Project Update: January –April 2026

Project Title: Systematic characterization and conservation of macro fungal diversity along the northern route of CPEC of KP, Pakistan.

Research activities and Progress achieved during the reporting period

During the first quarter of the project (January to April 2026), the research team successfully conducted field visits in the target regions of Mansehra, Shangla, and Battagram. The primary focus was on documenting fungal biodiversity and establishing a baseline for conservation efforts in forest ecosystems associated with the China–Pakistan Economic Corridor (CPEC). Significant progress has been made in both field collection and laboratory-based molecular identification. More than 250 macrofungal samples were gathered during this period.

Community Engagement: During these surveys, the team interacted with native populations to emphasize the ecological importance of mushrooms and their significance in forest conservation.

Molecular Identification

To ensure high scientific accuracy for conservation, specimens are being identified through morphological and molecular techniques: Over 100 samples have been successfully sequenced and identified using the ITS region. Identification for the remaining specimens is currently in progress. Several sequences have already been submitted to GenBank, including a confirmed new species of the genus *Clitocybula* found in Pakistan.

The initial identification phase has revealed an extraordinary level of biodiversity, including several records that are scientifically vital for the region.

The following species have been found and documented for the first time in Pakistan using molecular data:

- *Cordyceps cicadeae*
- *Clitocybula* (Genus and species)
- *Xerocomellus zelleri* (IUCN Red List species)
- *Caloboletus* (Genus)
- *Morchella eoa*
- *Panaeolus cambodginiensis*
- *Scleroderma dingjieense*
- *Bovista fulva*
- *Rhodophana flavipes*
- *Russula xerampelina* (IUCN Red List species)
- *Hydnellum caeruleum*

Other Notable Species Documented

Edible/Medicinal/Ecological interest: *Russula bunerensis*, *Trametes versicolor*, *Lepista irina*, *Phaeolus schweinitzii*, *Bovista plumbea*, *Onnia pakistanica*, *Helvella zhongtiaoensis*, *Pseudoomphalina sp.*, *Lycoperdon curtisii*, and *Suillus sibiricus*.

Conservation Implications

The documentation of *Xerocomellus zelleri* and *Russula xerampelina* is particularly noteworthy as these are recognized on the IUCN Red List. Their presence underscores the high conservation value of the CPEC-associated forests and justifies the ongoing efforts to protect these "silent ecosystem engineers."

Visual Representation of different activities conducted during the first quarter.

