Final Evaluation Report

Your Details	
Full Name	Bimal Raj Shrestha
Project Title	Butterflies of the trans-Himalayan region: Spatial Distribution, Status and Strengthening Conservation Approaches
Application ID	31133-2
Date of this Report	2025-07-09

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Diversity and distribution of Himalayan butterflies			√	A total of 47 butterfly species was recorded throughout the study periods carried out during April/May 2022 and June 2025 within the elevational gradients between 1600 m to 4500 m asl. of the study area. This study comprises 6.76% of the total butterfly species of Nepal. Based on our recent publication, we documented decline trend in butterfly distribution along elevational gradients and vegetation product influences most in their distribution (https://doi.org/10.1002/ecs2.70019).
Threats assessment and current conservation status of butterflies in the study sites			√	During the study periods, we observed significant habitat deterioration and native food plants depletion caused by rapidly ongoing developmental megaprojects such as hydro and road extension activities in the study area, which posing severe and major threats to the Himalayan butterflies including endemic species. We further documented numerous landslides and soil erosion in the study area that could be the consequences of environmental changes such as climate change and would be anticipated to inflict negative impact on the future of butterfly conservation in the Himalayas. From this study we achieved

				empirical results of population status of high-altitude butterflies in the Himalayas Nepal. Most of the species that were common in the region, now seen decrease in abundance in their home ranges. For instance, some significant Himalayan butterflies such as, *Parnassius epaphus*, *Polyommatus nepalensis*, *P. pierinoi, Lycaena panava*, *L. phlaeas*, *Taractrocera danna*, *Synchloea sherpae* which inhibiting specifically in the alpine and subalpine meadow parts of the regions were observed under extreme threats as their populations were rapidly declining, approximately 65% decrease in population abundance in the area. In addition, *Crebeta lehamanni*-an endemic butterfly species-has inhibited only in the trans-Himalayas was not recorded this time. Thus, this species can be considered to be on the verge of extinction.
Conservation Outreach programs and creating local stewardships		√		For the conservation outreach, we deployed awareness program in two secondary schools viz., Shree Prakash Jyoti Secondary School and Shree Lokpriya Secondary School of Manang, two knowledge sharing program within local people including hoteliers and stakeholders of Meta, Narpa Bhumi Rural Municipality, and Thoche, Nason Rural Municipality, Manang. Besides these, we also successfully conducted butterfly photography exhibition program in Tribhuvan University and Reliance International Academy, Kathmandu. During these outreach programs, altogether 600 students (120 from the schools of Manang and 480 during exhibition program), 50 teaching staffs,

				school's officials and guardians and 100 local peoples including stakeholders and hoteliers were informed about the conservation awareness of the Himalayan butterflies. In addition to these, to promote the stewardship for butterflies' conservation in the study sites, we formed one five members Butterfly Conservation Group selected from the school's students and provided them a capacity-building training related to the butterfly taxonomy and conservation. They will play a vital role in the future butterfly conservation projects in the Himalayas as a local partner. They will further develop comprehensive databases on species-level diversity in a regular basis, navigate environment challenges and collaborate effectively to the local communities for the conservation of butterflies beyond the project completion Besides these we distributed pamphlets- imprinted in native language with significant information on conservation perspectives of Himalayan butterflies, to the local government representative, hoteliers, club members, students, teachers, stakeholders and local people. As a part of understanding the perception of local people on butterfly richness and conservation of the project, we carried out questionnaire survey among 20 local peoples. We also informed three yarsagumba collectors about conservation of butterfly during in person meetings. However, we could not meet the maximum number of collectors as most of them had left

				their villages to harvest yarsagumba at higher regions.

2. Describe the three most important outcomes of your project.

a) The current conservation status and population trend of the Himalayan butterflies in the trans-Himalayas of Nepal was clearly assessed

b) This project set the spatial permanent sampling plots throughout the study sites covering temperate, subalpine and alpine habitats of butterflies for the long-term scientific monitoring references and to predict the impact of global change on butterfly biodiversity in the Himalayas Nepal.

