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SPIDER DIVERSITY OF JESSORE WILDLIFE SANCTUARY, BANASKANTHA, GUJARAT, INDIA

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ABSTRACT

Jessore Wildlife Sanctuary is rich in faunal and floral biodiversity. Present research about spiders was done in 2015-16 at Jessore Wildlife Sanctuary, Banaskantha district, Gujarat. The simple handpicking collecting method was used. 1290 specimens of spiders were collected during a field visit. A total of 133 spider species and 87 genera of 26 families were identified from the study area. During the field visit, observed some anthropogenic activities which disturbing forest biodiversity. Anthropogenic activities were domestic animal grazing, firewood collection, tourism, agricultural activities, etc., which led to the loss of faunal and floral biodiversity. So, we must conserve and protect natural biodiversity. Spiders are important natural controllers for insects and other small, harmful animals. Spiders are also part of biodiversity. So, after studying spiders, make baseline information and take conservative steps for spiders' biodiversity.

KEYWORDS: Spiders, Biodiversity, Jessore, Gujarat, India.

INTRODUCTION

Jessore Wildlife Sanctuary of the district Banaskantha is an important forest for animal biodiversity. This area was situated in the northwestern part of the District. This sanctuary was declared in May of 1978 for wildlife protection and conservation of flora and fauna, and its environment. As per the environment, spiders are an important creature of the ecosystem, which is a biotic factor to control harmful insects and other predators, and food for other animals. So, we need to conserve spider fauna.

Arachnologically, the study area has not been completely studied. That's why, study aimed to survey, document, and make a preliminary checklist of spiders.

Study Area: Study area situated (24° 12' to 24° 31' N latitude & 72° 18' to 73° 37' E longitude) in Banaskantha of north Gujarat. This hill range falls in the Aravalli, which separates and prevents from desert ecosystem. The highest peak of the forest was 3350ft above mean sea level. As per forest classification, this forest is classified as a dry deciduous forest. The forest of the study area was the natural habitat of the leopard and the sloth bear. Forest falls in the semiarid climatic zone. Forest feels hot and dry in summer (average 40°C temperature) and cold in winter, sometimes below 10°C temperature. Rainfall was average, 600mm to 700mm.

Methodology: A study of spiders was done in 2015-16 at various sites of Jessore hills. The study was done at different times of day: Morning, Evening, and night.

Collection: Spiders collected through hand hand-picking method. During collection, capture some photos and make notes of behavior, webs, and other things for identification.

Preservation: Collected spider specimens were transferred to vials/bottles filled with 70-75% ethanol for preservation. After transferring specimens, the vial/bottles are labeled with the proper date, place, and other important information. These vials/bottles are kept in the laboratory for identification.

Identification: In the laboratory, Specimens were identified under a stereo zoom microscope and a genital slide in a compound microscope. Specimens were classified using various taxonomic papers, books, and some monographs. Specimens were identified up to the family, genus, and species level. Some immature specimens were identified up to the genus level.

RESULTS

In the study of Jessore wildlife sanctuary, 1290 specimens were collected, and a total of 133 species of spiders were identified. In which 21 specimens were identified up to the genus level. 132 species of spiders belonged to 26 families. Family Araneidae has 30 species, which is numerically the highest among other families. Second second-highest number of family was Salticidae with 22 species. Other families have less than 10 species.

Identified spiders have 10 guilds related to their habits and habitats, which were orb weaver, foliage hunter, ground runner, snare/sheet web builder, foliage runner, scattered line weaver, ambusher, Crevice weaver/Space-web builder, disc web builder, and Nursery web weaver. Orb weaver guild was dominant with 29.54% species from the total species. The second dominant guild was ground runners, with 20.24% contribution of species. Other guilds contributed less than 10% species of spiders.

DISCUSSIONS

The present survey and documentation were a preliminary attempt to make a checklist and give a distribution of spiders in the forest. This sanctuary has rich faunal and floral biodiversity. The various day and night periods and collections may be connected to the araneid fauna. Spiders have various guilds, habitats, and environments. Forest provides a natural habitat for spider fauna. Spiders as biocontroller predation of small insect-like misquotes, larvae, and pupae in the forest. On the other side, they are food for some animals like lizards and frogs. They were provided a food chain in the ecosystem, which is reason they are an important biotic component. We must know and take conservation steps for spiders for many and many reasons in the terrestrial ecosystem.

