Project Update: July 2022

The first phase survey of this project was carried out in June 2022. For the 8- day period, we identified seven potential sampling sites, held meetings and group discussions with Gaurishankar Conservation Area (GCA) office staff and officials, forest offices and local communities and conducted pre-project scheduled survey. The research permits were collected from concerned authorities by the first week of June 2022. All required equipment and materials for field surveys were arranged and packed. Posters and stickers have also been printed for awareness and outreach programmes.

Limitations

Research permits from the Department of National Parks and Wildlife Conservation (DNPWC) and the Department of Forests and Soil Conservation (DoFSC) had been obtained by the end of March 2022. However, our first phase survey of the project was halted for 3 months due to the approval process of the project from the Social Welfare Council (SWC). On top of that, monsoon started that highly affected our field work in June 2022 and our field period was cut short.

Objectives and relevant activities

Research permits for this project from Division Forest Office, Dolakha and Ramechhap districts were obtained along with permits from concerned municipalities and Gaurishankar Conservation Area (GCA) Office during the field work which are required for the official administration purpose later during the renewal of Small Mammals Conservation and Research Foundation (SMCRF).

Objective 1: Document baseline data on assemblage and abundance of bat species; contribute to reference call library for Nepalese bats

<u>Activity 1.1: Identify potential sites for bat survey and important bat roost sites</u>

Small meeting with key people from GCA office, small group discussions with local communities and field observations were conducted to locate key sites for mist-netting and roost search. We identified altogether seven sites for mist-netting, acoustic survey and roost survey that include rivers, streams, near bamboo aggregations and a hydropower testing tunnel. GPS coordinates, habitat type, temperature and relative humidity were recorded of those sites. However, we could not find any appropriate site to administer harp trap this time. Acoustic survey was also carried out simultaneously in those sites.

In total, we visited seven sites and could perform mist-netting in five of them, since one was a stream and it rained throughout the evening and night while the other was a tunnel where we caught bats directly from roost via gloved hands and a scoop net for bats that were roosting far from our reach. We have known few additional potential bat roosts and mist-netting sites from the locals, but were unable to reach due to unfavorable weather, remoteness and lack of transportation in the rainy season. Those sites will be visited and assessed during the next phase of the project.

