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BUTTERFLIES OF NATURE AWARENESS CENTRE TRAMBRI, MANDI, HIMACHAL PRADESH

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ABSTRACT

Diversity of butterflies in Nature Awareness Centre Trambri, Sundernagar was studied during different seasons during the year 2011-2012. 49 species of butterflies belonging to 38 genera and 5 families were recorded during present study. Nymphalidae was found to be the dominant family in all the seasons. Species richness was found to be maximum during the rainy season.

Keywords: Butterfly diversity, closed area, Himachal Pradesh, Miscellaneous broad leaved forests, seasons, richness.

Introduction

Butterflies play important ecosystem roles including pollination. They are useful in studies of population and community ecology (Pollard, 1991) as indicators of ecosystem health because they are very sensitive to changes in microclimate and habitat (Erhardt, 1985; Kremen, 1992). Many species are strictly seasonal (Kunte, 1997), and their population dynamics are generally considered to be governed by environmental factors. Seasonality is a common phenomenon in insect populations. Seasonal fluctuations are often influenced by environmental factors including temperature, photoperiod, rainfall, humidity, variation in the availability of food resources, and vegetation cover such as herbs and shrubs (Anu, 2006; Anu *et al*., 2009; Shanthi *et al.,* 2009; Tiple and Khurad, 2009).

In India butterflies have been documented since the turn of 19th century (Williams, 1927, 1930, 1938), however, little information is available concerning butterflies in different protected areas and closed areas. The area of 204.98 ha of Trambri Demarcated Protected Forest(DPF) was closed to human intervention by barbed wire fencing in 1991 by the Forest Department of Himachal Pradesh and was designated as Nature Awareness Centre, Trambri. With the objective of affording increased protection to the wildlife habitats within the degraded forests and to enhance the conservation value of such habitats, the surrounding villages are restrained from using Trambri DPF for fuel, fodder and grass cutting. The restorative efforts and added protection measures are gradually improving the habitat potential of the area which is sparingly being used by a small population of carnivores and herbivores such as leopard, jungle cat, goral, barking deer, wild boar, sambar, porcupine and many species of birds and butterflies. Bandli wildlife sanctuary, the nearest protected area to National Awareness Centre (NAC) Trambri is also having almost similar habitat except for Phoenix patches and open grasslands. No study on butterfly diversity in NAC Trambri has been done so far. Hence, the present study was carried out to assess butterfly diversity in closed area of Trambri DPF which may act as baseline data for future monitoring.

Material and Methods

Study area

This study was undertaken in the closed area of Trambri DPF known as Nature Awareness Centre during the year 2011-12. It is located between E76° 53' 38" to E76 °54' 55" and N 31° 31' 12" to N 31° 32' 08" in Mandi district of Himachal Pradesh. The area is characterized by moderate, steep and precipitous slopes. Moderate and steep slopes are having patches of Chir (*Pinus roxburghii*) plantation and with miscellaneous broad leaved species and Nirgal (*Arundinaria falcata*) bushes. The climate is generally equable and moderate. Eastern part of the NAC drains into Gangal khud and western part of area drains in to Lindi khad both khuds are tributary of Suketi khud of Beas catchment.

Methods

The butterflies were collected with the help of hand net and photographed in different areas of the Trambri NAC. After identification, the butterflies were released into the wild. The data was collected during rainy, winter and summer season.

Documentation of 49 species of butterflies from NAC, Trambi (H.P) may provide baseline data for future monitoring of ecosystem health.

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Table 1: No of genera and species belonging to each family

Family	No of genera	No of species	% of total species	Simbalwara WLS(%)*	W.Himalaya (%)**
Papilionidae	3	5	10.2	7.1	7.4
Pieridae	4	7	14.3	17.1	10.1
Nymphalidae	19	24	49.0	47.13	36.5
Lycaenidae	6	7	14.3	21.42	30.9
Hesperiidae	6	6	12.0	7.1	15.1

*Source (Kittur *et al.* ,2006) ** Source (Singh and Pandey, 2004)

