AN INVESTIGATION OF CARNIVORE-HUMAN CONFLICTS IN KARGIL AND DRASS AREAS OF JAMMU AND KASHMIR, INDIA

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Introduction and Background

The snow leopard (*Uncia uncia*) is a large cat native to the mountain ranges of central and southern Asia. It is widely distributed over an area of 3.02 million km² (Hunter and Jackson 1997) and highly threatened throughout its range. The total snow leopard population is estimated to be between 4,500 and 7,500 across 12 countries, *viz.*, Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan and Uzbekistan (Fox 1994; Jackson and Hunter 1996). It is categorized as endangered in the IUCN Red Data Book and is listed in Appendix I of the CITES. The habitat of snow leopard is characterized by cold, arid and semiarid shrub land, grassland or barren areas (Jackson and Hunter 1996). Constant efforts towards documenting information about snow leopard are providing valuable insights into snow leopard biology. Recent studies on the different aspects of snow leopard's ecological status have produced valuable information on movement pattern, home range, behaviour and habitat use (Chundawat 1992, Jackson and Hunter 1996, Mc Carthy et al. 2008). Similarly, efforts have been made at the community level to minimize the snow leopard-human conflicts and threats to the habitat of snow leopard and associated species (Bhatnagar *et al.* 1999, Mishra 2000).

Still, there are areas from where very poor information is available on snow leopard and associated species. Keeping this in view, Kargil and Drass areas of Ladakh, Jammu and Kashmir were identified as "gaps" in available information on snow leopard. Kargil has not received much attention for wildlife studies due to its proximity to the International Boundary between India and Pakistan and resultant security implications. The only information available from the area is from a study done by Sathyakumar (2003) on the occurrence of Himalayan brown bear from Zanskar and Suru Valleys in Ladakh. But there was very poor information on the occurrence and distribution of other carnivores and conflicts with humans in Kargil. Therefore, this study was felt necessary to establish the following ***objectives***:

1. Surveys for the occurrence and distribution of snow leopard and other large carnivores and their prey

2. To estimate abundance of prey species

3. To study food habits of snow leopard and other carnivores based on scat analysis

4. To study the of carnivore – human conflicts

5. To study the socio-economic conditions of rural community and develop local awareness programme

Study Area

Kargil district in state of Jammu and Kashmir was once known as Purig. The region called Purig included the areas around Kargil town, the Suru Valley, Shaghar Chiktan, Pashkum, Bodh Kharbu and Mulbek.

It has an average elevation of 3200 m. About 14,000 km² in area, Kargil district has an agrarian population of approximately 120,000 people, who cultivate the land along the course of the drainage system, wherever artificial irrigation from mountain streams is possible. Kargil is also a town, which serves as the headquarters of Kargil District. It is located at 37.57° N to 76.1° East, 60km from Drass and 204km from Drass and Srinagar, 234km from Leh, and 240km from Padum.

The study area falls in the Suru Valley of greater Himalayas. The only information available from the Zanskar and Suru Valley is about the status of brown bear – human conflicts (Sathyakumar 2003) and wildlife conservation status and planning of a protected area network in Ladakh (Chundawat *et. al.* 1999). This information is helpful in predicting the fauna of Kargil and Drass areas as these areas fall in the distribution range of snow leopard, Tibetan wolf (*Canis lupus langier*), Himalayan brown bear (*Ursus arctos isabellinus*), Asiatic ibex (*Capra ibex*), Ladakh urial (*Ovis vignei vignei*), musk deer (*Moschus spp.*), pikas, and hares etc.

The forest types of Kargil and Drass are temperate and alpine forest. The four distinct seasons are spring (March–May), summer (June–August), autumn (September–November) and winter (December–February).

Drass, situated at a height of 3230 m, is the second coldest inhabited place in the world. Drass experiences extremely cold weather in winters. Recurring snowfalls during winters lower the temperature of this township to as low as minus 40 degrees. Zojila Pass, the Himalayan Gateway to Ladakh, serves as the starting point of the Drass valley of Kashmir.

Methods

1. SURVEYS FOR THE OCCURRENCE AND DISTRIBUTION OF SNOW LEOPARD AND OTHER LARGE CARNIVORES AND THEIR PREY

We employed the techniques of the Snow Leopard Information Management System (SLIMS) (Jackson and Hunter 1996) - a standardized approach widely used in snow leopard research refined by McCarthy K. et al. (2008). Sign surveys were conducted in all areas of Kargil and Drass. Transects were laid out along landforms where snow leopard signs are likely to be found, such as ridgelines, cliff edges, or livestock trails. Transects were walked by a pair observer and all signs were recorded. Five types of signs were recorded: scat, scrape, pug-marks, kills and claw – marking. At each site with sign, GPS location, date, elevation, slope, aspects, land ruggedness, habitat types and distance to cliff, distance from human habitation were recorded. Indirect evidence observed at the site of direct sighting or those which were very fresh and could easily be identified are included in the analysis. Other evidence those were old and could not be identified were classified as unidentified are not included in the analysis.