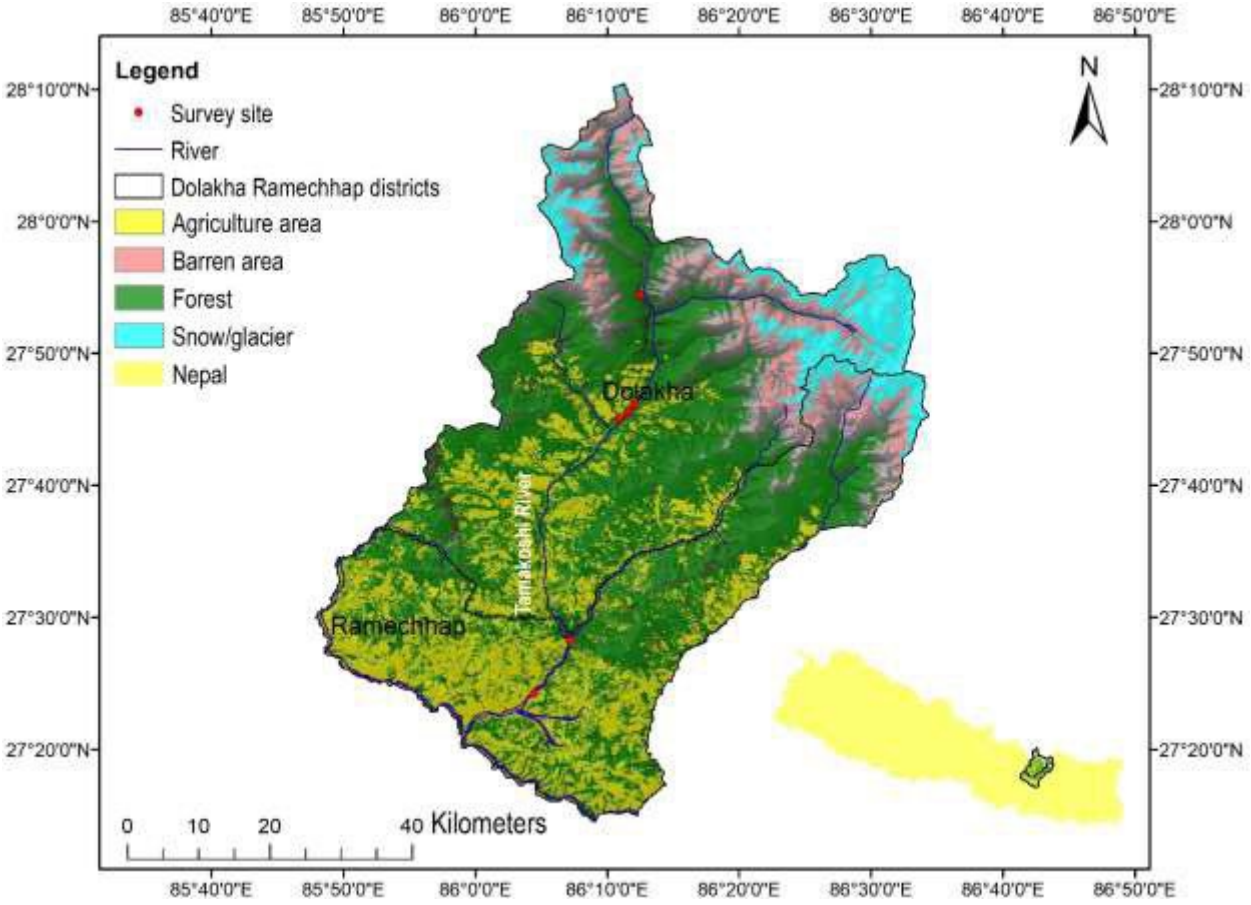

Figure 1: Study area map showing the potential sampling sites identified along the Tamakoshi River Corridor during the first phase of the project.

Figure 2: Mist-net deployed on a stream in Khimti Bajar, Ramechhap

Figure 3: Mist-net and a Song Meter Minibat deployed over a stream in Lamabagar, GCA, Dolakha

Figure 4: A hydropower testing tunnel serving as a roost for *Hipposideros gentilis* and *H. armiger*, Dolakha

Activity 1.2: Bat survey and acoustic survey in identified sites

Bat survey included mist-netting and roost search in the identified potential sampling sites. Harp trap was not used due to unavailability of proper sites in rain. We were able to capture three species of bats namely *Hipposideros gentilis, H. armiger* and *Barbastella darjeeligensis* along with their echolocation calls using two Song Meter Minibat and an Echo Meter Touch 2 Pro recorders. In addition, seven bat species have also been recorded using the ultrasonic recorders at mist netting sites during free flying condition, potentially *Tadarida* sp., *Myotis* sp., *Submyotodon* sp., *Pipistrellus* sp., *Nyctalus* sp., *Eptesicus* sp., etc., however, these species could not be captured. All the calls are yet to be analyzed manually via Kaleidoscope Lite 5.4.7 software because Nepal does not have Auto ID Classifiers that automatically suggest bat species using Kaleidoscope Pro version.

Two Song Meter Minibat recorders were deployed avoiding cluttered habitats that interfere with the calls and affect their quality. They were deployed on small tree branches with ultrasonic microphone facing the mist netting sites in less cluttered spaces (such as small streams, pond, etc.) at least 1.5 m above the

ground to avoid echoes from the ground and other surfaces. The Echo Meter Touch 2 Pro was also operated on an Apple iPhone 11 inside bat roost to detect the presence of different bat species.

Figure 5: Bats captured during the first phase of the project; *Hipposideros armiger* (Top left), *H. gentilis* (Top right), *Barbastella darjeelingensis* (Bottom)

Objective 2: Assess local peoples' perception about bats and identify areas for implementation of mass conservation outreach campaign

Activity 2.1: Pre-project scheduled survey

A semi-structured questionnaire survey was carried out to assess the perception of local towards bats in their area and the level of basic knowledge and importance of bats. Total of 50 people were interviewed nearby sampling sites and more than 90% of them have seen bats in the area. However, most of them know nothing about bats and their importance. Some people even mentioned that bat sightings have become rare in the recent times due to unknown reasons and agreed that bat population has been decreasing.

This data will now help us conduct awareness programs accordingly in the next phase of the project.

Figure 6: Scheduled survey being conducted by one of our team members, Sabina Koirala, in Jamune

Plans for the next phase

The next phase of this project will be carried out in September 2022. Bat survey and acoustic survey will be continued through the next phase using mist-nets, harp trap and Song Meter Minibats and Echo Meter Touch 2 Pro. More potential sampling sites will be searched and surveyed including caves, tunnels, forest edges, water sources such as small rivers, streams, ponds, etc. Workshops and meetings will also be conducted with the local government bodies to sensitise them on the ecological roles played by bats. Conservation outreach programmes will be carried out in the schools

and communities and school and youth bat clubs will be formed. Those clubs will be trained to monitor their respective bat roosts and run small environmental awareness activities. A post- project scheduled survey will be conducted to assess if people could grasp important information on the importance of bats motivating them to protect and not to harm bats in their area. Important bat roosts will be identified to install information board about bats.