

An Addition to Spider Fauna from the Vicinity of Radhanagari Wildlife Sanctuary of Kolhapur District

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Abstract: *The main objective of paper is to explore the diversity of spider fauna from vicinity of Radhanagari Wildlife Sanctuary of Kolhapur District from different habitats. Spiders are found in all parts of the world except Antarctic region. They are polyphagous in nature. Survey was conducted for a period of two year from December 2014 to January 2016 and was able to observe 105 species of spiders belonging to 24 families. In which highest number of species belonging to Araneidae (20) followed by Theridiidae (14), Salticidae (11), Thomisidae (10), Lycosidae (6) and Oxyopidae (6). Among them 09 monotypic families were identified.*

Keywords: Spider, Radhanagari, Polyphagous

1. Introduction

Among the arthropods groups spiders are considered to be important they play a vital role in insect pest management/regulation and other invertebrate population in most ecosystems. There are 12 talukas of Kolhapur district out of which Shahuwadi, Gaganbawada, Radhanagari, Bhudargad and Ajara talukas are western side of the district. Radhanagari is situated at 16°30' N and 74°00' E and the total area of the taluka is about 5000 Sq. Km. its altitude varies from 955m to 540m. In Radhanagari taluka out of four rivers running through wide valleys formed by these subranges the northern ones Dhamni and Tulasi are very small but the southern river Bhogavati and Doodhganga are important tributaries of river Krishna. The belt of Bhogavati River is turned into ecological zigzag extensive lake (4,256 acres) called Laxmisagar by the construction of the dam to the Radhanagari and Kalamawadi dam, on Doodhganga river an artificial large lake is formed known as Doodhsagar.

Spiders belong to the class Arachnida and like all arachnids, spiders have three body parts, a cephalothorax, abdomen and pedicel. The abdomen is soft and un-segmented while the cephalothorax is harder and includes the eight legs that characterize spiders. Arachnids lack wings and antennae. Most arachnids are carnivorous, typically preying on insects and other terrestrial organisms. Spiders have helped in biological control of insects. However spider can only consume liquids, as they lack chewing mouth parts. They use chelicerae, pointed appendages at the front of the cephalothorax, to grasp prey into liquid which can then be injected by the spider (Oyewole et al, 2014)

Spiders are carnivorous creature feeding on insects and small arachnids which is most abundant and ecologically important in almost every terrestrial and semi terrestrial habitat. Some species live near the oceans and some live into the pond and streams in search of prey member. Spiders also eat many insects that bother humans, such as mosquitoes and cockroaches. Spiders are an important food source for birds, lizards, wasps and other animals. Ground dwelling spiders are also an important in transferring energy directly from below ground detritus food web to the above ground

terrestrial food web of family birds, reptiles, amphibians and mammals (Johnston, 2000).

The Araneae order is an extremely diversified group distributed all over the world. Spiders can be found in all continents with the exception of Antarctica. They acquire almost all terrestrial environments and some aquatic too. Spiders are considered the seventh arthropod group, surpassed in number of species only by the order Acari and five orders in insects. The main difference between spiders and other members of arachnids is pedicel between the cephalothorax and the abdomen and the presence of spinnerets.

Present world status is about 46,741 species of spiders known to science belong to about 112 families and 4059 genera. Salticidae having 625 genera which includes 5950 species, Araneidae 3120 species from 172 genera, Theridiidae 124 genus known from 2477 species and Thomisidae contain 174 genus and 2159 species. (WSC, 18.0).

The distribution and diversity of spiders has drawn attention of naturalist in different part of the world since the eighteenth century. A general description of spider all over the world has been provided by Rod and Ken. Latreille (1804a & 1804b), Leach (1815), Koch (1836), Cambridge (1885, 1892 and 1897) prepared the early taxonomic record on spiders. Spiders of great Britain by Locket and Millidge (1951), spiders of Lee (1966), spiders of Tokyo by Shinkai (1969), spiders of China by Feng (1990), Spiders of Madagascar by Ono (1993) are some notable contribution.

The studied on the Systematics of spider had developed with the increasing knowledge about the group. Catalogues of Roewer (1955 and 1959) gave an overview on the taxonomy of spiders which covers about two centuries work. Lehtinen (1967) prepared a comparative and phylogenetic system of classification. Catalogs of Brignali (1983) include all the genera and species of spider described after Roewer (1955). He gave systematic list of about 7000 species of spider described in the literature from 1940 to 1980. Platnick (1989) added new taxa and taxonomic reference and provide

synonyms of various taxa. He also provides a bibliography of work related to Araneae published from 1981 to 1987. He maintains catalogs up to 2015 from American museum. Proszynski work for more than 50 years on jumping spiders.