2. ESTIMATEING ABUNDANCE OF PREY SPECIES

As the area was undulating in nature, to ensure uniform coverage of the entire study area, vantage points were selected to estimate abundance of prey species. In addition, observations were also recorded while surveying transects. This helped in gathering information about group size of ungulates, preferred habitats and support sign – survey dataset.

From the vantage points, once animals were sighted, the place was observed carefully with 7x40 binocular and habitat parameters were noted and distance was estimated with ocular estimation. Each observation was treated as one group or sighting, irrespective of number of individuals seen. For each observation, the following information was recorded: Date and time, species of animal, group size, age and sex classification (number of males, females, and sub adult males – females and

young ones; wherever possible), activity (e.g. feeding, foraging, resting, others), GPS location of the point on the trail from where animals were sighted, (wherever possible) slope angle, distance to cliff , aspect, terrain type (e.g. slopes, rocky outcrops, escarpments, valley bottoms, smooth slopes), vegetation type, distance to ridgeline and any other remarks.

Densities were calculated for each ungulate species using the number of observations and the area covered from all vantage points (Nievergelt 1981).

3. FOOD HABITS OF SNOW LEOPARD AND OTHER CARNIVORES BASED ON SCAT ANALYSIS

Scats were collected on all transects and randomly wherever they were encountered. Random searches were also carried out on trails. All scats were stored in polybags with information on GPS location, place and habitat. These scats were oven dried and then teased out for the indigestible material like hairs, hooves, bones etc. All prey species were identified on the basis of the typical hair structure, on comparison with the reference slides.

4. CARNIVORE – HUMAN CONFLICTS IN KARGIL AND DRASS AREAS

During surveys, information on the attacks on livestock was gathered through questionnaire surveys. All the livestock kills reported by the villagers were inspected physically to establish the identity of predator involved and to study the factors responsible for cattle kill/injury. Data on vegetation type, cover condition, topography type, distance to human settlement and water and proportion of kill consumed was collected for each livestock and wild kill. The exact location of kill was recorded in order to prepare accurate map of livestock kills distribution. Age, sex and place of attack were recorded in semi structured questionnaire surveys.

5. STUDYING THE SOCIO-ECONOMIC CONDITIONS OF RURAL COMMUNITY AND DEVELOP LOCAL AWARENESS PROGRAMME

Awareness can be a very powerful tool in all local communities to mitigate the carnivore – human conflicts. Over time, it would result in a change of behaviour towards the wild animals and reduce the level of conflict. Some awareness meetings were carried out for these communities. The results of the socio-economic surveys were helpful to develop guidelines for awareness programmes. The level of awareness towards wildlife issues were judged during surveys and on this basis the conservation awareness were designed. In an optimistic scenario, training would promote conservation of wildlife.

During surveys, demographic information such as village population, number of the families, family details and specially their livestock details were collected in an informal atmosphere by using questionnaires.

Results

This study was initiated in 2009 to investigate the carnivore-human conflicts in Kargil and Drass areas of Jammu and Kashmir. Surveys were conducted from April to November 2009.

Occurrence and distribution of snow leopard and associated species in Kargil and Drass

A total of 13 transects were laid out in Kargil and Drass to search for direct and indirect evidence of snow leopard and associated species. Unidentified sign of carnivores and not included in the analysis.

Direct sightings were made of snow leopard (n=1) and Tibetan wolf (n=2). A total of 15 Indirect evidence of snow leopard (scat, n=9, scrap=4, pugmark=1, kill=1; map 1) were recorded. Snow leopard evidence was found from 3635 m to 4205 m above MSL (Mean Sea Level). Indirect evidence were recorded of Tibetan wolf (n=12; scat=6, pugmark=6), Himalayan brown bear (n=11; scat=9, Track=2). The unidentified signs of carnivores (n=21) are summarised in table 1.

