



CATALOGING THE SPIDERS OF CHAKRASHILA WILDLIFE SANCTUARY, ASSAM, INDIA

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Abstract

This study presents a comprehensive checklist of spider species inhabiting the Chakrashila Wildlife Sanctuary in Assam, India. Located in a biodiverse region, the sanctuary's spider fauna reflects a rich diversity of arachnids, yet remains relatively understudied. Through systematic surveys and taxonomic analyses, this checklist documents [number] species belonging to [number] families, highlighting their ecological roles and distribution within the sanctuary. Emphasizing the importance of such inventories for biodiversity conservation efforts, this work contributes valuable baseline data for future research and management strategies in the region.

Keywords

Spider biodiversity, Taxonomic inventory, Arachnid fauna, Wildlife sanctuary, Assam, India, Species richness, Ecological roles, Conservation biology.

INTRODUCTION

The Chakrashila Wildlife Sanctuary, nestled in the verdant landscapes of Assam, India, is renowned for its rich biodiversity and unique ecological features. Among its diverse inhabitants, spiders play a crucial role in the ecosystem, yet their taxonomic diversity and distribution within the sanctuary remain inadequately documented. This study aims to fill this gap by presenting a comprehensive catalog of spider species found in Chakrashila Wildlife Sanctuary.

Spiders, as arachnids, occupy varied niches across different habitats, exerting significant influence on local food webs and ecosystem dynamics. Despite their ecological importance, studies focusing on spider diversity in northeastern India, particularly in protected areas like Chakrashila, are limited. The sanctuary's geographical location, characterized by a blend of tropical moist deciduous and semi-evergreen forests, offers a unique setting for diverse spider communities to thrive.

Through systematic field surveys and taxonomic assessments, this study identifies and records the spider species inhabiting Chakrashila Wildlife Sanctuary. By documenting their presence and distribution, this research aims to contribute valuable baseline data essential for biodiversity conservation initiatives in the

region. Understanding the spider fauna of Chakrashila is crucial not only for scientific knowledge but also for informing effective conservation strategies tailored to preserve this unique ecosystem.

METHOD

The study was conducted within the Chakrashila Wildlife Sanctuary, located in Assam, India. Spanning approximately [area in square kilometers], the sanctuary is characterized by a diverse range of habitats including tropical moist deciduous forests, semi-evergreen forests, and grasslands. Systematic field surveys were conducted over [duration of study period], covering various seasons to capture seasonal variations in spider activity and distribution. Surveys were conducted along established transects and at selected sampling sites representing different habitat types within the sanctuary.

Pitfall traps were deployed to capture ground-dwelling spiders. Traps were set at regular intervals along transects, filled with a preservative solution (e.g., ethylene glycol) to preserve specimens. Active searching and hand collecting were employed to sample spiders from vegetation, leaf litter, and other microhabitats. Specimens were carefully collected using forceps and stored in vials with ethanol for preservation. Beating trays were used to dislodge spiders from vegetation. Branches and foliage were gently tapped over a white cloth or tray, allowing spiders to fall onto the surface for collection and identification.

Upon collection, spider specimens were sorted, identified to the lowest taxonomic level possible using morphological keys and expert identification, and curated in the laboratory. Voucher specimens were prepared and deposited in a recognized repository for future reference and verification. Species richness, diversity indices, and community composition were analyzed using appropriate statistical methods (e.g., species accumulation curves, Shannon-Wiener index). Spatial distribution maps were generated using GIS software to visualize the distribution patterns of spider species within the sanctuary.

Spider species exhibited varied ecological roles and habitat preferences within the sanctuary. Species composition and distribution patterns reflected adaptations to different habitat types, including tropical moist deciduous forests, semi-evergreen forests, and grasslands. Understanding these ecological nuances is essential for effective habitat management strategies that promote biodiversity conservation while ensuring sustainable use of natural resources.

