

**International Snow Leopard Trust
Small Grants Program**

FINAL REPORT FOR 2004 STUDY PERIOD

**“Assessing the Status of the Snow Leopard Population in
Langtang National Park, Nepal”**

Randall C. Kyes and Mukesh K. Chalise

(University of Washington and Nepal Biodiversity Research Society/Tribhuvan University)

6 April 2005

1. Executive Summary:

This project is part of an ongoing snow leopard study established in 2003 with support from the ISLT. The study involves a multifaceted approach designed to provide important baseline data on the status of the snow leopard population in Langtang National Park (LNP), Nepal and to generate long-term support and commitment to the conservation of snow leopards in the park. The specific aims include: 1) conducting a population survey of the snow leopards in LNP, focusing on distribution and abundance; 2) assessing the status of prey species populations in the park; and 3) providing educational outreach programs on snow leopard conservation for local school children (K-8) living in the park. During the 2004 study period, snow leopard signs were observed (including pugmarks and scats) although somewhat fewer than in 2003. Similarly, the average herd size of the snow leopards' primary prey species in LNP (the Himalayan thar) was a bit lower than in 2003. There is speculation that the thar populations and the snow leopards may be moving to more remote areas of the park perhaps in response to increasing pressure from domestic livestock grazing. This possibility is being addressed during the 2005 study period.

2. Objectives:

During a Conservation Biology field training program in LNP in February 2002, the principle investigators (R. Kyes and M. Chalise) discovered, fresh snow leopard pugmarks in the snow around the river plain at Kyanjing Village in the northern part of the park (elev. ~3750m). Although there had been reports of snow leopard sightings in LNP in the past, confirmation of its presence had been lacking in recent years. The purpose of this study (initiated in 2003) is to provide important baseline data on the status of the snow leopard population in LNP as well as information concerning important related ecological variables and human factors.

This project also provides a substantial educational outreach component intended to enhance the knowledge base of both school children and adults from the local villages in LNP. Based on our experience with other outreach programs and the enthusiasm shown by the local students and teachers during our 2003 and 2004 study periods, we expect this outreach component to help promote environmental awareness and generate a sense of commitment to the conservation of snow leopards and other biodiversity in the park.

Finally, a significant goal of this project is to help establish a growing body of well-trained, regional experts who are capable of implementing the programs needed to ensure the future of Nepal's biodiversity and the conservation of snow leopards. To accomplish this goal, we have selected Nepali graduated students to work as field assistants. Through their involvement, training and participation in this study, we expect these individuals to develop and skills and knowledge needed to conduct their own independent research and conservation programs focusing on snow leopards in Nepal.

3. Methods:

The study is based out of Kyanjing Village in LNP (see map in the attached section at end of this report- Study Summary 2004). Two 3-month field periods were planned: mid March-mid June and mid-Sept.-mid Dec. Due to unforeseen events (Maoist strikes, weather extremes, etc.) the field time was limited to four periods totalling 65 days (see attached study summary 2004). Dr. Chalise and Dr. Kyes were responsible for the supervision of the project and conducted the field surveys and project activities when on site. Two graduate students from Tribhuvan University and one staff member from NEBORS assisted with the project during the 2004 study period. All had participated during the 2003 period and thus were familiar with the study area and experienced with the field survey methods.

Field data were collected using the standardized methods outlined in the *Snow Leopard Information Management System (SLIMS)* initiated by the ISLT.

The survey blocks and search sites identified during the 2003 study period were used again during the 2004 period (see attached study summary 2004). Our base of operation was located in Kyanjing Village. One of the hotel/homestay owners in Kyanjing provided a room as our base of operation as well as modest room and board. During surveys/outreach activities away from the Kyanjing area, the research team stayed in one of the many small "hotels" located throughout LNP or used tents in very remote areas.

The **snow leopard population survey** was conducted in 4 survey blocks using sign transect sampling as detailed in the SLIMS.

