

FAUNA OF PROTECTED AREAS -3

## SPIDERS OF PURNA WILDLIFE SANCTUARY, DANGS, GUJARAT

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### Abstract

The spider diversity of Purna Wildlife Sanctuary, Dangs, Gujarat as recorded in 2000-2001 is 116 species belonging to 66 genera and 25 families. Family Araneidae was found to be dominating. Rare spiders like *Rhene khandalaensis* and *Stegodyphus mirandus* are first records for Gujarat. A burrow of ground Therasphosid was also sighted.

### Keywords

Checklist, Dangs, Purna Wildlife Sanctuary, spiders

### Introduction

The northern extremity of Western Ghats in the Dangs District, Gujarat harbours diverse flora and fauna in its tropical moist deciduous forests. Two protected areas, Purna Wildlife Sanctuary and Vansda National Park render protection to the rich biodiversity of this forest. However, the knowledge on the invertebrate fauna in this region is limited. In an isolated attempt Singh and co-workers studied the biodiversity of Vansda National Park in Dangs, Gujarat (Singh *et al.*, 2000). The present study was made to provide a checklist of spiders at Purna Wildlife Sanctuary.

### Study area

Purna Wildlife Sanctuary (20°51'-21°21'N & 73°32'-73°48' E) (Fig. 1) has a total area of 160.84km<sup>2</sup> and consists of southern Indian tropical moist deciduous forests (Group 3A/C1), which can be further categorized into southern moist deciduous forests and southern dry deciduous forests (Champion & Seth, 1968; Singh *et al.*, 2000).

### Methodology

The study was carried out in four different ranges; Mahal,

Bheshkari, Bardipada and Kalibel of Purna WLS from October 2000-September 2001. All types of habitat, such as, bamboo forest, teak plantation, riparian zone and grassland were surveyed. Five sampling sites (each of 10m<sup>2</sup> area) were selected at random in each habitat on every visit (2-3 visits in monsoon and post-monsoon season). On an average two hours were spent in each sampling site. Spiders were searched thoroughly in all probable microhabitats *e.g.* under stones, dead leaves, bushes, branches of trees, near water bodies, trees and tree trunks up to 2m above ground level at every sampling site. Unnecessary collection was avoided by noting down the common spider species in the field. Spiders, which were difficult to identify in the field were collected and preserved in 70% ethyl alcohol and appropriately labeled with sample number, date, locality and remarks.

To avoid contamination, alcohol in all the vials was changed once in the laboratory. Spiders were identified after detailed microanalysis under WILD™ Stereomicroscope with the help of standard monographs and literature (Pocock, 1900; Kaston, 1978; Tikader, 1977, 1980, 1982, 1987; Tikader & Biswas, 1981). Only sexually mature spiders were identified to the species level, while spiderlings/immature spiders were identified only up to the genus level. Identified spiders were labeled and kept individually in small polypropylene vial (25x50mm) containing 70% ethyl alcohol. Genus and species name and their placement in the respective family is according to Platnick (2002).

All mature specimens are deposited at the Departmental Museum, Department of Zoology, Faculty of Science, M.S. University of Baroda, Gujarat, and is in the charge of the second author.

### Observations

Purna Wildlife Sanctuary provides diverse habitat to various spider species. The study revealed the occurrence of 116 species

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belonging to 66 genera and 25 families of spider (Table 1), of which 47.41% were weavers (6.89% ground weavers & 40.52% foliage weavers) while 52.59% were non-weavers (31.9% foliage hunters & 20.69% ground hunters). Among the 116 species of spiders, eight are probably new species (*Cyclosa* sp., *Gasteracantha* sp., *Larinia* sp., *Lyssomanes* sp., *Tinus* sp., *Scytodes* sp., *Poltys* sp. and *Steatoda* sp.), which will be published separately after comparative taxonomic work. Rare spiders like *Rhene khandalaensis* and *Stegodyphus mirandus* are first records for Gujarat.

Amongst these 25 families, the most dominant family was Araneidae (12 genera & 28 species), ten families were represented by single species (Table 1). Occurrence of high number of Araneids could be due to mixed vegetation of the forest, which provides enough space to build webs of different sizes and protection from their predators. During the survey, one burrow of a ground theraphosid and a few spiders belonging to family Amaurobiidae and Zodariidae, which are supposedly uncommon in India were also observed. This, shows that the forest ecosystem supports habitat for uncommon and rare spiders.

