



ASSESSMENT OF THE SEASONAL SPECIES DIVERSITY OF BUTTERFLIES IN THE BELA VILLAGE OF KASARGOD DISTRICT, KERALA.

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Abstract— Butterflies are the most beautiful, fragile and important component of our biodiversity. The objectives of the present survey are focused on the assessment of the diversity, seasonal variations of butterfly and prepare a checklist of the butterflies found in the Bela village. Transect line method is used for the study. This type of survey carried out during summer, rainy season and winter season in the year 2015 and 2016. During transect sampling, recorded a total of 72 species, highest number of species (27 sps) was recorded from the family Nymphalidae and least number of species (5 sps) was recorded from the family Pieridae. During summer 40 species, during rainy season 51 species and during winter season 41 species were recorded. Among 72 species, 16 species are common in three season. 10 species found only during the rainy season, 12 species found only during the winter season and 2 species found only during the summer season. Hence the study on diversity of butterflies contributes to take conservation measures. The information collected in the present study will hopefully constitute an incentive for planning conservation actions in the Bela village.

INTRODUCTION:

Butterflies are being good indicators of climatic conditions as well as seasonal and ecological changes; they can serve in formulating strategies for conservation. Butterflies provide aesthetic appeal and are connected with all plants and crops at all stages of their life cycle. Few are aware of the crucial role the butterflies play in pollination of a large portion of economically important crops and flowering plants, which is the second only to the honey bees. The Western Ghats and Agricultural lands and human habitations are the home to hundreds of species of a colorful butterflies, some of them are extremely rare. Habitat destruction and loss of host plants are the greatest threat to butterflies. The rate of destruction is accelerating and is already higher in the Western Ghats and other regions. From egg to adult, butterflies undergo metamorphosis that is the complex and often beset with problem like weather, predator, lack of food and human encroachment on habitat. Butterflies thrive on nectar and caterpillar on food plants preferably those growing in patches rather than as single plant. Plants

in sunny places, interspersed with rocks and stone wells, allow butterflies “basking” space and the shrubbery protects them from wind and predator. Seasonal fluctuations are often influenced by environmental factors including temperature, photoperiod, rainfall, humidity, variation in the availability of food resource and vegetation cover such as herbs and shrubs.

Different species of butterflies require different host species of plants for laying eggs and carrying out their respective life cycle. Many species are strictly seasonal (Kunte 1997) and their population dynamics are generally considered to be governed by environmental factors. Butterflies are biological indicators of the habitats. They are sensitive to environment, their very presence or absence indicates the health of environment. The life cycle of butterflies are closely related to plants of specific landscapes. Relationship between any species of plants and butterfly is very specific. Plants and butterflies have evolved together. Caterpillar of some butterflies feed and develop on weeds instead of agriculture crops thus helping them in controlling weeds. Thus butterflies can appropriately be called friends of farmers. Rich diversity indicates good health of particular habitat also focus on butterflies as the best group of insects for examining the pattern of biodiversity. The objective of the present survey is focused on the assessment of the seasonal species diversity of butterflies. The present survey was also aimed to prepare a checklist of the butterflies found in the Bela village. Hence the study on diversity of butterflies contributes to take conservation measures.

METHOD

Study of lifecycle of butterflies was carried out in the Bela village of Kasargod district, Kerala. This type of survey carried out during summer, rainy and winter seasons during 2015 and 2016. The study area is situated near the western coastal region. The study site receives the south west monsoon which is normally active from June to September. The annual rainfall ranges from 3700 mm to 3900 mm. The temperature ranges from a minimum 22 °C to a



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maximum 38 °C. Transect line method is used for the study. Total 11 transect lines were set up which were 500 m long and 10 m wide, passing through the eight different landscape element types. A study was carried out in different landscape elements like paddy plantation, human habitation, areca-nut plantation, deciduous forest, scrubby jungle, cashew plantation, grass land and rubber plantation. Collection of data is based on observation from 9.00 AM to 6.00 PM. Collection of specimen for the lab was avoided through photographic records. When identification was not possible through photographs only then we followed all-out search method for

collecting the individuals of butterfly species by hand net, then identified and released. The butterflies were identified by using various field guides and other available literature. The larval host plants were identified and noted together with their butterfly larvae and adults. Those plants that were difficult to identify in the field were preserved by making dry herbarium sheet specimens including all the details of the plants for further identification. These herbarium specimen were identified in consultation with Gopalkrishna Bhat, Taxonomic research center, Poornaprajna College Udipi Karnataka and other knowledgeable taxonomists.

