

DIVERSITY IN SOIL ORIBATID (ACARI) MITES OF TRIPURA

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INTRODUCTION

Mites are the predominating group among the soil inhabiting fauna in different habitats. Among the four orders of mite Oribatida or Cryptostigmata, commonly called “beetles” or “moss” mites, are numerically the most abundant in the soil ecosystem. They are very common in occurrence in soil, litter, humus, compost heaps, lichens, moss, leaf, bark of trees, bird nests, house dusts, caves, lava-caves, nests of small mammals and various other habitats like pasture soils, coniferous taiga, forest and in polar regions. They show a high degree of diversity in structure, habit and habitat.

Oribatid mites are of great economic importance because of their direct and indirect effect on human beings and other animals. They play a major role in promoting soil fertility through humification of organic matter. The mites are also used as agent for biological control of pests. The saprophytic oribatids play an important role in regulating soil nematode population. These mites also feed on higher plants, transmit helminth diseases caused by anoplocephaline cestodes to domestic animals and some act as agents of respiratory allergic diseases in man.

STUDIES ON SOIL ORIBATID MITES IN TRIPURA

The soil oribatid mite in India was first studied by Pearce (1906). Later several workers described and recorded these mites from different states of India and till date 425 species/subspecies of oribatid mites are known from India.

The study of these mites in Tripura was started in recent times. Subias and Sarkar (1982) first studied the oribatids of Tripura and described three new species. Later Sarkar and Subias (1982, 1983, 1984), Sarkar (1983, 1985, 1986, 1990, 1991a, 1991b, 1992), Subias and Sarkar (1983, 1984), Bhattacharya and Halder (1984), Bhattacharya *et al.* (1985), Bondjema *et al.* (1991), Chakrabarti and Bhattacharya (1992), Bhattacharya and Chakrabarty (1995), Saha and Sanyal (1996), Sanyal and Saha (1996) and Sanyal *et al.* (2000) described and recorded a good number of genera and species of oribatid mites from the state.

RANGE OF DIVERSITY

The total number of taxa of oribatid mites known from the soils of Tripura is 44 families, 98 genera and 160 species. When the number of oribatid mite species of Tripura is compared with the

total number of oribatid species known from Indian soils, it is noted that Tripura represents nearly 40% of Indian oribatid fauna and occupies second position among the Indian states.

The detailed analysis of the status of different taxa of soil oribatid mites in Tripura, indicated that 24 species have been described as new to science from this state. It is also recorded that among the species known from the state only a few viz., *Scheloribates praeincisus interruptus*, *S. fimbriatoides*, *Galumna flabellifera*, *Lamellobates palustris*, *Xylobates seminudus*, *Oppia yodai*, *Archezogozetes magnus longisetosus* are to be considered as numerically dominant in the soils of the state.

The distribution of soil oribatid in Tripura shows that they have adapted themselves to live in different habitats like grassland, forest, cropland and fallow land.

ENDEMICITY AND ZOOGEOGRAPHICAL DISTRIBUTION

The analysis of data on localities surveyed (Table-1) for collection of soil oribatids in Tripura reveals that the West and South districts of Tripura are thoroughly explored but North district is very little surveyed, hence the distribution data of these mites so far available are insufficient and it is rather difficult to make any comment on the degree of endemism in soil oribatid mite taxa (138) which are identified upto species level. However, on the basis of data so far available it may be commented that distribution of 36 species of soil oribatid is still restricted to India and of these 24 species are described from Tripura. Of the total number of identified species (138), distribution of 72 species and 42 genera though known from outside India, we are still restricted to the state i.e. not known from other states of India.

The zoogeographical distribution and relationship of oribatid mites so far known from Tripura is shown in Figure-1. The analysis of data indicates that it would be premature to make any specific

