Original Research Article

SpidersDiversity in North East Gariaband Forest Regions of Chhattisgarh, India

ABSTRACT

The research was conducted in northeast Gariyaband region (Chhura).The research deals with spider (Arachnida : Aranae) diversity in different regions that provides fundamental knowledge about spider species in the region and their conservation status on habitat. In the research, a total of 55 species belonging to 42 Genus under 11 families were recorded from August 2024 to October 2024 (3 months) in all three regions. All spider species are collected from different part of the area, like trees, shrubs, grassland and surfaces. There are Araneidae and Salticidae. Both are dominant families that have high species numbers. Spiders are important for ecosystem. The presence of spider species in a place indicates the good ecosystem of that area.The presence of spiders is more in forest region of Gariaband.

Key words– spider, Gariaband, Salticidae, Araneidae, species, Aranae.

INTRODUCTION

Spiders are small, predatory, carnivorous creatures that belong to theClass – Arachnida of Phyllum – Arthropoda (Nichat et. Al. 2024a). The spider is an air breathing creature. The body is also divided into two parts.Cephalothorax and abdomen or opisthosoma. Cephalothorax is fusedPortion of head and thorax that contains eight pairs of jointed legs andMany simple eyes on theanteriorpart . Abdomen contains most internalBody organs and posterior part contain 4-5 spinnerets (silkreleasingOrgan). Both cephalothorax and abdomen are jointed by small ,Cylindrical pedicel. Chelicerea and pedipals are key character of spider.There is high variation in shape, size, colour and behaviour of

spiders.TheCephalothorax and abdomen are marked with different patterns and colours to camouflage the surrounding atmosphere. They are everywhere in the world, we need special views to see them.

Currently valid Spider Genera and species on 2024 in the world are52,455 under 4404 Genus and 134 families. (WSC, 2024) India is the most diverseCountry in conditions and environment. In India two types of spiderGroupsMygalomorphae sometimes called it Old world spiders likeTarantula. 130 species under 33 Genera and 10 Families recorded inDifferent regions of India. The second group is AraneomorphaecalledNew World spiders. These group is the most developed and diverseGroup. 2114 species under 530 Genus are documented in differentRegions of India.(Singh R. et al. 2023)

In Chhattisgarh no more documentation of spider fauna in all districts and regions. Firstly 118 species of 52 Genena under 17 familiesIdentified in Ram Jharna, Raigarh, where only 4 species of Salticidae are found (Ekka, A. & Kujur A. 2015). Rose Garden Raigarh 20 spider species belong to 13 genus under 6 families are documented where 2Salticidae are documented Plexippuspaykuli and Rhene(Kujur R. &Ekka A. 2016). In Gomarda Wildlife Sanctuary 120 species of spider belong to 49 Genera and 16 families are documented where 4 species of Salticidae are listed Kujur R. & Ekka A. (2016). 63 spider species and38 Genera under 10 families, where 3 Salticidae are listed from IndraVihar Park, RaigarhKujur R. & Ekka A. (2016). In Achankmar Wild LifeSanctuary, Bilaspur 27 species of spider documented. Toppo, AK. Et.al.(2020). In Gariyaband and Chhuraregion 13 species under 13Genus and 8 families werereported where only one Salticids was observed, Plexippuspaykuli. Sen D.L. (2021). In Kharun river region 45 spider species under9 families where 5 Salticids are observed, Toppo A. k. et.al. (2022). 55Spider species under 45 Genera and 13 families observed in DeobhogRegionGariyaband district. Nichat et.al.2024b.

