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Population and habitat of Himalayan Thar (*Hemitragus jemlahicus*) in Langtang Himalaya, Langtang National Park (LNP), Nepal

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Abstract

A survey of Himalayan Thar was carried out in Langtang valley in response to the lacking of scientific information of its population status and distribution in the area. The study was carried out from Ghodatabela to Langsisa Kharka during April to June of 2003/04/2005. The area was divided into 5 survey blocks measuring 5sqkm each and study was conducted through blocks. Observed herds and individual animals were repeatedly counted and recorded. A total of 218 individuals of different age and sex Himalayan Thar were recorded during the study in 8 different herds. Three types of herds were recognized; Adult male-adult female-young (37.5%), Adult female-young (37.5%) and All adult-male (25%). Survey revealed that 50% of Thar herds were observed in 4200-4900m (Fourth block) and least (12%) were in 3700-4000m (First block), animals were not located in 3850-4200m (Third, Fifth block). Stratified random sampling was done to analyze the vegetation in their habitat and identified 26 potential plant species. The encroachment of their habitat is severe by the excessive livestock grazing and utilization for cowshed. Noticeable disturbance felt due to frequent poaching and tourist flow. The conservation of this species seems vital as it is prime prey species of Snow leopard in LNP.

Key words: Himalayan Thar, census, habitat characters, use

1. INTRODUCTION

The Himalayan Thar *(Hemitragus jemlahicus)* is an evolutionary primitive form of wild goat, popularly known as Jharal in Nepali. The Thar has long robust limbs, narrow erect ears and backwardly curved horns the body is covered with long mass of coppery brown flowing horns. On the neck and shoulder it grows in a mane, which sweeps down to the knees. The coloring is variable. Generally, it is deep reddish brown, and there is a dark mid-dorsal streak, not always distinct. Older males are darker particularly about the back and quarters. Eves and young males are lighter brown, kids much paler (Prater 1993). Thars' horn [1]

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touch base of the skull and are compressed. The structure of the horn is sub-triangular. They are uniformly wrinkled except at the tip and curve slightly backwards. In female Thar horns are smaller and manes are wanting. The general color of the female is uniform dark and reddish brown above and dirty white below (Shrestha 1999).

The adult males measures 90-100cm at the shoulder where as the female is 84-89cm and weight ranges from 90-160 kg in males and 50kg in females (Harris, 1976, Schaller, 1977).

The Himalayan Thar prefers sub-alpine to alpine habitat, with topographical features characterized by vertical cliffs, broken mountain terrain and rock covers were the tree line. The Thar is primarily a grazing animal, mostly in the morning and evening, with a rest period around noon (Green 1978). They are commonly found feeding on open grassland (Wegge, 1970).
Himalayan Thar are distributed throughout the Himalayas as from Bengal to Sikkim and Bhutan (Prater, 1993). At present three species of Himalayan Thar exists, the Arabian Thar (*Hemitragus jayakeri)* in Oman, the Nilgiri Thar (*Hemitragus hylocrius)* in southern India and Himalayan Thar in Nepal. Himalayan Thar is very shy and wary, they are difficult to approach especially from down hills.

2. Research Objectives

The prime Objective of the research was to collect ecological information on Himalayan Thar in Langtang National Park under following categories.

1. to explore the population composition in LNP
2. to explore status and distribution of Himalayan Thar
3. to identify the habitat utilization pattern.

3. Description of the Study Area

Langtang National Park (LNP) is located in the central Himalayan region of Nepal (longitude $85^0$33' $98^0$4" E, Latitude 28^0 12' $47^0$4"N) and located 32.2 km north of Capital City Kathmandu and in the northeast bordering to the Nepal-Tibet, autonomous region of China (Fig 1). The park encloses the watersheds of two major river systems: one draining west into the Trisuli and other east to Sun-Koshi. The park is bisected east west by the Gosainkunda Lekh and Dorje Lhakpa range in the north. Langtang Lirung (7,245 m) is the highest point in the park. Gosainkunda Lekh (4,300 m) lies in the southwest and Dorje Lhakpa (6,988 m) lies in the east. It occupies 1,710 Km^2 land areas of three district Rasuwa, Nuwakot and Sindhupalchok of Bagmati zone of Nepal.