The results show that the spider diversity in this forest is much higher and more intensive studies may yield more information

about the diverse Araneae fauna of this area.

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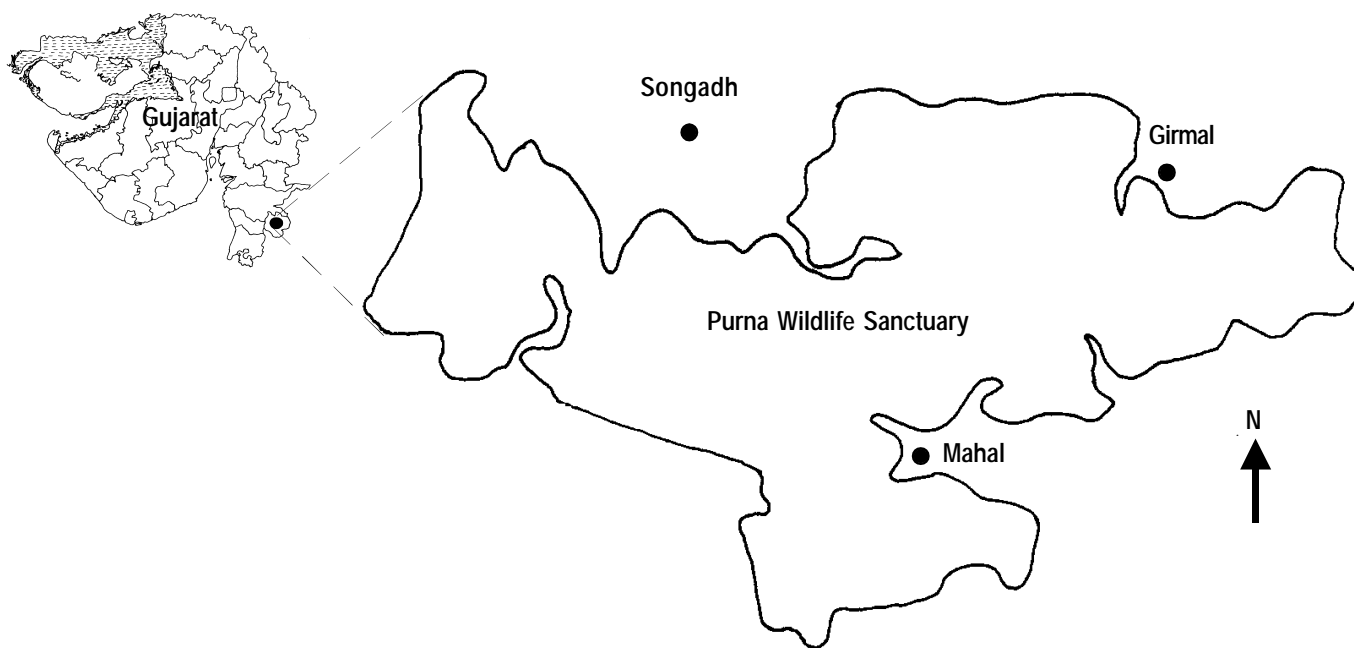


Figure 1. Map of Purna Wildlife Sanctuary

Table 1. Systematic list of Spiders from Purna Wildlife Sanctuary, Dangs, Gujarat

