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SPIDER (ARACHNIDA: ARANEAE) DIVERSITY OF MAVAL REGION IN PUNE DISTRICT OF MAHARASHTRA, INDIA

Zoology

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ABSTRACT

Spiders (Arachnida: Araneae) are among the most abundant predatory taxa within the phylum Arthropoda, playing a crucial role as bioindicators of environmental conditions and as natural pest controllers in agroecosystems. The present study aims to assess and document the diversity of spiders in Maval Tehsil of Pune District in the state of Maharashtra, India. The study area holds historical significance from the pre-independence time and it is also a part of the Northern Western Ghats, a recognized biodiversity hotspot. Systematic faunistic surveys were conducted during 2023-2024 which resulted in the identification of 46 species distributed across 19 genera and 9 families. This preliminary research provides a baseline for understanding the Arachnid fauna of the region. These findings provide a foundational understanding of the spider diversity in the region and underscore the critical ecological role spiders play in promoting agroecosystem stability. Furthermore, the research emphasizes the urgent need for conservation measures aimed at preserving spider habitats to ensure sustainable ecosystem management as the study area is prone to aftermath of ongoing Industrial development in the region.

KEYWORDS

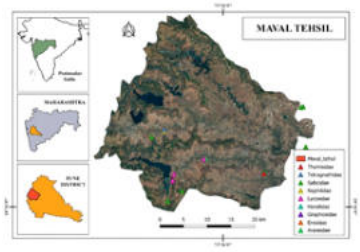
Araneae Diversity, Maval, Northern Western Ghats, Maharashtra.

INTRODUCTION

Spiders play a vital role in maintaining the ecological balance, acting as natural enemies of insects, agricultural pests, and disease vectors. Spiders occupy various microhabitats such as ground, foliage, tree trunks, shrubland and hence they play a crucial role in regulating insect populations and maintaining ecological stability. They thrive in diverse habitats, such as water surfaces, dense foliage, flowers, forest floors, grasslands, and crop fields, as well as under stones, logs, and tree barks. Globally, as per World Spider Catalog (2025) lists approximately 52862 species across 4432 genera and 136 families. In India, presently 1978 spider species within 512 genera and 63 families reported (Caleb and Sankaran, 2025; World Spider Catalog, 2025). Studies across Pune district report 29–58 spider species from Hadapsar, Indapur, and Ambegaon regions, with Salticidae often dominant (Markad, 2020; Choure et al., 2023). The recent discovery of Okinawicius tekdi from the Deccan Plateau further highlights the region's taxonomic richness (Tripathi & Kulkarni, 2025). However, no comprehensive study had been conducted in the Maval Tehsil in Pune district of Maharashtra until recently. Based on faunistic surveys from 2023–2025, the present study reported 26 species belong to 19 genera under 8 family's diversity in the Maval Tehsil district Pune Maharashtra India.

STUDY AREA

Maval Tehsil, located in the Pune district of Maharashtra, lies in the Sahyadri Hills (Western Ghats), a globally recognized biodiversity hotspot known for its rich ecological diversity. Geographically, Maval is situated between 18°30′N to 18°50′N latitude and 73°20′E to 73°40′E longitude, with an elevation ranging from 570 meters to over 1,000 meters in the hilly areas. This diverse topography, comprising hills, valleys, agricultural lands, and riparian ecosystems, provides a wide variety of microhabitats conducive to supporting a high diversity of spider species. The region's tropical monsoon climate, with hot summers, moderate winters, and heavy monsoon rainfall (June to September), fosters the growth of dense vegetation and seasonal water bodies, creating ideal environments for spiders.



Map-1: Field Collection Localities in Maval Tehsil, Pune District, Maharashtra India

Table: Taxonomic list of Spiders of the Maval Tehsil Dist. Pune, Maharashtra, India.

