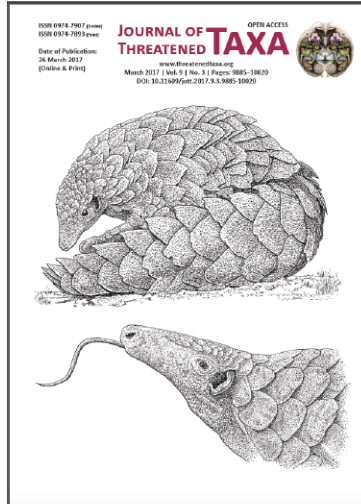


## OPEN ACCESS



The Journal of Threatened Taxa is dedicated to building evidence for conservation globally by publishing peer-reviewed articles online every month at a reasonably rapid rate at [www.threatenedtaxa.org](http://www.threatenedtaxa.org). All articles published in JoTT are registered under [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/) unless otherwise mentioned. JoTT allows unrestricted use of articles in any medium, reproduction, and distribution by providing adequate credit to the authors and the source of publication.



## Journal of Threatened Taxa

Building evidence for conservation globally

[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

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

### SHORT COMMUNICATION

#### A REPORT ON SOME BUTTERFLIES (LEPIDOPTERA) FROM LADAKH IN JAMMU & KASHMIR AND LAHAUL IN HIMACHAL PRADESH, INDIA

Sanjay Sondhi, Balakrishnan Valappil, Yash Sondhi & Anchal Sondhi

26 March 2017 | Vol. 9 | No. 3 | Pp. 9971–9987  
10.11609/jott.3024.9.3.9971-9987



For Focus, Scope, Aims, Policies and Guidelines visit [http://threatenedtaxa.org/About\\_JoTT.asp](http://threatenedtaxa.org/About_JoTT.asp)

For Article Submission Guidelines visit [http://threatenedtaxa.org/Submission\\_Guidelines.asp](http://threatenedtaxa.org/Submission_Guidelines.asp)

For Policies against Scientific Misconduct visit [http://threatenedtaxa.org/JoTT\\_Policy\\_against\\_Scientific\\_Misconduct.asp](http://threatenedtaxa.org/JoTT_Policy_against_Scientific_Misconduct.asp)

For reprints contact [info@threatenedtaxa.org](mailto:info@threatenedtaxa.org)

Partner



Publisher/Host







## A REPORT ON SOME BUTTERFLIES (LEPIDOPTERA) FROM LADAKH IN JAMMU & KASHMIR AND LAHAUL IN HIMACHAL PRADESH, INDIA

Sanjay Sondhi<sup>1</sup>, Balakrishnan Valappil<sup>2</sup>, Yash Sondhi<sup>3</sup> & Anchal Sondhi<sup>4</sup>

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

<sup>1,3,4</sup>Titli Trust, 49 Rajpur Road Enclave, Dhoran Khas, near IT Park, P.O. Gujrada, Dehradun, Uttarakhand 248001, India

<sup>2</sup>Nest, Kizhuparamba P.O., Malappuram District, Kerala 673639, India

<sup>3</sup>Indian Institute of Science Education and Research, CET Campus, Thiruvananthapuram, Kerala 560097, India

<sup>1</sup>sanjay.sondhi1@gmail.com (corresponding author), <sup>2</sup>balavalappil@gmail.com, <sup>3</sup>yashsondhi@gmail.com,

<sup>4</sup>anchal.tree@gmail.com

OPEN ACCESS



**Abstract:** Forty-two (42) species of butterflies were recorded from a short survey of Ladakh and Lahaul in the inner Himalaya in Jammu & Kashmir and Himachal Pradesh. Here, we provide location and altitude records for these species, data on their abundance, photo-documentation of the life cycle of *Pieris deota* and *P. brassicae* as well as the first published record of a larval host plant for *P. deota*. Twelve (12) of these species are protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

**Keywords:** Biodiversity, Himalaya, Lepidoptera, palearctic.

Ladakh, literally meaning “land of high passes” is in the Indian state of Jammu & Kashmir. Ladakh is administratively divided into two districts, Leh District and Kargil District. Xinjiang Province, China, Aksai Chin and Tibet are on Ladakh’s northern, northeastern and eastern borders. To the northwest is Baltistan on the Pakistan border, to the west is the Kashmir Valley and Jammu, while to the south is Lahaul Spiti District in Himachal Pradesh.

The Ladakh region is a high altitude, cold desert and it is the highest plateau in Jammu & Kashmir. The low precipitation in the area means that vegetation is sparse. Ladakh is bound by the Karakoram mountain range to its north and the Great Himalaya to the south.

The Zaskar Range and the Ladakh range are in the west and east of Ladakh respectively. The Indus River flows through the Indus Valley, the Nubra and the Shyok rivers flow through the Nubra Valley while the Stod and the Lungnak rivers flow through the Zaskar Valley.

The butterflies of Ladakh, Jammu & Kashmir and Lahaul and Spiti District, Himachal Pradesh are not well studied. The Ladakh region, part of the inner Himalaya, is remote and not easily accessible explaining the paucity of information on Lepidoptera. Moreover, being a cold desert, butterfly activity is largely restricted to the May to September period.

The average height of the high altitude plateau in Ladakh is 3,000m, and numerous motorable high altitude passes, such as Khardung “La” (Ladakhi: pass), Changa La, Namshang La, Lachung La in Ladakh and Rohtang La in Lahaul means that these areas can be accessed in a vehicle, at least in the summer months, which coincide with the peak period for butterfly activity. A number of high altitude lakes in the eastern part of Ladakh such as Pangong, Tsomoriri and Tsokar, and their surrounding areas are interesting habitats to survey for butterflies.

Older published literature on butterflies for Jammu & Kashmir includes publications by Lang (1868) and

**DOI:** <http://doi.org/10.11609/jott.3024.9.3.9971-9987> | **ZooBank:** urn:lsid:zoobank.org:pub:08E61E90-BEE7-4C50-9186-81CBCBFB32DE

**Editor:** Saito Motoki, The Butterfly Society of Japan, Tokyo, Japan.

**Date of publication:** 26 March 2017 (online & print)

**Manuscript details:** Ms # 3024 | Received 25 October 2016 | Final received 27 February 2017 | Finally accepted 01 March 2017

**Citation:** Sondhi, S., B. Valappil, Y. Sondhi & A. Sondhi (2017). A report on some butterflies (Lepidoptera) from Ladakh in Jammu & Kashmir and Lahaul in Himachal Pradesh, India. *Journal of Threatened Taxa* 9(3): 9971–9987; <http://doi.org/10.11609/jott.3024.9.3.9971-9987>

**Copyright:** © Sondhi et al. 2017. 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:** None.

**Competing interests:** The authors declare no competing interests.

**Acknowledgements:** We would like to thank Juma from Leh who helped in organizing the entire logistics of our visit to the Ladakh region; and Chris Chadwell from the UK, who assisted in identifying and confirming some of the flower species identities.



Home (1938), but these were not based on the Ladakh region. There are a few recent studies on the butterfly fauna of Ladakh. Mani & Singh (1962) reported on the Lepidopteran fauna of the nival zones of northwestern Himalaya, which included a mention of butterflies of Ladakh. They listed 91 Lepidopteran species including moths and butterflies of which 71 species and subspecies of butterflies were listed with a brief mention of localities and distribution.

Amongst the most comprehensive studies on butterflies of Ladakh was conducted by V.V. Tshikolovets during numerous expeditions between 1995 and 2004. He published a catalogue of his work listing 101 butterfly species from Ladakh (Tshikolovets 2005).

Amongst the more recent publications from Ladakh is the paper by Sidhu et al. (2012) from the Zoological Survey of India (ZSI), which recorded 20 species during a collection survey conducted between July and September 2009. This paper does not mention the survey efforts and intensity, but it is surprising that the number of species recorded were so few.

The Zoological Survey of India conducted a faunal survey in Pangi Valley in Chamba District in Himachal Pradesh, which is on the northwestern edge of Lahaul and Spiti District with similar altitudinal range and habitats. The ZSI survey recorded 36 species of butterflies (Sidhu 2013).

This paper is an outcome of a short 12-day survey in Ladakh in June and July 2016 during which 42 species of butterflies were recorded. Most of these species belonged to the Palearctic region, with only a few species recorded that can also be seen in the Oriental region. None of these species are new to Ladakh and Lahaul, having been reported by Tshikolovets (2005) and Sidhu et al. (2012); however, given the paucity of information of butterflies of the region, it was pertinent for us to record our observations.