Scientific name	Habit	No. of spiders observed*	No. of spiders collected (tag no.)
<u>Agelenidae C.L. Koch, 1837</u>			
<i>Agelena</i> sp.	Ground Weaver	-	1F (Spi-308-1)
<u>Amauribiidae Thorell, 1870</u>			
<i>Amaurobius</i> sp.	Ground Weaver	-	1F (Spi-303-01), 1S
<u>Araneidae Simon, 1895</u>			
<i>Araneus bilunifer</i> Pocock	Foliage Weaver	3F, 1M	2F (Spi-92-02, 03)
<i>Araneus pahalganensis</i> Tikader & Bal	Foliage Weaver	-	1F (Spi-312-01)
<i>Argiope aemula</i> (Walckenaer)	Foliage Weaver	9F	-
<i>Argiope anasuja</i> Thorell	Foliage Weaver	12F	-
<i>Argiope pulchella</i> Thorell	Foliage Weaver	2F	-
<i>Cyclosa confragra</i> (Thorell)	Foliage Weaver	1F	1F (Spi-97-01)
<i>Cyclosa mulmeinensis</i> (Thorell)	Foliage Weaver	-	1F (Spi-301-01)
<i>Cyclosa</i> sp.	Foliage Weaver	-	1M (Spi-280-02)
<i>Cyrtophora cicatrosa</i> (Stoliczka)	Foliage Weaver	15F, 3M	-
<i>Cyrtophora citricola</i> (Forsk.)	Foliage Weaver	3F, 2M	-
<i>Eriovixia excelsa</i> (Simon)	Foliage Weaver	2F	2F (Spi-30-14, 15)
<i>Eriovixia laglaizei</i> (Simon)	Foliage Weaver	6F	2F (Spi-34-12, 13)
<i>Gasteracantha hasseltii</i> C.L. Koch	Foliage Weaver	25F	-
<i>Gasteracantha kuhlii</i> C.L. Koch	Foliage Weaver	2F	1F (Spi-300-01)
<i>Gasteracantha unguifera</i> Simon	Foliage Weaver	3F	-
<i>Gasteracantha</i> sp.	Foliage Weaver	-	1F (Spi-299-01)
<i>Larinia phthisica</i> (L. Koch)	Foliage Weaver	-	1F (Spi-39-02)
<i>Larinia</i> sp.	Foliage Weaver	-	1F (Spi-308-01), 1S
<i>Neoscona bengalensis</i> Tikader & Bal	Foliage Weaver	-	3F (Spi-75-01, 02, 03)
<i>Neoscona molemensis</i> Tikader & Bal	Foliage Weaver	-	1M (Spi-313-01)
<i>Neoscona mokerjei</i> Tikader	Foliage Weaver	12F, 7M	-
<i>Neoscona nautica</i> (C.L. Koch)	Foliage Weaver	-	1F (Spi-296-03)
<i>Neoscona sinhagadensis</i> (Tikader)	Foliage Weaver	-	1F (Spi-22-01)
<i>Neoscona theisi</i> (Walckenaer)	Foliage Weaver	15F, 5M	-
<i>Parawixia dehaanii</i> (Doleschall)	Foliage Weaver	3F	1F (Spi-25-04)
<i>Poltys</i> sp.	Foliage Weaver	-	1F (Spi-293-01)
<i>Zygeilla indica</i> Tikader & Bal	Foliage Weaver	2F, 1M	1F (Spi-32-06)
<i>Zygeilla melanocrania</i> (Thorell)	Foliage Weaver	-	1F (Spi-31-04)
<u>Clubionidae Wagner, 1887</u>			
<i>Clubiona filicata</i> Cambridge	Foliage Hunter	3F, 1M	-
<u>Eresidae C.L. Koch, 1851</u>			
<i>Stegodyphus tibialis</i> (O.P. Cambridge)	Foliage Weaver	-	1F (Spi-314-01)
<i>Stegodyphus sarasinorum</i> Karsch	Foliage Weaver	25F, 4M	3F (Spi-316-03,04,07), 1M (Spi-316-05)
<i>Stegodyphus mirandus</i> Pocock	Foliage Weaver	-	1F (Spi-315-01), 1M (Spi-315-02)
<u>Filistatidae Ausserer, 1867</u>			
<i>Filistata</i> sp.	Ground Weaver	-	1S (Spi-302-01)
<u>Gnaphosidae Pocock, 1898</u>			
<i>Callilepis</i> sp.	Ground Hunter	-	1F (Spi-unid-15)
<i>Drassodes</i> sp.	Ground Hunter	-	1F (Spi-unid-21)
<i>Gnaphosa poonaensis</i> Tikader	Ground Hunter	-	2F (Spi-169-03, 04)
<i>Gnaphosa stoliczka</i> O. P. Cambridge	Ground Hunter	-	1F (Spi-317-01)
<i>Scopoides</i> sp.	Ground Hunter	-	1F (Spi-unid-22)
<i>Sosticus sundargarhensis</i> Gajbe	Ground Hunter	-	2F (Spi-283-09, 10)
<u>Hersiliidae Thorell, 1870</u>			
<i>Hersilia savignyi</i> Lucas	Foliage Hunter	5F, 2M	2F (Spi-91, 05), 1M (Spi-90-03)
<u>Linyphiidae Blackwall, 1859</u>			
<i>Linyphia sikkimensis</i> Tikader	Foliage Weaver	-	2F (Spi-318-01, 02)