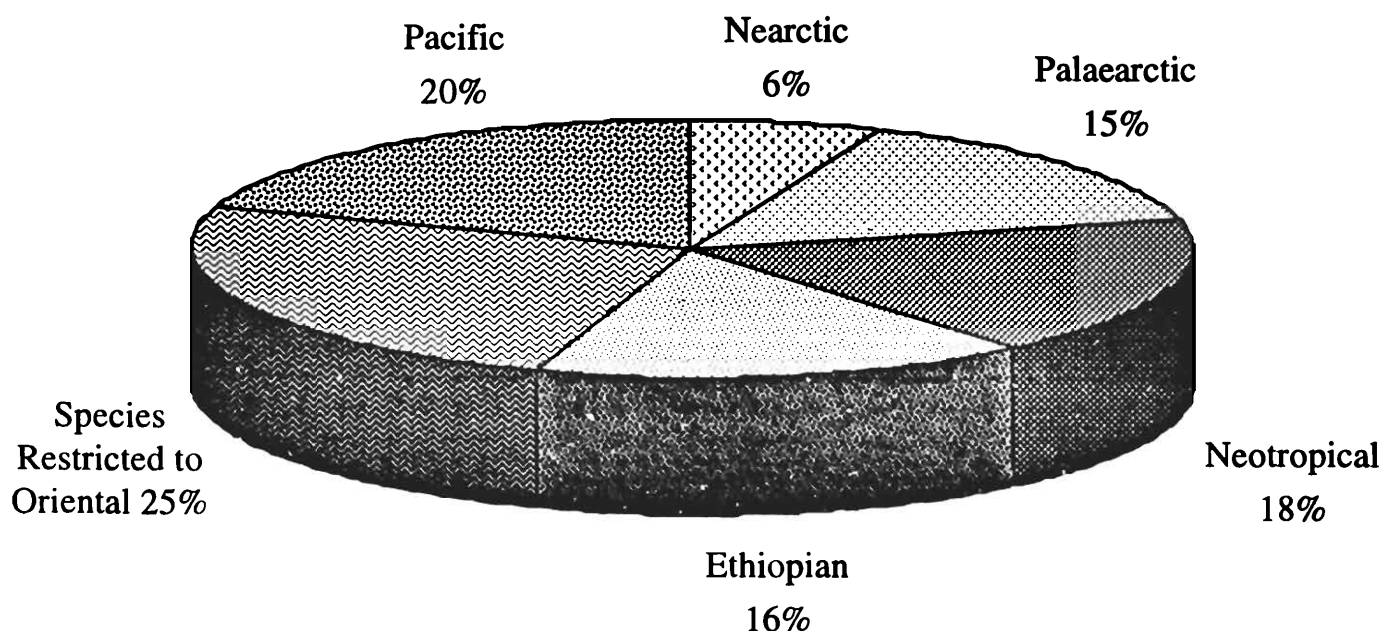


Fig. 1. Zoogeographical distribution of Oribatid species of Tripura.

Table-1. Collection localities in the districts of Tripura

West District	
1. Mekiban	24. Jagendranagar
2. Khowai	25. Madhuban
3. Padamabari	26. Ananthanagar
4. Mohanpur	27. Kamlasagar
5. Sonatala	28. Madhupur
6. Padmabill	29. Anandanagar
7. Narsinga	30. Lakshmipur
8. Chebri	31. Atharamura R. F.
9. Ramchandraghat	32. Teliamura
10. Lembuchhara	33. Jampaijala
11. Cinathani	34. Bisalgar
12. Ramnagar	35. Sipahijala
13. Maharaniapur	36. Brajapur
14. Kalyanpur	37. Matinagar
15. Kunjaban	38. Nalchhara
16. Abhoynagar	39. Khedabari
17. Central Jail	40. Melaghar
18. Subhasnagar	41. Rudrasagar
19. Agartala town	42. Sonamura
20. M. B. B. College Campus	43. Battala
21. Khayerpur	44. Jatrapur
22. Badharghat	45. Durlavpur
23. Jirania	
South District	
46. Garjanmura	62. Malbasa
47. Totabari	63. Paharpur
48. Udaipur	64. Jatanbari
49. Kankraban	65. Jarimura
50. Murapara	66. Ekchhari
51. Matarbari	67. Karbuk
52. Batsabari	68. Santirbazar
53. Baisalbari	69. Radhakishoreganj
54. Joalikhamer	70. Lakshmipur
55. Matipocha	71. Puranarajbari
56. Ampinagar	72. Radhanagar
57. Birganj	73. Joalbari
58. Maharani	74. Pulchari
59. Amarpur	75. Manubazar
60. Rangtang	76. Uttarkalapani
61. Brichandranagar	77. Bellamukhi
North District	
78. Manu	79. Ambasa

comments on zoogeographic relationship at the present state, as the knowledge on soil oribatid fauna of the state is still insufficient. However, the oribatid species recorded from Tripura show maximum similarity with species of the Pacific region. The other regions in order of degree of similarity are Neotropical, Ethiopian, Palaearctic and Nearctic. There is no species common with Antarctic species. Only four genera viz., *Trimalaconothrus*, *Oppia*, *Scheloribates* and *Galumna* are found to occur both in Tripura and Antarctica.

