

BASELINE STUDIES ON THE SPIDER FAUNA (*ARANEAE*) OF BRAJ REGION (BRAJ-BHOOMI), INDIA

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Abstract—Braj-bhoomi is considered to be the land of Lord Krishna. Geographically and culturally it is a part of the Ganges-Yamuna doab region. It is one of the biodiversity rich regions of the India. It includes cities of Rajasthan, Madhya Pradesh, Uttar Pradesh and Haryana states. The main city of this region is Mathura, Uttar Pradesh. A study to reveal its spider diversity was conducted from July 2011 to July 2013. A total of 75 species of spiders belonging to 45 genera of 17 families were collected and identified from this area. It represents 4% of the total families recorded from India. Guild structure analysis of the collected spiders' revealed 9 feeding guilds viz. foliage hunters, grounds hunters, orb web builders, irregular web builders, sheet web builders, single line snare weavers, horizontal dome shape web weaver and ambushers. The families Araneidae, Lycosidae, Oxyopidae, and Salticidae exhibited maximum species diversity. The dominant family was Salticidae with 16 species. Present study is the maiden report from Braj-bhoomi in India. Though the study of spiders from Braj-bhoomi is still far from complete, the present study will serve as baseline data for further investigation of this group.

Keywords: Braj-bhoomi, India, spiders, diversity, guild structure.

1. INTRODUCTION

Spiders are one of the most familiar and fascinating creatures' predators in terrestrial ecosystem and are found in diverse habitat. They regulate the terrestrial arthropod population (Riechrt and Bishop, 1990; Coddington and Levi, 1991). Despite their fundamental role in the natural eco systems, they have largely been ignored in conservational studies. India being a mega diverse country is rich in flora and fauna, but Braj region (Braj -bhoomi) has not been explored for its spider diversity. The present study was conducted from July 2011 to July 2013. It is the first attempt in unveiling the diversity of spiders in this area. This study is focused on the neglected diversity of spider fauna and providing base line information for further studies.

2. MATERIAL AND METHODS

2.1 Study area

The study was conducted in Braj region (Braj-bhoomi), a part of the Ganges – Yamuna Doab region.

The region within the golden triangle of Delhi- Jaipur- Agra, covering an area of about 3,800 sq.km. Its line touches Palwal (Haryana) in North, Gwalior (Madyapradesh) in South, Bharatpur (Rajasthan) in East, Ehta (Uttarpradesh) in West. Its covered cities like Agra, Mathura, Firozabad, Mainpuri, Ehta, Etawah, in U.P, Bharatpur, Dholpur in Rajasthan, Gwalior, Morena, Bhind in M.P. and Hodel, Palwal in Haryana. The study Area is dry tropical deciduous type Maximum and minimum temperature recoded in winter and summer were 24⁰C and 1⁰C and 49⁰C and 27⁰ C, respectively and average relative humidity (RH) was 54.8%. Study area has Semi-arid and Sub tropical humid climatic region. The vegetation comprises mostly Tropical thorny and dry deciduous type.

2.2 Collection:

The Study was extended from July 2011 to July 2012. Bushes tree trunks, firms, forest floor, foliage and grass lands were all searched for spiders and collected by using various methods such as hand picking, pitfall trapping, sweep netting, cryptic searching. Global positioning system hand unit (GPS) was used to determine the exact geographical location.

2.3 Identification:

The identification of spiders was done following Tikader (1980, 1982, and 1987) Murphy (2000), as well as pictorial guide (Levi, 2002; Sebastian & Petar 2009). The Collected spider specimens were preserved in 70% ethyl alcohol with a few drops of glycerin (Prasad, 1985).



3. RESULT AND DISCUSSION

75 species belonging 45 genera and 17 families were reported.