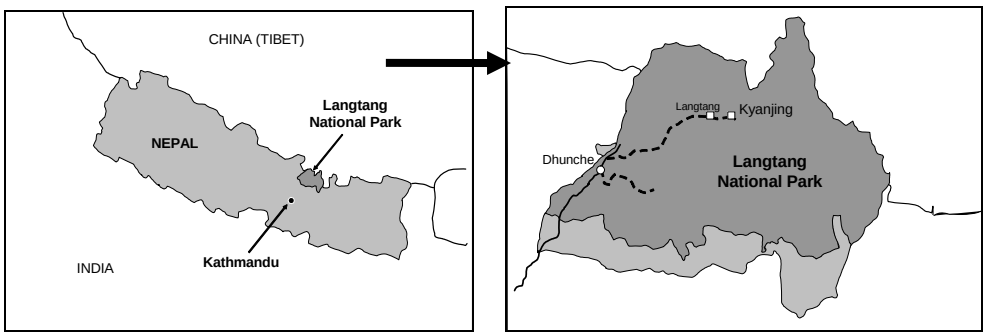

Fig. 1: Map of Nepal and location of Langtang National Park.

The complex topography and geology of the park are reflected in the wide spectrum of bio-diversity, which ranges from 1000 m to the alpine region. The park is interesting for a wide variety of vegetation including endemic and localized species such as *Rhododendron cowanianum, R. lowndesii and Larix nepalensis*. The 46 species of mammalian fauna are recorded in the park. Among them some typical of the area are Pika, Himalayan Black Bear, Himalayan Thar, Leopard, Ghoral, Serow, snow leopard (*Uncia uncia*), Clouded leopard (*Pardofelis nebulosa*), musk deer (*Muschus chrysogaster*), red panda (*Ailurus fulgens*), and three species of monkeys; Rhesus, Hanuman Langur and Assamese monkey (Chalise, 2003).

4. Methods

4.1 Population Census

Fixed Point Count

After reconnaissance survey with LNP park warden, rangers, field staffs and other local people in the upper LNP, a study area of 25 sq km was selected that assumed of observation of Himalayan Thars. It is further divided into five different blocks from Ghodatabela to Langsisa kharka each comprises 5 sq km (Fig 2). The fixed point count was done by searching the slopes of the study area with 10 x 40 binoculars. Observation of animals were done 0700 hours to 1600 hours. Almost all slopes irrespective of aspect and gradients were attempted (Tiwari2007).

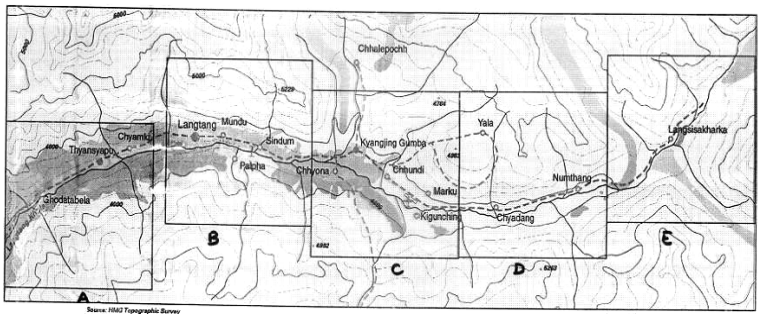

Fig. 2 : Study area divided into 5 square blocks from Ghodatabela to Langsisa.

4.2 Population Composition

Himalayan Thar observed were thoroughly counted and categorized into three age and sex: Adult male, Adult female and young.

4.3 Habitat Utilization

A quadrate of size (2x2)m^2 were used to find the different plants species. Plants species were identified through the book Flowers of the Himalaya (Oleg Polunin and Adjust Stainton 1997). Habitat type was recorded by dividing the study area into grassland, shrub land and vegetated cliffs. Altitudial distribution of Thar were observed by GPS. The possible slope used frequently by Thar was recorded by dividing the mountain slope into equal thirds and classified as following.

