A preliminary study on butterflies of the Kathlaur-Kaushlian Wildlife Sanctuary, Pathankot, Punjab, India

Narender Sharma 1, P. Kumar 2 & P.C. Tak 3

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

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 Hesperiidae 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...
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 22nd 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 (Emblica 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 11.xi.2011 and in Compartment nos. 5 & 6 (32°14.936’N & 75°26.967’E, accuracy 10’; ~260m) on 10.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 (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 Hesperiidae 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.

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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 |
|--------------|---------|-------------|---------------|--------------------|
| 1            | Papilio polytes romulus Cramer | Common Mormon | Scrubby        | Common             |
| 2            | Papilio demoleus demoleus Linnaeus | Lime Butterfly | Scrubby        | Less Common        |
| 3            | Cepora nerissa phryne (Fabricius) | Common Gull | Scrubby & Riverine | Common             |
| 4            | Pieris brassicae Linnaeus | Large Cabbage White | Scrubby & Riverine | Common             |
| 5            | Pieris canidia indica Evans | Indian Cabbage White | Scrubby & Riverine | Common             |
| 6            | Anaphes aurata aurata (Fabricius) | Pioneer | Scrubby & Riverine | Common             |
| 7            | Ixias pyrene kausala Moore | Yellow Orange Tip | Scrubby & Riverine | Common             |
| 8            | Leptosia nina nina (Fabricius) | Psyche | Scrubby & Grassy | Less Common        |
| 9            | Colias fieldii edusina Butler | Dark Clouded Yellow | Scrubby & Grassy | Less Common        |
| 10           | Eurema hecabe fimbrata (Wallace) | Common Grass Yellow | Scrubby & Grassy | Common             |
| 11           | Catopsilia crocale (Cramer) | Common Emigrant | Scrubby | Common             |
| 12           | Catopsilia pyranthe minna (Herbst) | Mottled Emigrant | Scrubby | Common             |
| 13           | Danaus chrysippus (Linnaeus) | Plain Tiger | Scrubby | Common             |
| 14           | Danaus genutia genutia (Cramer) | Common Tiger | Scrubby & Riverine | Common             |
| 15           | Euploea core core (Cramer) | Common Indian Crow | Scrubby & Riverine | Less Common        |
| 16           | Parantica aglea melanoides Moore | Glassy Tiger | Scrubby | Uncommon           |
| 17           | Mycalesis mineus mineus (Linnaeus) | Dark-brand Bushbrown | Grassy | Less Common        |
| 18           | Ypthima sakro Moore | Himalayan Five-Ring | Grassy | Less Common        |
| 19           | Melanitis jedi istene (Cramer) | Common Evening Brown | Grassy | Less Common        |
| 20           | Vanessa indica indica (Herbst) | Indian Red Admiral | Scrubby & Grassy | Uncommon           |
| 21           | Phalanta phalanta phalantha (Drury) | Common Leopard | Scrubby | Common             |
| 22           | Hypolimnas bolina (Linnaeus) | Great Eggfly | Scrubby | Less Common        |
| 23           | Junonia lemonias persicaria (Fruhstorfer) | Lemon Pansy | Scrubby & Grassy | Less Common        |
| 24           | Junonia hertia hertia (Fabricius) | Yellow Pansy | Scrubby & Grassy | Less Common        |
| 25           | Junonia almana almana (Linnaeus) | Peacock Pansy | Scrubby & Grassy | Common             |
| 26           | Junonia attiles (Linnaeus) | Grey Pansy | Scrubby & Grassy | Common             |
| 27           | Junonia ishita sicata (Stichel) | Chocolate Pansy | Scrubby & Grassy | Less Common        |
| 28           | Junonia orithya swinhoei Butler | Blue Pansy | Scrubby & Grassy | Less Common        |
| 29           | Cynthia cardui (Linnaeus) | Painted Lady | Scrubby & Grassy | Uncommon           |
| 30           | Ariadne merione tapestrina (Moore) | Common Castor | Scrubby | Less Common        |
| 31           | Neptys hylas astola Moore | Common Sailer | Scrubby | Common             |
| 32           | Athyma perius (Linnaeus) | Common Sergeant | Scrubby | Uncommon           |
| 33           | Kallima inachus hugelii (Kollar) | Orange Oakleaf | Scrubby | Uncommon           |
| 34           | Libythea myrrha sanguinalis Fruhstorfer | Club Beak | Scrubby | Uncommon           |
| 35           | Lampides boeticus (Linnaeus) | Pea Blue | Grassy | Less Common        |
| 36           | Castalius rosimon rosimon (Fabricius) | Common Pierrot | Grassy | Common             |
| Image number | Species                                      | Common Name           | Habitat            | Relative abundance |
|--------------|----------------------------------------------|-----------------------|--------------------|--------------------|
| 37           | Pseudazizeeria maha maha (Kollar)            | Pale Grass Blue       | Grassy             | Common             |
| 38           | Freyeria trachilus trachilus (Freyer)        | Grass Jewel           | Grassy             | Common             |
| 39           | Pelopidas mathias mathias (Fabricius)        | Small Branded Swift   | Scrubby & Grassy   | Common             |
| 40           | Sarangesa dasahara dasahara Moore            | Common Small Flat     | Scrubby & Grassy   | Less Common        |

Followed Varshney (2010b)
Image 17. Mycalesis mineus
Image 18. Ypthima sakra
Image 19. Melanitis leda
Image 20. Vanessa indica indica

Image 21. Phalanta phalantha
Image 22. Hypolimnas bolina
Image 23. Junonia lemonias persicaria
Image 24. Junonia hierta hierta

Image 25. Junonia almana
Image 26. Junonia atlites
Image 27. Junonia iphita siccata
Image 28. Junonia orithya swinhoei

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
Butterflies of Kathlaur-Kaushlian Wildlife Sanctuary

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