

DIVERSITY OF SPIDER FAUNA FROM WHEAT FIELDS OF DISTRICT LARKANA, SINDH, PAKISTAN

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Abstract:

During the present study, wheat field of of Larkana (district) having four talukas namely Larkana, Rato-Dero, Dokri and Bakarani were surveyed during the first week of November 2020 to April 2021. Total 1623 specimens were collected from the wheat fields that were differentiated into four families such as Araneidae, Tetragnathida, Oxyopidae, and Lycosidae. All families were researched out up to Genera and species level such as Argiope trifasciata, A. pradhani, Tetragnatha Javana, Lycosa terrestris, Pardosa birmanica, Oxyopes marginalis. All families, all genera as well as up to species are first time recorded from different area of district Larkana. Species of above families up to generic level and species levels which were identified with help of taxonomical keys. The maximum record and dominant family was Araneidae (2-species) trailed by Lycosidae (2-species), Tetragnathidae (01-species) and Oxyopidae (01-species). It proved that 38.44% of the total collections were observed in taluka Larkana followed by taluka Dokri (30.93%), taluka Bakrani (18.22%) and taluka Ratodero (12.07%). This research work will provide basic knowledge about wheat spider's fauna, mainly in the field of IPM.

Keywords: Diversity; Spider; Wheat; Araneidae; Larkana; Sindh.

1. Introduction

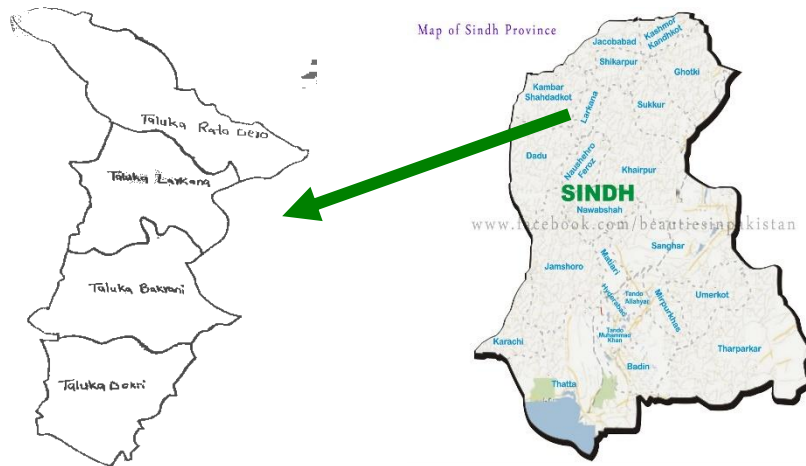
Spiders (Araneae) are important biological control agents, eight legs, voracious, carnivorous and predator which commonly use the unlike insects in order to continue their lives. (Cushing P.E 2008), Marc P et al., 1999) and (Blumenthal H 1935). These are predator to reduce the rate of pest and regulate the insect's environmental equilibrium (Maelfait JP and Hendrickx F, 1998). These spiders are ranked on seventh number according to biodiversity which are included into Animalia group, Phylum Arthropoda, Class Arachnida and Order (Araneae) and Largest number of species of class arachnida is spider (Sebastin, PA & Peter, KV 2009). Spiders are present all over the world except Antarctica region and different scientists (World spider catalog 2019) have identified 49623 species of spiders, 4235 genera with 129 families of spiders. Spiders are deadly poisonous but only 40 various varieties of spiders are possibly lethal (deadly) to human beings (Cushing, PE 2001). They are mainly terrestrial habitat (wheat) as well as found in various agricultural fields. The predator spiders extensively minimize present in fields of agricultural through top-down result, harmful killing preys choice micro haunt are numerical response and compulsory feeding plans (Pearce, S and Zalucki, M. P 2006) and Greenstone, M. H. and Sunderland, K. D 1999. Spiders appear the marvelous and countless diversity and life of mainly in systems of prey capturing, diurnal behavior and amount of mobility (Holland, J. D, Bert, D. G and Fahrig 2004). It illustrates the importance of bio control agents (spider) in various fields and has given rise to decrease pest

population, that is same result as by the use of chemicals exercise (pesticides) (Jalaluddin, S. M, Mohan, R, Velusaour, R and Sadakatullah, 2000).

Unfortunately, spiders are such a useful, the most outstanding and bio control agent which control different population of pests in ecosystem (Marc P et all 1999).

The research work about spiders has been unnoticed in larkana district, Sindh. In Pakistan the present information, talk, skill, biology, biochemistry and ecology etc about spider fauna is vastly limited. Also, the predatory lessons of spiders, biological lessons, ecological lessons and imaginable matters are hideously alarm. Earlier took the vital work, effort and struggle to guess main occupations of spiders to shrink different pest population in various sites of wheat fields of Larkana district.

