Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2016; 4(5): 933-936

Received: 04-07-2016
Accepted: 05-08-2016

Varuna P Panicker
Assistant Professor
Department of Veterinary Biochemistry, College of Veterinary and Animal Sciences, Mannuthy, Thrissur, India

Anuraj R
Research Associate
Department of Livestock Production Management
College of Veterinary and Animal Sciences, Mannuthy, Thrissur, India

Govind Shankar
MVSc Scholar
Department of Livestock Production Management
College of Veterinary and Animal Sciences, Mannuthy, Thrissur, India

Aswathy S
Research Associate
Department of Preventive Medicine College of Veterinary and Animal Sciences, Mannuthy, Thrissur, India

Anu Gopalakrishnan
PhD Scholar
Department of Veterinary Pharmacology College of Veterinary and Animal Sciences, Mannuthy, Thrissur, India

Biju S
Assistant Professor
Department of Livestock Production Management
College of Veterinary and Animal Sciences, Mannuthy, Thrissur, India

Varuna P Panicker
Assistant Professor
Department of Veterinary Biochemistry, College of Veterinary and Animal Sciences, Mannuthy, Thrissur, India

Studies on the diversity of butterfly (Lepidoptera: Rhopalocera) fauna in college of veterinary and animal sciences campus, Mannuthy, Thrissur, Kerala, India

Varuna P Panicker, Anuraj R, Govind Shankar, Aswathy S, Anu Gopalakrishnan and Biju S

Abstract
Butterflies are one of the important groups of insects which can act as indicators of change in ecosystem. Urbanisation going on around the globe leads to the habitat destruction of these insects. Survival of these butterflies is now under threat. Present survey is focussed on the assessment of the butterfly diversity and its conservation priorities. A total of 71 species of butterflies belonging to five families were identified from the campus of College of Veterinary and Animal Sciences. Among all six species were protected under various schedules of the Indian Wildlife (Protection) Act, 1972. Butterfly fauna of the campus dominated with Nymphalidae family. Abundance of the butterfly in the campus showed seasonal variations and preferences. The present study focussed to have a checklist of the butterfly population in our campus which will later contribute for planning campus development programmes.

Keywords: Butterfly, conservation, Nymphalidae, checklist

1. Introduction
Butterflies are beautiful and brightly coloured, nectar sucking, flying insects with two pairs of scaly wings. They come under the clade Rhopalocera from the order Lepidoptera. It is regarded as one of the best taxonomically studied group of insects. Tropical region contributes about 80% of the population across the globe. India has wide variety of butterflies. They form an important part of the food chain [1, 2]. Adult butterflies depend on plants for their nectar and pollen but caterpillars depend mainly for its foliage [3]. There exist a positive relationship between the diversity of butterflies and plant diversity. Among insects, butterflies perform major roles in pollination and bear a history of co-evolution with herbivores and plants. Being good pollinators they play an important role in the existence of the ecosystem. These close relations with the ecosystem make it as a good indicator species to analyse the quality of the ecosystem and climate change [4].
India has bestowed with around 1,501 species of butterflies and among that 316 species have been reported from Kerala. Biological diversity of an area is closely associated with the effect of anthropocentric developments [8, 14]. Alarming rate of increase in urban development programmes and air pollution results in complete disturbance of the ecosystem and extinction of various species. In the present scenario it is important to have a checklist of the biological species in an area to have an evaluation on the disturbance of the ecosystem [5, 6].
In the present study, an attempt has been made to document the diversity of butterflies in the College of Veterinary and Animal Sciences (CVAS) campus, since there was no known published checklist of butterflies in the (CVAS) campus till date.

2. Materials and Methodology
Study was conducted in the College of Veterinary and Animal Sciences (CVAS) campus which is surrounded by diverse habitat. Campus is located at Mannuthy, Thrissur, district surrounded by a mosaic of concrete buildings. It is blessed with lush green vegetation having large trees, shrubs, herbs and long grasses which serves as shelter to the butterflies. Core area of observation was a medicinal plant garden which is located in the campus. Campus lies between 10.5ºN and 76.2ºE longitude and latitude respectively and is located close to Peechi-

Vazhani Wildlife Sanctuary. Study area experiences tropical climate with hot summers (Temperature range: 35-40 ºC) and a dry cool winter (Temperature range: 20-25 ºC). Area received major portion of its rainfall from the south-west monsoon between June and September. The mean annual rainfall is 2800 mm with mean number of rainy days per year is 124 days.