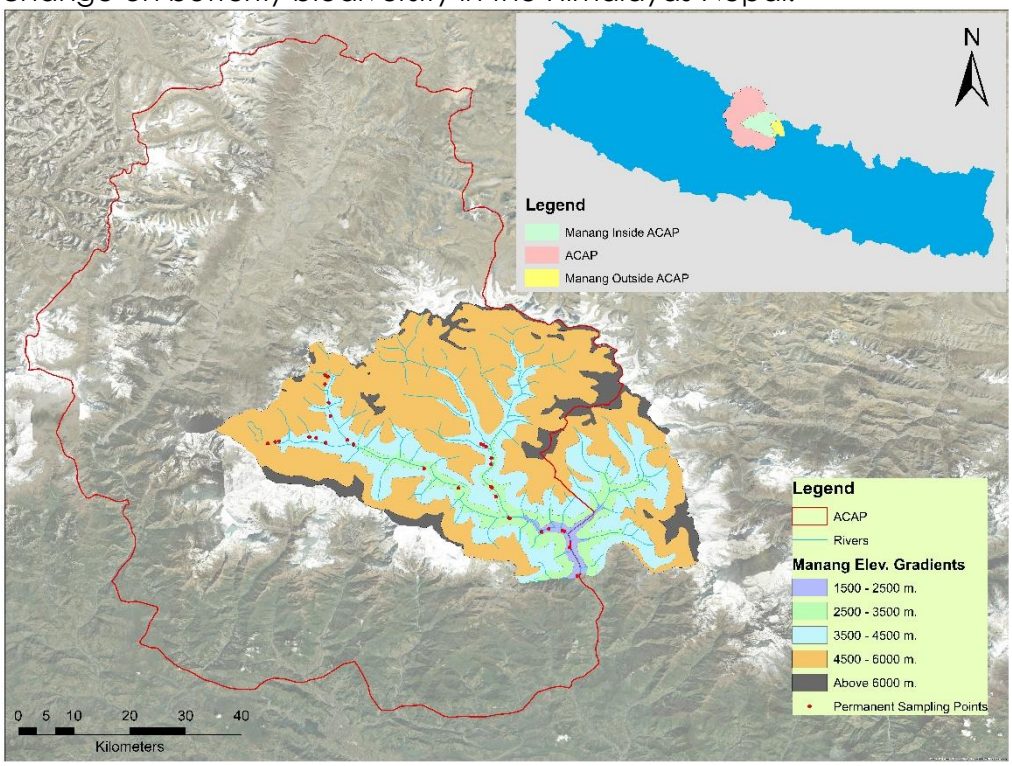


Figure shows permanent sampling plots (including first project's sampling plots) of the study area-Manang, trans-Himalayas Nepal.

c) Awareness education in the new local communities has strengthened butterfly conservation knowledge in the larger mass. Additionally, formation of a new Butterfly Conservation Group involving youths can be considered as a successful model to ensure continuous on-the-ground presence, monitoring, habitat management and conservation initiation of butterflies beyond the project period. Moreover, this program inspired locals, specifically, school youths in the care of butterflies.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

Unpredictable changes in weather conditions during the sampling period and abandoned of two field surveys due to blockage of off-roadway travel due to massive landslides were the unexpected obstacles we experienced during the project period. Therefore, the completion of the project took longer than we expected. Nevertheless,

we waited for a better environment and eventually successfully completed this project.

4. Describe the involvement of local communities and how they have benefitted from the project.

We usually conducted the awareness program in two ways- within the mass where people from different professions involved together and in person individual meeting. We found great enthusiasm in local people toward butterfly conservation and further some hoteliers and stakeholders showed high interest to connect this biodiversity to promote the eco-tourism of the region.

5. Are there any plans to continue this work?

Yes, the Himalayan butterflies need scientific delve in a continue basis as they are highly vulnerable to global change. The comprehensive scientific ecological studies based on global change and relationships with other environmental variables are becoming important task to more deeply understand the factors influencing butterfly conservation and distribution. Moreover, local communities should be informed regularly through conservation education, and more local stewards for the collaborative conservation and habitat protection action need to be developed to secure the future of butterflies in the Himalayas.

6. How do you plan to share the results of your work with others?

This project disseminated the current conservation status, population trends and threats of the Himalaya butterflies. The updated information on current conservation threats the Himalayan butterflies going through was provided to the local government representatives, and local club members and encouraged them to develop the conservation action plans. They showed profound interest to be the local partners to our organization to work on it.