DISTRIBUTION OF SOIL ORIBATID IN TRIPURA

The distribution of different taxa of soil oribatids in three districts of Tripura is shown in Table-2 and Figure-2. These indicate that oribatid mites are known from all the districts, but due to very little exploration these mites are present in North district by only 15 species where as South

Table-2. Distribution of Oribatid Taxa in different districts of Tripura

Districts	Oribatid Taxa		
	Family	Genera	Species
North	10 (22.7%)	12 (12.2%)	15 (9.4%)
South	35 (79.5%)	62 (63.2%)	83 (52.0%)
West	32 (72.7%)	64 (65.3%)	108 (68.0%)

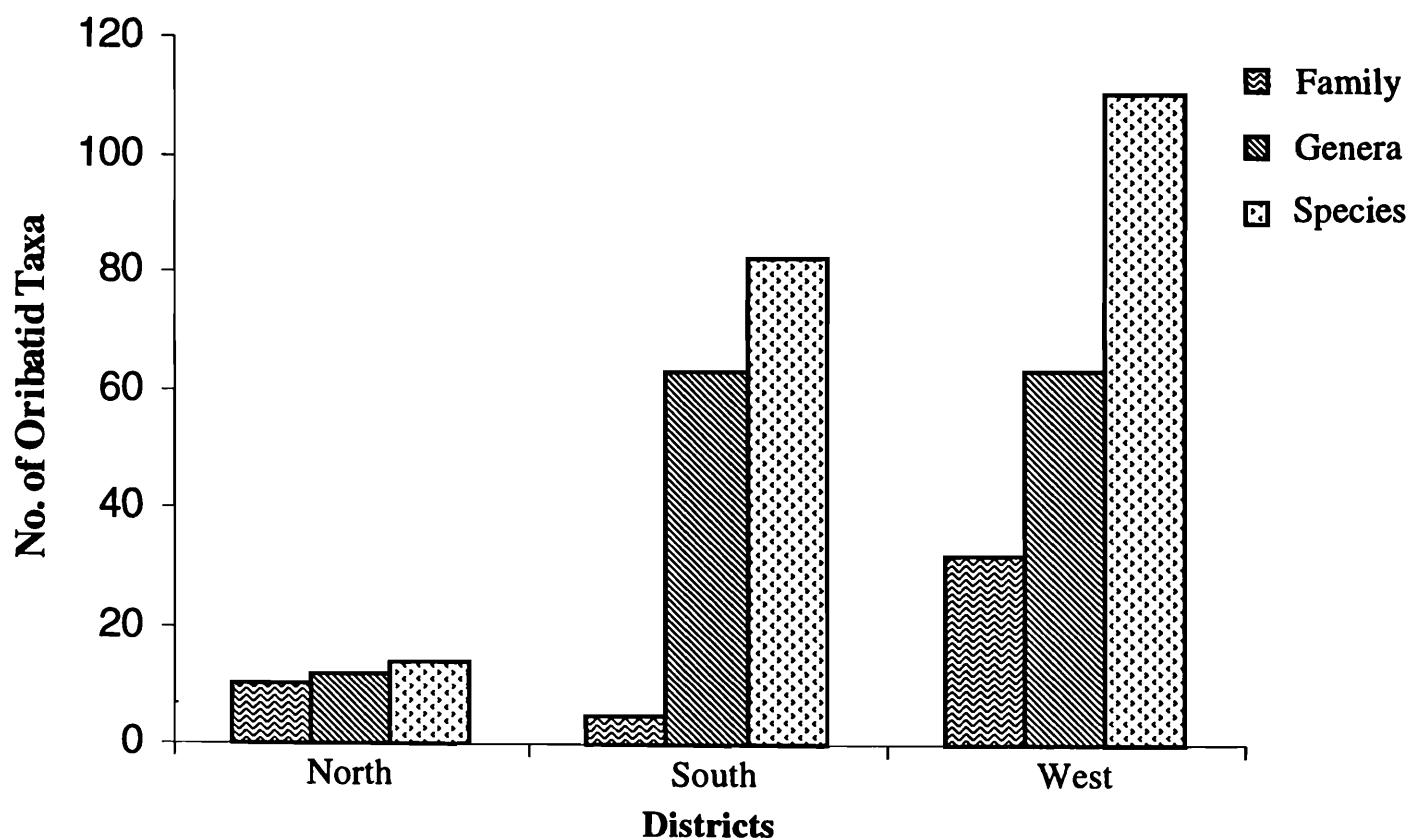


Fig. 2. District-wise distribution of Oribatid Mites in Tripura.

and West districts recorded 83 and 108 species respectively. The table also shows that West district alone represents 72.7% of families, 65.3% of genera and 68.0% of species out of the total soil oribatid taxa known from Tripura and it occupies highest position among the other two districts. The occurrence of maximum number of taxa in the district is due to the fact that the district in respect to others has been surveyed thoroughly for study of soil oribatid mites.

SUMMARY

The study of soil inhabiting oribatid mite fauna of Tripura was initiated by Subias and Sarkar in 1982. Later, many workers studied taxonomy and ecology of soil mites and till date 160 species under 98 genera and 44 families are known from the state. The mites have been recorded from all the three districts, in which West district occupies highest position in number of species. Of the total number of species known from Tripura, distribution of 36 species is still restricted to India of which 24 are described from the state. The oribatid species show maximum similarity in species composition with Pacific region (20%). The genera like *Scheloribates*, *Galumna* and *Lamellobates* are to be considered as numerically dominant in the soils of the state.

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