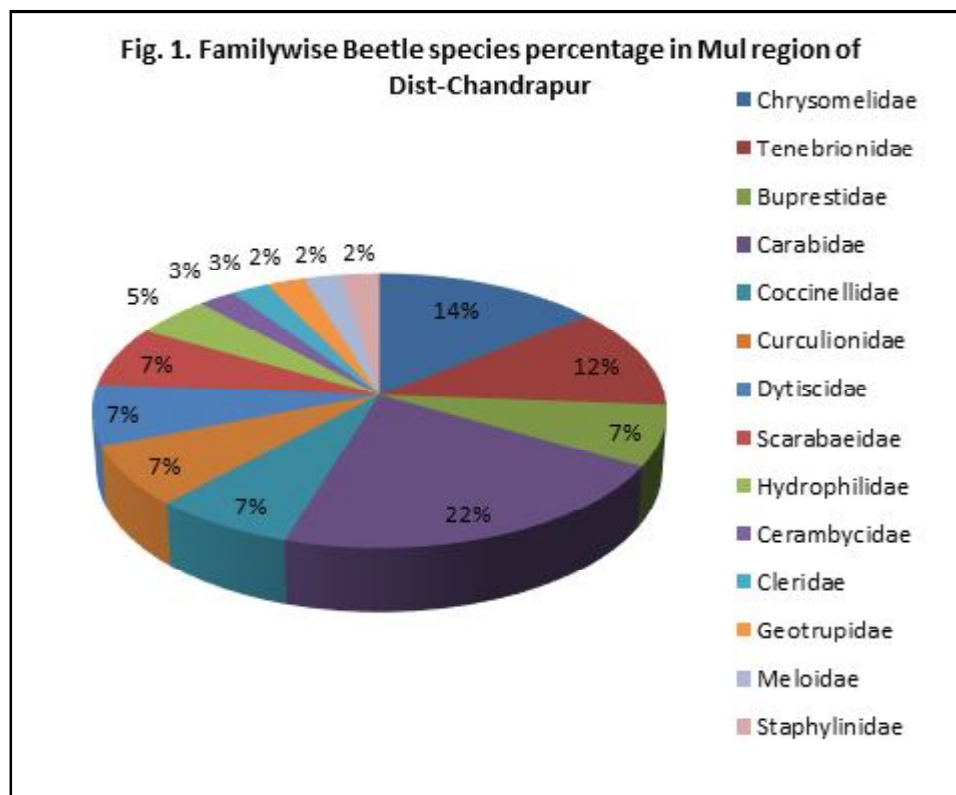
Beetles were collected from different places in the Mul region from March 2020 to February 2023. In the present study, standard techniques of beetle trapping were used. Beetles were collected from plants, grasslands, few species were collected from flowers and shrubs, few were found under the stone and few collected from cow dung. The light trap method is applied at some places, for this white light source is used to collect beetles during the night. The majority of beetles are harmless, they've been picked by hand. In order to catch flying beetles, butterfly nets were used. Dung beetles were collected from dung using forceps. Few beetles were collected from building walls and nearby water sources. Beetles were identified using standard identification keys and available literature.

In this research work we reported total 42 species from 14 families, and 32 genera

Table -1. List of beetles collected from Mul region

Sr.No.	Family	Scientific Name	Common Name
1.	Buprestidae	<i>Sternocera chrysis</i>	Jewel beetle
		<i>Sternocera sternicornis</i>	Jewel beetle
		<i>Sternocera aequisignata</i>	Jewel beetle
2.	Cerambycidae	<i>Batocera rufomaculata</i>	Long horn beetle
3.	Chrysomelidae	<i>Chrysolina hypericin</i>	Saint Johnswort beetle
		<i>Altica oleracea</i>	Leaf beetle
		<i>Dacladipsa armigera</i>	Rice hispa
		<i>Aulacophora indica</i>	Cucurbit beetle
		<i>Lilio cerislilii</i>	Scarlet lily beetle
		<i>Aulacophora nigripennis</i>	Pumpkin beetle
4.	Coccinellidae	<i>Coccinella transversalis</i>	Transverse ladybird
		<i>Cheilomenes sexmaculata</i>	Zigzag ladybird
		<i>Cycloneda sanguine</i>	Spotless ladybird
5.	Carabidae	<i>Chlaenius erythropus</i>	Ground beetle
		<i>Platynus ovipennis</i>	Harpaleaelytresovales
		<i>Chlaenius impunctifrons</i>	Lionephaerasa
		<i>Chlaenius bonelli</i>	Vivid metallic ground beetle
		<i>Pheropsophus verticalis</i>	Bombardier beetle
		<i>Patrobus longicornis</i>	Ground beetle
		<i>Anthia sexgutatta</i>	Six spot ground beetle
		<i>Synuchus impunctatus</i>	Harp ground beetle
		<i>Scarites subterraneus</i>	Big headed ground beetle
6.	Curculionidae	<i>Sitophilus oryzae</i>	Rice weevil
		<i>Sitophilus granaries</i>	Wheat weevil
		<i>Cosmopolites sordidus</i>	Banana root beetle
7.	Cleridae	<i>Trichodes punctatus</i>	Chekered beetle
8.	Dytiscidae	<i>Cybister tripunctatus</i>	Three punctured diving beetle
		<i>Cybister fimbriolatus</i>	Giant diving beetle
		<i>Cybister laterali marginalis</i>	Aquatic diving beetle
9.	Geotrupidae	<i>Anoplotrupes stercorosus</i>	Black dung beetle, dor beetle
10.	Hydrophilidae	<i>Hydrophilus caschmirensis</i>	Large scavenging water beetle
		<i>Hydrophilus piceus</i>	Great silver water beetle
11.	Meloidae	<i>Mylabris variabilis</i>	Blister beetle

