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Diversity of Spiders in Shegaon Town, District Buldana Maharashtra State, India

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ABSTRACT

A study on the diversity of spider fauna in shegon town District Buldana, Maharashtra State, India. Spiders Survey was conducted during November 2018 to November 2019, total 24 Genus 40 Species of 12 families were recorded. The occurrence of the salticidae family was found in more number i.e. 9 species (23%) and Oecobiodidae with 1 species (2%). The diversity of the spiders in the shegaon town was found from the different families like Areneidae, Salticidae, Lycosidae, Theridiidae, Ulobridae, Gnaphocidae, Thomsidae, Tetragnathidae, Scytodidae, Clubionidae, Oecobiodidae and Oxyopidae.

Keywords: Spiders, Shegaon Town, Diversity.

INTRODUCTION

Spiders are air-breathing arthropods that have eight leg chelicerae with fangs use for eject the venom. Anatomically, spiders differ from other arthropods in that the usual body segments are fused into two parts the prosoma and opisthosoma, their abdomens have appendages that have been modified into spinnerets that are used for secretes the silk from near about six types of gland. As one of the most recognized group of arthropods, spiders make up a very diverse portion of the world's invertebrates (Coddington and Levis, 1991). They are distributed every region of the world except Antarctica. They have adapted to all known environments except air and open sea (Foelix, 1996). Spiders globally include about 47,099 described species in 4,073 genera and 113 families (World Spider Catalog, 2017). They are unique among all organisms in their modes of silk production and usage and of reproduction. Spiders are clearly an integral part of the global biodiversity since they play an important role in ecosystems as predators and source of food for other creatures. They primarily feed on insects, but also eat other arthropods, including other Araneae. They are suitable biological indicators of

ecosystem changes and habitat modifications due to their small body size, short generation time, and high sensitivity to temperature and moisture changes (Kremen and Colwell, 1993). Spiders form one of the most diverse groups of organisms existing in India. Previous conservation efforts in India have focused on the larger vertebrates while invertebrates were largely ignored. There is now a growing need to conserve all species and not only the larger vertebrates (Samways, 1990).

Documentation of spider fauna is more important because they play a significant role in the regulation of insects and other invertebrate populations in most ecosystems. Spiders of protected areas in India are studied by Gajbe (1995a) in Indravati Tiger Reserve and recorded 13 species. Gajbe (1995b) 14 species from Kanha Tiger Reserve, Madhya Pradesh. Gajbe (2003) prepared a checklist of 186 species of spiders in 69 genera under 24 families distributed in Madhya Pradesh and Chhattisgarh. Silwal et al., (2003) recorded 116 species from 66 genera and 25 families of spiders from Purna wildlife Sanctuary. Bastawade (2004) described arachnid fauna of orders Araneae Scorpionida and Solifugi from Melghat Tiger Reserve, Amravati, Maharashtra State. Hippargi et al. (2011b) reported occurrence of spiders from 19, 25, 31 families from Lonar, Melghat and Southern Tropical thorn forest, Solapur respectively. Hore and Uniyal (2008a, 2008b) worked on the spider assemblage and the diversity and composition of spider assemblages in different vegetation types in Terai Conservation Area (TCA). Uniyal and Hore (2008) also studied on the effect of prescribed fire on spider assemblages in TCA. Biswas and Biswas (2004) contributed significantly to spider diversity by rendering comprehensive lists of new recorded spider species from Manipur and West Bengal. Spiders are the least studied or understood fauna in relation to conservation and fragmentation of habitats in India. Hence, it was felt to explore spider diversity in the Shegaon town.

MATERIAL AND METHODS

Study area:

The Shegaon town in buldana district of Maharashtra is unexplored for the diversity of the spiders.In the shegaon town, most of the area is under agriculture land and new developing area is with many kinds of trees like neem (Azadirachta indica), peepal (*Ficus religiosa*),banyan(*Ficus benghalensis*), bahuniya (*Bahunia purpurea*) kadamb (*Neolamarckia cadamba*) etc, grasslands, shrubs like datura (*Datura stramonium*), tickberry (*lantana camara*), wild tulsi (*Ocimum gratissimum*), Tridax (*Tridax procumbens*), acacia (*Acacia nilotica*), periwinkle (*Vinca alba*) etc and some abandoned buildings. In the shegaon town there is also manmade lake along with plenty of plants and trees in Anand sagar which is a giving better habitat for spiders. The shegaon town area is geographically located at 20°48'24.6"N 76°42'03.6"E. Fig.1.

