BUTTERFLIES OF SIRUVANI FORESTS OF WESTERN GHATS, WITH NOTES ON THEIR SEASONALITY

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Abstract

The seasonal pattern in the abundance of butterflies belonging to the families, Papilionidae, Pieridae and Nymphalidae was monitored during the period of September 1994 to August 1996 in the moist deciduous forest of Siruvani, using the transect counting method. Seventy-five species of butterflies belonging to 49 genera were recorded from the area during the study. Of these 53 were encountered along the transect. The present paper also provides an account of their seasonality pattern.

Keywords

Butterflies, Lepidoptera, seasonal pattern, Siruvani, Nilgiri Biosphere Reserve, Western Ghats, southern India

Introduction

The number of Indian butterflies amount to one fifth of the world total of butterfly species. The Himalayan mountain range harbours the major share of the Indian butterfly diversity (Haribal, 1992). Although, only a quarter of India's butterfly diversity is represented in the Western Ghats, it has the characteristic of high alpha diversity of butterflies in certain locations (Gaonkar, 1996; Arun, 2000). No comprehensive systematic account of the insect fauna of this mountain range exists today (Nair & Mathew, 1993; Mathew, 1996). However, butterflies are exceptional, are relatively well-studied and documented group of insects from this mountain range (Wynter-Blyth, 1944; Larsen, 1987, 1988; Mathew, 1990; Gaonkar, 1996). Checklists of butterflies are also available from different areas (Asaithambi, 1994; Rathinasabapathy, 1998). However the temporal dimension of the butterfly assemblages is little known from this region but for a recent report from the northern Western Ghats by Kunte (1996). Along with a checklist of butterflies from the Siruvani forests, the present paper provides information on the seasonal pattern in their occurrence as well.

Study area

The moist deciduous forests of Siruvani falling between 76^{o}41'-45' E and 10^{o}56'-58' N in the Boluvampatti Reserve Forest located in the foothills of Western Ghats about 35km west of Coimbatore, Tamil Nadu, southern India was the selected study area. The area receives good rainfall during both the north-east and south-west monsoons. The mean annual rainfall of the area during the study period was 2092mm, much higher than that generally received by moist deciduous zones (Champion & Seth, 1968), owing to the closeness of the study area to one of the core zone evergreen forests of the Nilgiri Biosphere Reserve.

The transect selected for the study was about four kilometre off the forest check post at Sadivayal on the road towards the Water Filtering plant of TWAD (Tamilnadu Water Supply and Drainage) Board. The transect route of one kilometre was selected in such a way that it represented all the available habitats (Figure 1).

Methodology

The butterflies encountered along a fixed transect route of 1km was recorded regularly at an interval of 10 days for a two-year period from September 1994 to August 1996. All the butterflies recorded at a distance of 5m from the observer were recorded during the counts. Species of the families, Lycaenidae and Hesperiidae could not be identified accurately up to the species level in the field as they are difficult to locate and identify in the field because of their smaller sizes and cryptic colouration. Hence only total count of butterflies belonging to these families was recorded. All the counts were done on non-rainy days during morning hours between 0930 and 1030hr. This timing was found ideal in the area based on preliminary counts done in different times of the day which revealed the maximum butterfly activity during that time.

Results and Discussion

A total of 75 species of butterflies belonging to 49 genera were observed during the present study. Abundance of butterflies fluctuated widely over the months and was most abundant in

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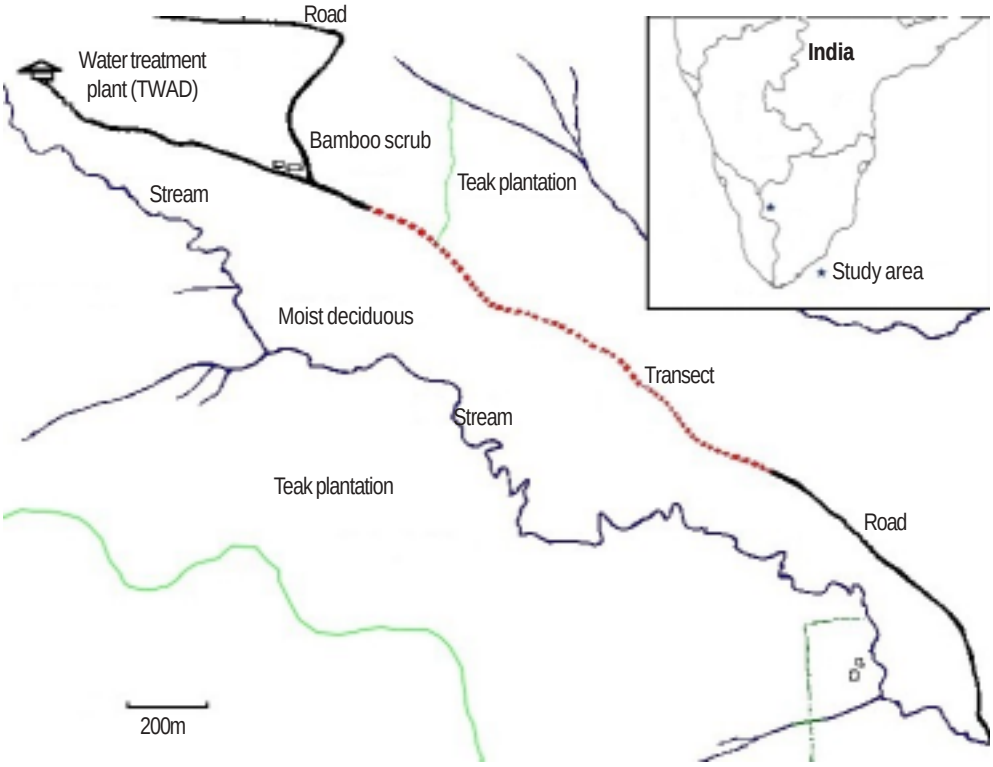

