



## The moths (Lepidoptera: Heterocera) of vagamon hills (Western Ghats), Idukki district, Kerala, India

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### Abstract

The present study was conducted at Vagamon hill station to evaluate the biodiversity of moths. During the present study, a total of 675 moth specimens were collected from the study area which represented 112 species from 16 families and eight super families. Though much of the species has been reported earlier from other parts of India, 15 species were first records for the state of Kerala. The highest species richness was shown by the family Erebidae and the least by the families Lasiocampidae, Uraniidae, Notodontidae, Pyralidae, Yponomeutidae, Zygaenidae and Hepialidae with one species each. The results of this preliminary study are promising; it sheds light on the unknown biodiversity of Vagamon hills which needs to be strengthened through comprehensive future surveys.

**Keywords:** fauna, lepidoptera, biodiversity, vagamon, Western Ghats, Kerala

### 1. Introduction

Arthropods are considered as the most successful animal group which consists of more than two-third of all animal species on earth. Class Insecta comprise about 90% of tropical forest biomass (Fatimah & Catherine 2002) [10]. Order Lepidoptera is the most diverse and second largest in class Insecta (Benton, 1995) [4]. Moths constitute the sub-order Heterocera of order Lepidoptera that has important roles in the forest ecosystem as herbivores and as food for predatory and parasitic species (Sivasankaran K. *et al.* 2011) [22]. An estimated 1, 27,000 species of moths have been reported worldwide (Alfred *et al.* 1998) [1]. From India over 12,000 moth species have been reported so far (Chandra & Nema 2007) [8]. Only a little information is available on the Lepidoptera because of the preference of researchers to work on less diverse taxa (Sachin A. Gurule & Santosh M. Nikam. 2013) [21]. The deficiency of knowledge of systematics of insect fauna is a problem in assessing insect diversity which is due in part to lesser conservation efforts for invertebrates over larger vertebrates and plants (Mahajan 2004) [17]. Moths being an indicator group are frequently selected as subject of study; it is taxonomically well-known and relatively rapid to identify (Holloway, 1985) [15]. Moths play an important role in the natural ecosystem as pollinators, food in the food chain and also with the saproxylic nature of larvae of many species (Srinivasan *et al.* 2014) [24].

#### 1.1 Study area

The Western Ghats in India is one of the 8 biodiversity "hottest hotspots" in the world and a UNESCO world heritage site. This extends into the states of Kerala, Tamil Nadu, Karnataka, Maharashtra, Goa and Gujarat. Western Ghats lies in the west coast of Indian subcontinent as a low-lying string rising from narrow strip of coast near the western border, merging with Deccan plateau at 500-600m and touching a height of 2800m (Bhatt and Magurran 2006) [5]. The Western

Ghats stretches from 8° N to 22° N. Due to increasing anthropogenic activities the montane grasslands and adjacent forests face several threats (Pramod *et al.* 1997) [20]. With a wide array of bioclimatic and topographic conditions, the Western Ghats has a remarkable level of biodiversity and endemism while it is one of the most threatened regions which have attained the status of a biodiversity 'hotspot' (Bossuyt *et al.* 2004; Myers *et al.* 2000).

Vagamon (9° 66' and 9° 73' N latitude and 76° 86' to 76° 98' E longitude) is one of the extensions of the Western Ghats in Kerala. Vagamon has an elevation of about 1,100m (3,600ft) above sea level and is the site of origin of river Meenachil that empties into the Vembanad Lake and then to the Arabian Sea through the district of Kottayam. The place is referred as "Scotland of Asia" by tourists for its natural beauty of grasslands and cool climate. The area has also been described as one of the best paragliding sites in Asia and is part of the second highest peak in Southern India namely Amruthamedu. The climate is equitable, ranging from 32°C in summer to 10°C in winter with an average annual rainfall of about 376 cm. The enchanting Vagamon hill station dotted with tea gardens was predicted to be a venue for one of the State's foremost ecotourism projects (Pramod *et al.* 1997) [20]. With a cool climate, Vagamon is located at the border of Kottayam and Idukki districts of Kerala. Vagamon sub-watershed lies between 9°38'35" N to 9°41'42" N latitude and 76°53'09" E to 76°55'37" E longitude and covers an area of 8.71 km<sup>2</sup> (Brilliant *et al.* 2012) [7]. There is no report of biodiversity assessment studies conducted in this area excluding the very few ones on floral diversity conducted years back. Therefore the present study is the first of its type in this area for insect diversity. 200 varieties of grasses, 170 endemic orchids and 28 herbs have been reported from this area of which many are endemic to this place (Felix *et al.* 2018) [11]. Increasing number of tourists in recent years and extensive developmental activities necessitate the need for assessment of