Spider survey is carried out for ground spiders and spiders from decaying barks of trees, from shrubs and walls of the houses. Well established sampling protocols for spider collection are adopted in different selected sampling spots. The detailed descriptions of the collection techniques are as follows-

(i) Sweep Netting

This sampling method is applied to collect the foliage spiders from low level vegetation of shrubs (up to 2 m in height). The sweep net consists of a 80 cm handle; 30 cm ring and the collection are poured on white cloth. The net was emptied at regular intervals to avoid loss and destruction of the specimen. During sampling time sweep net was moved back and forth to coverall ground layer herbs and shrubs till all vegetation in the sampling plots were swept thoroughly.

(ii) Ground Hand Collecting

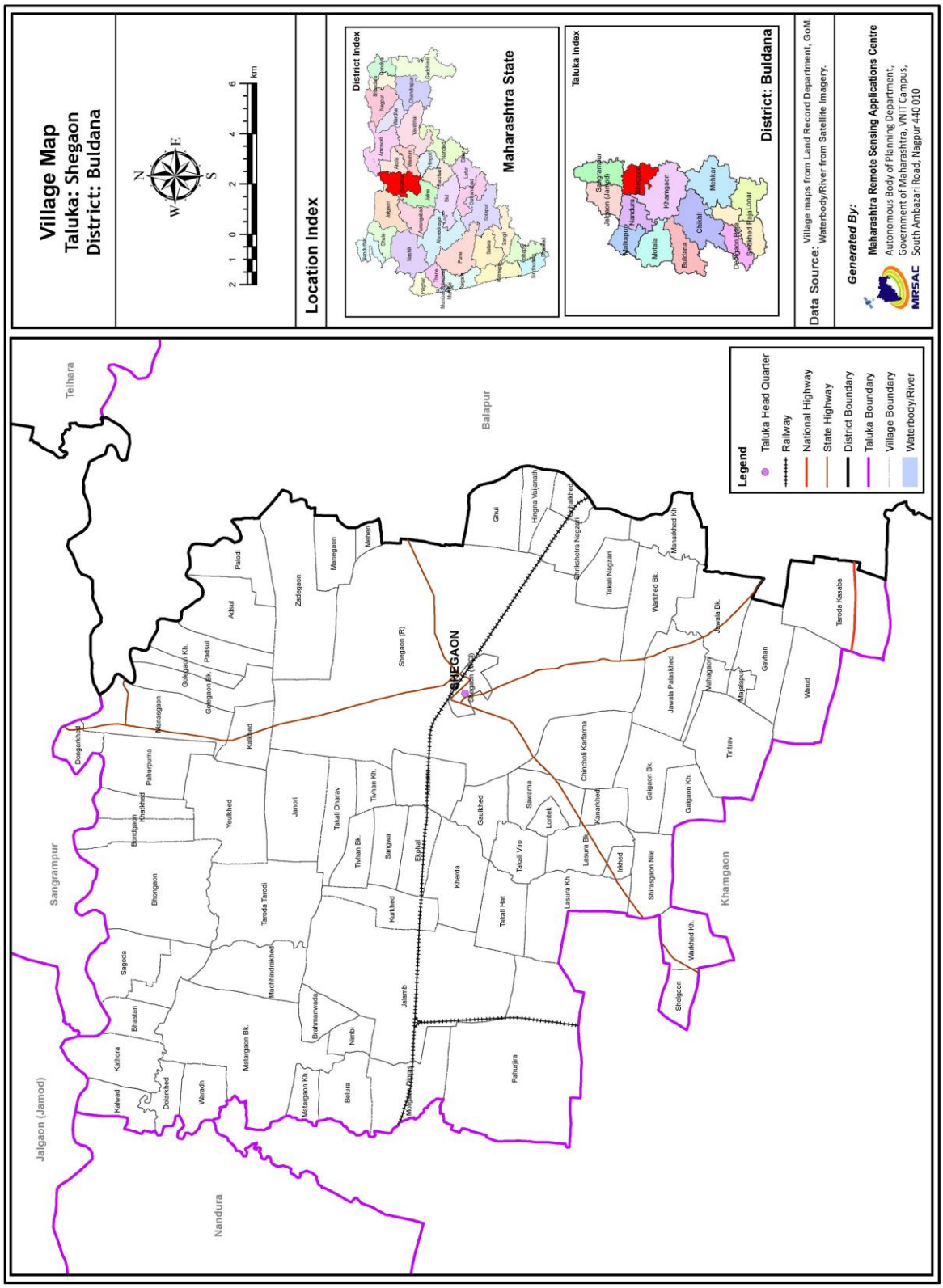
Ground Hand collection involved the collection of spider samples from ground to knee level. This method of sampling is used to collect the spiders, which are found to be visible in the ground, litter, in broken logs, rocks etc.

(iii) Aerial Hand Collecting

Aerial Hand collection involved the collection of spiders samples from knee level to arm length level. This method accessed web-building and free-living spiders on the foliage and stems of living or dead shrubs, high herbs, tree trunks etc.

