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## Studies on the distribution and diversity of beetles-carabidae, elateridae and gyrinidae (coleoptera : insecta) of Ranchi (Jharkhand)

Seema Keshari

Department of Zoology, R.L.S.Y. College, Ranchi , Ranchi University, Ranchi

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**Abstract :** The present investigation was conducted from March 2013- February 2014 on the Coleopteran diversity from Ranchi. A total of 8 species belonging to three different families of beetles, viz. Carabidae, Elateridae and Gyrinidae were collected and identified from various habitats.

**Keywords :** Beetles , Coleoptera, Insecta, Ranchi.

### INTRODUCTION

Insects are the major components of the world's biodiversity. The order coleoptera which include beetles is the largest group of comparable units among all animals. India being situated in the tropics and it has good richness of insect fauna. Over one and half million living and about 12,000 species of fossil insects have been identified and described all over the world (Uniyal, 2001). Beetles are found in almost every habitat and range in size ranging from 1-100 mm. It includes more than 3, 50000 identified species (Gavin , 2001) and represents about 40% of all insects and 30% of all animals. (Choate 2003). About 15088 species of Coleopteran insects are known from Indian region (Kazmi, 2004). Beetles are of particular importance to study because of their role as predators, decomposers and herbivores. (Peterson and Luxton, 1982) . Family Carabidae commonly known as ground beetles feed on other insects, is well represented from Arctic region (Chernov et al. 2000,2001) to high altitudes of Himalaya (Mani,1962). The most important factor in the success of

Coleopteran is the development of elytra which protect the folded hindwing permitting occupation of encoded spaces and hidden habitats by adult. Beetles are exceedingly variable both ecologically and biologically. A lot of work has been done by Borges 2007, Kazmi-2004 and Sharma - 2004 on order coleoptera.

This paper deals with the diversity of some species of families of beetles, viz. Carabidae, Elateridae and Gyrinidae of order Coleoptera in Ranchi, Jharkhand.

### MATERIALS AND METHODS

The study area consists of very diverse type of flora and fauna. A survey of beetles was undertaken in the study area along four different transects.

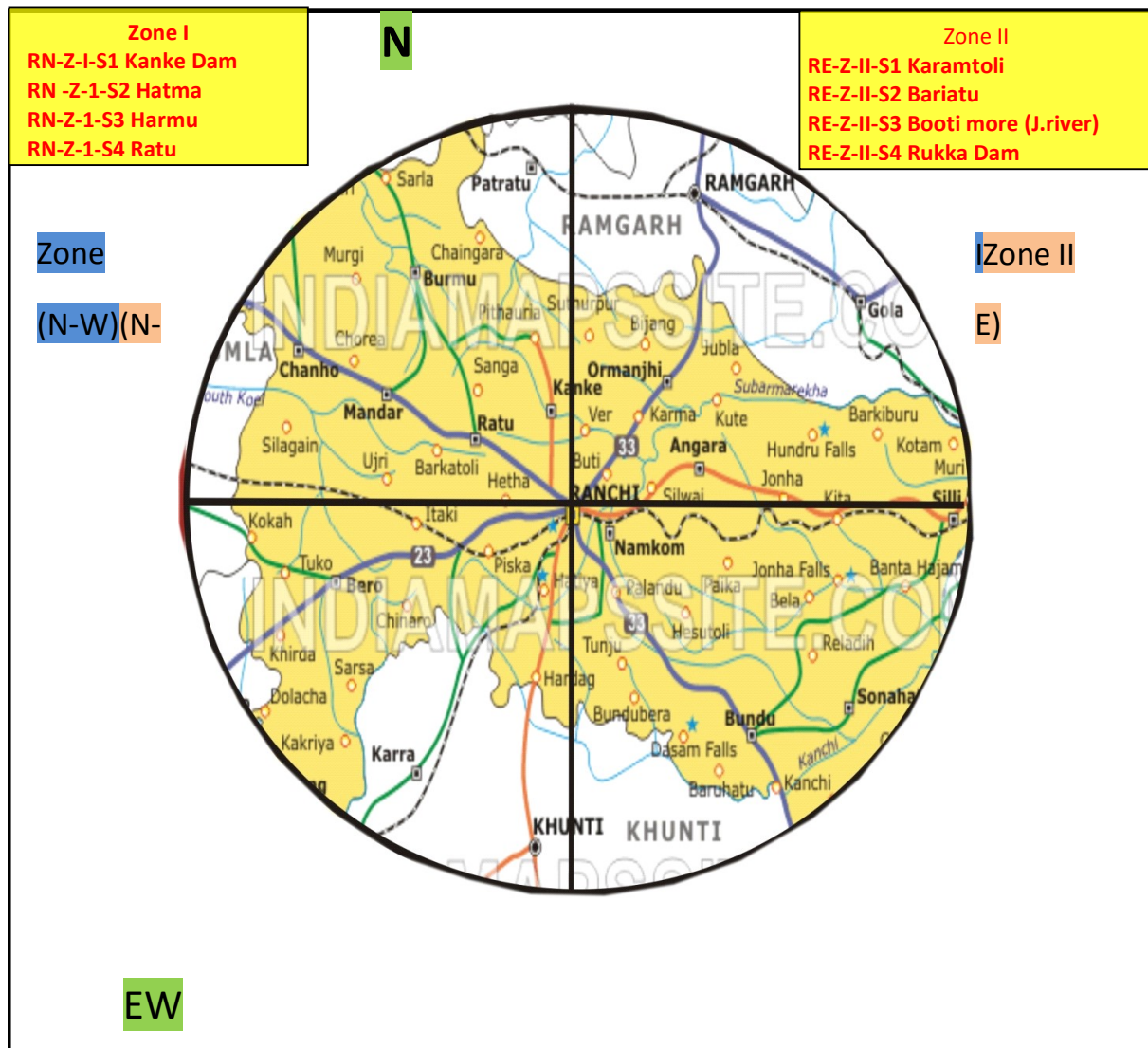
- Transect I - Zone 1 - N-W including Kanke dam , Hatma , Harmu, Ratu.
- Transect II - Zone-II - N-E including Karamtoli, Bariatu, Booty ,Rukka dam.
- Transect III - Zone III - S-E including Kokar, Kantatoli, Samlong, Namkum.
- Transect IV - Zone IV - S-W Niwaranpur, Sail, Doranda, Hinoo.

