

## SPIDER DIVERSITY IN BUTTERFLY PARK OF BANNERGHATTA NATIONAL PARK, BANGALURU, INDIA

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**Abstract:** A survey of the spider fauna of Butterfly Park of Bannerghatta National Park, Bangalore, was carried out from May 2012 to June 2013. A total of 42 species of Spiders belonging to 36 genera under 17 families viz. Amaurobiidae, Araneidae, Ctenidae, Corinnidae, Hersilidae, Lycosidae, Oxyopidae, Philodromida, Pisauridae, Pholcidae, Salticidae, Sparassidae, Scytodidae, Tetragnathidae, Theridiidae, Thomisidae and Uloboridae were recorded within the premises of Butterfly park. Practically no one has tried to explore spider fauna of this region. Amongst these families the most dominated family is, the Salticidae represented by 11 Genera & 11 species. The second dominated family is Lycosidae represented by 3 genera & 6 species. Family Araneidae was represented by 4 genera & 5 species. Families- Amaurobiidae, Ctenidae, Hersilidae, Scytodidae, Philodromida, Pisauridae, Tetragnathidae, Uloboridae, Corinnidae were represented by single species. Out of the recorded spiders Scytodus, Perenthes, Thanatus are rare genera. The survey result shows that the spider diversity is much higher and further studies may yield more information about the diverse Araneae fauna of this area.

**Keywords:** Araneae, Fauna, Genera.

**Introduction:** Spiders are placed under phylum Arthropoda, class Arachnida, order Araneae. Araneae is divided into three sub-orders: the Mygalomorphae (the primitive spiders), the Araneomorphae (the modern spiders), and the Mesothalae (the most primitive spider).

They feed on insects which are generally harmful to man and their live stocks. They control insect pests in most agricultural crops. The other animals like frogs, toads, lizards, birds, shrews, hedgehogs and bats destroy harmful pests, but spiders kill far more insects than all the others put together.

Major contributions to Indian arachnology were made by Pocock and Tikader. Pocock described 112 new species of spiders from India. A number of species from Lahore were described by Dyal (1935). Spiders of many families were practically unknown from Karnataka before Tikader (1980, 1982), who described several species of the families such as Lycosidae, Araneidae, Thomisidae, Gnaphosidae, and Philodromidae. Spider fauna of Gujarat has been studied by Patel (1973). Biswas and Biswas (1992) have described spiders from Bengal. Gajbe U.A (1983) has described many new species of spiders from Madhya Pradesh and Maharashtra. The first spider to be described from India was Shasuslepidus by Blackwall

(1864) (Manju Siliwal et al., 2005). Currently 43,678 species in 3,898 genera and 112 families have been described (Platnick, 2013). Updated checklist of Indian spiders includes 1,686 species, 438 genera and 60 families (Keswani et al., 2012). Arachnologist Dr. Vankhede G.N. Dept. of Zoology, SGB Amaravati University and chairman of National Society of Arachnology, Amaravati, conducting workshop on spiders every year and with his team members have recorded spiders of different areas of Maharashtra.

**STUDY AREA (Fig.1):** The capital of the state of Karnataka, Bangalore occupies the heart of the Mysore Plateau with an average elevation of 920m (3,018). It is located at 12.97° N 77.56° E. The country's first Butterfly Park was established in the Bannerghatta Biological Park, Bangalore, Karnataka. The Butterfly Park is spread across 7.5 acres (30,000 m<sup>2</sup>) of land, is a thick vegetation of Shrubs and trees. The environment has a tropical setting with rocky area and slope landscapes which is covered under natural forest of Bannerghatta. The spiders were found in all the aforementioned areas due to moist and green Atmosphere. This area is selected for the research project due to the wide range of dense vegetation which supports lot of spider species.