TRANSECT NO.	NAME OF THE LANDSCAPE ELEMENT	LOCAL NAME OF THE PLACE
1.	Paddy plantation	Ajjamballi
2.	Paddy plantation	Kolanji
3.	Human habitation	Vishnumurthinagara
4.	Human habitation	Pudukoli
5.	Areca nut plantation	Achikere
6.	Areca nut plantation	Vishnumurthinagara
7.	Deciduous forest	Sookuli
8.	Scrubby jungle	Parekere
9.	Cashew plantation	Bettaganji
10.	Grass land	Yeptakere gudde
11.	Rubber plantation	Chukkinadka

Table-1. Details of transect laid in the Bela village for study of butterflies.

RESULT:

During transect sampling, recorded a total of 72 species, highest number of species (27 sps) was recorded from the family Nymphalidae and least number of species (5sps) was recorded from the family Pieridae. During summer 40 species, during rainy season 51 species and during winter season 41 species were recorded. Among 72 species, 16 species

are common in three season, 12 species found in two seasons only and 18 species found only in one season. It is also observed that 10 species found only during the rainy season, 12 species found only during the winter season and 2 species found only during the summer season. It is observed that butterflies are sensitive to the changes in the habitat and climate, which influences their distribution and diversity.

FAMILY NAME	RAINY SEASON JUNE- SEPT	WINTER SEASON OCT- JAN	SUMMER SEASON FEB- MAY
Hesperiidae	6 species	8 species	4 species
Lycaenidae	5 species	5 species	4 species
Nymphalidae	27 species	20 species	23 species
Papilionidae	8 species	4 species	7 species
Pieridae	5 species	4 species	2 species

Table-2. Transect wise seasonal species diversity of butterflies

TRANSECT NO.	RAINY SEASON	WINTER SEASON	WINTER SEASON
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1.	8 species	7 species	9 species
2.	9 species	10 species	12 species
3.	10 species	12 species	12 species
4.	12 species	15 species	10 species
5.	11 species	15 species	12 species
6.	11 species	10 species	11 species
7.	18 species	18 species	11 species
8.	8 species	14 species	12 species
9.	3 species	2 species	1 species
10.	2 species	1 species	2 species
11.	2 species	1 species	1 species

Table-3. Family wise seasonal species diversity of butterflies

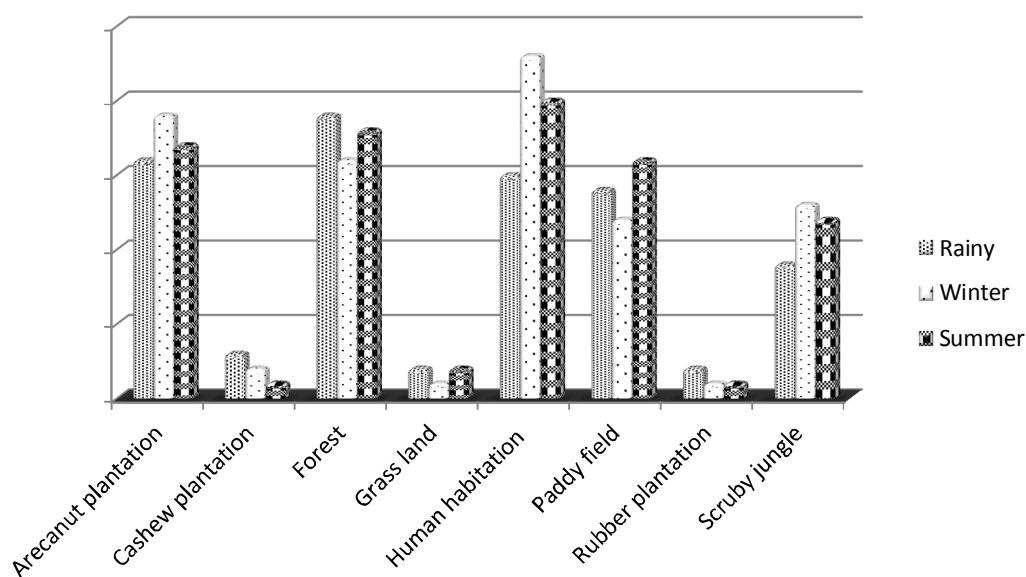


Table-4. Season wise distribution of individual species of butterflies

SL.NO	COMMON NAME	FAMILY NAME	SUMMER SEASON	RAINY SEASON	WINTER SEASON
1.	Angled castor	Nymphalidae	✓	✓	✓
2.	Autumn leaf	Nymphalidae		✓	
3.	banded bluepierrot	Lycaenidae			✓
4.	blue mormon	Papilionidae	✓	✓	
5.	blue nawab	Nymphalidae			✓
6.	blue tiger	Nymphalidae	✓	✓	
7.	bush hopper	Hesperiidae			✓
8.	Chocolate pansy	Nymphalidae	✓	✓	✓
9.	Chustnut bob	Hesperiidae	✓	✓	