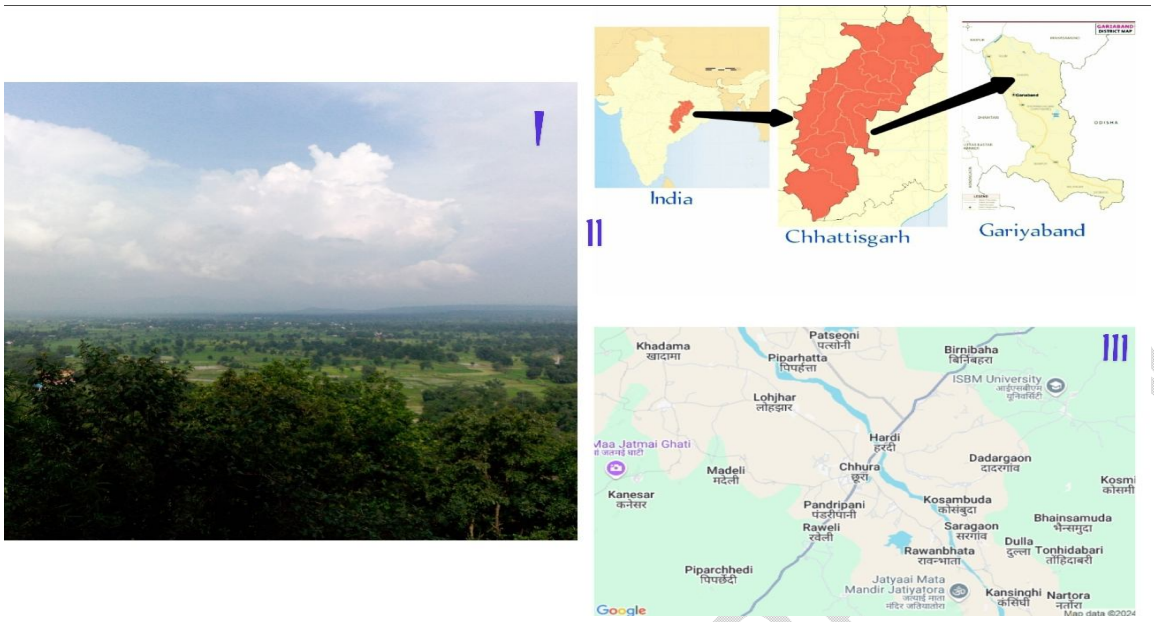

Figure1 :study area, I. Forest of North-east (Chhura) egion, II. Map of India, Chhattisgarh and Gariyaband, III. Map of Chhura region.

Figure: 2-IV & V Spider specimen collection by researcher in the Chhura forest region.

MATERIALS AND METHODS

Sampling area : TheNorth East region of Gariyaband district, Chhattisgarh, India, pin code 493996 located north east of Gariyaband, between 20.8108°N and 82.2081°N. The study was done at some villages in the forest region of Chhura – Hardi, Birnibaha, Pandaripani, Koasambuda and Chhura (KachnaDhurwa College). All study villages are almost covered with forest that contains highly dense and diverse plant species. The most dominant flora are *Semecarpusanacardium, Phyllanthus amblica, Shorearobusta* and *Tectona grandis.*

Sample from **tree**(Braches, Bark, Leaves and flowers), **Shrubs** (perineal short plants) , **Grassland**(Normal grasses) and **Ground surface** (Litters and dry barks)

Sampling methods:-The sample is collected from different trees, shrubs, grassland and ground surface in Chhura forest region by using many methods like beating vegetation, by collecting green and dry leaves, barks on trees, litters of ground but

maximum species are captured for photography by visual search methods. All specimens are photographed by INFINIX SMART HD camera version 10 andGPS MAP camera version 1.4.22.

Preservation :-During the research period many exoskeleton and damage spider specimens were observed but it is vary difficult to identification. So those spacimens have been preserved in 60%, 70% and 80% Alcohol for the latter identification and study their morphological variations.

Identification :-Identification of spiders on the basis of the taxonomic keys ,morphological characters, distribution, common habits and common behaviour of Indian spiders is explained byTikader (1982,1987), Recently published literature (2012 to 2024), Explore Spiders of India: A Pocket Guide by Karthikeyan S.,Sebastian P.A. Spiders Of India (2009), A Field Guide ToThe Spider Genera Of India by Ayan Mondal ,Indian Biodiversity website and INATURALIST MOBILE APP.

