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ORIGINAL ARTICLE

Study on Spider Diversity in Ambegaon Tehsil, Pune, Maharashtra

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ABSTRACT

Spiders are an important biotic component of ecosystem and indicator of the health of given ecosystem. The present study on spider diversity wasdone during 2016- 2017 in Ambegaon region, Pune, Maharashtra which is a part of Western Ghats. Total 5 spider families, represented by 38 Genera and 58 species are reported form the Ambegaon Tahsil. The family Salticidae were reported with highest numbers of species (20), followed by the Araneidae (17 species) and Thomisidae (8 species) while Lycosidae (6 species) families showed intermediate number of species. oxypidae (4 species) and Sparassidae (3 species) exhibited only lowest number of species during this study. The collection was done by active visual search, plant beating method, net sweeping method & pit fall trap method. Spiders were collected from various habitats like ground, vegetation, grasslands, water bodies, tree trunk & under stones. The habitat wise distribution includes foliage hunter, foliage-orb hunter and ground hunter, distribution of different families of spiders at Ambegaon Tahsil.

Key words: *Faunastic, Taxonomic, Diversity, Spider*

INTRODUCTION

Spiders are members of the Kingdom Animalia; Phylum Arthropoda, Class Arachnida and Order Araneae. Class Arachnida includes Scorpions, Palpigrades, Whipscorpions, Spiders, Ricinuleids, Pseudoscorpions, Windscorpions, Harvestmen and Mites. The large group of invertebrate animals with four pairs of jointed legs and hard skeleton are grouped in this class.

Existence of spider is known since Jurassic period on the geological time scale. 'There are 45,000 species of spiders in 114 families' (World Spider Catalog 2015) of which the described spider species are 46,777.In evolutionary study of spider, the first spider arachnids evolved from crab like Chelicerae (Platnick, 2011). Fossil records of spider back to the Devonian period some 380 million years ago (Shear, *et al.,* 1986).

The current world list of spider includes nearly 46,777 Species in over 4057 Genera in 112 Families. In all, 1442 species belonging to 361 genera of spiders in 59 families have been listed as describe formally from India. Taxonomic verification is recommended for 51 species (Manju Siliwal, 2010).

Spider body is divided into 2 main parts- 'The head' and 'The Abdomen'. This two part joined by Cephalothorax. The head contains brain, venom glands, eyes and mouthparts. Sensory hairs are found on the fore legs. They sense air temperature and moisture. Spiders have eight eyes but even then their vision is poor. Abdomens contain heart, lungs, digestive system, web making gland (Silk gland). All spider reproduces sexually. The male spiders have modified sperm storage structures in Known as pedipalps to store the spermatheca. A sperm drop is laid on web and is absorbed in storage receptacles in the pedipalp of male (Cooke, 1970; Lopez, 1987). These palps are then introduced into the female epigyne. This was first described in 1678 by Martin Listen. The female fertilizes her eggs with stored sperm and lays them into an egg sac.

Spiders are known for their webs. Spider web are made up of complex proteins. Spider use silk- produced by spinnerets in the posterior of their abdomen. Silk has variety of uses like catching its prey, wraping prey, build a home, to move from one place to another and protect their young. Spiders are found every terrestrial and Semi- terrestrial habitat on Earth, from Cold Tundra to Deserts. Some species adopted an aquatic lifestyle (Oraze, *et al.* 1988). Some Spider found all over

the world except ice covered regions. Their habitat ranges from grass lands, dry lands, deserts, forests, cracks, crevices, caves, water bodies, hills, field, trees, shrubs, gardens, rivers, stream and lastly human habitation. Spiders are an important food source for many birds (Peterson, *et al.,* 1989; Hogstad, 1984,). Spider food is mainly insects. Few species of spiders feed on pollen in the flowers where they sit and wait for insects e.g.- Crab spider. Few spiders are sheet made of wood-like silk with multiple layers, this web capture flying insect e.g.- Orb- weaver spider. Some large species of spider eat other small animals such as birds, Small snakes, bats, baby rodents, frogs, fish, lizards, millipedes, wood lice and even other spiders. 'They are one of the main predators in terrestrial environments with a considerable impact upon prey population, acting as agents of biological control' (Nyffeler and Benz 1987, Riechert and Lockley 1984, Young and Edwards 1990). Significant number of prey are annually killed by the spider population worldwide and the number of prey goes on to around 800 million. Spiders are really helpful to humans as they keep a control on insect population and keep a balance of nature maintaining it. Their direct and indirect role in pest control in agricultural field is important. Spiders serve as bio- control agents (CIKS 2002). Enemies of spiders include other spiders and some birds and insects. These enemies help to control spider population (Herbert & Lorna, 1968). Natural habitat of spiders is decreasing day by day due to increase in industrialization and human habitation. This wonderful animal is struggling to survive and exists with humans. Human needs have made their number to decline. There is a strong ergs and need to conserve this beautiful animal and maintain the balance of nature.

