



## Preliminary Report on the Butterfly Diversity of Muttom Panchayath, Idukki District, Kerala, India

Dilla Jose\* and P. Senthilkumaar

PG and Research Department of Zoology, Sir Theagaraya College, Chennai, Tamil Nadu, India  
sr.dillajose@gmail.com

Available online at: [www.isca.in](http://www.isca.in), [www.isca.me](http://www.isca.me)

Received 1<sup>st</sup> May 2016, revised 25<sup>th</sup> May 2016, accepted 7<sup>th</sup> June 2016

### Abstract

Butterflies are the best introduction to the amazing world of insects. A study to find out the relative abundance of butterflies in Muttom Panchayath, Idukki District, Kerala was carried out through bi-weekly sampling method over a period of six months from July 2015 to December 2015. A total of 52 species belonging to five families including Papilionidae, Pieridae, Nymphalidae, Lycaenidae and Hesperidae were recorded. Out of these, members of Nymphalidae were dominant with (24 species) followed by Papilionidae (12 species), Pieridae (08 species), Lycaenidae (03 species) and Hesperidae (05 species) were recorded. Most common species were Common Crow (*Euploea core*), Blue Tiger (*Tirumala limniace*), Dark Blue Tiger (*Tirumala septentrionis*), Common Grass Yellow (*Eurema hecabe*) and Common Five Ring (*Ypthima baldus*). Out of 52 species, four species namely Southern Birdwing (*Troides minos*), Malabar Rose (*Atrophaneura pandiyana*), Malabar Raven (*Papilio dravidarum*), Malabar Banded Peacock (*Papilio budha*) are endemic species from this area. This study was done to emphasize the importance of butterflies and the need for their conservation.

**Keywords:** Relative abundance, Muttom Panchayath, Endemic species, Conservation.

### Introduction

Butterflies (Lepidoptera: Rhopalocera) are one of the most plant dependent group of insects when compared to other mega diverse insect groups<sup>1</sup>. They are one of the labour forces that help in pollination; a key stone ecological process in natural sustainability throughout the world. They enhance the earth's beauty incontestably and add an aesthetic element to the ambient environment<sup>2</sup>. Butterflies bring about in nature a visual treat and are thus considered as the "fluttering jewels of nature." Nearly 1500 butterfly species<sup>3-4</sup> are identified from the Indian subcontinent, constituting 8.33% of the 18,000 known species of the world.

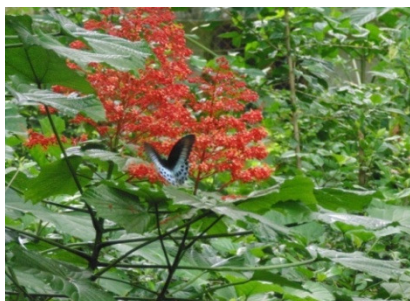
The distribution of butterflies depends upon the availability of their host plants. Owing to habitat destruction for developmental activities in urban areas and unscientific management of natural resources, much of our native butterflies are fast disappearing and at present, their survival is under threat. Habitat fragmentation and deterioration quality are two of the major threats to biodiversity<sup>5</sup>. These threats can be narrowed down to human dominated landscape which forms a substantial and ever increasing amount of the earth's land surface<sup>6</sup>. However, even a minor change in the ecosystem may affect their survival and many species are likely to become extinct. It has been stated that extinction of a single species may trigger the extinction of several other species that are related to it. The objective of this study was to conduct preliminary observation to identify areas with large population of butterflies.

### Materials and Methods

**Study area:** The study on the biodiversity of butterflies was carried out in Muttom Panchayath, Thodupuzha Thaluk, Idukki District, Kerala, India. It is located 29 K.M. towards west from District quarters Pinavu 9.8377755°N and 76.7126147°E at an elevation of 22 m. The Muttom Panchayath covers over 25.4 km<sup>2</sup> of land. The mean annual rainfall of the area during the study period was 1048 mm. The major vegetation types in this area are shrubs, herbs, home garden, grasslands, shoals and plantations. Two sites Plantation (Figure-1) and Shrubbery area (Figure-2) were selected for this study. These sites were under observation from July 2015 to December 2015. Butterflies were observed throughout the day from 8.00 am to 11.00 am under appropriate weather conditions.