RESULTS AND DISCUSSION

Table1 :- List of Spiders species and observed site during the study period :-

S.N.	Family	Species	Shrub	Tree	Ground
1	Araneidae	*Araneusmitificus* (Simon,1886)	+	+	+
2		*Argiope aemula*(Walckenear, 1841)	+	+	_
3		*Argiope anasuja* (Thorell, 1887)	+	+	+
4		*Argiope pulchella* (Thorell, 1881)	+	+	+
5		*Cyclosa bifida* (Doleschall , 1859)	+	+	+
6		*Cyclosaconfraga*(Thorell, 1892)	+	+	+
7		*Cyclosahexatuberculata* (Tikader, 1982)	+	+	_
8		Cyrtophoracicatrosa(	+	+	+

		Stoliczka, 1869)			
9		Cyrtophoracitricola (Forskal, 1775)	+	+	+
10		*Eriovixiaexcelsa* (Simon, 1889)	+	+	+
11		*Eriovixialaglaizei* (Simon, 1877)	–	+	–
12		*Hereniamultipunctata* (Doleschall 1859)	+	–	–
13		*Neoscona mukerjei*(Tikader, 1980)	+	+	–
14		*Neoscona vigilans*(Blackwall, 1865)	+	–	–
15		*Neoscona thesi*(Walckenear,1841)	+	+	–
16		*Nephila pilipes Fabricius, 1793*	–	+	–
17		*Thelacanthabrevispina* (Doleschall, 1857)	+	+	–
18	Hersiliidae	*Hersiliasavignyi* (Lucas,1836)	+	+	+
19	Lycosidae	*Hippasagreenalliae* (Blackwall, 1867)	+	+	–
20		*Lycosa bistriata*(Gravely,1924)	–	–	+
21		*Pardosapseudoannulata* (Bosenberge&Strand,1906)	+	+	–
22		*Wadicosaquadrifera*(Gravely,1924)	+	+	–
23	Oxyopidae	*Oxyopesjavanus* (Theroll,1887)	–	+	+
24		*Oxyopesmacilentus*	+	+	–

		(Koch,1878)			
25		*Peucetiaviridona*(Stoliczka,1869)	_	+	_
26	Pholcidae	*Artema atlanta* (Walckenear,1837)	+	+	_
27		*Crossoprizalyoni*(Blackwall,1867)	_	+	_
28		*Pholcusphalangioides*(Fuesslin,1757)	_	+	+
29	Salticidae	*Carrhotusviduus* (Koch,1846)	_	+	+
30		*Chrysillavolupe*(Karsch,1879)	+	_	+
31		*Harmochirusbrachiatus* (Thorell, 1877)	_	_	+
32		*Hasariusadansoni*(Audouuin,1826)	_	+	+
33		*Hyllus semicupreus*(Simon, 1885)	+	+	+
34		*Menemerusbivittatus* (Dufour,1831)	+	_	+
35		*Menemerusfulvus*(C L Koch,1878)	_	+	+
36		*Phintellavittata*(Koch,1846)	+	+	+
37		*Plexippuspaykulli*(Audouuin,1826)	+	+	+
38		*PlexippusPetersi*(Karsch,1878)	_	+	+
39		*Rheneflavicomans*(Simon,1902)	+	_	_
40		*Telamoniadimidiata*(Simon ,1899)	+	+	+
41		*Thyeneimperialis*(Rossi,(1846)	_	+	+
42	Scytodidae	*Scytodeslugubris* (Thorell,1887)	_	+	+
43	Sparassidae	*Heteropodavenatori*	_	_	+

		a(Linnaeus,1767)			
44		*Oliosmilleti*(Pocock, 1901)	+	--	+
45	Tetragnathidae	*Guizygielamelanocrania*(Thorell,1887)	+	_	+
46		*Leucaugedecorata*(Blackwall,1864)	+	_	+
47		*Tetragnatha extensa* (Linnaeus,1758)	+	+	_
48		*Tetragnathamandibulata* (Walckenear,1841)	_	+	_
49	Theridiidae	*Argyrodesargentatus* O.P.- Cambridge, 1880	+	+	_
50		*Meotipamultuma*(Murthappa et al.,2017)	_	+	+
51		*Nesticodesrufipes* (Archer,1950)	_	_	+
52		*Nihonhimeamundula* (Koch 1872)	_	+	_
53	Thomisidae	*Indoxysticusminutus*(Tikader,1960)	+	_	+
54		*Thomisuslobosus* (Tikader,1965)	+	_	+
55		*Thomisus pugilism* (Stoliczka,1869)	_	+	+