## MATERIALS AND METHODS

This report on butterflies of Ladakh and Lahaul in the Indian State of Jammu & Kashmir (J&K) and Himachal Pradesh respectively is an outcome of a 12-day visit to the area to primarily survey Lepidoptera by the authors of this manuscript. While the moths recorded during the survey will be reported elsewhere, this paper reports on the butterflies recorded. The visit was conducted from 29 June 2016 to 10 July 2016. The survey strategy adopted was to cover as many habitats and altitudes as possible in Ladakh making it necessary for us to use a vehicle throughout the survey period. The route taken by us (Fig. 1, Table 1) took us through most parts of

**Table 1. Route taken during butterfly surveys**

	Date	Route taken
1	29, 30.vi.2016	Leh City and Leh City outskirts, Leh District, Ladakh, J&K
2	1.vii.2016	Leh-South Pullu-Khardung La-North Pullu-Khardung-Khalsar-Nubra-Tigger in Leh District, J&K
3	2.vii.2016	Tigger-Nubra-Diskit-Hundar-Bogdang-Turtuk in Leh District, J&K
4	3.vii.2016	Turtuk-Hundar-Diskit-Khalsar-Khardung-North Pullu-Khardung La-South Pullu-Leh in Leh District, J&K
5	4.vii.2016	Leh-Shey-Thiksey-Karu-Sakti-Chang La-Durbuk-Laga-Pangong-Spangmik in Leh District, J&K
6	5.vii.2016	Spangmik-Man-Merak-Khaltse-Chusul-Tsaga-Tara Post (near Chaga La)-Rongso Bridge-Hanle in Leh District, J&K
7	6.vii.2016	Hanle in Leh District, J&K
8	7.vii.2016	Hanle-Nyoma-Raldong-Maya (Mahe Bridge)-Namshang La-Thadsang Karu Lake- Tsomoriri in Leh District, J&K
9	8.vii.2016	Tsomoriri-Thadsang Karu Lake-Namshang La-Sumdo-Puga-Polo Kongka La-Tsokar in Leh District, J&K
10	9.vii.2016	Tsokar-Pang-Lachung La-Serchu (Leh District, J&K)-Baralacha La-Darcha-Jispa in Lahaul-Spiti District, H.P.
11	10.vii.2106	Jispa-Keylong-Sissu-Teling-Khoksar-Rohtang La in Lahaul-Spiti District, H.P.

Leh District allowing us to cover its central, northern, eastern and southern parts as well as exit out of the Lahaul region in Lahaul and Spiti District of Himachal Pradesh (HP).

The methodology adopted consisted primarily of visual encounter surveys on foot in areas that we observed butterfly activity. Suitable habitats for butterflies such as alpine meadows, grasslands, crop fields and edges of stream and lakes were specifically targeted for the survey. As we did not have permission to collect specimens, we relied primarily on photographs for identification. In addition to the date and location of sightings, we also noted the times at which these individuals were encountered.

Existing literature was consulted for butterfly species identification (Marshall & de Nicéville 1882–1890; Bingham 1905–07; Swinhoe 1912–13; Evans 1927, 1932; Talbot 1939, 1947; Wynter-Blyth 1957; Cantlie 1963; Smith 1994, 2006; Mani 1986; Kinyon 2004; Tshikolovets 2005; Kehimkar 2008; Varshney & Smetacek 2015). Online sources were also consulted as aids to taxonomy and identification (Kunte et al. 2016; Savela 2016). Polunin & Stainton (1984), Stainton (1988) and the Flowers of India website were consulted to identify the flower species on which the butterflies were found nectaring.

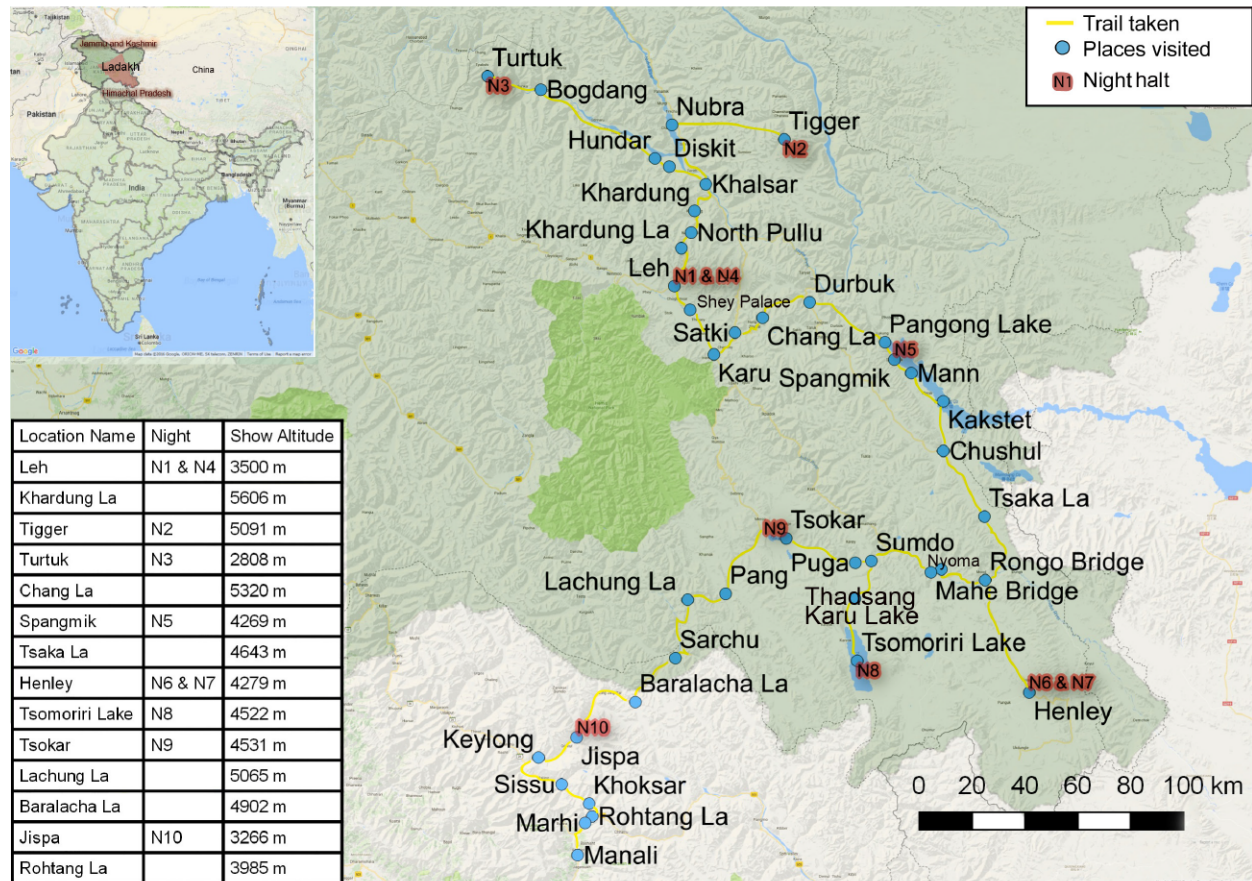


Figure 1. Route map of survey

**RESULTS**

The 12-day survey resulted in the record of 42 species of butterflies from five families and 11 subfamilies (Table 2). Many of these species are rare and found in very specialized palearctic habitats in the inner Himalaya. Of these 42 species, 12 species are protected under Schedule II of the Indian Wildlife (Protection) Act, 1972. A checklist of the species recorded along with their locations, altitudinal range and estimated number of individuals is listed in Table 3. The summary of photographic records of these species is provided in Images 1–41.

**DISCUSSION**

From our brief visit, we were alarmed at the number of tourists visiting the Ladakh region. We also observed that the basic tenets of sustainable eco-tourism were not being followed, and in many areas, the habitats face a threat of excessive human use in a fragile ecosystem. Butterflies are a great indicator of the health of an ecosystem, and we hope our study and the data generated including dates and times of records,

Table 2. Species break up by family and subfamily

	Family	No of subfamilies	No of species
1	Hesperiidae	1	1
2	Lycaenidae	3	12
3	Nymphalidae	3	15
4	Pieridae	2	11
5	Papilionidae	2	3

population data, as well as the locations at which they were sighted will serve as a baseline for future studies on butterflies.

The following section provides detailed information about the 42 species recorded during the survey including dates/times at which they were recorded, locations, altitudes as well as relevant natural history observations and taxonomic notes, wherever necessary. The species of flowering plant that butterflies were seen visiting are mentioned; however this consists only of the flower species that we were able to identify and does not mean that the butterfly species did not visit



Images 1–10 - Butterflies of Ladakh; 1a - *Hesperia comma dimila* male; 1b - *Hesperia comma dimila* male © BV; 2a - *Lycaena phlaeas* female; 2b - *Lycaena phlaeas* female; 3a - *Albulina lehanus* male; 3b - *Albulina lehanus* male; 4a - *Albulina metallica metallica*; 4b - *Albulina metallica metallica*; 5a - *Albulina omphisa omphisa* male; 5b - *Albulina omphisa omphisa* male; 5c - *Albulina omphisa omphisa* female; 6a - *Alpherakya devanica devanica* male; 6b - *Alpherakya devanica devanica* male © BV; 7a - *Polyommatus ariana* male; 7b - *Polyommatus ariana* male; 8a - *Polyommatus stolickzana* male; 8b - *Polyommatus stolickzana* male; 9a - *Plebejus samudra samudra* male; 9b - *Plebejus samudra samudra* male; 10a - *Pseudophilotes vicrama vicrama*. Images © Sanjay Sondhi, unless mentioned otherwise.

other flower species. The common names (following Evans 1932), as well alternative common names (ACN) in use are mentioned. The legal protection accorded to these species, under the Indian Wildlife (Protection) Act, 1972, if any, is mentioned. Photographs of these butterfly species are included in Images 1–41. In these images, the upperside of species is only provided if this is essential in species identity. In addition, gender of the butterfly in image as male or female, if known is mentioned.