As far as India is concerned Blackwall (1867); Karsch (1873); Simon (1887); Thorell (1895) and Pocock (1900) worked on Indian spiders. Tikader (1982) compiled a book on Thomisidae spiders of India, comprising two subfamilies, 25 genera and 115 species. Studies on Indian spiders have been done earlier by European workers and later by Indian Arachnologist. Tikader (1980, 1987) and Pocock (1900) made major contributions to the Indian Arachnology, have highlighted spider studies to notice researcher. Tikader (1987) also published the first comprehensive list of Indian spiders, which includes 1067 species belonging to 249 genera in 43 families. Gajbe (2003) prepared a checklist of 186 species of spiders in 69 genera under 24 families distributed in Madhya Pradesh and Chhattisgarh. Manju silwal et al., (2003) recorded 116 species from 66 genera and 25 families of spiders from puma wildlife sanctuary, Dangs, Gujarat. Recently Lanka (2015) worked on spiders from Radhanagari Wildlife Sanctuary of Kolhapur and reported 56 species belonging to 18 families.

As early as in 1958 19.16 Sq. Km area of the forest at Dajipur in taluka Radhanagari was initially reserved as Dajipur Bison (Indian Gaur) Sanctuary by the government of Maharashtra. Subsequently in 1985 the area of the sanctuary was renamed as Radhanagari Wild Life Sanctuary. This Sanctuary includes Radhanagari and Gaganbawada Taluka of Kolhapur District this is well known for its majestic Indian Gaur. Since it is near to my collage I have decided to survey from this area.

2. Methodology

The survey was conducted in the vicinity of Radhanagari Wildlife sanctuary for a period of two years from December 2014 to January 2016. Different habitat was selected i.e., trees, grassland, Shrubs and soil layer. Spiders were collected by using following different methods, such as beating sheets, active searching, sweeping. Preservation was done in 70% alcohol, identification and deposition in Spider Research Lab Daryapur (SR Lab). Identification with help of Olympus Stereo-zoom microscope attached camera, photography with the help of S Image software.

3. Results

Table 1: Checklist of spiders from Radhanagari wildlife sanctuary of kolhapur district

Sr. No.	Name of Family	Name of Genus & Species name
1.	Araneidae Clerck, 1757	<i>Araneus mitificus</i> (Simon, 1886) <i>Argiope aemula</i> (Walckenaer, 1841) <i>Argiope anasuja</i> Thorell, 1887 <i>Argiope pulchella</i> Thorell, 1881 <i>Cyclosa bifida</i>

		(Doleschall, 1859) <i>Cyclosa confragra</i> (Thorell, 1892) <i>Cyrtophora cicatrosa</i> (Stoliczka, 1869) <i>Cyrtophora citricola</i> (Forsskål, 1775) <i>Eriovixia laglaizei</i> (Simon, 1877) <i>Gasteracantha dabyi</i> Pocock, 1900 <i>Gasteracantha hasselti</i> C. L. Koch, 1837 <i>Larinia phthisica</i> (L. Koch, 1871) <i>Neoscona bengalensis</i> Tikader & Bal, 1981 <i>Neoscona nautical</i> (L. Koch, 1875) <i>Neoscona theisi</i> (Walckenaer, 1841) <i>Neoscona vigilans</i> (Blackwall, 1865) <i>Nephila kuhlii</i> (Doleschall, 1859) <i>Nephila pilipes</i> (Fabricius, 1793) <i>Parawixia dehaani</i> (Doleschall, 1859) <i>Plebs himalayaensis</i> (Tikader, 1975) <i>Guizygiella indica</i> (Tikader & Bal, 1980)
2.	Corinnidae Karsch, 1880	<i>Castianeira zetes</i> Simon, 1897
3.	Ctenidae Keyserling, 1877	<i>Ctenus cochinchinensis</i> Gravely, 1931
4.	Dipluridae Simon, 1889	<i>Diplura sp.</i> C. L. Koch, 1850
5.	Eresidae C. L. Koch, 1845	<i>Stegodyphus sarasinonum</i> Karsch, 1892
6.	Gnaphosidae Pocock, 1898	<i>Gnaphosa sp.</i> Latreille, 1804 <i>Scopoides sp.</i> Platnick, 1989 <i>Scotophaeus sp.</i> Simon, 1893 <i>Zelotes sp.</i> Gistel, 1848
7.	Hersiliidae Thorell, 1870	<i>Hersilia sp.</i> Audouin, 1826
8.	Linyphiidae Blackwall, 1859	<i>Nerienne sundaica</i> (Simon, 1905)
9.	Lycosidae Sundevall, 1833	<i>Geolycosas sp.</i> Montgomery, 1904 <i>Hippasa agelenoides</i> (Simon, 1884) <i>Hippasa greenalliae</i> (Blackwall, 1867) <i>Lycosa tista</i> Tikader, 1970 <i>Pardosa pseudoannulata</i> (Bösenberg & Strand, 1906) <i>Pardosa sumatrana</i> (Thorell, 1890)
10.	Eutichuridae Lehtinen, 1967	<i>Chieracanthium danieli</i> Tikader, 1975
11.	Oxyopidae Thorell, 1870	<i>Oxyopes birmanicus</i>