1. Upper third (U) - Animals located in upper portion of slope hear ridge line.
2. Middle third (M) - Animal located in middle portion of the slope.
3. Lower Third (L) - Animal located near bottom of slope or in the valley.

5. Results

5.1 Population Size

A total of 8 herds comprising 218 individuals were recorded in the study area of 25 sq. km in the Langtang valley of Langtang National Park. Population density was therefore 8.72 Thars /km^2. Population census in details is shown below for the five census blocks (Tab 1).

The average herd size were 27.25. The herd size varied from 4 individuals to mixed herds of 48 individuals. In the Langtang valley, average group size of Thar was 15 and largest was 77 in a maternal herd (Green, 1978). In maternal groups ranged in size between 1-57 while male herds were 1-13 (Gurung, 1995). In Dhorpatan, average groups size of Thar varied from 3 to 16 in different sub-habitats holding different numbers of Thar (Austergard and Hangland, 1993). In the Kang chu valley of East Nepal, the average group size was 7 in winter and 23 was the Largest group in a material hard (Schaller, 1973*)*, various advantages to living in groups has been suggested (Cultton-Brock, et al, 1982).

Table No. 1 Herd Composition in Five Census Blocks in 2005, LNP.

Census Blocks	Number of Herds	Adult Male	Adult Female	Young (Male+Female)	Total
A	1	3	36	7	46
B	3	2	18	4	24
		4	-	-	4
		-	28	5	33
C		-	-	-	-
D	4	-	10	3	13
		-	42	6	48
		6	-	-	6
		5	29	10	44
E		-	-	-	-
5 Blocks	**8 Herds**	**20**	**163**	**35**	**218**

5.2 Block wise Distribution of Himalayan Thar

The herds were recorded only in three census blocks i.e. A, B and D herds were not recorded in two census Block i.e. C and E. Maximum herds were observed in Block - D Where as least herds were observed in Block - A. The Block wise distribution of herds is presented below (Fig. 4).

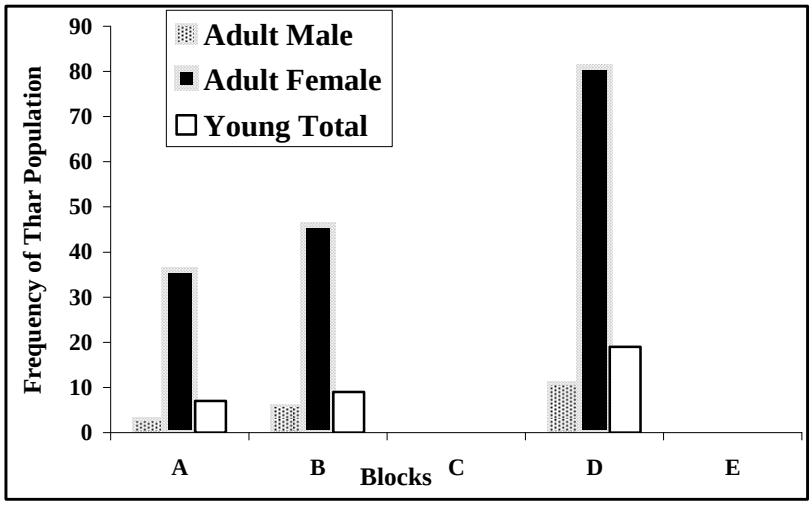

Fig. 4 : Block-wise Distribution of Thar in 2005 at Langtang Valley.

5.3 Types of Herds

Three types of herds were recognized Adult male - Adult female - Young (37.5%), Adult female and young (37.5%) and all male (25%). Among 8 herds three herds observed were mixed with male, female and young, three herds mixed with female and young and two male herds were also recorded during the

study period. The block wise distribution of three types of herds are presented below (Figure 5).

Survey revealed that 50% of the Thar herds were observed in 4200-4900m (Fourth /D Block).This is due to less flow of tourist in the block, and there is an adequacy of sloppy grassland and steep vegetated cliffs. More over there is maximum availability of preferred food.

