



ISSN 0974-7907 (Online)  
ISSN 0974-7893 (Print)

## A PRELIMINARY STUDY ON BUTTERFLIES OF THE KATHLAUR-KAUSHLIAN WILDLIFE SANCTUARY, PATHANKOT, PUNJAB, INDIA

Narender Sharma<sup>1</sup>, P. Kumar<sup>2</sup> & P.C. Tak<sup>3</sup>

<sup>1,2,3</sup> Northern Regional Centre, Zoological Survey of India 218, Kaulagarh Road, Derhra Dun, Uttarakhand 248195, India  
<sup>1</sup>narendersharma70@gmail.com (corresponding author), <sup>2</sup>abhinavsangal@rocketmail.com, <sup>3</sup>pctakzsi@gmail.com

OPEN ACCESS

**Abstract:** A preliminary study of the butterfly diversity of the Kathlaur-Kaushlian Wildlife Sanctuary (Pathankot, Punjab) India was conducted from 10–11 November 2011. A total of 40 species belonging to 31 genera was recorded, including *Libythea myrrha sanguinalis* Fruhstorfer, a new species added to the butterfly fauna of Punjab. Species richness was greatest for the family Nymphalidae, with 22 species, followed by Pieridae with 10 species, Lycaenidae with four, and Papilionidae and Hesperidae with two each. An analysis of relative abundances revealed that of the 40 species reported, 19 were classed as common, 15 as less common and the remaining six species as uncommon. Observations on their occurrence in different habitats revealed 13 species prefer scrubby habitat, 13 scrubby and grassy habitat, seven grassy habitats and the remaining seven scrubby and riverine habitats.

**Keywords:** Butterfly, Kathlaur-Kaushlian, Punjab, species diversity.

The butterfly fauna of India has been well studied in the past with the works of de Nicéville (1886, 1890), Moore (1890-1905), Marshall & de Nicéville (1883), Swinhoe (1893, 1896, 1905–1913), Bingham (1905, 1907), Evans (1932), Talbot (1939, 1947), Wynter-Blyth (1957), and Kehimkar (2008) being some of the more significant publications. To date, 1641 species of

butterflies have been reported from India (Varshney 2010a).

In particular, the state of Punjab is still unexplored in terms of its butterfly diversity and the available information is mainly restricted to that published by Rose & Sidhu (2001), who provided an inventory of 74 species of butterflies from Punjab; Arora et al. (2006), who gave a brief account of 74 species from the Punjab Shivaliks; and Sharma & Joshi (2009), who listed 41 species from Dholbaha Dam (Hoshiarpur). Thakur et al. (2002) listed 49 species of butterflies from a nearby sanctuary, Kalatop-Khajjiar Wildlife Sanctuary, Himachal Pradesh. However, information on the butterfly diversity of the various protected areas of Punjab is almost totally lacking.

It is precisely with this point in mind that while conducting ‘General Faunistic Surveys’ of Punjab under the mandate of the Zoological Survey of India in Kapurthala, Pathankot, Hoshiarpur and Rupnagar Districts, we were fortunate to have the opportunity to study the butterfly faunal diversity of Kathlaur-Kaushlian



DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
DD	LC	NT	VU	EN	CR	EW	EX

*Junonia orithya swinhoei*  
Blue Pansy



DOI: <http://dx.doi.org/10.11609/JoTT.o3882.7557-62> | ZooBank: urn:lsid:zoobank.org:pub:A8BCF922-B364-474C-B8B3-393C3B0BADD

Editor: Ian J. Kitching, Natural History Museum, Cromwell Road, UK.

Date of publication: 26 July 2015 (online & print)

Manuscript details: Ms # o3882 | Received 06 April 2013 | Final received 05 February 2015 | Finally accepted 12 May 2015

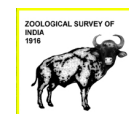
Citation: Sharma, N., P. Kumar & P.C. Tak (2015). A preliminary study on butterflies of the Kathlaur-Kaushlian Wildlife Sanctuary, Pathankot, Punjab, India. *Journal of Threatened Taxa* 7(9): 7557–7562; <http://dx.doi.org/10.11609/JoTT.o3882.7557-62>

Copyright: © Sharma et al. 2015. Creative Commons Attribution 4.0 International License. JoTT allows unrestricted use of this article in any medium, reproduction and distribution by providing adequate credit to the authors and the source of publication.