Figure 1. Map of the study area in Siruvani forests, Western Ghats, showing the location of the butterfly transect

the area during the month of August and was lowest in March (Table 2). The high peak in August was partly because of the high abundance of Whites and Yellows (Pieridae). A family-wise checklist of the species observed from the study area is given in Table 1. Of the total 63 species recorded from the three families monitored (Nymphalidae, Papilionidae and Pieridae), only 53 were recorded during the transect counts.

The seasonality of 53 butterflies belonging to three major families were monitored during the study. Among the three, Nymphalidae was the most speciose family in the area. Thirty-one species belonged to this family, which accounted for around 58% of the species richness. Papilionidae was represented by 13 species and Pieridae by 9 species (Table 2). The temporal pattern of fluctuation in the species richness of Nymphalidae showed a significant correlation with that of Papilionidae ($r = 0.788$, $P = 0.002$; Table 3).

The temporal pattern in the occurrence of butterflies in the counts revealed a wide range of fluctuations. The temporal distribution of species during a year was only one month in the case of certain species, such as *Graphium nominus*, *Mycalesis perseus*, *Junonia atlites*, *Junonia orithya* and *Tanaecia lepidea*, while it was all through the year in the case of certain others, such as *Pachliopta hector*, *Papilio polytes*, *Ariadne merione*, *Euploea core*, *Hypolimnas misippus*, *Tirumala limniace*, *Catopsilia pomona*, *Eurema hecabe* and *Hebomoia glaucippe* (Table 1).

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Table 1. List of Butterflies observed and their seasonality.