the biodiversity in this region with a view to conservation.

The present study was aimed at preliminary level to assess the lepidopteran (Moth: Heterocera) diversity at Vagamom with a view to shed light on its richness, to elicit interest for further studies and to create awareness to the public and local people about the importance of conservation.

## 2. Materials and Method

Moths were collected from 4 random locations of Vagamom hills each separated by a distance of 1km (Fig. 1). The collection was done from the month of June 2014 to June 2015. The specimens were collected using light trap method by spreading a screen of white cloth (12"x6") between two vertical poles and illuminated by white light emitting from fluorescent or CFL lamps; many commercially available trap designs are not suitable for tropical conditions due to their small size that cannot accommodate enormous catches (Barlow 1982) [2]. The present collection method helped to avoid the killing or damaging of previously collected insects. The specimens resting on the wall under the wall lights were collected using small plastic containers and vials which were then administered with cotton soaked in ethyl acetate that was used as the insect killing poison. The collected specimens were soon pinned, relaxed and labelled at the field itself; these are both laborious and time consuming procedures as noted by many lepidopterists (Fatimah & Catherine 2002) [10]. The specimens were identified to the species level using standard taxonomic keys in the laboratory at Entomology Research Institute, Loyola College, Chennai. Identification of moths was confirmed using various literatures like the fauna of British India (Hampson, 1894) [14], The moths of Borneo (Holloway J.D, 1985) [15], The fauna of British India, including Ceylon and Burma (Bell and Scot, 1937) [3] and other publications. Web resources dedicated to lepidopteran diversity were also utilized to confirm or to check the species names.

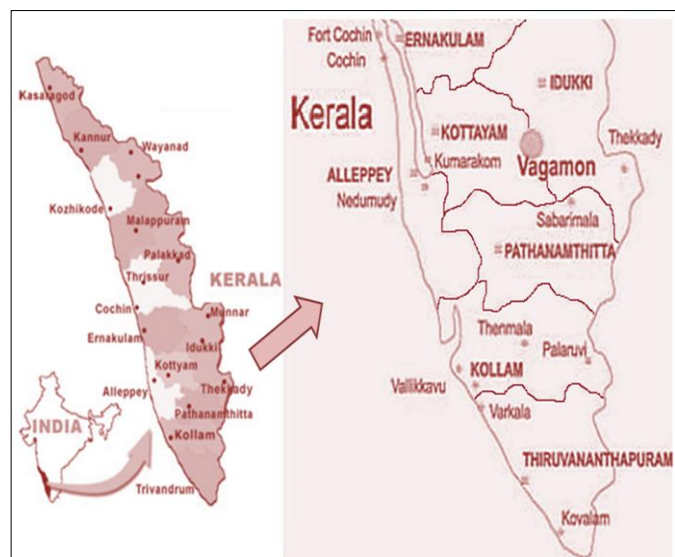


Fig 1: Map (Not to scale) showing the location of the study area

## 3. Result and discussion

During the present study a total of 675 moth specimens were

collected from June 2014 to June 2015. 112 species of moths were identified belonging to 16 families and 8 Super families. The most species rich family was Erebidae with 35 species under 31 genera belonging to 7 subfamilies, followed by Noctuidae with 17 species and Sphingidae and Geometridae with 12 species. The relative species abundance for the 8 superfamilies is shown in Table 1 and the same is presented with the help of pie diagram (Fig. 2). The least species richness was shown by families Lasiocampidae, Uraniidae, Notodontidae, Pyralidae, Yponomeutidae, Zygaenidae and Hepialidae with one species each. The most abundant species during the study was *Chiasmia eleonora* from the family Geometridae. The color photographs of all the identified 112 species are presented in Fig. 3 – 9. The checklist of all identified moths is given in Table 2.

