SPECIES

**To Cite:**
Betageri S, Makanur NS, Kotresha K, Karadakatti P. Spider Diversity in Karnatak College Dharwad (KCD), Karnataka, India. *Species* 2023; 24: e79s1588
doi: https://doi.org/10.54905/disssi.v24i74.e79s1588

**Author Affiliation:**
[1]Taxonomy and Floristic Laboratory, Department of UG, PG and Research Botany, Karnataka University's, Karnataka Science College, Dharwad-580001, Karnataka, India
[2]Department of Botany, Karnataka University, Dharwad – 580003, Karnataka, India

[*]**Corresponding Author**
Taxonomy and Floristic Laboratory, Department of UG, PG and Research Botany, Karnataka University's, Karnataka Science College, Dharwad-580001, Karnataka, India
Email: shreyasbetgari@gmail.com
ORCID: 0000-0002-6554-2965

**Contact List**

| | |
|---|---|
| Shreyas Betageri | shreyasbetgari@gmail.com |
| Ningaraj S Makanur | ningarajsm18@gmail.com |
| Kotresha K | kotresh_sk@yahoo.com |
| Prashant Karadakatti | prashant.s.k2012@gmail.com |

**ORCID List**

| | |
|---|---|
| Shreyas Betageri | 0000-0002-6554-2965 |
| Ningaraj S Makanur | 0000-0003-4737-1282 |
| Kotresha K | 0000-0003-1035-3937 |
| Prashant Karadakatti | 0000-0003-3972-4180 |

**Peer-Review History**
Received: 03 June 2023
Reviewed & Revised: 07/June/2023 to 21/September/2023
Accepted: 25 September 2023
Published: 29 September 2023

**Peer-Review Model**
External peer-review was done through double-blind method.

Species
pISSN 2319–5746; eISSN 2319–5754



DISCOVERY
SCIENTIFIC SOCIETY

# Spider Diversity in Karnatak College Dharwad (KCD), Karnataka, India

**Shreyas Betageri[1*], Ningaraj S Makanur[1], Kotresha K[1], Prashant Karadakatti[2]**

## ABSTRACT

The spiders are critically analyzed biological species in biodiversity, as we surveyed and listed out the species inside of campus from Karnatak College Dharwad (KCD) Karnataka, India. It includes 50 species and 19 families in that 33 are outdoor spiders (Wild habitat / Nature), 10 are indoor spiders and 07 are intermediate shelters (Indoor and outdoor). 30 spiders are rarely distributed based on their encounter in fewer locations and 20 are commonly distributed and encountered regularly in each field survey.

**Keywords:** Arthropod, Dharwad, Fauna, Web builders.

## 1. INTRODUCTION

Spiders are occasional and rare once with commonly distributed species and even it has a biological activator model, an important role in nature with a mimic on several aspects. Spiders belong to a large group of animals classified as arthropods (Greek: arthro=jointed, poda=legs) with 8 legs and two fangs. Fangs are used to stun the prey by injecting the poison (Karthikeyan, 2022). As per the World Spider Catalog, (2023), there are around 51,090 species accepted all over the World. In India in 1948 spider diversity is recorded as per Arenea in India. Study On the diversity of Spider Fauna in Jnana Sahyadri Campus, Shimogga recorded 17 spiders representing 10 families were recorded. Out of 17 species recorded, 6 belong to the family Salticidae, and 2 belong to the families of Oxyopidae and Pholcidae (Prashanthakumara et al., 2015).

A preliminary Study on spiders of Gulbarga, Karnataka recorded 25 species from 10 families and 17 genera (Ashwini and Ravindra, 2016). All spiders are predators, feeding almost entirely on other arthropods, especially insects. Some spiders are active hunters who chase and overpower their prey. These typically have a well-developed sense of touch or sight. Other spiders instead weave silk snares, or webs, to capture prey. According to seasonal distribution, spider diversity of Karnatak University Campus recorded 41 species belonging to 32 genera under 15 families differentiating outdoor, indoor, and endemic.

Distribution of Spiders in Gogi, Yadgir District reported 1060 individuals of 82 species of spiders (44 genera and 19 families) were extracted. Lycosidae was the dominant family represented by 17 species followed by Tetragnathidae (13), Araneidae (12), Theridiidae (8), Salticidae (6), Thomisidae (5), and Oxyopidae (4).

Philodromidae (3), Miturgidae (3) and Uloboridae with two species (Sunil et al., 2017). Spider diversity on Mangalore University Campus recorded 32 species of spiders belonging to 9 families and 16 genera (Sumangala et al., 2018). Occurrence of Spider Species in and around Mysore City, Karnataka recorded 65 spider species which belonging to 15 families of the order Araneae were observed at different ecosystems (Mubeen and Basavarajappa, 2018).

Diversity of Spiders from Tumkur University Campus, Tumakuru, India reported 46 species of spiders belonging to 34 genera of 13 families (Kokilamani et al., 2019). Spider Diversity along the Tungabhadra Irrigation Channel at Ballari, Karnataka reported 50 species belonging to 19 families, among them 12 species belong to the Salticidae family followed by Araneidae (12 species), Pholcidae (5 species), Linyphiidae (three), Theridiidae (two), Tetragnathidae (two), Oxyopidae (two). The Gnaphosidae, Thomisidae, Platoridae, Sparassidae, Dinopidae, Selenopidae, Aagelenidae, Corinnida, Eutichuridae, Sclerosomatidae and Lycosidae comprise one species each (Raiz-Tabasum et al., 2018).

Diversity of Spiders at Amanikere Park in Tumakuru District, Karnataka recorded 50 species of spider fauna; out of which only two spiders were identified family level. They belong to 41 genera of 14 families (Shraddha and Chaturved, 2020). Burrow characteristics of a trapdoor spider (*Idiops sp.*) in the Western Ghats of Uttara Kannada reported the *Idiops sp.* constructed simple tube-like burrows with a "D"-shaped trapdoor, the difference in thickness of the entrance door was observed, based on which, trapdoor can be categorized to two types i.e., Wafer like thin door (Neha Gupta). Spiders from Tavandi Ghat, (Nipani Range), Karnataka reported 75 species belonging to 52 genera and 18 families (Lazarus et al., 2020).