As per Caleb et *al* (2025), a total of 1977 species of spiders, 514 genera, and 63 families were recorded from India. According to Singh et al (2023), 533 spider species, 190 genera, and 41 families were recorded from Gujarat. This study compiled 133 species of spiders, 87 genera, and 26 families were recorded from the study area.

CONCLUSION

The survey of spiders was rich in the study area. Forest has some disturbing and non-disturbing areas due to anthropogenic activities. Also, observed that non-disturbing areas are rich in biodiversity, and other areas were affected by anthropogenic activities like firewood collection, ecotourism, overgrazing, and pilgrims, etc., have less biodiversity. That means we must take conservation action to protect natural forests and biodiversity. This study of spider diversity is helpful for future research and acts as a baseline study.

Checklist of spiders from Jessore Wildlife Sanctuary

From Araneomorphae, StudyArea represents 26 Families, 87 genera, and 133 species.

FAMILY ARANEIDAE Clerck, 1757

a. Genus Arachnura clerck, 1757

1. angora Tikader,1970

b. Genus Araneus Clerck, 1757

2. bilunifer Pocock, 1900

3. ellipticus Tikader & Bal, 1981

c. Genus Argiope Audouin, 1826

4. anasuja Thorell, 1887

5. aemula Walckenaer, 1841

d. Genus Cyclosa Menge, 1866

6. bifida Doleschall, 1859

7. confraga Thorell, 1892

8. hexatuberculata Tikader, 1982

e. Genus Chorizopes O. Pickard-Cambridge, 1871

9. stoliczkai O. Pickard-Cambridge, 1885

f. Genus Cyrtophora Simon, 1864

10. cicatrosa Stoliczka, 1869

11. citricola Forsskål, 1775

g. Genus Eriovixia Archer, 1951

12. excels Simon, 1889

13. laglaizei Simon, 1877

h. Genus Gasteracantha Sundevall, 1833

14. geminate Fabricius, 1798

i. Genus Gea C. L. Koch, 1843

15. spinipes C. L. Koch, 1843

j. Genus Guizygiella Zhu, Kim & Song, 1997

16. indica Tikader & Bal, 1980

17. melanocrania Thorell, 1887

k. Genus Larinia Simon, 1874

18. chloris Audouin, 1826

19. phthisica L. Koch, 1871

l. Genus Neoscona Simon, 1864

20. achine Simon, 1906

21. bengalensis Tikader & Bal, 1981

22. biswasi Bhandari& Gajbe, 2001

23. mukerjei Tikader, 1980

24. nautica L. Koch, 1875
25. odites Simon, 1906
26. theisi Walckenaer, 1841

m. Genus Parawixia O. Pickard-Cambridge, 1905

27. dehaani Doleschall, 1859

n. Genus Poltys C. L. Koch, 1843

28. bhabanii Tikader, 1970
29. bhavnagarensis Patel, 1988

o. Genus Thelacantha Hasselt, 1882

30. brevispina Doleschall, 1857

FAMILY NEPHILIDAE Simon, 1894

a. Nephila Leach, 1815

31. pilipes Fabricius, 1793

FAMILY CLUBIONIDAE Wagner, 1887

a. Genus Clubiona Latreille, 1804

32. drassodes O. P.-Cambridge, 1874
33. filicata O. P.-Cambridge, 1874
34. tikaderi Majumder & Tikader, 1991

FAMILY CORINNIDAE Karsch, 1880

a. Genus Castianeira Keyserling, 1879

35. Tinae BH Patel& Patel,1973
36. zetesSimon, 1897

FAMILY CTENIDAE Keyserling, 1877

a. Genus Ctenus Walckenaer, 1805

37. Ctenus sp.

FAMILY ERESIDAE C. L. Koch, 1850

a. Genus Stegodyphus Simon, 1873

38. sarasinorum Karsch, 1891
39. pacificus Pocock, 1900

FAMILY EUTICHURIDAELehtinen, 1967

a. Genus Cheiracanthium C. L. Koch, 1839

40. cheiracanthium sp.1

FAMILY FILISTATIDAE Ausserer, 1867

a. Genus Pritha Lehtinen, 1967

41. dharmakumarsinhjii Patel, 1978
42. poonaensis

b. Genus Sahastata Benoit, 1968

43. ashapuriae Patel, 1978

FAMILY GNAPHOSIDAE Pocock, 1898

a. Genus Cryptodrassus, F. Miller, 1943

44. cryptodrassus,

b. Genus Drassodes Westring, 1851

45. drassodes sp.

