

## Arachnids of Ousteri Lake, Riparian Area, Puducherry, India

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**Abstract:** Arachnids are essentially terrestrial animals that are found in nearly every habitat around the world. We studied the arachnids of Ousteri Lake riparian habitat of Puducherry, for a period of two months from January to February 2012. We recorded 10 species of arachnida belonging to 9 families.

**Key words:** Arachnids • Ousteri Lake • Diversity • Scorpions • Spiders • Centipedes

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### INTRODUCTION

Arachnids are highly recognizable and populous eight-legged invertebrates with two body parts (a prosoma and an abdomen) pedipalps, book lungs, or tracheae, sometimes poisonous fangs and generally the ability to produce silk; they are terrestrial chelicerates (invertebrates with pincer shaped mouth parts). The class arachnida includes orders Araneae (spiders), Scorpionidae (scorpions), Pseudoscorpionidae (Pseudoscorpion), Solufigidae (Solu-figids), Opilionida (Marvestmee), Pedipalpida (Whip scorpions) and acarina (ticks, mites etc.) while limulida is the only recent family of the order Xihposuridae and contains two of the four living species of the horseshoe crabs is included with class in Indian arachnids account. The spiders play an important role in maintaining biological balance in nature. They are potential predators of nearly all kinds of insects. Scorpions are one of the primitive nocturnal animals distributed throughout the world tropical and subtropical countries of the world. Hundreds of thousands of species of arachnids have been identified. Mites contribute several hundreds of thousands of species by themselves [1].

**Global Diversity:** About 40,000 spider species are currently known throughout the world [2]. Besides 30,000 species of Acaries 2,300, species of pseudoscorpions, 1750 species of scorpions, 1600 species of opilions, 1000 species of solpugidaes and 4 species of king crabs have been recorded [1].

**Indian Diversity:** 14447 species from 59 spider families has so far been reported under 362 genera from India, of which 1006 spider species of 288 genera under 55 families are endemic to India. Twenty eight spiders from India had already been included in the IUCN list of fauna under different status of conservation [1].

**Habits and Habitats:** Arachnids are essentially terrestrial animals that are found in nearly every habitat around the world. With exception of a few mites which have returned to a marine way of life, the king crabs, also known as horseshoe crabs, are the only surviving arachnids which now still in the sea. Terrestrial arachnids are plant associates, soil associates, storage associates, nest associates, water associates etc., maximum number of genera and species are found to occur in association with plants. Spiders are one of the primitive groups of arachnids occurring almost everywhere on or near an aquatic environment, over under the terrestrial environment from the seashore to the high mountain and in various climates from desert to snow lands with suitable extensions in their morphological and physiological adaptations.

Arachnids play an important role in ecosystem and have economic importance and thus beneficial to different purposes. Spiders can play an important role to regulate insect pests in the agricultural ecosystem. Spiders have a wide range of prey species, can catch significant numbers of prey and use various foraging strategies [3]. A few species of scorpions are known to give painful stings causing swelling and sometimes fever.

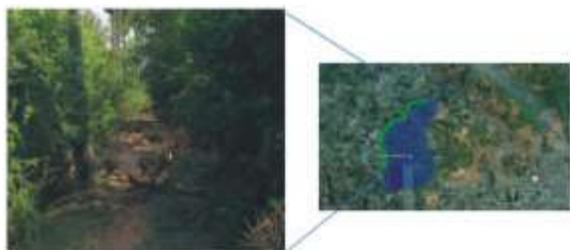


Fig. 1: Map showing study area of Ousteri lake riparian area

The whip-scorpions, pseudo spiders and pseudoscorpions are of no economic importance. However they play an important role in ecological balance. The harvestman are primarily carnivorous and usually feed on dead animal tissues. In view of their habits they are considered to be an agent in biological control of insects. The spiders play a significant role as predator in controlling pests of cotton, apple, banana and rice. Spider's silk is also an economic importance as reticles of a variety of optical devices. The present paper aims to report on the diversity of arachnids in the riparian area of Ousteri bird sanctuary in Puducherry.

**Study Area:** A field-site was chosen at a southern riparian part of Ousteri Lake as the site has abandoned with variety of trees, herbs and shrubs. Figure 1 explains the study area rich in plant diversity of Ousteri Lake.