Table I: Spider species recorded from Braj- bhoomi, India

Family	Species	Guild	Sp. Count
Agelenide	(i) <i>Agelendia</i> sp.	Funnel Web builders	15
	(ii) <i>Teganaria domestica</i>	Funnel Web builders	2
Araneidae	(i) <i>Acuilas indicus</i>	Orb web builders	3

	(ii) <i>Araneus mitificus</i>	Orb web builders	7
	(iii) <i>Argiope aemula</i>	Orb web builders	25
	(iv) <i>Argiope anasuja</i>	Orb web builders	17
	(v) <i>Argiope pulchella</i>	Orb web builders	19
	(vi) <i>Cylosa insulana</i>	Orb web builders	6
	(vii) <i>Cyclosa sp.</i>	Orb web builders	2
	(viii) <i>Cyrtarachne keralayensis</i>	Orb web builders	1
	(ix) <i>Cyrtophora cicatrosa</i>	Orb web builders	6
	(x) <i>Cyrtophora citricola</i>	Orb web builders	12
	(xi) <i>Cyrtophora faei</i>	Orb web builders	5
	(xii) <i>Cyrtophora molucensis</i>	Orb web builders	1
	(xiii) <i>Leucauge decorata</i>	Orb web builders	1
	(xiv) <i>Larinia emertoni</i>	Orb web builders	1
Corinnidae	(i) <i>Castianeira sp.</i>	Ground runner	2
Clubionidae	(i) <i>Chiracanthium sp.</i>	Foliage runner	1
Dictynidae	(i) <i>Nigma shiprai</i>	Irregular web builders	1
Gnaphosidae	(i) <i>Callilepis lambai</i>	Ground runner	7
	(ii) <i>Callilepis rukminiae</i>	Ground runner	2
	(ii) <i>Drassodes sp.</i>	Ground runner	5
Hersiliidae	(i) <i>Hersilia savignyi</i>	Foliage runner	17
Linyphiidae	(i) <i>Linyphia sp.</i>	Sheet web builders	5
Lycosidae	(i) <i>Geolycosa urbana</i>	Ground runner	2
	(ii) <i>Hippasa sp.</i>	Ground runner	1
	(iii) <i>Lycosa mackenziei</i>	Ground runner	1
	(iv) <i>Lycosa pictula</i>	Ground runner	5
	(v) <i>Pardosa birmanica</i>	Ground runner	3
	(vi) <i>Perdosa sp.</i>	Ground runner	9
	(vii) <i>Pardosa pseudonnulata</i>	Ground runner	1
Nephilidae	(i) <i>Nephila sp.</i>	Orb web builders	7
	(ii) <i>Nephila kuhlli</i>	Orb web builders	2
	(iii) <i>Nephila pilipes</i>	Orb web builders	5
Oxyopidae	(i) <i>Oxyopes assamesis</i>	Foliage runner	3
	(ii) <i>Oxyopes baramanicus</i>	Foliage runner	16
	(iii) <i>Oxyopes javanus</i>	Foliage runner	12
	(iv) <i>Oxyopes ratanae</i>	Foliage runner	11
	(v) <i>Oxyopes shweta</i>	Foliage runner	17
	(v) <i>Oxyopes sp.</i>	Foliage runner	3
	(vi) <i>Oxyopes pankaji</i>	Foliage runner	22
	(vii) <i>Oxyopes rufisternum</i>	Foliage runner	2
	(viii) <i>Oxyopes sertatus</i>	Foliage runner	1
	(ix) <i>Oxyopes retani</i>	Foliage runner	2
Pholcidae	(i) <i>Artema atlanta</i>	Irregular web builders	19
	(ii) <i>Crosspriza lyoni</i>	Irregular web builders	9
	(iii) <i>Pholcus phalangiodes</i>	Irregular web builders	2
	(iv) <i>Pholcus sp.</i>	Irregular web builders	1
Salticidae	(i) <i>Acemonea tenuipes</i>	Foliage runner	2
	(ii) <i>Bavia sp.</i>	Foliage runner	1
	(iii) <i>Cosmophasis umbortia</i>	Foliage runner	1
	(iv) <i>Hasarius andersoni</i>	Foliage runner	1
	(v) <i>Myrmaracne mathewei</i>	Foliage runner	1
	(vi) <i>Myrmaracne orientalis</i>	Foliage runner	1
	(vii) <i>Neoscona sp.</i>	Foliage runner	1
	(viii) <i>Plexippus paykuli male</i>	Foliage runner	27

