**Project Update: May 2000**

The second phase of this project constituted continual monitoring of the identified caves in the late winter and early spring. The study techniques used were similar to the first phase with extensive roost surveys where we placed iButton dataloggers and tempnotes in different compartments of each cave. These surveys were supplemented with acoustic monitoring, and photographs. Apart from the scientific part of study involving roosting patterns, we also conducted social surveys (n = 81) in the study area to gain more insights into the attitude and perception of local people and tourists regarding caves and bats.

The objectives of the second phase of this project were:

- To observe and quantify the use of the identified caves in the late winter and spring season.
- To use Audiomoths to monitor the cave-exiting activity of bats (measured in terms of bat passes) and compare it with the previous phase.
- To use questionnaire interviews as a tool to understand the attitude and perceptions of local people regarding bats and caves in the study area.

**<u>Field work conducted to achieve the above objectives.</u>**

Study area:

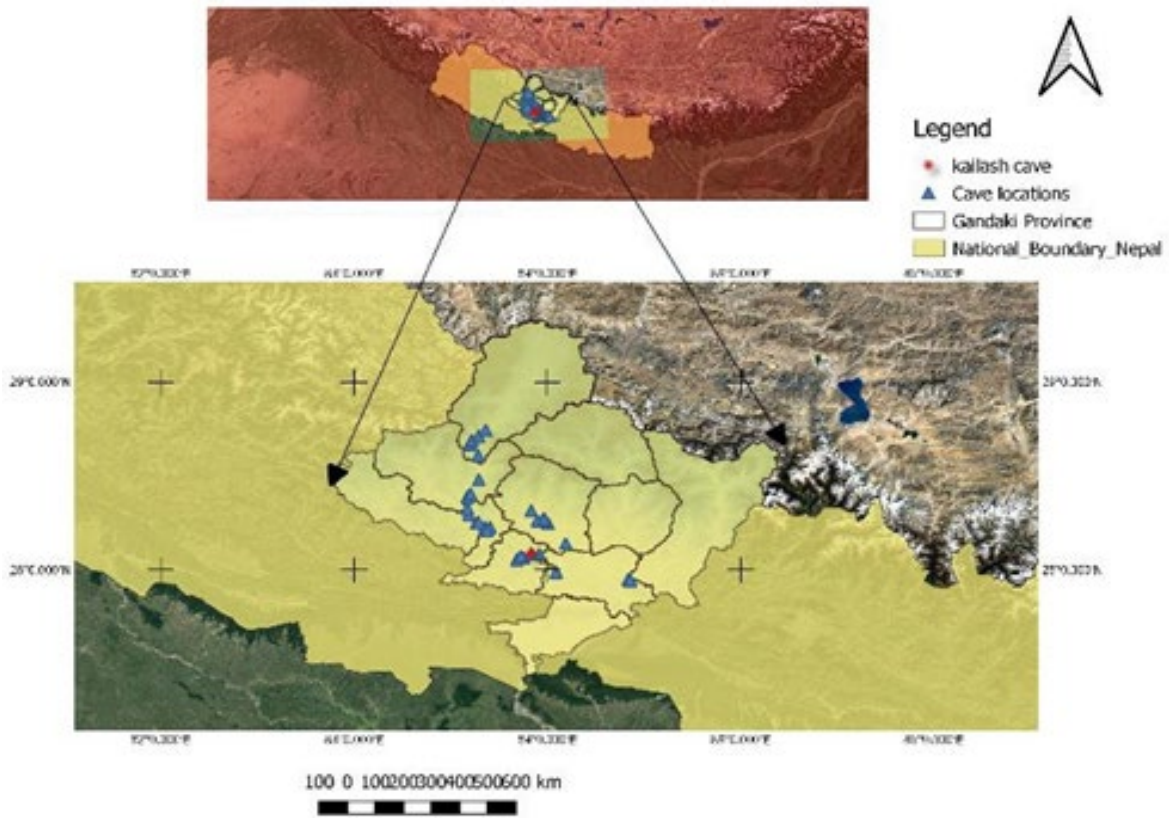


*Figure 1- Map of Nepal with identified caves. Same as in the first phase.*

***Field works***

*Objective 1*

The use of caves varied seasonally. In winter, most caves had fewer individuals compared to the Spring. In the target caves, Kailash cave and vicinity, we failed to record the use by *Myotis csorbai* while in other caves such as Patikhola cave, Siddha cave, Bhimad cave, Gupteshore cave, and Alpeshore cave in the neighboring district, we recorded *Myotis* cf. *nipalensis.* Altogether, in all caves, we recorded 17 species of bats, where variation in colony size was large. For example, in Khangrang cave, where we didn't record a single bat in the first phase, we recorded 302 individuals of *Hipposideros armiger* in the second phase. The variation in use along with differences in colony size in each cave will be modelled after entering all the data along with cave explanatory variables.