		Thorell, 1887 <i>Oxyopes javanus</i> Thorell, 1887 <i>Oxyopes lineatipes</i> (C. L. Koch, 1847) <i>Oxyopes shweta</i> Tikader, 1970 <i>Oxyopes sumandae</i> Tikader, 1970 <i>Peucetia sp.</i> Thorell, 1869			<i>Opadometa sp.</i> Archer, 1951 <i>Tetragnatha cochinchinensis</i> Gravely, 1921 <i>Tetragnatha mandibulata</i> Walckenaer, 1841
12.	Philodromidae Thorell, 1870	<i>Philodromus sp.</i> Walckenaer, 1826 <i>Tibellus elongatus</i> Tikader, 1960			<i>Achaearanea durgae</i> Tikader, 1970 <i>Argyrodes sp.</i> Simon, 1864 <i>Chikunia nigra</i> (O. Pickard-Cambridge, 1880) <i>Enoplognatha sp.</i> Pavesi, 1880 <i>Episinus sp.</i> Walckenaer, in Latreille, 1809 <i>Euryopsis flavomaculata</i> (C. L. Koch, 1836) <i>Nesticodes rufipes</i> (Lucas, 1846) <i>Phoroncidia sp.</i> Westwood, 1835 <i>Phycosoma martinae</i> (Roberts, 1983) <i>Rhomphaea sp.</i> L. Koch, 1872 <i>Steatoda sp.</i> Sundevall, 1833 <i>Theridion melanostictum</i> O. Pickard-Cambridge, 1876 <i>Theridion sp.</i> Walckenaer, 1805 <i>Theridula sp.</i> Emerton, 1882
13.	Pholcidae C. L. Koch, 1850	<i>Artema Atlanta</i> Walckenaer, 1837 <i>Crossopriza sp.</i> Simon, 1893 <i>Pholcus sp.</i> Walckenaer, 1805	20.	Theridiidae Sundevall, 1833	
14.	Pisauridae Simon, 1890	<i>Dolomedes sp.</i> Latreille, 1804 <i>Perenethis venusta</i> L. Koch, 1878 <i>Pisaura sp.</i> Simon, 1885	21.	Theraphosidae Thorell, 1869	<i>Unknown</i>
15.	Salticidae Blackwall, 1841	<i>Asemonea tenuipes</i> (O. Pickard-Cambridge, 1869) <i>Bavia sp.</i> Simon, 1877 <i>Brettus albolimbatus</i> Simon, 1900 <i>Carrhotus viduus</i> (C. L. Koch, 1846) <i>Epeus indicus</i> Prószyński, 1992 <i>Epeus sp.</i> Peckham & Peckham, 1886 <i>Epocilla aurantiaca</i> (Simon, 1885) <i>Hasarius adansoni</i> (Audouin, 1826) <i>Hyllus semicuperus</i> (Simon, 1885) <i>Menemerus bivittatus</i> (Dufour, 1831) <i>Phintella sp.</i> Strand, in Bösenberg & Strand, 1906	22.	Thomisidae Sundevall, 1833	<i>Amyciaea forticeps</i> (O. Pickard-Cambridge, 1873) <i>Misumena sp.</i> Latreille, 1804 <i>Oxytate virens</i> (Thorell, 1891) <i>Ozyptila sp.</i> Simon, 1864 <i>Runcinia sp.</i> Simon, 1875 <i>Thomisus lobosus</i> Tikader, 1965 <i>Thomisus projectus</i> Tikader, 1960 <i>Thomisus pugilis</i> Stoliczka, 1869 <i>Thomisus sp.</i> Walckenaer, 1805 <i>Xysticus sp.</i> C. L. Koch, 1835
16.	Scytodidae Blackwall, 1864	<i>Scytodes fusca</i> Walckenaer, 1837 <i>Scytodes thoracica</i> (Latreille, 1802)	23.	Uloboridae Thorell, 1869	<i>Uloborus danolius</i> Tikader, 1969 <i>Zosis sp.</i> Walckenaer, 1841
17.	Sicariidae Keyserling, 1880	<i>Loxosceles rufescens</i> (Dufour, 1820)	24.	Zodariidae Thorell, 1881	<i>Mallinella sp.</i> Strand, 1906 <i>Zodarion sp.</i> Walckenaer, 1826
18.	Sparassidae Bertkau, 1872	<i>Heteropoda sp.</i> Latreille, 1804 <i>Olios milleti</i> (Pocock, 1901)			
19.	Tetragnathidae Menge, 1866	<i>Leucauge decorata</i> (Blackwall, 1864) <i>Leucauge dorsotuberculata</i> Tikader, 1982 <i>Leucauge pondae</i> Tikader, 1970 <i>Leucauge tessellata</i> (Thorell, 1887)			

