

Diversity of Moths (Lepidoptera: Heterocera) in Sringeri Taluk, Western Ghats, Karnataka

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Abstract

The systematic survey was conducted during the month June to August in and around Sringeri taluk, Chickmagalur district in the year 2020. During study we recorded 33 species belongs to 30 genera and 13 families. Out of 11 recorded families of moth, family Erebidae was dominated which was followed by Geometridae, Crambidae, Saturniidae Sphingidae and only one species were recorded from, Elachistidae, Pyralidae Zygenidae, Lasiocaampidae, Cossidae, Eupterotinae.

Keywords: Moth, Diversity, Family, Lepidoptera

Introduction

Insects comprises more than half of the World's known animal species (Wilson, 1992) [12] and comprises about 90% of tropical forest biomass (Fatimah and Catherine, 2002) [4] of which the second largest and more diverse order is Lepidoptera of class insecta (Benton, 1995) [1]. Lepidoptera means "Scaled Wings" in Greek (Paul et al., 2016) [7],

Lepidoptera is the second largest and the most diverse order of the class insecta (Benton 1995). Many investigators have used lepidoptera as model to assess the impact of disturbance and management practices on forest ecosystem.

Among insects moths belonging to lepidoptera are economically very important as the primary herbivorous in the forest ecosystem are diverse in their habitats and are adapted to a variety of condition. Being highly sensitive to changes in the environment, they are easily

affected by even relatively minor perturbations in the habitat so much. So, they have been considered as indicators of environmental quality. Many are pests of various agricultural, horticultural and plantation crops (Muddasar, et.al 2017. K.Shivashanka et.al., 2011) [6]. Studies on diversity of moths in forest ecosystem can provide useful information on their role in the ecosystem.

The moth diversity of Western Ghats has been poorly studied in the past few decades. So, it is in need of a systematic update and additional modern surveys. Recent estimates report over 1,27,000 species of moths from all over the world (Alfred et al,1998) of which over 12,000 species are recorded from India (Abesh Kumar Sanyal et al.,). Several workers have previously worked on butterflies, like Cotes and Swinhoe (1887-89) and Hampson (1892-1896) listed 4,553 and 5,277 moth species respectively from India; of which they have reported 789 and 611 moth species principally from Western Maharashtra. Shull and Nadkerny (1962) recorded 180 species from Dangs, Gujarat. Chandra and Kumar (1992) [3] presented a comprehensive list of 415 species of moths from Andaman and Nicobar Islands. Arora (1983), Mondal and Battacharya (1980) and Chandra (1993 & 1994) have contributed information on the occurrence of 68 species of moths from Great Nicobar.

Allolli et al. (2017) recorded 42 species belonging to 3 families of Noctuidae from different districts of Karnataka i.e., Bangalore, Mysore, Chikmaglore, Bagalakot, Belgaum and Dharwad. Veeramani and Abirami [14] recorded 13 species from in around Kumbakonam city, Tamil Nadu. Mishra et al. (2017) collected 40 species of 35 genera belongs to 10 families from Neora valley National Park and Zoological Survey of India (Shah S.K. et.,al 2017) [8] and other organizations conducted Insect survey of Sikkim, reported hundreds of new species from the state and presently there is record of 1,817 species of moths pertaining to 607 genera and 26 families (Chandra, Insect diversity of Sikkim, India).

Insect being largest faunal group from a major component of the biodiversity of any area and hence documentation of this group is indispensable to any scientific study and conservation. Knowledge on the insect fauna of Indian forest is largely based on early studies by pioneer workers like Hampson (1896-1898). Although a series of reversionary studies have been subsequently carried out from different geographical regions, no exhaustive survey has so far been carried out specifically from the various forests areas, particularly true with regard to the Western Ghats region which is noted for its richness in biodiversity (Mathew and Rahamathulla, 1995) [5]. Thus, the present study was conducted in surrounding areas of Sringeri taluk, over three month period through systematic survey.

Materials and Methods

Study Area

The study area Sringeri one of the famous tourism place of Chikkamagalur district with a geographical area of 7201 sq. km is situated in mid-South-Western part of Karnataka state. The Sringeri has derived its name meaning beautiful place dressed around hills Sringeri town, situated on the bank of river Tunga. Sringeri is well known for its vegetation especially for the medicinal herbs.

The study area is situated between 13°30' to 13° 11' N and 75° 04' 35" to 75° 19' E. Sringeri has well defined physiographic regions. It has surrounded by many hills, the elevation ranges about 600-900m. The average rainfall is around 3000 mm. The maximum temperature reaches 36°C during summer and minimum around 12°C during winter. Considering topography, bioclimate and soil the vegetation of the region is broadly categorized under Evergreen, moist deciduous, dry deciduous and Shola and grasslands.

Methodology

Systematic survey was conducted during the months June to August by employing Pollard Walk Method (PWM) in and around Sringeri (Pollard, 1997). Moths were surveyed primarily by day time field visits, but also by use of light traps (Sondhi and Sondhi, 2016) [10]. Study area was visited during the mothing season and the light traps were also operated for one day per month. The light trap comprised a 3 x 4 m white cloth stretched between two posts or trees, in front of which was hung a mercury vapour light bulb (Philips, B/73). The light traps were operated from 07:00 pm to 09:00 pm. Moths attracted to the light traps were photographed. Besides data collected through light traps, photographic evidences have also been considered when listing the species. Identification of moths was carried out with the help of book Birdwing field guide to Indian Moths by Dr. V. Shubhalaxmi (2018) [9]. Specimen collection was strictly avoided and the small moths which are not able to identified in field they were collected using sweep net and released immediately as soon they identified or photographed.