## 2. MATERIAL METHODS

**Study area**

The Dharwad is known as the educational hub of Karnataka, Karnatak College Dharwad was the first institution of higher learning in Northern Karnataka. It was established on 20th June 1917 by the then Governor of Bombay (erstwhile Bombay Province). The gigantic building of Karnatak College is a major landmark of Dharwad. Karnataka College lies at 150 27′ 12′′ N 740 59′ 52′′ E, with lush green natural vegetation with hill and well-balanced biodiversity with the floristic composition of 303 plant species, belonging to 238 genera in 75 families (Kotresha et al., 2011). The campus is spread over an area of 57 acres, it has a tropical climate and lies 741m above sea level (Figure 1). Maximum temperature during summers may rise to 41 0C and the minimum in winters may go down to about 11 0C. The temperature averages 24.3 0C and annual rainfall is 885 mm. Trees are dominant on campus with a total of 1387 individuals of 98 species belonging to 83 genera of 33 families (Mouna et al., 2021). The survey was conducted throughout campus by repeated visits to different spots in various seasons throughout the year.

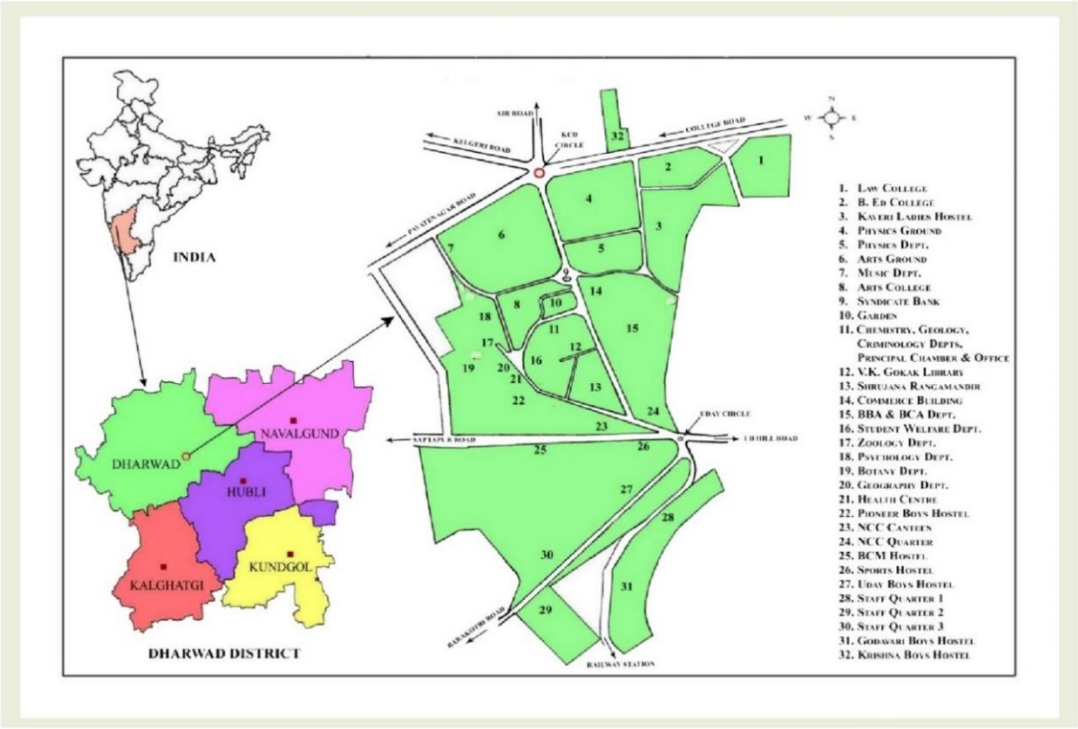


**Figure 1** Map of Karnatak Science College, Dharwad

**Photography**

Spider Photographs were clicked during day and night using D7200 and mobile macros lens in various angles (Side, top, down) without disturbing the spider and its web.

**Identification**

The photographed spiders were identified with the help of field guides (Sebastian and Peter, 2017; Karthikeyan, 2022; Ashalatha, 2018).

## 3. RESULTS & DISCUSSION

A checklist of spiders of Karnatak College Dharwad is prepared with 50 species without disturbing the spider web (Figure 5-9). It shows that 30 spiders are rarely distributed (R) based on their encounter in fewer locations and 20 are commonly distributed (C) based on their common distribution and more regular encounter (Figure 2). As per Table 1, 2 spiders are recorded from Grasses (G), 18 spiders are recorded from garden and garden plants (g), 15 spiders are recorded at Indoor wall corners (WC), 9 spiders are recorded under tree shades and tree trunk-Tree shades (TS), 2 spiders are recorded at ponds and tanks-Near wetland (NW), 2 spiders are recorded on land-Terrestrial (T), 1 spider recorded at Demolished building corners (DBC); 26 species are web builders (WB), 23 species are without web (WOB), 11 species builds web during predation (WOBP) (Figure 3).