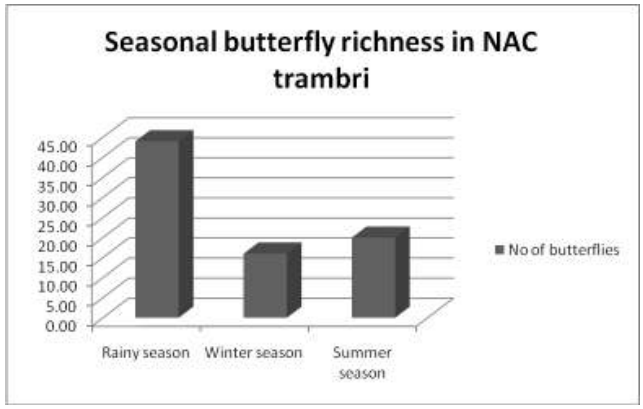
Results and Discussion

49 species of butterflies belonging to 38 genera, 5 families and 16 sub families were recorded in the present study. Maximum number of species are belonging to the families Nymphalidae(50%) followed by Pieridae(14%) and Lycaenidae(14%). Minimum representation was found from family Hespiridae (12%) and Papilionidae (10%). Family Nymphalidae is large and widely distributed and richly represented in Himalayan region. Of the total number of butterflies in the world one third are from Nymphalidae (Haribal, 1992). Similar trend was found in butterflies of Great Himalayan National Park, Western Himalaya. About 50 species with 38 genera representing five families have been reported from Great Himalayan National Park, Western Himalaya. Maximum number of butterflies are belonging to Nymphalidae and Pieridae (Uniyal and Mathur,1998).

The study revealed that butterfly species prefer broad leaved forest over conifer forest. The dominant plant species in both the communities were *Bauhinia variegata, Arundinaria falcata, Mallotus philipinensis, Debregesia hypoleuca, Cassia* spp*, Berberis aristata, Cinnamomum tamala, Dodonea viscsoa, Indigofera* spp*, Celtis australis* and *Pinus roxburghii,* etc*.*

In the present study, rainy season was found to be conducive for butterfly community, which was mainly due to the optimum temperature and high humidity. Butterflies prefer a suitable climatic condition and they respond reasonably to even subtle change in climate, which has been attributed to the fact that their entire life directly depend on temperature and moisture. Mathew and Anto (2007) have reported that temperature ranges between 27-29 ^{0}C and humidity ranging between 60-80 % are the most favourable conditions for butterfly growth.

Butterfly richness rapidly declined during winters and summer. Maximum number of species (44) were found during rainy season followed by summer season (20) and least were encountered in winter season(16). Factors such as scarcity of water, poor nectar and dry vegetation, results in less butterfly abundance and lower survival ability of most species. Swaay (1990) suggests that butterflies among insects are very vulnerable to changes in their environment because of their



specialized life cycle. Any minor to major abiotic stress may lead to substantial decline to complete dwindling of the butterfly species and thus the change in butterfly diversity can be used as an indicator of environmental degradation.

Maximum number of species in most of the families were encountered during rainy season followed by summer season . Minimum number of butterflies were found in winter season except for Hesperidae family. No representation from Hesperidae was recorded in summer season. Similarly no representation from Papilionidae family was found during winter season.

The study has indicated that butterfly fauna of Nature Awareness centre Trambri is rich and diversified because of specialized and complex ecological conditions produced as result of interaction between its unique topographical features. Rich diversity of butterflies found in a small area of Nature Awareness Centre Trambri is