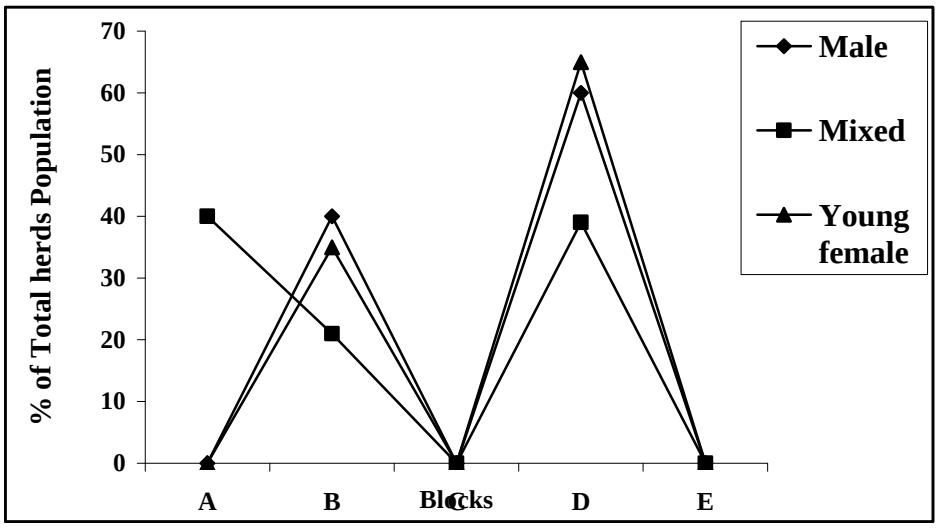

Fig. 5 : Composition of Himalayan Thar hard Type.

5.4 Age, Sex Ratio

Altogether, 218 individuals were classified to their respective sex and age classes in 2005. The average adult sex ratio was 1 male per 8 adult female. young to adult female ratio was 1 young per 5 females.

5.5 Habitat Utilization

Habitat Types

Himalayan Thar showed a preference towards grassland and vegetated rock in Langtang National Park (Fig 6). There is no marked variation in the utilization of glass land and vegetated rock. Detail list of plant enumerated in the set quadrates were as follows.

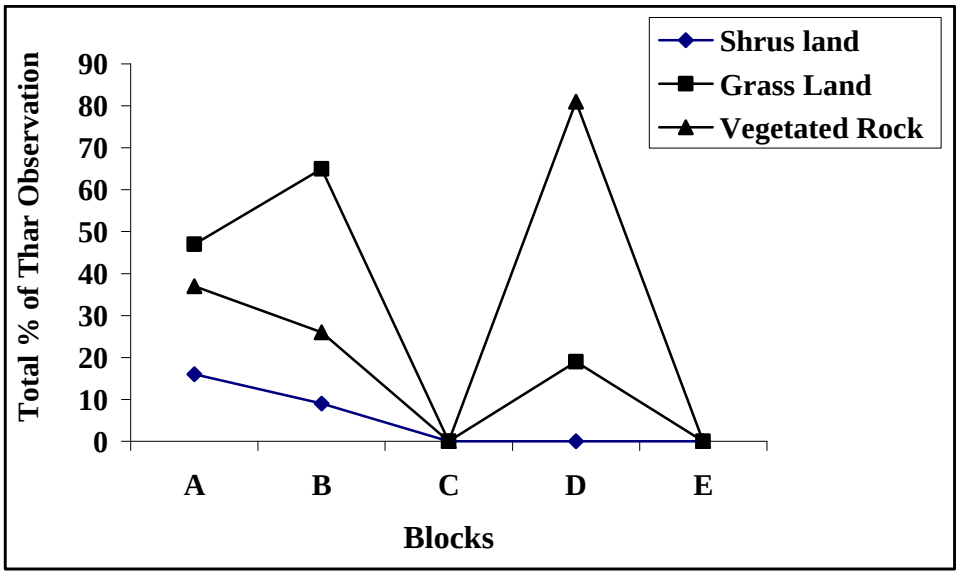

Fig. 6 : Distribution of Himalayan Thar According to habitat Type.