Although the "Snow Leopard and Prey Species Survey" questionnaire was used during the 2003 study period, since virtually all households were sampled during the 2003 study period, no additional survey questionnaires were conducted during 2004.

In search sites where snow leopard signs were frequently observed, we also used trap cameras for individual identification. During the 2004 study period, we had three camera traps available for use. The trap area was baited with rags soaked with common leopard urine.

We also planned to introduce a new study component focusing on analysis of fecal parasites. Any fresh fecal samples found were to be collected in Para-Pak ECOFIX tubes and sent back to the U.S. for analysis at the Washington Animal Disease Diagnostic Laboratory in the College of Veterinary Medicine at Washington State Univ.

We also planned to apply GIS-based statistical modeling to the sign transect data as well as the “presence/ absence” data obtained from the “Snow Leopard and Prey Species Survey” from the 2003-2004 study periods.

We also will conducted a **survey of the prey species** (e.g., Himalayan thar, serow, goral, musk deer, etc.) using the SLIMS methods, i.e., rapid site visit and fixed point counts, to conduct these surveys.

The **educational outreach programs** focused on the local school children (K-8). Following our basic outreach curriculum established in 2003, we continued our outreach efforts during the 2004 period to reach more students in the elementary and middle schools throughout the park. The basic program involves providing a short informational presentation (with photographs/posters) about snow leopard behavior and biology and the importance of conservation. An art contest focusing on snow leopard conservation also will be held with the “winners” of the contest receiving a special prize (e.g., stuffed toy snow leopard, snow leopard t-shirt or hat, snow leopard badge, etc.) and all other students receiving a prize, such as stickers, pencils, etc. Everyone receives an “award” certificate of participation, snow leopard conservation stickers, and conservation leaflets. As a way of evaluating the effectiveness of the outreach program with the school children, we have conducted a pre-outreach/post-outreach evaluation process using a attitude questionnaire prepared by Dr. Kelly Kyes of the University of Washington who is experienced in questionnaire-based research. The pre-outreach/post-outreach testing protocol involves the following: each child will be given the questionnaire individually (in interview form) prior to any outreach education and then retested approximately 3-4 months after the outreach program. The field assistants have been given specific training on conducting an interview and administering the questionnaires so as to insure a standardized presentation and the reliability of the responses.

4. Results:

Initial results show a 20-30% decline in observed snow leopard sign from the 2003 to 2004 study periods.

During the 2004 period, no fresh SL fecal (that is, fresh enough for parasite analysis) was collected for Para-Pak ECOFIX tubes.

Several fresh SL pugmarks were identified in the study area. Based on size measurements of the various tracks, it is estimated that the pugmarks represent at least 4 different snow leopards.

No photographs of snow leopards were obtained via the trap cameras. We did, of course, obtain frequent photographs of Yaks and one of the yellow-throated martin.

There was one reported sighting of a snow leopard by a Nepali guide (considered a reliable witness) who was walking alone in the remote Langsisa area (study block E). The sighting took place in November 2004 in the late afternoon between 4-5pm.

GIS-based statistical modeling to the sign transect data as well as the “presence/ absence” data obtained from the “Snow Leopard and Prey Species Survey” from the 2003-2004 study periods is still in progress.

Comparison of observed herd sizes of Himalayan thar from 2003-2004 indicated a decline in average herd size during the two-year period from 2003 ($X=23$ thar/herd) to 2004 ($X=15$ thar/herd). Also, there were fewer herd sightings in the same areas during the same time periods from 2003 to 2004.

Four educational outreach programs were conducted in elementary and middle schools in two villages in LNP during 2004.

During the 2004 study period, our two graduate student field assistants from the Central Department of Zoology at Tribhuvan University in Kathmandu (Janak R. Khatiwada and Jagan Nath Adhikari) completed their Masters degrees (M.S.) based on their participation in the snow leopard study. They were able to use data collected during the snow leopard study from 2003-2004 to form the basis of their respective theses. We consider this a significant achievement and an excellent example of how this project is helping to establish a growing body of well-trained, regional experts who are capable of implementing the programs needed to ensure the future of Nepal's biodiversity and the conservation of snow leopards.

