

Comprehensive Survey to Identify and Document Spider Species Present in Baramati.

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Abstract

This research aims to provide information and knowledge regarding the diversity of spider species and fauna within the Baramati city region, Pune district, Maharashtra. Data for this study were collected over four months, from December 2024 to March 2025, from botanical gardens on college campuses, and riverside areas within Baramati city, specifically in urban locations with ample vegetation. Spider species were identified using specialized identification keys and categorized into families, genera, and species. A total of 25 spider specimens were collected, representing 14 families and 22 species. The current study indicates that the Salticidae family was the most dominant compared to other families. The collected spiders belong to the order Araneae and encompass the following 14 families: Salticidae, Araneidae, Pholcidae, Tetragnathidae, Sparassidae, Lycosidae, Oxyopidae, Gnaphosidae, Theridiidae, Filistatidae, Agelenidae, Hersiliidae, Cheiracanthium, and Porrhothelidae. The identified species include *Telamonia dimidiata*, *Plexippus pterus*, *Plexippus paykulli*, *Hasarius adansonii*, *Cyrtophora cicatrosa*, *Argiope aurantia*, *Holocnemus pluchei*, *Pholcus phalangioides*, *Leucauge argyra*, *Heteropoda venatoria*, *Hogna radiata*, *Peucetia viridans*, *Scotophaeus blackwalli*, *Latrodectus mactans*, *Eustala anastera*, *Kukulcania hibernalis*, *Trochosa robusta*, *Malithonica lusitanica*, *Tamopsis eucalypti*, *Cheiracanthium mildei*, *Cheiracanthium virescens*, and *Porrhothele antipodiana*.

Keywords: Spider species diversity, Salticidae (dominant family), Class Arachnida, Spinnerets.

INTRODUCTION

Spiders belong to the Phylum Arthropoda, Class Arachnida, and Order Araneae, representing a significant group within the animal kingdom. In India alone, over 1,686 spider species have been documented out of the global total of 44,906 (Dharmaraj et al., 2017). A key characteristic of spiders is the presence of a carapace on the dorsal side of the cephalothorax. Their jaws, known as chelicerae, are equipped with fangs that function as piercing tools for venom injection. Spiders exhibit considerable variation in size and color. The presence of spinnerets is a unique anatomical feature, located at the posterior end of the abdomen, responsible for silk production and release. Six different types of silk glands are situated within the abdomen (Shultz, 2007). Predominantly carnivorous, spiders feed on insects and other small terrestrial animals. They play a crucial ecological role by regulating insect populations, utilizing consumed food material as a liquid form of digestive juices (Dharmaraj et al., 2017).

Spiders belonging to the order Araneae are commonly found in diverse habitats such as forest areas, bark of trees, under stones, walls of houses, gardens, and dried leaves (Perveen et al., 2012). Typically, spiders possess multiple pairs of eyes, usually ranging from two to eight, with variations in their number and

arrangement influencing their visual capabilities. A remarkable ability of spiders is their capacity to produce silk – a protein-based substance synthesized in specialized glands and used for constructing webs to capture prey or creating egg sacs (Sebastian and Peter 2009). Furthermore, spiders are recognized as significant biological control agents, contributing to the ecological balance by preying on small insects (Maloney, 2003 and Plantnick 2019).

Spiders exhibit a worldwide distribution as carnivorous organisms and predators within the animal kingdom (Riechert, 1984). They play a vital ecological role in controlling insect pests in horticultural and agricultural ecosystems (Michalko et al., 2018). Certain spider species also prey on mosquitoes, which can transmit human diseases like malaria and dengue, thus contributing to the reduction of mosquito-borne illnesses (Ndava et al., 2018). Additionally, spiders play a significant role in agriculture, horticulture, plantations, and protecting houses from insect pests (Brunet, 2000). Spiders are broadly classified into two groups: web builders and non-web builders. Web-building spiders construct various types of webs for catching prey, including funnel-shaped, tangle webs, orb webs, tent webs, and tubular webs (Malik and Goyal, 2017). In contrast, non-web-building spiders actively search for their prey or trap them. This group includes hunting spiders, trapping spiders, and ambush predators.

Material and Methods

Study Area: Spider collection for this study will focus on college gardens, campus grounds, riverside parks, and urban areas within Baramati city that exhibit substantial vegetation and tree cover. The data collection period spanned from December 2024 to March 2025, with spider collection occurring during both morning and evening hours.

Collection of Spiders: This study was conducted within the Baramati city region. During the survey, spiders were actively searched for and collected from various locations. Collection efforts were carried out during the morning and evening periods.

Visual Searching: Photographs of spider species were obtained through routine searches of arboreal, terrestrial, and even near-aquatic habitats, as well as gardens. This involved visually inspecting for spider webs and spiders both above and below ground, including areas such as tree bark, folded leaves, grassy areas, rock surfaces, tree trunks, and plant branches. Photography was the method used for collection.

Identification: The collected spider specimens were identified by referring to taxonomic identification keys by Tikader (1982 and 1962) and Biswas and Roy (2008).