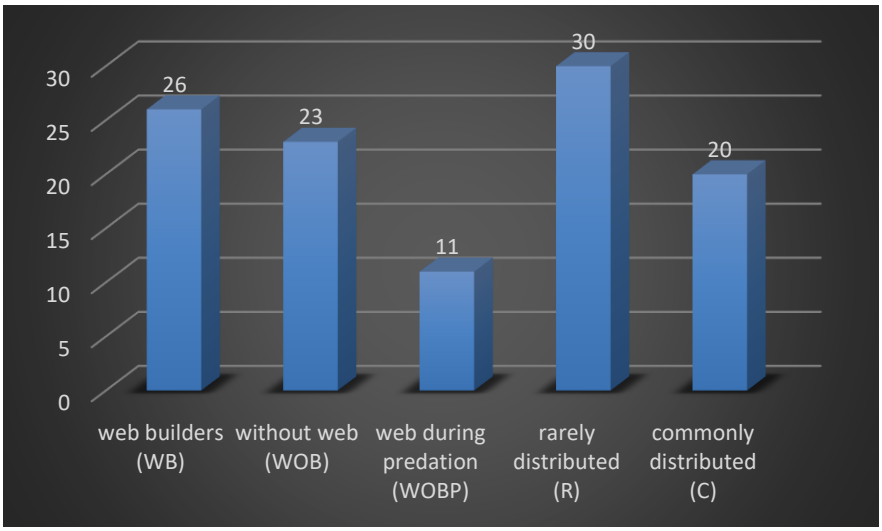


**Figure 2** Web pattern types and distributional status

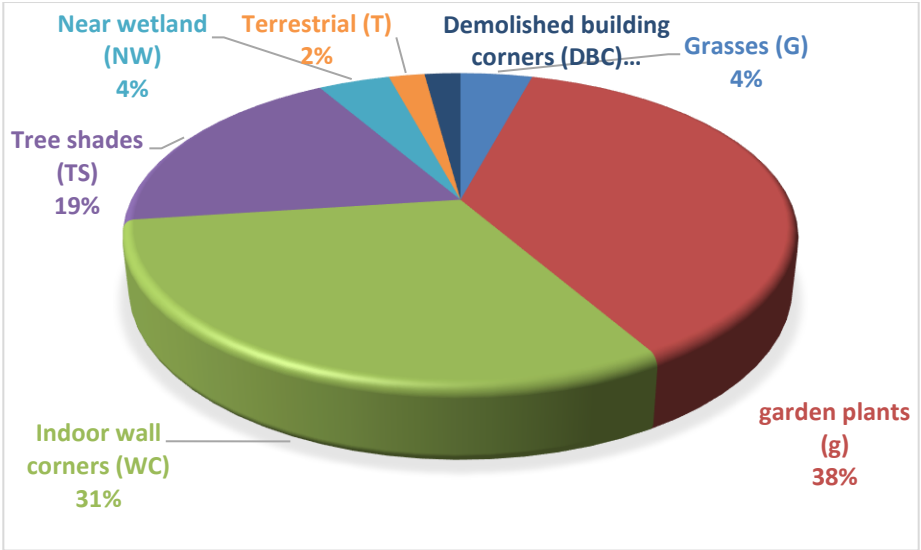


**Figure 3** Habitat distribution of spiders

The surveyed list comprises 50 species which approximately have 19 families in that 33 are outdoor spiders (Agelenidae, Araneidae, Salticidae, Hersiliidae, Sparassidae, Lycosidae, Theridiidae, Sclerosomatidae, Tetragnathidae, Uloboridae, Oxyopidae, Thomisidae, Theraphosidae, Thomisidae, Theraphosidae, Cheiracanthiidae, Oecobiidae, Scytodidae), 10 are indoor spiders (Salticidae, Pholcidae, Sparassidae, Theridiidae, Pisauridae, Liocranidae) and 07 (Araneidae, Salticidae, Oxyopidae, Oecobiidae) are both indoor and outdoor spiders (Table 2). The most common types of webs encountered during the survey are Normal Cob Web; Signature type of Web; Triangular type of Web; Trapping type of Web; Inverted Funnel type of Web; Deep pit type of Web (Figure 4).

**Threats**

Like most terrestrial invertebrates, spiders are affected by habitat alteration such as deforestation, agriculture, grazing, and urbanization (Wells et al., 1983). Spiders are very delicate with factors alike temperature, humidity and radiation, Hyper factors like fire, wind, water and light (radiation) may lead to destruct the nature of the spider and its shelter even, clear-cutting of forests reduces spider abundance and changes spider community composition drastically (Coyle, 1981; McIver et al., 1992). Some evidence says that paved roads and railway lines may act as linear barriers to dispersal, isolating some cursorial spider species into fragments of habitat (Mader et al., 1990). The magnitude of this effect leads to other dispersal abilities of species.

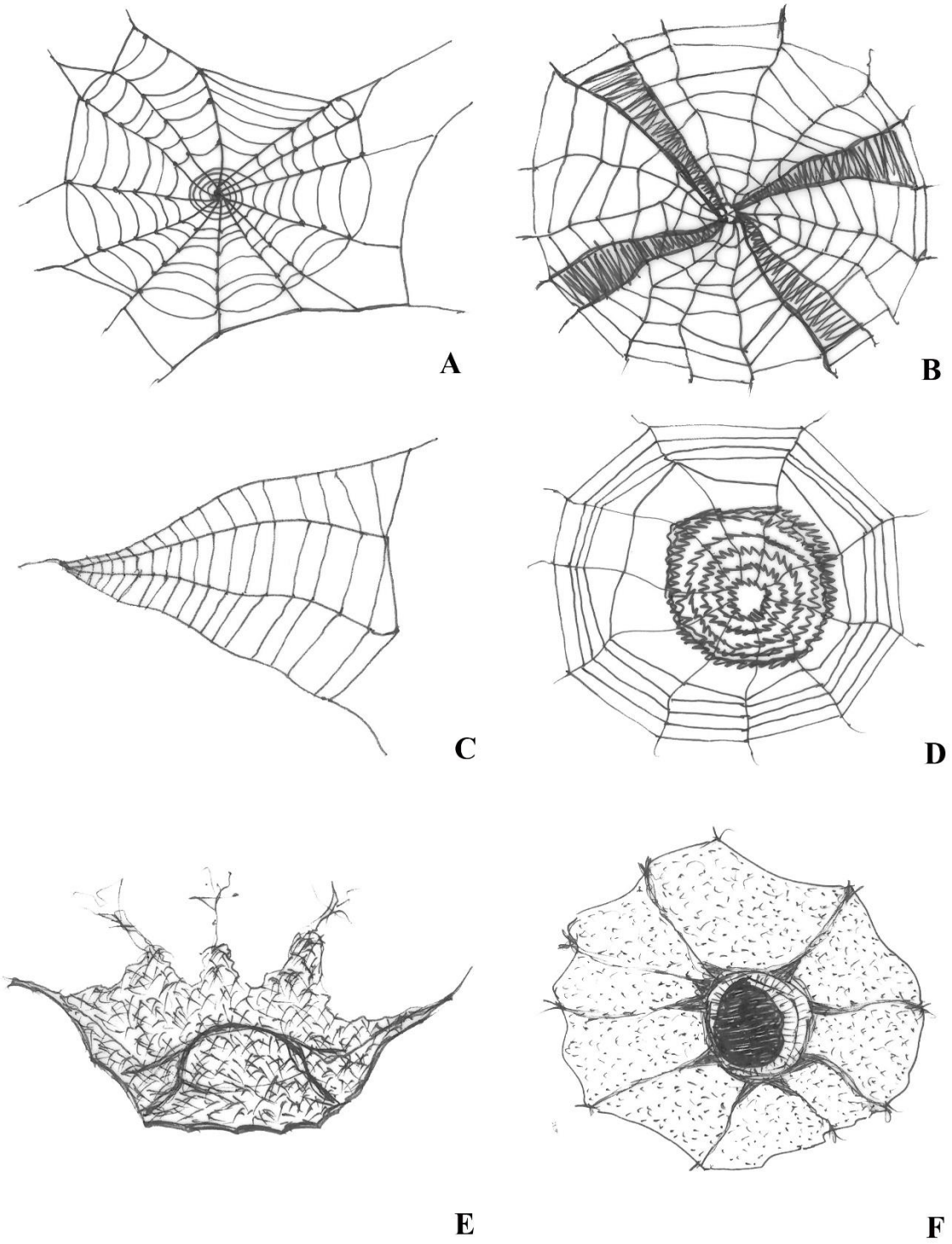


**Figure 4** Types of Webs encountered during survey, A. Normal Cob Web; B. Signature type of Web; C. Triangular type of Web; D. Trapping type of Web; E. Inverted Funnel type of Web; F. Deep pit type of Web.