Common name	Scientific name[1]	Observed in (months)
Papilionidae		
Tailed Jay	*Graphium agammemnon*	Except Jan, Jul, Oct
Spot Sword tail	*Graphium nominus*	Apr
Common Bluebottle	*Graphium sarpedon*	Except Jan
Common Rose	*Pachliopta aristolochiae*	Except April, Jun
Crimson Rose +	*Pachliopta hector*	All months
Common Mime	*Papilio clytia*	Feb, Apr-June, Sep, Oct
Lime Butterfly	*Papilio demoleus*	Except Jan, Nov
Malabar Raven +	*Papilio dravidarum*	Jan, Oct, Nov
Red Helen	*Papilio helenus*	Oct- Nov
Paris Peacock ssp	*Papilio paris*	June, Oct-Dec
Blue Mormon	*Papilio polymnestor*	Except Jun, Jul
Common Mormon	*Papilio polytes*	All months
Southern Birdwing +	*Troides minos*	Except Mar
Nymphalidae		
Tawny Coster	*Acraea violae*	June, Aug, Oct, Dec
Angled Castor	*Ariadne ariadne*	Feb, May
Common Castor	*Ariadne merione*	All months
Tamil Yeoman +	*Cirrochroa thais*	Nov, Dec
Rustic	*Cupha erymanthis*	Except Jan, Apr
Plain Tiger	*Danaus chrysippus*	Except Apr, Nov
Striped Tiger	*Danaus genutia*	Except Jul, Nov
Common Crow	*Euploea core*	All months
Double Branded Black Crow	*Euploea coreta*	*
Brown King Crow	*Euploea crassa*	Nov, Dec
Great Eggfly	*Hypolimnas bolina*	Except Apr, Jun
Danaid Eggfly	*Hypolimnas misippus*	All months
Malabar Tree Nymph +	*Idea malabarica*	Feb-May, Oct
Blue Oakleaf +	*Kallima horsfieldi*	*
Bamboo Treebrown	*Lethe europa*	*
Common Eveningbrown	*Melanitis leda*	Except Jan, Mar, Jun, Sep
Gladeye Bushbrown +	*Mycalesis patnia*	Except June
Common Bushbrown	*Mycalesis perseus*	Nov
Common Lascar	*Neptis hordonia*	*
Common Sailor	*Neptis hylas*	Except Apr
Chestnut Streaked Sailor	*Neptis jumbah*	Except Mar, Apr, Jun, Jul, Sep
Nigger	*Orsotrioena medus*	Jan, Nov, Dec
Glassy Tiger	*Parantica aglea*	Except Oct
Common Sergeant	*Parathyma perius*	*
Blackvein Sergeant	*Parathyma ranga*	Jan, Feb, Dec
Common Leopard	*Phalanta phalantha*	Except May, Jul, Sep
Common Nawab	*Polyura athamas*	Feb, Jul, Aug, Dec
Peacock Pansy	*Junonia almana*	*
Grey Pansy	*Junonia atlites*	Nov
Yellow Pansy	*Junonia hierta*	Jan-Apr, Oct, Dec
Chocolate Pansy	*Junonia iphita*	All months
Lemon Pansy	*Junonia lemonias*	Except Mar, Jun, Sep
Blue Pansy	*Junonia orithya*	Dec
Grey Count	*Tanaecia lepidea*	Sep
Blue Tiger	*Tirumala limniace*	All months
Dark Blue Tiger	*Tirumala septentrionis*	*
Common Fivering	*Ypthima baldus*	Except Sep
White Fourring +	*Ypthima ceylonica*	Except Mar-Jun, Oct
Common Fourring	*Ypthima hubneri*	*
Pieridae		
Pioneer	*Anaphaeis aurota*	Except Jul, Aug, Nov
Lemon Emigrant	*Catopsilia pomona*	All months
Mottled Emigrant	*Catopsilia pyranthe*	*
Lesser Gull	*Cepora nadina*	*
Common Jezebel	*Delias eucharis*	Except March, April August, Nov
Common Grass Yellow	*Eurema hecabe*	All months
Great Orangetip	*Hebomoia glaucippe*	All months
White Orangetip	*Ixias marianne*	Feb, Aug, Nov
Yellow Orangetip	*Ixias pyrene*	Jan, May, June, Aug-Oct
Psyche	*Leptosia nina*	Jan, Feb, May, Oct-Dec
Common Wanderer	*Pareronia valeria*	Except April, Aug
Hesperiidae		
Brown Awl	*Badamia exclamationis*	**
Indian Palmbob	*Suastus gremius*	**
Water Snow Flat	*Tagiades litigiosa*	**
Grass Demon	*Udaspes folus*	**
Lycaenidae		
Angled Pierrot	*Castalius caleta*	**
Leaf Blue	*Horsfieldia anita*	**
Common Cerulean	*Jamides celeno*	**
Dark Cerulean	*Jamides bochus*	**
Pea Blue	*Lampides boeticus*	**
Pale Grass Blue	*Zizeeria maha*	**
Zebra Blue	*Syntarucus plinius*	**
Red Pierrot	*Talicada nyseus*	**

* Not recorded in the transects; ** Seasonality not recorded as the species identification could not be done during the counts; [1] Nomenclature following Gaonkar (1996); + Species endemic to the region of South India and Sri Lanka (Gaonkar 1996).

Table 3. Correlation (Pearson, 2-tailed) between the temporal pattern in the fluctuation of species richness in different families of butterflies.

	Nymphalidae	Papilionidae	Pieridae
Nymphalidae	1	0.788**	0.47
Papilionidae	0.788**	1	0.50
Pieridae	0.47	0.50	1

** Correlation is significant at the 0.01 level (2-tailed)

Table 2. Seasonal variation in species richness of different families observed during the study.

Months	Family			Total
	Nymphalidae	Papilionidae	Pieridae	
Sep 94	10	7	6	23
Oct 94	8	7	3	18
Nov 94	11	5	3	19
Dec 94	16	8	7	31
Jan 95	17	5	6	28
Feb 95	15	6	6	27
Mar 95	14	5	4	23
Apr 95	8	6	4	18
May 95	16	8	6	30
Jun 95	12	7	6	25
Jul 95	16	6	4	26
Aug 95	15	7	5	27
Sep 95	12	8	7	27
Oct 95	18	9	8	35
Nov 95	20	9	6	35
Dec 95	23	8	7	38
Jan 96	11	5	7	23
Feb 96	18	8	8	34
Mar 96	8	5	5	18
Apr 96	12	7	4	23
May 96	13	8	7	28
Jun 96	10	6	6	22
Jul 96	8	4	5	17
Aug 96	17	8	4	29
Total Species	31	13	9	53
Std. Deviation	4.09	1.42	1.47	5.92

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