Ousteri Lake is located between 11°52'N; 79°45'E and 11°59'N, 79°52' towards north at a distance of 10 km from Puducherry town. The wetland covers an area of about 390 ha with a wide range of floral and faunal diversity. The mean annual temperature of 30°C and mean annual rainfall of about 1311 to 1172 mm, the climate is tropical dry evergreen. The Lake has been recognized as one of the important wetlands of Asia by the International

Union for Conservation of Nature and Natural Resources. The lake declared as a first bird sanctuary in Puducherry region by the Government of Puducherry. The study was conducted during the month of January to July 2012. Sampling was undertaken in the riparian areas by searching under rocks, leaf litter, beating foliage, termite mounds, dead wooden, insect holes, tree barks and sweeping short growing vegetation. Arachnids were photographed and identified using standard references.

## RESULTS AND DISCUSSION

As a result of this study a total of 10 species of arachnids were recorded representing 9 families Table 1 describes the list of total number of Arachnids were recorded in Ousteri lake riparian area. Figures (2 to 10) are representative Arachnids species of Ousteri lake riparian area. Among the all other species in the list the most dominant species rich order was the Araneae.

Several studies in woodlands have indicated the importance of habitat heterogeneity for various animals. The presence of leaf litter, branches and rotting logs in woodlands increased arthropod species richness [4] and increased species richness and changes in spider guild composition are associated with deep leaf litter layers [5]. The lake riparian are diverse with wide variety of plants, the decaying braches of trees, leaves are prevalent in along the lake riparian that attracts the variety of arachnid species.

The Amblypygi are nocturnal and live in moist areas, commonly known as whip spiders, is one of the smallest Arachnida orders, with over 120 described species [6]. These arachnids are easily recognized by its flat body without a terminal flagellum and with a narrow constriction, between pro and opisthosoma; extremely long and multisegmented first legs that act as tactile

Table 1: List of Arachnids species found in Ousteri riparian areas

| No | Family name    | Common Name               | Species Name                    |
|----|----------------|---------------------------|---------------------------------|
| 1  | Buthidae       | Indian red scorpion       | <i>Hottentotta tamulus</i>      |
| 2  | Scorpionidae   | Emperor scorpion          | <i>Pandinus imperator</i>       |
| 3  | Argiope        | Grass cross spider        | <i>Argiope catenulata</i>       |
| 4  | Lycosidae      | Funnel Web Spider         | <i>Hippasa holmerae</i>         |
| 5  | Sparassidae    | Brown Huntsman            | <i>Sparassidae</i> sp.          |
| 6  | Thelyphonida   | Whip scorpions            | <i>Thelyphonus doriae</i> hosei |
| 7  | Phyrinidae     | Tailless Whipscorpion     | <i>Heterophynus longicornis</i> |
| 8  | Scolopendridae | Megarian banded centipede | <i>Scolopendra cingulata</i>    |
| 9  | Lithobiidae    | common banded centipede   | <i>Lithobius variegates</i>     |
| 10 | Scorpionidae   | giant forest scorpions    | <i>Heterometrus ubicki</i>      |



Fig. 2: *Thelyphonus doriae hosei*

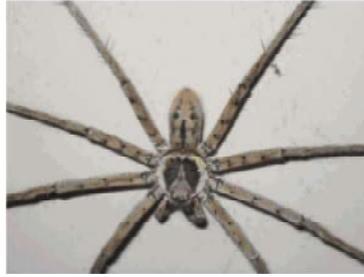


Fig. 3: *Sparassidae* sp.



Fig. 4: *Argiope catenulata*



Fig. 5: *Hottentotta tumulus*



Fig. 6: *Pandinus imperator*



Fig. 7: *Heterophynus longicornis*



Fig. 8: *Lithobius variegatus*



Fig. 9: *Scolopendra cingulata*



Fig. 10: *Heterometrus ubicki*

organs and raptorial pedipalps [7]. The amblypygi species were recorded during night time mostly in moist areas such as termite nest, under the Palmyra leaves and in near the water bodies.

A study conducted by [8] demonstrated that increase in temperature and relative humidity favoured spider population to increase through March to June. The present study reported more spider is abundant predators in nearly all survey places in Ousteri Lake.

**Conservation Status:** As a group, arachnids are considered abundant all over the world. Some species are diminished in numbers, even considered rare or endangered, because of internal circumstances (such as limitations of habitat) or external circumstances (such as human activities). A study conducted by Lena *et al.* 2012. [7] emphasised that the diversity of species are highly disturbed by various anthropogenic activities. The present study area also exposed periodic fire during summer season caused loss in biodiversity including

invertebrates. The 2012 IUCN Red List includes 20 arachnid species which constitute 0.03 percent: one as Endangered; nine as Vulnerable; one as Lower Risk/Near Threatened; and seven as Data Deficient.

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