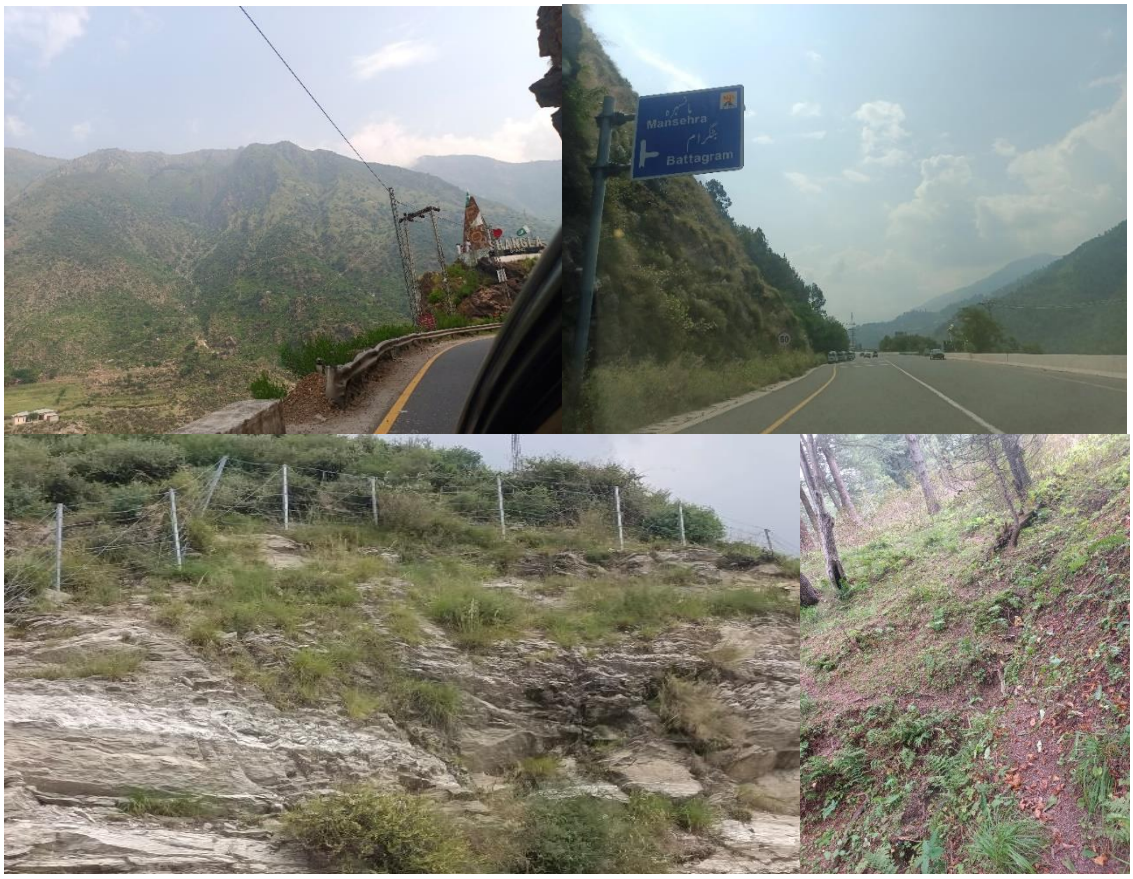

Fig: Scenic view of the target research sites in Shangla, Mansehra and Battagram showing the unique topography where macrofungi were collected.

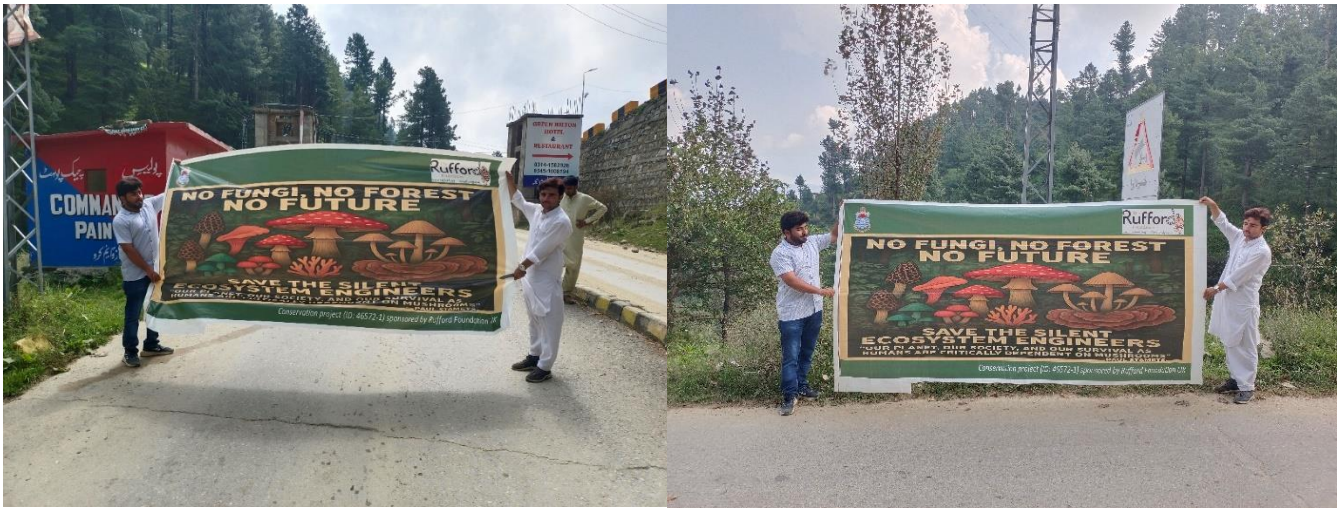

Fig: Our team is interacting with the passing native people and tell them about importance of mushrooms. Team members displaying a conservation banner with Rufford logo at a project site to promote the 'No Fungi, No Forest' initiative.