Funding: Zoological Survey of India.

Competing interests: The authors declare no competing interests.

Acknowledgements: Authors are thankful to Dr. K. Venkataraman, Director, Zoological survey of India, Kolkata for encouragement throughout. Thanks are also due the Chief Wildlife Warden, Punjab for necessary permission to undertake the General Faunistic Survey work and DFO, Pathankot for various courtesies.



Wildlife Sanctuary on 10 and 11 November 2011. A preliminary account of the observations and collections made on the butterfly diversity of this sanctuary was prepared.

## MATERIAL AND METHODS

### Study area

Kathlaur-Kaushlian Wildlife Sanctuary (KKWS) is situated in Pathankot District, which came into existence recently as the 22<sup>nd</sup> district of Punjab on 28 July 2011. The sanctuary covers an area of approximately 767 hectares of which 140 hectares are in Kaushlian division and the remaining 627 hectares in Kathlaur division.

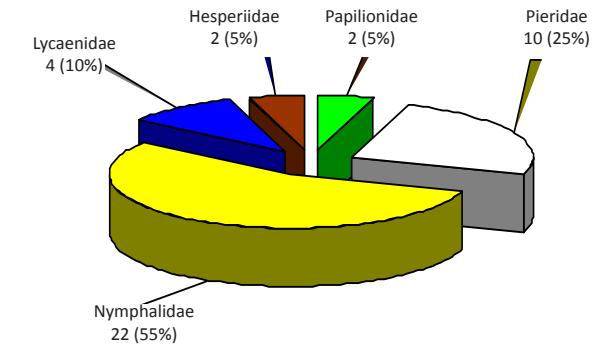
The sanctuary primarily comprises a riverine ecosystem. The vegetation mainly consists of grasses (*Saccharum spontaneum*, *S. officinalis*, *S. munja*, *Bambusa bambos*, *Dendrocalamus strictus*); plantations of trees such as: Khair (*Acacia catechu*), Shisham (*Dalbergia sissoo*), Kikar (*A. nilotica*), Amla (*Embolia officinalis*), Amrud (*Psidium guajava*), Safeda (*Eucalyptus* hybrid), Willow (*Salix* spp.), and a variety of shrubs and herbs.

### Methods

Collections and observations were made in Compartment no. 7 (32°14.936'N & 75°26.967'E, accuracy 10'; elevation ~260m) on 10.xi.2011 and in Compartment nos. 5 & 6 (32°14.936'N & 75°26.967'E, accuracy 10'; ~260m) on 11.xi.2011.

Butterflies were hand-collected with a butterfly net and voucher specimens (non-schedule species under the Wildlife (Protection) Act, 1972) preserved for identification. These have been deposited in the National Zoological Collection (NZC) at the Northern Regional Centre, Dehradun. The works of Evans (1932), Talbot (1939, 1947), Wynter-Blyth (1957), Haribal (1992) and Kehimkar (2008) were used to identify specimens to species and subspecies. Digital photographs were taken in the field of as many species as possible with the aid of a Nikon DX-80 digital camera but some had to be photographed from specimens in the collections of the Northern Regional Centre of ZSI, Dehradun. Latitude, longitude and altitude were recorded with the aid of a Garmin OREGON® 550 hand-held GPS.

The abundance status provided here is based on an arbitrary frequency scale formulated from the present observations and was quantified as follows: Common (encountered 6–10 times), Less Common (3–5 times), and Uncommon (only once or twice). The habitats where the collections and observations were made were likewise classified into three broad categories: scrubby



**Figure 1. Family-level classification of butterfly species in Kathlaur-Kaushlian Wildlife Sanctuary, Punjab (n = 40 spp)**

(mostly bushes), grassy (open grasslands) and riverine (bushes and grasses along streams and rivers).

## RESULTS

A total of 40 species belonging to 31 genera and five families were collected and identified (Images 1–40; image numbers correspond between Table 1 and the plates), including *Libythea myrrha sanguinalis* Fruhstorfer, which is new to the butterfly fauna of Punjab. Previously, this species was known from Kulu in Himachal Pradesh, India to Burma (Myanmar) (Evans 1932). Family-level analysis of the number of species revealed that the Nymphalidae were the most species rich with 22 species, followed by Pieridae (10 species), Lycaenidae (four species), and Papilionidae and Hesperidae with two species each (Table 1, Fig. 1).