The present checklist is first of its kind from the study area and also for the two districts namely Idukki and Kottayam of the state Kerala which shares their borders at this location. Earlier George Mathew & V. K Rahamathulla (1995) [13] reported 318 species of moths under 19 families from Silent Valley National Park, Palakkad district in Kerala. V. Sudheendrakumar & G. Mathew (1999) [25] reported 277 moths from Parambikulam wildlife sanctuary in the district of Palakkad, Kerala in which families Noctuidae, Geometridae, Pyralidae and Arctiidae contained maximum number of species. Mathew *et al.* (2004) [18] catalogued 202 species of Lepidoptera from Shendurny Wildlife Sanctuary, Kerala; of these 73 were butterflies and 129 were moths from nine families, of which the dominant families were Noctuidae (including Erebidae) and Pyralidae. Sivasankaran *et al.* (2017) [23] reported 188 species of Noctuoidea moths under 4 families from Nilgiris wherein Erebidae and Noctuidae were the dominant families.

Though most of the moths identified were reported from other parts of India, some species like *Aedia leucomelas*, *A. acronyctoides* *Arthisma scissuralis*, *Caduca albopunctata*, *Chasmia rejecta*, *Trachea auriplena* and *Viridistra viridipicta* from the family Noctuidae, *Beana terminigera*, *Erizada lichenaria* from the family Nolidae, *Phalera cossoides* from the family Notodontidae, *Leucophlebia lineata*, *Nephele hespira*, *Theretra oldenlandiae*, *T. clotho* from the family Sphingidae and *Eterusia aedea* from the family Zygaenidae were the first time report for the state of Kerala.

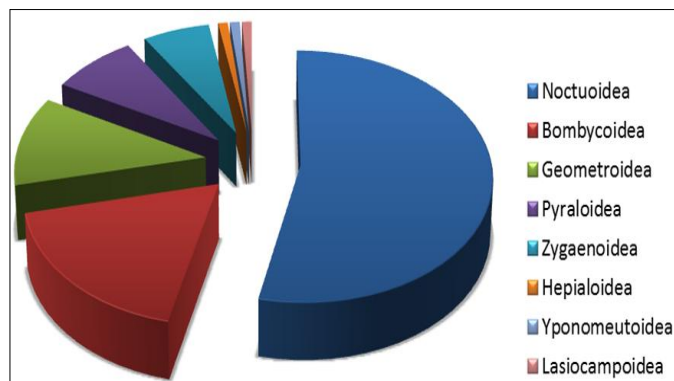
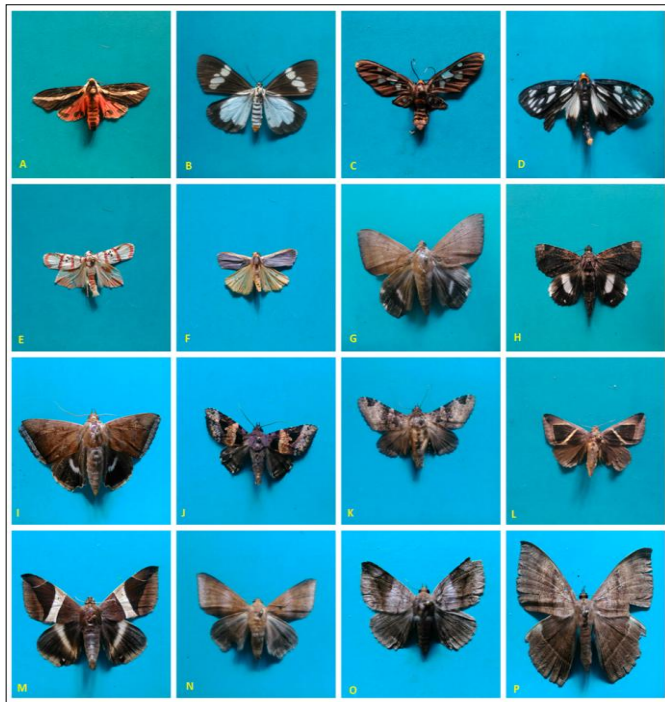


Fig 2: Pie diagram showing relative species abundance among the eight Superfamilies.