	(ix) <i>Plexippus paykuli female</i>	Foliage runner	11
	(x) <i>Phidippus pateli</i>	Foliage runner	9
	(xi) <i>Phidippus yashdharae</i>	Foliage runner	8
	(xii) <i>Salticus runjitus</i>	Foliage runner	14
	(xiii) <i>Phidippus indicus</i>	Foliage runner	19
	(xiv) <i>Portia assamensis</i>	Foliage runner	7
	(xv) <i>Portia sp.</i>	Foliage runner	5
	(xvi) <i>Selenops Sp.</i>	Foliage runner	1
Tetragnathidae	(i) <i>Leucauge decorata</i>	Orb web builders	5
	(ii) <i>Tetragnatna chamberlini</i>	Orb web builders	1
	(iii) <i>Leucauge sp.</i>	Orb web builders	2
Theridiidae	(i) <i>Achaearanea mundula</i>	Single line snare web	1
	(ii) <i>Chryso nigr</i>	Single line snare web	3
	(iii) <i>Chryso pulcherrimus</i>	Single line snare web	1
	(vi) <i>Steatoda Sp.</i>	Single line snare web	1
Thomisidae	(i) <i>Philodromus sp.</i>	Ambusher	1
	(ii) <i>Thomisus lolosus</i>	Ambusher	2
	(iii) <i>Thomisus projectus</i>	Ambusher	9
	(iv) <i>Xysticus minutes</i>	Ambusher	1
Uloboridae	(i) <i>Uloborus donoli</i>	Dome shape horizontal web	1

Total families: 17, Total Genera: 45, Total Species: 75

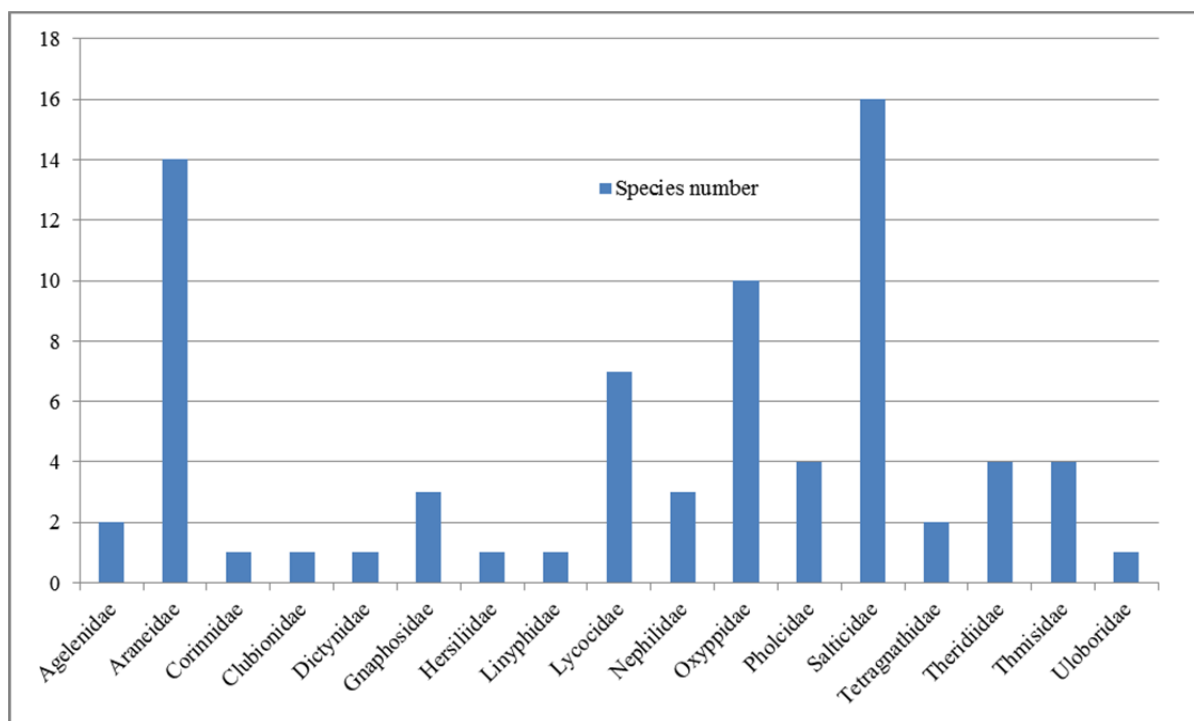


Fig. 1: Graph of spiders and their number recorded during the study.