Observations on the relative abundances of the 40 species observed revealed that 19 species were common, 15 as less common and the remaining six species as uncommon (Table 1). Observations on their occurrences in the different habitats revealed that 13 species preferred the scrubby habitat, 13 scrubby/grassy, seven the grassy habitat and the remaining seven the scrubby/riverine habitat (Table 1).

These preliminary observations on butterfly diversity of KKWS will serve as the basis for future studies on the ecology, biology and conservation of butterflies in Punjab in general and at KKWS in particular.

## REFERENCES

- Arora, G. S., H.S. Mehta, V.K. Walia & M.S. Thakur (2006). Butterflies, pp. 587–609. In: Jerath, N., Puja & J. Chadha (eds.). *Biodiversity in the Shivalik Ecosystem of Punjab, India*. Punjab State Council for Science and Technology, Chandigarh.
- Bingham, C.L. (1905). *The fauna of British India including Ceylon and Burma, Butterfly - Vol-I*. Taylor and Francis Ltd., London, 511pp.
- Bingham, C.L. (1907). *The fauna of British India including Ceylon and Burma, Butterfly - Vol-II*. Taylor and Francis Ltd., London, 453pp.

Table 1. Systematic list of butterfly species recorded from Kathlaur-Kaushlian Wildlife Sanctuary, Pathankot District, Punjab, India.

Image number	Species	Common Name	Habitat	Relative abundance
	<b>Papilionidae: Papilioninae</b>			
1	<i>Papilio polytes romulus</i> Cramer	Common Mormon	Scrubby	Common
2	<i>Papilio demoleus demoleus</i> Linnaeus	Lime Butterfly	Scrubby	Less Common
	<b>Pieridae: Pierinae</b>			
3	<i>Cepora nerissa phryne</i> (Fabricius)	Common Gull	Scrubby & Riverine	Common
4	<i>Pieris brassicae</i> Linnaeus	Large Cabbage White	Scrubby & Riverine	Common
5	<i>Pieris canidia indica</i> Evans	Indian Cabbage White	Scrubby & Riverine	Common
6	<i>Anapheis aurota aurota</i> (Fabricius)	Pioneer	Scrubby & Riverine	Common
7	<i>Ixias pyrene kausala</i> Moore	Yellow Orange Tip	Scrubby & Riverine	Common
8	<i>Leptosia nina nina</i> (Fabricius)	Psyche	Scrubby & Grassy	Less Common
	<b>Coliadinae</b>			
9	<i>Colias fieldii edusina</i> Butler	Dark Clouded Yellow	Scrubby & Grassy	Less Common
10	<i>Eurema hecabe fimbriata</i> (Wallace)	Common Grass Yellow	Scrubby & Grassy	Common
11	<i>Catopsilia crocale</i> (Cramer)	Common Emigrant	Scrubby	Common
12	<i>Catopsilia pyranthe minna</i> (Herbst)	Mottled Emigrant	Scrubby	Common
	<b>Nymphalidae: Danainae</b>			
13	<i>Danaus chrysippus</i> (Linnaeus)	Plain Tiger	Scrubby	Common
14	<i>Danaus genutia genutia</i> (Cramer)	Common Tiger	Scrubby & Riverine	Common
15	<i>Euploea core core</i> (Cramer)	Common Indian Crow	Scrubby & Riverine	Less Common
16	<i>Parantica aglea melanooides</i> Moore	Glassy Tiger	Scrubby	Uncommon
	<b>Satyrinae</b>			
17	<i>Mycalesis mineus mineus</i> (Linnaeus)	Dark-brand Bushbrown	Grassy	Less Common
18	<i>Ypthima sakra</i> Moore	Himalayan Five-Ring	Grassy	Less Common
19	<i>Melanitis leda ismene</i> (Cramer)	Common Evening Brown	Grassy	Less Common
	<b>Nymphalinae</b>			
20	<i>Vanessa indica indica</i> (Herbst)	Indian Red Admiral	Scrubby & Grassy	Uncommon
21	<i>Phalanta phalantha phalantha</i> (Drury)	Common Leopard	Scrubby	Common
22	<i>Hypolimnas bolina</i> (Linnaeus)	Great Eggfly	Scrubby	Less Common
23	<i>Junonia lemonias persicaria</i> (Fruhstorfer)	Lemon Pansy	Scrubby & Grassy	Less Common
24	<i>Junonia hierta hierta</i> (Fabricius)	Yellow Pansy	Scrubby & Grassy	Less Common
25	<i>Junonia almana almana</i> (Linnaeus)	Peacock Pansy	Scrubby & Grassy	Common
26	<i>Junonia atlites</i> (Linnaeus)	Grey Pansy	Scrubby & Grassy	Common
27	<i>Junonia iphita siccata</i> (Stichel)	Chocolate Pansy	Scrubby & Grassy	Less Common
28	<i>Junonia orithya swinhoei</i> Butler	Blue Pansy	Scrubby & Grassy	Less Common
29	<i>Cynthia cardui</i> (Linnaeus)	Painted Lady	Scrubby & Grassy	Uncommon
30	<i>Ariadne merione tapestrina</i> (Moore)	Common Castor	Scrubby	Less Common
31	<i>Neptis hylas astola</i> Moore	Common Sailer	Scrubby	Common
32	<i>Athyma perius</i> (Linnaeus)	Common Sergeant	Scrubby	Uncommon
33	<i>Kallima inachus hugeli</i> (Kollar)	Orange Oakleaf	Scrubby	Uncommon
	<b>Libytheinae</b>			
34	<i>Libythea myrrha sanguinalis</i> Fruhstorfer	Club Beak	Scrubby	Uncommon
	<b>Lycaenidae: Lycaeninae</b>			
35	<i>Lampides boeticus</i> (Linnaeus)	Pea Blue	Grassy	Less Common
36	<i>Castalius rosimon rosimon</i> (Fabricius)	Common Pierrot	Grassy	Common

