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A Preliminary Study on the Spider diversity in Moharli forest region Tadoba (TATR) District Chandrapur, (Maharashtra state) India

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Abstract

The diversity of spider species is influenced by the availability of prey and the ecological characteristics of their habitats. The order Araneae, belonging to the class Arachnida, encompasses spiders that play crucial roles in terrestrial food webs and good bioindicators. The research workdone toidentifiedspider'sspecies diversity from some localities of Moharli, Tadoba (TATR) District Chandrapur of MS. The collection of spiders from different sites including, Moharli, Sitarampeth, Moharli to Chandrapur road and lake side area. The research was for the period of 08 months extending from June 2025 to January 2026. In present investigation total 20 spider species belonging to 09 families were identified, out of which 07 individuals were identified of family Araneidae was dominantand followed by Salticidae, Tetragnathidae, Oxyopidae, Pholcidae, Nephilidae, Lycosidae, Agelenidae and Sparassidae.

Keywords: *Biodiversity, Araneae, spiders, Moharli Tadoba.*

INTRODUCTION

In animal kingdom spider's species occupies more than 18% of overall diversity. The order Araneae is positioned seventh in terms of total species diversity when compared to other groups of organisms,spiders are crucial in managing terrestrial arthropod populations. Arachnids represent the second largest group contributing to the overall diversity of arthropods, following insects. Spiders, which are classified under the order Araneae within the class Arachnida, serve as a diverse and ecologically significant group of predators. All species of spiders are carnivorous and exhibit hunting behaviours. These air-breathing arthropods possess eight legs and chelicerae equipped with fangs capable of delivering venom. The majority of spiders feature three pairs of spinnerets, each serving distinct functions. Numerous spiders construct webs specifically designed to capture insects for sustenance.The distribution and prevalence of spiders are significantly associated with habitat structure and vegetation characteristics [1].The spiders as biological control agents for insect pests and as bio-indicators, Spiders serve as a dependable indicator of environmental health. They exhibit sensitivity to changes in their surroundings, including habitat destruction and climate change, and they fulfil important functions within the dynamics of specific ecosystems [2].

Research study on spiders can greatly contribute to our understanding of biodiversity patterns [3]. Despite their considerable significance in natural ecosystems, spiders are often overlooked in conservation studies [4].

[5] studied and identifies112 families with 3924 genera of 44540 species. A total 44,540 species of spider, belongs to 3,924 genera of families 112, have been documented globally In South Asia, 2,299 speciesof spider of 67 families have been reported [6]. India has recorded 1,686 species belonging to 438 genera across 60 families [7]. Baseline data on the diversity of Indian spider fauna has been provided by [8]and [9], who published comprehensive lists of Indian spiders. Nevertheless, despite their critical roles in most natural ecosystems, conservation research has largely overlooked them. The Moharli region is recognised for its rich diversity of flora and fauna within the Tadoba area(TATR); however, no documentation has been conducted regarding the diversity of spider fauna to date. This study serves as a preliminary investigation focused on the diversity and distribution of spider species, future research dataaiming to establish baseline information for the spider fauna.

MATERIAL AND METHODS

Study Area

Chandrapur, the easternmost district is located in the eastern edge of Maharashtra in Nagpur division and forms the eastern part of the Vidarbha region. It is located between 19.30 N to 20.45 N latitude and 78.46 E longitude. Moharli is a small village located in the Chandrapur district. This village is known for its close proximity to the (TATR). The forest between Padmapur and Moharli lies within the (TATR) in Maharashtra.

2.1 Sampling methodsand Identification

The research was carried out over the course of one year, from June 2025 to January 2026. Sampling occurred daily between 8 to 10 am and 5 to 7 pm, as many spider species exhibit heightened activity during the evening and nighttime hours. The spiders were captured utilizing standard process, including visual searching, hand picking, the inverted umbrella method and sweep netting. Spiders were collected from various locations. They were photographed using a Nikon Z-5 with a 100 mm micro lens. The collected specimens were identified with the assistance of a field guide [10]and [9], and following identification, the spiders were returned to their natural habitats.

RESULTS AND DISCUSSION

In present investigation total 20 spider species belonging to 09 families were identified, out of which 07 individuals were identified of family Araneidae was dominant and followed by Salticidae, Tetragnathidae, Oxyopidae, Pholcidae, Nephilidae, Lycosidae, Agelenidae and Sparassidae. A Similar study was noted by, [11].Ecological balance is important it may be due to diversity and distribution of spider's species. [12]. In this study, a total of 29 species belonging to 22 genera and 6 families were surveyed in and around Madurai's selected habitats. The Vadipatti areas have the highest species diversity and richness, with23 species belonging to six families. This habitat has a lot of floral (trees and bushes) and faunal diversity (butterflies, moths, beetles, dragon flies, and ants), which is important for building microhabitats for a wide variety of spider species. Higher species diversity, according to [13], is an indicator of a healthier and more complex community because a larger range of species allows for more interactions, which leads to greater system stability, which indicates good environmental conditions.