The findings presented here are based on the random survey conducted from January 2014 to August 2016. Study site was visited once in a week and observations were made from morning 9AM to afternoon 5PM. Species identity and scientific names were confirmed with the help of the field guides [5, 6, 7]. Based on its abundance in the CVAS campus during the study period, butterflies observed were categorised into five groups. VC-very common (> 100 sightings), C-common (50-100 sightings), O- occasional (15-50 sightings), R–rare (2-15 sightings), VR-very rare (1-2 sightings).

3. Results and Discussion

This is the first study which reports the abundance and distribution of butterflies in the College of Veterinary and Animal Sciences, Mannuthy, Thrissur. Diversity study of the butterflies in the campus can be utilized as an indicator of changing environmental condition in the campus.

A total of 70 species of butterflies belonging to five families were identified from CVAS campus. Among all six species were protected under various schedules of the Indian Wildlife (Protection) Act, 1972. *Pachliopta aristolochiae aristolochiae* and *Hypolimnas misippus* come under schedule I and *Appias lyncida latifasciata, Parthenos sylvia virens, Tanaecia lepidea miyana* and *Euchrysops cnejus cnejus* come under schedule II. Butterfly fauna of CVAS campus dominated with Nymphalidae (brush-footed butterflies) family with 30 (42.2 %) species followed by Lycaenidae (blues) 15 (21.1 %) species, Papilionidae (swallow-tails) 10 (14.0 %) species, Hesperiidae (skippers) 9 (12.6 %) species and Pieridae (whites and yellows) 7 (9 %) species. Polyphagous nature may attribute to the dominance of Nymphalidae species in the study area [7]. Most of the members of this family are active fliers which help them to inhabit over a wider habitat. Species diversity of the butterflies recorded in the campus may be due the diverse vegetation which is inevitable for its existence.

Butterfly species diversity always indicates a healthier ecosystem. With increasing need of human population and increased pollution rates, greeneries are being destroyed in an alarming rate. This ecosystem destruction directly affects the destruction of butterfly diversity in that area [8, 9].

Butterfly abundance showed seasonal variation throughout the year. Species richness was higher during the month of February-May and August-September, while a low numbers were noticed from December to February and from June to August, irrespective of sites. This shows that number of butterflies increased in the summer and post monsoon and decreased during winter. Study results were similar to the earlier findings [10, 11, 13]. This may be due to the change in temperature and humidity of the habitat. Study on the habitat preference of the butterfly show that it has got more preference to the natural habitat compared to the area in and around the human dwellings [11, 12].

The observation in the present study is quite important as it highlights the importance of CVAS campus as preferred habitat for butterflies. It emphasizes the importance of CVAS campus in maintaining butterfly biodiversity of the area.

Table 1: Checklist of butterflies of College of Veterinary and Animal Sciences campus, Thrissur, Kerala, India