Snow leopard pugmark

Snow leopard scrap

Table 1. Summary of total number of direct and indirect evidence of large carnivores in Kargil and Drass

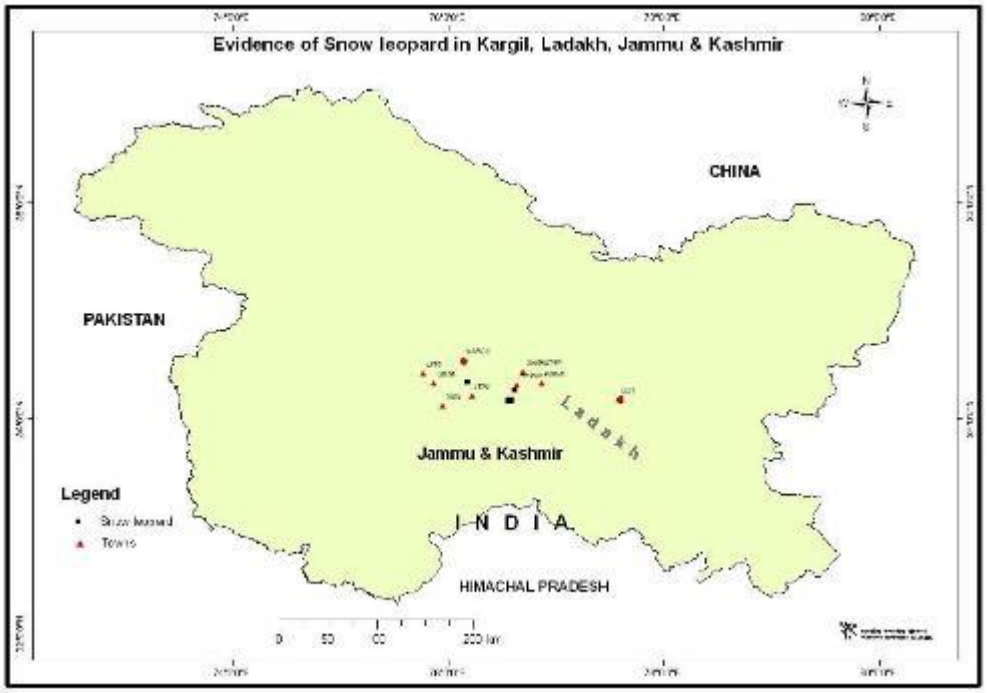
Large Carnivores	Sightings	Scat	Pugmark/ Track	Scrap/Claw mark	Kill	Total
Snow leopard	1	9	1	4	1	16
Tibetan wolf	2	6	6	0	0	14
Himalayan brown bear	0	9	2	0	0	11
Unidentified carnivores	0	16	4	0	1	21
Total	3	40	13	4	2	62

Habitat use by snow leopard was assessed based on indirect evidence (n=15) and one direct sighting. The eastern aspect (n=11) was used significantly more ($\chi^2 = 9.18$, $P < 0.05$) than northern (n=2) and southern (n=3). The eastern aspect was found significantly different. Very broken terrain (n=13) was used more than smooth (n=2) and level surface (n=1); and this difference was significant ($\chi^2 = 16.73$, $P < 0.05$). The steep slopes (n=11) were used more than middle (n=3) and lower (n=2). There was a significant difference in the use of various slopes ($\chi^2 = 7.67$, $P < 0.05$). Habitat use by Tibetan wolf was mainly based on two direct sightings and 12 fresh evidence recorded. There was no significant difference in the use of aspect ($\chi^2 = 2.43$, $P > 0.05$). Similarly, there was no significant difference in use of various landforms i.e. not significant ($\chi^2 = 4.5$, $P > 0.05$). Even use of various slopes was not found significantly different ($\chi^2 = 2.32$, $P > 0.05$).

Himalayan brown bear evidence was easy to identify because of it is the only bear species present in Kargil and Drass (Sathyakumar 2003). The use of aspect was found Habitat use by Tibetan wolf was mainly based on two direct sightings and 12 fresh evidence recorded. There was no significant difference in the use of aspect ($\chi^2 = 2.43$, $P > 0.05$). Similarly, there was no significant difference in use of various landforms i.e. not significant ($\chi^2 = 4.5$, $P > 0.05$). Even use of various slopes was not found significantly different ($\chi^2 = 2.32$, $P > 0.05$).

Himalayan brown bear evidence was easy to identify because of it is the only bear species present in Kargil and Drass (Sathyakumar 2003). The use of aspect was found significantly different ($\chi^2 = 7.97$, $P < 0.05$) and North-eastern (n=8) slope was used more than northern (n=2) and eastern (n=1) slopes. All the 11 signs of evidence were found along the river and streams with a gentle slope.

