Preliminary Field Visit Report of Status and Habitat Analysis of Himalayan field Mouse (*Apodemus gurkha*)

(A case study from Annapurna Conservation Area)

Submitted By

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Chapter I: Introduction

Background

Himalayan field mouse also known as *Apodemus gurkha* is one among the two endemic terrestrial mammals of Nepal. This species is mainly found in the altitudinal range of 2400 m to 3500m. A.gurkha habitat consists of coniferous and rhododendron forest in lower temperate and upper temperate region. This is a nocturnal species which conduct its daily activities like searching for food in night time and take rest in day time. From the literature till now we can say that other species found in its habitat are *suncus murinus, soriculus nigrescens, Apodemus sylvaticus, Mus musculus and Niviventer fulvescens*.

In Nepal it is found only in seven places: Gorkha, Maharigau, Takucha, Larjung, Ghorepani, Chitare and Upper Ulleri. This species is distributed only in 5000sq.km of total area of Nepal. Different literatures have said that because of the destruction of its habitat due to human influences its population is decreasing gradually.

Need of Study

Himalayan field mouse (*Apodemus gurkha*) is cited in Endangered B1 ab (iii) version 3.1 in Red List Category and Criteria (Moular et al). It is listed as Endangered in IUCN Red list because of its limited occupancy, which is less than 5,000 km². Its distribution is presumed to be severely fragmented, and there is continuous decline in the extent and quality of its habitat. However, the species is not protected under the National Park and Wildlife Conservation Act, 2029 of Nepal.

But one of the reviewers Malcolm J. Pearcch from the review of different literatures and finding from the past had said in his monograph ZOOTAXA that the occupancy of the A.gurkha is not limited to only 7 regions of Nepal limiting it to 5000 km² only. The total occupancy of A.gurkha is 5000 km².

There is no information available on the population abundance of this species but its population trend is known to be decreasing. Although this is one of the two endemic mammals of Nepal, there are very few research and surveys conducted to find the status of *Apodemus gurkha*. These studies have only identified the presence of this species. Inadequate information on this species

may be the main reason of its depletion or ignorance by conservation activities. Except a very few pioneer research, detail study have not been done in species regarding its status and habitat.

Different types of threats are there for the continuous decline of the species like its habitat destruction and degradation, least studies of the specific species, low level knowledge among the local people about its importance of conservation and so on. Most of the conservationist as well as local people are unaware about the ecological roles of the species.

Seeing the scenario and the lack of the exact and detail information on the species the detail study of the species is much needed for finding out the status of the species in Nepal. Therefore, detail study to find out the information on the species is needed which can contribute for the conservation of the species in the future. So this project has been proposed for rapid assessment of the status and habitat of this species.

Aim of the Project

This project will achieve for the first time the detail status and habitat condition of the Himalayan field mouse in the ACAP area through rapid assessment. In addition, it also assesses the perception and raise awareness of local people towards this species and the threats to conserve it which will help to prepare conservation policies, strategy and action plan for conservation of the Himalayan Field Mouse.

Chapter II: Methodology

Study Area

The study will be conducted in the southern belt of Annapurna Conservation Area. Kaski, Lamjung and Myagdi are the districts where the proposed project is being conducted. Three transects will be made for the completion of the project.

Annapurna conservation area covers an area of 7,629 sq. km. and is home to over 100,000 residents of different cultural and linguistic groups. ACAP is rich in biodiversity and is a treasure house for 1,226 species of flowering plants, 102 mammals, 474 birds, 39 reptiles and 22 amphibians (ACAP Report)

The biological diversity of the Annapurna region is equally rivaled by cultural diversity. Gurung and Magar are the dominant groups in the south, whereas Thakali, Manange and Loba are dominant in the north. The local people reside in the 5 districts: Kaski, Lamjung, Myagdi, Manang and Mustang of the 57 Village Development Committees (VDCs) of the Annapurna Conservation Area (ACA).

Data Collection for preliminary field survey

Key Informant Interview (KII)

The purpose of key informant interview was conducted before the preliminary field visit was started. The major purpose of KII is to collect firsthand information on Himalayan mouse. Different officials from Department of National Park and wildlife Conservation (DNPWC), National Trust for Nature Conservation (NTNC), Annapurna Conservation Area Project (ACAP) as well as different local people were interviewed as key informant to know about the abundance, distribution, threats of the species.

Habitat Map Classification

Habitat map classification of the species in these three districts was done through the analysis of the secondary literature and KII. One transect route was found for the preliminary survey from Banthati of Kaski district to Apoon hill of Myagdi district. Other two transect route for the detail phase assessment was finalized after the completion of preliminary field visit of the proposed area.