**Fig 3:** A) *Atteva fabriciella*(Adult from the family Yponomeutidae); B) *Agathodes ostentalis*, C) *Conogethes punctiferalis*, D) *Cydalima laticostalis*, E) *Terastia egialealis*, F) *Glyphodes bicolor*, G) *Parotis marginata*, H) *Palpita annulifer*, I) *Omphisa anastomosalis*(Adults from the family Crambidae); J) *Asota caricae*, K) *Asota heliconia*, L) *Neochera inops*, M) *Oeonistis entella*, N) *Barsine cuneonotata*, O) *Cretonotos transiens*, P) *Cretonotos gangis* (Adults from the family Erebidiae).



**Fig 4:** A) *Rajendra perrottetii*, B) *Nyctemera lactinicia*, C) *Amata cyssea*, D) *Machrobroschis gigas*, E) *Cyana coccinea*, F) *Brunia antica*, G) *Achaea serva*, H) *Nagia linteola*, I) *Artena dotata*, J) *Avatha bubo*, K) *Erygia spissa*, L) *Chalciope mygdon*, M) *Bastilla crameri*, N) *Bastilla absentimacula*, O) *Bastilla joviana*, P) *Lygniodes hypoleuca* (Adults from the family Erebidiae).



**Fig 5:** A) *Pandesma quenavadi*, B) *Olepa ricini*, C) *Mocis frugalis*, D) *Ophiusa onelia*, E) *Thyas coronata*, F) *Pangrapta macariana*, G) *Perina sp.*, H) *Lymantria sp.*, I) *Lymantria concolor*, J) *Lymantria mathura*, K) *Ericcia innagulata*, L) *Eudocima homaena*, M) *Eudocima hypermnestra*, N) *Hamodes propitia*(Adults from the family Erebidiae); O) *Eupterote mollifera discrepans*, P) *Eupterote undata*(Adults from the family Eupterotidae).



**Fig 6:** A) *Eupterote fabia*, B) *Eupterote lineosa* (Adults from the family Eupterotidae); C) *Chiasmia Eleonora*, D) *Chiasmia nora*, E) *Heterostegane cf urbica urbica*, F) *Heterostegane subtessellata*, G) *Hyposidra talaca*, H) *Cleora alienaria*, I) *Cleora determinate*, J) *Pelagodes quadraria*, K) *Oospila concinna*, L) *Dysphania percota*, M) *Spaniocentra lobate*, N) *Antityrogodes divisaria*(Adults from the family Geometridae); O) *Endoclitia malabaricus*(Adult from the family Hepialidae); P) *Metanastria gemella*(Adult from the family Lasiocampidae).



**Fig 7:** A) *Miresa bracteata*, B) *Scopelodes albipalpis*, C) *Phocodermata velutina*, D) *Doratifera stenora*, E) *Parasa fumosa*, F) *Thosea* sp. (Adults from the family Limacodidae); G) *Amphigonia hepatizans*, H) *Caduca albopunctata*, I) *Arthisma scissuralis*, J) *Calloplistria recurvate*, K) *Chasmina candida*, L) *Chasmina rejecta*, M) *Ctenoplusia* sp. N) *Plusiopalpa* sp. O) *Aedia leucomelas* P) *Aedia acronyctoides*(Adults from the family Noctuidae).