c. Genus Eilica Keyserling, 1892

46. tikaderi Platnik 1976

d. Genus Gnaphosa Latreille, 1804

47. poonaensis Tikader, 1973

e. Genus Poecilochroa Westring, 1874

48. barmanii Tikader, 1982
49. khodiar Patel, 1988

f. Genus Zelotes Gistel, 1848

50. Zelotes sp.

FAMILY HERSILIIDAE Thorell, 1870

a. Genus Hersilia Audouin, 1826

51. savignyi Lucas, 1836
52. striata Wang & Yin, 1985

FAMILY LINYPHIIDAE Blackwall, 1859

a. Genus Linyphia Latreille, 1804

53. Linyphia sp.

FAMILY LYCOSIDAE Sundevall, 1833

a. Genus Arctosa C. L. Koch, 1847

54. indica Tikader &Malhotra, 1980

b. Genus Evippa Simon, 1882

55. Evippa sp.

c. Genus Hippasa Simon, 1885

56. Hippasa sp.

d. Genus Lycosa Latreille, 1804

57. Fuscana Pocock, 1901

58. poonaensis Tikader & Malhotra, 1980
59. tista Tikader, 1970

e. Genus Pardosa C. L. Koch, 1847

60. birmanica Simon, 1884
61. pseudoannulata Bösenberg& Strand, 1906

f. Genus Wadicosa Zyuzin, 1985

62. wadicosa sp.

FAMILY OECOBIIDAE Blackwall, 1862

a. Genus Oecobius Lucas, 1846

63. putus O.Pickard-Cambridge, 1876

b. Genus Uroctea Dufour, 1820

64. thaleri Rheims et al., 2007

FAMILY OXYOPIDAE Thorell, 1870

a. Genus Hamadruas Deeleman-Reinhold, 2009

65. hamadruas sp.

b. Genus Oxyopes Latreille, 1804

66. bharatae Gajbe, 1999
67. gujaratensis Gajbe,1999
68. Indicus Walckenaer,1805
69. javanus Thorell, 1887
70. ryvesi Pocock, 1901
71. Shweta Tikader, 1970

c. Genus Peucetia Thorell, 1869

72. akwadaensis Patel, 1978
73. elegans Blackwall, 1864

FAMILY PHILODROMIDAE Thorell, 1870

a. Genus Thanatus C. L. Koch, 1837

74. elongatus Tikader, 1960

b. Genus Tibellus Simon, 1875

75. tibellus sp.

FAMILY PHOLCIDAE C. L. Koch, 1850

a. Genus Artema Walckenaer, 1837

76. atlanta Walckenaer, 1837

b. Genus Crossopriza Simon, 1893

77. lyoni Blackwall, 1867

c. Genus Pholcus Walckenaer, 1805

78. phalangioides Fuesslin, 1775

FAMILY PISAURIDAE Simon, 1890

a. Genus Nilus O. P. Cambridge, 1876

79. nilus sp.

b. Perenethis L. Koch, 1878

80. perenethis sp.

c. Genus Pisaura Simon, 1885

81. pisaura sp.

FAMILY SALTICIDAE Blackwall, 1841

a. Genus Bianor Peckham & Peckham, 1886

82. bianor sp.

