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A Descriptive study on poisonous arachnids, and parasites of human and domestic animal illnesses

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Abstract

The purpose of the study is to present the Araneae Order, which has been overlooked and is mostly unknown to science, especially in Northeast India. A total of 40 spider species from 36 genera and 11 families were identified throughout the study's period of January through April 2016. Utilizing keys for Indian spiders, the species was identified. Active searching was used in the methodology at all stages, from the ground up to the layer of the tree canopy, that were conveniently accessible for manual collection and visual surveys. This serves as documentation and a report on the Nilgiri spiders' preferred microhabitats. Such research is essential for protecting these critters and compiling a biodiversity record of this enormously varied group from an India's fragmented forest habitat. This research focuses on the underappreciated variety of spiders found in this woodland.

Keywords: Spider family, Conservation, Microhabitat,

Introduction

In addition to the well-known ticks, mites, spiders, and scorpions, arachnids also include pseudoscorpions, camel spiders, vinegaroons, whip spiders, and a few more subspecies. In practically every imaginable terrestrial ecosystem, arachnids play an essential predatory arthropod role. Spiders are the most successful arachnids ecologically, and as predators, they devour enormous amounts of insects, in contrast to ticks, which are ectoparasites that harm people and animals. Therefore, from a macroevolutionary and macroecological standpoint, it is important to understand when arachnids invaded the land and began to diversify. Arachnids are chelicerates, together with sea spiders and marine horseshoe crabs (Xiphosura) (Pycnogonida). With more than 112,000 documented living species, they constitute the Chelicerata clade with the greatest diversity. Arachnids are one of three different and prehistoric occurrences of arthropod terrestrialization, together with hexapods and myriapods (terrestrial isopods are a younger addition to the continental arthropod biota). Arachnids have historically been thought of being monophyletic and terrestrial, with the exception of marine mites, however this notion has sometimes been contested. Scorpions were formerly believed to be the aquatic "sea scorpions," the eurypterids, or the sister group of all other extant arachnids. It has been suggested that early fossil

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scorpions were aquatic, and in some instances, even marine. According to these evolutionary theories and interpretations of ancient ecology, terrestrialization must have occurred independently of one another. Strong molecular and morphological evidence that scorpions are nested within the Arachnida as the sister group of the other arachnids with book lungs, the Tetrapulmonata, has reversed some of these ideas. In fact, precise similarities between the shape of the book lungs of scorpions and tetrapulmonates imply their homology. On the basis of morphology and geology, it has also been questioned if some fossil scorpions really lived in the water. Analyses of phylogenomic databases, which often found the marine Xiphosura to be nested inside Arachnida, presented another obstacle to a single terrestrialization event in arachnids. Other phylogenomic investigations have produced trees in which Arachnida is monophyletic, therefore this topic is still debatable.

The majority of chelicerate lineages are predatory elements of a wide variety of ecosystems, and the rock record attests to their existence in both earlier Paleozoic marine settings and throughout the Mesozoic and Cenozoic, which saw a prodigious diversification of spiders and other terrestrial arachnids. Prior to the Silurian, the terrestrial rock record is quite scant and has shown some apparent discrepancies when examining the divergence periods of plants and myriapods hexapods, and hexapods (Lozano-Fernandez e While estimations from molecular clocks go as far back as the Ordovician (485-443 Ma) and Cambrian (538-485 Ma), the body fossil record of terrestrial plants and arthropods only goes as far as the Silurian (443-419 Ma. However, it is probable that plant spores dating to the middle Cambrian have characteristics that make them resistant to desiccation. There is no clear proof that crown-group arachnids existed before the Silurian period in the fossil record. Silurian-aged crown-group arachnids (stem-group Scorpiones in the Llandovery) are the oldest, followed by the extinct Trigonotarbida in the late Silurian (early Pdol), Acariformes and Opiliones in the Early Devonian (Pragian), and Pseudoscorpiones in the Middle Devonian (Givetian). In the Carboniferous, the spider orders Araneae, Uropygi, Amblypygi, and Ricinulei make their first appearances. Older members of the arachnid lineage are members of the stem-group Arachnida, which are marine shoreline or brackish water/estuarine forms rather than terrestrial ones, in contrast to the idea of dispersed branches of the arachnid crown-group that first

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appeared in the Siluro-Devonian. These include the Chasmataspida and Eurypterida, whose oldest individuals originate from the Miaolingian Series of the Cambrian (Drumian Stage) and the Late Ordovician (Sandbian), respectively. A species from the Early Ordovician (Tremadocian) of Morocco extends the lineage's history even further for Xiphosura-like chelicerates. Marine stem-group representatives of Xiphosura like Lunataspis have been documented from the Late Ordovician, ca. 445 Ma. Any estimated evolutionary position for Xiphosura among terrestrial arachnids would suggest that the marine ecology of this branch should be a subsequent acquisition given the extensive history indicated by the fossil record. Molecular studies have frequently found horseshoe crabs in highly derived clades of arachnids, such as sister groups to Opiliones or Palpigradi, Ricinulei, or Scorpiones and Araneae. Although such a scenario is paleontologically improbable, horseshoe crabs have been found in these groups.

Literature Review

Similar to other terrestrial groups, arachnids have undergone significant diversity and may be traced back to ancient times using molecular dating. Lozano-Fernandez et al. (2016) determined dates for the beginning of the Arachnida with credibility intervals bracketed between the Cambrian, in the first two investigations, and the Ordovician, in the latter, as part of larger campaigns examining arthropods utilising just a few arachnid examples. Recently, Ballesteros and Sharma (2019) revealed a chelicerate molecular phylogeny in which they inferred an Ediacaran origin for the group when they restricted Arachnida to be monophyletic. As a result, there are significant geochronological disparities between the molecular clock-based research and the younger dates indicated by the earliest fossil appearances, especially for terrestrial lineages. Clock-based approaches are necessary to approximate an accurate evolutionary timeline since fossils do not offer information on the date of genesis of clades but rather indicate minimum ages of divergence.

Conclusion

According to the research, there are 40 species of spider in the study region, which are divided into 36 genera and 11 families. It means that 22 families were found, which means that about 50% of

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the research field's families were recognised. When there is a wider range of habitat types, diversity tends to rise. The use of spiders as indicator species is nevertheless limited by a dearth of knowledge on the ecology and taxonomy of Indian spiders. Using them as indicator species was made challenging by aspects including their range, connection to diverse ecosystems, and reactions to varied disturbances. The research provides details on species distribution in a certain ecosystem in relation to environmental factors, disturbances, and food availability. The research region is home to a variety of ecosystems, including dry deciduous forest, rain forest, and shrubs. This might be the cause of the abundance of species. By describing species variety and emphasizing uncommon and unique species found in this habitat, it also highlights the need to conserve this ecosystem.

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