MATERIAL AND METHODS

STUDY AREA:

The Ambegaon region covers in area of 87851 hectares. The selected study area has ideal habitat for spiders. Ambegaon region have a huge forest area, hilly area and has low human population. Adivasi tribes live in large number in this region. The North region of the Ambegaon Tehsil is dry due to less rain fall. The South region of the Tehsil Experiences more rain fall due to hilly region. The Dimbha dam provides water for cultivation. The capacity is 13.5 (T.M.C). The main river in this region is Meena, Ghodnadi and Velnadi. This is under an agricultural development area and it is rich in Biodiversity. The Ambegaon region latitude is $19^0$2'5''N and longitude is $73^0$50'11''E. The temperature range of Ambegaon Taluka is 21- 38^0C and humidity 66%.

Spider collection sites in Ambegaon Tehsil- 1. Shingave 2. Pargaon 3. Bhagadi 4. Valati 5. Nagapur 6. Kathapur 7. Awasari 8. Ghodegaon 9. Gangapur 10. Nigdhale 11. Taleghar 12. Aahupe 13. Bhimashankar.

METHOD FOR COLLECTION:

The Study was conducted in Ambegaon region location toward west side of Pune city. During this surveys spiders were actively searched or collection from different localities.

1. Active Visual Search:

Walk through the habitat and search visually for spiders. Spider both the ground level, underground and above ground including microhabitat, folded leaves, plant branches, leaf little, tree trunk, rock surface, grass lands, decaying bark of trees, vegetation, near water bodies were collected.

2. Plant Beating Method:

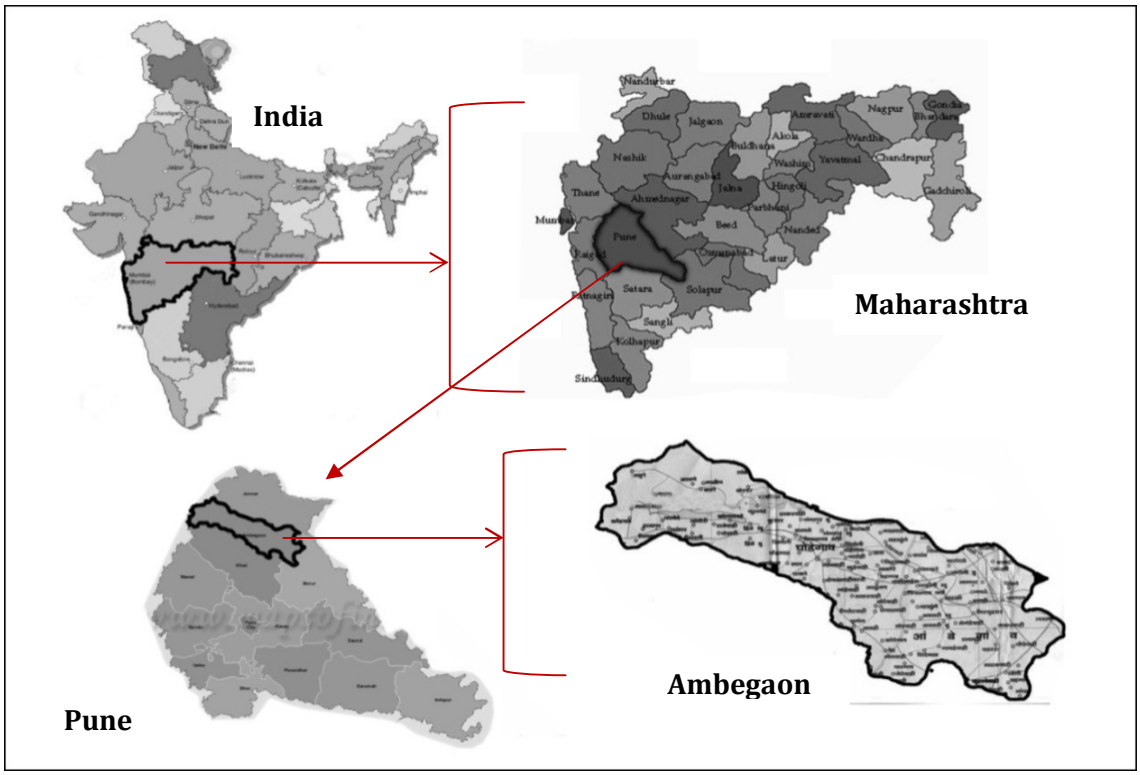
Spiders from trees above 5 feet height were collected using plant beating method or shaking method. This method consisted of vegetation, trees or shrubs with long stick and catch falling spiders in an inverted umbrella. It is easy to transfer from the umbrella into plastic vial.

