

Bats of Nepal: Laying a foundation for future mammalian phylogeography through the Himalayas

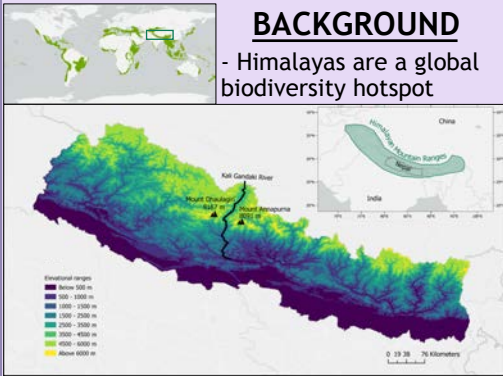
Basant Sharma*, Andrew Hope

Kansas State University, Manhattan, KS 66506, USA

KANSAS STATE UNIVERSITY

BACKGROUND

- Himalayas are a global biodiversity hotspot



Question: How formation of Himalayas shaped present-day diversity and distribution of bats?

- >> Tectonic collision and uplift of Himalayas
- >> Associated geographic complexity; deep river valleys

-The Kali Gandaki Canyon, one of deepest gorge in the world, is a major biogeographic feature

OBJECTIVES

- To document bat species composition in the Kali Gandaki Canyon
- To review existing knowledge of bat distributions and community assembly
- Develop hypotheses for comparative phylogeographic processes

METHODS

A. Bats surveys (2018-2020)

- At 800-1200 m (tropical/sub-tropical) and 2100-2500 m (temperate)

Trapping: Mist netting and harp trapping in the forests/caves

Acoustics: EchoMeter Touch 2 Pro

B. Spatial distribution modelling

- Downloaded IUCN species distribution maps for bats reported in Nepal
- Species range maps overlap in ArcGIS Pro grouped based on elevation, potential origin, and family

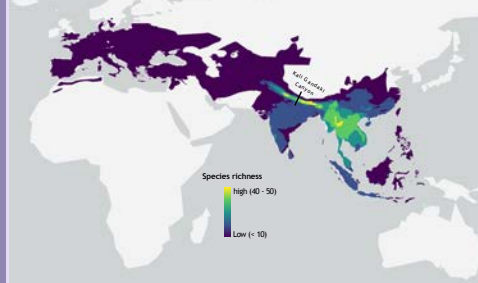
RESULTS

A. Bats of Kali Gandaki Canyon

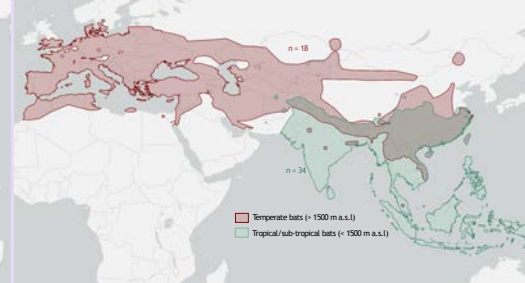


B. Phylogeographic patterns of Himalayan bats

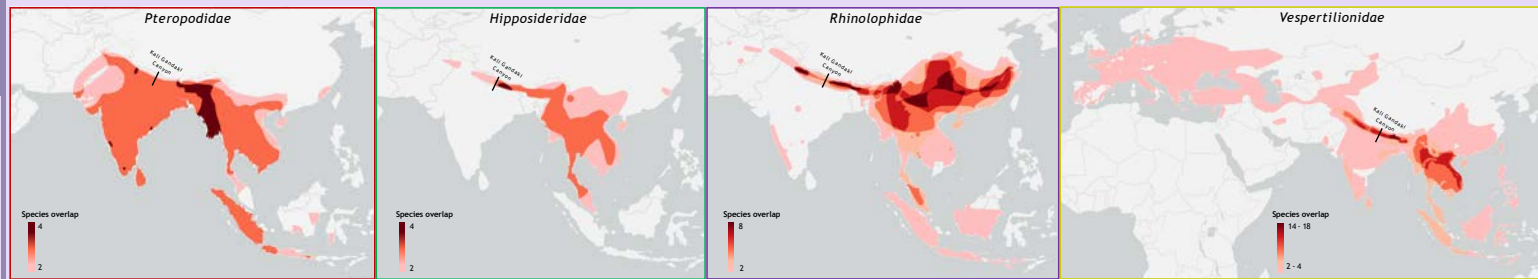
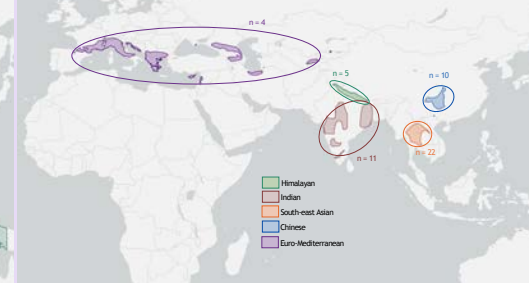
B1. Geographic extension of bats in Nepal with species richness



B2. Merge distribution of temperate and tropical/sub-tropical bats in Nepal



B3. Common distribution of bats in Nepal based on probable origin



CONCLUSION

- There are currently >50 species of bats known from Nepal (>20 from the Kali Gandaki Canyon)
- Nepal bats represent multiple distinct regional assemblages (**high elevational bats = Palearctic, low elevational bats = Indo-Malayan**)
- Likely there is high intra-specific diversity associated with the Himalayas
- We predict the **Kali Gandaki Canyon is an important barrier and/or transition zone**

FUTURE PLANS

- Spatial distribution modelling for other mammalian groups
- Genetics sampling all across Nepal with special focus on either side of Kali Gandaki Canyon