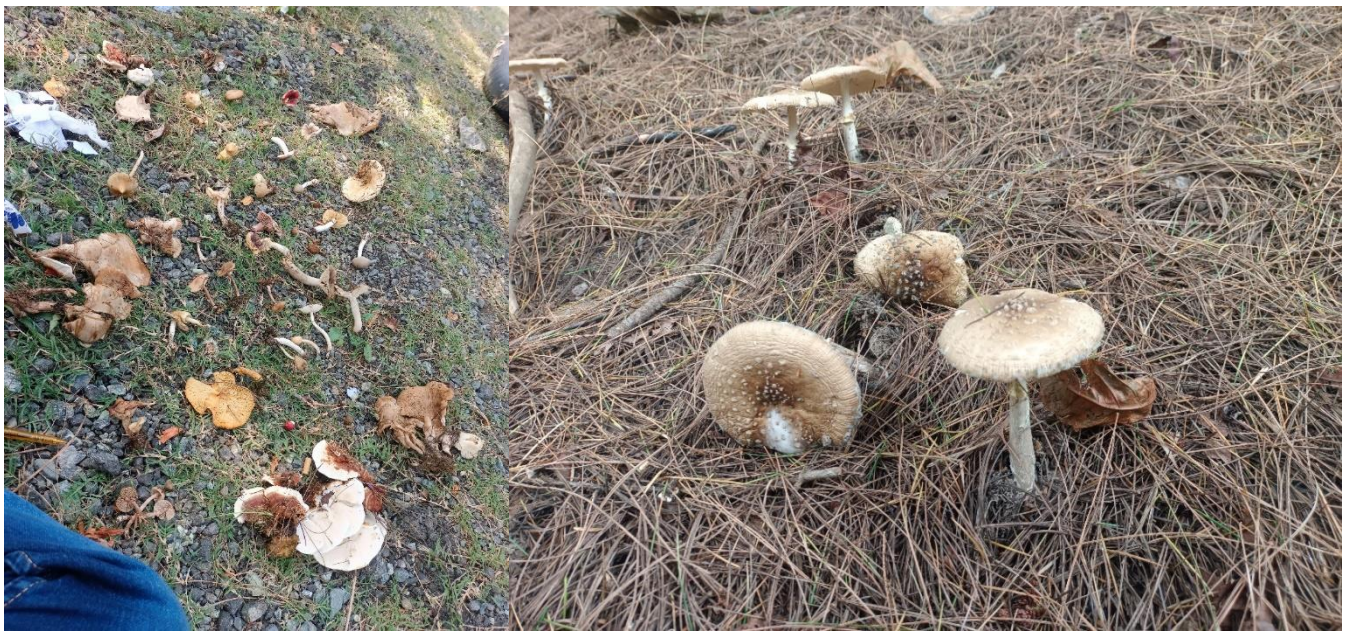

Fig: A collection of diverse specimens gathered during a field tour to Shangla

Fig: A collection of diverse specimens gathered during a field tour to Mansehra

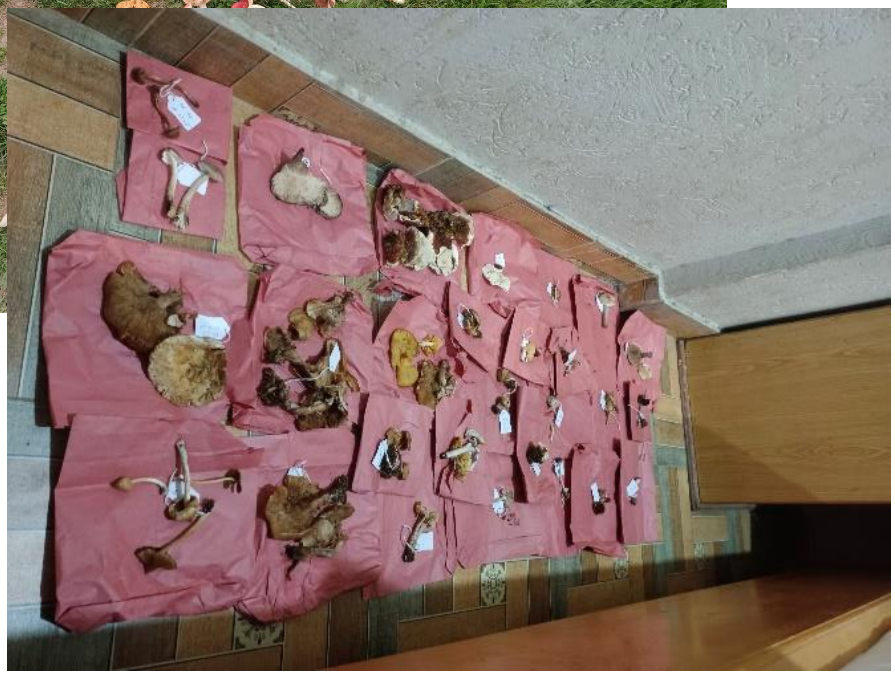

Fig: Collected fungal specimens being dried to maintain their quality for future identification and analysis.

Fig: Preparation of PCR products of the collected macro-fungi specimens in Fungal Biodiversity and Biotechnology lab, Institute of Botany, University of Punjab, Lahore the sequencing. for