Result and Discussion

During the present study we recorded 33 species belongs to 30 genera and 13 families (Table 1). Out of 11 recorded families of moth, family Erebidae was dominated with 35% (10 species) which was followed by Geometridae (18%, 6 species), Crambidae (12%, 4 species), Saturniidae (9% 3 Species) Sphingidae (6%, 2 species), and Only one species were recorded from, Elachistidae, Pyralidae Zygenidae, Lasiocaampidae, Cossidae, Eupterotinae (Table 2 and Figure 1).

Table 1: List of Moth Species Documented during the Survey

SI. No.	Family	Scientific Name	Common Name
1	Erebidae	<i>Ophiusa tirhaca cramer</i> <i>Cyana arama</i> <i>Spilosoma virginica</i> <i>Thyas coronata</i> <i>Eudocima maternal</i> <i>Olene sp.</i> <i>Eudocima hypermnestra</i> <i>Mangina argus</i> <i>Olepa sp.</i> <i>Barsine sp.</i>	Tirhaca underwing Arama Virginia Tiger Ornge underwing Thyas Citrus fruit piercer Brown Bordered Tussock Grape fruit piercer Crotalaria podborer Yellow underwing Tiger Crimson Barrow moth
2	Crambide	<i>Diaphania indica</i> <i>Maruca vitrata</i> <i>Pygospila tyres</i> <i>Spoladea recurvalis</i>	Cucumber snout Beampad Borer Chequered snout Beet webworm
3	Geometridae	<i>Pingosa ruginaria</i> <i>Pingasa chlora</i> <i>Idea tacturata</i> <i>Agathia gemma</i> <i>Thalassodes quadraria</i> <i>Hyperythra lutea stol</i>	Brown Bordered Pingosa White looper moth Dot lined wave White Tip emerald Mast-tree emerald Red banded Geometer

4	Saturnidae	<i>Antheraea Polyphemus</i> <i>Attacus atlas</i> <i>Attacus taprobanis</i>	Polyphemus Silk moth Greater Atlas moth Lesser Atlas moth
5	Sphingidae	<i>Daphnis nerii</i> <i>Hippotiom boerhavia</i>	Oleander hawk moth Hogweed hawk moth
6	Elachistidae	<i>Elachista albifrontella</i>	Bentgrass Leafmimer
7	Pyralidae	<i>Hypsopygia olinalis</i>	Yellow, Fringed Hypsopygia
8	Zygaenidae	<i>Zygaena filipendulae</i>	Six spot burnet
9	Lasiocampidae	<i>Trabala Vishnou Lefebver</i>	Vishnow lappet
10	Cossidae	<i>Xyleutes persona</i>	Cassia Stem Borer
11	Eupterotidae	<i>Eupterote lineosa</i>	Yellow Monkey moth
12	Uraniidae	<i>Lyssa zampa</i>	Grey shallow tail moth
13	Noctiuidae	<i>Artaxal incomcisa</i>	Orange tufted artaxa

Table 2: Number of Moth Species Recorded in Different Family

Sl. No.	Family	Total No. of Species
1	Erebidae	10
2	Crambidae	4
3	Geometridae	6
4	Saturnidae	3
5	Sphingidae	2
6	Elachistidae	1
7	Pyralidae	1
8	Zygaenidae	1
9	Lasiocampidae	1
10	Cossidae	1
11	Eupterotidae	1
12	Uraniidae	1
13	Noctiuidae	1
	Total	33

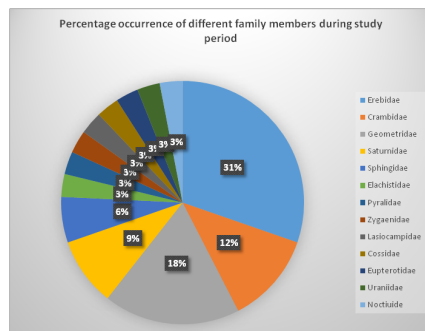







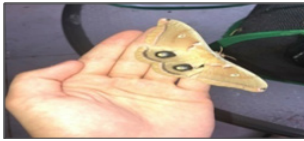












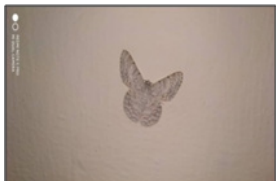


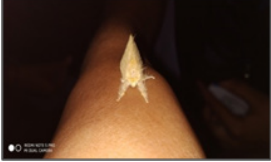











Figure 1 Percentage Occurrence of Different Family Members during Study Period

4. Photographs

		
<i>Elachista albifrontella</i>	<i>Pygospila tyres</i>	<i>Ideaea tacturata</i>
		
<i>Mangina argus</i>	<i>Hypsopygia olinalis</i>	<i>Cyana arama</i>
		
<i>Xyleutes persona</i>	<i>Antherea polyphemus</i>	<i>Spilosoma virginica</i>
		
<i>Zygaen filipendulae</i>	<i>Daphis nerii</i>	<i>Trabala Vishnou Lefebver</i>
		
<i>Eudocima maternal</i>	<i>Ophiuss tirhaca</i>	<i>Olene sp.</i>
		
<i>Agathia gemma</i>	<i>Maruca vitrata</i>	<i>Diaphania indica</i>
		
<i>Olepa sp</i>	<i>Eudocima hypermnestra</i>	<i>Pingasa chlora</i>

		
<i>Pingosa ruginaria</i>	<i>Thalassodes quadraria</i>	<i>Artaxal incomcisa</i>
		
<i>Eupterote lineosa</i>	<i>Lyssa Zampa</i>	<i>Attacus atlas</i>
		
<i>Thyas coronata</i>	<i>Barsine sp.</i>	<i>Hippotion boerhvia</i>
		
<i>Sapoladea recurvalis</i>	<i>Hyperythra lutea</i>	<i>Attacus taprobanis</i>

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