Transect Survey

Preliminary transect survey was conducted in one site among the potential habitat of *A. gurkha* after habitat map classification. Transects was set according to the altitudinal variation from 2300m to 3200m. The transect point were in the difference of 300m altitude.

Apoon Hill (3200m)

↓

Ghore Pani (2900m)

↓

Nangethati (2600m)

↓

Banthati (2300m)

Transect was stated from the Apoon hill to Banthati moving from uphill to downhill. Total of 76 traps were installed in 4 different sites with 19 traps in each site for one night. Traps were set in two grids where first grid consists of 10 traps while second grid consists of 9 traps. For each grid, 5 different locations were chosen where the center location was chosen on researcher's judgment and there after other traps were placed in 10 meter distance in all four directions. Two traps were placed in each location with 1 meter distance between each trap.

For the habitat analysis the plot of 10m X 10m was made in each altitudinal transect point. In that plot the vegetation species, its quality, GPS location, altitude, aspect, vegetation cover and height, slope, aspect, soil types as well as level of human disturbances were recorded.

Handing Process and measurement:

Gloves were used for the proper handling and safety of both research species and researcher. When the species were caught in the trap, at first they were transferred to capture bags. After it is

made comfortable in the capture bag then the species was properly handle in the hand by lifting it up through its neck skin. Major precaution was taken during the measurement morphological characteristics that are body size, length of hinder foot, half body and ear. After the completion of the measurement ear punch was used to take the DNS sample from the ear. The sample was kept in the tube containing ethanol. Then the species was kept in weighing bag to measure its weight and safely left in their habitat.

Rapid Field Observation

Rapid field observation was done during the preliminary field visit to finalize the transect route for detail field assessment. During the rapid field observation, individual interaction with the local people was conducted to find the information on the appearance of A.gurkha.

Secondary Data Collection

Literature Review

Different available literatures on A.gurkha were reviewed along with the other mouse species to collect the first hand information on the species habitat, behavior, as well the technique for the inventory for mouse species, their handling technique and so on. This information was used to finalize the preliminary field visit site and research procedure.

Chapter III: Results from Preliminary Field Visit

Inventory Result

Capture percentage

Among the total laid 76 traps, 12 traps were false trap where traps which was closed due to external disturbance rather than species entering and in remaining traps eleven different individual species captured.

The capture percentage was calculated as follows:

Capture percentage: (Total Capture/Total trap installed-False Trap)*100

Where,

Total Capture= 11

Total installed Trap= 76

Total False Traps= 12

Then,

Capture percentage= (11/76-12)*100

= 17.18%

The capture of species according to the location and grid is given in the table

Table 1: Capture as per location and grid

SN	Location	Grid	Capture	Total Trap Installed
1	Apoon Hill	1	1	9
2	Apoon Hill	2	2	10
3	Ghore puani	1	2	10
4	Ghore Pani	2	2	9

5	Nangethanti	1	0	10
6	Nangethanti	2	3	9
7	Banthanti	1	0	10
8	Banthanti	2	1	9

Capture Species

A total of 11 individuals belonging to 5 different species were captured. The total species capture and their site location are given below:

Table 2: Species according to grid and location

SN	Site	Grid	Species(Not sure)
1	Apoon Hill	1	*Probable Apodemus gurkha*
2	Apoon Hill	2	*Probable Apodemus gurkha*
3	Apoon Hill	2	*A.lucups*
4	Ghorepani	1	*Probable Apodemus gurkha*
5	Ghorepani	1	*Mus booduga*
6	Ghorepani	2	*Probable Apodemus gurkha*
7	Ghorepani	2	*Mus booduga*
8	Nangethanti	2	*Probable Episoriculus caudatus?*

9	Nangethanti	2	*Soriculus nigresum*
10	Nangethanti	2	*Soriculus nigresum*
11	Banthati	2	*Probable Apodemus gurkha*

Habitat Analysis

All the sites where A.gurkha was found were a coniferous and Rhododendron forest. The description of Habitat of the A.gurkha as the result of preliminary survey is given below:

Table 3: Habitat Quality

SN	Location	Grid	Tree Species	Ground Coverage	Canopy Cover	Slope	Aspect
1	Apoon Hill	1	Rhododendron, Juniperous Indica, Spurce, Deodar	75-100%	50-75%	30%	South East
2	Apoon Hill	2	Rhododendron, Juniperous Indica,	75-100%	50-75%	30%	East
3	Ghorepani	1	Rhododendron, Juniperous Indica,	75-100%	75-100%	25%	North West
4	Ghorepani	2	Rhododendron, Juniperous Indica, Pinus Wallichi, Spurce	75-100%	50-75%	30%	East
5	Nangethanti	1	Juniperous Indica, Pinus Wallichi, Rhododendron	25-50%	25-50%	20%	West
6	Nangethanti	2	Juniperous Indica, Pinus Wallichi, Rhododendron	50-75%	50-75%	15%	South
7	Banthanti	1	Juniperous Indica, Pinus	50-75%	50-75%	10%	East