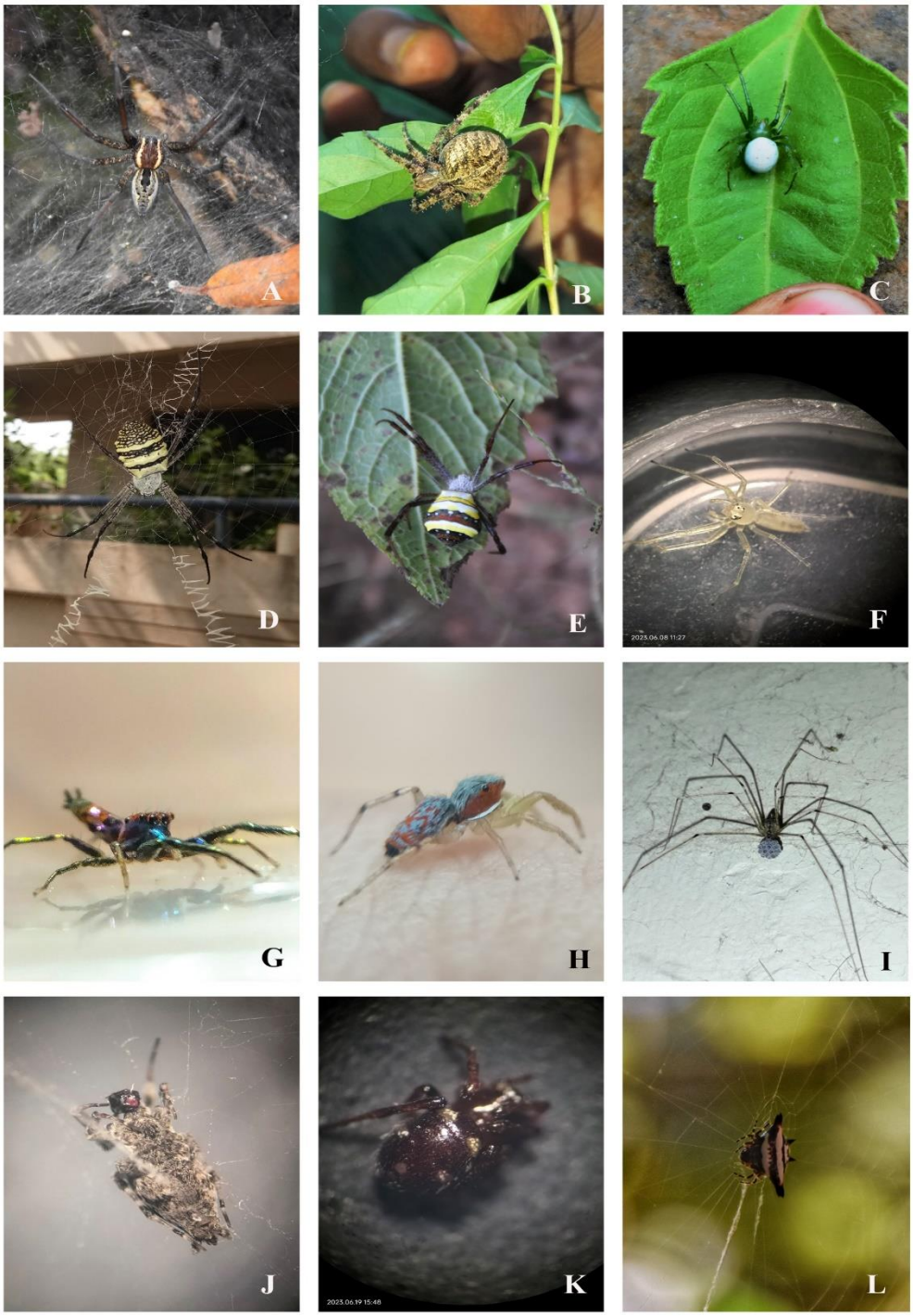


**Figure 5** A. *Agelenopsis sp.* B. *Araneus ventricosus* C. *Araneus viridisomus* D. *Argiope aemula* E. *Argiope anasuja* F. *Cheiracanthium sp.* G. *Chrysilla volupe* (Feamle) H. *Chrysilla volupe* (Male) I. *Crossopriza lyoni* J. *Cyclosa sp.* K. *Euryopsis sp.* L. *Gasteracantha geminata*