**Figure-1**  
Plantation Site



**Figure-2**  
**Shrubbery Site**

**Transects and butterfly data:** The field method is based on the standardized “Pollard walk” method<sup>7-8</sup>. Transects of about 1000 meter in length which was divided into five segments of 200 meters were aligned. Each transect was observed twice and the number of individuals per species as recorded from all the five segments. The butterflies were observed within 2.5 meters to the left and right side and five meters in front of the observer. Mostly photographic documents were done during the study period. These two habitats were surveyed on foot bi-weekly.

utterflies were identified with the help of standard identification keys provide in the reference books<sup>9-12</sup>. Butterflies were categorized in five categories on the basis of their abundance such as VC - very common (> 100 sightings), C - common (51–100 sightings), O - occasional (16–50 sightings), R - rare (3–15 sightings), VR - very rare (1–2 sightings).

## Results and Discussion

During the study period 52 species of butterflies belonging to 33 genera under five families were recorded, including four species that are endemic to the Western Ghats (Table-1).

Out of these, followed by of Nymphalidae were dominant with (24 species) followed by Papilionidae (12 species), Pieridae (08 species), Hesperidae (05 species) and Lycaenidae (03 species) were recorded. Photographs were taken to achieve a closer look and for documentation. The photographs of the observed butterfly species are illustrated based on the serial number provided in the Table-1 given above:

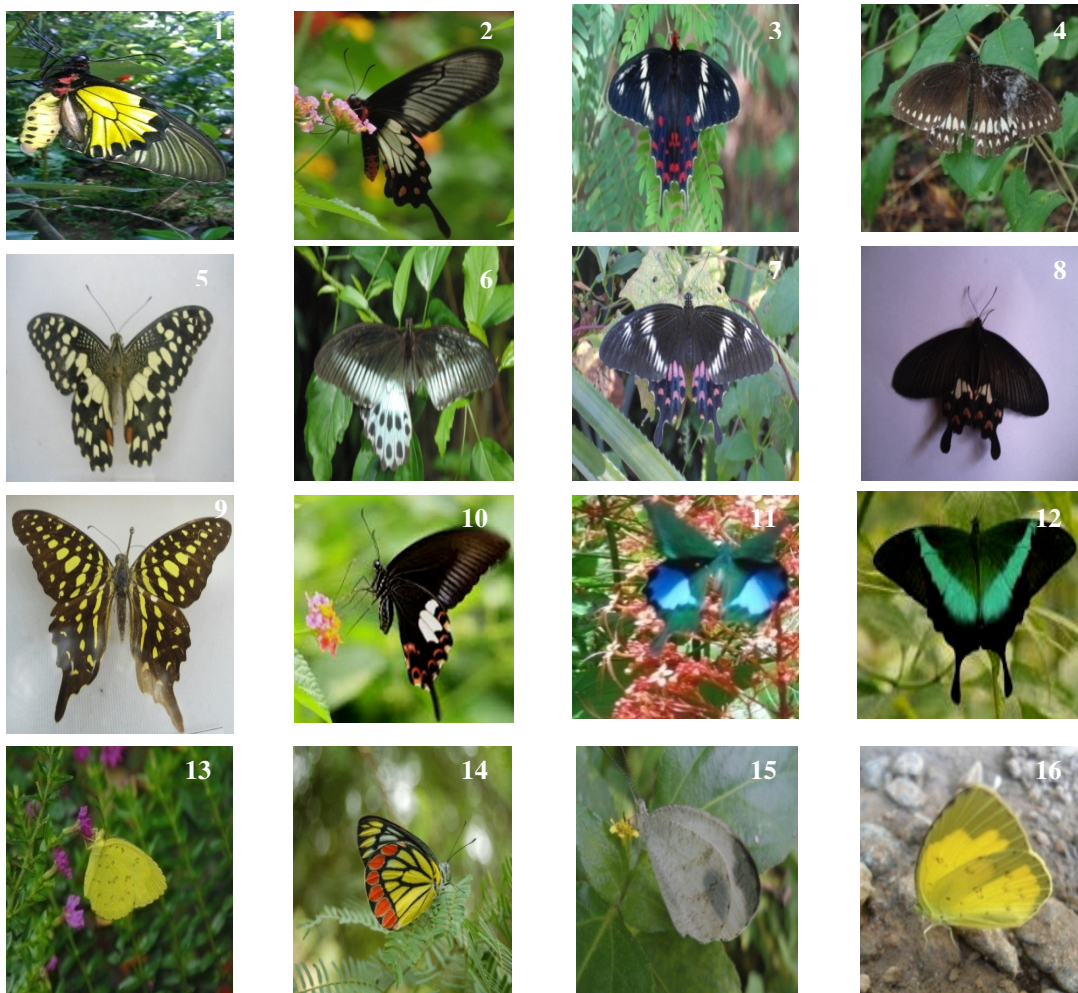
**Table-1**  
**Checklist of butterflies of Muttom Panchayath, Thodupuzha Thaluk, Kerala**