5. Discussion:

We experienced a number of unexpected obstacles during the 2004 study period that created difficulty in accessing our field site. Most notably, the Maoist-related issues in Nepal remained problematic and intensified during 2004. Travel outside of the Kathmandu valley was often impossible for days at a time (due to Maoist imposed work strikes) – if one chose to chance travel, they were likely targets for road-side bombs, car burning, etc. There also were a number of extreme weather-related events (i.e., road closures/loss due to major landslides, bridges washed away, etc.) that further hampered our plans for getting to our field site.

The initial results from our 2004 study period seem to suggest a decline in the numbers of SL signs and prey species (thar) sightings. Based on information from local herders and our own experience, we suspect that the thar populations and SLs may be moving to more remote areas of the park. Currently (2005 study period), we are planning to expand our study area and establish additional survey blocks in the more remote areas of the park where larger herds of thar have been reported.

On a positive note, from the outset, our snow leopard study has received very good media coverage in Nepal. During Feb 2004, two reporters accompanied our field team to LNP to observe and report on our study activities. At least three different stories were published in Nepali newspapers/magazines summarizing our efforts and promoting the snow leopard as a flagship species that is in critical need of stronger conservation initiatives. In addition, Dr. Chalise is a frequent guest on local/national radio/TV shows in Nepal where he is invited to provide expert opinion on wildlife management and conservation issues. Our snow leopard research is a frequent topic of discussion.

Snow Leopard Study Summary 2004

Langtang National Park, Nepal



I. Research Team

PIs:

Randall C. Kyes, PhD and Mukesh K. Chalise, PhD

Field Assistants:

Minesh Ghimire, MS

Janak Raj Khatiwada (Grad Student – Central Dept of Zoology, T.U. – M.S. completed Sep. 04)

Jagan Nath Adhikari (Grad Student – Central Dept of Zoology, T.U. – M.S. completed Sep. 04)

II. Study Area

Langtang National Park - Geographic Coordinates:

Study Blocks (major designation):

A – Ghoda Tabela	N28°11.875' / E085°27.316' (elev: 3015m)
B – Langtang (village)	N28°12.955' / E085°30.465' (elev: 3432m)
C – Kyanjin (village) / <u>BASECAMP</u>	N28°12.767' / E085°33.963' (elev: 3853m)
D – Numthan	N28°11.790' / E085°36.780' (elev: 4000m)
E – Langsisa Kharka	N28°12.286' / E085°39.169' (elev: 4070m)

III. Total Field Days

- 12 – 21 Jan 2004 (9 days)
- 13 Feb – 25 Feb 2004 (12 days including training)
- 9 – 21 May 2004 (13 days)
- 16 Sept – 7 Oct 2004 (21 days)

TOTAL: ~ 65 days

IV. Sign Transect Locations:

BLOCK A: (no sign transect sampling conducted as no evidence of snow leopards in block A)

A1
A2
A3

BLOCK B:

B1	Yamphu	N28°12.419' / E085°33.261' (3980m) N28°12.492' / E085°32.992' (3930m)
B2	Opposite Mundu Village (across river)	N28°12.627' / E085°31.438' (3660m) N28°12.750' / E085°31.416' (3830m)
B3	Falls side of Mundu Village	N28°13.125' / E085°31.468' (3720m) N28°12.917' / E085°31.620' (3690m)
B4	Down side Mundu Village	N28°12.727' / E085°31.845' (3660m) N28°12.660' / E085°32.107' (3680m)
B5	Way to Yamphu (across river)	N28°12.610' / E085°32.335' (3700m) N28°12.600' / E085°32.634' (3720m)

BLOCK C:

C1	Langtang khola basin (1.7km from Kyanjin)	N28°12.480' / E085°33.810' (m) N28°12.501' / E085°33.784' (m)
C2	Cherokori base camp (kharka)	N28°12.480' / E085°33.810' (m) N28°12.501' / E085°33.784' (m)
C3	Ganjala pass base camp	N28°12.107' / E085°33.550' (m) N28°11.705' / E085°34.977' (m)
C4	Tharchepisa (Cherkori I)	N28°12.578' / E085°35.153' (4240m) N28°12.499' / E085°34.630' (3950m)
C5	Langtang glacier area (near Kyanjin)	N28°12.974' / E085°33.975' (4000m) N28°13.307' / E085°34.058' (4040m)
C6	Langtang Lirung base camp	N28°14.030' / E085°33.571' (4350m) N28°13.755' / E085°33.560' (4300m)
C7	Langtang glacier lake side	N28°13.348' / E085°33.640' (4220m) N28°13.090' / E085°33.667' (4160m)
C8	Glacier kharka	N28°13.214' / E085°34.013' (4350m) N28°13.657' / E085°34.286' (4220m)

BLOCK D:

D1	Chyadan	N28°11.800' / E085°36.705' (m) N28°11.781' / E085°36.430' (m)
D2	Yala base camp	N28°12.920' / E085°35.123' (m) N28°12.214' / E085°36.487' (m)
D3	Thungchung (way to Yala)	N28°11.711' / E085°35.973' (m) N28°11.706' / E085°36.509' (m)
D4	Yala kharka	N28°12.768' / E085°36.926' (4750m) N28°12.957' / E085°36.739' (4810m)
D5	Way of Yala base camp	N28°13.177' / E085°36.344' (4800m) N28°13.314' / E085°36.392' (4750m)
D6	Way of Yala peak kharka	N28°12.146' / E085°35.928' (4400m) N28°12.199' / E085°36.458' (4510m)
D7	Numthan kharka	N28°11.790' / E085°36.780' (4000m) N28°11.797' / E085°37.075' (4010m)
D8	Kinggurchen kharka (opposite Chandan)	N28°11.741' / E085°35.535' (3950m) N28°11.709' / E085°35.811' (3980m)

BLOCK E:

E1	Langsisa kharka (I)	N28°12.926' / E085°40.521' (m) N28°13.192' / E085°40.681' (m)
E2	Langsisa kharka (II) (near Numthang)	N28°12.286' / E085°39.169' (4070m) N28°12.176' / E085°39.421' (4060m)
E3	Langsisa kharka (III)	N28°12.275' / E085°39.816' (4170m) N28°12.467' / E085°39.978' (4130m)
E4	Langsisa kharka (IV)	N28°12.912' / E085°40.518' (4200m) N28°13.155' / E085°40.672' (4240m)

Other significant land marks:

Kyanjin bridge (old)	
Airport (Kyanjin)	N28°11.955' / E085°27.316' (elev: 3000m)
Marku	

V. Survey Questionnaire

Since virtually all households were sampled during the 2003 survey period, no additional survey questionnaires were conducted during 2004.

2003 Results:

Total households in the 5 survey blocks = 60 (population 530)

- We surveyed 55 households (individuals). More than 90% of respondents were herders.

Selected results from the “Snow Leopard and Prey Species Survey Questionnaire”

- responses to the question: “*Should they [snow leopard] be protected or eliminated and why?*”

51% said snow leopards should be eliminated (because “they kill my livestock”)

44% said snow leopards should be protected

VI. Snow Leopard (Signs) Sightings

- Numerous scat samples were recorded (collected) during sign transect sampling (to be summarized).

- Fresh snow Leopard pugmarks were observed on several occasions. Based on size measurement of the various tracks, we estimate that the pugmarks represent at least 4 different snow leopards.

- We expanded our number of trap cameras to a total of 3 cameras. We also used common leopard urine (collected at the Central Zoo in Kathmandu) to bait the trap area. However, no trap camera photos of snow leopards were obtained (we did get photos of Yak and of the Yellow-throated Martin - Feb 2004, way to glacier).