Fig No: 01 map of study area



2. Materials and Methods

Collection of spiders:

Orb-web spiders as well as ground spiders were collected from host plants (wheat) of Larkana (district) having four talukas namely Larkana, Rato-Dero, Dokri and Bakarani (Table: 01).

Methods of collection:

Following different methods were used for collecting the spiders from host plants (wheat).

Hand Picking: Maximum number of orb web spiders as well as ground spiders was collected with the help of **mug bath** through hand picking.

Ground Hand Collecting: This method is also used to collect the spiders, which are present on the ground (wheat ground), litter etc.

Pitfall method: Trapped spiders in pitfall also were collected from the ground of wheat Field.

A pitfall method is digging of hole in field and fixed bottles with level of field surface, which is filled with 70% ethanol about 4-inches to preserve the ground spiders. There were **37-pitfalls** made in fields and which were observed three days alternatively.

Identification: Ursani (2010) identified 1623 specimen because of morphological characters under Stereoscope dissecting binocular microscope with the help mainly taxonomic keys.

Some spiders also identified because of photographs and relevant literature by using the internet and related various types of books.

Figures. Collection and observation of spiders from wheat crop



Results and Discussion:

During PhD work from wheat fields of district Larkana, having four talukas namely Larkana, Rato-Dero, Dokri and Bakarani was surveyed during the first week of November 2020 to April 2021 (Figure No: 05).

Total 1623 specimens were captured as well as collected from the wheat fields which were observed into four families such as Araneidae, Tetragnathida, Oxyopidae and Lycosidae [Figure No: 06]. All families were researched out up to Genera such as Argiope, Tetragnatha, Lycosa, Pardosa, Oxyopes and species level such as Argiope trifasciata, A. pradhani, Tetragnatha Javana, Lycosa terrestris, Pardosa birmanica, Oxyopes marginalis [Table No. 3]. All families, all genera as well as up to species are first time recorded from different area of district Larkana but Araneidae and lycosidae families are main, imperative and significant role in wheat field of Larkana (district) (Table No. 2).

Specimen of above families up to generic level and species level were identified with help of taxonomical keys (Ursani 2010).

Sindh (province) and its different districts have wisely amazing fauna of spider.

The standard and straight research on the systematic condition of spider from rice field is concluded from Sindh (province) and that work reported 26-various species of spiders, 22-genera with 09-families (Ursani TJ 2010). Systematic studies of spider also first time reported on wheat field of kamber-shahdadkot (Soomro IA 2018). Research project also concluded on the spider from rice crop of Dadu district which reach work is also reported the 621 spiders that were differentiated into 05 families, 06 genera with 08 species (Soomro AR 2015).

The standard and best research on spider also concluded from India and identified the 1,700 various species with 450 genera and 61 families (Platnick NI, 2018).