#### CHECKLIST OF SPECIES RECORDED IN LADAKH AND LAHAUL

Family HesperIIDae, Subfamily HesperIIDae, Tribe HesperIIDae

##### 1. *Hesperia comma dimila* (Moore, [1874]) (Chequered Darter)

08 July 2016, 07:30hr, Tsomoriri, altitude 4,590m—A single individual spotted by Yash at the lake's edge. 08 July 2016, 09:30hr, below the Polo Kongka La enroute to Tsokar, altitude ~4,600m—Another individual alongside the stream. 09 July 2016, 12:13hr, meadows near

Serchu, altitude 4,290m—A single individual. Reported as “widespread, except lowlands” by Tshikolovets (2005) as only one of two skippers recorded in Ladakh, the second species being *Pyrgus cashmirensis*.

Family Lycaenidae, Subfamily Lycaeninae

**2. *Lycaena phlaeas* (Linnaeus, 1761) (Common Copper)**

09 July 2016, 09:45hr, 15 km after Lachung La, ~4,500m; 10 July 2016, 08:16hr, Keylong meadows, Lahaul Spiti District, Himachal Pradesh, 3,000m—A few individuals spotted in the meadows at each location. Both male and female seen. Numerous subspecies of *L. phlaeas* in India are mentioned in literature—*baralacha*, *flavens*, *indicus* and *stygianus* (Cantlie 1963; Varshney & Smetacek 2015; Kunte et al. 2016)—but their taxonomic validity and treatment remains unclear. *Lycaena phlaeas phlaeas* reported as “widespread” in Ladakh by Tshikolovets (2005).

Family Lycaenidae, Subfamily Polyommatinae, Tribe Polyommatini

**3. *Albulina lehanus* (Moore, 1878) (Common Mountain Blue)**

03 July 2016, 12:10hr, Khardung Village, 4,450m—A few individuals seen in grassy meadows in the company of other meadowblues (*Polyommatus* spp.). 04 July 2016, 11:30hr, meadow below Chang La, 4,900m—Three individuals, two males and a female. 05 July 2016, 12:33hr, enroute to Hanle, after Tara Post (Chaga La), ~4,700m—A few individuals in grassland bordering fields. 09 July 2016, meadows near Serchu, 4,290m—Numerous individuals spotted, but never in large numbers. Tendency to sit on grass clumps and clamber into the clump, making it difficult to photograph. Feeds on flower nectar. Weak flier. Reported from the mountain ranges of Ladakh, Karakoram and Rupshu by Tshikolovets (2005) in meadows between 4,500m up to 5,500m. Reported as *Albulina pheretes* from Nubra Valley by Sidhu et al. (2012).

**4. *Albulina metallica metallica* (Felder & Felder, [1865]) (Small Green Underwing)**

10 July 2016, 08:16hr, 3km after Keylong, Lahaul Spiti District, Himachal Pradesh, 3,000m—males, two individuals. Based on Cantlie (1963) and Evans (1932), mentioned as *Polyommatus metallica metallica*, the male of this species has a 3mm sharply defined, dark border with the rest of the UPF/H being blue. A similar species, *Albulina omphisa* has a 4mm border, UPF and the UPH is blue only basally. The only confirmed sighting of this species during the survey. Observed

mud-puddling on moist soil in the company of other meadowblues (*Polyommatus* spp.). Reported as “widespread except eastern and south-eastern parts” of Ladakh by Tshikolovets (2005). This subspecies is protected under the Schedule II of the Indian Wildlife (Protection) Act, 1972.

**5. *Albulina omphisa omphisa* (Moore, [1875]) (Dusky Green Underwing)**

01–04 July 2016, South Pullu, North Pullu, Khardung Village, 4,300–4,800 m—The most common species on either side of the Khardung La. Spotted along the roadside, on the grassy meadows and at stream edges. Mostly males, often mud-puddling on moist soil. A few females seen. 04 July 2016, 09:18hr, male, near Sakti Village, 4,300m; 04 July 2016, 11:55hr, meadow below Chang La, 4,900m; 09 July 2016, 12:10hr, meadows near Serchu, 4,290m; 10 July 2016, 09:44hr, Keylong and enroute to Rohtang La—Observed feeding on nectar of the following flowering plant species—Alpine Forget-me-not *Eritrichium* species, Meadow Geranium *Geranium pratense* and Common Silverweed *Argentina anserina*. Reported as “widespread except eastern and south-eastern parts” of Ladakh by Tshikolovets (2005). Only reported from Ganglis, Leh by Sidhu et al. (2012).

**6. *Alpherakya devanica devanica* (Moore, [1875]) (Dusky Meadow Blue)**

01 July 2016, 11:13hr, South Pullu, enroute to Khardung La, 4,600m—Single male spotted at a stream in the company of a few male Dusky Green Underwing *A. omphisa*. Mud-puddling on moist soil at the stream edge. 03 July 2016, 11:40hr, before Khardung village, 4,400m—Ascended up a stream in a *nullah* and spotted a single female. Reported as “widespread except south and eastern parts” of Ladakh by Tshikolovets (2005). This subspecies is protected under the Schedule II of the Indian Wildlife (Protection) Act, 1972.

**7. *Polyommatus ariana* Moore, 1865 (Lahaul Meadow Blue)**

01 July 2016, 10:58hr, Near South Pullu, 4,600m; 03 July 2016, 12:30hr, Khardung Village, 4,450m—male; 06 July 2016, 10:38hr, Hanle, 4,500m, male; 10 July 2016, 08:39hr, Keylong, 3,000m—male, feeding on moist soil. 10 July 2016, 12:32–12:44 hr, before Rohtang La, 3,600m—2 males, mud-puddling. Seen occasionally in grassy meadows. Feeds on flower nectar. *Polyommatus ariana* is larger (34–38 mm), male is bright metallic blue above, with 1.5mm black border. Below grey, sub-marginal red markings nearly or quite obsolete and white

markings very prominent, especially the central streak. The similar species in this landscape, *Polyommatus stolickzana* is smaller (30–34 mm), male is shining blue turning whitish before the narrow border. UPH: traces of black sub-marginal spots. Below pinkish-brown to grey, sub-marginal spots completely whitened or may show reddish (Evans 1932; Cantlie 1963; Tshikolovets 2005). Observed feeding on the nectar of flowers of *Gentiana* cf. *pseudoaquatica* in the grassy meadow at Khardung Village. Reported as “widespread except southern part” of Ladakh by Tshikolovets (2005).

**8. *Polyommatus stolickzana* (Felder & Felder, [1865]) (Ladakh Meadow Blue)**

29 June 2016, 10:19hr, Bharat Guest House, Leh, 3,500m—Only one individual sighted and photographed perhaps 30 times. 30 June 2016, 13:28hr, Leh City outskirts, 3,500m—In the fields. Female. 01 July 2016, 10:50hr, near South Pullu, 4,200m; Female. 05 July 2016, 10:03hr, near Merak, 4,250m; Male. 05 July 2016, 17:10hr, Hanle, 4,500m, in the meadows outside Hanle; 07 July 2016, 10:55hr, before Mahe Bridge, ~4,000m—Numerous males and females in grassy meadows beside a stream. Both sexes feeding on flower nectar; up to 20 individuals seen. 09 July 2016, 09:35hr, below Lachung La, 4,500m; Male, 09 July 2016, 12:22hr; Male and females, meadows near Serchu, 4,290m; 10 July 2016, 08:19hr, Keylong, 3,000m—Males mud-puddling and nectaring on thistle flowers. For separation from *P. ariana*, see previous species. Evans (1932) lists this species as *P. drasula* and as a junior synonym. Varshney & Smetacek (2015) lists this species as *P. drasula*. Observed feeding on nectar of flowers of *Geranium pratense*. Reported from the central and southwestern parts of Ladakh by Tshikolovets (2005).

**9. *Plebejus samudra samudra* (Moore, [1875]) Sea Jewel Blue (Ladakh Jewel Blue)**

02 July 2016, 18:55–19:20 hr, Turtuk, Nubra Valley, 3,000m—Numerous individuals spotted roosting late evening in wheat fields above Turtuk Village. A few individuals observed feeding on legume flowers. Reported as *Plebeius christophi samudra* by Tshikolovets (2005) from the Indus and Zaskar River valleys. Reported as *Plebejus christophi* from Pangong and Nyeoma, Leh by Sidhu et al. (2012).

**10. *Pseudophilotes vicrama vicrama* (Moore, 1865) (Eastern Baton Blue) (ACN: Chequered Blue)**

02 July 2016, 14:50–15:30 hr at Bogdang Village, Nubra Valley, 3,200m—Numerous individuals spotted in

wheat fields in village Bogdang on the road to Turtuk from Hundar. 02 July 2016, 17:00–17:30 hr, Turtuk, Nubra Valley, 2,900m—More individuals spotted at Turtuk, amidst shrubs on the hill slopes. Weak flight, seen amongst the flowering shrubs on the hill slopes or amidst the wheat crop, feeding on flower nectar. Observed feeding on nectar of flowers of the Russian Sage *Perovskia abrotanoides* and Yellow Sweet Clover *Melilotus officinalis*. Weak flight; males pale blue above; female brown above. Many of the individuals had worn and tattered wings. Not recorded anywhere else. Reported from the “mountains around Indus, Dras, Suru and Zaskar river valleys” by Tshikolovets (2005). Reported from Nubra Valley by Sidhu et al. (2012).