The current outcomes of the project related to the conservation perspectives of the Himalayan butterflies have high value to update the global data base of butterfly biodiversity and significant data sources which would help to classify these butterfly species under different IUCN Red List categories. Since, these butterflies are not yet listed in the IUCN Red List, as a member of IUCN Species Survival Commission Butterfly and Moth Specialist Group, my goal is to approach for the assessment of those butterfly species under appropriate IUCN Red List categories. Furthermore, I plan to publish more scientific papers on ecology and conservation of butterflies as I published one (See: https://doi.org/10.1002/ecs2.70019) previously.

7. Looking ahead, what do you feel are the important next steps?

During the field period, we observed massive habitat deterioration of Himalayan butterflies due to ongoing developmental activities and land changes-possibly as a result of global climate change. Owing to such vulnerable situation at the study sites, most high-altitude butterflies, particularly the endemic species, are threatened with extinction. Therefore, there is an urgent need for the tangible and nature-based conservation practices to safeguard the refuges and enhance resilience of the Himalayan butterflies. We further need to explore scientific insights into the ecological relationships to demonstrate the status of Himalayan butterflies to the scientific communities for the formulation of effective conservation plans and policies.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?
The logo of The Rufford Foundation was used in all conservation related materials such as T-shirts, Posters and Banner. The Rufford Foundation received high recognition from the public wherever the programs were conducted.

9. Provide a full list of all the members of your team and their role in the project.
I hired two research assistants and one field assistant for this project;

i. **Ashant Dewan:** His roles in the project were conceptualization in research design, field data collection, and assisting in butterfly identification as he has good taxonomic knowledge on lepidoptera, as he completed Master's degree in Zoology by conducting thesis research in the Lepidoptera of the Himalayan region. He further helped me partially in desktop works such as data entry and report preparation.
ii. **Suraj Basnet:** He had two important roles in the project. Firstly, he played important role in coordination to local people, school staffs and students to facilitate cordial environment for the awareness program. Secondly, he also assisted me in the data collection during study period.
iii. **Abishek Shrestha:** He was hired as a field assistant for the project. He helped us to collect and manage field gears during sampling period, and photo collection.

10. Any other comments?
Without the funding support of the Rufford Foundation It would have been nearly impossible to explore the butterflies of the Himalayas into the global scientific network. Therefore, we express our heartfelt gratitude to the Rufford Foundation for this support. We are also very thankful to all the reviewers who selected this project for this fund.
As I mentioned earlier that, the butterflies of the Himalayas are facing severe conservation threats, thus we conservationists expect more funding support from the Rufford Foundation in future for the actionable conservation application in the Himalayas to secure the future of the Himalayan butterflies.

Photographic appendix of the conservation awareness activities

My presentation during conservation awareness program at Shree Prakash Jyoti Sec. School, Thoche, Manang. This program was conducted in participation of 70 students, 20 teaching staffs and school's officials, 10 stakeholders and hoteliers and 20 local peoples.

With a five members (holding T-shirts) Butterfly Conservation Group: First Photo-me (first from left), Mr. Padma Raj Panthi, Principal (Second from left), Mr. Gunraj Gurung, Stakeholder (First from right) and Mr. Min Bahadur Gurung, President, School Management Committee (Second from right); Second Photo: me with conservation group.


We had a sound discussion on butterfly conservation with Mr. Padma Raj Panthi, Principal, Shree Prakash Jyoti Secondary School (Left), Thoche, Manang and gifted him T-Shirt imprinted the logo of The Rufford Foundation and butterfly conservation information.

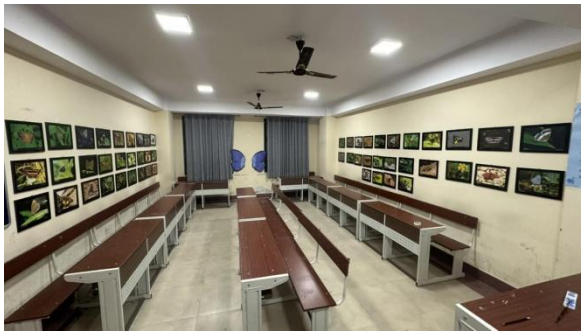
Group Photo Session


Educating local people about high-altitude butterflies (First Photo) and providing a book called "Butterflies of Annapurna Conservation Area" by Colin Smith to the local (Second Photo). Location: Meta, Manang.