			Wallichi,				
8	Banthanti	2	Juniperous Indica, Pinus Wallichi,	75-100%	75-100%	20%	East

Food Preference

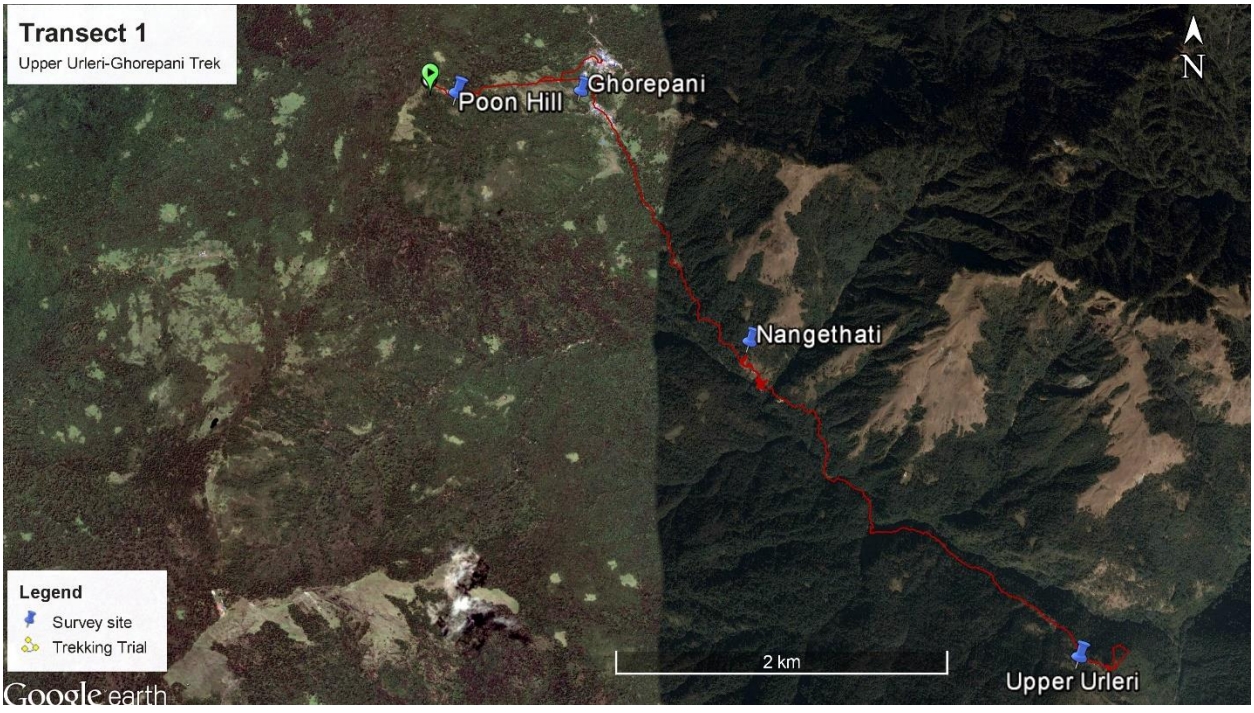
Natural environment was tried to artificially create by keeping dry grass along with food like dry fish, cabbage and peanut butter in the traps. After moving species for measurement of morphological characteristics the food consumed by captured species was analyzed. In all the probable five traps where A.gurkha had been captured, only cabbage and peanut butter were eaten by the species.

Identified Transect Route for Detail Phase Assessment

Three different transects has been identified for the detail phase assessment through the preliminary field visit.

