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# Study on spider diversity and status in Koppal district, Karnataka

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**Abstract**
The present study was conducted to determine the status of spider diversity and the status of Koppal district, an area close to the Tungabhadra River. The study showed the presence of 36 species of spiders spread over 17 families. The study revealed that the Salticidae family is dominant among other families. The highest species was found at Shri Gavisiddeshwar College site than the other study sites. Oxyopidae, Araneidae, and Theridiidae were found on trees, shrubs, and herbs. This was the first scientific investigation into the diversity and status of spiders in the Koppal District. This study employs field surveys, data collection, and analysis to provide significant information on the intricate spider species in the Koppal district.

**Keywords:** Arthropoda, koppal district, arachnids, gavishree campus

## Introduction

Spiders belong to the Arthropoda phylum, Araneae order, and Arachinidae class, and they are
the biggest group of animals with a hard exoskeleton. Arthropoda means "arthro-jointed," "poda-legs," or jointed-legged animals. With over 44,000 species spread across 110 families, they comprise the largest group of arachnids, according to the World Spider Catalogue (WSC, 2022) [11]. They live in almost all habitats and have a distinctive habitat. They consume a significant number of preys without harming the plants and are the most prevalent insect predators in the terrestrial ecology. Accurate documentation is essential for the sustainable management and conservation of the biodiversity of animal species in any region of the world as it aids in tracking the pace of extinction of species (Kashmeera and Sudhikumar, 2019). Therefore, a cataloguing and adequate documentation of biodiversity, especially on unnoticed groups like spiders, is needed right away in light of the intensifying anthropogenic threats to biodiversity. A crucial part of systematic documentation is the creation of a species checklist. Few attempts have been made up to this point to investigate the spider fauna in the southern states, particularly in Karnataka. Hence, our current research aims to examine and identify spider species for the first time in the Koppal district.

## Methods

### Study area

The study area Koppal district is located in Karnataka state, India. It is located between 15.09'00"- 16.03'30" North Latitude and 75.47'30" to 76.48'10" East Longitude. The climate of the district is very hot and dry. Hot season starts from middle of February to end of May. South- West monsoon ranges from June to end of September. Post monsoon is during the October and November. Cold season is from December to middle of February. The average rainfall of the district is 572mm and average rainy days are 46.

### Spider Sampling and Identification

A sampling technique was used to carry out the survey in the morning hours between 6 am and 9.30 am and in the evening from 5 pm to 7 pm. To study the diversity of spiders, the survey, was conducted from January 2022 to July 2022. The search area includes following four sites
**S1**=College campus and Gavi mata botanical garden (Gavishree Canpus)
**S2**=Hulikeri
**S3**=Pampavan garden, Munirabad and
**S4**=Houses and in and around fields
(S indicates Sites)
According to Ganesan and Shumugavelu (2012) the following techniques were used to identify the spiders.

#### 1. Visual searching

Collection of spiders through visual inspection of terrestrial, freshwater, and even arboreal sites. They were collected using plastic boxes with proper aeration, irrespective of their size.

#### 2. Active searching:

The spiders were carefully gathered without hurting them whenever and wherever they were found in the study sites. Holding the jar open underneath sedentary spiders found on leaf blades, tree trunks, and those on webs, then tapping the spiders into it with the lid, they were captured in the container

#### 3. Photography and identification

In the field, photographs of the specimens were taken with android mobile phone (64 megapixels). By using Murphy's (2000) [4] taxonomic keys, online resources, and a visual identification guide, the collected spiders were identified (Levi, 2002) [3]. Juveniles were challenging to identify, thus only adults were found and used in further analyses. The captured specimens were stored in a laboratory for future use and preserved in 70% ethyl alcohol with a few drops of glycerin (Prasad, 1985) [5].