*Figure 2: Field colleague, Kushal Neupane, conducting roost surveys in Kailash cave, Syangja.*

*Figure 3: Hipposideros armiger in Khangrang cave.*

*Figure 4: Rhinolophus luctus in Pelkachaur cave. The species seemed to use this cave in both the phases. PC- Kushal Neupane*

*Objective 2*

In order to maximise detection of species which could have been missed during roost surveys (because some bats roost in crevices that cannot be reached), we deployed Audiomoths at the entrance of each cave. Through Audiomoths, we then quantified the hourly activity at the entrance of each cave as well as the variation in activity in different seasons. The acoustic activity was measured in terms of bat passes (a 5-second sequence file with at least two identifiable echolocation pulses), and quantified. We have some results from the first phase (i.e., winter survey), and still have to analyse the acoustic data collected during the spring.

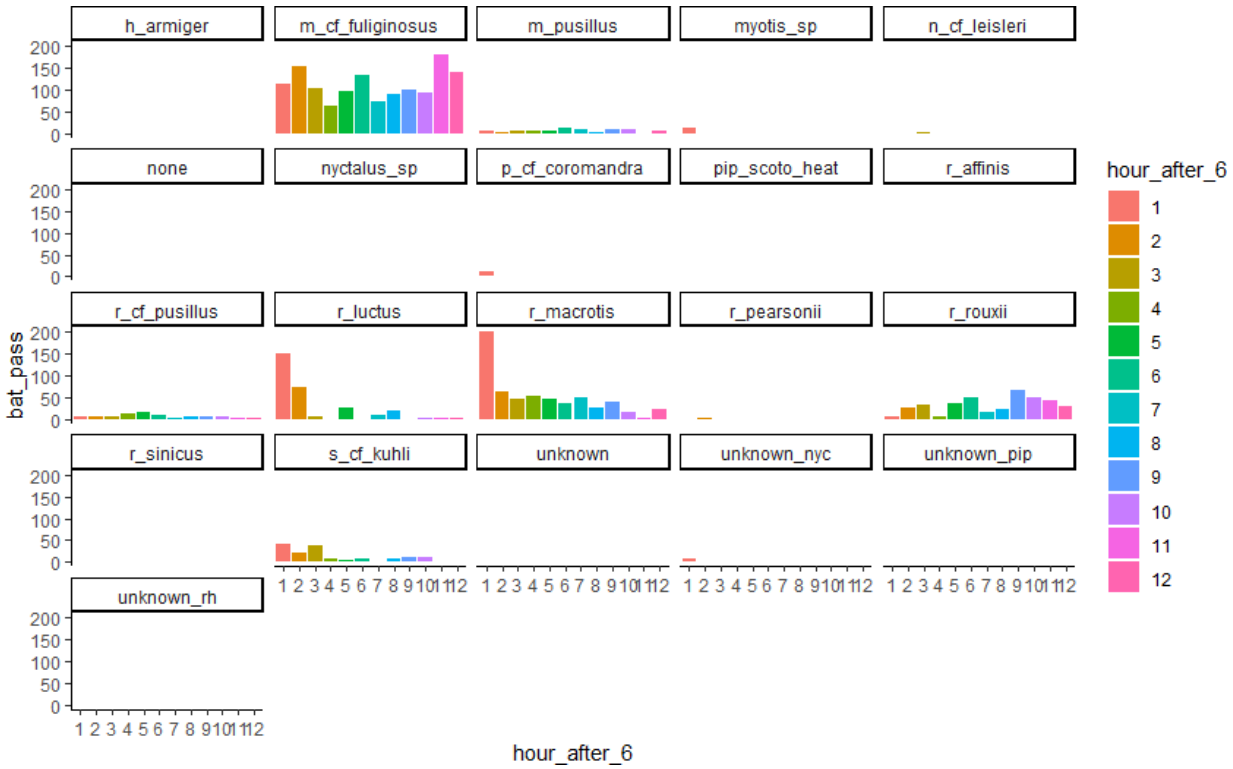


*Figure 5- Hourly bat activity in winter.*


*Figure 6- Species- specific bat activity in caves in each elevation. low elevation: 400 - 800 meters, Mid elevation: 800- 1200 meters, High elevation: 1200 - 1600 meters, very high elevation: Above 1600 meters.*

<u>*Objective 3*</u>

In order to assess the perception and attitude of bats and caves in local people and tourists, we conducted semi-structured questionnaire surveys. Local people in the vicinity of caves, hotel managers and shopkeepers, tourists, and students were the target audience. Based on the identified caves, 81 questionnaire surveys were completed during this phase.

*Figure 7- Field colleague, Kushal Neupane, conducting questionnaire survey related to bats near Kailash cave, Syangja. Figure 8- Field colleague, Sanish Gautam, interviewing a farmer about bats in Syangja district.*

Conclusion

There weren't any difficulties while conducting studies in this phase in terms of logistics and Covid-19 outbreaks. We observed quite a lot of variation in the colony size of bats, and the use of caves in different seasons. We still have tons of acoustic and microclimatic data to analyze which will take place in the coming phase. Field work during third phase will be minimal due to monsoon showers. Apart from ecological data, we also collected socio-economic data from the nearby people to understand their interrelationship with caves and bats, and how bats have been portrayed in their culture.