First Transect Route

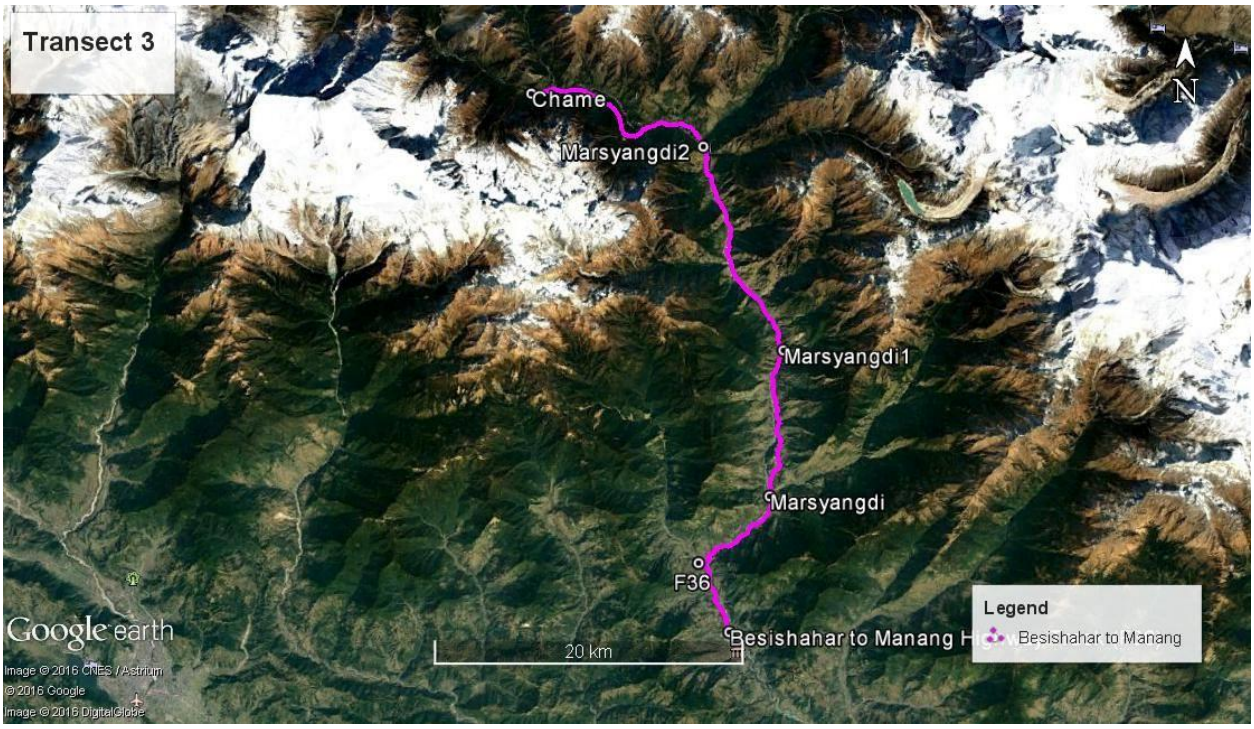
Ulleri to Apoon Hill



Second Transect Route

Apoon Hill to Ghandruk

Third Transect Route



Chapter IV: Strategy for Detail Phase assessment

From the learning of preliminary field visit different planning/strategies has been made for the detail phase assessment to achieve desired aim of the project. The procedure for detail phase assessment has been described below:

Inventory:

Three transect route for the detail phase assessment has been identified. 40 traps will be used in 4 different site of each transact route. Two night trap will be placed for each site.

Total individual traps = No of traps* No of site* No of transect* No of night

= 40*4*3*2

= 960

Habitat survey will be done similar to the preliminary survey where the plot of 10m*10m was made in each altitudinal transect point. In that plot the vegetation species, its quality, GPS location, altitude, aspect, vegetation cover and height, slope, aspect, soil types as well as level of human disturbances will be recorded.

Handing Process and measurement:

The same method used during the preliminary field visit will be used in detail assessment phase for handling and measurement of the species captured.

After the mouse has been trapped in the traps. At first the mouse will be kept in the capture bag and it will be handled properly wearing the gloves in the hand to take a precaution for both species and researchers. After it is made comfortable in the capture bag then the species will be properly handle in the hand by lifting it up through its neck skin. Measure precaution will be taken during this step. Then the measurement of the body parts like its total body size, length of hinder foot, half body and ear will be recorded. After the completion of the measurement earpunch will be used to take the DNS sample from the ear. The sample will be kept in the tube contained of alcohol. Then the species will be kept in weighing bag to measure its weight. Finally after the completion of the process all the species will be safely left in their habitat.

Focal Group Discussion

Using photographs of *A. gurkha*, the discussion will be conducted various groups who can have better information about Himalayan field mouse. This discussion will focus to find out the major

areas and major threats for *A gurkha* occurring in those areas. In addition, we will also discuss about its endemic characteristics and importance for ecosystem services to raise awareness among the local people and leaders.

Awareness Campaign

Awareness Campaign will be conducted during Focal Group Discussion and in those places where Himalayan field mouse is sighted. Various awareness activities will be conducted about importance of the species to the ecosystem and local place to targeted group. For creating the awareness poster regarding the conservation of A. gurkha will be developed and distributed in the local area.