

GENERAL NOTES

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NEW RECORDS ON THE DISTRIBUTION AND ECOLOGY OF COMMON GEM BUTTERFLY, *PORITIA HEWITSONI HEWITSONI* MOORE FROM THE LOWER WESTERN HIMALAYAS: A LESSER KNOWN TAXA

Additional key words: geographical distribution, seasonality, abundance, habitats, habits, larval food plant.

The common gem butterfly, *Poritia hewitsoni hewitsoni* Moore (1866) (Poritiinae: Lycaenidae), is endemic to the Oriental (Indo-Australian) region (Fig. 1). Its distribution extends from Kumaon in northern India in the west, up to north Thailand in the east, through the lower Himalayan tracts in Nepal, Sikkim, W. Bengal (Dargeeling), Bhutan up to parts of north-east India (Assam and Meghalaya [Khasi hills]), extreme south-east Bangladesh (Chittagong hill tracts) and north Myanmar (Chin, Arakan and Karen hills, Chindwin, Pegu) (De Niceville 1890, Bingham 1907, Swinhoe 1910–11, Evans 1932, Wynter-Blyth 1957, d'Abrera 1986, Mani 1986, Haribal 1992). W. Doherty collected one male and one female of this species from Kali river valley at Garjighat near Kumaon-Nepal border (approx. 80°07'E and 29°12'N) and this record is considered to be the western most limit in the distribution of this species (Hannington 1910). In east to central Nepal, *P. h. hewitsoni* occurs in lower midlands from 160 m to 1050 m (Lamjung, Rupandehi, Chitwan districts) as a locally abundant, fairly common species found during winter. It has also been recorded in March, April, August, September, November and December months, on trees in jungle clearings, riverine and sal, *Shorea robusta* flowers from Nepal (Smith 1989, 1997). However, in Sikkim it is not easily recorded presumably as it flies high among the trees and goes unnoticed as it flies around rapidly to settle on leaves in jungle country at low elevations (Mangan and Rangpo areas) during October and November (Wynter-Blyth 1957 & Haribal 1992). In Darjeeling (north Bengal) one male was collected in March (Maude 1949). Its life history and food plants have so far not been recorded and only its egg has been described by W. Doherty as 'truncate pyramid in shape, half again as long as wide with two vertical and sloping and two horizontal faces, reticulate above as is usual in the family Lycaenidae' (De Niceville 1890). The tuft of hairs present on the hind wings of this butterfly are known to produce a pleasant perceptible odor (Haribal 1992).

Recently, this butterfly was collected from the New Forest campus (8 individuals in August 1988 on a guava tree) and adjoining forested slopes of Tons valley (10+ recorded on November 1989 on a mango

tree in an open and mixed sal forest) (Singh 1999). Both the places lie in the Dehra Dun valley (77°40'E to 78°15'E and 30°00'N to 30°35'N), in Uttaranchal state of northern India, which lies further west to Kumaon, the known western most limit for the distribution of this species. Later, this species was also collected from Paonta valley (4 individuals from a sal forest edge at Rajban in July 1996) and Nahan (77°20'E to 30°33'N) (one specimen [male] observed in a mixed sal forest with *Terminalia tomentosa* trees besides the road near Shambuwalla in November 1999). These places lie in the Sirmour district of Himachal Pradesh state, which is further west to Dehra Dun district. Even Mackinnon and De Niceville (1899) who had studied butterflies of Mussoorie and neighboring regions during all the seasons for 11 successive years (1887–98), had not record this species in Dehra Dun district. One reason could have been non access to Paonta valley and Nahan due to poorly developed road communication at that time.

As there were no previous records of this butterfly from the western Himalayas, I decided to carry out extensive surveys in Dehra Dun valley to know more about the distribution and ecology (seasonality, food plants, breeding time, habits, habitat, life history, etc.) of this lesser known butterfly species in the lower west Himalayan tracts of Uttaranchal state.

