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PRELIMINARY INVESTIGATION ON SPIDERS (ARACHNIDA: ARANEAE) IN RANI VEERANGANA DURGAWATI WILDLIFE SANCTUARY, DAMOH, MADHYA PRADESH, INDIA

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ABSTRACT

A preliminary study of spider fauna of the RVDWLS was carried out during 2009-2011. The present findings indicated that a total 23 spider species belonging to 12 genera under 7 families were reported for the first time from the sanctuary. Lycosidae was the most diverse family followed by Araneidae, Nephilidae, Oxyopidae, Clubionidae, Ctenidae and Salticidae. The *abundance of the* Lycosid spiders is mainly attributed to adequacy of leaf- litter in tropical mixed dry deciduous forest. Based on categorization of spiders into habit-wise functional groups, the ground hunters were dominating the foliage orb weavers and foliage hunters. The study has also indicated that there are new records of family, genus and species to the spider fauna of Madhya Pradesh.

Key words : Spiders fauna, Ground hunters, Lycosidae, Habit-wise functional groups, Abundance.

Introduction

The spiders operate within the balance of nature and their role in nature's plan is beneficial to man. Spiders are found almost everywhere in varied habitats like water surface, thick foliage, on flowers, forest floor, grassland, under stones, logs and barks of trees as well as in crop fields. They are natural enemies of insects, agricultural pest and disease vector insects. The World Spider Catalog includes around 42751 species under 3859 genera and 110 families (Platnick, 2012: Version 12.5). Sebastian and Peter (2009) described 1520 spider species under 377 genera belonging to 60 families from India. Spider fauna of Madhya Pradesh and Chhattisgarh states has been recently compiled by Patil (2011) as an updated checklist of 214 species belonging to 68 genera under 22 families. Ramkrishna *et al.* (2006) have documented the spider fauna of some national parks of Madhya Pradesh, in which altogether 62 species are listed including 16 species from the Kanha National Park, 27 from Pench National Park and 29 from Satpura National Park. Perusal of literature shows, no authentic spider fauna was reported earlier from the Rani Veerangana Durgawati Wildlife Sanctuary. The present study reports 23 species under 12 genera belonging to 7 families along with few new records of taxa based on recent faunistic surveys (2009-2011) from the Rani Veerangana Durgawati Wildlife Sanctuary, Damoh district, Madhya Pradesh, India.

Study Area

The Rani Veerangana Durgawati (RVDWLS) Wildlife Sanctuary was notified and came to existence in January, 1997 in Damoh district of Madhya Pradesh. It covers 24 km^2 of area under its jurisdiction. The sanctuary is located within $23^0$30' and $23^0$35' N latitudes and $79^0$40' and $79^0$50' E longitudes. There is hilly topography in the sanctuary with mosaic patches of all kinds of habitat. According to Dwivedi (2003) the forests of this sanctuary are classified as tropical mixed dry deciduous forests of medium quality and density. Bel (*Aegle marmelos*) is dominant plant species.

Material and Methods

During seasonal faunistic surveys (2009-2011) spiders were collected from different localities in the RVDWLS following three methods: active visual search, vegetation beating and net sweeping. Spider collection and preservation methodology by Tikader (1987) was followed. Rectified spirit with few drops of glycerin was

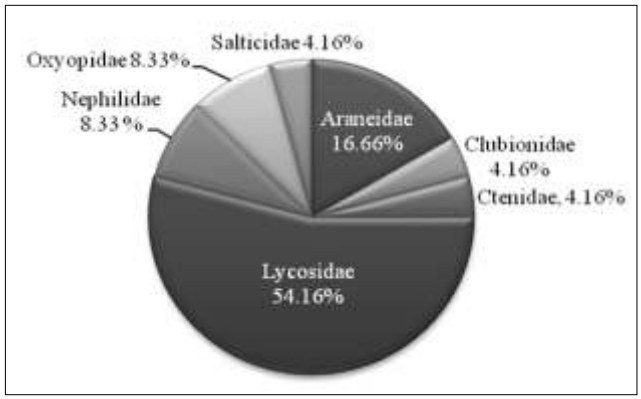

Fig. 1 : Spider diversity in RVDWS

A total of 23 spider species belonging to 12 genera under 7 families were reported first time from Rani Veerangana Durgawati Wildlife Sanctuary.

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Table 1: Taxomomic list of Spiders (Arachnida: Araneae) of the Rani Veerangana Wildlife Sanctuary, Damoh district, Madhya Pradesh.

