Executive Summary of
A Minor Research Project
on
Diversity and Microhabitat Utilization Pattern of Spiders
(Arachnida: Araneae) in Katepurna Sanctuary, Akola.

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Study Area: (Katepurna Sanctuary)

The Katepurna Sanctuary in Akola, Maharashtra is an exotic sanctuary dotted with an abundance of flora and fauna. Positioned in Akola district in Vidarbha region of the state of Maharashtra, the sanctuary lies in close proximity to the catchments area of Katepurna reservoir (Mahan Dam). Its area is geographically located at - 20°25’0.54”N 77°10’50.14”E. The land vegetation at Katepurna Sanctuary is southern tropical dry deciduous forest. There are over 115 species of plants at this sanctuary such as Bihada, Dhawada, Moha, Tendu, Khair, Salai, Aola, Tendu, etc. Katepurna Wildlife Sanctuary is renowned for the four-horned antelope and barking deer. Other animals that can see at the sanctuary include Black buck, Leopard, Wolf, Wild boar, Hyaena, Hare, Nilgai, Jungle cat and Monkeys. The Katepurna water reservoir attracts many water birds.
Fig: Area showing Study area i.e., Katepurna Sanctuary (Courtesy: Google Earth)
OBSERVATIONS AND RESULTS

During the study, 92 species were recorded, belonging to 19 families that represent 30.64% of the total families reported from India. Most species of spiders found belonged to family Salticidae and Araenidae. Neoscona was found to be the most abundant species in this region followed by Oxyopes, Theridion, Plexippus paykulli, Sp, etc. Out of total spider species recorded, about 48% were found to be web builders, 52% were ground wanderers. The unidentified species were properly labeled as morphospecies (Sp.) and photographed for identification. The pattern of web building, egg laying, egg sac, feeding, and reproduction were noticed for different species and properly recorded.

FAMILY: ARANEIDAE

1. Araneus ellipticus Tikader & Bal, 1981 Female
2. Argiope aemula Walckenaer, 1842 Female
3. Chorizopes bengalensis Tikader, 1975 Female
4. Cyclosa bifida Doleschall, 1859 Male, Female
5. Cyclosa hexatuberculata Tikader, 1982 Female
6. Cyclosa insulana (Costa 1834)
7. Cyrtophora cicatrosa Stoliczka, 1869 Female
8. Cyrtophora citricola (Forsskål, 1775)
9. Eriovixia excelsa Simon 1889 Female
10. Eriovixia laglaizei Simon, 1877 Female
11. Larinia chloris Audoin, 1825 Female
12. Larinia argiopiformis
13. Larinia lineata
14. Neoscona adianta
15. Neoscona bengalensis
16. Neoscona crucifera
17. Neoscona mukerjei Tikader, 1980 Female
18. Neoscona nautica L. Koch, 1875 Female
19. Neoscona punctigera, Male, Female
20. Neoscona subfusca (C. L. Koch, 1837)
21. Neoscona theisi Walckenaer, 1842 Female
22. Neoscona vigilans Blackwall, 1865 Female, Male
23. Poltys nagpurensis Tikader, 1982 Female
24. Poltys illepidus C. L. Koch, 1843
25. Zygiella indica Tikader & Bal, 1980 Male, Female

**FAMILY: CLUBIONIDAE** Wagner, 1887
26. Clubiona abbotii L. Koch, 1866
27. Clubiona filicata O. P.-Cambridge, 1874 Female
28. Cheiracanthium inclusum

**FAMILY: ERESIDAE** C. L. Koch, 1850
29. Stegodyphus sarasinorum Karsch, 1891 Female
30. Stegodyphus lineatus, Latreille, 181

**FAMILY: GNAPHOSIDAE** Pocock, 1898
31. Agroeca pratensis Emerton, 1890 Female
32. Litopyllus temporaries Chamberlin, 1922 Female
33. Micaria longipes Emerton, 1890 Female
34. Talanites echinus Chamberlin, 1922 Female
35. Zelotes fratris Chamberlin, 1920 Female
36. Zelotes sp. Female