Map 1: Location of evidence of snow leopard in Kargil, Ladakh, Jammu and Kashmir



Abundance of prey species

A total of eight vantage points were selected and data was collected on the main prey species found in Kargil i.e. Asiatic ibex and Ladakh urial. It was not worthy that Ladakh urial has restricted distribution only in Nindum areas of Kargil. Three groups of Asiatic ibex (n=45; with a mean group size of 15 ± 6.4) and seven groups of Ladakh urial (n=53; with a mean group size of 7.6 ± 2.1) were recorded.

The overall density estimated 0.09/km² for Asiatic ibex and for Ladakh urial 0.06/km² in areas surveyed. Observations were also made along transects and a total of eight groups (n=84) with a mean of 10.5 ± 1.8 of Asiatic ibex were sighted and five groups (n=69) with a mean of 13.8 ± 8.9 of Ladakh urial. These observations also helped in gathering data on the group composition (table 2 and 3) of the two main prey species of snow leopard. Comparison of mean values with 95%

Confidence limit (CI) of prey species along transects and vantage sampling was also evaluated and summarised in Figure 1.

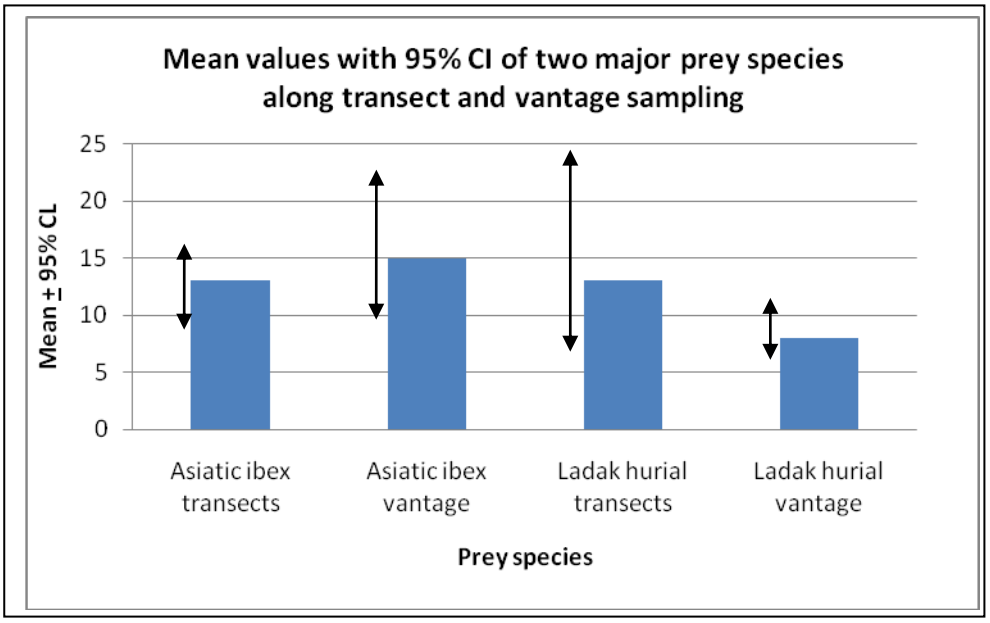
Table 2. Group composition of wild ungulates recorded from vantage points

Prey species	Male	Female	Sub adult male	Sub adult female	Young one	Unidentified	Total
Asiatic ibex	8	10	4	0	12	11	45
Ladak hurial	9	7	4	0	3	30	53

Table 3. Group composition of wild ungulates recorded along transects

Prey species	Male	Female	Sub adult male	Sub adult female	Young one	Unidentified	Total
Asiatic ibex	22	30	8	5	10	9	84
Ladak hurial	11	21	9	7	6	15	69