	Scientific name	Common name	Family	Subfamily	Status
1.	*Papilio polytes romulus*	Common Mormon	Papilionidae	Papilioninae	C
2.	*Papilio polymnestor polymnestor*	Blue Mormon	Papilionidae	Papilioninae	C
3.	*Pachliopta aristolochiae aristolochiae*	Common Rose	Papilionidae	Papilioninae	O
4.	*Pachliopta hector*	Crimson Rose	Papilionidae	Papilioninae	R
5.	*Graphium agamemnon menides*	Tailed Jay	Papilionidae	Papilioninae	C
6.	*Graphium doson eleius*	Common Jay	Papilionidae	Papilioninae	O
7.	*Graphium sarpedon sarpedon*	Common Bluebottle	Papilionidae	Papilioninae	C
8.	*Troides minos*	Southern Birdwing	Papilionidae	Papilioninae	C
9.	*Papilio demoleus demoleus*	Lime Butterfly	Papilionidae	Papilioninae	C
10.	*Papilio helenus daksha*	Red Helen	Papilionidae	Papilioninae	VR
11.	*Catopsilia pomona pomona*	Common Emigrant	Pieridae	Coliadinae	VC
12.	*Catopsilia pyranthe pyranthe*	Mottled Emigrant	Pieridae	Coliadinae	C
13.	*Eurema hecabe hecabe*	Common Grass Yellow	Pieridae	Coliadinae	VC
14.	*Eurema brigitta rubella*	Small Grass yellow	Pieridae	Coliadinae	O
15.	*Delias eucharis*	Common Jezebel	Pieridae	Pierinae	VC
16.	*Leptosia nina nina*	Psyche	Pieridae	Pierinae	VC
17.	*Appias lyncida latifasciata*	Chocolate Albatross	Pieridae	Pierinae	VR
18.	*Melanitis leda leda*	Common Evening Brown	Nymphalidae	Satyrinae	VC
19.	*Elymnias hypermnestra undularis*	Common Palmfly	Nymphalidae	Satyrinae	C
20.	*Mycalesis perseus tabitha*	Common Bushbrown	Nymphalidae	Satyrinae	C
21.	*Orsotriaena medus mandata*	Nigger	Nymphalidae	Satyrinae	C
22.	*Ypthima huebneri*	Common Four-ring	Nymphalidae	Satyrinae	VC
23.	*Ypthima baldus madrasa*	Common Five-ring	Nymphalidae	Satyrinae	O
24.	*Acraea violae*	Tawny Coster	Nymphalidae	Heliconiinae	C
25.	*Cupha erymanthis maja*	Rustic	Nymphalidae	Heliconiinae	C
26.	*Cirrochroa thais thais*	Tamil Yeoman	Nymphalidae	Heliconiinae	O
27.	*Phalanta phalantha phalantha*	Common Leopard	Nymphalidae	Heliconiinae	R
28.	*Neptis hylas varmona*	Common Sailer	Nymphalidae	Limenitidinae	O
29.	*Limenitis procris*	Commander	Nymphalidae	Limenitidinae	R
30.	*Neptis jumbah nalanda*	Chestnut-Streaked Sailer	Nymphalidae	Limenitidinae	O
31.	*Parthenos sylvia virens*	Clipper	Nymphalidae	Limenitidinae	VR

