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Araneofauna of Nawabganj bird sanctuary, Unnao, Uttar Pradesh, India

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Abstract

Spiders are eight legged arthropods belonging to the order Araneae of the class Arachnida and Phylum Arthropoda. The present study was carried out to investigate the diversity of spiders in Nawabganj Bird Sanctuary which is a large wetland located in Unnao district, Uttar Pradesh, India, covering an area of about 224.60 hectares. The study was conducted from May 2016 to October 2016. During this study a total of 55 Spider species were identified belonging to 41 genera & 14 families. Out of this, majority of spiders were belonging to family Araneidae (~20%) followed by Salticidae (~18%) and Lycosidae (~10%). Total species reported here represents about 23% of total spider families found in India.

Keywords: Araneae, Diversity, Wetland, Nawabganj, Bird Sanctuary

1. Introduction

Spiders belong to the class Arachnida of the Phylum Arthropoda [1]. Ecologically, they are functionally important predators regulating the terrestrial arthropod population and are good indicators of environmental health [2]. A world without spider would have serious effect on the whole food chain and cause imbalance in the ecosystem. Spiders are 7th largest group of animals [3]. Platnick's 'World Spider Catalogue' has provided good insights into standardized approaches for understanding spider diversity and taxonomy around the world. Globally there are about 46058 described species under 3988 genera and 114 families [4].

In India, about 1685 spider species belonging to 438 genera of 60 families have been reported [5]. The important studies on Indian Araneae have been conducted by Tikader 1977 [6], 1982 [7], Pocock 1900 [8], Tikader & Biswas 1981 [9], Gajbe & Rane 1992 [10]. Spiders have been neglected when it comes to mainstream documentation, research and conservation. This marginalization is further added by general negative public attitude towards spiders and a paucity of information on spider status and distribution. However, fact is that only few spiders are generally poisonous to human beings [11]. Keeping this view, the present study was carried out to investigate the neglected diversity of spiders, to prepare the first baseline data, documentation and understanding of spider biodiversity, using an integrated approach for capturing, assembling, analyzing and managing taxonomic information inhabiting Nawabganj Bird Sanctuary, a wetland; located in Unnao district, Uttar Pradesh, India.

2. Study Area

Nawabganj Bird Sanctuary is a natural wetland; covers an area of about 224.60 hectares. This sanctuary is about 45 Km. from Lucknow, geographically located at 26°34'N and 80° 40' E. The sanctuary; encompasses a large lake which is known for its scenic beauty, and also very wealthy in terms of floral diversity like *Vachellia nilotica*, *Eucalyptus globus*, *Neolamarkia cadamba*, *Pithecellobium dulce*, *Azadiracta indica* due to which it is a tourist place that have a great economic value (Fig. 1). The sanctuary is famous for its unique avifauna (especially for winter migrants) like Asian Open bill, Bronze winged Jacana, Pheasant tailed Jacana, Purple moorhen, Spot billed duck etc.

3. Materials and Methods

The study was conducted from May 2016 to October 2016, covering two seasons viz, summer and rain respectively. Sampling was based on quadrat method and was carried out in the morning and afternoon between 8.00 A.M. to 3.00 P.M. Various sampling methods like Aerial sampling, ground collection, beating vegetation, Litter sampling, Sweep netting and, pitfall

method was used to collect spiders' specimens. Preservation of spiders was done in 70% ethanol in separate vials/small bottles. The research tools include various collecting tools, G.P.S., Cameras, magnifying lenses and microscope etc. The species were identified using keys for Indian spiders from Tikader 1987^[12], Platnick 2011^[13], Sebastian and Peter 2009^[1, 14] and other authentic sources.

4. Results and Discussion

During this study a total of 55 Spider species were identified belonging to 41 genera & 14 families (Table. 1 & 2; Fig. 2). Out of this, majority of spiders were belonging to family Araneidae (~20%) followed by Salticidae (~18%) and Lycosidae (~10%). Total species reported here represents about 23% of total spider families found in India (Fig. 3). S.

R. Patil 2011^[15] described 117 spider species under 20 families and 58 genera have been listed as from district Jabalpur. Singh and Singh 2014^[16] reported 13, 303 individuals belonging to 58 species, 28 genera and 10 families from northeastern Uttar Pradesh, India.