Scientific name	Habit	No. of spiders examined	No. of spiders collected (tag no.)
<u>Lycosidae Sundevall, 1833</u>			
<i>Evippa</i> sp.	Ground Hunter	-	1F (Spi-unid-19)
<i>Hippasa lycosina</i> Pocock	Ground Weaver	-	1F (Spi-98-03)
<i>Hippasa pisaurina</i> Pocock	Ground Weaver	11F	1F (Spi-43-05)
<i>Hippasa</i> sp.	Ground Weaver	-	1F (Spi-unid-20)
<i>Lycosa tista</i> Tikader	Ground Hunter	-	1F (Spi-44-09)
<i>Lycosa poonanensis</i> Tikader & Malhotra	Ground Hunter	-	1F (Spi-221-07)
<i>Lycosa madani</i> Pocock	Ground Hunter	-	2F (Spi-89-04, 05)
<i>Lycosa pictula</i> Pocock	Ground Hunter	-	1F (Spi-198-03)
<i>Lycosa mahabaleshwariensis</i> Tikader & Malhotra	Ground Hunter	5F	3F (Spi-47-09, 10, 11)
<i>Pardosa birmanica</i> Simon	Ground Hunter	16F, 29M	-
<i>Pardosa sumatrana</i> (Thorell)	Ground Hunter	-	2F (Spi-201-02, 03)
<i>Pardosa pusiola</i> (Thorell)	Ground Hunter	-	1F (Spi-114-01)
<i>Pardosa</i> sp.	Ground Hunter	-	1M (Spi-unid-18)
<u>Miturgidae Simon, 1885</u>			
<i>Cheiracanthium</i> sp.	Foliage Hunter	-	1M (Spi-unid-14)
<u>Oecobiidae Blackwall, 1862</u>			
<i>Oecobius putus</i> Cambridge	Foliage Weaver	12F, 5M	2F (Spi-128-03, 04), 3M (Spi-128-02, 05)
<u>Oxyopidae Thorell, 1870</u>			
<i>Oxyopes chittrae</i> Tikader	Foliage Hunter	-	1F (Spi-319-01)
<i>Oxyopes ratnae</i> Tikader	Foliage Hunter	-	1F (Spi-182-02)
<i>Oxyopes shweta</i> Tikader	Foliage Hunter	5F	-
<i>Oxyopes</i> sp.	Foliage Hunter	-	1F (Spi-unid-16)
<i>Peucetia</i> sp.	Foliage Hunter	-	1F (Spi-unid-17)
<u>Philodromidae Thorell, 1870</u>			
<i>Philodromus bhagirathi</i> Tikader	Foliage Hunter	-	1F (Spi-320-01)
<i>Thantanus</i> sp.	Foliage Hunter	-	1F (Spi-unid-13)
<i>Tibellus elongatus</i> Tikader	Foliage Hunter	3F, 1M	3F (Spi-263-15, 16, 17), 1M (Spi-263-14)
<i>Tibellus pashanensis</i> Tikader	Foliage Hunter	-	1F (Spi-275-04)
<i>Tibellus pateli</i> Tikader	Foliage Hunter	-	1F (Spi-270-07)
<i>Thantaus dhakuricus</i> Tikader	Foliage Hunter	3F	2F (Spi-242-05, 06)
<i>Tibellus</i> sp.	Foliage Hunter	-	3F (Spi-unid-12-01, 02, 03), 2M (Spi-unid-12-04, 05)
<u>Pholcidae C.L. Koch, 1851</u>			
<i>Artema atlanta</i> Walckenaer	Foliage Weaver	3F	-
<i>Crossopriza lyoni</i> (Blackwall)	Foliage Weaver	9F	-
<i>Pholcus</i> sp.	Foliage Weaver	3F	1F (Spi-unid-11)
<u>Pisauridae Simon, 1890</u>			
<i>Pisaura gita</i> Tikader	Foliage Hunter	3F	1F (Spi-99-08)
<i>Tinus</i> sp. 1	Foliage Hunter	-	1F (Spi-unid-04)
<i>Tinus</i> sp. 2	Foliage Hunter	-	1F (Spi-323-01)
<u>Salticidae Blackwall, 1841</u>			
<i>Asemonea tenuipes</i> (O.P. Cambridge)	Foliage Hunter	-	1F (Spi-321-01)
<i>Bianor</i> sp.	Ground Hunter	-	2F (Spi-unid-10-01,02)
<i>Hyllus semicupreus</i> (Simon)	Foliage Hunter	-	1F (Spi-218-05)
<i>Lyssomanes</i> sp.	Foliage Hunter	-	1F (Spi-310-01)
<i>Marpissa</i> sp.	Ground Hunter	-	1F (Spi-unid-09)
<i>Myrmarachne bengalensis</i> Tikader	Ground Hunter	-	2F (Spi-288-09)
<i>Plexippus paykullii</i> (Audouin)	Ground Hunter	2F, 3M	-
<i>Rhene khandalaensis</i> Tikader	Ground Hunter	-	2F (Spi-309-01)
<i>Phintella vittata</i> (C.L. Koch)	Ground Hunter	-	1F (Spi-230-06)
<i>Phintella</i> sp.	Ground Hunter	-	1F (Spi-unid-08)