**11. *Lampides boeticus* (Linnaeus, 1767) (Peablu)**

29 June 2016, 10:48hr, Bharat Guest House, Leh, 3,500m—single individual, 09 July 2016, 12:20hr, meadows near Serchu, 4,290m—10 July 2016, 09:23hr, Keylong, 3,000m—A few individuals sighted during the visit. All males, seen feeding on flower nectar. Reported from western and central Ladakh as “probably widespread in lowlands” by Tshikolovets (2005). This species is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

**12. *Celastrina argiolus kollari* (Westwood, [1852]) (Hill Hedge Blue)**

29 & 30 June 2016, Leh City and surrounds. Bharat Guest house vegetable garden, crops fields in Leh City outskirts near Indus River, 3,500m, males and females. 01 July 2016, 17:10hr, Tigger, Nubra Valley, ~3,200m; Male. 2 July 2016. 14:50hr, Bogdang Village, Nubra Valley, 3,200m—Seen bordering the wheat fields. Reported from the Indus, Dras, Suru and Zaskar River valleys by Tshikolovets (2005). Sidhu et al. (2012) reported it as common in wild vegetation and agricultural fields of Ladakh.

Family Lycaenidae, Subfamily Theclinae, Tribe Theclini

**13. *Superflua deria* (Moore, 1865) (Indian White-line Hairstreak)**

10 July 2016, 08:30–09:30 hr, Keylong, 3,000m—One individual spotted at the bridge 2km after Keylong. Another individual spotted another 3km further along the road. Both individuals brown above, possibly males. Weak fliers, looking like a small Satyrid in flight. Previously treated as a subspecies of *Superflua sassanides* (Tshikolovets 2005) but elevated to a separate species by Churkin & Pletnev (2010). Based on Churkin & Pletnev (2010), in the species *S. deria*, the





Images 10–25. Butterflies of Ladakh; 10b - *Pseudophilotes vicrama vicrama* male; 11 - *Lampides boeticus*; 12a - *Celastrina agriolus kollari* female; 12b - *Celastrina agriolus kollari* male; 12c - *Celastrina agriolus kollari* female; 13 - *Superflua deria*; 14 - *Aglais caschmirensis*; 15 - *Vanessa cardui* © BV; 17a - *Melitaea arcesia amoenula*; 17b - *Melitaea arcesia amoenula* ©YS; 18a - *Argynnis jainadeva persephone* © BV; 18b - *Argynnis jainadeva persephone*; 19 - *Issoria isaea* ©YS; 20 - *Aulocera swaha garuna*; 21a - *Aulocera brahminus brahminus*; 21b - *Aulocera brahminus brahminus*; 22a - *Callerebia kalinda kalinda*; 22b - *Callerebia kalinda kalinda*; 23a - *Hyponephele brevistigma brevistigma* male; 23b - *Hyponephele brevistigma brevistigma* male; 24a - *Hyponephele pulchra pulchra* male; 24b - *Hyponephele pulchra pulchra* male; 25a - *Hyponephele pulchella pulchella* male; 25b - *Hyponephele pulchella pulchella* male. Images © Sanjay Sondhi, unless mentioned otherwise.

UNH post discal line is not wavy, but not fully straight. The white line is more prominent (more so in female) near the dorsum. White post-discal line on HW is more or less straight compared to that of *S. mirabilis* (Ersch.),

internally edged black and looking solid, but more careful examination shows that it is slightly, indistinctly separated to several sections by the darkened veins. Other differences are in genitalia. Further work is

needed on the species found in the inner Himalaya in India to clarify its taxonomic status. Originally described as *Thecla deria* by Moore (1865) from “Upper Kunawur” near the Spiti River. Tshikolovets (2005) reported it from Manji, Kargil District and Sonmarg.

Family Nymphalidae, Subfamily Nymphalinae, Tribe Nymphalini

**14. *Aglais caschmirensis caschmirensis* (Kollar, [1844]) (Indian Tortoiseshell)**

10 July 2016, 12:20–12:40 hr, 10km before Rohtang La, ~3,600m—Three individuals seen on the rocky hill slopes along the road. Tshikolovets (2005) reported it as “widespread except eastern part” of Ladakh. Reported from Tsomoriri by Sidhu et al. (2012).

**15. *Vanessa cardui* (Linnaeus, 1758) (Painted Lady)**

30 June 2016, 12:00hr, Leh outskirts, 3,500m, 2–3 individuals spotted in the fields. 09 July 2016, 12:10hr, Serchu, 4,290m—Single individual seen in the meadows. 10 July 2016, Jispa to Rohtang route. Reported as a widespread migrant by Tshikolovets (2005). Reported from Diskit by Sidhu et al. (2012).

**16. *Vanessa indica indica* (Herbst, 1794) (Indian Red Admiral)**

09 July 2016, 12:10hr, Serchu, 4,290m—Single individual seen in the meadows. Not recorded by Tshikolovets (2005) but included in his checklist for Ladakh.

Family Nymphalidae, Subfamily Nymphalinae, Tribe Melitaeini

**17. *Melitaea arcesia amoenula* Felder & Felder, [1867] (Blackvein Fritillary)**

06 July 2016, 08:00–08:30 hr, Hanle, 4500m—A small fritillary; two individuals spotted in a grass meadow with swampy area. One of the individuals was feeding on moist soil in the swampy area. Very sluggish at the time of observation; not wanting to take to wing, and easily coming onto the finger. The butterfly also has a tendency to sit with its wings open, with the forewing covering the hindwing, giving it a very “un-butterfly-like” appearance. Some authors treat *Melitaea amoenula* as a separate species (Tshikolovets 2005; Savela 2016). Reported as *Melitaea amoenula amoenula* from Zanskar, Ladakh and Rupshu by Tshikolovets (2005).

Family Nymphalidae, Subfamily Heliconiinae, Tribe Argynnini

**18. *Argynnis jainadeva persephone* Hemming, 1934 (Highbrown Silverspot)**

03 July 2016, 12:30hr, Khardung Village, 4,400m—3–4 individuals spotted seen flying above the grassy meadows. 08 July 2016, 07:47hr, edge of Tsomoriri Lake, 4,590m—A pair of butterflies were basking. Feeding on flower nectar. 08 July 2016, 09:48hr, near Namshang La, enroute to Tsokar, before Sumdo—Numerous individuals spotted along streams enroute to Tsokar. 09 July 2016, 09:37hr, 09:56hr, 10:03hr, approximately 15km after Lachung La, ~4,500m—Spotted quite a few individuals in the meadows. Both male and female, 09 July 2016, 10:54hr, 25km before Serchu, altitude 4,500m. 09 July 2016, 12:10–12:30 hr, Serchu, 4,290m—meadows just after Serchu. 10 July 2016, 13:01hr, before Rohtang La, 3,600m—a few individuals along the roadside. Observed feeding on nectar of flowers of the following plant species—Catmints *Nepeta* species, *Christolea* cf. *crassifolia* and Wild Thyme *Thymus serpyllum*. Reported as “widespread except extreme north-western and southern parts” of Ladakh by Tshikolovets (2005). Reported as *Fabriciana adippe* from Leh and Tsomoriri by Sidhu et al. (2012). Listed by Evans (1932) as *Argynnis adippe pallida*, which is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

**19. *Issoria isaea* (Gray, 1846) (Himalayan Queen Fritillary)**

10 July 2016, 12:36hr, 10km before Rohtang La, ~3,600m—A single individual seen along the road by Yash Sondhi. Tshikolovets (2005) reported *Issoria lathonia lathonia* as “probably widespread except high mountains” in Ladakh.

Family Nymphalidae, Subfamily Satyrinae, Tribe Satyrini

**20. *Aulocera swaha garuna* (Fruhstorfer, 1911) (Common Satyr)**

10 July 2016, 08:20–08:45 hr, Keylong, 3,000m—At the bridge, 2km after Keylong and another location 3km further on. At each location, the species was common with at least 5–6 individuals. Frequently visiting flowers to feed on nectar including thistle. Not given to flying in cloudy weather when the sun hid behind the clouds, the butterflies would disappear, only to miraculously appear a few minutes later when the sun re-appeared. This is the inner Himalaya high altitude subspecies. The subspecies is significantly different in colour and markings from the nominate subspecies *A. swaha swaha*, and the first author wonders whether this might

actually be a different species altogether. Status as a subspecies needs investigation. Tshikolovets (2005) reported it only from Darcha-Rari, Himachal Pradesh and Sonamarg, in the area close to our sightings. Reported from Leh by Sidhu et al. (2012) without a mention of the subspecies.

**21. *Aulocera brahminus brahminus* (Blanchard, 1853) (Narrow-banded Satyr)**

10 July 2016, 11:48hr, after Khoksar, between Keylong and Rohtang La, ~3,000m—Seen commonly in flowering fields and meadows as well as along the motorable road at two locations. At each location, the species was common with at least 5–6 individuals. Frequently visiting flowers including thistle. 10 July 2016, 12:20hr, below Rohtang La, altitude 3,600m. The satyr was seen on the rocky hill slopes along the road, opening its wings to bask. This species is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972. Observed feeding on the nectar of flowers of Smooth Catmint *Nepeta* cf. *laevigata* and *Senecio* cf. *chrysanthemoides*. Tshikolovets (2005) reported it from the western and southern part of Ladakh.