The study was conducted in a wetland ecosystem to explore the diversity of spiders which are adapted to these systems. Several species of Araneidae, Lycosidae, Thomisidae and a few others are well adapted to live in wetland ecosystems. However, species of Salticidae and Araneidae have wide range of habitat and therefore, they were dominant families of inhabiting study area. These spiders play a major role in regulating population of insects and serve as food source for many wetland animals^[17].

Table 1: List of Spiders reported from Nawabganj Bird Sanctuary

Sr. No.	Guild	Family	Number of Genera	Number of Species	Name of Species
1.	Orb weavers	Araneidae (Simon,1895)	08	11	<i>Argiope anasuja</i> (Thorell,1887) <i>Argiope pulchella</i> (Thorell,1881) <i>Cyclosa confragra</i> (Thorell,1892) <i>Cyrtophora insulana</i> (Costa,1834) <i>Cyrtophora bidenta</i> (Tikader,1970) <i>Parawixia dehaani</i> (Daleschall,1859) <i>Eriophora sp.1</i> <i>Neoscoma mukerji</i> (Tikader,1980) <i>Neoscoma theisi</i> (Walekenaer,1841) <i>Araneus mitificus</i> (Simon,1860) <i>Cyrtarachne sp.1</i>
2.	Space web builders	Eresidae (Koch,1851)	01	01	<i>Stegodyphus sarasinorum</i> (Kirsch,1891)
3.	Ambushers	Hersiliidae (Thorell,1870)	01	02	<i>Hersilia sp.1</i> (Audouin,1826) <i>Hersilia sp. 2</i>
4.	Ground runners	Lycosidae (Sundevall,1833)	05	06	<i>Hippasa agelenoides</i> (Simon,1884) <i>Lycosa tista</i> (Tikader,1970) <i>Lycosa sp. 2</i> <i>Pardosa sumatrana</i> (Thorell,1890) <i>Trochosa sp.1</i> <i>Geolycosa urbana</i> (O.P. Cambridge,1876)
5.	Sheet web Builders	Linyphiidae (Blackwall,1859)	02	04	<i>Erigone sp.1</i> <i>Linyphia sp.1</i> <i>Linyphia sp.2</i> <i>Atypena sp.1</i>
6.	Orb weavers	Nephilidae (Simon,1894)	01	01	<i>Nephila clavata</i> (Koch,1878)
7.	Stalkers	Oxyopidae (Thorell,1870)	03	04	<i>Oxyopes javanus</i> (Thorell,1887) <i>Oxyopes birmanicus</i> (Thorell,1887) <i>Peucetia sp.1</i> <i>Hamatalwia sp.1</i>
8.	Space web builders	Pholcidae (C.L.Koch,1851)	02	02	<i>Crossopriza lyoni</i> (Blackwall,1867) <i>Pholcus phalangioides</i> (Fuesslin,1775)
9.	Ambushers	Philodromidae (Thorell,1870)	01	02	<i>Philodromus sp. 1</i> <i>Philodromus sp. 2</i>
10.	Ambushers	Pissauridae (Thorell,1870)	02	02	<i>Pisaura sp.1</i> <i>Thalassius sp.1</i>
11.	Stalkers	Salticidae (Blackwall,1841)	09	10	<i>Plexippus paykulli</i> (Audouin,1826) <i>Hyllus sp.1</i> <i>Phintella sp.1</i> <i>Siler sp.1</i> <i>Rhene flavigera</i> (C.L.Koch,1846) <i>Thiania sp.1</i> <i>Salticus sp.1</i> <i>Phelgra sp.1</i> <i>Myrmarchne orientalis</i> (Tikader, 1973) <i>Carrhotus sp.1</i>
12.	Ground Runners	Sparassidae (Bertkau,1872)	01	03	<i>Heteropoda sp. 1</i> <i>Heteropoda venatoria</i> (Latreille,1804)
13.	Foliage runners	Tetragnathidae (Menge,1866)	02	03	<i>Leucauge decorate</i> (Blackwall,1864) <i>Leucauge celebesiana</i> (Walckenaer,1841) <i>Tetragnatha mandibulata</i> (Walckenaer,1842)
14.	Ambushers	Thomisidae (sundevall,1833)	03	04	<i>Misumena vatia</i> (Clerck,1757) <i>Camaricus sp.1</i> <i>Xysticus minutes</i> (Tikader,1960) <i>Xysticus sp.1</i>
Total		14	41	55	

