

Tracing Roots of Himalayan Biodiversity: Discovery, Description, and Conservation of Bats in Nepal

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Update Summary

This project has stages: research permits and agreements, field and laboratory work, and journal publication. The first stage of setting up agreements and securing research permits has been fully completed. The second stage is currently ongoing and will continue for another year until the project is completed. The final stage will take place after the project's conclusion.

Some of our projects activities are associated with the Tribhuvan University, Institute of Forestry (IoF) in Nepal. In April, we set up an agreement between Division of Biology, Kansas State University (KSU) and IoF to collaborate on research and conservation activities related to this project [KSU Contract Award 7254]. The agreement includes providing training to undergraduate students on bat related research, involving them as research assistants to carry out field as well as lab work, conducting workshop on bat conservation genomics, and establishing DNA extraction lab.

Before conducting any activities related to this project, we needed to secure research permits from both the USA and Nepal. Once the project was approved, we applied for a permit from the Institutional Animal Care and Use Committee (IACUC), which oversees the use and care of animals at U.S. educational institutions that use animals for research or teaching purposes. In Nepal, we applied for research permits from the Department of National Parks and Wildlife Conservation (DNPWC) and the Department of Forests and Soil Conservation (DoFSC). The DNPWC manages and conserves wildlife populations and their habitats within protected areas, while the DoFSC focuses on areas outside of these protected zones. Since our plan was to conduct surveys both inside and outside the protected areas of Nepal, we needed to obtain permits from both departments. The IACUC and DoFSC permits were approved in early July, while the DNPWC permit was granted in early August.

After securing the IACUC and DoFSC permits, we focused our work on the loF Pokhara campus and in the Pokhara Valley. First, we provided two weeks of training to undergraduate students, with a special focus on Bat Friends Pokhara, an undergraduate student union at loF Pokhara campus dedicated to bat conservation in the area. The training covered bat capturing, identification, and genetic sample collection, as the students had no prior experience in these activities. We conducted bat sampling in Banpale Forest (a forest located near the loF Pokhara campus), as well as in Birendra Cave and Mahendra Cave in the Pokhara Valley. During the training, we collected samples from 8 species of bats, primarily including 2 mm wing tissue and buccal swabs. After collecting samples, we set up a DNA extraction lab at loF Pokhara Campus and extracted DNA from all the samples we had collected. Unfortunately, we had a few bat casualties while trapping in the caves. All the individuals were preserved in ethanol and are currently located at the loF in Pokhara.

In addition to securing agreements, permits, and conducting fieldwork, we have also created a website and associated social media platforms to raise awareness about bats. Here is website link <https://www.hibcn.org/>. Our initial plan was to create a website focused solely on this project, but we realized it could serve a larger purpose. We renamed it the Himalayan Bat Conservation Network (HiBCN), with the primary goal of raising awareness about bats and creating a collaborative network of researchers, both native and international, to promote bat research and conservation in the Himalayan landscape.

Future Plans

So far, we have only sampled bats in the Pokhara Valley. There are many more sites to cover, particularly focusing on the eastern and western parts of the Kali Gandaki Canyon. The next major steps are to select sampling sites, assemble a field crew, and conduct further fieldwork. Another task is to send the DNA to a sequencing facility and begin sequencing the DNA within Nepal, as the export of wildlife DNA, even for sequencing, is not legally permitted outside of Nepal. In addition to field and lab work, we plan to conduct a few school teaching sessions, organize a workshop, and write, share, and promote web blogs.

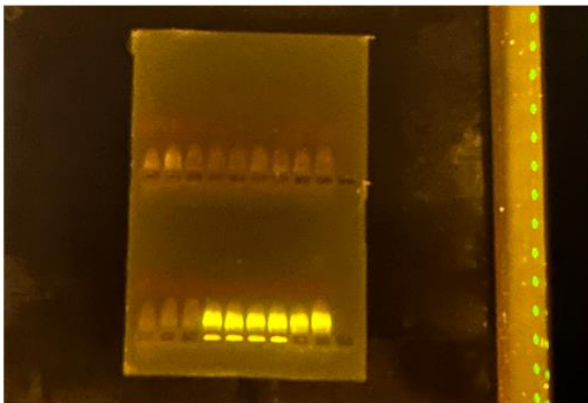
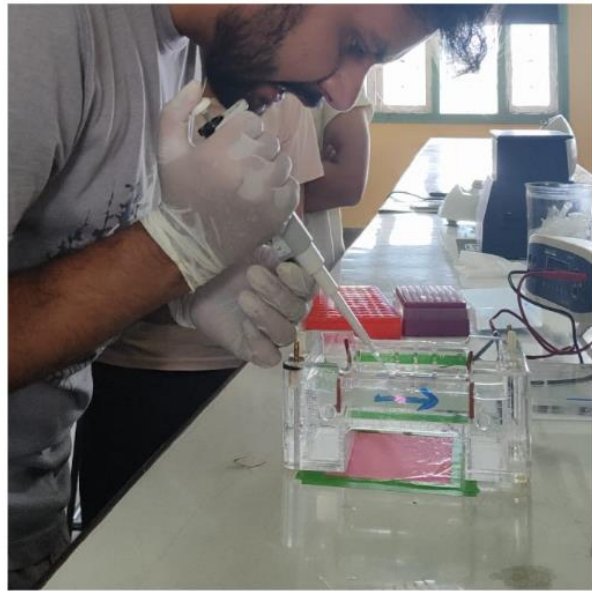
Pictures



Picture 1. Top left: providing instructions to members of Bat Friends Pokhara on mist netting, bat capture, safety measures, and identification. Bottom left: night work at Birendra Cave, Pokhara. Right: setting up mist nets in Banpale Forest, loF, Pokhara.



Picture 2. Some of the bat species captured from different places in Pokhara valley, including forests and caves. Top left: *Cynopterus sphinx*, middle left: *Hipposideros armiger*, bottom left: *Pipistrellus sp.*, top right: *Hipposideros gentilis*, and bottom right: *Rhinolophus macrotis*.



Picture 3. Lab work at IoF, Pokhara. Top left: lab setup and workspace, middle left: tissue samples in plates used for DNA extraction, bottom left: electrophoresis results to check DNA content, top right: demonstrating the DNA extraction procedure to IoF, Pokhara's undergraduate students, and bottom right: placing samples in gel for electrophoresis after extraction to check DNA content.