**22. *Callerebia kalinda kalinda* (Moore, 1865) (Scarce Mountain Argus)**

10 July 2016, 12:21hr, 10km before Rohtang La, ~3,600m—A few individuals were seen on the rocky hill slopes along the road. Tshikolovets (2005) reported it as *Parasa kalinda kalinda* on the “western and south-western slopes of the Great Himalaya”. This subspecies is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

**23. *Hyponephele brevistigma brevistigma* (Moore, 1893) (Short-branded Meadowbrown)**

03 July 2016, 10:37–10:58 hr, below North Pullu, 4,000m. 11:22hr, stream below Khardung Village, altitude ~4,420m—A few butterflies seen along the road edges on rocky hill slopes and at the stream edge. Feeds on flower nectar. Inhabits the same area, repeatedly returning to the same clump of flowers to feed. Best separated from the similar species *H. davendra* by the shorter brand in *H. brevistigma*, UPF in male, more prominent discal line and two equal-sized ocelli UNH in 2 and 5 in *H. brevistigma*; ocelli are much smaller in *H. davendra*. Observed feeding on nectar of flowers of Woolly Catmint *Nepeta floccosa*. Tshikolovets (2005) reported it from Zaskar and Ladakh mountain ranges.

**24. *Hyponephele pulchra* (Felder & Felder, [1867]) Dusky Meadowbrown**

10 July 2016, 09:00–12:45 hr, Keylong enroute to Rohtang La along the road in all locations, ~3,000–3,600 m—Numerous individuals and both sexes observed feeding on moist spots and flower nectar on rocky, crumbling hill slopes, meadows and even road edges with little vegetation. Generally a weak flier, but can fly fast and over long distances if threatened. Both sexes, best separated from *H. pulchella* by presence of UNF/UPF dark discal line, less distinct in male; stronger in female. Male *pulchra*: UPF: brown-dusted on dull tawny patch. Tawny patch may be almost entirely brown. Female *pulchra*: brighter tawny, but less so than *pulchella*. Both sexes of *pulchella* brighter tawny, UPF. Observed feeding on nectar of flowers of Wild Thyme *Thymus serpyllum*. Reported as *Hyponephele pulchra pulchra* from the southwestern part of Great Himalaya by Tshikolovets (2005), an area which is close to the sightings reported by us in Lahaul District, Himachal Pradesh.

**25. *Hyponephele pulchella pulchella* (Felder & Felder, [1867]) Tawny Meadowbrown**

01 July 2016, 09:35hr, Enroute to Khardung La, below South Pullu, 4,200m—Seen in the same habitat of Tawny Rockbrown *Pseudochazara lehana*. 09 July 2016, 09:56hr, approximately 15km after Lachung La, 4,500m—Spotted a few individuals in the meadows. A similar species seen in similar habitat is Dusky Meadowbrown *H. pulchra*. See notes in *H. pulchra*. Reported as “probably widespread” on the mountain ranges of Zaskar, Ladakh and eastern slopes of Greater Himalaya by Tshikolovets (2005).

**26. *Karanasa* cf. *huebneri* (Felder & Felder, [1867]) (Tawny Satyr)**

09 July 2016, 10:54hr, 25km before Serchu, ~4,400m—A few individuals seen in scrub habitat on the hill slopes bordering the road. Evans (1932) listed *K. huebneri huebneri* as the subspecies recorded from the Astor-Lahaul region. Tytler (1926) treated *astorica*, *balti* (= *leechi*), *pallida*, *modesta* (= *caesia*) and *huebneri* as valid subspecies of which the species in the Lahaul-Spiti area was ssp. *huebneri*. In addition, Varshney & Smetacek (2015) also listed ssp. *expressa* from the Ladakh area. Some authors (Tshikolovets 2005; van Gasse 2013) treat these sub-species as valid species. The taxonomic status of the various species/subspecies needs clarification. Reported as *K. huebneri huebneri* from Serchu and Kargil by Tshikolovets (2005).



Images 26–41. Butterflies of Ladakh; 26a - *Karanasa cf. huebneri* male; 26b - *Karanasa cf. huebneri* male; 27a - *Paralasa mani mani*; 27b - *Paralasa mani mani* ©YS; 28a - *Pseudochazara lehana*; 28b - *Pseudochazara lehana*; 29a - *Baltia butleri butleri*; 29b - *Baltia butleri butleri*; 30a - *Pontia callidice kalora* female; 30b - *Pontia callidice kalora* female ©BV; 31 - *Pontia chloridice*; 32 - *Pontia daplidice moorei*; 33a - *Pieris brassicae nepalensis* male; 33b - *Pieris brassicae nepalensis* female ©BV; 34 - *Pieris deota* female; 35 - *Pieris deota* female; 36 - *Colias eogene* female; 37 - *Colias erate erate* form *pallida* female; 38 - *Colias fieldi fieldi* female; 39 - *Colias ladakensis ladakensis* male; 40 - *Papilio machaon ladakensis*; 41a - *Parnassius jacquemontii jacquemontii*; 41b - *Parnassius jacquemontii jacquemontii* ©BV. Images © Sanjay Sondhi, unless mentioned otherwise.

**27. *Paralasa mani mani* (de Nicéville, 1881) (Yellow Argus)**

03 July 2016, 16:00–16:20 hr, 10km below South Pullu, ~4,200m—A pair of individuals seen on rocky

hill slopes. 09 July 2016, 09:39hr, approximately 15km after Lachung La, ~4,500m—Grassy meadows. A few individuals. 09 July 2016, 11:01hr, 25km before Serchu, ~4,500m—Grassy meadows. 09 July 2016,

10:40hr, Serchu, 4,290m—Grassy meadows. Weak flier. Observed feeding on flower nectar. When seated with its wings closed, the butterfly conceals its forewings under the hindwings, possibly to hide its bright orange discal patch on UNF. Reported as “widespread except eastern and south-eastern parts” of Ladakh by Tshikolovets (2005). This species is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

**28. *Pseudochazara lehana* (Moore, 1878) (Tawny Rockbrown)**

01 & 03 July 2016, 08:40–10:11 hr, 10km from Leh towards South Pullu, ~4,000–4,200 m—Multiple sightings along the road. 09 July 2016, 09:40hr, 15km below Lachung La, ~4,500m—The butterflies were seen in dry, rocky habitat with some flowering shrubs. Feeds on flower nectar. Observed feeding on nectar of flowers of *Scorzonera virgata* and *Crepus* cf. *flexusa*. One individual constantly flicked its wings open after sitting to flash its orange marking UPF/H. Reported from the mountain ranges of Zaskar, Ladakh and Karakoram by Tshikolovets (2005).

Family Pieridae, Subfamily Pierinae, Tribe Pierini

**29. *Baltia butleri butleri* (Moore, 1882) (Two-spotted Dwarf; ACN: Butler’s Dwarf)**

04 July 2016, 11:45hr, below Chang La, ~ 4,900m—Single male spotted at a grassy meadow, a 15-minute drive from Chang La on the Durbuk side on the Leh-Pangong Lake road. The butterfly flew weakly across the meadow, but was swept along with the wind and Sanjay Sondhi (SS) had to follow it for a fair distance. SS had just one opportunity to photograph it, before the butterfly was wind-swept along the meadow again. Reported “as widespread except north-western part” of Ladakh by Tshikolovets (2005). This subspecies is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

**30. *Pontia callidice kalora* (Moore, 1865) (Lofty Bath White) (ACN: Peak White)**

3 July 2016, 12:42hr, Khardung Village, 4,400m—2–3 individuals spotted at the meadow. Female photographed, 08 July 2016, 08:08hr, Tsomoriri, 4,590m. Female, 9 July 2016, 13:20hr, Serchu, 4,290m—A single female seen in the meadows. No males sighted. Observed feeding on nectar of flowers of *Gentiana* cf. *pseudoaquatica* in the grassy meadow at Khardung village. Reported as “widespread in high mountains” by Tshikolovets (2005). Reported by Sidhu et al. (2012) from Khardung La.

**31. *Pontia chloridice* (Huebner, [1813]) (Lesser Bath White)**

01 July 2016, 15:49hr, below Khardung Village, ~4,350m—Single individual spotted and followed at a meadow with dry scrub alongside the road below Khardung Village, on the Nubra Valley side. 02 July 2016, 08:10hr, near Tigger, Nubra Valley, 3,200m—2–3 individuals spotted feeding on flower nectar alongside the road. 04 July 2016, 12:43hr, below Chang La, ~4,200m; 05 July 2016, 08:38hr, near Merak Village, 4,200m—Spotted a single individual along the bare scrub on the banks of the Pangong Lake. Observed feeding on nectar of flowers of the Russian Sage *Perovskia abrotanoides* and *Christolea* cf. *crassifolia*. Reported from the “mountains around Shyok, Indus, Dras and Zaskar river valleys” by Tshikolovets (2005). Reported by Sidhu et al. (2012) from Nubra Valley. The subspecies *P. chloridice alpina* is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

**32. *Pontia daplidice moorei* (Roeber, [1907]) (Bath White)**

29 June 2016, 09:43hr, 10:41hr. Bharat Guest House, Leh, 3,500m—Quite common. Up to 10 individuals. Both sexes observed feeding on nectar of flowers of *Aster* species. 30 June 2016, Leh outskirts, 3,500m—Up to 10 individuals recorded. 07 July 2016, 11:12hr, Mahe Village enroute to Tsomoriri, 4,040m. Single individual, 09 July 2016, 10:45hr, meadows 25km before Serchu, 4,290m—single individual. Tshikolovets (2005) reported *Pontia daplidice daplidice* as “widespread in lowlands”. Reported by Sidhu et al. (2012) from Leh and Chilling.