Sl.No.	Scientific name	Common name	Family	Status
1	<i>Troides minos</i>	Southern Birdwing**	Papilionidae	O
2	<i>Atrophaneura pandiyana</i>	Malabar Rose**	Papilionidae	O
3	<i>Pachliopta hector</i>	Crimson Rose	Papilionidae	R
4	<i>Papilio dravidarum</i>	Malabar Raven**	Papilionidae	O
5	<i>Papilio demoleus</i>	Lime	Papilionidae	C
6	<i>Papilio polymnestor</i>	Blue Mormon	Papilionidae	C
7	<i>Papilio polytes</i>	Common Mormon	Papilionidae	C
8	<i>Pachliopta aristolochiae</i>	Common Rose	Papilionidae	VR
9	<i>Graphium agamemnon</i>	Tailed Jay	Papilionidae	VR
10	<i>Papilio helenus</i>	Red Helen	Papilionidae	VR
11	<i>Papilio paris</i>	Paris Peacock	Papilionidae	C
12	<i>Papilio budha</i>	Malabar Banded Peacock**	Papilionidae	VR
13	<i>Eurema hecabe</i>	Common Grass Yellow	Pierideae	VC
14	<i>Delias eucharis</i>	Common Jezebel	Pierideae	O
15	<i>Leptosia nina</i>	Psyche	Pierideae	C

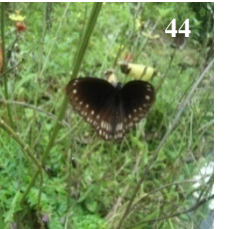
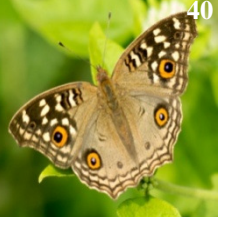
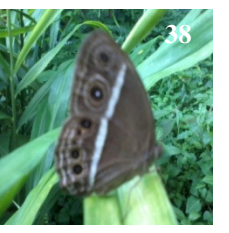
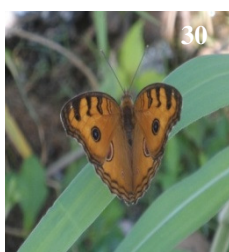
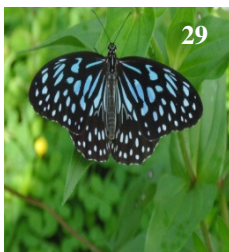
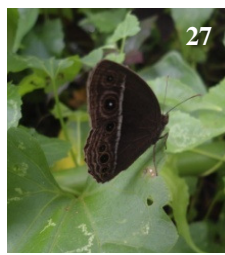
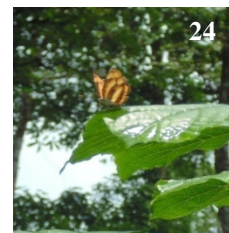
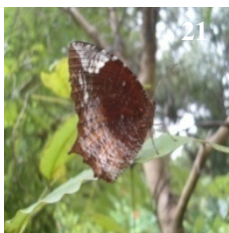
S.No.	Scientific name	Common name	Family	Status
16	<i>Eurema blanda</i>	Three Spot Grass Yellow	Pierideae	O
17	<i>Catopsilia Pomona</i>	Common Emigrant	Pierideae	C
18	<i>Appias albinia</i>	Common Albatross	Pierideae	R
19	<i>Catopsilia pyranthe</i>	Mottled Emigrant	Pierideae	C
20	<i>Pieris rapae</i>	Small Cabbage White	Pierideae	C
21	<i>Euripus consimilis</i>	Common Palm Fly	Nymphalide	VR
22	<i>Ypthima huebneri</i>	Common Four Ring	Nymphalide	O
23	<i>Neptis hylas</i>	Common Sailer	Nymphalide	O
24	<i>Pantoporia hordonia</i>	Common Lascar	Nymphalide	O
25	<i>Ypthima baldus</i>	Common Five Ring	Nymphalide	VC
26	<i>Tirumala limniace</i>	Blue Tiger	Nymphalide	VC
27	<i>Mycalesis mineus</i>	Dark Brand Bushbrown	Nymphalide	O
28	<i>Acraea violae</i>	Tawny Coster	Nymphalide	C
29	<i>Tirumala septentrionis</i>	Dark Blue Tiger	Nymphalide	VC
30	<i>Junonia almana</i>	Peacock Pansy	Nymphalide	C
31	<i>Junonia iphita</i>	Chocolate Pancy	Nymphalide	C
32	<i>Danaus genutia</i>	Striped Tiger	Nymphalide	C
33	<i>Danaus chrysippus</i>	Plain Tiger	Nymphalide	C
34	<i>Euploea core</i>	Common Indian Crow	Nymphalide	O
35	<i>Hypilimnas bolina</i>	Great Eggfly	Nymphalide	C
36	<i>Euripus consimilis</i>	Painted Courtesan	Nymphalide	VR
37	<i>Melanitis leda</i>	Common Evening Brown	Nymphalide	O
38	<i>Mycalesis visala</i>	Long-Brand Bushbrown	Nymphalide	O
39	<i>Orsotriaena medus</i>	Nigger	Nymphalide	O
40	<i>Junonia lemonias</i>	Lemon Pansy	Nymphalide	O
41	<i>Morpho peleides</i>	Blue Morpho	Nymphalide	R
42	<i>Parantica aglea</i>	Glassy Blue Tiger	Nymphalide	C
43	<i>Euploea sylvester</i>	Double Brand Crow	Nymphalide	O