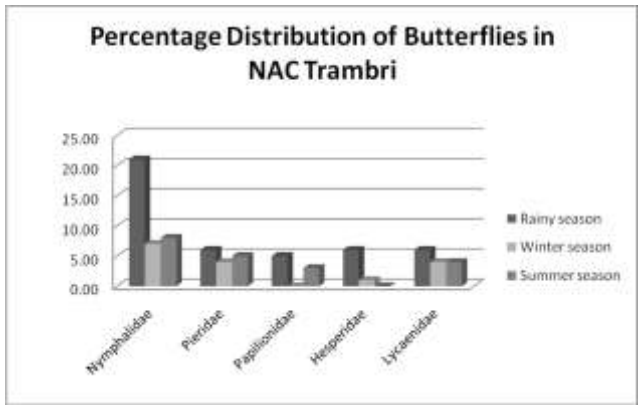


Table 2 : List of butterfly species recorded in Nature Awareness Centre, Trambri

S.No.	Family/Subfamily	Common Name	Scientific name	Rainy season	Winter season	Summer season
	Papilionidae					
1	Papilioninae	Common windmill	*Atrophaneura polyeuctes* Doubleday	*		*
2	Papilioninae	Glassy bluebottle	*Graphium cloanthus* Westwood	*		
3	Papilioninae	Common mormon	*Papilio memnon* Linnaeus	*		*
4	Papilioninae	Common Peacock	*Papilio polyctor* Boisduval	*		
5	Papilioninae	Blue peacock	*Papilio acturus* Westwood	*		*
	Pieridae					
6	Coliadinae	Common Emigrant	*Catopsilia pomona* Fabricius	*		*
7	Coliadinae	Mottled emigrant	*Catopsilia pyranthe* Linnaeus	*		
8	Coliadinae	Common Grass yellow	*Eurema hecabe* Linnaeus	*	*	*
9	Coliadinae	Small grass yellow	*Eurema brigitta* Cramer	*	*	
10	Pierinae	Indian cabbage white	*Pieris canidia* Sparrman	*	*	*
11	Pierinae	Large cabbage white	*Pieris brassicae* Linnaeus	*	*	
12	Pierinae	Bath white	*Pontia daplidice* Linnaeus			*
	Nymphalidae					
13	Cyrestinae	Constable	*Dichorragia nesimachus* Doyere	*		
14	Cyrestinae	Tabby	*Pseudergolis wedah* Kollar	*		
15	Nymphalinae	Orange Oakleaf	*Kallima inachus* Boisduval	*		
16	Nymphalinae	Blue admiral	*Kaniska canace* Linnaeus	*		
17	Nymphalinae	Red admiral	*Vanessa atalanta* Linnaeus			
18	Nymphalinae	Lemon Pansy	*Junonia lemonias* Linnaeus	*	*	*
19	Nymphalinae	Chocolate pansy	*Junonia iphita* Cramer	*	*	*
20	Nymphalinae	Common Jester	*Symbrenthia lilaea* Cramer	*	*	
21	Nymphalinae	Indian tortoiseshell	*Aglais kaschmirensis* Kollar		*	
22	Limenitinae	Common Sailer	*Neptis hylas* Linnaeus	*	*	*
23	Heliconinae	Common Leopard	*Phalanta phalantha* Drury	*	*	
24	Libytheinae	Club beak	*Libythea myrrha* Godart	*		*
25	Danainae	Common Crow	*Euploea core* Cramer	*		
26	Danainae	Glassy tiger	*Parantica aglea* Stoll	*		
27	Danainae	Striped blue crow	*Euploea mulciber* Cramer	*		*
28	Danainae	Chestnut tiger	*Parantica sita* Kollar	*		
29	Danainae	Striped tiger	*Danaus genutia* Cramer	*		*
30	Danainae	Blue tiger	*Tirumala septentrionis* Cramer	*		
31	Danainae	Plain Tiger	*Danaus chrysippus* Linnaeus	*		*
32	Satyrinae	Banded treebrown	*Lethe confusa* Aurivillius	*		
33	Satyrinae	Common Five rings	*Ypthima baldus* Fabricius	*		
34	Satyrinae	Large Three rings	*Ypthima nareda* Kollar	*		
35	Satyrinae	Common four rings	*Ypthima huebneri* Kirby	*		
36	Satyrinae	Common Bushbrown	*Mycalesis persius* Fabricius			*
37	Apaturinae	Golden emperor	*Dilipa morgiana* Westwood			*
	Lycaenidae					
38	Polyommatinae	Lesser grass blue	*Zizina otis* Fabricius	*	*	*
39	Polyommatinae	Common hedge blue	*Acytolepis puspa* Horfield	*	*	
40	Polyommatinae	Pale grass blue	*Pseudozizeeria maha* Kollar	*	*	*
41	Polyommatinae	Dark grass blue	*Zizeera knysna* Moore	*	*	*
42	Lycaeninae	Sorrel saphhire	*Heliophorus sena* Kollar	*		
43	Riodininae	Common Punch	*Dodona durga* Kollar	*		

	Hesperiidae				
44	Coeliadinae	Orange awlet	*Bibasis jaina* Moore	*	*
45	Pyrginae	Fulvous pied flat	*Pseudocoladenia dan* Fabricius	*	
46	Pyrginae	Tricoloured pied flat	*Coladenia indrani* Moore	*	
47	Hesperiinae	Great swift	*Pelopidas assamensis de* Niceville	*	
48	Hesperiinae	Himalayan dart	*Potanthus dara* Kollar	*	
49	Hesperiinae	Indian palm bob	*Suastus gremius* Fabricius	*	

indicator of sound health of the ecosystem. The ongoing efforts of protection to NAC Trambri may result in improving the future potential of these habitats that may have long term benefits for conservation of threatened species such as the leopard and leopard cat. This study has provided a baseline data which can be used for continuous monitoring of butterflies and ecosystem health in NAC Trambri.

प्रकृति जागरूकता केन्द्र, ट्राम्ब्री, मण्डी, हिमाचल प्रदेश की तितलियां

सुवीना ठाकुर और सुनीत भारद्वाज

सारांश

वर्ष 2011–2012 के दौरान विभिन्न मौसमों में प्रकृति जागरूकता केन्द्र ट्राम्ब्री, सुन्दरनगर में तितलियों की विविधता का अध्ययन किया गया। वर्तमान अध्ययन के दौरान 38 वंश और 5 कुलों से संबंधित तितलियों की 49 प्रजातियों को अभिलिखित किया गया। नीम्फेलिड़ा सभी मौसमों में प्रधान कुल पाया गया। प्रजाति समृद्धता वर्षाती मौसम में अधिकतम पाई गई।

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