Slope Type

Distribution of the Himalayan Thar herds with respect to slope is illustrated in Fig. 7. Which shows that Thar prefers upper and middle portion of the slopes in Langtang National Park. Altogether 38% in upper slope and 34% in the middle slopes were observed. In D-black in however portion of the slope the herds were not recorded.

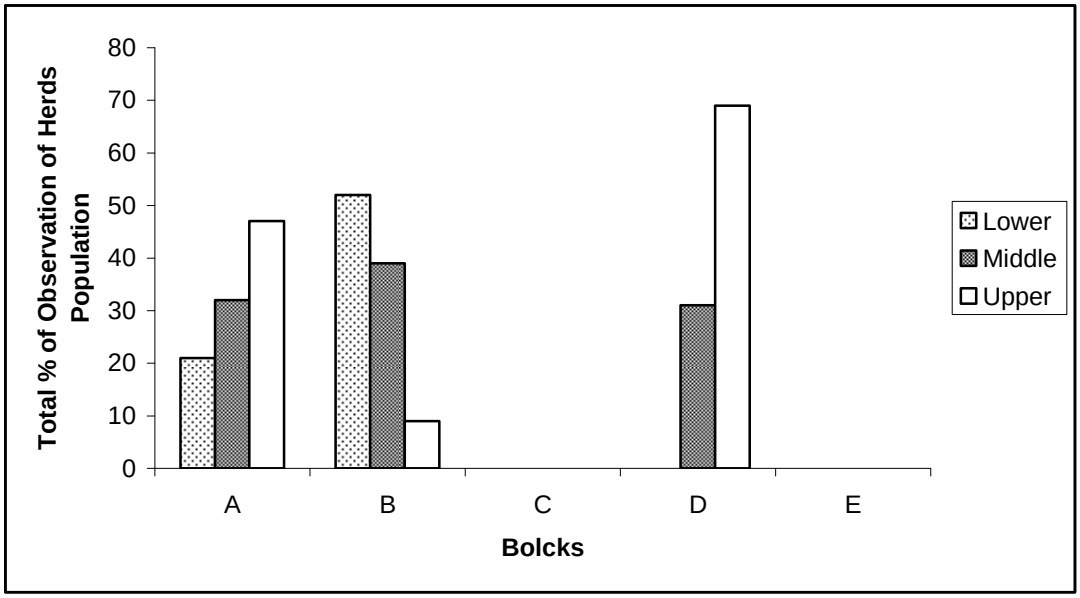

Fig. 7 : Distribution of Himalayan Thar according to the Position of Slope.

Elevation

The vertical distributional range of the entire population was quite wide (3700-4900m) with mean elevation of 4300m. Most of the herds were observed around 4300m (Fig 8).

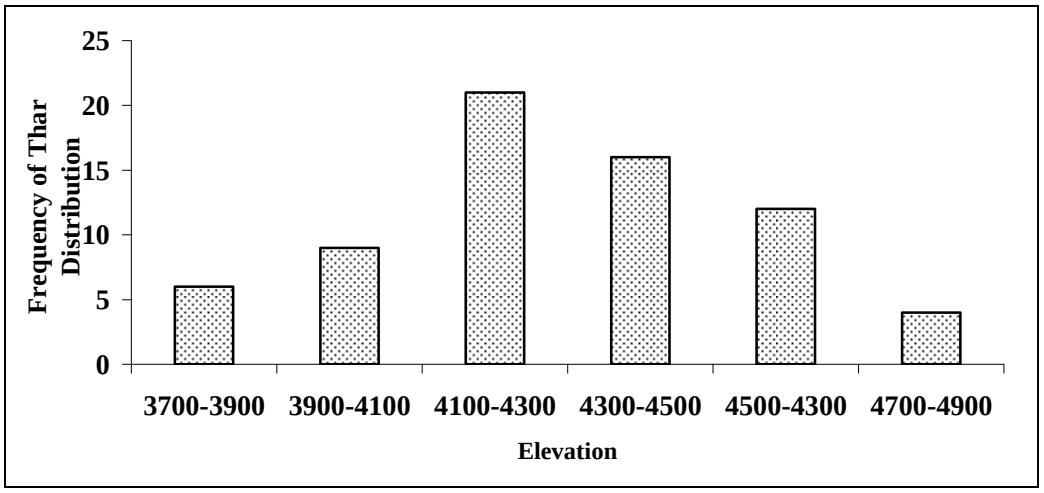

Fig. 8 : Altitudinal Distribution of Himalayan Thar in Langtang Valley.