**FAMILY: HERSILIIDAE** Thorell, 1870
37. Hersilia savignyi Lucas, 1836 Female
38. Hersilia sp.

**FAMILY: LYCOSIDAE** Sundevall, 1833
39. Hippasa greenalliae (Blackwall, 1867) Female
40. Lycosa poonaensis Tikader & Malhotra, 1980 Female
41. Pardosa pseudoannulata (Bösenberg & Strand, 1906) Female, Male

**FAMILY: EUTICHRURIDAE** Lehtinen, 1967
42. Cheiracanthium inornatum O. P.-Cambridge, 1874 Female, Male

**FAMILY OECOBIIDAE** Blackwall, 1862
43. *Oecobius putus* O. P.-Cambridge, 1876 Female

**FAMILY: OXYOPIDAE** Thorell, 1870

44. *Oxyopes bharatae* Female, Male
45. *Oxyopes pankaji* Gajbe & Gajbe, 2000 Female
46. *Oxyopes javanus* Thorell, 1887
47. *Oxyopes macilentus* Female, Male
48. *Oxyopes ramosus* Female, Male
49. *Peucetia viridana* (Stoliczka, 1869)
50. *Peucetia albescens*

**FAMILY: PHILODROMIDAE** Thorell, 1870

51. *Philodromus kuttanadensis*
52. *Philodromus rufus*
53. *Philodromus sp.*
54. *Philodromus sp.*
55. *Tibellus oblongus*

**FAMILY: PHOLCIDAE** C. L. Koch, 1850

56. *Artema atlanta* Walckenaer, 1837 Female
57. *Crossopriza lyoni* (Blackwall, 1867) Female
58. *Pholcus phalangioides* (Fuesslin, 1775) Female, Male

**FAMILY: PISAURIDAE** Simon, 1890

59. *Dolomedes sp.*
60. *Thalassius albocinctus*

**FAMILY: SALTICIDAE** Blackwall, 1841

61. *Cosmophasis thalassina*
62. *Hasarius adansoni* (Audouin, 1826) Female
63. *Hyllus semicupreus* (Simon, 1885) Male
64. *Menemerus bivittatus*
65. *Phintella vittata* (C. L. Koch, 1846) Female, Male
66. *Plexippus paykulli* (Audouin, 1826) Female, Male
67. *Rhene flavigera* (C. L. Koch, 1846) Male
68. *Telamonia dimidiata* (Simon, 1899) Female, Male
69. *Thyene imperialis* (Rossi, 1846) Female, Male
FAMILY: **SCYTODIDAE** Blackwall, 1864