Study area. The Dehra Dun valley lies between the west Himalayan mountain ranges in the north and the Shiwalik range running parallel to it in the south at a mean altitude of 485 m and covers an area of ca. 1920 km². In the west it is bordered by the river Yamuna and in the east by the river Ganga. The valley is also well watered by perennial streams. The mountain slopes on the north and south sides of the valley are covered with pure and mixed forests dominated by sal, *Shorea robusta* (tropical moist deciduous sal forests or TMDSF; Champion & Seth 1968). These forests cover 51–58% of Dehra Dun valley (FSI 1995). Mixed stands have *Terminalia tomentosa*, *T. belerica*, *Adina cordifolia*, *Lagerstromia parviflora*, *Mallotus philippensis*, *Lannea coromandalica*, *Syzygium cumini* trees, as other dominant species besides sal. The valley receives ca. 200 cm rainfall annually, mostly during the monsoons (June–September). The temperature fluctuates be-

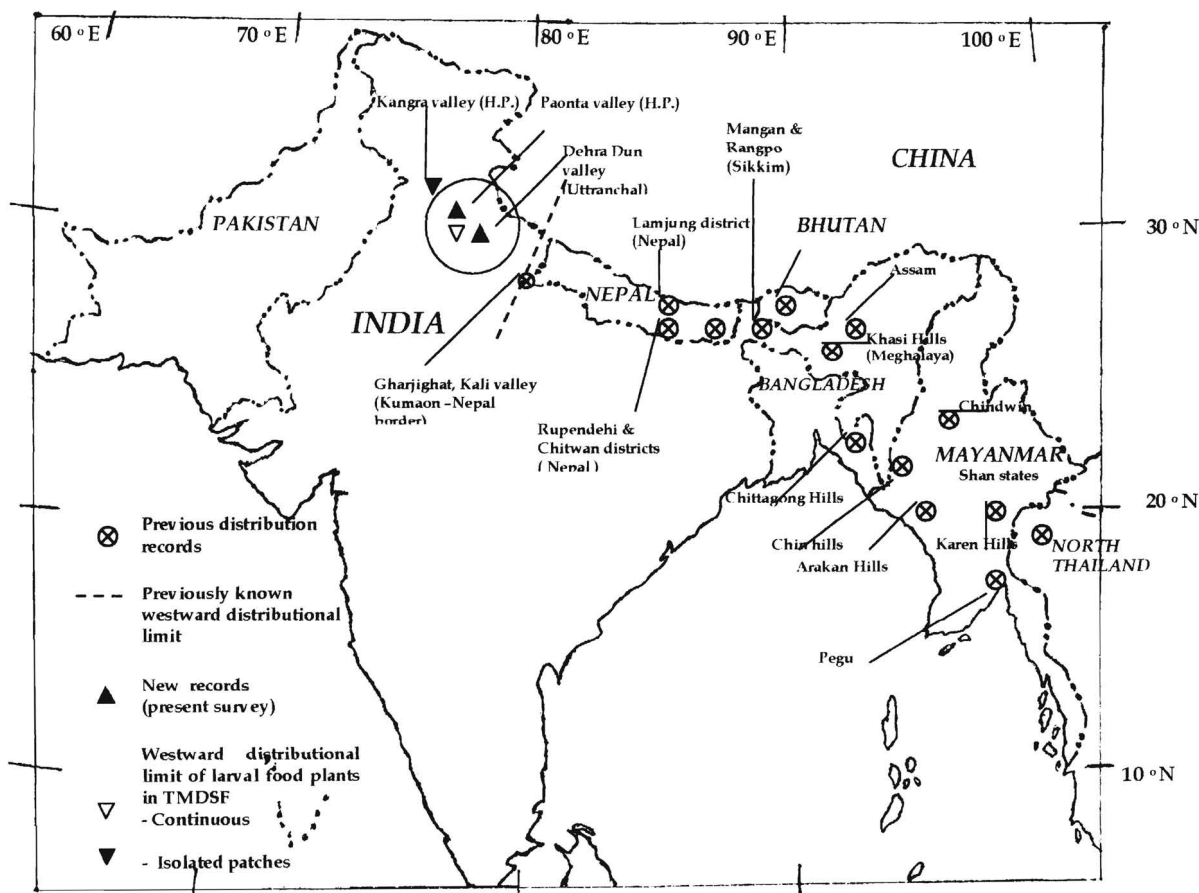


FIG. 1. Map depicting the geographical distribution of common gem butterfly, *Poritia hewitsoni hewitsoni* Moore in the Oriental region and the location of collection sites in Tropical moist deciduous sal forests (TMDSF) from where it was recently recorded.

tween -1°C to 43.9°C from winter to summer. The distribution of the seasons in the area is as follows: Spring (March–April); Pre-Monsoon (May–June); Summer/Monsoon (July–August); Post-Monsoon (September–October); Autumn (November–December); Winter (January–February).