Image number	Species	Common Name	Habitat	Relative abundance
37	<i>Pseudozizeeria maha maha</i> (Kollar)	Pale Grass Blue	Grassy	Common
38	<i>Freyeria trochilus trochilus</i> (Freyer)	Grass Jewel	Grassy	Common
	<b>Hesperiidae: Hesperinae</b>			
39	<i>Pelopidas mathias mathias</i> (Fabricius)	Small Branded Swift	Scrubby & Grassy	Common
	<b>Pyrginae</b>			
40	<i>Sarangesa dasahara dasahara</i> Moore	Common Small Flat	Scrubby & Grassy	Less Common

Followed Varshney (2010b)



Image 1. *Papilio polytes romulus*



Image 2. *Papilio demoleus demoleus*



Image 3. *Cepora nerissa phryne*



Image 4. *Pieris brassicae*



Image 5. *Pieris canidia indica*



Image 6. *Anapheis aurota aurota*



Image 7. *Ixias pyrene kausala*



Image 8. *Leptosia nina nina*



Image 9. *Colias fieldii edusina*



Image 10. *Eurema hecabe fimbriata*



Image 11. *Catopsilia crocale*



Image 12. *Catopsilia pyranthe minna*

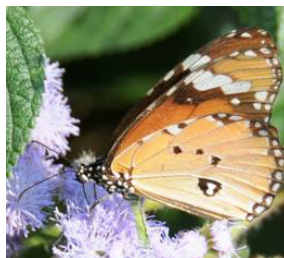


Image 13. *Danaus chrysippus*



Image 14. *Danaus genutia genutia*

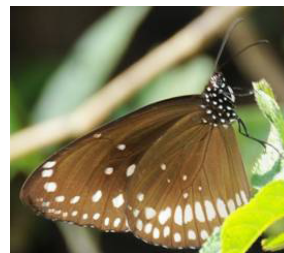


Image 15. *Euploea core core*



Image 16. *Parantica aglea melanoides*



Image 17. *Mycalesis mineus mineus*



Image 18. *Ypthima sakra*



Image 19. *Melanitis leda ismene*

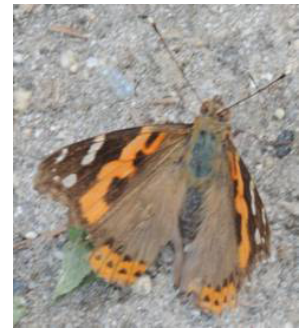


Image 20. *Vanessa indica indica*

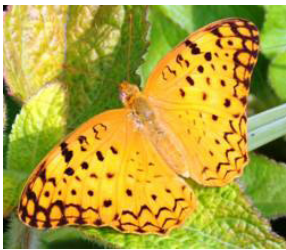


Image 21. *Phalanta phalantha phalantha*



Image 22. *Hypolimnas bolina*

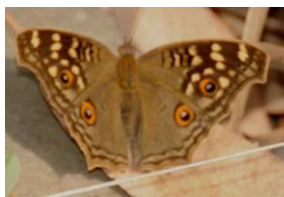


Image 23. *Junonia lemonias persicaria*



Image 24. *Junonia hierta hierta*



Image 25. *Junonia almana almana*



Image 26. *Junonia atlites*



Image 27. *Junonia iphita siccata*



Image 28. *Junonia orithya swinhoi*



Image 29. *Cynthia cardui*

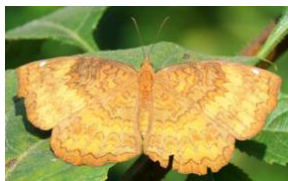


Image 30. *Ariadne merione tapestrina*

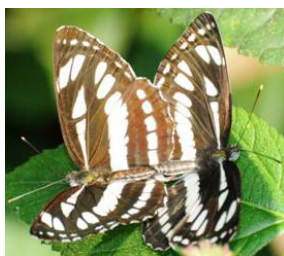


Image 31. *Neptis hylas astola*