70. *Scytodes fusca* Walckenaer, 1837 Male and Female

71. *Scytodes pallida*, Male and Female

72. *Scytodes univittata*

FAMILY: **SPARASSIDAE** Bertkau, 1872

73. *Heteropoda cervina*

74. *Heteropoda venatoria*

75. *Micrommata virescens*

76. *Olios argelasius*

FAMILY: **TETRAGNATHIDAE** Menge, 1866

77. *Leucauge decorata* (Blackwall,1864) Female

78. *Tetragnatha mandibulata* Walckenaer,1841 Female

FAMILY: **THERIDIIDAE** Sundevall, 1833

79. *Ariamnes colubrinus* female

80. *Argyrodus argentatus* O. P.-Cambridge, 1880 Female, Male

81. *Parasteatoda mundula* (L. Koch,1872) Female

82. *Theridula gonygaster* (Simon, 1873) Female

83. *Nesticodes rufipes* (Lucas,1846) Female, Male

84. *Theridion sp.* Female

FAMILY: **THOMISIDAE** Sundevall, 1833

85. *Indoxysticus minutus* (Tikader, 1960) Female, Male

86. *Thomisus okinawensis* Strand,1907 Female

87. *Tmarus angulatus*

88. *Xysticus cristatus* Female

FAMILY: **ULOBORIDAE** Thorell, 1869

89. *Octonoba sinensis*

90. *Uloborus plumipes*

91. *Uloborus walckenaerius* Latreille,1806 Female, Male

92. *Zosis geniculata*
SUMMARY AND CONCLUSIONS

The spider fauna of India is represented by 438 genera and 1685 species (Keswani et. al. 2012). The present study represents 19 families, 63 genera and 92 species arranged on their foraging behavior in the field. The distribution of some families was found to be continuous (Araenidae, Hersiliidae, Salticidae, Tetragnathidae etc), while some had very discontinuous distribution. Coloration in spiders varies extensively among the species due to different environmental effects which also is due to different behavioral pattern observed on them (Oxford and Gillespie 1998; Craig and Ebert 1994; Huber, 2002; Hoese, et al. 2006).

**Family diversity:**

Araenidae (25 species) and Salticidae (09 species) Oxyopidae (07 species), Theridiidae (06 species) covers the middle order of species diversity, Philodromidae (05 species), Sparassidae (04 species), Thomisidae (04 species), Uloboridae (04 species), Clubionidae (03 species), Lycosidae (03 species), Pholcidae (03 species), Scytodidae (03 species), Eresidae (02 species), Hersiliidae (02 species), Pisuridae (02 species), Tetragnathidae (02 species), Eutichuridae (01 species), Oecobidae (01 species) are also observed during the present study.

**Generic diversity:**

India represents 438 genera and 1685 species (Keswani et. al. 2012) from which 63 genera are recorded in Katepurna Wildlife Sanctuary (Akola Forest Division, Maharashtra) during the study. Highest generic diversity is found in Araenidae (10), Salticidae (09), Theridiidae (06) and Gnaphosidae (05).
Species richness:

India accounts with 1685 spider species and 92 species are recorded from Katepurna Wildlife Sanctuary (Akola Forest Division, Maharashtra) during the present study. This record is high compared with other records like Sikkim (55 species) and (Tikader, 1970, 1977, 1980; Tikader & Biswas, 1981).

Endemism:

Among the 92 species recorded, *Leucauge* sp, *Neoscona* sp, *Oxyopes* sp, *Tetragnatha* sp, *Uloborus* sp and *Xysticus* sp are endemic to India.

DISCUSSION

Study on spiders is completely untouched in Katepurna Wildlife Sanctuary (Akola Forest Division, Maharashtra) India. Checklist or records to these spiders are not yet prepared. Thus the study is the baseline information over the ecology, importance and the threats faced by the spider species. The rich floral and faunal diversity in the Sanctuary is the key to build the microhabitats of different species. Structurally more complex herbs and shrubs can support a more diverse spider community. The study will also help to work for the conservation of the species and specify the hidden benefits in them. Thomisids, Oxyopids, Salticidae, Uloborids, Tetragnathids etc., are some of the expert silent predators in the forest ecosystems that are seen feeding on small insects like moths, butterflies, beetles, aphids, hoppers etc. They are maintaining ecological equilibrium by suppressing insect pest. Thus efforts can be laid to rear spiders and use them as bio-controlling media. Highly fragmented territory of the spiders acts as a barrier for dispersal form one compartment to the other around the Katepurna Sanctuary. It is also seen that adaptation to the various environment has facilitated them to survive in broad functional groups. There is lack of information on ecology and taxonomy of Indian Spiders. However spiders can be used as indicator species (Kapoor, 2008; Noss, 1990). Certain factors like distribution and relationship of them to the
various habitats and its responses to the different disturbance makes difficult, using them as indicator species. The study shows information related to the species distribution in a particular habitat with response to environment, disturbance, and availability of food. Hence it is concluded that the study area i.e, Katepurna Sanctuary is having good diversity of Spiders. There is a need for the conservation of this creature because it is a part of the food chain in the protected area.

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Place: Akola

Project Investigator