Figure No. 03 Position of the male & female Specimen

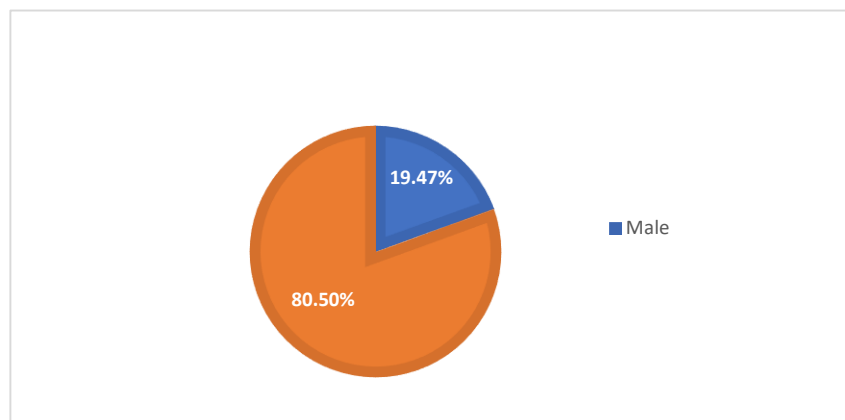


Figure No. 04 Position of Adult & Sub-Adult Specime

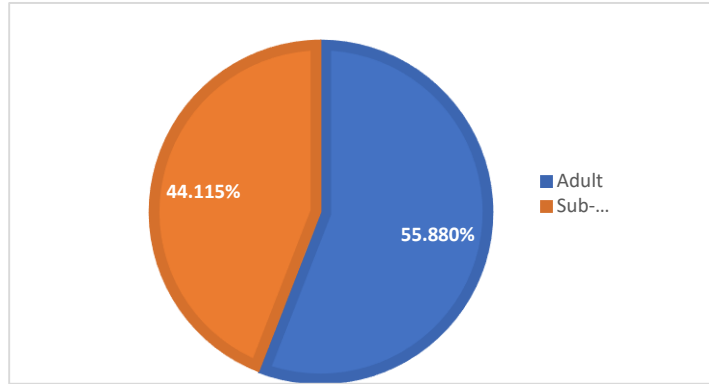


Figure No: 05 Monthly Position of Collected Spiders

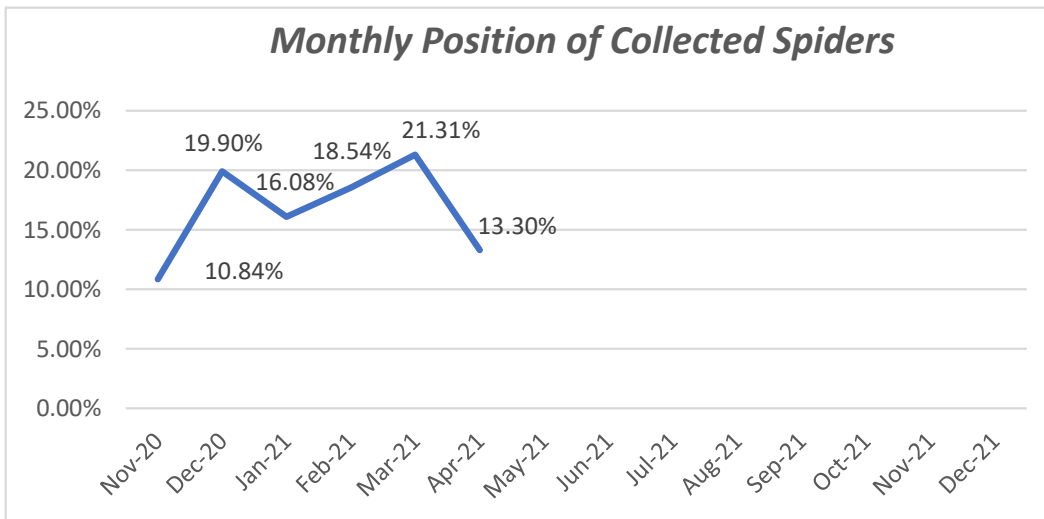


Figure No: 06 Position of collected Spiders at Family Lev

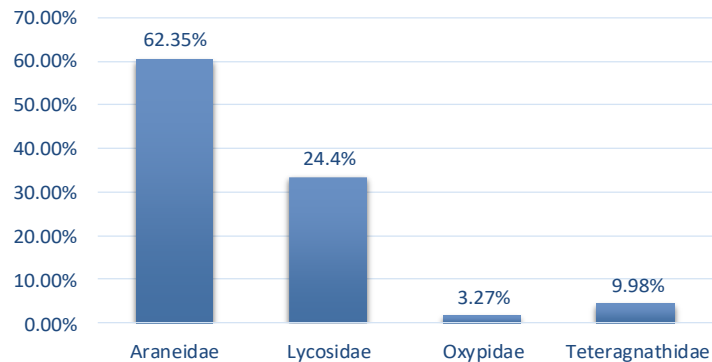


Table No: 01 Position Spiders at Areas Level

AREA	♂	♀	TOTAL	Total %
LARKANA	116	508	624	38.44%
RATODERO	35	161	196	12.07%
DOKR	73	429	502	30.93%
BAKERANI	11	209	301	18.45%
TOTAL	316	1307	1623	100%

Table No. 2: Position of spider's diversity from Larkana district.

Families	Genera	Species	%
Araneidae	01	02	62.3536
Tetragnathidae	01	01	9.98
Oxyopidae	01	01	3.26
Lycosidae	02	02	24.39

Table No. 3: Abundance of collected spiders from District Larkana during Nonemember-2020 to April-2021

Family Species Name	Orb-Webbers	Ground runner	Stalker	Foliage	Total
Argiope trifasciata (Forskal, 1775)	423				423
Argiope pradhani (Sinha, 1951)	589				589
Pardosa birmanica (Simon, 1884)		203	06	11	220
Lycosa terrestris (Butt, 2002)		171	03	02	176
Oxyopes marginalis (Mukhtar, 2004)			53		53
Tetragnatha Javana, (Thorell, 1890)	162				162
Total	1174	374	62	13	1623

CONCLUSION

Four sites (talukas) of larkana district such as Larkana, Rato-Dero, Dokri and Bakarani were visited to research the spider diversity. During the diversity and structure of spider, fauna from wheat fields of district larkana and total species of the spiders are first time recorded from this district, which was identified based on morphological characters. This PhD work will increase the awareness and offer standard data and local information among the Landlords, farmers, common people, students, scientists etc about spider fauna of wheat fields of district Larkana, this article and research will be supportive to establish, start and assess the future application for different types of field.

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