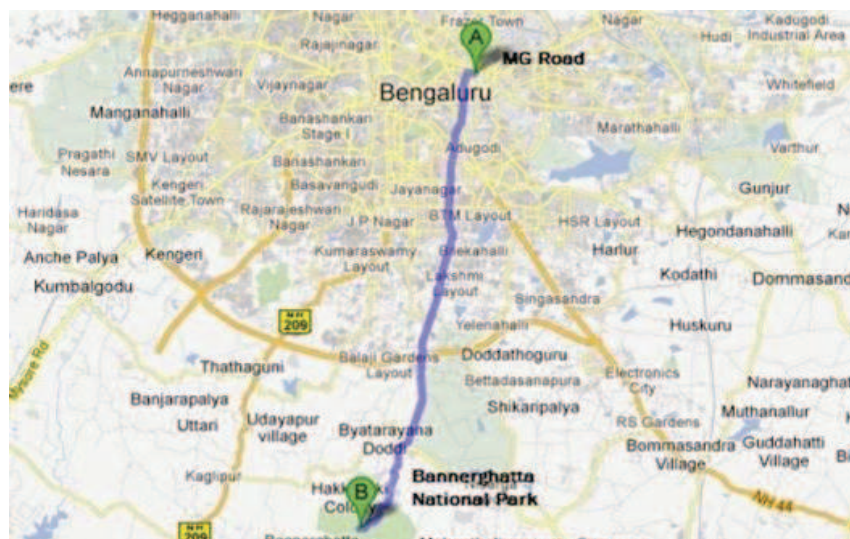


Fig.1 Study Area

### Materials & Methods:

**Materials Required:** Necessary materials taken to the field depending on the methods of spider collection. Field note was maintained to keep the data such as place of Study/Locality, habitat, Weather conditions, Size and number of spiders etc. Materials carried to field includes, Collecting bottles (to collect the live specimens), brushes (to pick tiny spiders), aspirators, forceps, umbrella, large white cloth, Camera with 100mm & 50mm lens, Collecting bags, Lux meter, basic guide to Indian spiders, 70% ethyl alcohol (to preserve if required), tripod stand etc.

**Methods of Spider Collection:** The method of Spider collection depends upon the location and the types of spiders available in that habitat. The preferred methods for Spider Collection are:

**Visual Method:** It is a selective method which involves keen visual observation of the locality to locate the spiders. The spiders are carefully hand-picked using brushes, aspirators etc., and therefore undamaged capture of spiders is ensured.

**Sweeping net method:** A net is used in this method. It is swept through the top of the bushes and grass. It provides an effective capture of low vegetation. A large number and variety of spiders of all sizes can be effectively captured using this method. It is of low cost and is a quick method to capture.

**Beating Method:** The branches of trees and bushes are beaten to collect the spiders. Umbrellas and White Cloth is usually used to collect the spiders in this method. The umbrella or the cloth is spread around the tree or bush and then it is beaten to collect the spiders. The spiders should be collected very swiftly as this method is usually used to collect jumping spiders. It is an easy method and a large number of spiders are collected.

**Pit-fall Trap Method:** -It is generally used to collect nocturnal and active ground spiders. In this method, long containers are taken and placed inside a pit to the level of the ground surface. The edges of the containers are well hidden by the soil and are sunk perfectly to the level of the ground. The preservative (preferably ethylene Glycol) is poured into these containers. The containers are then covered by a thin leaf and wire mesh to avoid damage and to protect larger animals. Specimens are collected the next day.

### List Of Spiders Recorded:

Family: AMAUROBIIDAE

1. *Amaurobius andamanensis* (Tikader)

Family: ARANEIDAE

2. *Araneus* sps (Simon)

3. *Argiope pulchella* (Thorell, 1881)

4. *Cyrtophoracicastrata* (Stoliczka, 1869)

5. *Cyrtophoracitricola* (Forsk. 1775)

6. *Neosconamukerjei* (Tikader, 1980)

Family: CORINNIDAE

7. *Casteianeiraspis* (Keyserling 1895)

Family: CTENIDAE

8. *Ctenus cochinchinensis* (Gravely, 1931)

Family: HERSILIDAE

9. *Hersiliasaviginyi* (Lucas, 1836)

Family: LYCOSIDAE

10. *Hippasa agelenoides* (Simon, 1884)

11. *Lycosaspis* (Latreille 1804)

12. *Lycosaspis* nov (Latreille 1804)

13. *Pardosaspis* nov (CL Koch 1847)

14. *Pardosapsumatrana* (Thorell, 1890)

15. *Pardosapseudoannulata* (Bosenberg and Strand 1906)

Family: OXYOPIDAE

16. *Oxyopes birmanicus* (Thorell, 1887)

17. *Oxyopes pankaji* (Gajbe and Gajbe 2001)

18. *Oxyopes* sps nov (Latreille 1804)