**Fig 9:** A) *Actias selene*, B) *Loepa katinka*(Adults from the family Saturniidae); C) *Leucophlebia lineata*, D) *Cephanodes hylas*, E) *Theretra oldenlandiae*, F) *Theretra clotho*, G) *Nephele hespera*, H) *Macroglossum belis*, I) *Hippotion rosetta*, J) *Acherontia lachesis*, K) *Acherontia styx*, L) *Agrius convolvuli*, M) *Psilogramma incerta*, N) *Marumba nymph*(Adults from the family Sphingidae); O) *Micronia aculeate*(Adult from the family Uraniidae); P) *Eterusia aedea*(Adult from the family Zygaenidae).



**Fig 8:** A) *Trachea auriplena*, B) *Mythimna separata*, C) *Mythimna unipuncta*, D) *Mythimna loreyi*, E) *Tiracola plagiata*, F) *Viridistria viridipicta*, G) *Penicillaria jacosatatrix*(Adults from the family Noctuidae); H) *Eligma narcissus*, I) *Beana terminigera*, J) *Westermannia superba*, K) *Westermannia argentea*, L) *Erizada lichenaria*(Adults from the family Nolidae); M) *Phalera grotei*(Adult from the family Notodontidae); N) *Vitessa suradeva*(Adult from the family Pyralidae); O) *Antheraea mylitta*, P) *Circula trifenestrata*(Adults from the family Saturniidae).

**Table 1:** Summary of the Superfamilies

Superfamily	Family	Number of species	Total number of species
Bombycoidea	Eupterotidae	4	20
	Saturniidae	4	
	Sphingidae	12	
Geometroidea	Geometridae	12	13
	Uraniidae	1	
Hepialoidea	Hepialidae	1	1
Lasiocampoidea	Lasiocampidae	1	1
Noctuoidea	Erebidae	37	60
	Noctuidae	17	
	Nolidae	5	
	Notodontidae	1	
Pyraloidea	Pyralidae	1	9
	Crambidae	8	
Yponomeutoidea	Attevidae	1	1
Zygaenoidea	Limacodidae	6	7
	Zygaenidae	1	
Grand total			112

