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# A review on spider family Pisauridae

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**Abstract**
Spiders (~40,000 sp.), Order Araneae, are members of the Class Arachnida and are defined by numerous shared- derived characters including the ability to synthesize and spin silk. The last few decades have produced a growing understanding of the relationships among spider families based primarily on phylogenetic analysis of morphological characters. Only a few higher-level molecular systematic studies have been conducted and these were limited in their taxonomic sampling. Nevertheless, molecular time estimates indicate that spider diversification is ancient and that many families radiated rapidly in the early Cretaceous (146–100 million years ago, Ma) and before. In India, About 29 species, split across 11 genera, of the family Pisauridae have been found in 18 Indian states and 3 union territories; 12 of these species are endemic. West Bengal (9 species), Kerala (8 species), Gujarat (7 species), and Maharashtra (13 species) had the fewest number of these spider species. Tamil Nadu (10 species) and West Bengal (9 species) had the highest.

**Keywords:** Pisauridae, araneae, araneomorphae, arachnida, spiders, Indian species

## Introduction

With about 39,000 known species, spiders (Araneae) are one of the most diverse orders of animals and can be found almost anywhere in the globe in terrestrial settings. They belong to the class Arachnida, which also contains orders like harvestmen or daddy long legs (Opiliones), ticks and mites (Acari), and scorpions (Scorpiones). Although the phylogeny of arachnids is poorly understood, the general agreement is that the Pedipalpi, a group of arachnids made up of whip-scorpions (Uropygi), tail-less whip-scorpions (Amblypygi), and short-tailed whip-scorpions (Schizomida), are the closest relatives of spiders. Numerous shared-derived characteristics, including as cheliceral venom glands, male pedipalpi adapted for sperm transfer, absence of a trochanter-femur depressor muscle, abdominal spinnerets, and silk glands, strongly suggest the monophyly of spiders. There are two suborders of spiders: the Opisthothelae (107 families, 39,638 species), which has lost all abdominal segmentation, and the Mesothelae (one family, 87 species), which has considerable remnants of abdominal segmentation. These issues are made worse by the fact that spiders are assumed to have originated in the Devonian. Fossil representatives of numerous extant families have been found in the early to mid-Cretaceous, 146–100 Ma. In spite of these problems, phylogenetic analyses have significantly advanced our knowledge of spider relationships within the past 30 years. Despite recent studies on the diversity of spiders, India's spider population is not as large as that of other regions of the world. We have updated the 40 families of spiders' distribution patterns in India. This article continues with listing the diversity and distribution of the Pisauridae family of spiders in India.

The araneomorph family Pisauridae is typically known as nursery web spiders, while the semi-aquatic species are also frequently referred to as raft and fishing spiders. Although they appear to resemble wolf spiders (Lycosidae), they are not the same, especially in terms of the egg sac's destiny and eye design. In addition to their other six eyes, wolf spiders have two very noticeable eyes, whereas nursery web spiders have eight identical eyes. Additionally, unlike wolf spiders, which attach their eggs to their spinnerets, female nursery web spiders carry their egg sacs beneath their bodies using chelicerae. The female builds a nursery tent, which the eggsacs are kept inside until they hatch. When the moment of hatching draws near, the female secures the egg sac to branches or leaves and creates a protective web around it.

**Table 1:** Different species of Pisauridae family Spiders in India

| Sr.No. | Species |
|---|---|
| 01. | *Dolomedes tenebrosus* |
| 02. | *Dolomedes fimbriatus* |
| 03. | *Eucamptopus coronatus* |
| 04. | *Dolomedes triton* |
| 05. | *Dendrolycosa gitae* |
| 06. | *Dendrolycosa bobbiliensis* |
| 07. | *Euprosthenops ellioti* |
| 08. | *Hygropoda chandrakantii* |
| 09. | *Hygropoda longimana* |
| 10. | *Nilus decorata* |
| 11. | *Nilus* sp. |
| 12. | *Hygropoda gracilis* |
| 13. | *Hygropoda sikkimus* |
| 14. | *Hygropoda* sp. |
| 15. | *Nilus albocinctus* |
| 16. | *Nilus phipsoni* |
| 17. | *Perenethis dentifasciata* |
| 18. | *Perenethis sindica* |
| 19. | *Nilus pseudoalbocinctus* |
| 20. | *Dolomedes* sp. |
| 21. | *Dendrolycosa putiana* |

| | |
|---|---|
| 22. | *Dendrolycosa robusta* |
| 23. | *Dendrolycosa* sp. |
| 24. | *Perenethis* sp. |
| 25. | *Perenethis venusta* |
| 26. | *Pisaura podilensis* |
| 27. | *Pisaura mirabilis* |
| 28. | *Pisaura* sp. |
| 29. | *Pisaura swami* |
| 30. | *Pisaurina* sp. |
| 31. | *Polyboea vulpina* |
| 32. | *Stoliczka affinis* |
| 33. | *Pisaurina mira* |
| 34. | *Tinus arindamai* |
| 35. | *Polyboea zonaformis* |
| 36. | *Tinus* sp. |
| 37. | *Stoliczka insignis* |

