

## **Project Update: March 2019**

Report for the period of 15th November 2018 - 14th March 2019

### **Progress in implementation of the activities planned during a projected period:**

#### **Activity 1 # Design of the programme**

- During second reporting period of 4 months, project has been conducted smoothly meeting all the established plans and procedures.

#### **Activity 2 # Conservation campaigns / strengthens the capacity of local stakeholders in research sites**

- Outreach articles on mushrooms (for the national dailies) are being prepared as most of the collected specimens are now identified.
- A poster with identified mushrooms specimens is being designed in collaboration with Annapurna Conservation Area Project management team entitled "Mushrooms Biota of Annapurna Conservation Area" to distribute before mushrooms collection season starts (i.e. May 2019).

#### **Activity 3 # Documentation of indigenous local knowledge (ILK) and socioeconomic importance of wild mushrooms**

- Manuscript is being prepared for a journal Ethnobiology and Ethnomedicine (<https://ethnobiomed.biomedcentral.com/>) based on ethnomycological survey conducted among the 43 local respondents from the age of 9 to 81 years, mostly from Brahmins, Gurungs, Magars and Dalits communities.
- About 22 species of mushrooms with their medicinal value (MV), food value (FV), ritual and spiritual value (RSV), and aesthetic and decorative value (ADV), are identified. Species names and their details are included in a draft manuscript and will be for the public access only after acceptance for the publication.
- Concerning the use values, Pearson's Chi-squared test ( $\chi^2$ ) was applied using the statistical software R and significant difference ( $p = <0.05$ ) are found along altitudinal gradients or locations of the settlements, cultural groups and ethnicity of the respondents.
- Though not mentioned in a proposal, we came an idea of conducting laboratory works to find out the major bio-active compounds and antioxidant activities of the seven wild mushrooms (*Grifola frondosa*, *Termitomyces euzirices*, *Laetiporus sulphureus*, *Auricularia auricala-judae*, *Flmmulina velutipes*, *Daldinia concentrica* and *Trametes versicolor*). Dried specimens were extracted via Soxhlet extractor using methanol as a solvent. Individual extract were then screened for two major bioactive compounds - Phenolic and Flavonoid and their antioxidant activity. Three different in vitro antioxidant systems - DPPH, OH, and superoxide radical scavenging activity were used to determine their antioxidant potential. The finding is supposed to help in understanding basic scenario and to develop further broader research concept. Such findings are being included in forthcoming ethnomycological manuscript.

#### Activity 4 # Ecological studies and implication for the conservation of the wild mushrooms

- In this reporting period, we were engaged with identifications of collected specimens, analysing of social data and figuring out ecological notes. So, all the ecological findings will be presented in next report. Based on all the ecological information, we are also in preparation of a manuscript to submit for a journal Biodiversity and Conservation (<https://link.springer.com/journal/1053>)

#### Activity 5: Dissemination of outputs, knowledge management and final report preparation

- All the collected, well preserved and identified species are in a process of making well labeled herbaria for the deposition at herbarium centers.

**Fig 1:** Collected and dried specimens are preserved temporarily in Nepali envelopes. Such handmade paper is made from the fibrous inner bark of high *Daphne bholua* and *D. papyracea* species. Nepali envelopes are preferred choice for the recording of official government records of Nepal as they are more resistance to tearing, humidity, insects and mildew. We have found more practicability of such envelopes and recommend for the further uses while preserving specimens.



**Fig 2:** Well dried *Lentinula edodes* (Berk.) Pegler - showing upper surface of pileus and lower gills portion. These are only the representative pictures to show that all the dried specimens are in good condition to deposit in Herbarium Centers.

#### The way forward: Bringing research initiative at the International forum

1. An abstract based on the research funded by Rufford Foundation, UK has been submitted to participate (with oral presentation) in 29th International Congress for Conservation Biology - *Conservation beyond boundaries, connecting biodiversity*

with communities, government, and stakeholders : Kuala Lumpur, Malaysia: July 21-25, 2019 <https://conbio.org/mini-sites/iccb-2019/>



Society for Conservation Biology  
A global community of conservation professionals



29<sup>th</sup> INTERNATIONAL CONGRESS FOR CONSERVATION BIOLOGY  
CONSERVATION BEYOND BOUNDARIES: CONNECTING BIODIVERSITY  
WITH COMMUNITIES, GOVERNMENT, AND STAKEHOLDERS