S.N	**Family**	**Genera**	**Species**	**% of species**

1	Aranidae	09	17	30.90
2	Hersilidae	01	01	1.81
3	Lycosidae	04	04	7.27
4	Oxyopidae	02	03	5.45
5	Pholcidae	03	03	5.45
6	Salticidae	11	13	23.63
7	Scytodidae	01	01	1.81
8	Sparassidae	02	02	3.63
9	Tetragnathidae	03	04	7.27
10	Theridiidae	04	04	7.27
11	Thomisidae	02	03	5.45
	Total	**42**	**55**	**100%**

Table2 : Different family represents different number of genera ,species and their percentage (%).

The study was done from August 2024 to October 2024 in the North East forest region of (Chhura)Gariaband district, Chhattisgarh, India. A total of 55 species of spider under 42 Genera belonging to 11 families were recorded in the present research. Among all 11 families, the families Aranidae (17 species)30.90% and Salticidae (12 species) 23.63% are dominant families. Different families represent the following number of species; Lycosidae (04 species), Theridiidae (04 species), Tetragnathidae (04 species), Oxyopidae (03 species), Pholcidae (03 species), Thomisidae (03 species), Sparassidae (02 species), Hersillidae (01 species), Scytodidae (01 species.(Table, figure 4)

In this region, some spider species are found in tree, shrub and ground places. Their names are something like this*Araneusmitificus, Argiope anasuja, Argiope pulchella, Cyclosa bifida, Cyclosaconfraga,Cyrtophoracicatrosa, Cyrtophoracitricola, Eriovixiaexcelsa, Hersilliasavignyi, Phintellavittata, Telamoniadimediata*and *Plexippuspaykuli*. But some spider species like, *Eriovixialaglaizei, Nephila pilipes, Rheneflavicomans.* They have been observed only in trees. They are adapted to live in trees and get food.

Some other spiders species like, *Neoscona vigilans,Peucetiaviridana*live in shrubs because many shrubs are dense and many insects and their larvae are found here as food.In this study, it has been observed that *Lycosa bistriata* and *Harmochirusbrachiatus*spend most of their time searching for food on the ground.

Telamoniadimidiata (Simon, 1899) is a jumping spider that belongs to the Salticidae family that is found in large numbers in the grassland, trees, shrubs and ventral part of leaves. *Nephila pilipes* (Fabricius, 1793) is a dominant species in the trees and forms a large tringular orb web. *Guizygiellamelanocrania*(Thorell, 1887) belongs to the family Tetragnathidae. It makes its nest in dry and green leaves. It shows nocturnal behaviour. *HersiliaSavignai*(Lucas, 1836) is the most common spider species found in the bark of trees. They build their nest in the bark of a tree and spend their entire life there. They show camouflage behaviour to protect themselves from predators.

CONCLUSION

During research work, it was observed that *Erio*vixialaglaize(Simon, 1877), *Nephila pilipes*(Fabricius,1793) and *Rheneflavicomans*(Simon, 1902) are found only in trees.. Most of the spiders have been observed in shrubs (41 species/34.45%), and lowest in grassland (21 species/ 17.64%) and on trees (33 species/ 27.73%), ground surface (24 species/20.16%). (Table 2, figure 5)

Figure 3:-*a.Argiopeanasuja | b.Eriovixialaglaizei | c. Cyclosahexatuberculata|d. Hyllus semicupreus |e.Telamoniadimidiata|f. Nephila pilipes| g.*

Guizygielamelanocrania |h. Neoscona vigilans | i.Oxyopesmacilentus| j. Oxyopesjavanus| k. Plexippuspetersi| l. Plexippuspaykuli