The herds were occurred in between 3700m to 4900m in Langtang Valley. Thar was observed at 2500m to 4400m elevation in the Kang chu in Eastern Nepal (Schaller 1977). Thar was observed in between 3800m and 4850m elevation is Nepal (Caughley 1970b) Thar was sighted at 2,700-4500m elevation at Pangboche in Sagarmatha National Park (Lovari,1992). Thar never came down below 3800m (Caunghly, 1970c). Observation of Thar reported from upper Langtang valley where the elevation was 3000m-5200m (Fox, 1974). His observation was beyond our observation limit in Langtang valley.

Floristic Survey in Thars' Grazing Area

Altogether, 40 different herbarium sheets were collected. 26 potential plants species were identified. The plants species were distributed in 19 different families' species of plants census only herbs and shrubs where as trees were not present (Fig 9). A combine lists of enumerated herbs and shrubs are also presented below.

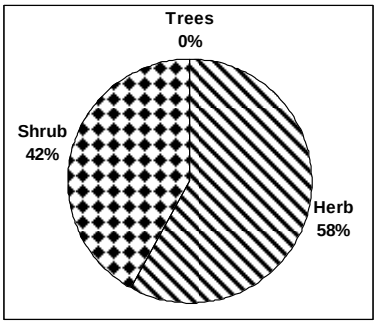

Fig. 9 : Distribution of Vegetation Types in study area, LNP.

The Babio was most abundant and *Rhoodondron Lepidation, R. anthopogan, Primula* Sp, *Potentila* Sp were also abundantly present in the sampling area.

Herbs

S.N.	Plant Name	Family
1	Babio	*
2	*Saxifrage* sp	Caryophyllaccae
3	*Arenaria densissima*	Iridaceae
4	*Iris kemaonensis*	Primaulaceae
5	*Primula calderana*	Primulareae
6	*Primula denticulate*	Compositae
7	*Dubyacae*	Rosaceae
8	*Cryptothaladia polyphylla*	Merinaccae
9	*Dryopterus* sp	-
10	*Thermopsis barbata*	Caryophyllaceae
11	*Euphorbia wallichil*	Euphorbiaceae
12	*Arenaria glanduligera*	Caryophyllaceae

Shrubs

S.N.	Plant Name	Family
1	*Ephedira Gerardiana*	Ephedraceae
2	*Leontopodium jacotiamum*	Compositae
3	*Cotorneaster microphyllus*	Rosaceae
4	*Lonicera rupicola*	Capritfoliaceae
5	*Berbasis angulora*	Berberidaceae
6	*Phododendron setosum*	Ericaceae
7	*Berberis erythroclada*	Berberidaceae
8	*Caragna gerardiana*	Leguminosa
9	*Rodododendron lepidoton*	Ericaceae
10	*Juniper squamata*	Cupressaceae
11	*Phododendron anthopegan*	Ericaceae
12	*Janiperus recurva*	Cupressaceae

Conclusion

A total of 218 individuals of different age and sex Himalayan Thar were recorded during the study in 8 different herds in 25 sq. km area. Three types of herds were recognized. Survey revealed that 50% of herds were observed in 4200m - 4900m (fourth block) and least in the 3700m-4000m (first block), animals were not located in 3850-4200m (third and fifth block). Thar preferred grassland and vegetated rocks in the Langtang valley. Upper slopes were highly utilized by Thar. Harris (1976) reported similar observation of Thar in New Zealand too. Babio was the most preferred food by Thar. Other species like *Rhododendron lepidation, R. anthopogan, Primula* sp., *Potentila* sp. were also abundantly present in the area.

Acknowledgement

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