\*Corresponding author :

Phone : 9835379406

E-mail : seemakeshary@gmail.com

COLEOPTERANS SAMPLING ZONES AND SITES OF RANCHI CITY



Zone I Zone III

(S-W) (S-E)

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**Collection and identification of beetles**

The beetles sampled from various habitats. These were collected by wide varieties of collecting and trapping methods. Some beetles are manually collected by hand picking. Butterfly nets were also used for catching flying beetles. Light trap method was also used to capture beetles during night. The beetles also collected by stem beating. After collection, the insects were killed by using ethyl acetate either in the killing bottle or by introducing cotton balls dipped and subsequently squeezed in ethyl acetate in closed polythene bags. After killing the beetles were

preserved, cardened, stretched and dried. The population studies fortnightly survey were made from March 2014 - February 2015 regularly for the presence of adult beetles at four different study zones and the relative abundance of each species were determined by using the formula -

$$\text{Relative abundance (R. A.) of a species} = \frac{\text{Number of individuals of the species}}{\text{Number of individuals of all the species}} \times 100$$

**RESULTS AND DISCUSSIONS**

The present author has recorded 8 genera within these three families - Carabidae, Elateridae and Gyrinidae.

**(Table-1)**

**Checklist of Beetles and their habitat from the study area**

S.No	Family	Genus /Species	Occurrence			
			Site 1	Site 2	Site 3	Site 4
1	Carabidae	1. Anthiasps.	+	+	+	-
		2. Calosomasps.	-	+	-	-
		3. Cicindellasps.	+	-	+	-
2	Elateridae	4. Agrotissps.	-	+	+	+
		5. Agrypynussps.	+	+	-	+
3	Gyrinidae	6. Gyrinusps.	+	+	-	-
		7. DineutesspinosusFabr.	-	+	+	+
		8. Orectocheilusgangeticus; Wield	+	+	+	-

A total of 8 beetle species belonging to three families -. Carabidae, Elateridae and Gyrinidae were collected during the period are listed in table 1 and 2 . A total of 108 individuals were collected from the study area during the period of study which were further categorised into 8 sps. Belonging to 3 families

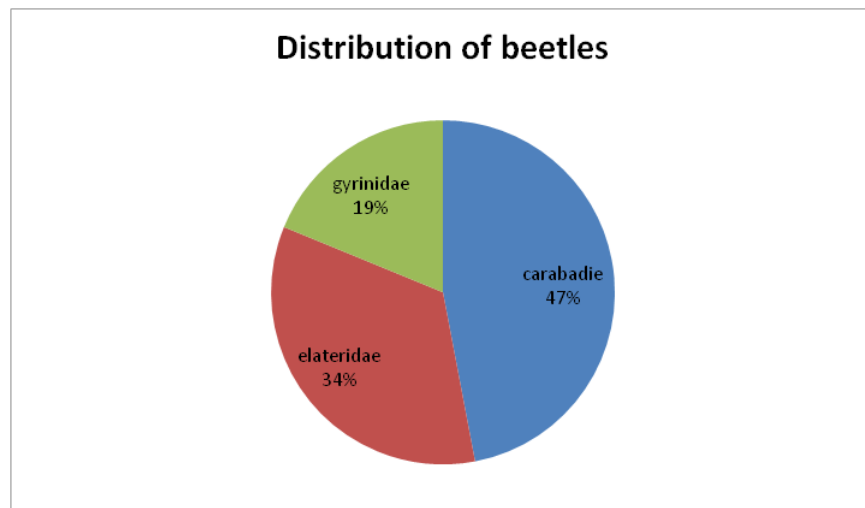
The dominance of Carabidae, and Gyrinidae over Elateridae indicate the ecological condition of the area. Zone one and zone two has more greenery, agricultural land, forest area and wetland than zone III and IV. So, the population abundance is more frequently seen in these two areas.