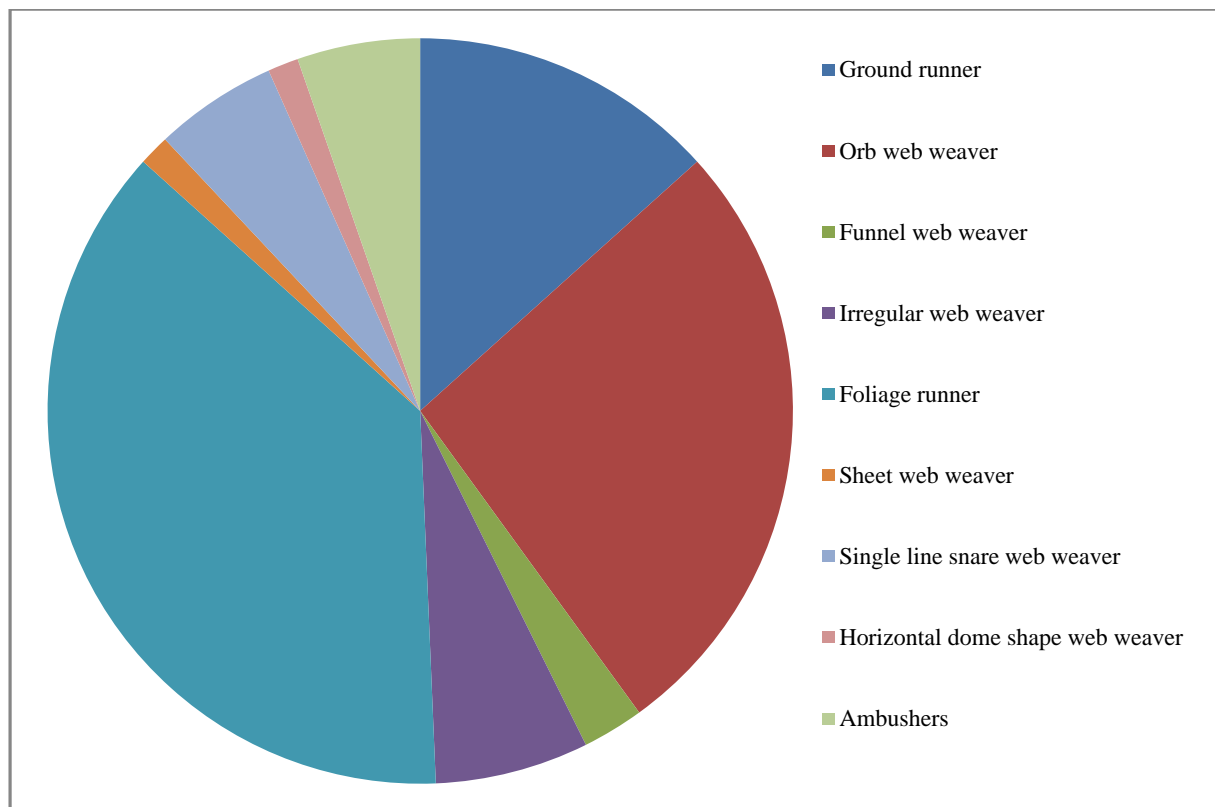


Fig. 2: Comparative Guild density (percentage) of spiders recorded during the study

17 families were reported that represent 28% of the total family recorded from India. Most species of spiders found were from Salticidae and Araenidae families. *Plexippus paykulli*, *Oxyopes javanus*, *Argiope pulchella*, *Argiope aemula* were found to be the most abundant species in this region. Out of total spider species recorded, about 37.33% were foliage runners, 13.33% ground runners, 26.66% Orb web weavers, 6.66% irregular web weavers, 1.33% sheet web weavers, 2.66% funnel web weavers, 5.33% single line snare weavers, 1.33% horizontal dome shape weavers, and 5.33% Ambushers.

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