**33. *Pieris brassicae nepalensis* Gray, 1846 (Large Cabbage White)**

29, 30 June 2016, 09:00hr onwards. Bharat Guest House, Leh, 3,500m—The most common pierid. Between 10–20 individuals, including mating pairs. Observed egg-laying on cabbage in the guest house’s vegetable garden, and numerous larvae were seen feeding on the cabbage. Quite a few chrysalises were found on the walls of the guesthouse. Photo-documentation of various stages of the life cycle of this species from Ladakh is provided in Image 42. 30 June 2016, 13:30hr onwards, Leh City outskirts, 3,500m—In the fields. Very common. 02 July 2016, 09:49hr, 13:21hr, on the Diskit-Hundar road in Nubra Valley, 3,200m—Seen in the fields and at stream edges. 07 July 2016, 12:00hr, Mahe Village enroute to Tsomoriri, 4,040m—Large numbers in the company of *Pieris deota*. 10 July 2016, 08:00hr onwards, Jispa to Manali, ~3,000m—Many



**Image 42. Life Cycle of Large Cabbage White *Pieris brassicae***  
 a - *Pieris brassicae* female; b - egg laying; c - egg; d - final instar caterpillar; e - pupation on wall; f - pupa; g - female; h - male  
 © Balakrishnan Valappil

individuals sighted in village fields enroute. Reported as “widespread” by Tshikolovets (2005). Reported as very common in agricultural fields of Ladakh by Sidhu et al. (2012).

**34. *Pieris canidia indica* Evans, 1926 (Indian Cabbage White)**

29 June 2016, 12:57hr, Bharat Guest House, Leh, 3,500m—Only one individual. In the cabbage patch

where *Pieris brassicae* was observed. 30 June 2016, 12:00hr onwards. Leh outskirts, 3,500m—A couple of individuals in the mustard fields. 09 July 2016, 12:20hr onwards, Serchu-Keylong route, ~4000m—Many individuals seen in vegetable (cabbage, mustard) fields alongside the road. 10 July 2016, 08:30hr onwards, Jispa to Manali, ~3,000m—Many individuals sighted in village fields enroute. A similar species, *Pieris rapae*, which is supposedly common in this landscape, was searched for extensively, but not recorded. Sidhu et al. (2012) reported only a single individual of *P. rapae* from Diskit. *Pieris canidia indica* reported from the Dras, Indus and Zaskar river valleys by Tshikolovets (2005). This species was reported as moderately common in agricultural fields around Leh by Sidhu et al. (2012).

### 35. *Pieris deota* (de Nicéville, [1884]) (Kashmir White)

07 July 2016, 11:30-12:30hr, Mahe Bridge, 4,040m, enroute to Tsomoriri. At the Mahe bridge, we encountered dozens of cabbage whites (*Pieris* spp.) flying around near the bridge. Most of these looked like Large Cabbage White *Pieris brassicae nepalensis*, but three to four individuals had very prominent black borders, UPF/H, visible even in flight. These individuals were female Kashmir White *Pieris deota*. Females of this species can be told even in flight with experience on account of their black borders above. Males of this species are difficult to tell apart in flight, but have a narrow black border, UPH, which the similar-sized *P. brassicae* lacks. Both sexes are heavily dusted with black on UNH and apex UNF. In the same area, we also spotted a few males, though on a few occasions, we spotted what seemed to be *P. brassicae*, attempted courtship with the female *P. deota*, but was never observed mating. We believe that this was just aggressive behaviour on part of male *P. brassicae*. The female *P. deota* was observed egg-laying on *Lepidium sativum* (Brassicaceae), which was abundant in the area. This family of plants is known to serve as larval host plants for a variety of Pieridae species, and a similar species *Lepidium draba* serves as the host plant for *Pieris brassicae* (Robinson et al. 2010). We spotted dozens of larvae of *P. deota* on Garden Cress *Lepidium sativum*. While Watanabe (1998) illustrated the life cycle of this species from China, no mention was made of the name of its larval host plant. Hence, there is no published information on the larval host plant of *P. deota* and Robinson et al. (2010) do not list any known larval host plant for *deota*. Photo-documentation of various stages of the life cycle of this species from Ladakh is provided in Image 43. 08 July 2016, 07:28hr, Tsomoriri Lake, 4,595m—Enroute to Tsokar near Puga,

altitude 4,300m. A few individuals of *P. deota*, including a male, were observed on the banks of Tsomoriri, as well as enroute to Tsokar, but at no other location other than Mahe was there such a large congregation of cabbage whites. Evans (1932) lists this species as “rare” and recorded from “Kashmir to Ladak”. Talbot (1939) states that this “inhabits desolate plateau, and occurs in single specimens”. Tshikolovets (2005) reported this from only a few locations during his survey, and stated that its “distribution in Ladakh needs clarification”. He also reported it as univoltine, and flying between June and August. Khan & Hanif (2016) report this species as “common” and flying in August from neighbouring Pakistan. This species is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

Family Pieridae, Subfamily Coliadinae

### 36. *Colias eogene eogene* Felder & Felder, 1865 (Fiery Clouded Yellow)

04 July 2016, 11:30hr, below Chang La, ~ 4,900m—Single female spotted at a vast alpine meadow. The butterfly flew across the wind-swept meadow, sat only for a minute, feeding on moist soil, before taking off and disappearing in the distance. Rapid flier. Tshikolovets (2005) reported this as “widespread, except southern and south-eastern parts” of Ladakh. This species is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

### 37. *Colias erate erate* (Esper, 1805) (Pale Clouded Yellow)

29 June 2016, 09:30hr onwards, Bharat Guest House, Leh, 3,500m—Between 10–15 individuals spotted in the garden bordering the guest house. Males and females (yellow form) and white form female *pallida* seen. At 10:35hr, spotted a female laying eggs. The larval host plant was a legume that could not be identified with certainty but seemed like a species of *Melilotus*. 30 June 2016, 12:00hr onwards, Leh outskirts, 3,500m—In fields. Common. Males and females. White females, form *pallida* common. 10 July 2016, Keylong to Rohtang route, 3,000m—A few individuals sighted in village fields enroute, after Serchu. Reported by Tshikolovets (2005) from the “central and north-western parts” of Ladakh but noted that it was “probably everywhere”. Our records show that it is also found in the southern parts of the study area. Reported as commonly seen in agricultural fields around Leh by Sidhu et al. (2012).



**Image 42. Life Cycle of Kashmir White *Pieris deota***  
 a - host plant; b - egg laying; c - egg; d - final instar caterpillar; e - pupa; f - adult female open wing; g-i - male  
 © Balakrishnan Valappil



Table 3. Checklist of butterflies recorded during the survey along with locality, altitudinal range and abundance.

	Common name	Scientific name	Locations seen at	Altitudinal range in m	Estimated number of individuals
Hesperiidae, Hesperinae, Hesperini					
1	Chequered Darter	<i>Hesperia comma dimila</i>	Tsomoriri, Serchu	4,290-4,600	5
Lycaenidae, Lycaeninae					
2	Common Copper	<i>Lycaena phlaeas</i>	Below Lachung La, Keylong	3,000-4,500	5-8
Lycaenidae, Polyommatainae					
3	Common Mountain Blue	<i>Albulina lehanus</i>	Khardung village, below Chang La, near Chaga La, Serchu	4,290-4,900	10-15
4	Small Green Underwing	<i>Albulina metallica metallica</i>	Keylong	3,000	2
5	Dusky Green Underwing	<i>Albulina omphisa omphisa</i>	South Pullu, North Pullu, Khardung village, Sakti village, below Chang La, Serchu, Keylong, below Rohtang La	3,000-4,900	>50
6	Dusky Meadow Blue	<i>Alpherakya devanica devanica</i>	South Pullu, Khardung village	4,400-4,600	2
7	Lahaul Meadow Blue	<i>Polyommatus ariana</i>	South Pullu, Hanle, Khardung village, Keylong, below Rohtang La	3,000-4,600	15-20
8	Ladakh Meadow Blue	<i>Polyommatus stolickzana</i>	Leh, Merak, Maya village, Serchu	3,000-4,500	>50
9	Sea Jewel Blue	<i>Plebejus samudra samudra</i>	Turtuk	3,000	15-20
10	Eastern Baton Blue	<i>Pseudophilotes vicrama vicrama</i>	Bogdang, Turtuk	2,900-3,200	10-15
11	Peablu	<i>Lampides boeticus</i>	Leh city, Serchu, Keylong	3,000-4,290	3-5
12	Hill Hedge Blue	<i>Celastrina argiolus kollari</i>	Leh, Tigger, Bogdang	3,200-3,500	15-20
Lycaenidae, Theclinae, Theclini					
13	Indian Whiteline Hairstreak	<i>Superflua deria</i>	Keylong	3,000	2
Nymphalidae, Nymphalinae, Nymphalini					
14	Indian Tortoiseshell	<i>Aglais caschmirensis caschmirensis</i>	Below Rohtang La	3,600	3
15	Painted Lady	<i>Vanessa cardui</i>	Leh, Serchu	3,500-4,290	4-5
16	Indian Red Admiral	<i>Vanessa indica indica</i>	Serchu	4,290	1
Nymphalidae, Nymphalinae, Melitaeini					
17	Blackvein Fritillary	<i>Melitaea arcesia amoenula</i>	Hanle	4,500	2
Nymphalidae, Heliconiinae, Argynnini					
18	Highbrown Silverspot	<i>Argynnis jainadeva persephone</i>	Khardung village, Tosmoriri, Sumdo, Lachung La, Serchu, Rohtang La	3,600-4,590	>25
19	Himalayan Queen Fritillary	<i>Issoria isaea</i>	Below Rohtang La	3,600	1
Nymphalidae, Satyrinae, Satyrini					
20	Common Satyr	<i>Aulocera swaha garuna</i>	Keylong	3,000	8-10
21	Narrow-banded Satyr	<i>Aulocera brahminus brahminus</i>	near Khaksar, below Rohtang La	3,000-3,600	15-20
22	Scarce Mountain Argus	<i>Callerebia kalinda kalinda</i>	Before Rohtang La	3,600	2
23	Short-branded Meadowbrown	<i>Hyponephele brevistigma brevistigma</i>	North Pullu	4,000-4,420	5-6
24	Dusky Meadowbrown	<i>Hyponephele pulchra</i>	Keylong-before Rohtang Pass	3,000-3,600	15-20
25	Tawny Meadowbrown	<i>Hyponephele pulchella pulchella</i>	South Pullu, Lachung La, before Rohtang Pass	4,200-4,500	5-8
26	Tawny Satyr	<i>Karanasa cf. huebneri</i>	25km before Serchu	4,400	3-5
27	Yellow Argus	<i>Paralasa mani mani</i>	South Pullu, below Lachung La, Serchu	4,200-4,500	6-8
28	Tawny Rockbrown	<i>Pseudochazara lehana</i>	South Pullu, below Lachung La	4,000-4500	10-15
Pieridae, Pierinae, Pierini					
29	Butler's Dwarf	<i>Baltia butleri butleri</i>	Below Chang La	4,900	1
30	Large Cabbage White	<i>Pieris brassicae nepalensis</i>	Leh, Nubra valley, Mahe Bridge, Serchu, Keylong	3,000-4,000	>50
31	Indian Cabbage White	<i>Pieris canidia indica</i>	Leh, Keylong, Serchu	3,000-4,000	15-20