- Family: PHILODROMIDA
19. *Thanatusps* (CL KOCH 1837)
- Family: PHOLCIDAE
20. *Crossoprizalyoni* (Blackwall, 1867)
21. *Pholcusphalangioides* (Fuesslin, 1775)
- Family: PISAURIDAE
22. *Perenethisvenusta* (L.Koch, 1878)
- Family: SALTICIDAE
23. *Asemoneatenuipes*(O.P Cambridge, 1869)
24. *Epeusspsnov*(Peckham and Peckham 1886)
25. *Hasariusadansoni* (Audouin, 1826)
26. *Hyllussemicupreus* (Simon, 1885)
27. *Menemerusbivittatus* (Dufour, 1831)
28. *Myrmarachneplataleoides* (Cambridge, 1869)
29. *Phintellavittata*(CL Koch 1846)
30. *Plexippuspaykulli* (Audouin, 1826)
31. *Ptocasiusyashodharae* (Tikader, 1977)
32. *Rhenekhandalaensis* (Tikader, 1977)
33. *Telamoniadimidiata* (Simon, 1899)
- Family: SCYTODIDAE
34. *Scytodesthoracica* (Latreille, 1804)
- Family: SPARASSIDAE
35. *Heteropodasps* (Latreille 1804)
36. *Oliosmilleti* (Pocock, 1901)
- Family :TETRAGNATHIDAE
37. *Leucaugespsnov* (White 1841)
- Family: THERIDIDAE
38. *Achaearaneamundulum*(L. Koch, 1872)
39. *Achaearaneatepidariorum* (C.L.Koch, 1841)
- Family: THOMISIDAE
40. *Oxytatevirens*(Thorell, 1891)
41. *Thomisuslobosus*(Tikader, 1965)
- Family: ULOBORIDAE
42. *Uloborusspsnov* (Latreille 1806)

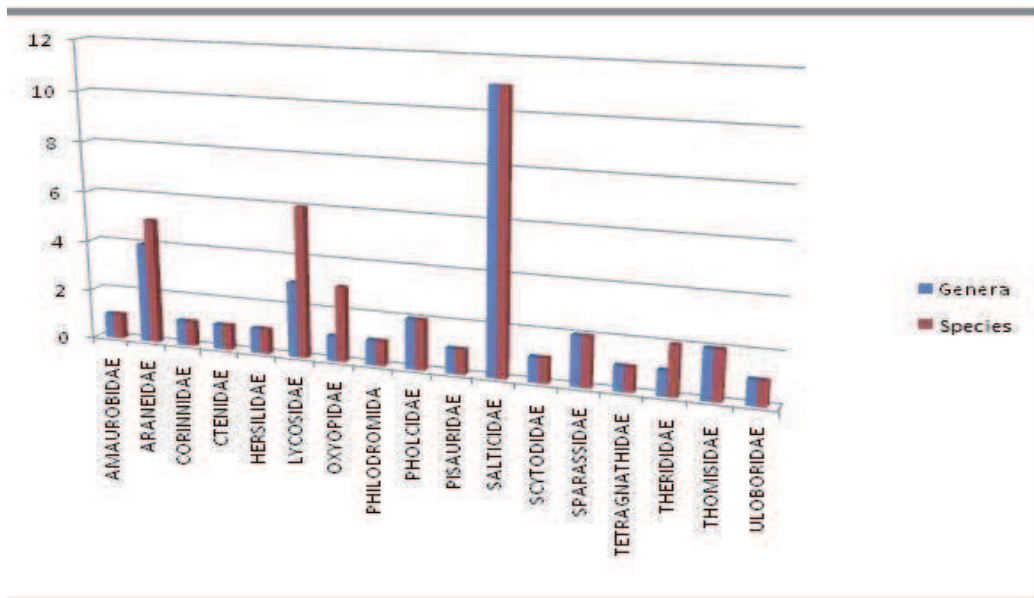


Fig. 2 Number of species and genera in each family

**Discussion & Results:** The richness of spider fauna found in the Butterfly Park is due to its proximity to the Bannerghatta national park. Total of 42 species belonging to 36 genera under 17 families were recorded(Fig. Salticidae is the largest family, with spiders belonging to 11 genera and 11 species. The detailed list of the family, genus and species are given in the table.

The most of the species recorded were hunting spiders. Spiders belonging to families Araneidae, Corinnidae, Oxyopidae, Pisauridae, Salticidae, Uloboridae were found in vegetation. Spiders belonging to families Scytodidae and Sparassidae were found in the leaf litter. Thomisid spiders were found on flowers. Hersilid spiders were located on tree trunk. Spiders belonging to family Tetragnathidae were sited near a pond (water body). We have recorded Sytodussps, a special spider

commonly called spitting spider which was shown in the national geographic channel under a programme “Extreme Animals”.

In our findings under family Lycosidae recorded two unknown species of genus *Lycosa* and *Pardosa*, under Oxyopidae one unknown species of genus *Oxyopes*, under Tetragnathidae one unknown species of genus *Leucauge* and under Uloboridae one species of genus *Uloborus*.

The above mention spider specimens will be published separately after comparative taxonomic work.

Our future plan is to display the recorded spider photographs in the museum of the butterfly park as an association of fauna exists in that area which will in terms to give awareness about the Spider Species to the Public as well as to the academic students who visit the Butterfly park for their Knowledge and

studies. This is the first kind of project work in Karnataka framed to develop the awareness, skills and interest in research field activity for the BSc students on taxonomic field work on spiders at the Butterfly Park. Further there will be wide scope of finding more species and hence, future taxonomic work must be done to update the catalogue of this Park.

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