During training session of butterfly identification technique to the Butterfly Conservation Group

With Mr. Dil Ram Gurung, Advisor, BP Tarun Youth Club, Tilche, Manang

Had a fruitful meeting with Mr. Dawa Lama, a Hotelier and Ward Member, Chame Rural Municipality-4, Manang



Butterfly photo exhibition at Reliance International Academy, Kathmandu

At field sites-Dhikurpokhari, Manang Alt.: 3150 m asl. (© Suraj Basnet)

Threats of butterflies we observed in the study sites

Land Changes Evidence (Drying out landscapes) (Location: Humde, Manang; Alt.: 3400 m asl.) (© Bimal Raj Shrestha)

Activities that deteriorate habitats of Himalayan butterflies

Table 1: Detail list of butterflies with their elevation range cover and population trends comparing with previous studies (Khanal 1982, 1984; Smith 2011; Shrestha 2018; Shrestha et al. 2020; Shrestha 2021)

SN	Scientific Name	Elevation Range Cover (m asl.)	Population Trends
1	*Aglais caschmerensis*	1600-4500	Steady
2	*A. ladakensis*	3870-4500	Decline
3	*Argynnius childreni*	1750-2650	Steady
4	*Parantica aglea*	1650-4250	Common
5	*Neptis soma*	2750	Steady
6	*N. hylas*	1650-2850	Decline
7	*Lethe baladeva*	2650	Steady
8	*L. siderae*	2415	Steady
9	*Tirumula septentrionis*	2150-2550	Steady
10	*Euploea mulciber*	1650-2400	Steady
11	*Vanessa indica*	1600-4500	Common
12	*V. curdii*	1650-4500	Common
13	*Precis iphita*	1650-2750	Steady
14	*Issoria lathonia*	2550-4500	Decline
15	*Raphicera moorei*	2650-2950	Decline
16	*Polygonia c album*	3350-4500	Decline
17	*Aulocera swaha*	2350	Steady
18	*Ypthima parasakra*	1950-2650	Decline
19	*Acetylopis puspa*	1650-2650	Common
20	*Celeastrina huegelii*	1850-2650	Common
21	*C gigas*	2000-2850	Decline
22	*Lampides boeticus*	1600-3350	Decline
23	*Heliophorus tamu*	2650-3550	Decline
24	*H. moorei*	3050	Decline
25	*Lycaena phlaeas*	2950-3750	Decline
26	*L. panava*	3350	Decline
27	*Polyommatus pierinoi*	3150-3450	Decline
28	*P. nepalensis*	3150-3350	Decline
29	*Agriades kurtjohnsoni*	3200-3650	Decline
30	*Pieris canidia*	1650-4250	Common
31	*P. brassicae*	1650-3650	Common
32	*Colias erate*	1750-3350	Steady
33	*C. fieldii*	1650-4050	Common
34	*Delias belladonna*	1650-1900	Common
35	*Aporia agathon*	1650-2700	Decline
36	*Synchloea sherpae*	4500	Decline
37	*Gonepterynx rhamni*	1950-2450	Steady
38	*Troides helena*	2150-2450	Decline
39	*Byasa latreillei*	1650-2750	Common
40	*Papilio machaon*	2150-4200	Steady
41	*P. polytes*	4450 m	Decline
42	*P. protenor*	1650-2250	Steady
43	*Parnassius epaphus*	1650-2100	decline
44	*Graphium cloanthus*	1650-2050	Decline
45	*Carterocephalus avanti*	3150-4150	Steady
46	*Hesperiid (unknown)*	2650	-
47	*Taractocera danna*	3150	Decline

Photos of butterflies captured in the study sites

Delias belladonna (Alt. 1750 m; Loc: Thoche Manang)

Pieris canidia (Alt. 1750 m; Location: Thoche, Manang

Byasa latreillei (Alt. 2750 m., Locatio Thankchowk, Manang)

Parantica aglea (Alt. 1750 m; Loc: Thoche Manang)

Polygonia c-album (Alt. 3400 m; Location: Humde, Manang

Agridaes kurtjohnsonii (Alt. 3150 m Location: Dhikurpokhari, Manang)

Celastrina huegelii (Alt. 2650 m; Loc: Timang, Manang)

Celastrina gigas (Alt. 1750 m; Location: Thoche, Manang

Polyommatus pierinoi (Alt. 3150 m Location: Dhikurpokhari, Manang)

Acetylopsis puspa(Alt. 1650 m; Loc: Dharapani, Manang)

Neptis soma (Alt. 2750 m; Location: Koto, Manang

Colias erate (Alt. 3050 m; Location: Bratang, Manang

ANNEX – Financial Report

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