RESEARCH NOTES

(I)

BUTTERFLIES VISITING FLOWER HEADS OF *TERMINALIA PANICULATA* ROTH IN KERALA, INDIA

Introduction

Terminalia paniculata Roth is a valuable tree species found in the moist deciduous and semi-evergreen forest tracts of the Western Ghats. Its timber is durable and is used for building construction and furniture making. Other than this, the tree is utilized in paper and leather industry and in medicine for treatment of various diseases (Srivastav *et al.*, 1998).

While camping in the New Amarambalam forest of the Nilambur Forest Division, Kerala, profuse insect activity was noticed on flowered *T. paniculata* trees during November-January 1998-1999. This prompted us to make regular observations on the insects visiting the flowers of this tree. Of the various insects visiting the flower heads, butterflies were most conspicuous. Earlier Srivastava (1993) in a study on the insects visiting the flower heads of *Terminalia* spp., had recorded six species of Lepidoptera which included two butterflies viz., *Graphium nomius* and *Phalanta phalantha*. Foraging of flowers by butterflies and their role in pollination are relatively well documented (Feltwell, 1986). As *T. paniculata* flowers are mostly entomophilous, such an information will have great ecological significance.

Methods

Two flower bearing trees of *Terminalia paniculata* were selected in the 'New Amarambalam Reserve Forest' of Nilambur South Division. These trees were systematically monitored during the flowering season. Of the two trees selected, one was in a moist deciduous patch while the other was in a semi-evergreen patch. Observations were made following the methodology given by Mathew *et al.* (1987). Initially observations for butterflies visiting *T. paniculata* in both the habitats were made from dawn to dusk everyday but subsequently the period of observation was narrowed from 8 AM to 2 PM as the butterflies were found to be very active during this time period. Observations were made using a binocular. In order to confirm the identity of species, butterflies were collected using a hand net for examination. Wynter-Blyth (1957) served as a useful reference in the identification of butterflies.

The relative abundance of butterflies in different habitats was worked out based on the number of flower visitations by individuals of various butterflies species as given below.

(a) XXX - More than 100 visitings/month (very common)
(b) XX - More than 25 and less than 100 visitings/month (common)

(c) X - Less than 25 visitings/month (uncommon)

Results and Discussion

The butterflies associated with *Terminalia paniculata* flowers are given in Table 1.

A total of 11 species belonging to 4 families and 10 genera were identified. The family Pieridae with 5 species was the most abundant followed by Danaidae (3 species), Nymphalidae (2 species) and Papilionidae (1 species). In the semi evergreen habitat 10 species were found to visit the flowers, while 8 species were found in the moist deciduous habitat. Three species observed only in the semi-evergreen habitat include the Papilionid, *Papilio helenus daksha* and the Nymphalids *Cirrochroa thais thais* and *Cupha erymanthis maja*. The Pierid, *Catopsilia pyranthe* was observed only in the moist deciduous habitat.

With regard to frequency of flower visiting, *Tirumala limniace leopardus* and *Euploea core core* were 'very common' followed by *Parantica aglea aglea*, *Catopsilia pomona* and *Eurema blanda silhetana* which were 'common'. Flower

Table 1

Butterflies visiting flowerheads of Terminalia paniculata in two different forest types

Family/Species	Month			
	November		December	
	SEF	MDF	SEF	MDF
Papilionidae :				
Papilio helenus daksha Moore	X			
Nymphalidae :				
Cirrochroa thais thais Fabr.	X			
Cupha erymanthis maja Fruh.			X	
Danaidae :				
Tirumala limniace leopardus Butl.	XXX	XXX	XXX	XXX
Parantica aglea aglea Cram.	XX	XX	XX	XX
Euploea core core Cram.	XXX	XXX	XXX	XXX
Pieridae :				
Delias eucharis Drury		X	XX	XX
Hebomoia glaucippe australis Butl.	XX	X	XX	X
Catopsilia pomona Fabr.	XX	XX	X	XX
C. pyranthe Linn.		X		
Eurema blanda silhetana Wallace	XX	XX	X	XX

SEF - Semi Evergreen Forest; MDF - Moist Deciduous Forest
XXX - More than 100 visitings/month; XX - More than 25 and less than 100 visitings/month; X - Less than 25 visitings/month.

visitations by the Great orange tip, *Hebomoia glaucippe australis* were more in the semi evergreen habitat while, in the case of Common jezebel, *Delias eucharis*, it was more in the moist deciduous forest. *Papilio helenus daksha, Cirrochroa thais thais, Cupha erymanthis maja* and *Catopsilia pyranthe* were 'uncommon' in terms of their flower visitation patterns.

Availability of adult food resources is an important factor determining the distribution and survival of various butterflies. However, information on the nectar resources of butterflies in the Western Ghats is negligible (Shahabuddin, 1997). The findings of this study is a contribution with regard to the nectar resource utilisation by 11 species of butterflies.

Acknowledgements

This study was carried out as part of a research project funded by the Ministry of Environment and Forests, Govt. of India. The support rendered by the Forest Department personnel of Nilambur South Division is gratefully acknowledged.

References

Feltwell, J. (1986). *The Natural History of Butterflies.* Croom & Helm Ltd., London. 133 pp.

Mathew, G., M.P. Koshy and K. Mohanadas (1987). Preliminary studies on insect visitors of Teak (*Tectona grandis* Linn.F.) inflorescence in Kerala, India. *Indian Forester*, **113** (1) : 61-64.

Shahabuddin, G. (1997). Habitat and nectar resource utilisation by butterflies found in Siruvattukadu Kombei, Palni Hills, Western Ghats. *J. Bombay. Nat. Hist. Soc.*, **94** (3) : 423-428.

Srivastava, P.K. (1993). Pollination mechanisms in genus *Terminalia* Linn. *Indian Forester*, **119** (2) : 147-150.

Srivastav, P.K., K. Thangavelu, R. Khare and R.N. Singh (1998). *Treatise on Terminalias.* Indian Publishers Distributors, Delhi. 272 pp.

Wynter-Blyth, M.A. (1957). *Butterflies of the Indian region.* Bombay Natural History Society, Bombay. 523 pp.

Kerala Forest Research Institute,
Peechi, Thrissur (Kerala)

C.F. Binoy
and
George Mathew