**Fig 1:** Pisauridae species


**Fig 2:** Pisauridae species high resolution

## Literature review

The current article discusses the distribution and faunal diversity of the Pisauridae (Araneae: Arachnida) spider family in various Indian states and union territories. It also offers an updated checklist based on published research through January 31, 2021. Common names for this family of spiders include fishing, raft, and nursery web spiders. Twelve of the 29 species of spiders are endemic, and they are distributed over 18 states, three union territories (Puducherry, Jammu and Kashmir, and the Andaman and Nicobar Islands), and 11 genera. Records showed that only three species of these spiders are found in large geographic areas: Perenethis venusta L. Koch, 1878 (8 Indian states), Nilus albocinctus (Doleschall, 1859) (8 Indian states, 1 union territory), and Dendrolycosa gitae (Tikader, 1970) (11 Indian states, 1 union territory). The highest number of these spider species—13—was found in Maharashtra, with 10 more found in Tamil Nadu. [2]

The current paper examines the faunal diversity of eleven families of spiders found in various Indian states and union territories. These families include the Theridiosomatidae (Arachnidae), Symphytognathidae, Psechridae, Psilodercidae, Segestriidae, Palpimanidae, Pimoidae, and Segestriidae. In the Indian states of Arunachal Pradesh, Chhattisgarh, Haryana, Mizoram, Telangana, and Tripura, no spider species belonging to these families have been documented. In the union territories, reports of these species come from Andaman and Nicobar Islands, Jammu & Kashmir, Lakshadweep, and Puducherry. Ten, eight, and seven species, respectively, are represented by the three families Tetrablemmidae, Selenopidae, and Psechridae. There are extremely few reports for the following families: there are five species in the Segestriidae family, four in the Palpimanidae and Pimoidae family, three in the Psilodercidae and Stenochilidae family, two in the Sicariidae family, and one in each of the Symphytognathidae and Theridiosomatidae family. Tamil Nadu has the greatest number of spider species (16 species), followed by Kerala (10 species), Uttarakhand (10 species), Maharashtra (9 species), Karnataka (8 species), and less species in other states. Thirty of the 48 species of these families that have been found in India are strictly endemic, making up the exceptionally high endemism rate of 62.5 percent for these families. The Pimoidae, Segestriidae, Symphytognathidae, and Tetrablemmidae species that have been documented in India are all indigenous. [5]

It has been demonstrated that spiders reduce insect pests in agricultural settings and have a significant impact on insect population density. After reading over the literature on the fauna of Egyptian spiders, one could get the conclusion that the absence of systematic investigations and complicated morphological variations make it difficult to correctly identify many spider species. Therefore, the goal of the current study was to create a key to make it easier to identify real spiders based on their morphological traits and to compile a list of the various families and species that live in the Assiut Governorate, which is located in the central region of Upper Egypt (between 27º14' N and 31º11' E) and is part of the arid belt of North Africa. Using a manual picking method, monthly samples of spiders were gathered from six distinct sites throughout the Assiut governorate over the course of a year, from December 2015 to November 2016. The findings of the survey showed that 3457 specimens, representing 42 genera and 47 species across 22 groups, were found. Forty of these species are regarded as new locality records in the Governorate of Assiut. [3]

## Conclusion

Members comprising the Class Arachnida, spiders (~40,000 sp.) are classified by a number of shared-derived characteristics, such as the capacity to spin silk and synthesize it. Based mostly on phylogenetic research of morphological features, the relationships between spider families have become increasingly clear in the last few decades. There aren't many higher-level molecular systematic investigations out there, and the ones that have been done have had restricted taxonomic sampling. However, molecular time estimates show that several

families of spiders spread quickly in the early Cretaceous (146–100 million years ago, Ma) and earlier, indicating that spider diversification is old. Within the family Pisauridae, only 29 species, divided into 11 genera, have been identified in 18 Indian states and 3 union territories; 12 of these species are endemic. There were the most species of these spiders found in Maharashtra (13 species) and Tamil Nadu (10 species), with West Bengal (9 species), Kerala (8 species), Gujarat (7 species), and West Bengal (9 species) having the fewest species. The states of Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jharkhand, Mizoram, Nagaland, Punjab, Tripura, Dadra and Nagar Haveli, Daman and Diu, Ladakh, and Lakshadweep are surprisingly devoid of reported species, necessitating substantial investigation.

**Conflict of Interest**
Declared None

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