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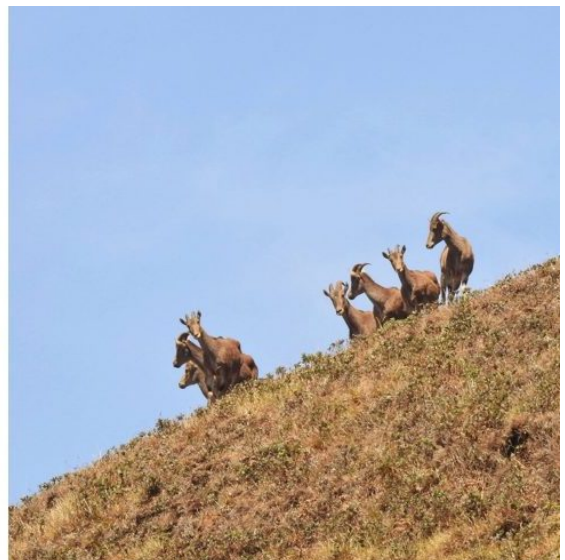
The unsung mountain monarch: Endangered Nilgiri tahr of the Anamalai Tiger Reserve

By Munib Khanyari, 18th March 2020

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Mountain ungulates—wild sheep and goats of the subfamily Caprinae—mark the grandeur of montane ecosystems. In India, the term mountain ungulate often invokes flamboyant images of species such as the Ibex *Capra sibirica* or markhor *Capra falconeri* standing on the steep, high cliffs of the Himalaya. But there is another species, often overlooked, which lives in the mountains of the Western Ghats, a global biodiversity hotspot in tropical south-west India: the Nilgiri tahr *Nilgiritragus hylocrius*, a mountain monarch in its own right.

Wild ungulates such as the Nilgiri tahr play an important role in maintaining ecosystem structure, and are also determinants of predator populations. Found only in the states of Tamil Nadu and Kerala in India, the Nilgiri tahr is restricted to montane grasslands, an ecosystem particularly vulnerable to climate change. Several threats affect this species over many parts of its restricted range, including habitat loss and disturbances caused by invasive species, and in some cases livestock grazing, poaching and fragmentation of the landscape. As a result of its small range, specific habitat needs, and persistent threats, the global population of Nilgiri tahr is estimated to be only around 2,000–3,000. A key site for the survival of Nilgiri tahr is the Anamalai Hills within the Anamalai Tiger Reserve, Tamil Nadu, which harbors the second largest population of the species after the Eravikulam National Park in Kerala.



Left: The Anamalai hills has a unique mosaic of shola grassland interspaced with lush tropical forests. Photo: Devika Rathore. Right: Nilgiri Tahr are gregarious species and were usually found in mixed-groups. There were slightly more females than males (7 males for every 10 females); the proportion of young in comparison to females is indicative of a healthy wild ungulate population. (c. 1 young for every 2 females). Photo: Devika Rathore.

Monitoring populations and documenting trends over time are important to assess the impact of conservation actions. The task of estimating Nilgiri tahr populations poses many challenges. Conventional methods used in tropical forests, such as line transect surveys, are not suitable: surveyors often cannot walk straight lines in the rugged terrain, and although tahr can be sighted at long distances in the mountains it is difficult to estimate these distances accurately. As an alternative, we used the double-observer method, which has been applied successfully to estimate ungulate populations in mountainous terrain in the Himalaya. The method is based on the principles of capture-mark-recapture, but applied to groups rather than individuals. It carries the added benefit that it allows us to estimate error, which enables statistical comparisons of populations over time.

The Anamalai Tiger Reserve lies across a vast 1,480 km² mosaic of forest, grasslands, and areas used by people mainly for livestock grazing and agriculture. We first identified potential sites used by Nilgiri tahr, from published studies and reports by knowledgeable forest staff and researchers. We then divided each of the Reserve's ranges into 36 relatively separate grassland blocks. Following a training workshop for 45 officers and field staff of the Reserve, we walked 257 km of survey transects, collaboratively, to complete this study.



A Male Nilgiri Tahr. Males are larger than females and of darker colouration. Adult males develop a light grey area on their backs, thus are called 'saddlebacks'. Photo: Devika Rathore

The experience and knowledge of officers, and our field experience, provided us with key insights that helped ensure we employed the double-observer survey method effectively while staying safe in the forests, which are also home to tigers *Panthera tigris*, elephants *Elephas maximus* and gaur *Bos gaurus*. Our [study](#) estimated the Nilgiri tahr population in the Anamalai Tiger Reserve to be 510 individuals (95% confidence interval 300–858 individuals) in 35 groups.

Our estimate is similar to those from studies in 1978 and 1998, suggesting the populations have remained largely stable. It was puzzling, however, that some of the peaks we surveyed had no or few tahr; the main concentration of tahr was in Grass Hills National Park and on Pachapal Malai peak. The reasons for this fragmentation and concentration is unknown and merits further research.



The key to our success was the inclusion and participation of the field staff and officers from the Anamalai Tiger Reserve. Here, a field staff member is scanning for tahr. Photo: Devika Rathore.

Our field experience suggested some adaptations to the double-observer method for it to be more effective in the montane grassland landscape of the Western Ghats. For instance, the time separation between two observers was reduced in our surveys as the tahr exhibited invasive behaviour. Not only does the method generate reliable error estimates, which enables statistical comparison of populations over time, it was also logistically and financially cost-effective. We have recommended that survey to estimate the total population of the Reserve should be conducted every 3–5 years, with a subset of sites—particularly Grass Hills and Pachapal Malai—monitored annually. Such an approach would provide the management of Anamalai Tiger Reserve with a better understanding of Nilgiri tahr populations and help them to identify areas on which to focus their conservation efforts.

The article [Population assessment of the Endangered Nilgiri tahr *Nilgiritragus hylocrius* in the Anamalai Tiger Reserve, using the double-observer survey method](#) is available at *Oryx—The International Journal of Conservation*.



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