

Movement Ecology and Socioecology of the Tonkin Snub-nosed Monkeys and Recommendations for Future Conservation

Nicholas James,
nlj987@yahoo.com

Awarded the Cyril Rosen award in 2016

High volume biodiversity loss in Southeast Asia threatens the existence of numerous primate species. Especially rare species such as the Tonkin snub-nosed monkey (TSNM; *Rhinopithecus avunculus*), which has been listed as one of the 25 most endangered primates for over a decade, due to threats from hunting and habitat degradation. Currently, only four populations remain with a total of less than 200 individuals in northern Vietnam making them Critically Endangered (CR; c2ai). Unfortunately, legislation appears to have had minimal impact on three of the four declining populations (Fig. 1). This study focuses on the two largest remaining populations found in the Khu Ca Species and Habitat Conservation area (SHCA) and the Tung Vai watershed forest (TVWF).

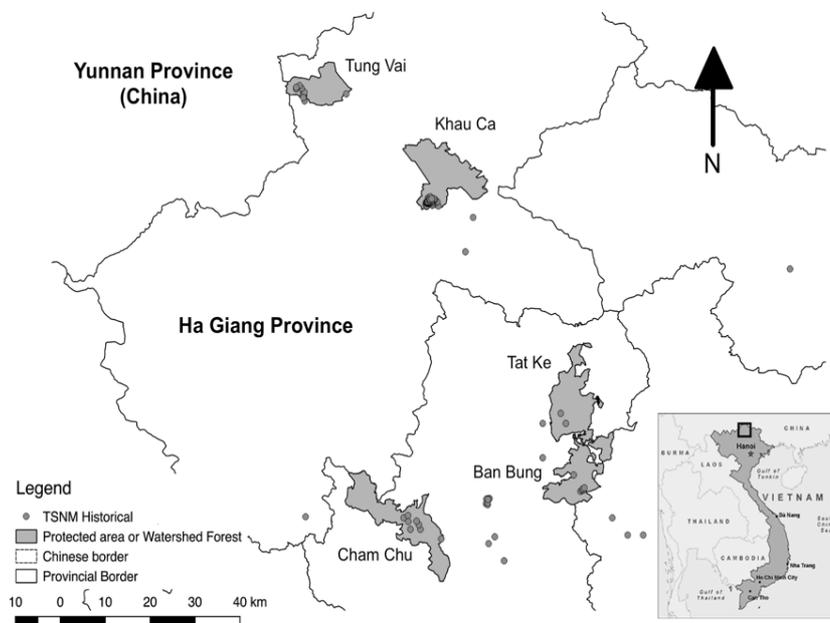


Figure 1: Distribution of all confirmed historical records of Tonkin snub-nosed monkey (*Rhinopithecus avunculus*) with boundaries of the protected areas or watershed areas where populations still exist.

The TVWF is currently thought to contain 15-21 individuals. Two years ago, a SHCA classification was proposed for the core TSNM habitat areas in the TVWF, although it is not clear if this protected area will be finalised. The Khu Ca SHCA population was most recently estimated at approximately 100 individuals (Le, 2014) and, as such, is thought to be the stronghold of the species.

I conducted primate surveys between 04/06/2016 to 17/06/2016 and 04/12/2016 to 19/01/2017 at the TVWF and Khu Ca SHCA, respectively, in a team of four individuals. We used a 'recce' survey method on existing trails due to the steep terrain and to avoid unnecessary destruction of habitat that may open up access for hunters. During primate follows we recorded group size, classified age/sex class and took GPS points at five-minute intervals. All anthropogenic disturbances encountered along recce routes were recorded including logging, people, traps, hunting evidence, gunshots and chainsaws. In addition, 105 ground truth points of habitat assessment were

made throughout the Tung Vai site which recorded canopy density, land cover type and slope measurements. A large dataset collected from 2/10/2015 to 27/11/2016 by a local non-government organisation was also provided for both sites, which were combined with my own survey data. I worked with FFI team members during the period 22/01/2017 to 18/02/2017 to interpret and clean these data ready for analyses.

I conducted a land cover classification and anthropogenic disturbance analysis for the TVWF to understand the extent of cardamom farming's impact on TSNM habitat. Encounter rate, day range and population estimates were also calculated. I then created a habitat suitability model for the TVWF and Khau Ca SHCA to contribute to the potential zoning of the new SHCA in Tung Vai and to identify areas for corridor projects in Khau Ca.

We observed no TSNMs in TVWF and six groups in the Khau Ca SHCA (Fig 2). Anthropogenic disturbance throughout the TVWF was found to be extensive, with the impacts of cardamom farming reaching further than expected. Only one case of illegal logging was the extent of observable anthropogenic disturbance in the Khau Ca SHCA. Home range of the Khau Ca population was estimated to be 3.74 km² and day range was estimated as 0.55-1.47 km. The encounter rate was 1.47 individuals/km and population density ranged from 13-35 individuals/km². Finally, the total population was estimated to be 58-131 individuals.



Figure 2: An adult female Tonkin snub-nosed monkey in the Khau Ca Species and Habitat Conservation Area. Photo – N. James

This study provides new information on a seldom researched species that contributes to our ecological understanding and, hopefully, improves conservation measures. Key issues such as widespread cardamom farming in the TVWF require immediate conservation intervention to prevent the loss of that population. Both populations studied are still small enough to be vulnerable to stochastic demographic factors, which emphasise the need for conservation efforts in boosting population growth. Overall this project highlights the need to prioritise conservation efforts in Southeast Asia, particularly with primates.