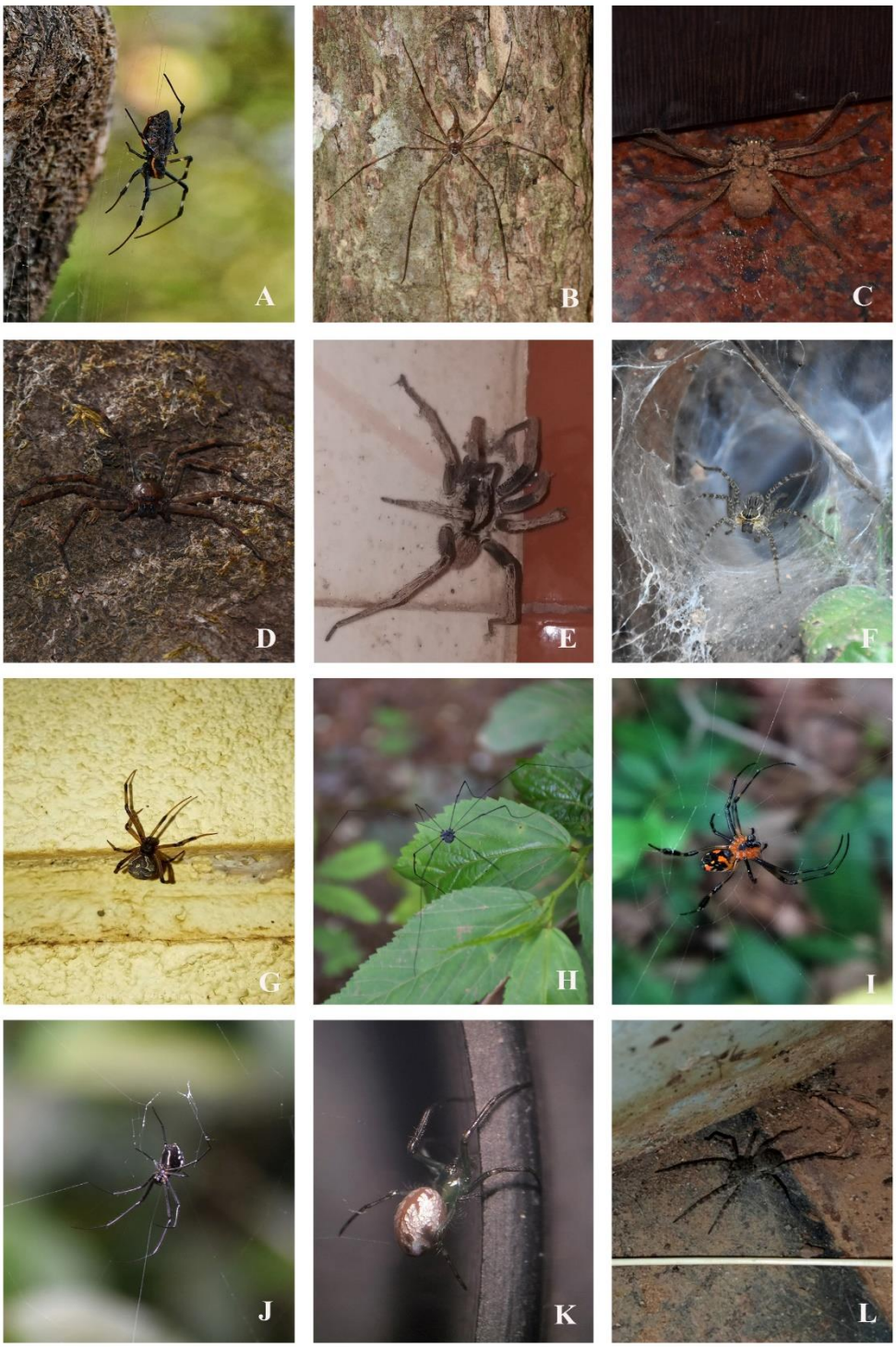


**Figure 6** A. *Herennia multipuncta* B. *Hersilia savignyi* C. *Heteropoda sp.* 1 D. *Heteropoda venatoria* E. *Heteropoda sp.* 2 F. *Hippasa agelenoides* G. *Latrodectus geometricus* H. *Leiobunum sp.* I. *Leucauge fastigata* J. *Leucauge sp.* K. *Leucauge venusta* L. *Lycosa Sp.*