Study sites and sampling. A total of 5 sites (Baarwala, Jhajra, Thano, Timli & Karvapani forest areas) each covering a continuous area of 4 km^2 and representing the TMDSF, spread over the valley were selected for sampling. Sampling of each site for butterflies was done visually by walking and counting the number of individuals of butterfly species on a line transect for 30 minutes during sunshine. In all 8 line transects were covered in each site totaling to 4 h of sampling period in 2 successive days (2 h/day in a stretch). All the three strata (canopy, middle story and ground level) were sampled for butterflies with the help of binoculars and butterfly nets. Only a few voucher specimens were collected for identification of difficult species. Destructive sampling was kept to the minimum. Each site was thus sampled once in two

months for two successive years (July 2000–August 2002), based on the methodology adopted by Blair and Launer (1997).

Seasonality and abundance. *P. h. hewitsoni* specimens (both male and female) were recorded from all the 5 sites. This species was found to be relatively locally abundant as compared to other butterflies, being collected in almost half (46%) of the total samplings. The data on the number of individuals collected from different sal forest sites in Dehra Dun valley is given in the Table 1. The flight period of *P. h. hewitsoni* in the lower western Himalayas, as recorded in this study, is from spring to autumn seasons with higher abundance in July–August (monsoons) when it also breeds.

Habits and Habitat. Most of the collections were made in edges/ openings of sal forest. Large assemblages of this butterfly were recorded (a) while nectar feeding on flowering *Syzygium operculata* trees growing besides a stream (riverine) in the company of Large Oak Blue, *Aropala amantes* Hewitson and Common Silverline, *Spindasis vulcanus* Fabricius, butterflies (Baarwala); (b) in the edge of a sal forest growing

TABLE 1. Common gem butterfly, *Poritia hewitsoni hewitsoni* Moore individuals recorded* from tropical moist deciduous sal, *Shorea robusta* forest sites in Dehra Dun valley, the lower western Himalayas.

Year	Season	Month	Sites				
			Baarwala	Jhajra	Thano	Timli	Karvapani
2000	Monsoon	July					
		August	31				
	Post-Monsoon	Sept					1
		October					
	Autumn	November	1				
2001		December					
	Winter	January					
		February					
	Spring	March		1		2	18
		April					
	Pre-Monsoon	May					
		June					
	Monsoon	July		22			
		August	1	4			3
	Post-Monsoon	Sept				23	
2002		October			16		
	Autumn	November	2			9	
		December					
	Winter	January			1		
		February					
	Spring	March					
		April				1	
	Pre-Monsoon	May		1			1
		June			1	5	
	Monsoon	July					
		August					45

* Recorded in 4 h of sampling time period in 2 successive days and covering 8 transects in an area of 4 km² for each site.

in mixed association with tall *Terminalia tomentosa* trees (in flowering) and *Mallotus philippiensis* trees occupying lower story below it (Jhajra); (c) degraded, extensively lopped open, pure sal forest (Thano); (d) in small openings in a dense, mixed sal forest having closed canopy, on bushes and dry leaves present on the forest floor in late spring (Karvapani and Timli, both sites located on the Shiwaliks). During November it was observed basking on tree tops (canopy) of medium to tall trees (Timli). It was not recorded outside sal forest areas. Adults were recorded being predated by spiders.

Larval food plants and breeding. Fourth and fifth instar larvae were recorded feeding on tender and mature leaves of sal, *Shorea robusta* and Sain, *Terminalia tomentosa* trees during the rainy season (in August at Karvapani, Jhajra and Baarwala).

Brief life history. Larvae: As many as 45 fourth and fifth instar larvae recorded feeding together in a group (like a pack of cigarettes), half in line above the leaf surface while rest of the half below the leaf surface in such a way that all the mouths feed together in a line, on a leaves of *S. robusta* and *T. tomentosa* trees, during day time (Karvapani, August) (Fig. 2). This may be an adaptation for protection against natural enemies by giving them a confusing effect as collectively they appear to be one single mass covering the leaf surface from both the sides, making it very difficult to judge

its actual size and shape. Pupae: Pale in color with a line of black spots on the 2 margins, 10 mm long which were found attached to the upper surface of fresh leaves of young sal trees in an open forest (Baarwala, August) and also on the leaves of a climber *Millettia auriculata* in sal forest (Timli, September). Pupal



FIG. 2. Common gem butterfly, *Poritia hewitsoni hewitsoni* Moore larvae feeding on sal (*Shorea robusta*) leaf.

period was recorded to 2–3 days in August and 3–4 days in September. Adults: Wing span: 28–39 mm. In April and August males appear to be fresh with brilliant metallic blue colors. Sex ratio of adult butterflies on emergence from one group of 45 larvae brought from the field (August-Karvapani), was found to be 1:1. Adult longevity in laboratory ranged from 6–16 days (August) when kept in breeding cages and fed honey-sugar solution.

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