Table-2

The population dynamics and relative abundance of the collected species.

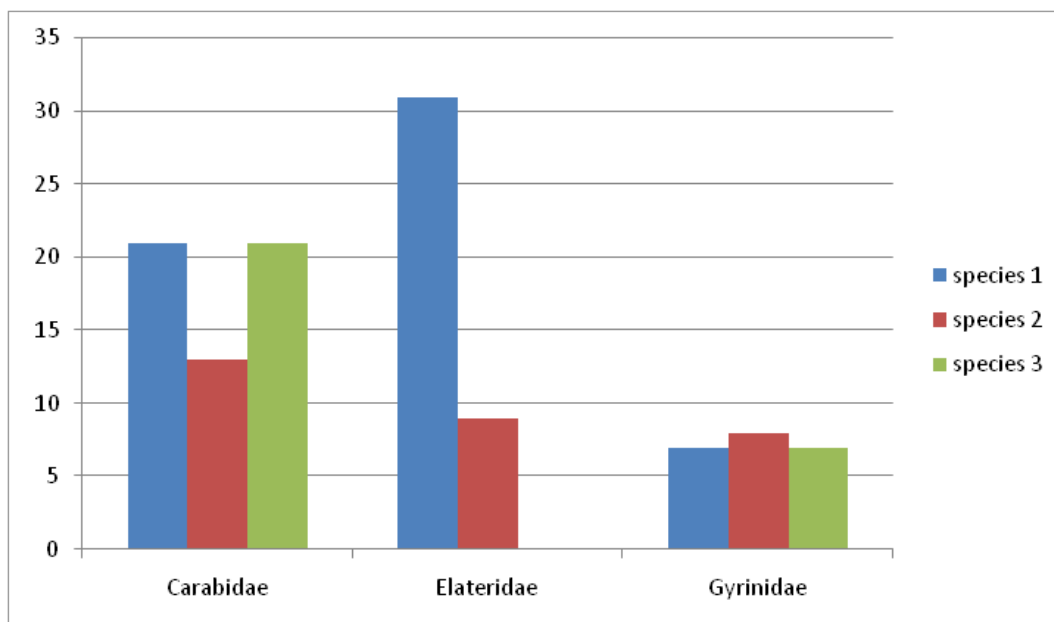
S. No	Family	Genus /Species	March 2013 –February 2014												Total	R.A.%
			M	A	M	J	J	A	S	O	N	D	J	F		
1	Carabidae	1. <i>Anthiasps.</i>	5	3	2	-	3	3	3	1	-	-	-	1	21	17.94
		2. <i>Calosomasps.</i>	2	1	3	1	2	-	-	-	1	-	-	2	13	11.11
		3. <i>Cicindellasps.</i>	1	-	2	3	3	1	-	-	2	-	-	2	21	17.94
2	Elateridae	4. <i>Agrotissps.</i>	8	5	3	4	2	-	2	11	-	-	1	5	31	26.49
		5. <i>Agrypynussps.</i>	-	-	-	3	2	1	-	-	-	1	1	-	09	07.69
3	Gyrinidae	6. <i>Gyrinusps.</i>	-	2	-		3	-	-	1	-	1	-	-	07	05.98
		7. <i>DineutesspinosusFabr.</i>	1	-	1		-	-	3	-	1	-	1	1	08	06.83
		8. <i>Orectocheilusgangeticus</i> ; Wield	-	3	-		-	-	-	-	-	2	-	2	07	05.98
Total			17	14	11	11	15	10	08	04	04	04	04	15	117	

Minimum number were collected during October to December (4 in number) and maximum in March(17 in number).The % contribution of family Carabidae was present in maximum (47%) and Gyrinidae minimum (19%) . Of these Agrotiss ps. was maximum in number(31) and *Gyrinusps.* and *Orectocheilus gangeticus* was minimum (07) in number.



Pie chart showing %age population of some Coleopteran families

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**Total number of species diversity of Coleoptera**

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