12.	Scarabaeidae	<i>Heteronychus arator</i>	African black beetle
		<i>Catharsius sagax</i>	
		<i>Adoretus bimarginatus</i>	
13.	Staphylinidae	<i>Paederus riparius</i>	Rove beetle
14.	Tenebrionidae	<i>Tribolium destructor</i>	Destructive flour beetle
		<i>Tenebrio obscurus</i>	Dark mealworm
		<i>Tribolium confusum</i>	Confused Flour beetle
		<i>Gonocephalum sericeum</i>	
		<i>Tenebroides corticalis</i>	



from the Mul region. The list of identified species is given in table-1. During the investigation we reported beetle species from 14 different families that is Cerambycidae (Longhorn beetle), Cleridae (Chekered beetles), Geotrupidae (Earth boring dung beetle),

Meloidae (Blister beetles), Staphylinidae (Rove beetles), Coccinellidae (Ladybird beetle), Curculionidae (Weevils), Hydrophilidae (Water scavenger beetles), Scarabaeidae (Dung beetles), Buprestidae (Jewel beetles), Dytiscidae (Predaceous water beetle), Carabidae (Ground

beetles), Tenebrionidae (Darkling beetles) and Chrysomelidae (Potato beetles).

Among 14 families family Carabidae is found the largest family, with 9 species, with 6 species Chrysomelidae family is found second largest and 5 species were from Tenebrionidae family. Three species were recorded from the Buprestidae, Coccinellidae, Curculionidae, Dytiscidae, and Scarabaeidae family each. Single species were recorded of Cerambycidae, Cleridae, Geotrupidae, Meloidae, and Staphylinidae family each. This study indicates the diversity of beetles in the Mul region. Shashikant Trimbak in 2018 worked on diversity of beetles of Maharashtra and noted 29 species from 8 families from Taluka Kopargaon of district Ahmednagar¹³. Sharma et al worked on beetles of Himachal Pradesh in 2004 and reported 18 species belonging to 9 families from kalatop khajjar sanctuary¹². 13 different families with 102 species of beetles were noted by Kazmi in 2004 from Thar desert of Rajasthan¹⁰. In central India 13 water beetles belongs to 3 different families were recorded by Thakare in Melghat tiger reserve in 2011¹⁴. Chandra K et al reported 44 species of beetles include in 8 subfamilies from Madhya Pradesh, India in 2005⁴. Chandra in 2007 studied beetle of family scarabaeidae of G.N.H.P., Himachal Pradesh and documente 9 species of 4 subfamilies⁵. Borges AV 2007 studied cavernicolous ground beetles in which documented 10 different species in Azores³. In this study we reported only single species of longhorn beetle, checkered beetle, earth boring dung beetle, blister beetle, and rove beetle were recorded from the study area.

There is a great diversity of beetles in

Mul region, Tahsil Mul, District Chandrapur which includes 42 species belonging to 14 families and 32 genera. Among all, Carabidae is the dominant family. This diversity is due to rich rice fields, the dense forest of Tadoba Andhari Tiger Reserve, and the nearby Uma River basin which supports the growth of a variety of beetle species. From the field collection, it is concluded that maximum beetles are found during monsoon season due to favorable conditions and the richness of resources required for their growth and survival. There is very little known about beetle fauna in all world regions. This will help to decide on Conservation strategies to check the diversity loss. The present data reveal the diversity of beetles in the Mul region for the first time which provides scope for further research.

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References :

1. Anzai, M. (1991). Attraction of beetles (in particular ambrosia beetles) to freshly felled logs of plantation species. Sabah Forestry Department Report. 52 pp.
2. Banerjee M. (2014), Diversity and composition of Beetles (Order: Coleoptera) of Durgapur, West Bengal, India, Hindawi Publishing Corporation Psyche, pp 1-6.
3. Borges AV, P Oromi, R M Serrano, IR Amorim and F Pereiara, (2007). *Zootaxa*, 1478: 21-31.
4. Chandra K and SC Ahirwar, (2005). *Zoos' print journal*, 20 (8): 1961-1964.

5. Chandra K, (2007). *Zoos' print journal*, 22 (9) : 2821-2823.
6. Chey, V.K. (1996). Forest Pest Insects in Sabah. Sabah Forest Record No. 15, Sabah Forest Department. 111 pp.
7. Chung, A.Y.C. (1995). *The Planter* 71(827): 55–66.
8. Gavin C. Mc. George. (2001). Essential Entomology, I Edi., Oxford University Press New York. Pp 189-199.
9. Hammond, P. M. Species inventory in Global Biodiversity, Status of the Earths Living Resources. B. Groombridge, ed. Chapman and Hall, London. Pp. 17-39 and 585 pp, 1992.
10. Kazmi SI and V V Ramamurthy, (2004). *Zoos' print journal*, 19(4): 1447-1448.
11. Mohd Feroz and J. S. Tara (2010), *The Bioscan*, 5(4): pp. 573-577.
12. Sharma RM, M Mulganina and P Chakraborty, (2004). *Zoos' print journal*, 19 (9): 1626.
13. Shashikant Trimbak Hon (2018), Preliminary study on diversity of beetles from Kopergaon tehsil, Ahmednagar, Maharashtra, India. International Research Journal of Vol. 7(6): 23–25.
14. Thakare V. G, V. S Zade, and K. Chandra (2011), Diversity and Abundance of scarab beetles (Coleoptera: Scarabaeidae) in kolkas region of Melghat Tiger Reserve (MTR), District Amravati, Maharashtra, India, *World Journal of Zoology*, 6(1): pp. 73–79.
15. Trigunayat Kritika and Sharma Jaimala (2017), *JEZS*; 5(2): 1422-1429.