**Table 1:** List of Spider species collected from different study areas

| Sl. No | Family | Spiders name |
|---|---|---|
| 1. | Salticidae | Menemerus semilimbatus |
| | | Marpisa muscosa |
| | | Plexippus paykulli |
| | | Telamonia dimidiata |
| | | Gray wall jumper |
| | | Phidippus putnami |
| | | Hasarius adasoni |
| | | Phidippus rigious |
| | | Blod jumper |
| | | Hyllus giganteus |
| 2. | Araneidae | Argiope anasuja |
| | | European garden spider |
| | | Argiope appensa |
| | | Austracantha minax |
| | | Gastericantha fornicate |
| | | Garden tent web spider |
| | | St. Andrews cross spider |
| | | Walnut orb-weaver spider |
| 3. | Pholcidae | Daddy long leg spider |
| | | Pholocus phalangioides |
| | | Marbled cellar spider |
| 4. | Oxyopidae | Oxyopes salticus |
| | | Green lynx spiider |
| 5. | Theridiidae | Noble false widow |
| | | Triangulate cobweb spider |
| 6. | Cheiracanthidae | Cheiracanthum mildae |
| 7. | Thomisidae | Crab spider |
| 8. | Gnapoosidae | Herpyllus ecclesiticus |
| 9. | Paisauridae | Dark fishing spider |
| 10. | Anyphaenidae | Anyphaena accentauta |
| 11. | Sparassidae | Huntsmaan spider |
| 12. | Philodromidae | Philodromidae |
| 13. | Uloboriddae | Uloborus |
| 14. | Agelenidae | Tegeneria domestica |
| 15. | Dysderidae | Woodlouse spider |
| 16. | Scytodidae | Spitting spider |
| 17. | Sicariidae | Mediterraneanceluse spider |

**Table 2:** List of common name and Scientific name of Spiders

| Sl. No | Common Name | Scientific Name |
|---|---|---|
| 1 | Huntsman spider | *Heteropoda venatoria* |
| 2 | Running crab spider | *Philodromidae* |
| 3 | Anypheanid sac spider | *Anyphanea accentuata* |
| 4 | Dark fishing spider | *Dolomedes tenebrosus* |
| 5 | Jumping spider | *Menemenus semilimbatus* |
| 6 | Noble false widow | *Steatoda nobilis* |
| 7 | Eastern parson spider | *Herpyllus ecclesiasticus* |
| 8 | Jewel spider | *Austracantha minax* |
| 9 | Jumping spider | *Marpissa muscosa* |
| 1 | Yellow sac spider | *Cheiracanthium mildei* |
| 11 | Northern jewel spider | *Gasteracantha fornicata* |
| 12 | Orb weaver spider | *Argiope appensa* |
| 13 | Crab spider | *Gastericantha canciformis* |
| 14 | Fether legged weaver | *Uloborus* |
| 15 | Green lynx spider | *Psucetia viridans* |
| 16 | Pantropical jumper | *Plexippus paykulli* |
| 17 | Daddy long leg spider | *Pholcus phalangioides* |
| 18 | Two stripped jumper spider | *Telamonia dimidiata* |
| 19 | Gray wall jumper | *Menemenus bivittatua* |
| 20 | Jumping spider | *Phidippus putnami* |
| 21 | Adansons house jumper | *Hasarius adansoni* |
| 22 | Striped lynx spider | *Oxyopus salticus* |
| 23 | Garden cross /banana spider | *Argiope ansuja* |
| 24 | European garden spider | *Araneus diadematus* |
| 25 | Marbelledcellar spider | *Holoclemus pluchei* |
| 26 | Barn tunnel weaver | *Tegenaria domestica* |
| 27 | Triangular crab spider | *Steatoda triangulosa* |
| 28 | Regal jumper spider | *Phidippus regius* |
| 29 | Bold jumper | *Phidippus audax* |
| 30 | Mediterranean recluse spider | *Loxosc elesrufescens* |
| 31 | Jumping spider | *Hyllus giganteus* |
| 32 | Splitting spider | *Scytodes thoracica* |
| 33 | Walnut orb-weaver spider | *Nuctena umbratical* |
| 34 | St. Andrews cross spider | *Argiope keyserlingi* |
| 35 | Gardentent web spider | *Cryphora cicatrosa* |
| 36 | Woodlouse spider | *Dysdeca crocata* |