Sr. No.	Family	Species Information
1	Araneidae	Argiope aemula (Walckenaer, 1841) Latitude (°N) - 18.7558 Longitude (°E) - 73.4823 Habitat - Foliage weaver
2		Bijoaraneus mutificus (Simon, 1886) lat-18.7389, lon-73.4572 Ground Hunter
3		Cyclosa hexatuberculata (Tikader, 1982) lat-18.7192°N, lon-73.7651°E Ground Hunter
4		Cyclosa hexatuberculata (Tikader, 1982) lat-18.7558, lon-73.4823 Foliage weaver
5		Cyclosa insulana (Costa, 1834) lat-18.7389, 73.4572 Ground Hunter
6		Cyrtophora cicatrosa (Stoliczka, 1869) lat-18.7543, lon-73.4822 Ground Hunter
7		Cyrtophora citricola (Forsskål, 1775) lat-18.7389, lon-73.4572 Ground Hunter
8		Cyrtophora citricola (Forsskål, 1775) lat-18.6698, lon-73.6823 Ground Hunter
9		Neoscona mukerjei (Tikader, 1980) lat-18.7192, lon-73.7651 Ground Hunter
10		Neoscona mukerjei (Tikader, 1980) lat-18.7525, lon-73.4821 Ground Hunter

11		Neoscona mukerjei (Tikader, 1980) lat-18.6119, lon-73.489 Ground Hunter
12		Neoscona mukerjei (Tikader, 1980) lat-18.6943, lon-73.5656 Foliage weaver
13		Neoscona mukerjei (Tikader, 1980) lat-18.6663, lon-73.6817 Foliage weaver
14		Neoscona mukerjei Tikader, 1980 lat-18.7989, lon-73.7599 Foliage weaver
15		Nescona mukerjei (Tikader, 1980) lat-18.6518, lon-73.4993 Ground Hunter
16		Nescona mukerjei (Tikader, 1980) lat-18.6519, lon-73.4989 Ground Hunter
17	Salticidae	Plexippus paykulli (Audouin, 1826) lat-18.7192s, lon-73.7651 Bark hunter
18		Myrmaplata plataleoides (O. Pickard-Cambridge, 1869) lat-18.6663, lon-73.6817 Tree & bushes
19		Plexippus sp. (Audouin, 1826) lat-18.6119, lon-73.489 Bark hunter
20		Plexippus paykulli (Audouin, 1826) lat-18.6119, lon-73.489 Bark hunter
21		Plexippus paykulli (Audouin, 1826) lat-18.6313, lon-73.5179 Bark hunter
22		Plexippus paykulli (Audouin, 1826) lat-18.7975, lon-73.7554 Bark hunter
23		Plexippus paykulli (Audouin, 1826) lat-18.6698, lon-73.6823 Bark hunter
24		Rhene flavigera (C. L. Koch, 1846) lat-18.7989, lon-73.7599 Bark hunter
25		Telamonia dimidiata (Simon, 1899) lat-18.7389, lon-73.4572 Bark hunter
26		Telamonia dimidiata (Simon, 1899) lat-18.7389, lon-73.4523 Bark hunter
27	Lycosidae	Hippasa olivacea (Thorell, 1887) lat-18.6645, lon-73.5018 Shrubland
28		Lycosa phipsoni (Pocock, 1899) lat-18.6949, lon-73.5616 Ground Hunter
29		Pardosa sp. (Thorell, 1891) lat-18.6949, lon-73.5616 Ground Hunter
30		Pardosa pusiola (Thorell, 1891) lat-18.7192, lon-73.7651 Ground hunter
31		Pardosa pusiola (Thorell, 1891) lat-18.7389, lon-73.4572 Ground hunter
32		Wadicosa fidelis (O. Pickard-Cambridge, 1872) lat-18.7192, lon-73.7651 Ground hunter
33		Wadicosa fidelis (O. Pickard-Cambridge, 1872) lat-18.7389, lon-73.4572 Ground hunter
34		Wadicosa fidelis (O. Pickard-Cambridge, 1872) lat-18.6521, lon-73.4991 Ground hunter
35	Harsilidae	Harsilia savignyi Lucas, 1836 lat-18.6119, lon-73.489 Bark hunter
36		Harsilia savignyi Lucas, 1836 lat-18.6521, lon-73.4991 Bark hunter
37		Harsilia savignyi Lucas, 1836 lat-18.7525, lon-73.4821 Bark hunter
38	Nephilidae	Harsilia savignyi Lucas, 1836 lat-18.7512, lon-73.4821 Arboreal hunter
39		Harsilia savignyi Lucas, 1836 lat-18.7525, lon-73.4821 Arboreal hunter
40		Harsilia savignyi Lucas, 1836 lat-18.7514, lon-73.4819 Arboreal hunter
41	Eresidae	Stegodyphus sarasinorum Karsch, 1892 lat-8.6949, lon-73.5616 Social Spider
42		Stegodyphus sarasinorum Karsch, 1892 lat-18.6949, lon-73.5616 Social Spider
43	Tetragnathida	Leucauge decorata (Blackwall, 1864) lat-18.6663, lon-73.6817 Foliage weaver
44		Tetragnatha mandibulata (Walckenaer, 1841) lat-18.7543, lon-73.4822 Foliage weaver
45	Gnaphosidae	Drassodes westring (Niklas Westring1851) lat-18.7192, lon-73.7651 Ground hunter
46	Thomisidae	Thomisus sp. (Walckenaer, 1805) lat-18.6663, lon-73.6817 Flower hunter