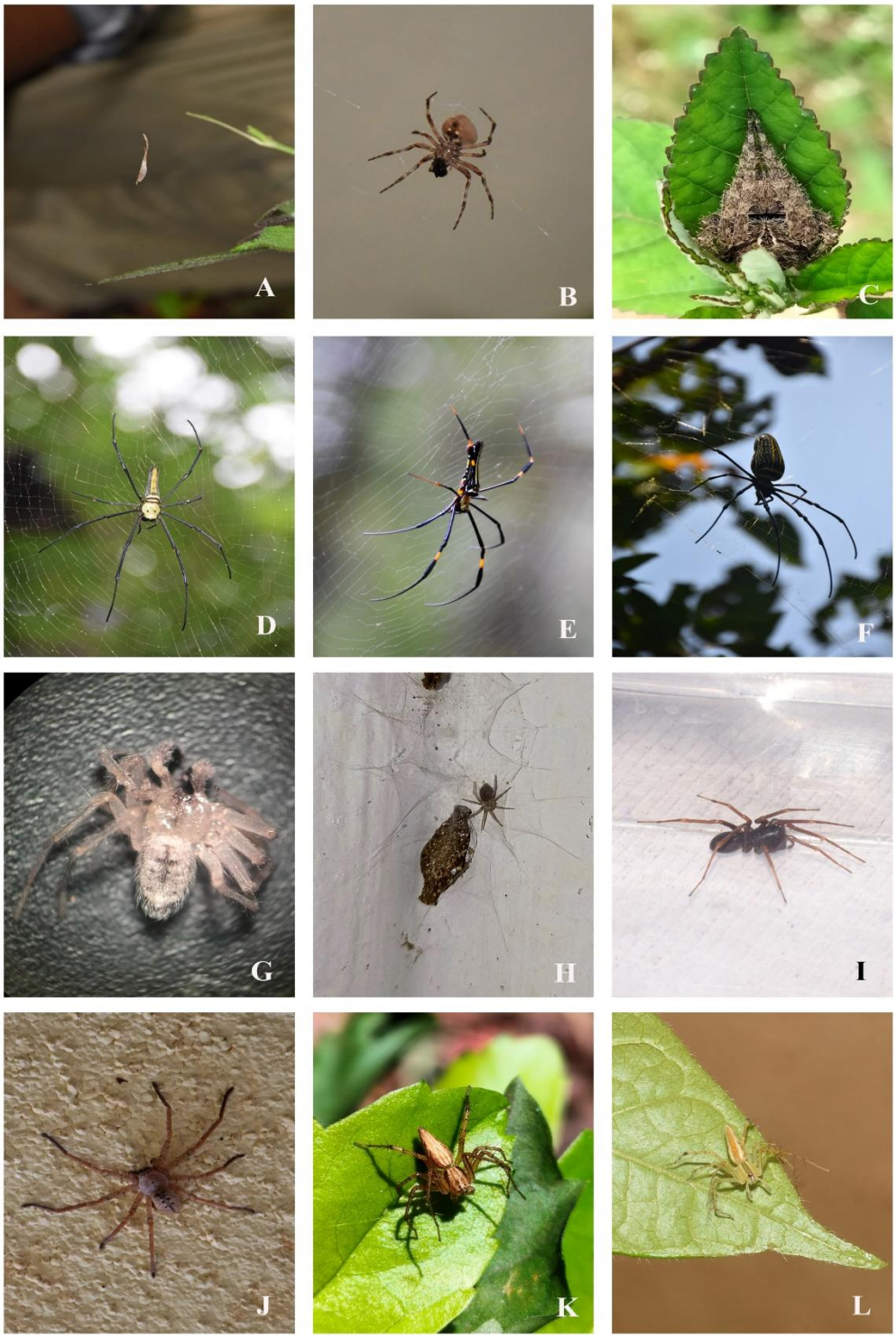


**Figure 7** A. *Miagrammopes bradleyi* B. *Neoscona bengalensis* C. *Neoscona puntigera* D. *Nephila pilipes* E. *Nephila pilipes* F. *Nephila sp.* G. *Oecobius maculatus* H. *Oecobius putus* I. *Oedignantha scorbicualta* J. *Olios sp.* K. *Oxyopes javanus* L. *Oxyopes lineatipes*

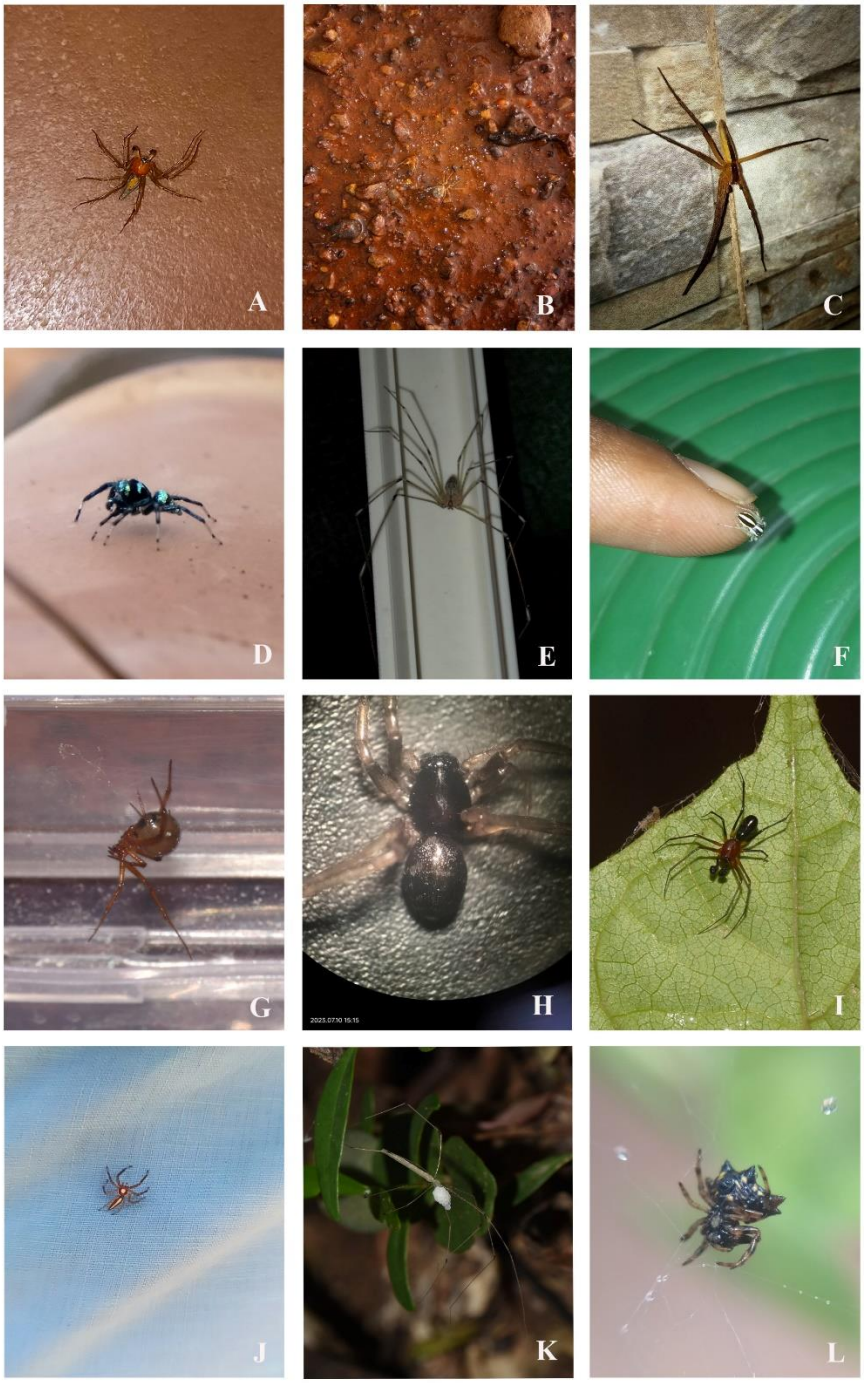


**Figure 8** A. *Oxyopes sp.* B. *Paradosa sp.* C. *Perenethis venusta* D. *Phintella sp.* E. *Pholcus phalangioides* F. *Plexippus paykuli* G. *Portia sp.* H. *Scytodes fusca* I. *Steatoda sp.* J. *Telmonia dimidiata* K. *Tetragnatha sp.* L. *Thelacantha brevispina*


