

AN INVESTIGATION OF DIVERSITY AND BIOECOLOGY OF ARANEOFAUNA OF PATHIRAMANAL ISLAND IN VEMBANAD LAKE, A RAMSAR SITE, KERALA, INDIA

Jobi J. Malamel^{a*} and Ambalaparambil Vasu Sudhikumar^b

^aDivision of Arachnology, Department of Zoology, Sacred Heart College, Thevara, Cochin, Kerala 682 013, India; ^bCentre for Animal Taxonomy and Ecology, Department of Zoology, Christ College, Irinjalakuda, Kerala 680125, India

*Corresponding author. Email: jomalamelcmi@gmail.com

Article history

Received: 25 August 2020;
accepted 12 November 2020

Keywords:

Abundance; dominance;
ecological guild;
kleptoparasitic; spider

Abstract. A preliminary checklist of araneofauna of Pathiramanal Island is provided. A total of 147 species belonging to 26 families under 92 genera are documented. *Tylorida ventralis* (Thorell 1877) is considered to be the dominant species, and orb weavers are seen as the dominant guild. Araneidae, Salticidae, Theridiidae, Tetragnathidae and Thomisidae are five dominant families. The Shannon diversity, Simpson's (1-D) diversity, evenness and Chao1 indices have been calculated. Seven species new to science such as *Indopadilla insularis*, *Epeus triangulopalpis*, *Marengo sachintendulkar*, *Indomarengo chavarapater*, *Icius vikrambatrai*, *Piranthus planolancis* (Salticidae) and *Wolongia papafrancisi* (Tetragnathidae) are documented as well as three genera and four species are added to the Indian spider taxonomy. The males of *Meotipa picturara*, *Curubis tetrica* and *Pscellonus planus* are described for the first time. Eight species are synonymized and redescribed. Mating plug formation in *Argyrodes flavescens* is reported for the first time. It is noted that spider species from Pathiramanal Island bear affinities with Oriental and Palearctic regions.

INTRODUCTION

A healthy ecosystem and its smooth functioning is an indicator of the potentiality of the biodiversity of that particular ecosystem (Pettersson 1996). Pathiramanal Island seems to be a healthy ecosystem with a tower of biodiversity of both plants and animals. As far as a local legend goes, Pathiramanal Island originated as a result of divine intervention. A young Brahmin (a person belonging to the Hindu higher caste worthy of priesthood) dived into Vembanad Lake to perform his evening prayers, and the water made way for land to rise from below, thus forming the enchanting Island of Pathiramanal which means 'sands of midnight'. A great charming look, wide waterfront, flourishing coconut palms, floating weeds and hyacinths, tiny birds building nests on weeds, and varieties of rare fauna and flora among the dense foliage of this tiny Island make it really a biodiversity hotspot. But, regrettably, no previous biodiversity studies have been done in Pathiramanal Island. An informal report indicates that the Island possesses some sort of fauna like odonates, birds, mammals, reptiles and arthropods (not a precise data). Arthropod diversity in this area remains undocumented, and a pilot study disclosed that it is a refuge for a rich volume of arachnids, to which spiders make a great contribution. But no organized work has been carried out to date on the taxonomy and diversity of spiders of this biologically unique ecosystem. 23 species of spiders have been named unofficially from this ecological zone. However, it is sure that a number

of spiders have yet to be explored in this ecosystem, which prompts the need for an inventory of the spider fauna of this unique environmental sector. As spiders free us from most of insect pests like a key component to balancing the ecosystem both as prey and predator, they are very important animal taxa for humans (Benítez and Méndez 2011). In order to understand the potentiality of the Island and to conserve the spider species there, it is essential to explore the Island comprehensively. Therefore, this study is an attempt to throw light on the diversity, richness, abundance and dominance of spiders in Pathiramanal Island.

MATERIALS AND METHODS

Study Area

Pathiramanal Island (hereinafter, Island) is a small tropical island with an area of approximately 1 km². It lies between the latitudes 9°37'07.11" N and longitudes 76°23'04.95" E (Figure 1). Though small in size, Pathiramanal Island is blessed with rich flora and fauna owing to the presence of a wide forest cover and thick vegetation (Figure 2). With respect to its geographical, climatic and ecological features, the Island harbours a rich amount of arachnids, of which spiders have a huge share. The temperature ranges from 28.6° C to 33.5° C, with an annual mean of 31.0° C and plentiful rainfall in June–July (annual rainfall > 250 mm). The dense vegeta-