Fig: The family-wise species distribution of spiders in Maval Taluka Dist. Pune, Maharashtra, India.

Photo Plate: Natural Photographs of Spiders from Study Area

Argiope aemula (Walckenaer, 1841), *Harsilia savignyi* (Lucas, 1836).

CASE STUDY

The overall taxonomic specimens of spider from Maval Taluka, Pune District, Maharashtra documented a total of 46 species belonging to 19 genera across 9 families, namely Araneidae, Lycosidae, Salticidae, Gnaphosidae, Nephilidae, Tetragnathidae, Harsilidae, Thomisidae and Eresidae (Table-1). This comprehensive dataset highlights the distribution and habitat specialization of spider species, with coordinates (latitude and longitude) indicating their wide geographic occurrence across multiple sampling sites. The pie chart in Fig. 1 illustrates the family-wise distribution of spider species, highlighting the dominance of certain families.

Araneidae contributes the highest proportion, comprising 37.5% of the total species. Following closely by family Salticidae (17.5%) represents the second-largest group. Lycosidae accounts for 15.0%, comprising ground-dwelling wolf spiders. Additionally, Harsilidae and Nephilidae contribute equally, each with 7.5% of the species, where Nephilidae are large orb-weaving spiders, while Harsilidae add to the diversity. Smaller contributions come from Eresidae and Tetragnathidae, each accounting for 5.0% of the spider species. Tetragnathidae, or long-jawed orb weavers, are notable for their web-building skills, while Eresidae, or velvet spiders, are known for communal behavior. Lastly, Gnaphosidae and Thomisidae contributes the smallest share at 2.5%, consisting of nocturnal ground hunters. The findings emphasize the necessity of preserving these diverse habitats to protect spider populations and maintain the ecological balance of the region. Conservation efforts should focus on protecting the diverse landscapes in Maval Taluka to ensure the sustainability of these vital ecosystems and the continued ecological services provided by the spider community.

CONCLUSIONS

This study documents 46 spider species from Maval Tehsil, highlighting the region's rich arachnid diversity within the Northern Western Ghats. The dominance of families like Araneidae and Salticidae reflects varied habitat preferences. These findings emphasize the ecological importance of spiders and the urgent need for habitat conservation amidst increasing anthropogenic pressures.

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