3. Net Sweeping Method:

The specimen net used was 30cm in diameter. This net is used to collect spider mainly from flowers, grass layer and herb layer. The content was placed into an umbrella or bucket and transferred to collect into vial.

4. Pitfall Trap Method:

To collection ground dwelling & nocturnal spiders, pitfall traps like cylindrical plastic bottles of 9cm diameter and 10 cm depth were arranged within ground surface will work. The traps were filled with liquid preservative 69% water, 30% ethyl acetate and 1% detergent.



Website Souse: 1. https://maps.google.co.in/place/ambegaon/satellite.
2. https://maps.google.co.in/search.indiamap.

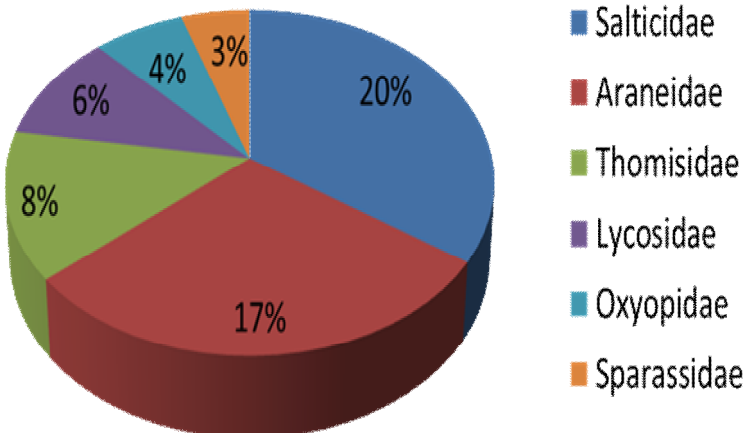
Map 1: Map of Experimental Ares

RESULTS AND DISCUSSION

		
Harmochirus brachiatus	*Gasteracantha cancriformis*	*Thomisus rishus*
		
Lycosa nigrotibialis	*Olios cf. Lamarcki*	*Oxyopes chittrae*

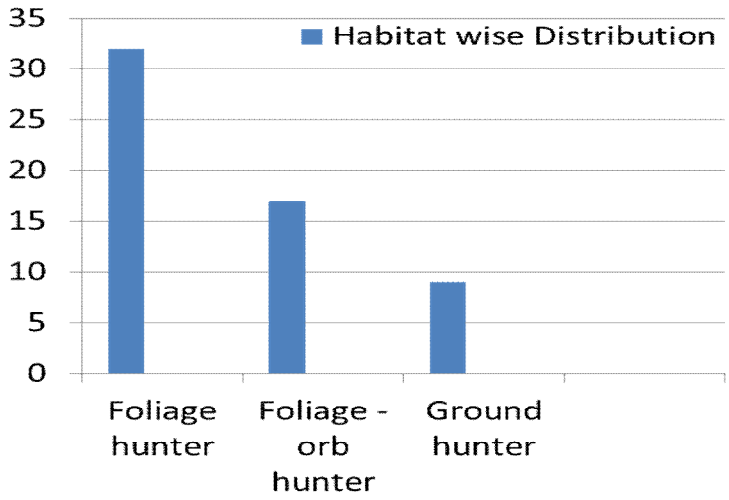
Fig. 1: Experimental Insects

Present study on spider diversity were made during 2016-2017 in Ambegaon region, Pune, Maharashtra. Total 5 spider families, represented by 38 Genera and 58 spider species are reported form the Ambegaon Tahsil. The family Salticidae were reported by highest numbers of species (20), Followed by the Araneidae (17 species) and Thomisidae (8 species). Where Lycosidae (6 species) families showed intermediate number of species. oxypidae (4 species) and Sparassidae (3 species) exhibited only lowest number of species during this study.



Graph 1: Wheel diagram showing the family wise distribution of spiders in Ambegaon Tahsil.

The most abundant eight genera are reported as Neoscona, Araneus, Cyclosa, Uloborus, Thomisidae, Oxyopes, Pardosa, and Myrmarachne. As per their habits, foliage hunters includes three families and 32 species, Foliage orb weaver includes one family and 17 species. Ground hunter includes two families and 9 species.



Graph 2: Column diagram showing the habitat wise distribution of spiders in Ambegaon Tahsil.

FOLIAGE HUNTER:
In present study, 35 species representing six families were spotted. The Salticidae (20 species), Thomisidae (8 species) and Oxyopidae (4 species) were the families most often encountered.
FOLIAGE ORB WEAVER:
Araneidae family represented by 17 species was foliage orb weaver, the most common families.
GROUND HUNTER:
Two families represented by 9 species were ground wanderers, with Lycosidae (6 species) and Sparassidae (3 species) the most common families.
The spider diversity in the selected area still indicates a good ecosystem which needs proper attention with respect to conservation strategies of spider.

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