**Figure 9** A. *Thomisus spectabilis* B. *Thrigmopoeus truculentus* C. *Zosis geniculata*

**Table 1** Checklist of Spiders in Karnatak Science College, Dharwad

| Sl no. | Scientific name | Family | CN. | S. | H. | St. | Type |
|---|---|---|---|---|---|---|---|
| 1 | *Agelenopsis sp.* (Giebel, 1869) | Agelenidae | Pennsylvania funnel-web spider | July | G | R | WB |
| 2 | *Araneus ventricosus* (L. Koch, 1878) | Araneidae | Large nocturnal spider | June | g | R | WOBP |
| 3 | *Araneus viridisomus* Gravely (1921) | Araneidae | - | May | NW | R | WB |
| 4 | *Argiope aemula* (Walckenaer, 1841) | Araneidae | Oval St Andrew's cross spider | May | g | R | WB |
| 5 | *Argiope anasuja* (Thorell, 1887) | Araneidae | Signature spider | January | g | C | WB |
| 6 | *Cheiracanthium sp.* (C. L. Koch, 1839) | Cheiracanthiidae | yellow sac spiders | June | g | R | WB |
| 7 | *Chrysilla volupe* (Karsch, 1879) | Salticidae | Jumping Spider | April | g | R | WOB |
| 8 | *Crossopriza lyoni* (Blackwell, 1867) | Pholcidae | Tailed daddy longlegs | May | WC | C | WB |
| 9 | *Cyclosa sp.* (Anton Menge in 1866) | Araneidae | Trashline Orbweavers | June | g | C | WB |
| 10 | *Euryopsis sp.Anton Menge in 1868)* | Theridiidae | False Widow Spiders | June | WC | R | WOBP |
| 11 | *Gasteracantha geminata* (Fabricius, 1798) | Araneidae | Oriental spiny orb-weaver | December | TS | R | WB |
| 12 | *Hasarisus adansoni* (Audouin, 1826) | Salticidae | Adanson's House jumper | May | WC | C | WOB |
| 13 | *Herennia multipuncta* (Doleschall, 1859) | Araneidae | Ornamental tree trunk spider | May | TS | R | WB |
| 14 | *Hersilia savignyi* (Lucas, 1836) | Hersiliidae | Two-tailed spider | May | TS | C | WOB |
| 15 | *Heteropoda sp.1* | Sparassidae | Huntsman spiders | April | WC | R | WOB |
| 16 | *Heteropoda sp.2* | Sparassidae | Giant Huntsman spiders | May | WC | R | WOB |
| 17 | *Heteropoda venatoria* (Linnaeus, 1767) | Sparassidae | Huntsman spiders | April | On | R | WOB |
| 18 | *Hippasa agelenoides* (Simon, | Lycosidae | Common funnel | December | G | C | WB |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1884) | | web spider | | | | |
| 19 | *Latrodectus geometricus* C.L. Koch, 1841 | Theridiidae | Brown black widow | May | WC | R | WB |
| 20 | *Leiobunum sp.* | Sclerosomatidae | Harvestman spiders | August | DBC | R | WB |
| 21 | *Leucauge fastigata* (Simon, 1877) | Tetragnathidae | Pear-shaped leucauge | July | NW | C | WB |
| 22 | *Leucauge sp.* | Tetragnathidae | Long-jawed orb weaver | August | TS | R | WB |
| 23 | *Leucauge venusta* (Walckenaer, 1841) | Tetragnathidae | Long-jawed orb weaver | May | g | C | WB |
| 24 | *Lycosa Sp.* | Lycosidae | Wolf spiders | June | T | R | WOBP |
| 25 | *Oedignatha scrobiculata* (Thorell, 1881) | Uloboridae | Cribellate Orb weavers | July | WC | R | WB |
| 26 | *Miagrammopes bradleyi* (O.P. Cambridge, 1874) | Araneidae | Spotted orb weaver or barn spider | April | TS | R | WB |
| 27 | *Neoscona bengalensis* (Tikader & Bal, 1981) | Araneidae | Ghost orb weaver spider | August | g | R | WOBP |
| 28 | *Neoscona puntigera* (Doleschall, 1857) | Araneidae | Giant golden orb weaver | August | g | R | WB |
| 29 | *Nephila pilipes* (Fabricius 1793) | Araneidae | Giant golden orb weaver | July | TS | C | WB |
| 30 | *Nephila spp.* (Leach, 1815) | Oecobiidae | Tiny House Dweller | August | TS | C | WB |
| 31 | *Oecobius maculatus* (Simon, 1870) | Oecobiidae | Tiny House Dweller | June | g | R | WB |
| 32 | *Oecobius putus* (O. Pickard-Cambridge, 1876) | Lyocranidae | Swollen Jaw Spiny-legged Spider | June | g | C | WOB |
| 33 | *Olios spp.* (Walckneaer, 1837) | Sparassidae | Huntsman spider | April | TS | R | WOB |
| 34 | *Oxyopes javanus* (Thorell, 1887) | Oxyopidae | Lynx spiders | May | g | C | WOBP |
| 35 | *Oxyopes lineatipes* (C.L.Koch, 1847) | Oxyopidae | Lynx spiders | June | g | R | WOBP |
| 36 | *Oxyopes sp.* | Oxyopidae | Lynx spiders | June | WC | R | WOBP |
| 37 | *Paradosa sp.* | Lycosidae | Thin-legged Wolf Spider | August | T | C | WOBP |
| 38 | *Perenethis venusta* (L. Koch, 1878) | Pisauridae | Nursery web spiders | May | WC | R | WOB |
| 39 | *Phintella vittata* (L. C. Koch, 1846) | Salticidae | Banded Phintella Jumping spider | August | g | R | WOBP |
| 40 | *Pholcus phalangioides* (K. F. Johann, 1775) | Pholcidae | Long-bodied cellar spider | May | WC | C | WB |
| 41 | *Plexippus paykuli* (Audouin, 1826) | Salticidae | Pantropical Jumping Spider | April | WC | C | WOBP |
| 42 | *Lyniphadae sp.* | Arachnida | Intuitive learners | June | WC | C | WB |
| 43 | *Scytodes fusca* (Walckenaer, 1837) | Scytodidae | Spitting Spider | June | WC | R | WOB |
| 44 | *Steatoda sp.* (Sundevall, 1833) | Theridiidae | Ant mimic spider | July | g | C | With Web |
| 45 | *Telmonia dimidiata* (Simon, 1899) | Salticidae | Jumping Spider | April | WC | R | WOB |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 46 | *Tetragnatha sp.* | Tetragnathidae | Jawed orb-weavers | March | TS | R | WB |
| 47 | *Thelacantha brevispina* (Doleschall, 1857) | Araneidae | Asian spiny-backed spider | August | g | C | WB |
| 48 | *Thomisus spectabilis* (Doleschall, 1859) | Thomisidae | White Crab spider | March | g | C | WOBP |
| 49 | *Thrigmopoeus truculentus* (Pocock, 1899) | Theraphosidae | Karwar large burrowing spider | April | WC | R | WOB |
| 50 | *Zosis geniculata* (Olivier, 1789) | Uloboridae | Humped spider or grey house spider | May | g | C | WB |

CN- Common name; S. Season; H. Habitat; St. Status; R-Rarely distributed, C-Commonly distributed; G-Grasses; g- garden; WC-Indoor wall corners; TS-Tree shades; NW-Near wetland; T-Terrestrial; DBC-Demolished building corners; WB-Web Builder; WOB-Without Web; WOBP-Without web, but uses web during predation.