	Common name	Scientific name	Locations seen at	Altitudinal range in m	Estimated number of individuals
32	Kashmir White	<i>Pieris deota</i>	Mahe Bridge, Tsomoriri, Puga Sumdo	4,040-4650	13-15
33	Lofty Bath White	<i>Pontia callidice kalora</i>	Khardung, Tsomoriri, Serchu	4,290-4,590	4-5
34	Lesser Bath White	<i>Pontia chloridice</i>	Khardung village, Tigger, Merak	3,200-4,350	8-10
35	Bath White	<i>Pontia daplidice moorei</i>	Leh, Mahe Bridge, Serchu	3,500-4,290	20-25
Pieridae, Coliadinae					
36	Fiery Clouded Yellow	<i>Colias eogene eogene</i>	Below Chang La	4,900	1
37	Pale Clouded Yellow	<i>Colias erate erate</i>	Leh, Jispa, Keylong	3,000-3,500	15-20
38	Dark Clouded Yellow	<i>Colias fieldi fieldi</i>	Jispa, Keylong, Serchu	3,000-3,600	>25
39	Ladak Clouded Yellow	<i>Colias ladakensis ladakensis</i>	Before Tara post, Tsomoriri, below Polo Kongka La, below Chung La	4,500-4,590	15-20
Papilionidae, Papilioninae, Papilionini					
40	Common Yellow Swallowtail	<i>Papilio machaon ladakensis</i>	Pangong Lake, Tsomoriri	4,000-4,200	10-12
Papilionidae, Parnassiinae, Parnassiini					
41	Keeled Apollo	<i>Parnassius jacquemontii jacquemontii</i>	25km before Serchu	4,400	1
42	Apollo spp.	<i>Parnassius</i> spp.	Below Chang La	~5,000	1

### 38. *Colias fieldi fieldi* Ménétériés, 1855 (Dark Clouded Yellow)

09 July 2016, 12:30hr, Meadows near Serchu, 4,290m—A few individuals seen in grassy meadows. 10 July 2016, 08:30hr onwards—Jispa, Keylong to Rohtang La. Many individuals sighted in village fields enroute and near Keylong. Males and females seen. Reported by Tshikolovets (2005) from the “western and central parts” of Ladakh but noted that it was “probably widespread”. Our records show that it is also found in the southern parts of the study area.

### 39. *Colias ladakensis ladakensis* Felder & Felder, 1865 (Ladak Clouded Yellow)

05 July 2016, 12:10hr onwards, before Chaga La (Tara Post), 4,500m—In this area, largely sandy hillocks with large clumps of flowering *Caragana versicolor*, we spotted at least 10 males of *Colias ladakensis* nectaring. When the sun would hide behind the clouds, the butterflies would disappear, only to appear as the sun peeked out again, a few minutes later. Beyond Chaga La, we spotted a few other individuals along the same road, amidst clumps of *Caragana versicolor*. 08 July 2016, 08:10hr, Tsomoriri lake, 4,590m—A solitary male, 09:00hr, we saw a few other individuals alongside the stream below the Polo Kongka La enroute to Tsokar. 09 July 2016, 09:34hr, below Lachung La, ~4,500m—Male. In the meadow, approximately 15km after the pass. 09 July 2016, 10:54hr, Meadows 25km before Serchu, 4,500m—A few individuals. Ladakh Clouded Yellow

*Colias ladakensis* male is bright yellow above. UPH orange cell spot. Both male and female have a row of yellow sub-marginal spots UPF/H; also visible UNF/H. UNH greenish-yellow. A similar species, Lemon Clouded Yellow *Colias thrasibulus thrasibulus* male is pale lemon yellow above. UPH lacks orange cell spot. Reported by Tshikolovets (2005) from the “central and south-western parts” of Ladakh. This subspecies is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

Family Papilionidae, Subfamily Papilioninae, Tribe Papilionini

### 40. *Papilio machaon ladakensis* Moore, 1884 (Common Yellow Swallowtail)

04 July 2016, 16:00hr, Pangong. A single individual in rocky habitat with sparse vegetation. 14:30hr, Spangmik, 4250m—Single individual seen amidst agricultural fields. 07 July 2016, 09:15hr onwards, 15km from Tsomoriri towards Sumdo near Namshang La, ~4,000m—Numerous individuals active. The area we saw these individuals consisted of dry scrub bushes near a stream. The butterflies seem active well away from water in fairly dry terrain. Reported as “widespread, except lowlands” by Tshikolovets (2005). Also reported by Sidhu et al. (2012) from Tsomoriri.

Family Papilionidae, Subfamily Parnassiinae, Tribe Parnassiini

**41. *Parnassius jacquemontii jacquemontii* Boisduval, 1836 (Keeled Apollo)**

09 July 2016, 10:46hr, Meadow 25km before Serchu, ~4,400m—Spotted a single individual nectaring in the meadows. Observed feeding on the nectar of flowers of *Scorzonera virgata*. Only two females recorded by Tshikolovets (2005) from Starzi Karu with only a handful of older records reported. This subspecies is protected under Schedule II of the Indian Wildlife (Protection) Act, 1972.

**42. *Parnassius* spp (*Apollo* spp.)**

04 July 2016, Chang La. Altitude ~ 5,000m—An Apollo sighted on the road before Chang La. A brief glimpse and photograph, which was insufficient for any identification.