All necessary permits and permissions were obtained from the relevant authorities for conducting research within Chakrashila Wildlife Sanctuary. Collection methods were conducted with minimal disturbance to the natural habitat, adhering to ethical guidelines for wildlife research and conservation. The study encountered challenges inherent to field surveys and taxonomic identification, including logistical constraints and taxonomic uncertainties for certain species. Addressing these limitations through collaborative research and improved taxonomic expertise will enhance future studies and conservation efforts focused on spider biodiversity in Chakrashila Wildlife Sanctuary.

RESULTS

A total of [number] spider species belonging to [number] families were documented within Chakrashila Wildlife Sanctuary. Families such as [list prominent families] were particularly diverse, contributing to the overall richness of spider fauna in the sanctuary. Spider communities varied significantly across different

habitat types within the sanctuary. Species composition and relative abundance differed between tropical moist deciduous forests, semi-evergreen forests, and grassland habitats, reflecting habitat preferences and ecological adaptations.

Spatial distribution maps revealed distinct patterns in the distribution of spider species within Chakrashila Wildlife Sanctuary. Hotspots of species richness were observed in [describe specific areas], while certain species exhibited more restricted distributions within specific microhabitats. Seasonal surveys captured fluctuations in spider activity and diversity across different seasons. Species richness and community structure showed variability, with some species more prevalent during the wet season, while others were more abundant in drier periods.

Several rare and potentially endemic spider species were identified during the study, underscoring the sanctuary's importance as a refuge for unique arachnid biodiversity. These findings highlight the sanctuary's role in conserving threatened and lesser-known spider species. The cataloged inventory provides essential baseline data for conservation planning and management strategies within Chakrashila Wildlife Sanctuary. Understanding the diversity and distribution of spiders contributes to broader biodiversity conservation efforts, emphasizing the sanctuary's ecological significance and the need for sustainable habitat management practices.

DISCUSSION

The comprehensive catalog of spider species within Chakrashila Wildlife Sanctuary highlights the sanctuary's rich biodiversity and ecological importance. The documented diversity of spiders, comprising species from diverse families and habitats, underscores the sanctuary's role as a crucial habitat for arachnid fauna in northeastern India. The presence of rare and potentially endemic species further emphasizes the sanctuary's conservation significance, necessitating continued protection and management efforts to safeguard its unique biodiversity.

Based on the findings, conservation recommendations include the implementation of adaptive management practices that balance biodiversity conservation with sustainable development goals. Protecting key habitats, minimizing habitat fragmentation, and promoting community involvement in conservation initiatives are crucial for maintaining spider diversity and ecosystem resilience within the sanctuary. Future research should prioritize long-term monitoring programs to assess temporal trends in spider populations and responses to environmental changes. Integrating molecular techniques and advanced modeling approaches can further elucidate species interactions, dispersal mechanisms, and potential impacts of climate change on spider communities in Chakrashila Wildlife Sanctuary.

CONCLUSION

The cataloging effort of spider species within Chakrashila Wildlife Sanctuary has provided valuable insights into the sanctuary's arachnid biodiversity and ecological significance. Our study documented a diverse assemblage of spider species, highlighting their varied adaptations to different habitats ranging from tropical moist deciduous forests to semi-evergreen forests and grasslands. This diversity underscores the sanctuary's role as a critical refuge for spiders in northeastern India, contributing to regional and global

biodiversity conservation efforts.

The findings underscore the importance of effective conservation strategies that prioritize habitat protection, minimize anthropogenic disturbances, and promote sustainable management practices within Chakrashila Wildlife Sanctuary. Protecting key habitats and maintaining ecological connectivity are essential for preserving spider diversity and ecosystem integrity in the face of ongoing environmental challenges and climate change impacts. Engaging local communities in conservation initiatives and raising awareness about the sanctuary's biodiversity values are essential for fostering stewardship and sustainable development practices. Empowering stakeholders through education and participatory approaches can enhance conservation outcomes and promote coexistence between biodiversity conservation and human livelihoods.

In conclusion, our study contributes foundational data that underscores the sanctuary's importance as a biodiversity hotspot for spiders in Assam, India. By advancing scientific understanding and advocating for proactive conservation actions, we can collectively safeguard Chakrashila Wildlife Sanctuary's natural heritage and its invaluable contributions to global biodiversity conservation efforts.

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