b. Genus Carrhotus Thorell, 1891

83. sannio Thorell, 1877

84. Viduus C.L. Koch, 1846

c. Genus Chrysilla Thorell, 1887

85. lauta Thorell, 1887

86. Chrysilla sp.

d. Genus Epeus Peckham & Peckham, 1886

87. indicus Prószyn'ski, 1992

e. Genus Epocilla Thorell, 1887

88. aurantiaca Simon, 1885

f. Genus Hasarius Simon, 1871

89. adansoni Audouin, 1826

g. Genus Hyllus C. L. Koch, 1846

90. semicupreus Simon, 1885

h. Genus Icius Simon, 1876

91. Alboterminus Caleb, 2014

i. Genus Menemerus Simon, 1868

92. bivittatus Dufour, 1831

93. fulvus L. Koch, 1878

j. Genus Myrmarachne MacLeay, 1839

94. plataleoides O. P.-Cambridge, 1869

k. Genus Phintella Strand, in Bösenberg& Strand, 1906

95. vittata C. L. Koch, 1846

l. Genus Plexippus C. L. Koch, 1846

96. paykulli Audouin, 1826

97. petersi Karsch, 1878

m. Genus Rhene Thorell, 1869

98. flavigera C. L. Koch, 1846

n. Genus Siler Simon, 1889

99. semiglaucus Simon, 1901

o. Genus Stenaelurillus Simon, 1886

100. lesserti Reimoser, 1934

101. Stenaelurillus sp. 1

p. Genus Telamonia Thorell, 1887

102. dimidiata Simon, 1899

q. Genus Thyene Simon, 1885

103. imperialis Rossi, 1846

FAMILY SCYTODIDAE Blackwall, 1864

a. Genus Scytodes Latreille, 1804

104. fusca Walckenaer, 1837

105. thoracica Latreille,1802

FAMILY SICARIIDAE Keyserling, 1880

a. Loxosceles Heineken & Lowe, 1832

106. Rufescens Dufour, 1820

FAMILY SPARASSIDAE Bertkau, 1872

a. Genus Heteropoda Latreille, 1804

107. bhaikakai Patel & Patel, 1973

108. venatoria Linnaeus, 1767

b. Genus Olios Walckenaer, 1837

109. bhavnagarensis Sethi& Tikader, 1988

110. iranii(Pocock, 1901)

111. milleti(Pocock, 1901)

FAMILY TETRAGNATHIDAE Menge, 1866

a. Genus Leucauge White, 1841

112. decorate Blackwall, 1864

b. Genus Tetragnatha Latreille, 1804

113. extensa Linnaeus,1758

114. mandibulata Walckenaer, 1841

c. Genus Tylorida Simon, 1894

115. striata Thorell, 1877

116. ventralis Thorell, 1877

FAMILY THERIDIIDAE Sundevall, 1833

a. Genus Achaearanea Strand, 1929

117. triangularis Patel, 2005

b. Genus Argyrodes Simon, 1864

118. argyrodes Simon, 1864

119. flavescens O. P.-Cambridge, 1880

c. Genus Chrysso O. P.-Cambridge, 1882

120. angula Tikader, 1970

FAMILY THOMISIDAE Sundevall, 1833

a. Genus Diaea Thorell, 1869

121. Diaea sp.

b. Genus Indoxysticus Benjamin & Jaleel, 2010

122. minutus Tikader,1960

c. Genus Misumena Latreille, 1804

123. misumena sp.

d. Genus Oxytate L. Koch, 1878

124. oxytate sp.

e. Genus Synema Simon, 1864

125. decoratum Tikader, 1960

f. Genus Thomisus Walckenaer, 1805

126. dhakuriensis Tikader, 1960

127. projectus Tikader, 1960

128. lobosus Tikader, 1965

g. Genus Xysticus C. L. Koch, 1835

129. Xysticus sp.

FAMILY ULOBORIDAE Thorell, 1869

a. Genus Uloborus Latreille, 1806

130. danolius Tikader, 1969

131. krishnaeTikader, 1970

b. Genus Zosis Walckenaer, 1841

132. geniculate Olivier,1789

FAMILY ZODARIIDAE Thorell, 1881

a. Genus StorenaWalckenaer, 1805

133. Storena sp.

Table: 1 Guilds and its family.

Sr. No.	Guilds	Families	Percentage
	Orb Weaver	Araneidae, Nephilidae, Tetragnathadae, Uloboridae	29.54%
	Foliage Hunter	Clubionidae, Hersiliidae	3.78%
	Ground Runner	Corinnidae, Ctenidae, Gnaphosidae, Lycosidae, Sparassidae, Scytodidae, Zodariidae	20.45%
	Snare/ Sheet web builder	Eresidae, Linyphiidae	2.27%
	Foliage Runner	Eutichuridae, Oxyopedae, Salticidae,	24.24%
	Scatterline weaver	Pholcidae, Theridiidae	5.30%
	Ambusher	Thomisidae, Philodromidae	8.33%
	Crevice weavers/ Space-web builder	Filistatidae	2.27%
	Disc-Web builder	Oecobiidae	1.51%
	Nursery web weaver	Pisauridae	2.27%

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