Result and Discussion

This research was conducted to understand the diversity of spiders within the Baramati city region in the Pune district. Following the data collection phase, which yielded a total of 25 spider specimens from December 2024 to March 2025, 22 distinct spider species were identified, belonging to 14 families within the order Araneae. The Salticidae family was found to be the most dominant, followed by Araneidae, Pholcidae, Tetragnathidae, Sparassidae, Lycosidae, Oxyopidae, Gnaphosidae, Theridiidae, Filistatidae, Agelenidae, Hersiliidae, Cheiracanthiidae, and Porrhothelidae.

Spider diversity was analyzed at the family level. The Salticidae family exhibited the highest species richness with 4 species, followed by Araneidae with 3 species, and Pholcidae with 2 species. The families Tetragnathidae, Filistatidae, Sparassidae, Oxyopidae, Gnaphosidae, Theridiidae, Agelenidae, Hersiliidae, and Porrhothelidae were each represented by a single species. The Lycosidae family and the Cheiracanthiidae family each contained 2 species.

The spider species identified during this study are *Telamonia dimidiata*, *Plexippus pterus*, *Plexippus paykulli* (male and female), *Hasarius adansoni*, *Cyrtophora cicatrosa*, *Argiope aurantia*, *Eustala anastera*, *Holcnemus pluche*, *Pholcus phalangioides*, *Leucauge argyra*, *Heteropoda venatoria*, *Hogna radiata*, *Trochosa robusta*, *Peucetia viridans*, *Scotophaeus blackwalli*, *Latrodectus mactans*, *Kukulcania hibernalis*, *Malithonica lusitanica*, *Tamopsis eucalypti*, *Cheiracanthium mildei*, *Cheiracanthium virescens*, and *Porrhothele antipodiana*. The color photographs of all 22 identified species are presented in Figure 1, and the checklist of all identified spider species is provided in Table 1.



Telamonia dimidiata



Plexippus petersi



Plexippus paykulli



Hasarius adansoni

Fig 1: Photographs of identified species.



Holocnemus pluchei



Leucauge argyra



Heteropoda venatoria



Hogna radiata



Cyrtophora cicatora



Argiope aurantia



Eustala anastera



Pholcus phalangioides



Trochosa robusta



Peucetia viridans



Scotophaeus blackwalli



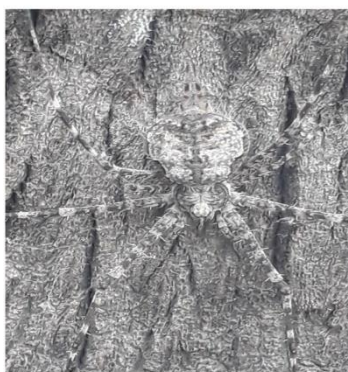
Latrodectus mactans



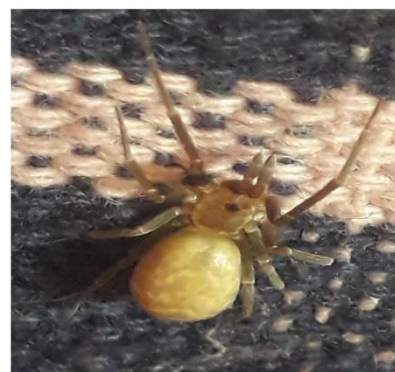
Kukulcania hibernalis



Malthonica lusitanica



Tamopsis eucalypti



Cheiracanthium mildei



Cheiracanthium virescens



Porrhothele antipodiana

Table 1: Checklist of all identified spider species

Sr.No	Order	Family	Scientific name	Common name
1	Araneae	Salticidae	Telamonia dimidiata	Jumping spider
2			Plexippus petersi	Small zebra jumper
3			Plexippus paykulli	Jumping spider
4			Hasarius adansoni	House jumper
5		Araneidae	Cyrtophora cicatora	Dome spider
6			Argiope aurantia	Yellow garden spider
7			Eustala anastera	Humpbacked orbweaver
8		Pholcidae	Pholcus phalangioides	Daddy long leg spider
9			Holocnemus pluchei	Marbled cellar spider
10		Tetragnathidae	Leucauge argyra	Orb web builders
11		Sparassidae	Heteropoda venatoria	Common house spider
12		Lycosidae	Hogna radiata	Wolf spider
13			Trochosa robusta	Wolf spider
14		Oxyopidae	Peucetia viridans	Green lynx spider
15		Gnaphosidae	Scotophaeus blackwalli	Mouse spider
16		Theridiidae	Latrodectus mactans	Black widow spider
17		Filistatidae	Kukulcania hibernalis	Southern house spider
18		Agelenidae	Malthonica lusitanica	Portuguese funnel web spider
19		Hersiliidae	Tamopsis eucalypti	Two tailed or tree trunk spider
20		Cheiracanthiidae	Cheiracanthium mildei	Long legged sac spider
21			Cheiracanthium virescens	Green legged sac spider
22		Porrothelidae	Porrhothele antipodiana	Black tunnel web spider

Conclusion

In this research, spiders belonging to the Phylum Arthropoda, Class Arachnida, and Order Araneae were studied across various habitats within the Baramati city region of Pune district. A total of 25 individual spiders, representing 14 families, were examined. The Salticidae family was identified as the most

dominant, followed in prevalence by Araneidae, Pholcidae, Tetragnathidae, Sparassidae, Lycosidae, Oxyopidae, Gnaphosidae, Theridiidae, Filistatidae, Agelenidae, Hersiliidae, Cheiracanthiidae, and Porrhothelidae. The diversity of spiders was analyzed based on their family classification.

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