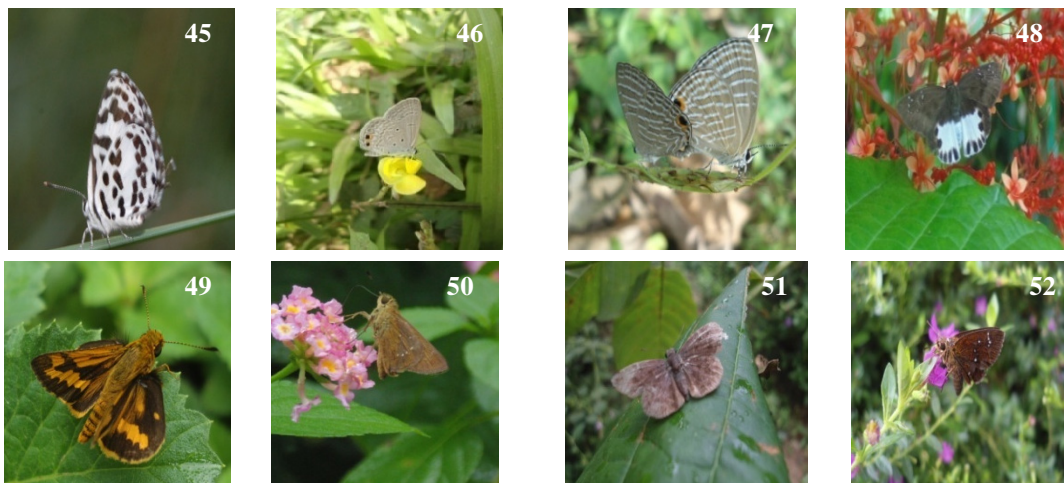
S.No.	Scientific name	Common name	Family	Status
44	<i>Euploea klugii</i>	Brown King Crow	Nymphalide	R
45	<i>Castalius rosimon</i>	Common Pierrot	Lycanidae	VC
46	<i>Euchrysops cnejus</i>	Gram Blue	Lycanidae	VC
47	<i>Jamides celeno</i>	Common Cerulean	Lycanidae	VC
48	<i>Tagiades litigiosa</i>	Water Snow Flat	Hesperidae	VC
49	<i>Tilicota ancilla</i>	Dark Palm Dart	Hesperidae	O
50	<i>Parnara bada</i>	Straight Swift	Hesperidae	O
51	<i>Sarangesa dasahara</i>	Common Small Flat	Hesperidae	VC
52	<i>Pelopidas mathias</i>	Small Branded Swift	Hesperidae	O

\*\* Endemic to Western Ghats; VC- Very Common; C-Common; O-Occasional; R-Rare; VR- Very Rare.