Family diversity

Out of which 09 families were recorded at Moharli region District - Chandrapur, Maharashtra, India. Araneidae was the dominant family with 35%, which is composed of (07 species) of four genera. Salticidae was the next dominant family with 20% which composed of 04 species, four genera, Tetragnathidae was 3rd dominant family with 10% (02 species) and withonegenus, Oxyopidae with 10% (02 Genera and 02 species), Pholcidae, Nephilidae, Lycosidae, Agelenidae and Sparassidae with 05% with (01 Genera and 01 species). A Similar study was noted by[11],a total of 29 spiders from six families and 22 genera were recorded. 16 (55.17 percent) of the total (29) species found were rare, 8 (27.58 percent) species were common, and 5 (17.24 percent) species were abundant. Nine species were found in the Araneidae family (31.03 percent), eight in the Salticidae family (27.60 per cent), five in the Tetragnathidae family (17.24 per cent), three in the Sparassidae family (10.34 percent), two in the Oxyopidae family (6.90%), and one each in the Pholcidae family (3.45%) and Hersiliidae family (3.45%). Araneidae is the most abundant family, with nine species. Based on their foraging mode, the spiders were divided into five functional categories: the most popular feeding guild was Orb-web builders, with 48.27 percent, followed by Stalkers (27.58%), Ambushers (10.34%), Foliage runner (10.34%), and Irregular-web builders (3.44%). [14]report on the diversity of spider fauna from Charghad river basin of Morshi, Amravati was identified 12 families

Table1.1: Diversity and Distribution of Spider species at Near Moharli TATR Tadoba district Chandrapur

SN	Order	Family	Genus	Species	Site- 1	Site -2	Site- 3	Site-4
1	Araneae	Araneidae	***Argiope***	***Anasuja***	✓	✓	✓	✓
2			***Argiope***	***sp.1***	AB	✓	✓	AB
3			***Argiope***	***sp.2***	✓	AB	✓	✓
4			***Argiope***	***sp.3***	✓	✓	AB	AB
5			*Neoscona*	***crucifera***	AB	AB	✓	✓
6			*Zygiella*	***x-notata***	✓	✓	✓	AB
7			*Cyrtophora*	***cicatrosa***	AB	AB	AB	✓
8		Salticidae	*Hasarius*	***adansoni***	✓	AB	✓	AB
9			*Attulus*	***sp.***	AB	✓	✓	✓
10			Carrhotus	***vidius***	✓	✓	AB	✓
11			*Plexippus*	***paykulli***	✓	✓	AB	✓
12		Tetragnathidae	*Leucauge*	***decorata***	AB	AB	✓	✓
13			*Leucauge*	***sp.***	✓	✓	AB	AB
14		Oxyopidae	*Oxyopes*	***Salticus***	✓	✓	AB	✓
15			peucetia	***sp.***	AB	✓	✓	✓
16		Pholcidae	*Pholcus*	***sp***	AB	AB	✓	✓
17		Nephilidae	*Trichonephila*	***Pilipes***	✓	✓	AB	✓
18		Lycosidae	Alopecos	***sp.***	AB	✓	✓	✓
19		Agelenidae	*Agelena*	***labyrinthica***	✓	AB	✓	✓
20		Sparassidae	*Heteropoda*	***venatoria***	AB	✓	✓	✓

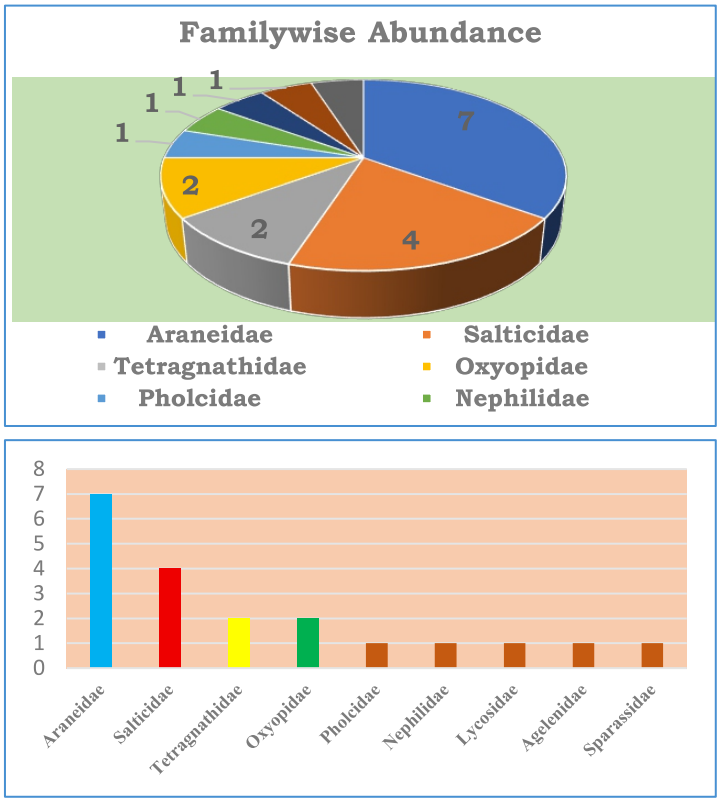

Fig.1.1 Diversity and Distribution of Spider species with Family at Near Moharli (TATR) Tadoba district Chandrapur

CONCLUSION

Ecological and taxonomic data concerning Indian spiders are significantly deficient, and research on these aspects remains entirely unexplored in the Moharli regionof Tadoba (TATR)District Chandrapur of India. A checklist or records documenting these spiders have yet to be compiled. Nevertheless, spiders are regarded as one of the most effective bio-indicator species in ecological research.This study provides insights into species distribution within a specific habitat and underscores the significance of the Moharli regionin preserving and enhancing spider diversity. Furthermore, the findings highlight the potential of the Moharli region as a reservoir for a diverse array of spider fauna. It is recommended that comprehensive studies on the spider fauna of this area be conducted, and that spiders be integrated into conservation strategies.

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