A STUDY ON DIVERSITY OF SPIDERS IN JHARBARI FOREST RANGE OF CHIRANG RESERVE FOREST, ASSAM, INDIA

THESIS

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CHAPTER 6
SUMMARY

Spiders play vital roles in the ecosystem as both predators, controlling insect populations, and as prey for other wildlife. Despite their ecological importance, research on spider fauna in Assam is limited, indcating a vast potential for discovering new species in the area. Thus, this study was conducted in the Jharbari Forest Range of Chirang Reserve Forest, Assam, India, from December 2017 to November 2021. Six fixed trails were explored slowly to look for spiders on leaf litter, leave foliage, tree bark, rock crevices and soil. Spiders were photographed in the field at their natural habitat. Spiders were collected using nets and beat sheets, then euthanized with acetone and stored in 80% ethanol. Detailed photos and measurements were taken under stereo microscope. Each spider was identified to the species level, with new species and records described in detailed along with illustrations. The number of spiders and their seasonal occurrences were documented and diversity was analysed using species accumulation curves and biodiversity indices. Villagers from fringe forest villages were interviewed in Bodo and Assamese language to gather their perceptions on spiders and sightings in their areas. This information was compiled and analysed to understand local spider diversity and community attitudes. The outcomes of the present study, entitled "A study on diversity of spiders in Jharbari Forest Range of Chirang Reserve Forest, Assam, India" are as follows: Jharbari Forest Range harbours a diverse species of spider, where 100 species belonging to 83 genera under 19 families have been documented.

1. Out of the 62 families recorded from India, 18 families are known from Jharbari Forest Range. The dominant family was Aranediae with 33 species belonging to 23 genera, followed by Salticidae (20), Theridiidae (11), Thomisidae (6), Oxyopidae (5) and Tetrganathidae (5).
2. The total recorded genera from India is 504, of which 83 genera is recorded from the study area. Araneidae showed maximum generic diversity with 23 genera, followed by Salticidae (19), Theridiidae (8) and Thomisidae (6).

3. Six new species have been uncovered, namely *Eriovixia kachugaonensis*, *Meotipa ultapani*, *Paraplectana mamoniae*, *Vailimia jharbari*, *Chinattus prabodhi* and *Gravelyia boro*.
4. Ten new records for India, viz., *Hyllus diardi*, *Dexippus kleini*, *Phrynarachne decipiens*, *Cyrtarahcne nagasakiensis*, *Hygropoda higenaga*, *Dendrolycosa songi*, *Philoponella alata*, *Himalmartensus ausobskyi* and *Eriovixia pseudocentrodes*.
5. The genus *Chinattus* and *Vailimia* have been recorded for the first time from India.
6. *Deixippus kleini* have been rediscovered after 129 years, additionally the genus *Vailimia* is rediscovered after 133 years along with the female representative of the genus.
7. *Asianopis goalparaensis* has been redescribed based on the specimens collected from the type locality.
8. A total of 17 species have been recorded as endemic species of India, namely *Arachnura angura*, *Guizygiella indica*, *Eriovixia kachugaonensis*, *Paraplectana mamoniae*, *Chrysso urbasae*, *Chrysso angula*, *Meotipa ultapani*, *Asianopis goalparaensis*, *Pasilobus kotigeharus*, *Camaricus khandalaensis*, *Thomisus lobosus*, *Oxytate greenae*, *Tmarus jabalpurensis*, *Bowie sikkimensis*, *Vailimia jharbari*, *Chinattus prabodhi* and *Gravelyia boro*.
9. A total of 76 species have been documented as a new record from Indian state of Assam.
10. The overall species accumulation curve of four years (2017-2021) showed asymptote at 100 species.
11. Out of the four seasons (winter, pre-monsoon, monsoon and post-monsoon), the highest species diversity was observed during pre-monsoon with a total of 80 species, followed by monsoon season (63), winter (57) and post-monsoon (38).
12. The dominant family observed throughout the seasons was Araneidae (winter=18, pre-monsoon=28, monsoon=23, post-monsoon=10), followed by Salticidae (winter=10, pre-monsoon=17, monsoon=10, post-monsoon=6).
13. Out of the eight habitats (Shrubs, Herbs, Grasses, Tree bark, Forest stream, Forest litter, Under rocks and Burrow), the highest species diversity have been recorded in

Shrubs with Shannon-Weiner index value as 4.0, followed by Herbs (3.4), Grasses (1.49), Tree bark (1.47) Forest stream (1.29), Forest litter (1.16), Under rocks (0.91) and Burrow (0.25).

14. A total of 8 guild types have been recorded from the study area. Orb weavers were the dominant guild type with 40 species, followed by other hunters (30) and space web weavers (11).
15. Species accumulation curve varied for each habitat, where Shrubs showed asymptote with highest number of species (63), followed by Herbs (34).
16. Out of the total 89 individuals interviewed, 94% of them could recognise spiders and the rest 6% were not familiar with spiders.
17. 43% of the individuals showed no Arachnophobia, while 27% showed fear and rest of the 24% were eager to kill spiders.
18. The interviewees sighted highest number of spiders from the family Araneidae (33%), followed by Lycosidae (26%), while Salticidae (21%) and Pholcidae (21%) were equally sighted.
19. Maximum spiders were sighted indoors (55%), followed by home garden (26%).
20. The interviewees' sighted the maximum number of spiders during monsoon season (31%) followed by pre-monsoon (28%), and 41% of the interviewees' were not observant of spiders.

The high level of diversity indicated the ecological richness of the forest, which provides a variety of microhabitats supporting a wide range of spider species. The intricate web of flora and fauna within the reserve forest plays a crucial role in maintaining these microhabitats. This research highlights the need for further studies and conservation efforts. By deepening our understanding of spider species and their ecological roles, we can foster greater appreciation and support for their conservation among the general public, scientists, land managers, and conservationists. Protecting spider diversity is crucial not only for maintaining ecological balance but also for preserving the intricate biological networks that sustain various life forms in the forest. Therefore, conservation initiatives should prioritize

educating stakeholders about the critical contributions of spiders to ecosystem health and the urgent need to protect their habitats from anthropogenic threats.