Scientific name	Habit	No. of spiders examined	No. of spiders collected (tag no.)
<i>Telamonia dimidiata</i> (Simon)	Foliage Hunter	-	1F (Spi-95-04)
<u>Scytodidae Blackwall, 1864</u>			
<i>Scytodes fusca</i> Walckenaer	Foliage Hunter	-	1F (Spi-213-06)
<i>Scytodes</i> sp.	Foliage Hunter	-	1F (Spi-175-01)
<i>Scytodes thoracica</i> (Latreille)	Foliage Hunter	3F	2F (Spi-324-01)
<u>Sparassidae Bertkau, 1872</u>			
<i>Olios</i> sp.	Foliage Hunter	-	1M (Spi-unid-06)
<i>Heteropoda</i> sp.	Foliage Hunter	-	1M (Spi-unid-07)
<u>Tetragnathidae Menge, 1866</u>			
<i>Leucauge decorata</i> (Blackwall)	Foliage Weaver	2F	1F (Spi-14-03)
<i>Leucauge tessellata</i> (Thorell)	Foliage Weaver	3F, 2M	-
<i>Nephila kuhlii</i> Doleschall	Foliage Weaver	2F	1F (Spi-322-01)
<i>Nephila pilipes</i> (Fabricius)	Foliage Weaver	27F, 22M	-
<i>Tetragnatha</i> sp.	Foliage Weaver	-	1F (Spi-unid-03)
<u>Theraphosidae Thorell, 1870</u>			
Unidentified species #	Ground Weaver	-	-
<u>Theridiidae Sundevall, 1833</u>			
<i>Argyrodes ambalika</i> Tikader	Foliage Weaver	-	1F (Spi-53-05)
<i>Argyrodes xiphias</i> Thorell	Foliage Weaver	-	1F (Spi-323-01)
<i>Argyrodes gazingensis</i> Tikader	Foliage Weaver	-	1F (Spi-324-01)
<i>Steatoda</i> sp.	Ground Weaver	-	1F (Spi-298-01)
<i>Theridion</i> sp.	Foliage Weaver	-	1F (Spi-unid-05)
<u>Thomisidae Sundevall, 1833</u>			
<i>Camaricus khandalaensis</i> Tikader	Foliage Hunter	-	1F (Spi-306-02), 1M (Spi-306-01)
<i>Oxytate elongata</i> (Tikader)	Foliage Hunter	-	1F (Spi-325-03)
<i>Monaeses parvati</i> Tikader	Foliage Hunter	5F	1F (Spi-269-07)
<i>Runcinia ghorpadei</i> Tikader	Foliage Hunter	-	1F (Spi-326-01)
<i>Thomisus shivajiensis</i> Tikader	Foliage Hunter	-	1F (Spi-16-11)
<i>Thomisus cherapunjeus</i> Tikader	Foliage Hunter	3F	1F (Spi-13, 26)
<i>Thomisus elongatus</i> Stoliczka	Foliage Hunter	-	2F (Spi-327-02, 03)
<i>Thomisus</i> sp.	Foliage Hunter	-	1F (Spi-unid-02)
<i>Thomisus pugilis</i> Stoliczka	Foliage Hunter	-	1F (Spi-239-04)
<i>Xysticus minutus</i> Tikader	Foliage Hunter	6F	-
<u>Uloboridae Thorell, 1869</u>			
<i>Uloborus danolius</i> Tikader	Foliage Weaver	5F, 2M	-
<i>Uloborus khasiensis</i> Tikader	Foliage Weaver	6F	3F (Spi-196-03, 04, 05)
<u>Zodariidae Thorell, 1881</u>			
<i>Lutica</i> sp.	Ground Hunter	-	1F (Spi-unid-01)

Note: \* - Spiders not collected; # - indirect evidence of its occurrence; F - female; M - male; S - subadult; Spi-unid- unidentified species

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