ABSTRACT

Title: THE EVOLUTION, PHYLOGEOGRAPHY, AND CONSERVATION OF THE GOLDEN LANGUR (Trachypithecus geei) IN BHUTAN

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The golden langur (Trachypithecus geei) is an endangered endemic species of primate in Bhutan. Conservation of this species is addressed here through phylogeographic and habitat management tools.

I hypothesize that rivers and mountains in Bhutan isolated a population of capped langurs (Trachypithecus pileatus) and that this population later speciated into the morphologically distinct golden langur. Trachypithecus, the genus to which both capped and golden langurs belong, spread north from a paleo-refuge in south China and Semnopithecus (grey langurs) spread east and northward from a refuge in south India. My results show that these two genera both arrived in Bhutan but could not mix since the Sunkosh River and Pelela range form a biogeographic barrier. Likewise, a population of capped langurs isolated from parental populations by rivers speciated into the distinct golden langur.

I conducted field surveys covering the entire range of langurs in Bhutan, confirming the distribution and isolating barriers among the three langurs. Grey langurs and golden langurs are isolated from each other by the Sunkosh River and
Black Mountain range in west Bhutan. In the east, the Manas river system (Manas-Mangde-Chamkhar) served as a barrier between golden and capped langurs. However, this barrier has been broken in the last 30 years due to the construction of bridges over the Chamkhar river. A hybrid zone was found and the implications are discussed.

A cyt b phylogeny showed the grey langur of Bhutan grouping into a distinct clade with other congenerics of Semnopithecus. The south-Indian clade of grey langurs is more ancient, with the Bhutan and Nepal grey langurs having diverged later. The golden and capped langur from Bhutan grouped with Trachypithecus from South East Asia.

Finally, I explore conservation of golden langur habitat in Bhutan and estimate available habitat at 3,089 km² and an estimated population of about 6,000 individuals. I also find that the most viable strategy for conservation of langur habitat is to give ownership of the forests to local people, with monitoring by the Department of Forestry.