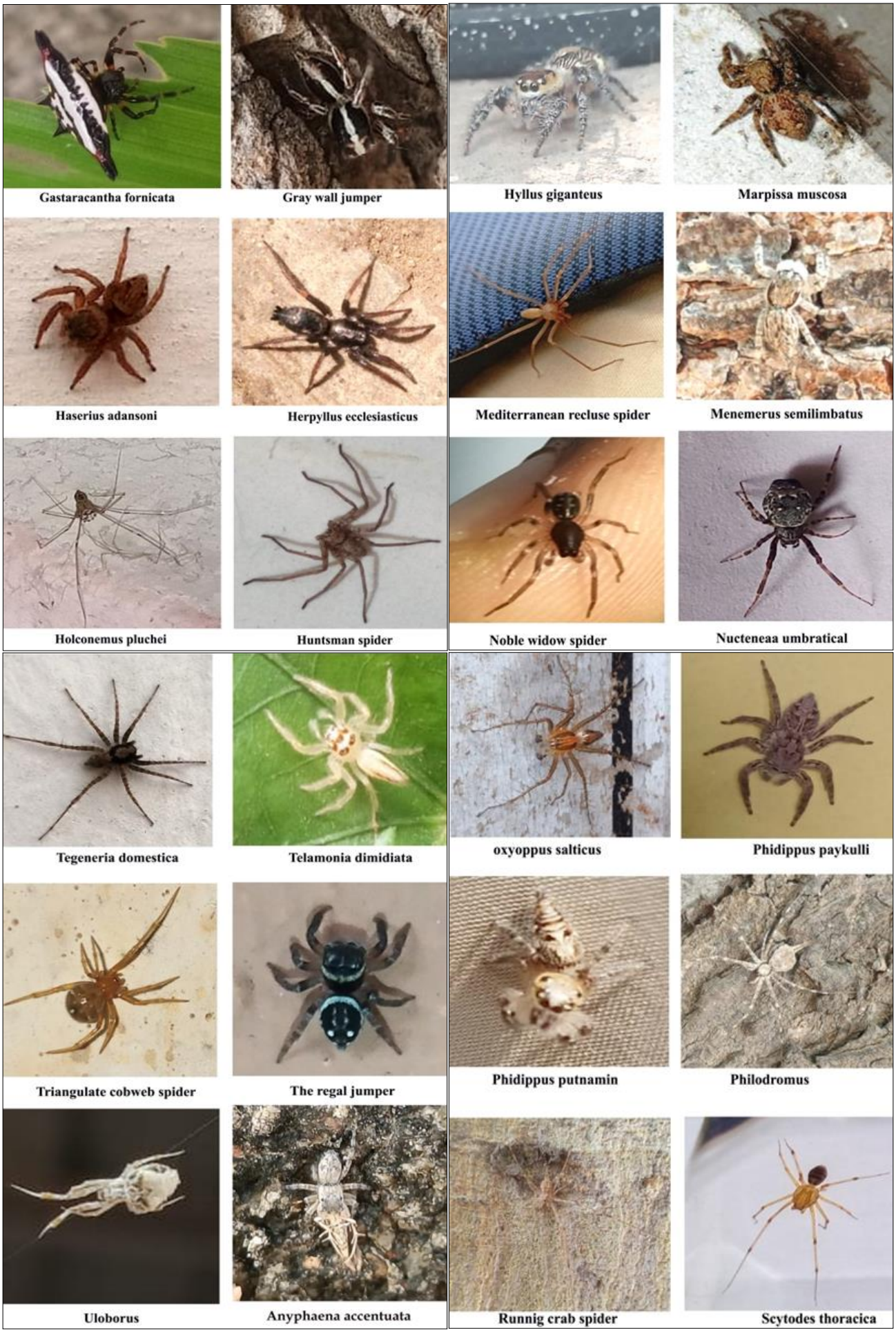


**Fig 1:** showing identified colour photographs of spider species

## Results and Discussion

The findings of the current study, there are 36 species of spiders across 17 families. Most frequently, the survey methodology used may have some bearing on the number of spider species detected in a certain area (Kapoor, 2006) [7]. Additionally, the habitat characteristics have a significant impact on the abundance and dispersion of spiders in a particular location. Therefore habitat plays a pivotal role in species abundance. Ramakrishnaiah *et al* (2014) [8] found out on 2,351 species from four locations in Bangalore discovered 275 spiders in Rajaji Nagar Industrial Area, 1,355 spiders in Bangalore Rural, 197 spiders in Bangalore Urban, and 524 spiders in semi-urban areas. On the other hand, in the Yercaud Hills in the Selem district of Tamil Nadu, India, Sugumaran *et al*. (2007) [9] reported 38 species from 13 families of horticulture crops. However, in the agricultural field, 80 species from 21 groups were reported by Kazim *et al*. (2014) [6]. The research was also carried out in forest areas, including the Indian portion of the Sundarban Biosphere Reserve in West Bengal, where it found 115 species (Dhali *et al*., 2016) [2]; the Salbardi forest (Satpura range) in Maharastra, where it discovered 104 species belonging to 18 families (Deshmukh and Raut, 2014) [1]; and the Nanda Devi Biosphere Reserve in Dehradun, Uttarakhand, where it discovered 244 species (Quasin, 2011) [10].

The present investigation reveals that among the families Salticidae was dominant constituting 10 species followed by family Araneidae with 8 species (table – 1). Highest species richness was recorded at SG College campus Koppal compared with other sites. Oxyopidae, Araneidae and Theridiidae were mainly found on trees, shrubs and herbs. The complexity of various habitat structures will have a direct impact on the diversity of spiders because spiders often favour certain temperatures and levels of humidity, which will restrict their ability to live to certain habitat (Pandit and Pailk, 2017). In the study area, habitat structure, availability of food, and environmental factors may be crucial in determining the diversity of spider communities.

