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Climate change threatens Nilgiri Tahr

by Sibi Arasu | Sep 10, 2018

The endangered mountain ungulate in southern India faces a new risk of habitat loss due to climate change even as conservationists grapple with more imminent threats

An adult male Nilgiri Tahr, or Saddleback, as they are commonly known (Photo by P.S. Easa)

The iconic Nilgiri Tahr is most at home in the higher reaches of the Western Ghats, usually on its steepest cliffs. But their habitat could now be in harm's way due to climate change, says a new study.

Published in the peer-reviewed Ecological Engineering journal, the study predicts that days might be numbered for the few thousand remaining Nilgiri Tahrs. Researches associated with the Ashoka Trust for Research in Ecology and the Environment (ATREE) say that most of the existing habitats of the Tahr in the Western Ghats will become unsuitable as global warming intensifies.

A cousin of the Himalayan blue sheep or Bharal, the Nilgiri Tahr (*Hemitragus hylocrius*) is a flagship species of the high altitude montane grasslands of the Western Ghats. It is also the state animal of the southern state of Tamil Nadu. The Tahr was once found across the length of the Western Ghats but now live only in a few isolated pockets and protected areas in the states of Kerala and Tamil Nadu.

They are usually spotted at altitudes above 1,100 metres up to 2,650 metres. While it is difficult to put an exact number on their population, it is estimated to be anywhere between 2,617 to 4,232 individuals. The Eravikulam National Park in Kerala accounts for a sizeable chunk of the population with 664 individuals. This limited population is the reason why it is classified as an endangered animal by the International Union for Conservation of Nature (IUCN).

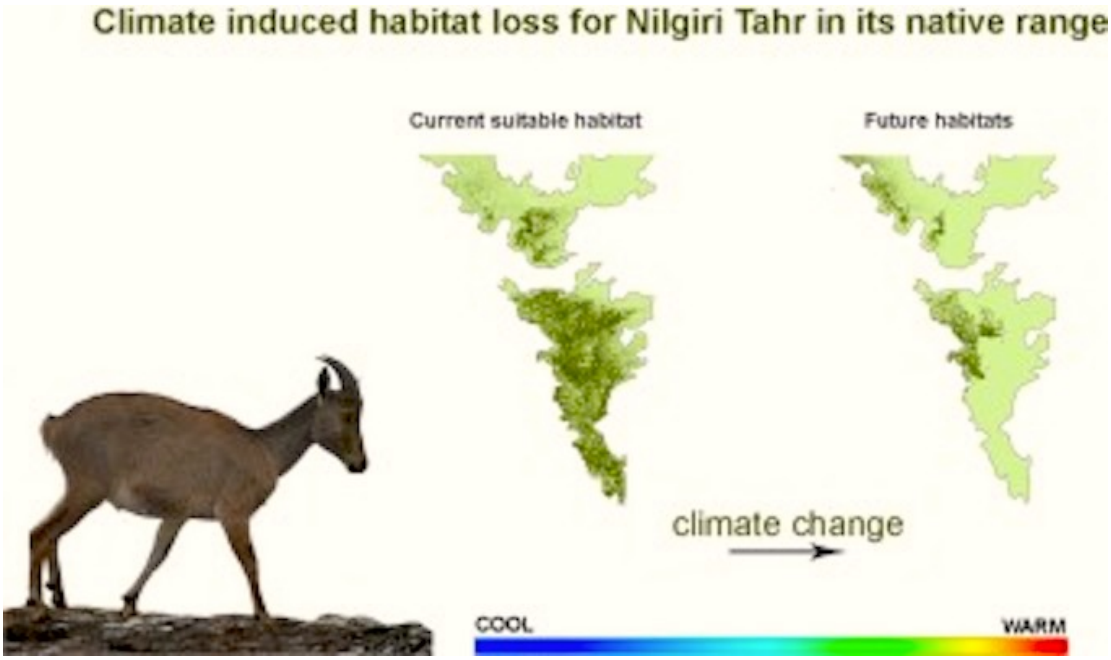
The new study looked into different climate scenarios over a course of three time frames (2030s, 2050s and 2080s) and observed a drastic loss of habitat in all three scenarios. The study looked at 10 Tahr habitats during 2010-11.

Grim future

The future climate projections in the study were based on two scenarios. The first scenario represented an optimistic emission rate, with peaking of emissions by 2040, while the second scenario represented continuous rise in emissions all through this century.

The study predicts a maximum habitat loss of 61.2%, 61.4%, and 63% for 2030, 2050 and 2080, respectively, if emissions did not reduce. The protected areas are expected to experience a drastic habitat loss owing to climate change. While the protected area network within the Western Ghats is suitable for the Nilgiri Tahr in the current scenario, the study predicts that over 60% of this network will become unsuitable due to global warming.