(iv) Vegetation Beating

The method is employed to accesses spiders living in the shrub, high herb vegetation, bushes, and small trees and



Source : https://mrsac.gov.in/MRSAC/pages/contact_us

Fig 1: Map of Shegaon town in Buldana district

branches. The spiders are collected by beating the vegetation with a stick and collecting the samples on a cloth (1m by 1.2 m).

(v) Litter sampling: Litter i.e. deciduate from the ground was collected by hand and was put in a big tray. Litter sampling involved sorting of spiders from the litter collection tray. With the above methods of collections, the spiders were collected. Later all the spiders were photographed by Canon 1500 D with macro lens in their natural habitat, Specimens were not preserved and released in to their habitat from where they are collected.

RESULTS & DISCUSSION

During the present study total 24 genus and 40 species of 12 families we were recorded from November 2018 to November 2019.

Table-1: Spider Families, Genera and Species from Shegaon town, District Buldana Maharashtra State.

S.No	Family	Genus and Species	Common name	Habitat
1	**Araneidae**	*Cyrtophora citricola*	orb web spider	On plants
		Neoscona crucifera	orb web spider	On plants
		Neoscona lippana.	orb web spider	On plants
		Neoscona benganesis	orb web spider	On plants
		Neoscona theisi	orb web spider	On plants
2	**Clubionidae**	*Clubionia species.*	Sac spider	Under stones & bark
3	**Gnaphosidae**	*Zelotes civicola.*	Ground spider	Leaf litter
		Gnaphosa species	Ground spider	Leaf litter
		Gnaphosa species	Ground spider	Leaf litter
4	**Lycosidae**	*Paradosa groecnlandica*	Wolf spider	Grassland and ground
		Paradosa lungubris	Wolf spider	Grassland and ground
		Hippasa species	Wolf spider	Grassland and ground
		Lycosa Species	Wolf spider	Grassland and ground
		Lycosa Species	Wolf spider	Grassland and ground
5	**Oxyopidae**	*Oxypus javanus*	Lynx spider	Small plants
6	**Oecobiodae**	*Oecobius navaus*	Wall spider	On the Walls
7	**Salticidae**	*Plexipus paykuli (male)*	Jumping spider	On plants,and Walls
		Plexipus paykuli (female)	Jumping spider	On plants,and Walls
		Hasarius adanosi	Jumping spider	On the Walls
		Phintela vittata (male)	Jumping spider	On the plants
		Phintella vittata (female)	Jumping spider	On plants,
		Thyene imperialis	Jumping spider	On plants
		Salticus species	Jumping spider	On plants,and Walls
		Hylus semicuprus	Jumping spider	On plants
		Menemerus species	Jumping spider	On the Walls
8	Scytodidae	Scytodes species.	Spitting spider	Under stone
9	Theridiidae	Nesticodes rufipes	Tanglewebsspider	Human dwelling
		Theredion species	Tangle web spider	Human dwelling
		Theredion species	Tangle web spider	Human dwelling
		Theredion species	Tangle web spider	Human dwelling

Table 1: Contunued…

S.No	Family	Genus and Species	Common name	Habitat
10	Thosmisidae	Thomisus spectabilis (m)	Crab spider	Flowering plants
		Thomisus spectabilis (f)	Crab spider	
		Tmarus species	Crab spider	Flowering plants
		Thomsius vitekari	Crab spider	Flowering plants
11	Tetragnathidae	Tetragnatha decoreta	Long Jawed spider	Near water on plants
		Tetragnatha mandibulata	Long Jawed spider	
12	Uloboridae	Uloborus plumipes	Humped spider	On the walls
		Uloborus species	Humped spider	On the walls
		Uloborus species	Humped spider	On the walls
		Uloborus species	Humped spider	On the walls

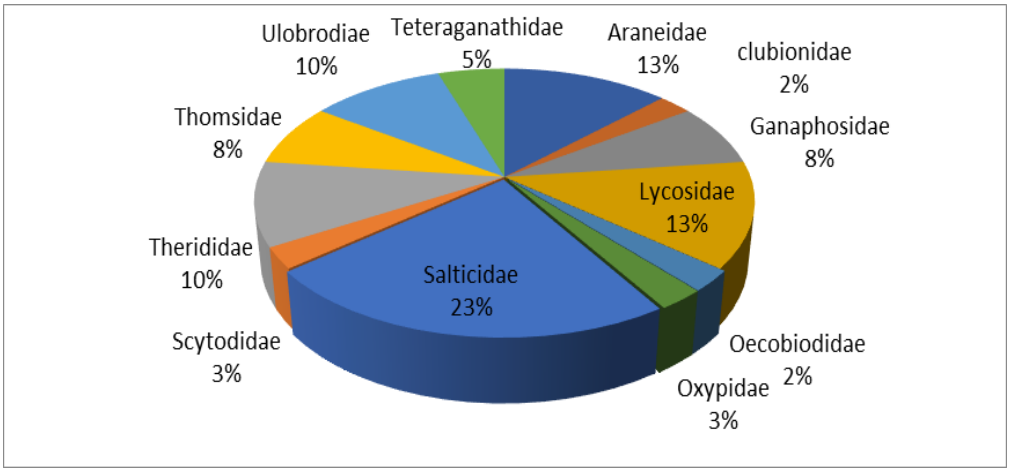


Figure 2: Chart showing percentagewise distribution of species of different families