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10.	Clipper	Nymphalidae			✓
11.	Common banded demon	Hesperiidae			✓
12.	Common baron	Nymphalidae	✓	✓	✓
13.	Common bottle blue	Papilionidae	✓		
14.	Common bush brown	Nymphalidae	✓	✓	
15.	Common castor	Nymphalidae	✓	✓	
16.	Common cerulean	Lycaenidae		✓	✓
17.	Common crow	Nymphalidae	✓	✓	✓
18.	Commondarklet	Hesperiidae		✓	
19.	Common emigrant	Pieridae	✓	✓	✓
20.	Commoneveng brown	Nymphalidae	✓	✓	
21.	Common five ring	Nymphalidae	✓	✓	✓
22.	Commonfourring	Nymphalidae		✓	✓
23.	Common jay	Papilionidae	✓	✓	
24.	Common lascar	Nymphalidae	✓		✓
25.	Common leopard	Nymphalidae		✓	
26.	Commonmormon	Papilionidae	✓	✓	✓
27.	Commonpalmfly	Nymphalidae	✓	✓	✓
28.	Commonpierrot	Lycaenidae	✓	✓	
29.	Common redeye	Hesperiidae		✓	
30.	Common rose	Papilionidae	✓	✓	✓
31.	Common sailor	Nymphalidae	✓	✓	✓
32.	Common small flat	Hesperiidae			✓
33.	Common three ring	Nymphalidae	✓	✓	✓
34.	Common wander	Pieridae		✓	
35.	Coon	Hesperiidae	✓	✓	✓
36.	Crimson rose	Papilionidae	✓	✓	
37.	Daniedeggfly	Nymphalidae	✓	✓	✓
38.	Dark blue tiger	Nymphalidae	✓		✓
39.	Dark palm dart	Hesperiidae			✓
40.	Forget-me-not	Lycaenidae		✓	✓
41.	Gaint redeye	Hesperiidae			✓
42.	Glade eyebushbrown	Nymphalidae		✓	
43.	Glassy blue tiger	Nymphalidae	✓	✓	
44.	Grass demon	Hesperiidae		✓	
45.	Great eggfly	Nymphalidae		✓	
46.	Great mormon	Papilionidae		✓	
47.	Great orangetip	Nymphalidae			✓
48.	Grey count	Hesperiidae	✓	✓	✓
49.	Grey pansy	Nymphalidae	✓	✓	✓
50.	Lemonpansy	Nymphalidae	✓	✓	
51.	Malabarbandeapeacock	Papilionidae	✓		
52.	Molte demigrant	Pieridae		✓	
53.	Mokeypuzzle	Lycaenidae		✓	✓
54.	nigger	Nymphalidae	✓	✓	✓
55.	Peacock	Nymphalidae	✓	✓	✓
56.	Planetiger	Nymphalidae	✓	✓	
57.	Plum judy	Lycaenidae	✓	✓	
58.	Pschye	Pieridae	✓	✓	✓
59.	Red pierrot	Lycaenidae			✓
60.	Restricted demon	Hesperiidae			✓
61.	Rustic	Nymphalidae	✓	✓	✓
62.	Straight swift	Hesperiidae		✓	
63.	Stripped tiger	Nymphalidae			✓
64.	Suffused snowflat	Hesperiidae			✓



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65.	Sunbeam	Lycaenidae	✓	✓	
66.	Sothorn birdwing	Papilionidae	✓	✓	✓
67.	Tailed jay	Papilionidae		✓	✓
68.	Tawny castor	Nymphalidae		✓	
69.	Three spotted grassy yellow	Pieridae		✓	✓
70.	Tiny grass blue	Lycaenidae	✓	✓	
71.	Watersnowflat	Hesperiidae	✓	✓	✓
72.	Yalmfly	Lycaenidae			✓

Table-5.Landscap wise distribution of Butterflies in different seasons

CONCLUSION:

It is observed that butterflies are sensitive to the changes in the habitat and climate, which influences their distribution and diversity. Observations suggest that butterfly species diversity generally increase with increase in vegetation. Hence the study on diversity of butterflies contributes to take conservation measures. The information collected in the present study will hopefully constitute an incentive for planning, conservation actions in the Bela village. The host plants are crucial for maintaining butterfly diversity, it is vital to conserve them and their landscapes. Fragmentation of natural landscapes for crop area could certainly destroy the host plant and could greatly influence the biodiversity of butterflies. It is very important to understand the relation between host plant and the butterflies to protect them as they have co-evolved. This type of study could contribute to educate the younger generation about the importance of identification, documentation and conservation of butterflies and their host plants. Therefore, further research on the biodiversity of butterflies in each village with special reference to their host plants and factors that affect their distribution, diversity and abundance will be recommended.

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