Table 2: Checklist of moths identified

Sl. No.	Superfamily	Family	Sub-Family	Name of the species
1.	Bombycoidea	Eupterotidae	Eupterotinae	<i>Eupterote mollifera discrepans</i> Walker, 1865
2.	Bombycoidea	Eupterotidae	Eupterotinae	<i>Eupterote undata</i> Blanchard, 1844
3.	Bombycoidea	Eupterotidae	Eupterotinae	<i>Eupterote fabia</i> Cramer, 1780
4.	Bombycoidea	Eupterotidae	Eupterotinae	<i>Eupterote lineosa</i> Walker, 1855
5.	Bombycoidea	Saturniidae	Saturniinae	<i>Antheraea mylitta</i> Drury, 1773
6.	Bombycoidea	Saturniidae	Saturniinae	<i>Circula trifenestrata</i> Helfer, 1837
7.	Bombycoidea	Saturniidae	Saturniinae	<i>Actias selene</i> Hubner, 1807
8.	Bombycoidea	Saturniidae	Saturniinae	<i>Loepa katinka</i> Westwood, 1848
9.	Bombycoidea	Sphingidae	Macroglosinae	<i>Leucophlebia lineata</i> Westwood, 1847
10.	Bombycoidea	Sphingidae	Macroglosinae	<i>Cephanodes hylas</i> Linnaeus, 1771
11.	Bombycoidea	Sphingidae	Macroglosinae	<i>Theretra oldenlandiae</i> Fabricius, 1775
12.	Bombycoidea	Sphingidae	Macroglosinae	<i>Theretra clotho</i> Drury, 1773
13.	Bombycoidea	Sphingidae	Macroglosinae	<i>Nephele hespera</i> Fabricius, 1775
14.	Bombycoidea	Sphingidae	Macroglosinae	<i>Macroglossum belis</i> Linnaeus, 1758
15.	Bombycoidea	Sphingidae	Sphinginae	<i>Hippotion rosetta</i> Swinhoe, 1892
16.	Bombycoidea	Sphingidae	Sphinginae	<i>Acherontia lachesis</i> Fabricius, 1798
17.	Bombycoidea	Sphingidae	Sphinginae	<i>Acherontia styx</i> Westwood, 1847
18.	Bombycoidea	Sphingidae	Sphinginae	<i>Agrius convolvuli</i> Linnaeus, 1758
19.	Bombycoidea	Sphingidae	Sphinginae	<i>Psilogramma incerta</i> Walker, 1865
20.	Bombycoidea	Sphingidae	Smerinthinae	<i>Marumba nympha</i> Rothschild & Jordan, 1903
21.	Geometroidea	Geometridae	Ennominae	<i>Chiasmia nora</i> Walker, 1861
22.	Geometroidea	Geometridae	Ennominae	<i>Chiasmia eleonora</i> Hubner, 1818
23.	Geometroidea	Geometridae	Ennominae	<i>Heterostegane cf urbica urbica</i> Swinhoe, 1895
24.	Geometroidea	Geometridae	Ennominae	<i>Heterostegane subtessellata</i> Walker, 1863
25.	Geometroidea	Geometridae	Ennominae	<i>Hyposidra talaca</i> Walker, 1860
26.	Geometroidea	Geometridae	Ennominae	<i>Cleora alienaria</i> Walker, 1860
27.	Geometroidea	Geometridae	Ennominae	<i>Cleora determinate</i> Walker, 1860
28.	Geometroidea	Geometridae	Geometrinae	<i>Pelagodes quadraria</i> Guenee, 1857
29.	Geometroidea	Geometridae	Geometrinae	<i>Oospila concinna</i> Warren, 1900