**Table 2** Outdoor and indoor spiders

| Sl no. | Family | Indoor spiders | Outdoor spiders | Both Indoor & Outdoor |
|---|---|---|---|---|
| 1 | Agelenidae | - | 1 | - |
| 2 | Araneidae | - | 9 | 4 |
| 3 | Salticidae | 1 | 3 | 1 |
| 4 | Pholcidae | 2 | - | - |
| 5 | Hersiliidae | - | 1 | - |
| 6 | Sparassidae | 3 | 1 | - |
| 7 | Lycosidae | - | 3 | - |
| 8 | Theridiidae | 2 | 1 | - |
| 9 | Sclerosomatidae | - | 1 | - |
| 10 | Tetragnathidae | - | 4 | - |
| 11 | Uloboridae | - | 1 | - |
| 12 | Oxyopidae | - | 3 | 1 |
| 13 | Pisauridae | 1 | - | - |
| 14 | Thomisidae | - | 1 | - |
| 15 | Theraphosidae | - | 1 | - |
| 16 | Cheiracanthiidae | - | 1 | - |
| 17 | Oecobiidae | - | 1 | 1 |
| 18 | Liocranidae | 1 | - | - |
| 19 | Scytodidae | - | 1 | - |
| Total | | 10 | 33 | 07 |

## 4. CONCLUSION

A spider's checklist of Karnatak College Dharwad is prepared and documented with 50 species. The spider's biodiversity is critically analyzed, surveyed, and listed the species inside of campus from Karnatak College Dharwad (KCD) Karnataka, India.

**Informed consent**

Not applicable

**Ethical approval**

The ethical guidelines for animals are followed in the study for sample collection & identification without disturbing the webs and insects, only by photograph.

**Conflicts of interests**

The authors declare that there are no conflicts of interest.

**Funding**

The study has not received any external funding.

**Data and materials availability**

All data associated with this study are present in the paper.

## REFERENCES AND NOTES

1. Ashwini D, Ravindra P. Preliminary Study on Spiders of Gulbarga, Karnataka State. Int J Environ Agric Biotech 2016; 1 (4):680-686.
2. Coyle FA. Effects of clearcutting on the spider community of a southern Appalachian Forest. J Arachnol 1981; 9:285-298.
3. Karthikeyan S. Explore Spiders of India. Eco Edu. Consultants Pvt. Ltd. Bengaluru 2022.
4. Kokilamani AL, Lokeshkumar P, Rakesh BO, Sahana R, Geetha HC. A Preliminary Study on Diversity of Spiders from Tumkur University Campus, Tumakuru, India. Int J Adv Sci Res Manag 2019; 4(2):84-87.
5. Kotresha K, Kambhar SV, Harihar NS. Floristic Composition of Woody Species in Karnatak College, Dharwad (KCD), Karnataka, India. Life Sci Leafl 2011; 18:656-669.
6. Lazarus L, Subhash K, Rohit H, Shailaja W, Sandhyarani J, Sumit SP, Omkar P. Assemblages of Spiders from Tavandi Ghat, (Nipani Range), Karnataka. Int J Res Biosci Agric Technol 2020; III(VIII):158-166.
7. Mader HJ, Schell C, Kornacker P. Linear barriers to arthropod movements in the landscape. Biol Conserv 1990; 54(3):209-222.
8. McIver JD, Parsons GL, Moldenke AR, Litter spider succession after clear-cutting in a western coniferous forest. Can J For Res 1992; 22(7):984-992.
9. Mouna S, Ningaraj SM, Kotresha K. Estimation of tree biomass and carbon sequestration in Karnataka college campus, Dharwad, Karnataka. J Global Biosci 2021; 10(11):909 2-9108.
10. Mubeen M, Basavarajapp S. Density, Abundance and Per Cent Occurrence of Spider Species (Arachnida: Araneae) In and Around Mysore City, Karnataka, India – A Case Study. J Pharm Biol Sci 2018; 13(3) *Ver.* IV:31-40.
11. Neha Gupta, Habitat Preference and Burrow Characteristics of a Trapdoor Spider (*Idiops Sp.*) In The Western Ghats of Uttara Kannada, Karnataka, India. Part of CEPF Project: Tarantula (Araneae: Theraphosidae) spider diversity, distribution and habitat-use in the Western Ghats of Uttara Kannada district, Karnataka: A study on Protected Area adequacy and conservation planning at a landscape level (Dr. Manju Siliwal). https://indiabiodiversity.org/biodiv/content/projects/project-c145be90-981d-431f-9a43-dcf06bf99fef/991.pdf
12. Prashanthakumara SM, Nijagal BS, Venkateshwarlu M. Study on Diversity of Spider Fauna in Jnana Sahyadri Campus, Shimoga, Karnataka. Bull Pure Appl Sci 2015; 34A(1-2):1-9.
13. Raiz-Tabasum N, Nagaraj B, Shubha Shantakumari, Sreenivasa V, Sai-Sandeep Y. Assessment of Spider Diversity and Composition along the Tungabhadra Irrigation Channel at Ballari, Karnataka. Int J Biol Sci 2018; 9(1):36-44.
14. Sebastian PA, Peter KV. Spiders of India. Universities Press (India) Pvt. Ltd. 2017.
15. Shraddha-Kumari K, Chaturved SR. A Preliminary Study on Diversity of Spiders at Amanikere Park in Tumakuru District, Karnataka. Int J Sci Res 2020; 9(5):570-581.
16. Sumangala R, Srikanth, Shreya K, Ashwini V, Rekha KN, Shenoy KB. Spider diversity on Mangalore University Campus. J Entomol Zool Stud 2018; 6(2):3186-3194.
17. Sunil N, Imran-Khan YD, Kaechele H, Bhaskar K. Diversity and Distribution of Spiders in Gogi, Yadgir District: A Semi-arid Landscape in Southern India. Int J Ecol Environ Sci 2017; 43(3):195-204.
18. Wells SM, Pyle RM, Collins NM. The IUCN invertebrate red data book. IUCN 1983; 632.
19. World Spider Catalog. World Spider Catalog. Version 24. Natural History Museum Bern, online at http://wsc.nmbe.ch, accessed on {28-08-2023}, 2023. doi: 10.24436/2