Image 32. *Athyma perius*

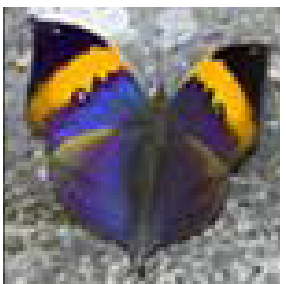


Image 33. *Kallima inachus hugeli*

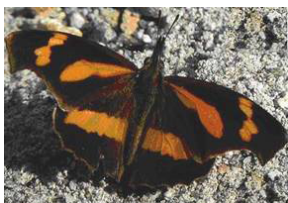


Image 34. *Libythea myrrha sanguinalis*



Image 35. *Lampides boeticus*



Image 36. *Castalius rosimon rosimon*



Image 37. *Pseudoizeeria maha maha*



Image 39. *Pelopidas mathias mathias*



Image 38. *Freyeria trochilus trochilus*



Image 40. *Sarangesa dasahara dasahara*

de Nicéville, L. (1886). *The Butterflies of India, Burma and Ceylon Vol-II. Nymphalidae, Lemoniidae, Libytheinae, Nemeobinae*. The Calcutta Central Press Co. Ltd., 332pp.

de Nicéville, L. (1890). *The Butterflies of India, Burma and Ceylon Vol-III (Lycaenidae)*. The Calcutta Central Press Co. Ltd., 503pp.

Evans, W.H. (1932). *The Identification of Indian Butterflies (2nd Edition)*. The Bombay Natural History Society, Mumbai, 454pp.

Haribal, M. (1992). *The Butterflies of Sikkim Himalaya and their Natural History*. Published by Sikkim Nature Conservation Foundation (SNCF), Gangtok, Sikkim, 217pp.

Kehimkar, I. (2008). *The Book of Indian Butterflies*. Bombay Natural History Society, Mumbai, 487pp.

Marshall, G.F.L. & L. de Nicéville (1883). *Butterflies of India, Burma and Ceylon. Vol.I. Nymphalidae (Danainae, Satyrinae, Elymniinae, Morphinae, Acraeinae)*. The Calcutta Central Press Co. Ltd, 327pp.

Moore, F. (1890–1892). *Lepidoptera Indica. Vol. I. Rhopalocera. Family Nymphalidae. Sub-families Euploeinae and Satyrinae*. Reeve & Co, London, 317pp.

Moore, F. (1893–1896). *Lepidoptera Indica. Vol. II. Rhopalocera. Family Nymphalidae. Sub-families Satyrinae (continued), Elymniinae, Amathusiinae, Nymphalinae (group Charaxina)*. Reeve & Co, London, 274pp.

Moore, F. (1896–1899). *Lepidoptera Indica. Vol. III. Rhopalocera. Family Nymphalidae. Sub-families Nymphalinae (continued), groups Potamina, Euthaliina, Limenitina*. Reeve & Co, London, 254pp.