30.	Geometroidea	Geometridae	Geometrinae	<i>Dysphania percota</i> Swinhoe, 1891
31.	Geometroidea	Geometridae	Geometrinae	<i>Spaniocentra lobata</i> Holloway, 1982
32.	Geometroidea	Geometridae	Sterrhinae	<i>Antitrygodes divisaria</i> Walker, 1861
33.	Geometroidea	Uraniidae	Microniinae	<i>Micronia aculeate</i> Guenee, 1857
34.	Hepialoidea	Hepialidae	Hepialinae	<i>Endoclita malabaricus</i> Moore, 1879
35.	Lasiocampoidea	Lasiocampidae	Metanastria	<i>Metanastria gemella</i> Lajonquiere, 1979
36.	Noctuoidea	Erebidae	Aganainae	<i>Asota caricae</i> Fabricius, 1775
37.	Noctuoidea	Erebidae	Aganainae	<i>Asota heliconia</i> Linnaeus, 1758
38.	Noctuoidea	Erebidae	Aganainae	<i>Neochera inops</i> Walker, 1854
39.	Noctuoidea	Erebidae	Arctiinae	<i>Oeonistis entella</i> Cramer, 1779
40.	Noctuoidea	Erebidae	Arctiinae	<i>Barsine cuneonotata</i> Walker, 1855
41.	Noctuoidea	Erebidae	Arctiinae	<i>Cretonotos transiens</i> Walker, 1855
42.	Noctuoidea	Erebidae	Arctiinae	<i>Cretonotos gangis</i> Linnaeus, 1763
43.	Noctuoidea	Erebidae	Arctiinae	<i>Rajendra perrottetii</i> Guérin-Méneville, 1844
44.	Noctuoidea	Erebidae	Arctiinae	<i>Nyctemera lacticina</i> Grote, 1873
45.	Noctuoidea	Erebidae	Arctiinae	<i>Amata cyssea</i> Stoll, 1782
46.	Noctuoidea	Erebidae	Arctiinae	<i>Machrobrochis gigas</i> Walker, 1854
47.	Noctuoidea	Erebidae	Arctiinae	<i>Cyana coccinea</i> Moore, 1878
48.	Noctuoidea	Erebidae	Arctiinae	<i>Brunia antica</i> Walker, 1854
49.	Noctuoidea	Erebidae	Erebinae	<i>Achaea serva</i> Fabricius, 1775
50.	Noctuoidea	Erebidae	Erebinae	<i>Nagia linteola</i> Guenee, 1852
51.	Noctuoidea	Erebidae	Erebinae	<i>Artena dotata</i> Fabricius, 1794
52.	Noctuoidea	Erebidae	Erebinae	<i>Avatha bubo</i> Geyer, 1832
53.	Noctuoidea	Erebidae	Erebinae	<i>Erygia spissa</i> Guenee, 1852
54.	Noctuoidea	Erebidae	Erebinae	<i>Chalciope mygdon</i> Cramer, 1777
55.	Noctuoidea	Erebidae	Erebinae	<i>Bastilla crameri</i> Moore, 1885
56.	Noctuoidea	Erebidae	Erebinae	<i>Bastilla absentimacula</i> Guenee, 1852
57.	Noctuoidea	Erebidae	Erebinae	<i>Bastilla joviana</i> Stoll, 1782
58.	Noctuoidea	Erebidae	Erebinae	<i>Lygniodes hypoleuca</i> Guenee, 1852
59.	Noctuoidea	Erebidae	Erebinae	<i>Pandesma quenavadi</i> Guenee, 1852
60.	Noctuoidea	Erebidae	Erebinae	<i>Olepa ricini</i> Fabricius, 1775
61.	Noctuoidea	Erebidae	Erebinae	<i>Mocis frugalis</i> Fabricius, 1775