Taxa and Zoological Name	Habit	Locality	No. of specimens studied
Family: Araneidae Simon, 1895			
Argiope aemula (Walckenaer)	Foliage Orb Weaver	Singhorgarh	2F
Neoscona mukerjei Tikader	Foliage Orb Weaver	Bada Chakkar	2F
Neoscona odites (Simon)	Foliage Orb Weaver	Singhorgarh	1F
Neoscona punctigera (Doleschall) #	Foliage Orb Weaver	Ghogra	1M
Family: Clubionidae Wagner, 1887 +			
Clubiona drassodes O.P.-Cambridge #	Foliage Hunter	Bada Chakkar	1F
Family: Ctenidae Keyserling, 1877 +			
Ctenus sp.*	Ground Hunter	Bada Chakkar	1F
Family: Lycosidae Sundevall, 1833			
Arctosa indica Tikader & Malhotra	Ground Hunter	Bada Chakkar	4F, 2M
Arctosa himalayensis Tikader & Malhotra	Ground Hunter	Singhorgarh	9F
Hippasa agelenoides (Simon)	Ground Hunter	Singhorgarh	1M
Hippasa greenalliae (Blackwall)	Ground Hunter	Bada Chakkar	1F
Hippasa pisaurina Pocock	Ground Hunter	Bandarkol	1F
Lycosa mackenziei Gravely #	Ground Hunter	Bada Chakkar	1F
Lycosa nigrotibialis Simon	Ground Hunter	Ghogra	1F
Lycosa tista Tikader #	Ground Hunter	Singhorgarh	2F
Pardosa altitudis (Tikader & Malhotra) #	Ground Hunter	Bada Chakkar, Koha nala	4F
Pardosa birmanica Simon	Ground Hunter	Bada Chakkar	1F
Pardosa pusiola (Thorell) #	Ground Hunter	Bada Chakkar	1F
Pardosa rhenockensis (Tikader) #	Ground Hunter	Koha nala	1F
Pardosa timidula (Roewer) #	Ground Hunter	Bada Chakkar, Bandarkol, Koha nala	3F
Family: Nephilidae Simon, 1894			
Nephila pilipes (Fabricius)	Foliage Orb Weaver	Bada Chakkar	1F
Nephila clavata L.Koch #	Foliage Orb Weaver	Singhorgarh	1F
Family: Oxyopidae Thorell, 1870			
Oxyopes bharatae Gajbe	Foliage Hunter	Singhorgarh, Tilgua	3F
Peucetia viridana (Stoliczka)	Foliage Hunter	Tilgua	1F
Family: Salticidae Blackwall, 1841			
Plexippus paykulli (Audouin)	Ground Hunter	Singhorgarh	1M

+Family new from M.P., *Genus new from M.P., #Species new from M.P.
Abbreviations: F-Female, M-Male

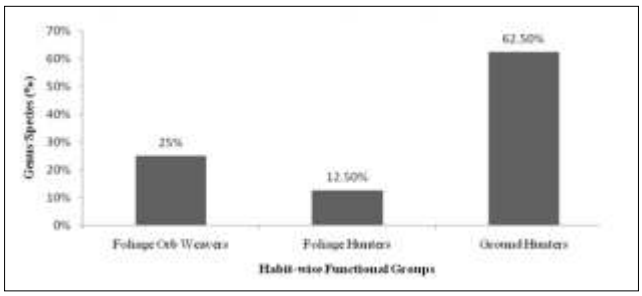

Fig. 2 : Habit-wise functional groups (%) of spiders from RVDWS

used as preservative. LEICA M205A Stereo-zoom microscope was used for spider identification following standard taxonomic keys by Tikader (1980, 1982); Tikader and Malhotra (1980); Dippenaar-Schoeman and Jocque (2006); Gajbe (2008) and Sebastian and Peter (2009). Family-wise placement and latest zoological names are according to Platnick (2012). Spider specimens were deposited in the National Zoological Collections of the Zoological Survey of India, Central Zone Regional Centre, Jabalpur, M. P. Digital SLR (Nikon-D70s) camera was used for field photography.

Results and Discussion

From the RVDWLS altogether 23 species belonging to 12 genera under 7 families were identified. Out of these taxa, two families (*Clubionidae, Ctenidae*), one genus (*Ctenus*) and nine species (*Neoscona punctigera, Clubiona drassodes, Lycosa mackenziei, Lycosa tista, Pardosa altitudis, Pardosa pusiola, Pardosa rhenockensis, Pardosa timidula* and *Nephila clavata*) are reported for the first time from the state of Madhya Pradesh, whereas all species are documented for the first time from this sanctuary. Photographs of selected spiders are given in *Plate 1.* Six species *viz. Arctosa himalayensis, Lycosa tista, Neoscona mukerjei, Neoscona odites, Oxyopes bharatae* and *Pardosa rhenockensis* are endemic to India.

