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Diversity of Spiders Fauna in K.V.M College Campus Wai, Maharashtra, India

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ABSTRACT

The Spiders are more abundant, predatory groups in world of arthropod. They act as indicator of environmental conditions and act as biological control agent in agricultural ecosystem.

We study the Diversity of spiders fauna in K.V.M. College campus. The Study was carried out during period of six months from December 2022 to May 2023. Total 15 species reported and belonging to 5 families. The families described are Salticidae, Araneidae, Oxyopidae, Lycosidae, and Thomisidae. The described families Salticidae is presiding family having 6 species. The second presiding Araneidae family having 5 species, Oxyopidae having 2 species, and Lycosidae and Thomisidae are 1 species each.

The family Salticidae constitute most predominant family (40%), followed by Araneidae (33%), Oxyopidae (13%), and Lycosidae and Thomisidae (7%). The abundance of families present order Salticidae > Araneidae > Oxyopidae > Lycosidae = Thomisidae.

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1. Introduction:

Spiders (Arachnida: Araneae) are most omnipresent and numerous like insert in both agricultural and natural ecosystem. And arthropod predators and also act as bio-indicators of environmental changes. (Jansen, 2013).

Arachnids are largest and successful group of chelicerates. Among the arachnids order Araneae is largest group (Thompson,2015). They are most diversified group of invertebrates. They are most diversified group of invertebrates with 51,163 species under 4325 genera and 132 families (WSC, 2023). In India 1953 space is under 495 genera and 61 families are known. (Calab, J.T.D & Sankaran, P.M. Araneae of India version 2023). Spiders diversity in agro ecosystem have showing their potential to be used as a biological control agent in IPM and it can unselective use of pesticides. (Benamu, 2020). Spiders play vital role in keeping in 6th and paste population. They eat insects and bugs which destroy different crops and consequently safe guard the agro ecosystem. (Rana et al., 2016). Spiders good bio- indicators for impart of an natural ecosystem and regulate insects population in many test real habitat. (Enriguez & Nunera, 2014). The spiders diversity in primary forest and forest in the tropics (Floren,2005).The composition and diversity of spider types of vegetation (Uniyal and Hore, 2008). In order to assess the species diversity and ecological relationship if any of this region. Recently a new Species of the Genus Oxyopes latrielle (Araneae: Oxyopidae) from Sahyadri ranges of Western ghats. (Kulkarni,Deshpande,2012). The diversity of spider fauna in P.S.M.O college campus, Tirurangadi Kerala studied 25 spiders species having 7 families and family Salticidae are dominating family. (Sidheek K.T,2019).

2. Materials and methods :

i) Study area:

The sampling was done from December 2022 to May 2023, of Kisan Veer College Campus. Geographically it is located at the coordinate position " North Latitude 17^{0}56' 43.476" and "East longitude 73^{0}52'35.9724" and 738m above from sea level having total area 258.9 hac.

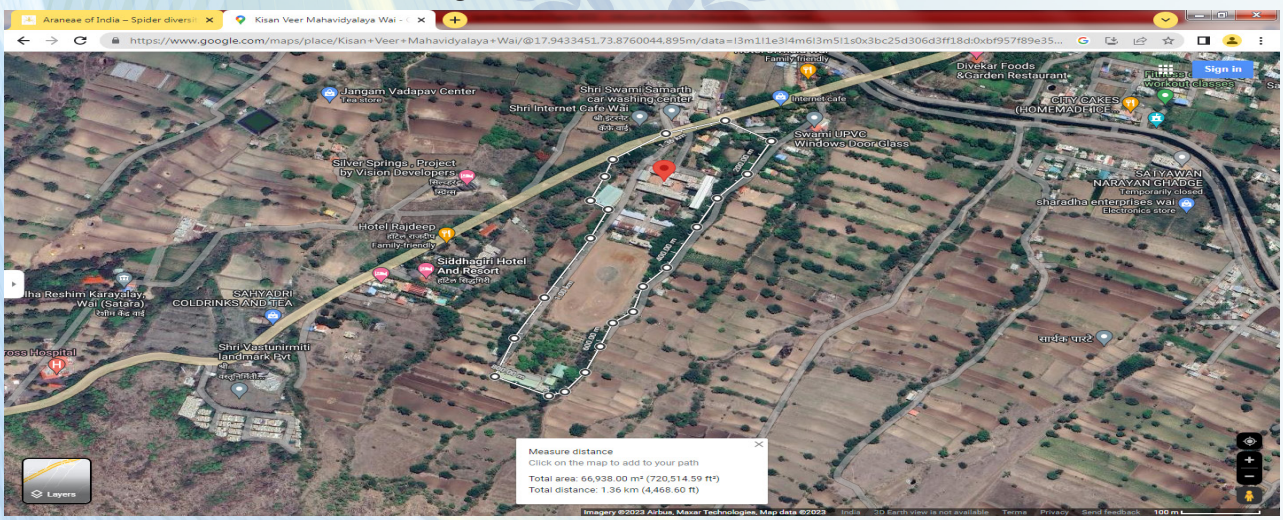

Fig:1 Map of Study area Kisan Veer College Campus, Wai.

ii) Collection and Identification :

Spiders are collected from different habitats of college campus area having canopy, grassland, garden area. Different methods are used for collection of spiders specimen. Spiders were collected at regular time intervals. The sampling was done from December 2022 to May 2023 between 9-11 am. The photography and specimen collection are important task of data collection method.

iii) Specimen Collection methods:

a) Hand Picking method:

This method used for collection of spiders inhabiting on ground for this explored places like leaf litter, forest floor level (Cardoso et al., 2008; Hippaggi, R.V 2011).

b) Sweep netting:

Spiders inhabiting grasses, small shrubs were sampled with sweep net (Coddington et al.,1991). For sweep netting a round sweep net made up of nylon mesh (1.5mm), having a diameter of 28cm (Aluminum ring) and 1m long handle was used (Churchill and Arther,1991; Cardoso et al.,2008).

c) Beating:

Spiders from woody trees collected in plastic sheet by beating trees and shrubs stiks. The collected spiders specimen are photographed in natural life.

d) Pitfall sapling:

Pitfall traps are for collecting surface active ground dwelling and leaf litter inhabiting spiders (Brennan, 2005).

e) Areal hand collection:

The areal hand collection method applied for collection of free living foliage dwellers. In this method spiders searching on vegetation and collect the spiders visible from knee level (Sorensen et al.,2002; Scharff et al.,2003).

Preservation:

Preservation was done in 70% Ethyl alcohol used and stored in plastic container (Tikader Handbook Indian Spiders, 1987).

Identification:

The collected spiders specimen were identified by standard identification keys, systematic references (Tikader,1987 and Pocock,1900).

3) Result and Disscussion:

The collected spiders specimen listed during the study period from the December 2022 to May 2023 between 9-11 am, presented in (Table 1).

A total 15 species of spiders belonging to 5 families recorded during the study. The families listed are Araneidae, Salticidae, Thomisidae, Oxyopidae and Lycosidae.

The Salticidae are dominant families comprising 6 species. The second dominant families are Araneidae 5 species, Oxyopidae 2 species, Lycosidae and Thomisidae are 1 species each. During the study the specimens observed their natural habitat. Some are jumping spiders, some are lynx spider, ground dwellers and orb weaver. The different families are as Salticidae > Araneidae > Oxyopidae > Lycosidae > Thomosidae.

List of Spiders collected during the study site (Table 1)

	Family	Species
1	Salticidae	i) *Telamonia dimidiate* (Simon, 1899)
		ii) *Plexippus paykulli* (Audowin,1826)
		iii) *Banded phintella* (L. Koch,1846)
		iv) *Rhene flavigera* (L. Koch,1846)
		v) *Salticus sp.*
		vi) *Chrysilla sp.*
2	Araneidae	i) *Araneus mitificus* (Simon, 1886)
		ii) *Argiope anasuja* (Thorell, 1881)
		iii) *Eriovixia sp.* (Archer,1951)
		iv) *Neoscona sp.* (L. Koch, 1975)
		v) *Nephila pilipes* (Fabricus,1793)
3	Oxyopidae	i) *Oxyopes javanus* (Thorell,1857)
		ii) *Oxyopes birmanicus* (Thorell,1857)
4	Lycosidae	i) *Hippasa sp.*
5	Thomosidae	i) *Thomisus sp.*

Fig.2 Graphical representation of Spiders families in the sampling area of study site.

Morphological characteristics of collected families:

i) Salticidae (Blackwall,1841) :

These are small to medium sized active hunting spiders and are commonly known as jumping spiders. The cephalothorax has distinct rectangular quadrangle. Eight eyes are present arranged in 3-4 rows, large anterior median eyes are present. Abdomen round oval, covered with hairs. Legs are segmented. (Upper Assam Biodiversity board, 2015). A total 307 species reported from India. (Caleb, J.T.D. and Sankaran, P.M, 2023 Araneae of India Ver. 2023).

ii) Araneidae (Clerk,1757) :

These are small to medium spiders, commonly knows orb weaver. Members of this family generally build orb webs often found in gardens, fields, and forests, eight eyes are present arranged in two rows, chelicerae are strong. (Upper Assam Biodiversity board, 2015). Total 196 species reported in India. (Caleb, J.T.D. and Sankaran, P.M, 2023 Araneae of India Ver. 2023).

iii) Oxyopidae (Thorell,1870): These are small to large sized foliage dwelling and commonly called as lynx spider. Cephalothorax is elongated usually with strips and spots. Eight eyes are arranged hexagonally on two rows. Chelicerae are long with short fangs. Abdomen is elongated with bands, spots,strips. Legs are long, three clawed and covered with spines. (Upper Assam Biodiversity board, 2015). A total 88 species reported in India. (Caleb, J.T.D. and Sankaran, P.M, 2023 Araneae of India Ver. 2023).

iv) Lycosidae (Sindevall,1833) :

These are small to large sized, free living ground spider, commonly called as wolf spider. Cephalothorax elongated and carapace remain covered with dense setae. Eight eyes are arranged in rows. Chelicerae are strong. Female carry eggs sac attached the spinnerets. (Upper Assam Biodiversity board, 2015). A total 125 species reported in India (Caleb, J.T.D. and Sankaran, P.M, 2023 Araneae of India Ver. 2023).

v) Thomisidae (Sundevall,1833):

These are small medium sized spiders commonly known as crab spiders. Cephalothorax various in shape. Eight eyes are arranged in two rows. Abdomen various size and shape and color tends to camouflage with background, legs with two claws. (Upper Assam Biodiversity board, 2015). A total 185 species reported in India (Caleb, J.T.D. and Sankaran, P.M, 2023 Araneae of India Ver. 2023).

4) Conclusion:

The spiders discovered during the December 2022 to May 2023 included 5 families constituting of 15 species. The most common Salticidae followed by Araneidae, Oxyopidae Lycosidae and Thomisidae. The largest abundance and species richness, diversity species are found in K.V.M. College campus.

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