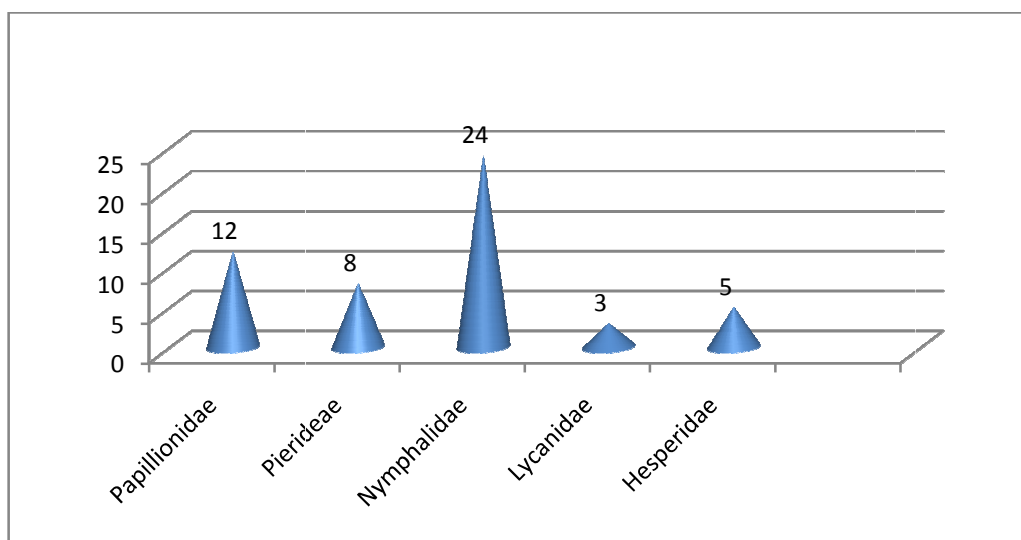








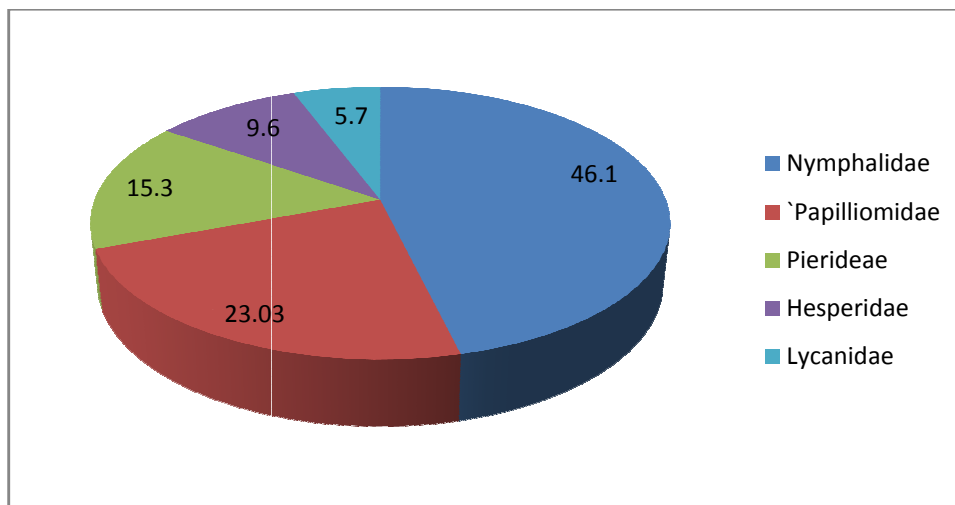
**Figure-3**  
 The list of butterflies are identified from the study area



**Figure-4**  
 Family wise distribution of butterfly species in Muttom Panchayath, Thodupuzha Thaluk, Kerala

**Table-2**  
 Relative abundance of butterflies at Muttom Panchayath, Thodupuzha taluk, Kerala

Sl.No.	Family	No. of Genera	Relative abundance (%)	No. of species	Relative abundance (%)
1	Papilionidae	5	15.1	12	23.07
2	Pieridae	6	18.1	8	15.3
3	Nymphalidae	14	42.4	24	46.1
4	Lycaenidae	3	9.09	3	5.7
5	Hesperidae	5	15.1	5	9.6
	Total	33	100	52	100



**Figure-5**  
**Abundance of butterfly species at Muttom Panchayath, Thodupuzha, Kerala**

The abundance of butterfly species population in the selected study area may be due to the availability of favourable tropical climate and topographic features of different regions<sup>13-15</sup>. The rich diversity of butterflies correlates with the presence of larval host plants and adult nectar plants. The preference of butterfly species at a particular habitat also depends upon other factors like abundance of predators, parasites and prevalence of diseases. The rainfall conditions greatly influence the butterfly count and species distribution<sup>16</sup>.