Lycosidae was the most diverse family with 13 species (54.16% of the total species) under 4 genera, highest amongst all, followed by Araneidae (16.66%), Nephilidae and Oxyopidae (8.33% each) and Clubionidae, Ctenidae and Salticidae (4.16% each) were represented by only one species (Fig. 1). Spiders were

Female of *Argiope aemula* (Walckenaer)
(Family : Araneidae)

Female of *Neoscona mukerjei* Tikader
(Family : Araneidae)

Female of *Hippasa pisaurina* Pocock
(Family : Lycosidae)

Female of *Lycosa mackenziei* Gravely
(Family : Lycosidae)

Female of *Nepila pilipes* (Fabricius)
(Family : Nepilidae)

Male of *Plexippus paykulli* (Audouin)
(Family : Salticidae)

Plate 1 : Spiders of Rani Veerangana Durgawati Wildlife Sanctuary

categorized into three habit-wise functional groups *viz.* foliage orb weavers, foliage hunters and the *ground hunters. It was observed that in terms of number, ground hunters were dominating the* foliage orb weavers and foliage hunters. Of the total species the *ground hunters were 62.5%, followed by the* foliage orb weavers (25.0%) and the foliage hunters (12.5%) (Fig. 2). Abundance of the Lycosid spiders is justified primarily because of the adequate leaf-litter in the tropical mixed dry deciduous forests typical of this area. The results indicate scope for further extensive studies that will generate more informative database on the Araneae fauna of this sanctuary.

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रानी वीरांगना दुर्गावती वन्यजीव अभ्यारण, दामोह, मध्यप्रदेश (भारत) में स्पाईडर्स (एराक्नीडा : एरानी) पर प्रारंभिक खोज

सचिन आर. पाटिल, एस. सम्बाथ तथा रीता भण्डारी

सारांश

2009–2011 के दौरान आर.वी.डी.डब्ल्यू.एल.एस. के स्पाईडर फौना का प्रारंभिक अध्ययन किया गया। वर्तमान निष्कर्षो से इस अभ्यारण में पहली बार 7 कुलों के तहत 12 वंशों की कुल 23 स्पाईडर प्रजातियों को रिपोर्ट किया गया। लाइकोसीडाई सर्वाधिक वैविध्यपूर्ण परिवार था। जिसके बाद आर्नीडाई, नेफलीडाई, आक्सोपीडाई, क्लबोनीडाई, केटीन्डाई तथा साल्टीसीडाई का स्थान रहा। ल्यूकोसिड स्पाईडर्स की प्रचुरता मुख्यत: मिश्रित उष्ण कटिबंधी शुष्क पर्णपाती वनों की लीफ–लिटर में पाई जाती है। आदतों के अनुसार स्पाईडर्स को श्रेणीबद्ध करने पर पर्ण ओर्व वीबर्स तथा पर्ण हंटर्स का बाहुल्य पाया गया। अध्ययन से यह भी पता चला कि मध्यप्रदेश के स्पाईडर्स फौना के कुल, वंश और प्रजाति के नये रिकार्ड भी उपलब्ध है।

References

Dwivedi, A.P. (2003). *Protected Areas of Madhya Pradesh*. *Government Printing Press, Bhopal*: 254pp.

Dippenaar-Schoeman, A.S. and Jocque, R. (2006). *Spider Families of The World,* Royal Museum for Central Africa, Tervuren, 1-336.

Gajbe, U.A. (2008). *Fauna of India and the adjacent countries*, Spider (Aracnida: Araneae: Oxyopidae), *Zoological Survey of India,* Kolkata, III: 1-117.

Patil, S.R. (2011). Spiders of the States of Madhya Pradesh and Chhattisgarh (Arachnida: Araneae): Updated checklist 2011, *Indian Forester,*137(10): 1217-1224.

Platnick, N.I. (2012). *The World Spider Catalog, Version 12.5.* American Museum of Natural History. http://research.amnh.org/entomology/spiders/catalog/index.html (Last accessed on 29 February, 2012).

Ramakrishna, Chandra, K., Nema, D.K., Ahirwar, S.C. and Alfred, J.R.B. (2006). Faunal Resources of National Parks of Madhya Pradesh and Chhattisgarh, *Conservation Area Series, Records of Zoological Survey of India,* 30: 1-123.

Sebastian, P.A. and Peter, K.V. (2009). *Spiders of India*, First Edition, Universities Press, Hyderabad*:* 1-614.

Tikader, B.K. (1980). *Fauna of India-Araneae,* Family Thomisidae (Crab-spiders), *Zoological Survey of India,* Culcutta, I (1): 1-247.

Tikader, B.K. (1982). *Fauna of India-Araneae*: *Spiders*, Family Araneidae & Gnaphosidae, *Zoological Survey of India,* Culcutta, II (1 & 2): 536pp.

Tikader, B.K. (1987). *Handbook*: *Indian Spiders* (Anon. Ed.). Zoological Survey of India, Calcutta, 251 pp.

Tikader, B.K. and Malhotra, M.S. (1980). *Fauna of India-Araneae,* Family Lycosidae (Wolf-spiders), *Zoological Survey of India,* Culcutta, I (2): 248-447.