32.	*Pantoporia hordonia hordonia*	Common Lascar	Nymphalidae	Limenitidinae	VR
33.	*Tanaecia lepidea miyana*	Grey Count	Nymphalidae	Limenitidinae	R
34.	*Euthalia aconthea meridionalis*	Common Baron	Nymphalidae	Limenitidinae	O
35.	*Junonia orithya swinhoei*	Blue Pansy	Nymphalidae	Nymphalinae	VR
36.	*Junonia lemonias lemonias*	Lemon Pansy	Nymphalidae	Nymphalinae	O
37.	*Junonia atlites atlites*	Grey Pansy	Nymphalidae	Nymphalinae	C
38.	*Junonia iphita iphita*	Chocolate Pansy	Nymphalidae	Nymphalinae	VC
39.	*Hypolimnas misippus*	Danaid Eggfly	Nymphalidae	Nymphalinae	C
40.	*Hypolimnas bolina jacintha*	Great Eggfly	Nymphalidae	Nymphalinae	VC
41.	*Ariadne merione merione*	Common Castor	Nymphalidae	Biblidinae	O
42.	*Parantica aglea aglea*	Glassy Blue Tiger	Nymphalidae	Danainae	C
43.	*Tirumala limniace exoticus*	Blue Tiger	Nymphalidae	Danainae	VC
44.	*Tirumala septentrionis dravidarum*	Dark Blue Tiger	Nymphalidae	Danainae	O
45.	*Danaus chrysippus chrysippus*	Plain Tiger	Nymphalidae	Danainae	VR
46.	*Danaus genutia genutia*	Striped Tiger	Nymphalidae	Danainae	C
47.	*Euploea core core*	Common Crow	Nymphalidae	Danainae	VC
48.	*Spalgis epius epius*	Apefly	Lycaenidae	Miletinae	R
49.	*Castalius rosimon rosimon*	Common Pierrot	Lycaenidae	Polyommatinae	C
50.	*Discolampa ethion ethion*	Banded Blue Pierrot	Lycaenidae	Polyommatinae	C
51.	*Neopithecops zalmora dharma*	Quaker	Lycaenidae	Polyommatinae	R
52.	*Acytolepis puspa felderi*	Common Hedge Blue	Lycaenidae	Polyommatinae	C
53.	*Zizula hylax hylax*	Tiny Grass Blue	Lycaenidae	Polyommatinae	C
54.	*Zizina otis indica*	Lesser Grass Blue	Lycaenidae	Polyommatinae	C
55.	*Euchrysops nejus cnejus*	Gram Blue	Lycaenidae	Polyommatinae	C
56.	*Chilades pandava pandava*	Plains Cupid	Lycaenidae	Polyommatinae	O
57.	*Jamides celeno celeno*	Common Cerulean	Lycaenidae	Polyommatinae	C
58.	*Talicada nyseus nyseus*	Red Pierrot	Lycaenidae	Polyommatinae	VR
59.	*Spinda sisvulcanus vulcanus*	Common Silverline	Lycaenidae	Theclinae	O
60.	*Loxura atymnus atymnus*	Yamfly	Lycaenidae	Theclinae	R
61.	*Rathinda amor*	Monkey Puzzle	Lycaenidae	Theclinae	R
62.	*Matapa aria*	Common Red-eye	Hesperiidae	Hesperiinae	C
63.	*Ampittia dioscorides dioscorides*	Bush Hopper	Hesperiidae	Hesperiinae	VC
64.	*Telicota ancilla*	Dark Palm Dart	Hesperiidae	Hesperiinae	O
65.	*Iambrix salsala luteipalpis*	Chestnut Bob	Hesperiidae	Hesperiinae	VC
66.	*Borbo cinnara*	Rice Swift	Hesperiidae	Hesperiinae	C
67.	*Aeromachus pygmaeus*	Pygmy Scrub Hopper	Hesperiidae	Hesperiinae	O
68.	*Erionota thrax*	Banana Skipper	Hesperiidae	Hesperiinae	O
69.	*Tagiades gana silvia*	Suffused Snow Flat	Hesperiidae	Pyrginae	O
70.	*Tagiades litigiosa litigiosa*	Water Snow Flat	Hesperiidae	Pyrginae	O