The butterflies tend to avoid dry habitat and prefer moist place. The Nymphalidae and Papilionidae were also seen in abundance during October and it may be due to the availability of nectar as many shrubs were actively blooming. The relative abundance of butterflies were calculated and presented in Table-2.

Among the five families, Nymphalidae were found to be most dominant members with 46.1 % followed by Papilionidae 23.07%, Pieridae 15.3%, Hesperidae 9.6% and Lycaenidae 5.7 % as per the record. Most common species were Common Crow (*Euploea core*), Blue Tiger (*Tirumala limniace*), Dark Blue Tiger (*Tirumala septentrionis*), Common Grass Yellow (*Eurema hecabe*) and Common Five Ring (*Ypthima baldus*). Out of 52 species, four species namely Southern Birdwing (*Troides minos*), Malabar Rose (*Atrophaneura pandiyana*), Malabar Raven (*Papilio dravidarum*), Malabar Banded Peacock (*Papilio budha*) are endemic to Western Ghats from this area.

The localities which yielded higher diversity have very dense vegetation and abundant flowering plants and high trees which provide a favourable habitat to the butterflies. The present study is the first of this type in the said area and hence further study is needed to know about the fluctuation in the diversity of butterflies, because the changes in the diversity can only be observed through continuous monitoring and comparing the data annually.

The ever-increasing human population, loss of habitat, urbanization, industrialization and waste disposal are some of the factors that have an impact on the wildlife, thus proving a threat to the butterfly species. Environmental degradation due to anthropogenic activities including logging<sup>17</sup>, urbanization<sup>18</sup>, agricultural practices<sup>19</sup>, grazing of livestock<sup>20</sup>, greatly affect both butterfly diversity and abundance. However, scanty information is available on the impact of mining activities on butterfly community structure<sup>21</sup>.

With the gradual decrease in greenery and increase in pollution, butterflies, birds and all wildlife are fast disappearing. The net result is a complete imbalance of the ecosystem and extinction of many species<sup>22</sup>. Human dominated landscape form a substantial and ever increasing amount of the earth's surface. These modified habitats often influence butterfly species and their dynamics<sup>23-24</sup>. The least number of butterflies were collected during the month of December when the adequacy of host plants and unfavourable climatic conditions were observed.

## Conclusion

Since the study area is home to some of the endemic and protected species, the habitats need conservation to protect the butterfly fauna of this region. The present list of butterfly species is not conclusive and exhaustive therefore future exploration will be continued to update this checklist. They have a significant and beneficial role to play in nature for protection of all life forms including our own. In addition, it is necessary to identify the rare butterfly species and conserve them by establishing conservatories. Furthermore, long term research and monitoring on the diversity of butterflies with special reference to ecological aspects may be taken up in the area.