## Contributed Session Abstracts

ABSTRACT SUBMISSION-3309  
**Wild Mushrooms of Monsoon Nepal: Species Diversity and Ecosystem Services**  
Shiva Devkota<sup>1,2</sup>, Ram Prasad Khanal<sup>3</sup>, Shova Poudel<sup>4</sup>  
<sup>1</sup>Global Institute for Interdisciplinary Studies, Kathmandu, Nepal, <sup>2</sup>Swiss Federal Research Institute WSL, Switzerland, <sup>3</sup> Botany Department, Amrit Campus, Tribhuvan University, Kathmandu, <sup>4</sup>Sahayatri Agro, Pokhara, Nepal

**Please choose one of the ICCB themes from the menu to assist us in selecting an appropriate session for your presentation.:** Making an impact by mobilizing local community participation in conservation efforts  
**Sub-theme first choice:** Ecosystems  
**Category first choice:** Forest conservation  
**Sub-theme second choice:** Issues  
**Category second choice:** Ecosystem functions and services  
**Sub-theme third choice:** Not applicable  
**Please indicate your presentation preference:** Oral Presentation  
**Alternate presentation format: If your preferred format cannot be accommodated, would you wish to have your abstract considered for another presentation format? :** Poster Presentation  
**Comments:** NONE  
**Are you an SCB member? :** No  
**Are you a student?:** No  
**Do you plan to request travel support from SCB? :** Yes  
**Are you comfortable presenting in English? :** Yes  
**Do you have any accessibility accommodation requests? Please list them below.:** NONE  
**Is your abstract part of a symposium?:** No  
**I am willing to review abstracts:** Yes

**Abstract:** This study investigated the diversity of wild mushroom and documented traditional knowledge (TK) of Indigenous People and Local Communities (IPLCs) in the southern terrains of Annapurna Conservation Area (ACA), with highest precipitation regime (3,345 mm/year) in Nepal. For the ecological study, the study covered elevational gradients between 1000 and 3600 m along the Modi river basin and included sixteen elevation bands with a regular interval of 200 m en route to Annapurna Base Camp (4130m) starting from Birethanti settlement. Apart from the established quadrats in each elevational band, the mushrooms diversity and vegetation patterns along the horizontal trail (walking trail) were also noted for the additional information. Field work was carried out between July - Sep 2018 covering mid-monsoon and post monsoon periods. It is found that the habitat types along the different altitudinal gradients in ACA differ greatly in their mycological diversity. Similarly, ethnomycological documentation revealed about 32 domestically used wild species for their different values and services among the different IPLCs.

**Social Media Summary - to be used in promoting ICCB :** Wild mushrooms can be, and most necessarily need to be, included in conservation plans

## 2. IPBES - Assessment Fellow Awarded

Dr. Shiva Devkota has been selected to participate in the production of IPBES' thematic assessment of the sustainable use of wild species as part of IPBES'

fellowship programme (<https://www.ipbes.net/expert/shiva-devkota>). The production of the assessment started in 2018, and Shiva will take part in this assessment together with more than seventy experts from all regions of the world, to produce an assessment report over the next 3 years. This is a home based voluntary job (commitment of up to 15 % of his time during the fellowship) done for the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) - a UN entity with Headquarters in Bonn, Germany.

The IPBES fellowship programme is an ambitious and highly competitive programme that builds capacities of outstanding early-career experts by providing them with opportunities to receive mentorship from more established scientists and to contribute to the work of IPBES. IPBES has, since 2015, provided this opportunity to 74 fellows from 53 countries, selected from a pool of 1100 applicants, taking part in the production of 10 assessment reports.

Dr Devkota has made his participation in the "IPBES First Author Meeting on Sustainable Use of Wild Species Assessment" Organized by IPBES. (Montpellier, France, Dec 02-07 2018), where he shared his experiences and scientific findings on wild mushrooms in the Himalayas and acknowledged the RUFFORD Foundation, UK for financial support to carry out research and conservation initiatives.

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## Shiva DEVKOTA

**Full Name:** Shiva DEVKOTA  
**Deliverable:** [Sustainable use](#)  
**Chapter:** [3biii Chapter 4](#)  
**Role:** Fellow  
**Nominator type:** Government  
**Government:** Nepal

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Dr. Shiva Devkota among the participants of "IPBES First Author Meeting on Sustainable Use of Wild Species Assessment" (**Montpellier, France, Dec 02-07, 2018**). Photo Source: IPBES

**Active team members during second reporting period:**

1. Dr. Shiva DEVKOTA\*, Principal Researcher, Mycologist
2. Mr. Ram Prasad KHANAL, Plant Ecologist
3. Ms. Shova POUDEL, Socio-economic Analyst
4. Mr. Ishor Thapa, Biotechnology and Biochemistry Expert

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