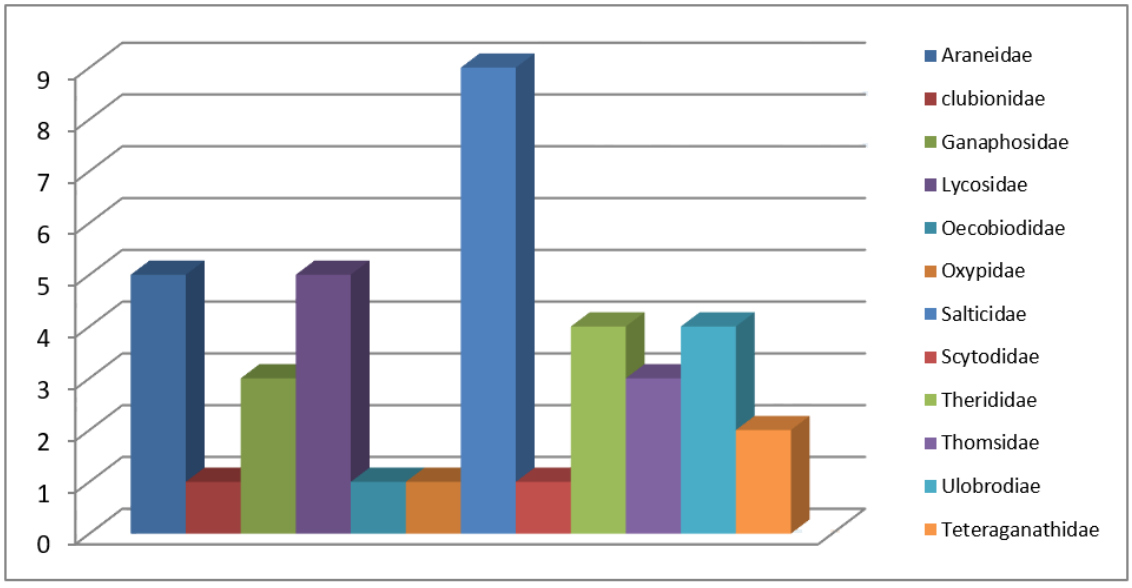


Fig 3: Bar graph showing number of species of different spider families

Photographs of Spiders Collected From Shegaon Town


Cyrtophora citricola


Neoscona crucifera


Neoscona lippana


Neoscona bengalnesis


Neoscona theisis


Zeltoes civicola


Paradosa lungubris


Paradosa lungubris


Paradosa groenlandica


Oxypus javanus


Oecobius navus


Plexippus paykulli (M)


Plexippus paykulli(F)


Plexippus paykulli


Hasarius adnosi


Thyene impirialis


Hylus semicuprus


Menaramus species


Phintella vittata (M)


Phintella vittata


Scytecoda species


Nesticode rufipes


Theridian species


Theridian species


Theridian species


Thomisus(F)


Thomsius(M)


Tmraus species


Ulobrus plumipes


Uloborus species


Uloborus species

In the present study, it was found that in the shegaon town the family salticidae is predominant with 9 species (23%), Areneidae with 5 species (13%), Lycosidae with 5 species(13%), Theridiidae with4 species (10%), Ulobridae with 4 species(10%), Gnaphocidae with 3 species (8%), Thomsidae with 3 species (8%), Tetragnathidae with 2 species (5%), Scytodidae with 1 species (3%), Clubionidae with1 species (2%), Oxypidae with 1 species (3%) and Oecobiodidae with 1 species (2%).

As per as shegaon town is concerned, the occurrence of species *Phintella vittata, Hylus semicuprus, Uloborus plumipes, Cyrtophora citricola,* Theridion Species, *Neoscona lipana*, *Thyene imperialis* and Tramus species from Thomsidae family was first time explored. The number of families, genus and species along with their common name and the place where they were found noted in the table number 1. The fig 1.1 and 1.2 showed the buldana district and map of study area i.e. shegaon town respectively. The graphical representation of the spider families was described in fig.1.3 and 1.4.

Conflicts of interest: The authors stated that no conflicts of interest.

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