Table 2: Numerical table

Family	Genus	Species
Araneidae Clerck, 1757	12	21
Corinnidae Karsch, 1880	1	1
Ctenidae Keyserling, 1877	1	1
Dipluridae Simon, 1889	1	1
Eresidae C. L. Koch, 1845	1	1
Gnaphosidae Pocock, 1898	3	4
Hersiliidae Thorell, 1870	1	1
Linyphiidae Blackwall, 1859	1	1
Lycosidae Sundevall, 1833	4	6
Eutichuridae Lehtinen, 1967	1	1
Oxyopidae Thorell, 1870	2	6
Philodromidae Thorell, 1870	2	2
Pholcidae C. L. Koch, 1850	3	3
Pisauridae Simon, 1890	3	3
Salticidae Blackwall, 1841	10	11
Scytodidae Blackwall, 1864	1	2
Sicariidae Keyserling, 1880	1	1
Sparassidae Bertkau, 1872	2	2
Tetragnathidae Menge, 1866	3	7
Theridiidae Sundevall, 1833	13	14
Theraphosidae Thorell, 1869	1	1
Thomisidae Sundevall, 1833	7	10
Uloboridae Thorell, 1869	2	2
Zodariidae Thorell, 1881	2	2

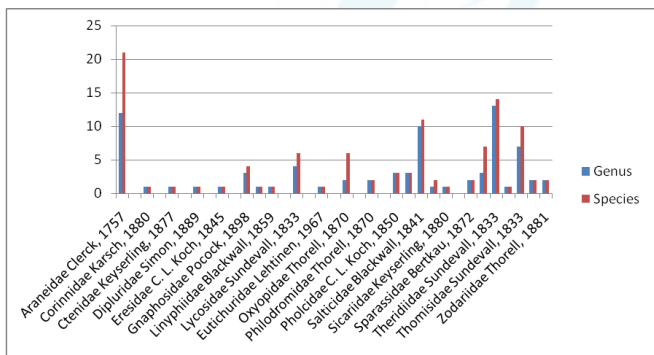


Figure 1: Graphical representation of generic and species count of each recorded family

4. Discussion

Earlier in year 2011-2013 survey done by me, I was able to record about 56 species of spiders belonging to 17 families. Further the survey was conducted by me for a period of two years from December 2014 to January 2016. I was able to observe an addition 42 species of spiders belonging to 24 families. In which highest number of species belonging to Araneidae (20) followed by Theridiidae (14), Salticidae (11), Thomisidae (10), Lycosidae (6) and Oxyopidae (6). Among them 09 monotypic families were identified. Among the area were surveyed from vicinity of Radhanagari Wild Life Sanctuary and ultimately 105 species were identified. Thus this area is very rich in spider fauna because of huge difference in number of for a period of two years. Further a detail study is in need to explore spider fauna with reference to phylogeny and ecology.

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