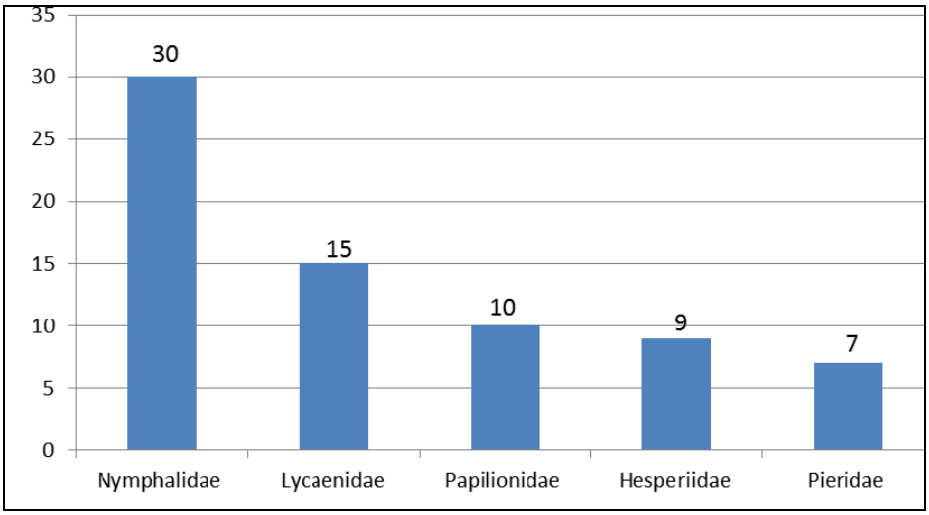

Fig 1: Family wise distribution of butterfly species in CVAS campus

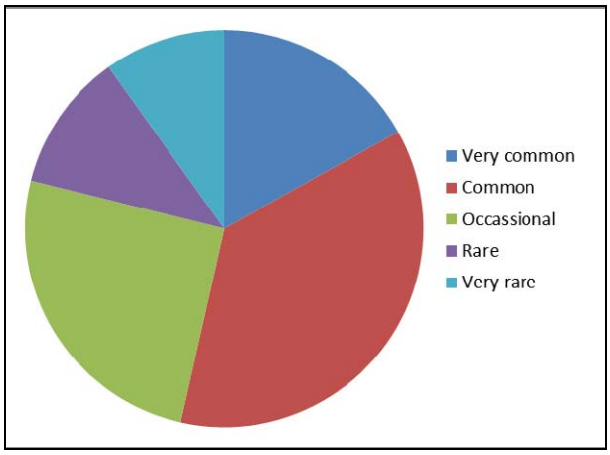

Fig 2: Status of butterfly species at CVAS campus, Mannuthy, Thrissur, Kerala.

4. Conclusion

Observations made in the present study concludes that Nymphalidae was the most dominant family in terms of number of species followed by Lycaenidae, Papilionidae, Hesperiidae and Pieridae. The study reports underline the importance of institutional campus as a preferred habitat for butterflies. If the diversity of the plants in the campus could maintain through proper landscaping and gardening, the diversity of butterflies may increase in the CVAS campus. The present list of butterfly species is not conclusive a future exploration will be needed to update this checklist.

5. Acknowledgement

The authors are grateful to the Dean College of Veterinary and Animal Sciences, Mannuthy, Thrissur for providing facilities to carry out the survey in the college campus. The authors like to thank members of LORIS NATURE CLUB and Kerala Sastra Sahitya Parishad Mannuthy Unit for their constant support and encouragement.

6. Conflict of interest

The authors declare that there is no conflict of interest.

7. References

1. Dennis RB, Hardy PB. Loss rate of butterfly. Biodiversity and conservation 2001; 99:263-276.
2. Evans WH. The identification of Indian Butterflies. Bombay Natural History Society, Bombay, 1932.
3. Kremen C. Assessing the Indicator Properties of Species Assemblages for Natural Areas Monitoring. Ecological Applications 1992; 2:203-217.
4. Kunte K, Joglekar A, Utkarsh G, Padmanabhan P. Patterns of butterfly, bird and tree diversity in the Western Ghats. Current Science 1999; 77:577-586.
5. Kunte K. Butterflies of Peninsular India. Universities Press, Hyderabad, India, 2000.
6. Kehimkar I. The Book of Indian Butterflies. Bombay natural History Society and Oxford University Press, Mumbai, 2008.
7. Padhey AD, Dahanukar N, Paigankar M, Deshpande M, Deshpande D. Season and landscape wise distribution of butterflies in Tamhini, Northern Western Ghats India. Zoo's Print Journal. 2006; 21:2175-2181
8. Sreekumar PG, Balakrishnan M. Habitat and altitude preferences of butterflies in Aralam Wildlife Sanctuary, Kerala. International Society of Tropical Ecology 2001; 42(2):277-281.
9. Thomas JA. Monitoring change in the abundance and distribution of insects using butterflies and other indicator groups. Philosophical Transactions of the Royal Society B 2005; 360:339-357.
10. Tiple AD, Deshmukh VP, Dennis RLH. Factors influencing nectar plant resource visits by butterflies on a university campus: implications for conservation. Nota Lepidopteralogica 2006; 28:213-224.
11. Tiple AD, Khurad AM, Dennis RLH. Butterfly diversity in relation to a human-impact gradient on an Indian university campus. Nota lepidopterologica 2007; 30(1):179-188.
12. Tiple AD, Khurad AM. Butterfly species diversity, habitats and seasonal distribution in and around Nagpur city, central India. World Journal of Zoology. 2009; 4(3):153-162.
13. Tiple AD. Butterfly species diversity, relative abundance and status in Tropical Forest Research Institute, Jabalpur, Madhya Pradesh, central India. Journal of Threatened Taxa. 2012; 4(7):2713-2717.
14. Wynter-Blyth MA. Butterflies of the Indian Region. Bombay Natural History Society, Mumbai, 1957, 523.