**REFERENCES**

- Bingham, C.T. (1905–07).** *The Fauna of British India, including Ceylon and Burma (Butterflies)*, Vol. 1 & II. Taylor and Francis, London.
- Cantlie, K., (1963).** *The Lycaenidae portion (except the Arhopala group) of Brigadier Evans' The Identification of Indian Butterflies 1932 (India, Pakistan, Ceylon, Burma)*. Bombay Natural History Society, Bombay, vi+156pp.
- Churkin, S.V. & V.A. Pletnev (2010).** A review of the *Satyrinae* (Superflua) *sassanides* (Kollar, 1849) species group from "Russian" Central Asia (Lepidoptera, Lycaenidae). *Atalanta* 41(1/2): 207–220.
- Evans, W.H. (1927).** *The Identification of Indian Butterflies*. Bombay Natural History Society, Bombay, x+302pp+32pl.
- Evans, W.H. (1932).** *The Identification of Indian Butterflies. 2<sup>nd</sup> Revised Edition*. Bombay Natural History Society, Bombay, x+454pp+32pl.
- Flowers of India** - website <http://www.flowersofindia.net> (accessed in August 2016).
- Kehimkar, I. (2008).** *The Book of the Indian Butterflies*. Bombay Natural History Society and Oxford University Press, Oxford, xvi+497 pp.
- Kinyon, S. (2004).** *Illustrated Checklist for the Butterflies of Myanmar*. Smithsonian Institution.
- Kunte, K., P. Roy, S. Kalesh & U. Kodandaramaiah (eds.) (2016).** *Butterflies of India*. v. 2.23. Indian Foundation for Butterflies, Bangalore. Available from <http://ifoundbutterflies.org/> (Accessed July 2016).
- Lang, A.M. (1868).** Notes on Lepidoptera from Goolmurg in Cashmere. *Entomological Monthly Magazine* 5: 33–37.
- Home, W.M.L. (1938).** Some notes on butterflies and big game in Kashmir. *Journal of the Bombay Natural History Society* 40(1): 49–55, 2pls.
- Mani, M.S. & S. Singh (1962).** Entomological Survey of the Himalaya. Part xxvi. A contribution to our knowledge of the geography of high altitude insects of the nival zones from the North-West Himalaya - Part 3. *Journal of the Bombay Natural History Society* 59(1): 77–99. [Lepidoptera pp. 87–99].
- Marshall, G.F.L. & L. de Nicéville (1882–90).** *The Butterflies of India, Burma and Ceylon. Vol. I–III*. The Calcutta Central Press Co., Calcutta.
- Khan, H.A. & H. Hanif (2016).** Butterflies species and Habitat of Tehsil Choa Saiydan Shah Punjab Pakistan. *International Journal of Entomology Research* 1(1): 27–30.
- Mani, M.S. (1986).** *Butterflies of the Himalaya*. Oxford & IBH Publishing Co., 181pp+25pls.
- Moore, F. (1865).** List of diurnal Lepidoptera collected by Capt. A. M. Lang in the N. W. Himalaya. Proceedings of the Zoological Society of London, 486–509+2pls.
- Moore, F. (1874).** A list of diurnal Lepidoptera collected in Cashmere territory. Proceedings of the Zoological Society of London, 263–274+1pl.
- Polunin, P. & A. Stainton (1984).** *Flowers of the Himalaya*. Oxford University Press, 580pp+128pls.
- Robinson, G.S., P.R. Ackery, I.J. Kitching, G.W. Beccaloni & L.M. Hernández (2010).** HOSTS - A Database of the World's Lepidopteran Hostplants. Natural History Museum, London. <http://www.nhm.ac.uk/hosts>. (Accessed August 2016).
- Savela, M. (2016).** [http://ftp.funet.fi/index/Tree\\_of\\_life/insecta/lepidoptera/](http://ftp.funet.fi/index/Tree_of_life/insecta/lepidoptera/) (accessed July 2016).
- Sidhu, A.K., K. Chandra & J. Palot (2012).** Observations on the status and diversity of butterflies in the fragile ecosystem of Ladakh (J & K). *Records of Zoological Survey of India* 112(part-3): 101–112.
- Sidhu, A.K. (2013).** Faunal Diversity of Pangi Valley, Chamba District, (Himachal Pradesh), Himalayan Ecosystem Series (Lepidoptera: Rhopalocera) - 3. Zoological Survey India, Kolkata, 41–70pp.
- Smith, C. (1994).** *Butterflies of Nepal. Revised Edition*. Tecpress Service L.P., Bangkok, Thailand, 368pp.
- Smith, C. (2006).** *Illustrated Checklist of Nepal's Butterflies. New Revised and Updated Edition*. Walden Book House, Kathmandu, Nepal, 129pp.
- Stainton, A. (1988).** *Flowers of the Himalaya a supplement*. Oxford University Press, 86pp+128pls.
- Swinhoe, C. (1912–13).** *Lepidoptera Indica. Vol. X. Rhopalocera. Family Hesperidae*. Reeve & Co, London, 361pp+78pls.
- Talbot, G. (1939).** *The Fauna of British India, including Ceylon and Burma: Butterflies. Vol. 1*. Taylor and Francis, London, xxx+600pp+3pl.
- Talbot, G. (1947).** *The Fauna of British India, including Ceylon and Burma: Butterflies. Vol. 2*. Taylor and Francis, London, xvi+506pp+2pl.
- Tshikolovets, V.V. (2005).** *The Butterflies of Ladak (N. W. India)*. Published by Vadim V. Tshikolovets, Pardubice, Czech Republic, 176pp+30pl.
- Tytler, H.C. (1926).** Notes on some new and interesting butterflies from India and Burma, Part I. *Journal of the Bombay Natural History Society* 31: 248–260.
- van Gasse, P. (2013).** Butterflies of India-Annotated Checklist (Accessed at [http://www.ifoundbutterflies.org/images/PaulVanGasse/Butterflies\\_of%20India-Annotated\\_checklist-1.pdf](http://www.ifoundbutterflies.org/images/PaulVanGasse/Butterflies_of%20India-Annotated_checklist-1.pdf) in July 2016).
- Watanabe, Y. (eds.). (1998).** Wallace Vol.4 No.1. Musashino-Insectarium, Oita. Incomplete reference
- Wynter-Blyth, M.A. (1957).** Butterflies of The Indian Region. Bombay Natural History Society, Bombay, xx+523pp+72pl.



OPEN ACCESS



The Journal of Threatened Taxa is dedicated to building evidence for conservation globally by publishing peer-reviewed articles online every month at a reasonably rapid rate at [www.threatenedtaxa.org](http://www.threatenedtaxa.org). All articles published in JoTT are registered under [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/) unless otherwise mentioned. JoTT allows unrestricted use of articles in any medium, reproduction, and distribution by providing adequate credit to the authors and the source of publication.

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

March 2017 | Vol. 9 | No. 3 | Pages: 9885–10020

Date of Publication: 26 March 2017 (Online & Print)

DOI: 10.11609/jott.2017.9.3.9885-10020

[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

#### Articles

**An updated report on the distribution and conservation status of the endangered Cat's Head Rockrose *Helianthemum caput-felis* (Magnoliopsida: Violales: Cistaceae) in Algeria**  
-- Jonás C. Agulló, Ana Juan, Manuel B. Crespo, María Ángele Alonso & Alejandro Terrones, Pp. 9885–9891

**A comparative study of the diet of the Indian Eagle Owl *Bubo bengalensis* (Franklin, 1831) from two distinct habitats in the Tamil Nadu - Puducherry area, southern India**  
-- M. Eric Ramanujam & Tushita Singh, Pp. 9892–9902

#### Review

**Status, distribution and threats of kraits (Squamata: Elapidae: *Bungarus*) in Bangladesh**  
-- M.F. Ahsan & M.M. Rahman, Pp. 9903–9910

#### Communications

**Ecology of marine macro algal flora of Visakhapatnam coastal areas, Bay of Bengal, India**  
-- I. Vishnupriya Sowjanya & P.S. Raja Sekhar, Pp. 9911–9919

**Distribution pattern, population estimation and threats to the Indian Pangolin *Manis crassicaudata* (Mammalia: Pholidota: Manidae) in and around Pir Lasura National Park, Azad Jammu & Kashmir, Pakistan**  
-- Faraz Akrim, Tariq Mahmood, Riaz Hussain, Siddiqa Qasim & Imad-ul-din Zangi, Pp. 9920–9927

**Impact of vehicular traffic on vertebrate fauna in Horton plains and Yala national parks of Sri Lanka: some implications for conservation and management**  
-- Suranjan Karunaratna, Sudheera Ranwala, Thilina Surasinghe & Majintha Madawala, Pp. 9928–9939

**Forest ghost moth fauna of northeastern India (Lepidoptera: Hepialidae: *Endoclita*, *Palpifer*, and *Hepialiscus*)**  
-- John R. Grehan & Vijay Anand Ismavel, Pp. 9940–9955

**First record of tapeworm *Moniezia* (Cestoda: Anoplocephalidae) infections in Leopards: Coprological survey of gastrointestinal parasites of wild and captive cats in Sri Lanka**  
-- Vishvapali Kobbekaduwa, Caroline Fillieux, Ashan Thudugala, R.P.V. Jayantha Rajapakse & Rupika S. Rajakaruna, Pp. 9956–9961

#### Short Communications

**Macrofungi in two botanical gardens in southwestern India**  
-- Mundamoole Pavithra, Kandikere R. Sridhar & Ammatanda A. Greeshma, Pp. 9962–9970

**A report on some butterflies (Lepidoptera) from Ladakh in Jammu & Kashmir and Lahaul in Himachal Pradesh, India**  
-- Sanjay Sondhi, Balakrishnan Valappil, Yash Sondhi & Anchal Sondhi, Pp. 9971–9987

**Status, abundance and habitat preference of butterflies (Insecta: Lepidoptera) in Chittagong University Campus, Chittagong, Bangladesh**

-- Ibrahim Khalil Al Haidar, M. Mizanur Rahman, M. Farid Ahsan & M. Ariful Islam, Pp. 9988–10003

**A preliminary report on the impact of road kills on the herpetofauna species in Nilgiris, Tamil Nadu, India**  
-- P. Santhoshkumar, P. Kannan, A. Veeramani, A. Samson, S. Karthick & J. Leonaprinicy, Pp. 10004–10010

#### Notes

**Lifecycle and fecula measurements of *Cheritra freja* (Lepidoptera: Lycaenidae), as relevant to the different larval stages**  
-- Tharaka Sudesh Priyadarshana & Ishara Harshajith Wijewardhane, Pp. 10011–10013

**New distribution record of Nagarjunasagar Racer *Platyceps bholanathi* (Reptilia: Squamata: Colubridae) in Sigur, Nilgiris landscape, India**  
-- Arockianathan Samson, Palanisamy Santhoshkumar, Balasundaram Ramakrishnan, Sivaraj Karthick & Chandrashekaruni Gnaneswar, Pp. 10014–10017

**A first report of the presence of the Indian Wild Pig *Sus scrofa cristatus* from Kajinag Range, Kashmir, India**  
-- Riyaz Ahmad, Intesar Suhail & Yash Veer Bhatnagar, Pp. 10018–10020