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Chromosome numbers of thirty-one species of Indian Lepidoptera

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Abstract

Chromosome numbers are reported for 31 Indian species. Results for *Psara stultalis* (2n = 60, n = 30), *Malacosoma indica* (50, 25) and *Pygaera fulgurita* (62, 31) differ from data reported by earlier workers. Eighteen species are new to cytology.

Introduction and methods

Although the Lepidoptera constitutes one of the largest orders of insects, the chromosome numbers of only a little of 1700 species are known (Kaur, 1984). However from India only about 100 species have been cytologically investigated so far.

In the present note the chromosome numbers of 31 Indian species are brought on record. The observations are based on slides prepared using larval testis and air-drying Giemsa technique. The larvae were taken from cultures of the species maintained in the laboratory and their identity was established from the parents (moths and butterflies).

Review of chromosome numbers

In Table 1 the chromosome numbers are given for 31 species from various Indian localities. Most of the material has been collected from Northern India.

The 31 species studied are referable to 8 superfamilies and 16 families; 18 species are new to lepidopteran karyology. In 10 species the chromosome numbers were found to be in confirmation to the already known ones. However, in 3 species i.e. *Psara stultalis, Malacosoma indica* and *Pygaera fulgurita* Rishi (1973) observed diploid and haploid chromosome numbers 60(30), 50(25) and 62(31) respectively, which is at variance with our findings. In the cases of *Psara stultalis* and *Pygaera fulgurita* the difference in number may be due to variation in species or error in counting, but in *Malacosoma indica*, where the difference in number is substantial it appears that the identity of the species studied by Rishi is incorrect. This is also confirmed by the locality of the material worked by her i.e. Port Blair, Andamans. *Malacosoma indica* does not occur in the Andamans.

In 26 species elongated karyotypable chromosomes were obtained. The diploid and haploid chromosome numbers in 20 species were 62 and 31 respectively, which is the ancestral or primitive number of the order.

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Table 1. Chromosome numbers of 31 species of Indian Lepidoptera.

Super family Family	Species	Chromosome number 2n (n)			Food plant/host	Time and locality
		Reported for the first time	Confirming earlier reports	At variance with earlier reports		
Tineoidea Psychidae	*Cryptothelia crameri* westw.	62 (31)			*Duranta repens* leaves	Sept., New Forest, Dehra Dun
Yponomeutoidea Yponomeutidae	*Atteva fabriciella* Swed.		62 (31)		*Ailanthus excelsa* leaves	Aug., Dholkhand Range, Siwalik Forest Division
	Yponomeuta evonymella Linn.		62 (31)		*Prunus padus* leaves	May, Buraskhanda, Dhanolti Yamuna Forest Division, Tehri Garhwal
Gelechioidea Oecophoridae	*Tonica niviferana* Walk.		60 (30)		*Bombyx ceiba* shoots	Aug., Dholkhand Range, Siwalik Forest Division
Pyraloidea Pyralidae	*Antigastra catalaunalis* Dup.	62 (31)			*Sesamum indicum* leaves, fruits	Aug., New Forest, Dehra Dun
	Lamoria adaptella Walk	62 (31)			*Shorea robusta* seeds	Aug., New Forest, Dehra Dun
	Leucinodes orbonalis Guen.	62 (31)			*Solanum melongena* fruits	Sept./Oct., Dehra Dun
	Nephopteryx eugraphella Rago.	62 (31)			*Mimusops elengi* leaves	Aug., Buddha Garden, Delhi
	Nephopteryx rhodobasalis Hamp.	62 (31)			*Cassia fistula* leaves	Sept., New Forest, Dehra Dun
	Palpita laticostalis Guen.	62 (31)			*Holorrhina antidysentrica* leaves	Nov., Mohand Range, Siwalik Forest Division
	Palpita vertumnalis Guen.	62 (31)			*Tabernaemontana coronaria* leaves	Sept., New Forest, Dehra Dun
	Psara stultalis Walk.			62 (31)	*Achyranthes aspera* leaves	Sept., New Forest, Dehra Dun
	Tyspanodes linealis Moore	62 (31)			*Bombyx ceiba* leaves	Sept., New Forest, Dehra Dun
	Hypsipyla robusta Moore	60 (30)			*Toona ciliata* fruit/flowers	April, Chakrata Road, Dehra Dun
	Galleria mellonella Linn.		60 (30)		Bees Wax	Aug., Dehra Dun
Papilionoidea Nymphalidae	*Vanessa cashmirensis aesis* Fruh.	62 (31)			*Girardinia heterophylla* leaves	May, Mussoorie
Lycaenidae	*Virachola isocrates* Fabr.	38 (19)			*Punica granatum* fruit	July, New Forest, Dehra Dun
Pieridae	*Delias belladona belladona* Fabr.	50 (25)			*Santalum album* leaves	Feb., New Forest, Dehra Dun
	Pieris brassicae Linn.		30 (15)		*Brassica oleracea* var. *botrytis* leaves	May, New Forest, Dehra Dun

Table 1. Continued.

Super family Family	Species	Chromosome number 2n (n)			Food plant/host.	Time and locality
		Reported for the first time	Confirming earlier reports	At variance with earlier reports		
Papilionidae	*Papilio machaon asiatica* Mene	60 (30)			*Foeniculum vulgare* leaves	May, New Forest, Dehra Dun
Geometroidea Geometridae	*Ectropis deodarae* Prout	62 (31)			*Cedrus deodara* needles	June, Lolab Valley Kashmir, J. & K.
Bombycoidea Lasiocampidae	*Malacosoma indica* Walk			62 (31)	*Populus ciliata* leaves	May, Dholkhand Range Siwalik Forest Division
Bombycidae	*Bombyx mori* Linn.		56 (28)		*Morus alba* leaves	April, Dehra Dun
Saturniidae	*Antheraea pernyi* G.M.		98 (49)		*Quercus incana* leaves	May, Chamba Tehri Garhwal
Noctuoidea Notodontidae	*Pygaera fulgurita* Walk.			60 (30)	*Populus deltoides* leaves	Jan., Range Office, New Forest, Dehra Dun
	Pygaera cuprerata Butl.	48 (24)			*Populus deltoides* leaves	June, Range Office, New Forest, Dehra Dun
Arctiidae	*Spilosoma obliqua* Walk.		62 (31)		*Lantana camara* leaves	Dec., Vasant Vihar, Dehra Dun
Noctuidae	*Heliothis armigera* Hubn.	62 (31)			*Leucaena leucocephala* leaves/ flowers	Aug., Lachhiwala, East Forest Division, Dehra Dun
	Polytela gloriosae Fabr.		62 (31)		*Zephyrintes* leaves	Aug., Botanical Garden, Dehra Dun
	Plusia orichalcea Fabr.		62 (31)		French beans	Nov., New Forest, Dehra Dun.
Lymantriidae	*Lymantria obfuscata* Walk.	62 (31)			*Salix tetrasperma* and *Populus nigra* leaves	June, Lolab Valley, Kashmir, J. & K.

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