- One Nepali guide (from Kathmandu) while walking alone reported a visual sighting of a snow leopard near Langsisa (in our study block E - ~4300m), on the way to Dorje Lakpa in November 2004. The sighting took place in the late afternoon between 4-5pm.

VII. Prey Species (Signs) Sightings

Himayalan Thar

Langtang cliff area

15 Feb 2004 – one grp of 15 Himalayan Thar

Marku cliff area

14 May 2004 – one grp of 17 Himalayan Thar

Numthang area

No Thar observed

Way to Yala Peak

17 May 2004 – one grp of 13 Himalayan Thar

Musk deer

16 May 2004 – many fresh droppings in Musk deer conservation area – across bridge in forest across from Kyanjin (N28°12.133' / E085°33.488')

no snares were found in Musk deer conservation area this year.

Pika

Frequent sightings of pika throughout the study area from May-Oct 2004.

Other notes of importance (as noted during 2003):

* Feb-May was a good time to observe prey and snow leopard signs as the area was not so disturbed by herders taking their animals to graze in the higher kharka.

* In June the herders began moving their livestock (sheep, goats, yak, horses) to upper grazing land - in Oct they began moving back down. Seems that the natural prey may be moving to other more remote locations to graze – thus the snow leopard signs also decrease.

VIII. Outreach Program:

Overview:

1st Pre-outreach Snow Leopard Knowledge/Attitude Questionnaire

Each student is individually asked 20 questions relating to snow leopards (~10min/student)

2nd Conservation Presentation (~15-20min):

“We want to talk about conservation...”

1. Do you know what conservation means?
2. Saving the ecosystem/environment (plants and wildlife)
3. Why should we conserve the environment (plants and wildlife)?
4. Provide basic info about Langtang NP – What animals live in LNP?
5. Do you know what a snow leopard is?

Present info on Snow leopard behavior, biology, etc. from ISLT data sheet.

Show snow leopard pictures from poster

3rd Conservation Art Contest (~30-45min)

Students are asked to participate in art contest and draw pictures about the plants/wildlife in the park.

Students receive pencil/pen and small notebook.

They all receive a certificate of participation

They all receive snow leopard stickers

The winners (3-5) receive small prize (magic markers, etc.)

4th Post-outreach repeat questionnaire (~1-2 months following outreach presentation)

Each student is asked the same questions from the original Knowledge/Attitude Questionnaire

Four outreach activities conducted in 2004:

- 1) 15 Feb 2004 – Shyamewangphel secondary school, Syabrubensi (grade 7-8). Pre-outreach Questionnaire, Conservation Presentation and Art Contest.
- 2) 21 May 2004 – Shyamewangphel secondary school, Syabrubensi (grade 7-8). Post-outreach Questionnaire
- 3) 6 Oct 04 – Namuna Lower Secondary School, Thulo Sybru (grade 6-7) Pre-outreach Questionnaire and Conservation Presentation.
- 4) 6 Oct 04 – Namuna Lower Secondary School, Thulo Sybru (grade 3-4) Conservation Presentation and Art Contest.

IX. Major Problems/Obstacles during 2004 Study Period

- 1) Rainy season (July-Sept) Major landslides – roads/trails washed out, bridges washed away, very difficult to see at higher elevations due to thick clouds/fog. Travel to Langtang N.P. was very difficult/impossible at times.
- 2) Maoist related-issues, banda (strike) – transportation shut-down (no vehicles allowed to travel outside of Kathmandu) made travel to Langtang impossible at times. The risks associated with travel to Lantang (i.e., road-side bombs, vehicle burnings) posed serious individual threat to our team. This is a **SERIOUS** ongoing problem that continues to worsen.
- 3) Somewhat difficult to conduct extended surveys in remote areas due to limited logistical support – had to return to Kyanjin base camp at night (we plan to conduct extended surveys in more remote areas of the park during 2005).