Moore, F. (1899–1900). *Lepidoptera Indica. Vol. IV. Rhopalocera. Family Nymphalidae. Sub-families Nymphalinae (continued), groups Limenitina, Nymphalina, and Argynnia*. Reeve & Co, London, 260pp.

Moore, F. (1901–1903). *Lepidoptera Indica. Vol. V. Rhopalocera. Family Nymphalidae. Sub-family Nymphalinae (continued), groups Melitaeina and Eurytelina. Sub-families Acraeinae, Pseudergolinae, Calinaginae, and Libytheinae. Family Riodinidae. Sub-family Nemeobiinae. Family Papilionidae. Sub-families Parnassiinae, Thaidinae, Leptocircinae, and Papilioninae*. Reeve & Co, London, 248pp.

Moore, F. (1903–1905). *Lepidoptera Indica. Vol. VI. Rhopalocera. Family Papilionidae. Sub-family Papilioninae (continued). Family Pieridae. Sub-family Pierinae*. Reeve & Co, London, 240pp.

Rose, H.S. & A.K. Sidhu (2001). Inventory of the butterflies of Punjab (Lepidoptera: Rhopalocera). *Bionotes* 3(2): 43–44.

Sharma, G. & P.C. Joshi (2009). Diversity of Butterflies (Lepidoptera: Insecta) from Dholbaha Dam (Dist. Hoshiarpur) in Punjab Shivalik, India. *Biological Forum* 1(2): 11–14.

Swinhoe, C. (1893). A list of the Lepidoptera of the Khasia Hills. Part I. *Transactions of the Entomological Society of London* 1893(41): 267–330.

Swinhoe, C. (1896). New species of Lepidoptera from Khasia Hills. *Annals and Magazine of Natural History, including Zoology, Botany, and Geology* (6)17: 357–363.

Swinhoe, C. (1905–1910). *Lepidoptera Indica. Vol. VII. Rhopalocera. Family Pieridae [printed in error: "Family Papilionidae"]*. Sub-family Pierinae (continued). Family Lycaenidae. Sub-families Gerydinae, Lycaenopsinae and Everinae. Reeve & Co, London, 286pp.

Swinhoe, C. (1910–1911). *Lepidoptera Indica. Vol. VIII. Rhopalocera. Family Lycaenidae. Sub-families Lycaeninae, Plebeinae, Lampidinae, Chrysophaninae, Poritiinae, Amblypodiinae, Curetinae, Liphyrinae, Ruralinae*. Reeve & Co, London, 293pp.

Swinhoe, C. (1911–1912). *Lepidoptera Indica. Vol. IX. Rhopalocera. Family Lycaenidae (continued). Sub-families Horaginae, Deudorixinae, Hypolycaeninae, Zesiusinae, Aphnaeinae, Biduandinae, Cheritrinae, Loxurinae. Family Hesperidae. Sub-families Ismeneinae, Achalarinae*. Reeve & Co, London, 278pp.

Swinhoe, C. (1912–1913). *Lepidoptera Indica. Vol. X. Rhopalocera. Family Hesperidae (concluded). Sub-families Celaenorrhinae, Hesperinae, Pamphilinae, Astictopterinae, Suastinae, Erionotinae, Matapinae, Notocryptinae, Plastingiinae, Erynninae*. Reeve & Co, London, 364pp.

Talbot, G. (1939). *The Fauna of British India including Ceylon and Burma, Butterfly - Vol-I*. Taylor and Francis Ltd., London, 600pp.

Talbot, G. (1947). *The Fauna of British India including Ceylon and Burma, Butterfly - Vol-II*. Taylor and Francis Ltd., London, 506pp.

Thakur, M.S., H.S. Mehta & V.K. Mattu (2002). Butterflies of Kalatop-Khajjir Wildlife Sanctuary, Himachal Pradesh. *Zoos' Print Journal* 17(10): 909–910; <http://dx.doi.org/10.11609/JoTT.ZPJ.17.10.909-10>

Varshney, R.K. (2010a). *Bharat Ki Titliyan* (Butterflies of India) [in Hindi]. Zoological Survey of India, Kolkata, 195pp.

Varshney, R.K. (2010b). *Genera of Indian Butterflies*. Published by Nature Books India, New Delhi, 186pp.

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