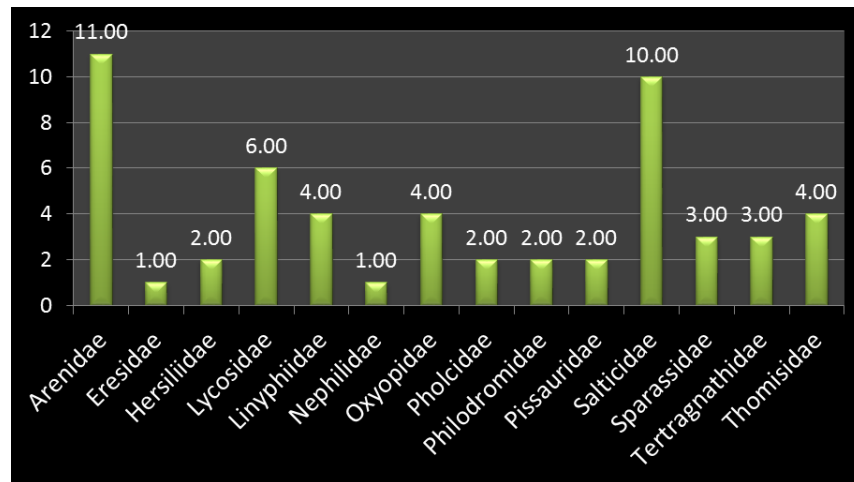


Fig 1: Species composition of Spiders species in Nawabganj Bird Sanctuary according family

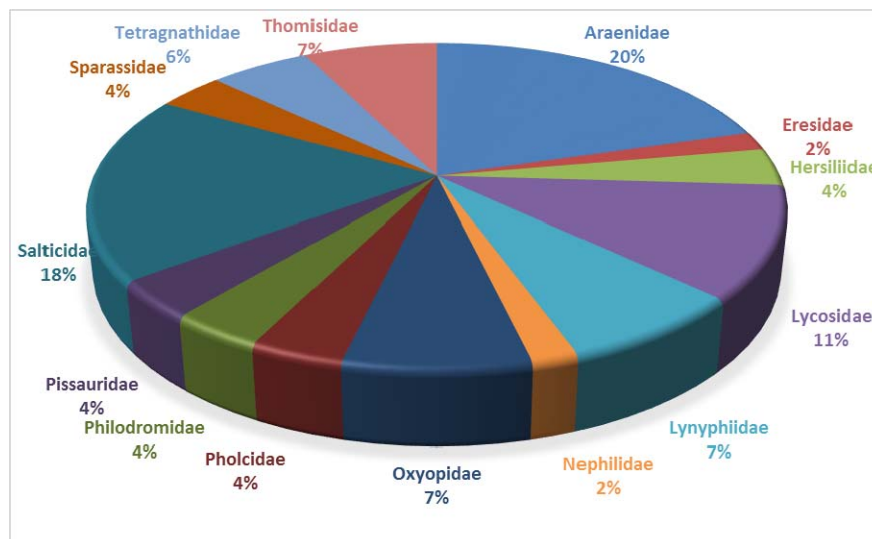


Fig 2: Family wise Percentage compositions of Spiders species in Nawabganj Bird Sanctuary

5. Conclusion

The present study was an effort to document spider diversity in a natural wetland ecosystem. The study will help in understanding diversity & distribution of spiders living in aquatic ecosystems, to work for their conservation and specify the hidden benefits in them. Several Thomisids, Oxyopids, Salticids, Tetragnathids etc., are well adapted to these ecosystems and are expert silent predators in this sanctuary that were seen feeding on small insects and thus they are maintaining ecological equilibrium by suppressing insect pests. Efforts can be laid to rear and conserve spiders and use them in various ways such as biocontrol agents etc.

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