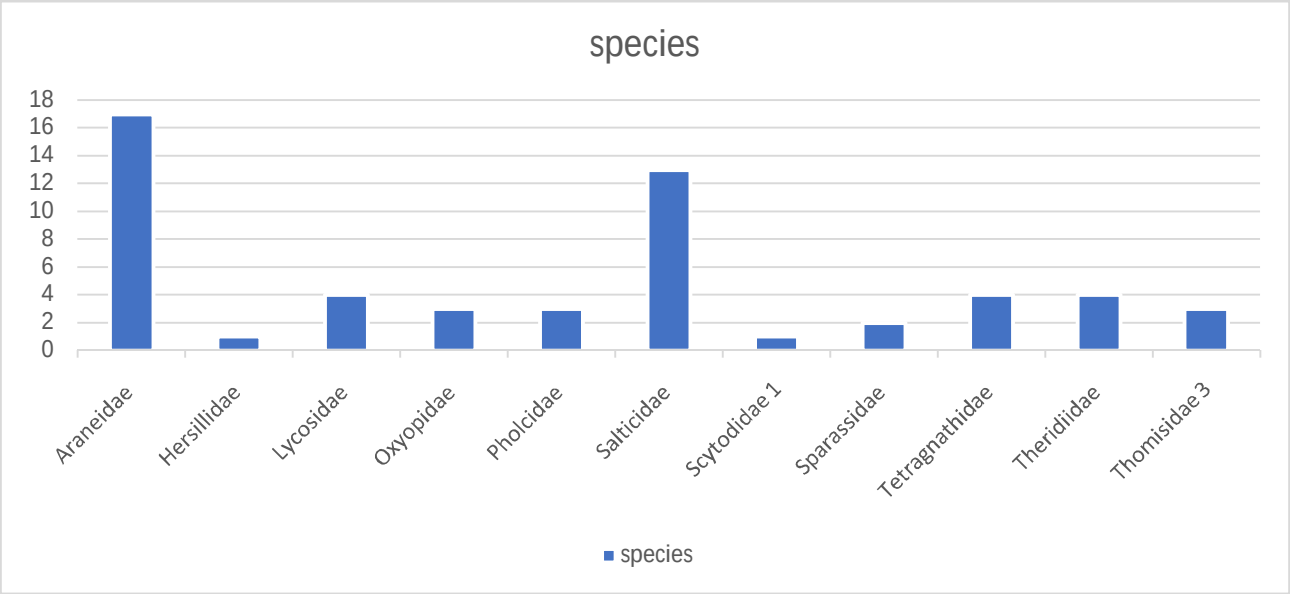

Figure 4 : Graphicalrepresentation of different species numbers in different families.

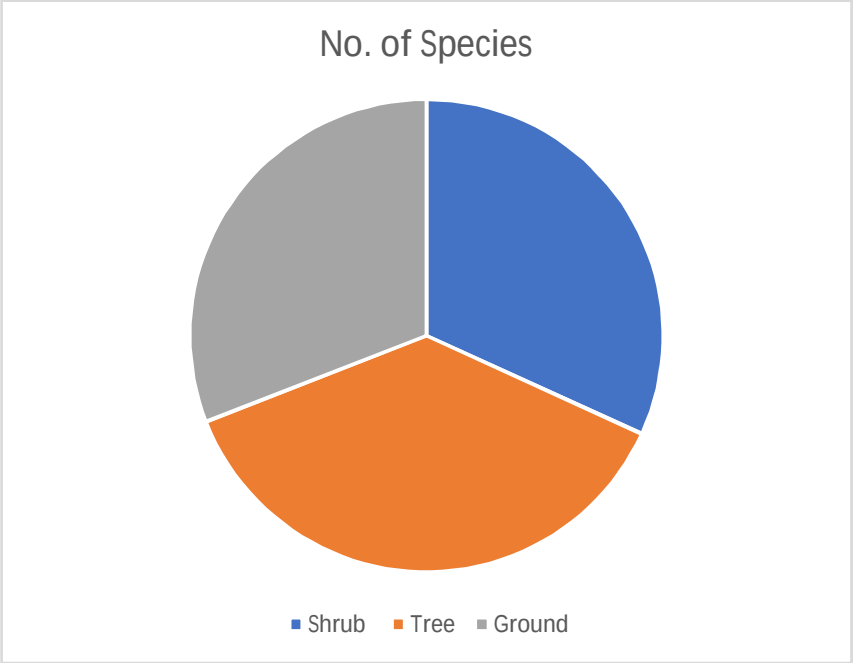

Figure 5 : Spider species collected from different types of vegetation tree, shrub, grassland and ground surface.

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