## References

1. Kristensen N.P. and Skalski A.W. (1999). Phylogeny and palaeontology. In: Kristensen N.P. (ed), Evolution,



- systematics and biogeography. Handbook of Zoology Lepidoptera: moths and butterflies, 5, 7-25.
2. Guptha M.B., Rao P.V.C., Reddy D.S., Maddala S.R.S.C.S. and Babu P.M. (2012). A Preliminary Observation on Butterflies of Sehachalam Biosphere reserve, Eastern Ghats Andhra Pradesh, India. *World Journal of Zoology* 7 (1) 83-89.
  3. Smetacek P. (1992). Record of *Plebejus eversmanni* (Stgr.) from India. *J. Bombay Nat. hist. Soc.*, (89), 385-386.
  4. Gay (1992). Common Butterflies of India. WWF India and Oxford University Press Mumbai India,
  5. Rosin Z.M., Myczko L., Piotr S., Lenda M., Moron D., Sparks TH and Tryjanowski P. (2012). Butterfly responses to environmental factors in fragmented calcareous grassland. *Journal of Insect Conservation*, 16 321-329.
  6. Ramesh T., Hussain K.J., Selvanayagam M., Satpathy K.K. and Prasad M.V.R. (2010). Patterns of diversity, abundance and habitat associations of butterfly communities in heterogeneous landscapes of the department of atomic energy (DAE) campus at Kalpakkam, South India. *International Journal of Biodiversity and Conservation*, 2(4), 75-85.
  7. Pollard E. (1977). A method for assessing changes in the abundance of butterflies. *Biological Conservation*, 12, 115-153.
  8. Pollard E. and Yates T.J. (1993). Monitoring Butterflies for Ecology and Conservation. Chapman and Hall, London.
  9. Kunte K. (2000). Butterflies of Peninsular India. Universities Press (Hyderabad) and Indian Academy of Science (Bangalore), 24.
  10. Haribal M. (2002). Butterflies of Sikkim Himalaya and their Natural History. Sikkim Nature Conservation Foundation (SNCF), Sikkim, 217.
  11. Sing A.R. (2001). Butterflies of India. Om Books International New Delhi, 183.
  12. Guptha M.B., Rao P.V.C., Reddy D.S., Maddala S.R.S.C.S. and Babu P.M. (2012). A Preliminary Observation on Butterflies of Sehachalam Biosphere reserve, Eastern Ghats Andhra Pradesh, India. *World Journal of Zoology* 7 (1) 83-89.
  13. Ravindra M., Viswantathan S. and Ram G.M. (1996). Checklist of butterfly species of Osmania University Campus, Hyderabad. *Zoo's Print journal*, 11(10), 5.
  14. Tiple A.D. and Khurad A.M. (2009). Butterfly species diversity, habitats and seasonal distribution in and around Nagpur City, Central India. *World Journal of Zoology*, 4(3), 153-167.
  15. Subba R.C., Atluri J.B., Venkata Ramana S.P. and Meer B.G. (2006). The butterfly fauna of Vishakapatnam in South India. *Tiger*, (30), 29-32.
  16. Hogsden K.L. and Hutchinson T.C. (2004). Butterfly assemblages along a human disturbance gradient in Ontario, Canada. *Canadian Journal of Zoology*, 82(5), 739-748.
  17. Ghazoul J. (2002). Impact of logging on the richness and diversity of forest butterflies in a tropical dry forest in Thailand. *Biodiversity and Conservation*, 11, 521-541.
  18. Tropek R., Kadleca T., Hejdic M., Kocarek P., Skuhrovec J. and Malenovskyh I. (2012). Technical reclamations are wasting the conservation potential of post-mining sites, A case study of black coal spoils dumps. *Ecological Engineering*, 43, 13-18.
  19. Schtickzelle N., Turlure C. And Baguette M. (2007). Grazing management impacts on the viability of the threatened bog fritillary butterfly *Proclissiana eunomia*. *Biological Conservation*, 136,651-660.
  20. Van-Lien V. and Yuan D. (2003). The differences of butterfly (Lepidoptera: Papilionoidea) communities in habitats with various degrees of disturbance and altitudes in tropical forests of Vietnam. *Biodiversity and Conservation*, 12(6), 1099-1111
  21. Aiswarya V.N., Pradarsika M. and Soma A. (2014). Studies on the diversity and abundance of butterfly (Lepidoptera: Rhopalocera) fauna in and around Sarojini Naidu college campus, Kolkata, West Bengal, India. *Journal of Entomology and Zoology* , 2(4), 129-134.
  22. Gascon C., Lovejoy T.E., Bierregaard R.O., Malcolm J.R., Stouffer P.C, Vasconceleos H.L., Laurance W.F., Zim M.B., Tocher M. and Borges S. (1999). Matrix. Habitat and Species Richness in Tropical Forest Butterflies. *Biological Conservation*, 91, 223-229.
  23. Ricketts T.H., Daily G.C. and Fay J.P. (2001). Countryside Biogeography of Moths in a Fragmented Landscape: Biodiversity in Native and Agricultural Habitats. *Conservation Biology*, 15, 378.
  24. Fernandes B., Kini A., Varkey J., Subramanjan S. and Achary P. (2016). Study of Diversity and Current Status of Butterflies (Rhopalocera) at Vasai Fort, Dist-Palghar, India. *International Research Journal of biological science*, 5(3), 11-19.