“The present study has to be observed in the backdrop of this identified vulnerability of the species to local extinction,” K.M. Jayahari, principal investigator, told indiaclimatedialogue.net. The local vulnerabilities he was referring to are threats to the Tahr’s survival due to hunting, conflict with livestock, grazing and habitat loss over the years.



Projected climate-induced habitat loss of the Nilgiri Tahr (Source: ATREE study)

"In the absence of data on the movements of these animals between the high-altitude montane grasslands separated by thick shola forests, the possible impacts on the habitat suitability are increasing the chances of local extinction since the animals may then not be able to move to suitable habitats from the existing ones," he said.

The study says that wildlife sanctuaries such as Shenduruny, Neyyar, Peppara, Kalakkad-Mundanthurai and Srivilliputhur will become unsuitable for the Tahr. In addition, other protected areas such as Peechi-Vazhani, Parambikulam Tiger Reserve, Chinnar and the Silent Valley National Park are vulnerable to extreme climate change scenarios.

Sony R.K., a doctoral student at ATREE and associated with the study, said, "I don't think the Tahr will face any serious threats in areas like Eravikulam and Mukurthi, where there is a good population. My worry is about the smaller, isolated populations."

The authors also made clear that these are possible scenarios and are in no way representative of what will actually happen on the ground. Sandeep Sen, a doctoral student at ATREE who had assisted with the climate-change modelling, said, "The accuracy of these models in predicting real world species distributions are always questioned which depends on the type of algorithm, accuracy of the climatic data and also the availability of sufficient species occurrence data etc."

"Having said that, we also want our study to bring awareness of this issue," he told indiaclimatedialogue.net. "The Tahr is an emblematic species, and with their preferred habitat decreasing, measures need to be taken for their protection."

Contradictory claims

Other experts and researchers on the Tahr, while welcoming the study and the attention it brings to the Tahr, have taken issue with some of the study's claims and results.

"While it is always good to be mindful of the risk that large scale threats like climate change pose to species with limited distributions like the Tahr, it is critical that these risk assessments are careful and rigorous," said M.D. Madhusudan, scientist and co-founder of the Mysore-based Nature Conservation Foundation (NCF). "In this instance, the study appears to significantly overestimate current habitat suitability, as it builds this map entirely on the basis of climatic and topographic input variables. However, the Tahrs are actually distributed far more narrowly within that bioclimatic envelope, mostly restricted to montane grassland that co-occur with exposed rock-faces."

Nilgiri Tahr descending a steep slope

Madhusudan surmises that this potential over-estimation of currently suitable habitat as the baseline will lead to shrinkage in suitable areas in predicted climatic scenarios. The problem with this though is, as he says, "the change, in relation to actually suitable habitat today, may not be as drastic as the authors apprehend."

He also flagged the underestimation of the Tahr's potential to adapt. "When ecologists assess the impact of climate change on a certain species, they are often quick to recognise that the climate may change in the future, but far slower to acknowledge that species also can and do change and adapt to these changes," he told indiaclimatedialogue.net.

P.S. Easa, Member of the National Board for Wildlife and chairman of Care Earth Trust in Chennai, has done work related to the Nilgiri Tahr since the 1980s. He also raised doubts regarding the report in question.

"Any model should be true to the reality and ground condition," he told indiaclimatedialogue.net. "Once this is not reliable, the whole thing goes wrong. Also on

habitat suitability, the most important variables such as the altitude, extent of the cliff and availability of food species were not considered. They are mentioned in one place in the report. They did not even mention that there are previous studies published on this."

Easa and others had conducted a study on the habitat suitability index model for the Nilgiri Tahr in the Eravikulam National Park, once in 2002 and then in 2007.

Connectivity is key

Regardless of their differences, all the researchers and scientists working on the Tahr agree that the species faces a multitude of threats.

"For me connectivity is the key," said Easa. "The immediate need is to preserve where they are thriving and reintroduce them in places where it is possible to do so. A few of us, along with the forest department of Kerala, have been working on how best to do this and hope to act on this soon. We have also identified conservation units in both Tamil Nadu and Kerala, where we will try to ensure their movement, connect different Tahr populations and ensure their gene flow continues uninhibited. Even to deal with climate change, I think connectivity is important."

The authors of the ATREE study agree. "There are some isolated populations without the saddlebacks or adult males, whose future is in doubt. For them to survive, either reintroduction or connecting them to existing, thriving populations is important," said Sony. "There are a lot of studies on mountain ungulates worldwide. Researchers have found that climate change affects horn size in temperate areas. We don't have any of those data for the Tahr. We need more resources and more on-ground studies about habitat and ecology of the Tahr in order to conserve them."

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