62.	Noctuoidea	Erebidae	Erebinae	<i>Ophiusa onelia</i> Guenee, 1852
63.	Noctuoidea	Erebidae	Erebinae	<i>Thyas coronate</i> Fabricius, 1775
64.	Noctuoidea	Erebidae	Pangraptnae	<i>Pangrapta macariana</i> Hampson, 1926
65.	Noctuoidea	Erebidae	Lymantirinae	<i>Perina</i> sp.
66.	Noctuoidea	Erebidae	Lymantirinae	<i>Lymantria concolor</i> Walker, 1855
67.	Noctuoidea	Erebidae	Lymantirinae	<i>Lymantria</i> sp.
68.	Noctuoidea	Erebidae	Lymantirinae	<i>Lymantria Mathura</i> Walker, 1856
69.	Noctuoidea	Erebidae	Caplinae	<i>Ericcia innagulata</i> Guenee, 1852
70.	Noctuoidea	Erebidae	Caplinae	<i>Eudocima homaena</i> Hubner, 1816
71.	Noctuoidea	Erebidae	Caplinae	<i>Eudocima hypermnestra</i> Cramer, 1780
72.	Noctuoidea	Erebidae	Caplinae	<i>Hamodes propitia</i> Boisduval, 1832
73.	Noctuoidea	Noctuidae	Catocalinae	<i>Amphigonia hepatizans</i> Guenee, 1852
74.	Noctuoidea	Noctuidae	Catocalinae	<i>Caduca albopunctata</i> Walker, 1858
75.	Noctuoidea	Noctuidae	Catocalinae	<i>Arthisma scissuralis</i> Moore, 1883
76.	Noctuoidea	Noctuidae	Amphipyridae	<i>Callopietria recurvate</i> Moore, 1882
77.	Noctuoidea	Noctuidae	Amphipyridae	<i>Chasmina candida</i> Walker, 1858
78.	Noctuoidea	Noctuidae	Amphipyridae	<i>Chasmina rejecta</i> Fabricius, 1775
79.	Noctuoidea	Noctuidae	Plusinae	<i>Ctenoplusia</i> sp.
80.	Noctuoidea	Noctuidae	Plusinae	<i>Plusiopalpa</i> sp.
81.	Noctuoidea	Noctuidae	Aediinae	<i>Aedia leucomelas</i> Linnaeus, 1758
82.	Noctuoidea	Noctuidae	Aediinae	<i>Aedia acronyctoides</i> Guenee, 1852
83.	Noctuoidea	Noctuidae	Aganinae	<i>Trachea auriplena</i> Walker, 1857
84.	Noctuoidea	Noctuidae	Hadeninae	<i>Mythimna separate</i> Walker, 1865
85.	Noctuoidea	Noctuidae	Hadeninae	<i>Mythimna unipuncta</i> Haworth, 1809
86.	Noctuoidea	Noctuidae	Hadeninae	<i>Mythimna loreyi</i> Duponchel, 1827
87.	Noctuoidea	Noctuidae	Hadeninae	<i>Tiracola plagiata</i> Walker, 1857
88.	Noctuoidea	Noctuidae	Dyopsinae	<i>Viridistria viridipicta</i> Hampson, 1902
89.	Noctuoidea	Noctuidae	Eutiliinae	<i>Penicillaria jacosatrix</i> Guenee, 1852
90.	Noctuoidea	Nolidae	Eligminae	<i>Eligma narcissus</i> Cramer, 1775
91.	Noctuoidea	Nolidae	Beaninae	<i>Beana terminigera</i> Holloway, 1976
92.	Noctuoidea	Nolidae	Westermanniinae	<i>Westermannia superba</i> Hubner, 1823
93.	Noctuoidea	Nolidae	Westermanniinae	<i>Westermannia argentea</i> Hampson, 1891
94.	Noctuoidea	Nolidae	Chloephorinae	<i>Erizada lichenaria</i> Walker, 1865
95.	Noctuoidea	Notodontidae	Phalerinae	<i>Phalera grotei</i> Moore, 1859
96.	Pyraloidea	Pyalidae	Pyalinae	<i>Vitessa suradeva</i> Moore, 1860
97.	Pyraloidea	Crambidae	Spilomelinae	<i>Agathodes ostentalis</i> Geyer, 1837
98.	Pyraloidea	Crambidae	Spilomelinae	<i>Conogethes punctiferalis</i> Guenee, 1854
99.	Pyraloidea	Crambidae	Spilomelinae	<i>Cydalima laticostalis</i> Guenee, 1854
100.	Pyraloidea	Crambidae	Spilomelinae	<i>Terastia egialealis</i> Walker, 1859
101.	Pyraloidea	Crambidae	Spilomelinae	<i>Glyphodes bicolor</i> Swainson, 1821
102.	Pyraloidea	Crambidae	Spilomelinae	<i>Parotis marginata</i> Hampson, 1893
103.	Pyraloidea	Crambidae	Spilomelinae	<i>Omphisa anastomosalis</i> Guenee, 1854
104.	Pyraloidea	Crambidae	Spilomelinae	<i>Palpita annulifer</i> Inoue, 1996
105.	Yponomeutoidea	Yponomeutidae	Attevininae	<i>Atteva fabriciella</i> Swederus, 1787
106.	Zygaenoidea	Limacodidae	Limacodinae	<i>Miresa bracteata</i> Walker, 1880
107.	Zygaenoidea	Limacodidae	Limacodinae	<i>Scopelodes albipalpis</i> Hering, 1931
108.	Zygaenoidea	Limacodidae	Limacodinae	<i>Phocoderma velutina</i> Kollar, 1844
109.	Zygaenoidea	Limacodidae	Limacodinae	<i>Doratifera stenora</i> Turner, 1902
110.	Zygaenoidea	Limacodidae	Limacodinae	<i>Parasa fumosa</i> Swinhoe, 1889
111.	Zygaenoidea	Limacodidae	Limacodinae	<i>Thosea</i> sp.
112.	Zygaenoidea	Zygaenidae	Chalcosiinae	<i>Eterusia aedeia</i> Linnaeus, 1763

#### 4. Conclusion

The abundance of moth diversity found during this preliminary study assures that the diversity of moths in this area is huge. Insects being a megadiverse group form a major component of biodiversity in any area and therefore surveying and documenting this fauna will indispensably contribute to many scientific studies and conservation programs (Kendrick 2002) [16]. Comprehensive studies in future will shed light on the hidden diversity of moth fauna of Vagmon Hills. The abundance of moth fauna during the present study also reflects

the abundance of host plants in the area which needs urgent conservation measures due to increasing tourist disturbances.

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