## Conclusion

The current study demonstrates that species belonging to the Salticidae family were more numerous than those belonging to other families. As a reason, they have adapted to a wide range of feeding environments. Because of its beautiful, green gardens and undisturbed areas, the SG College campus had more species than other study locations. Further detailed study is required to explore to determine the causes of decreases in the species in the study area.

**Conflicts of interest:** None

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## References

1. Deshmukh US, Raut NM. Seasonal Diversity and Status of Spiders (Arachnida: Araneae) in Salbardi forest (Satpura range) Maharastra, India. Journal of Entamology and zoology studies,2014:2(5):278-281.
2. Dhali DC, Sureshan PM, Chandra K. Diversity and Distribution of Indian Primitive Spiders (Araneae: Opisthothelae: Mygalomorphae) in Different State Inculding an Annotated Checklist. World Scientific News,2016:37:88-100.
3. Levi LR. Spiders and their kin. (St. Martin's Press, New York), 2002, 206.
4. Murphy JF. An introduction to the Spiders of South East Asia. Kuala- Lampur, Malaysia. Malaysian Natural Society, 2000, 625.
5. Prasad B. Setting and preservation of spiders. Entomologist's Newsletter,1985:1(8):2-3.
6. Kazim M, Perveen R, Hussain R, Fatima N. Biodiversity of spiders (Arachnida: Araneae) of Karachi (Urban) Sindh Province, Pakistan. Journal of Entamology and Zoology studies,2014:2(6):308-313.
7. Kapoor V. An assessment of Spider sampling methods in tropical rainforest fragments of the Anamalai hills, Western Ghats, India. Zoos' Print journal,2006:21(12):2483-2488.
8. Ramakrishnaiah T, Jayaprakash N, Ramakrishna S. Impact of urbanization on population dynamics of spider species in Bangalore. Journal of Entamology and Zoology studies,2014:2(6):336-339.
9. Sugumaran MP, Soundararajan RP, Lakshmanan V. Spider fauna in the horticultural crops of yercaud hills. Zoos' Print Journal,2007:22(6):2721-2722.
10. Quasin S. Diversity of Spiders in Nanda Devi Biosphere Reserve, Dehradun, India, 2011.
11. World Spider Catalog. Natural History Museum Bern, available online at http://wsc.nmbe.ch, 2022, 17.5 [accessed on 10 August 2022].