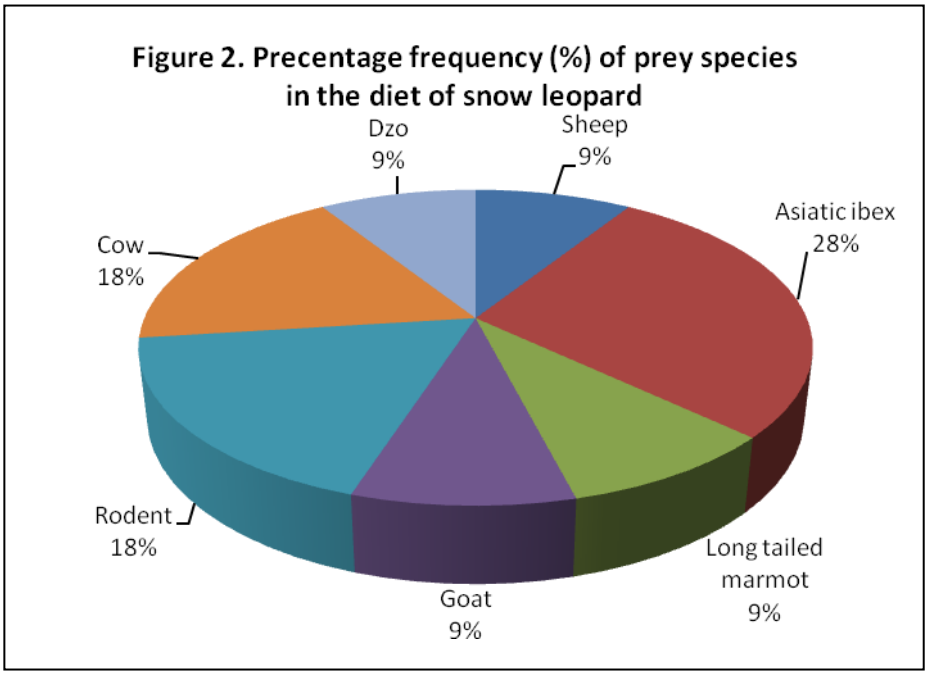
Figure 1. Mean values with 95% CI of two major prey species of snow leopard.

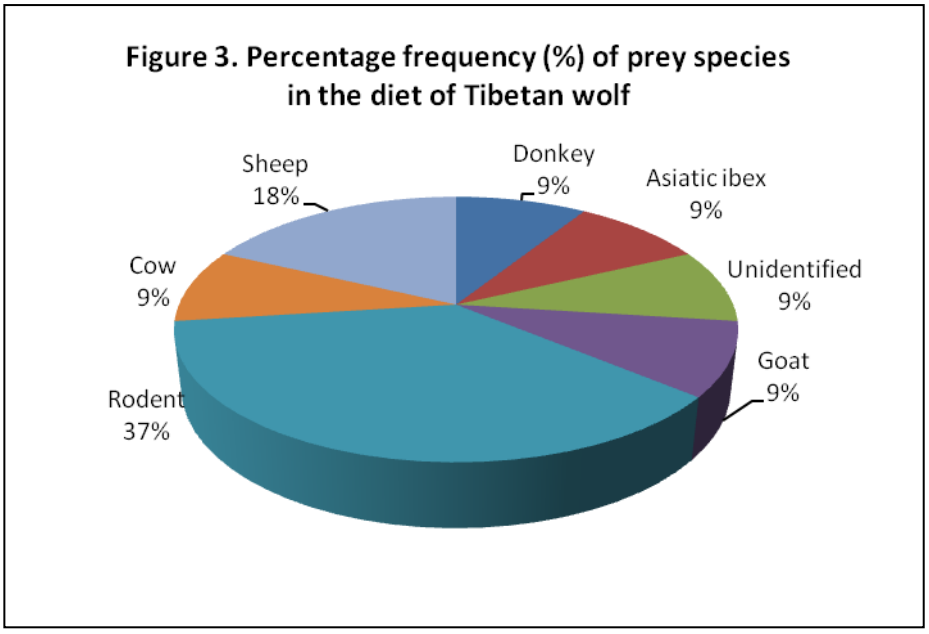


Asiatic ibex

Food habits of snow leopard and co-predators

The nine scats were identified of snow leopard and analysed for assessing food habits. A total of seven prey species were identified on the basis of unique medullar and cuticle pattern of the hair. Among the nine scats, five scats were comprised of single prey, three scats of two prey and one scat of three prey species. Asiatic ibex contributed towards 28% of the diet followed by rodent and cow of 11% each. The other details are summarised in the figure 2. It is interesting to note here that some vegetation material was also recorded from five scats of snow leopard. During surveys, six scats of Tibetan wolf were identified. The scat analysis revealed that seven prey were present out of which single prey species was found in two scats, two prey species in three scats and three prey species in one scat. The highest contribution in the diet of Tibetan wolf is by rodents (37%) followed by domestic sheep (18%). The rest of the prey species are summarised in figure 3. Similar to snow leopard, vegetation material was recorded in two scats and insects were also recorded from four scats of Tibetan wolf.





Carnivore-human conflicts

A total of 118 cases (Annexure I) of depredation by predators in Kargil and Drass in 2009 were reported by villagers. Loss of livestock by predators such as snow leopard, Tibetan wolf and Himalayan brown bear instigate the retaliatory killing of these carnivores. Compensation for such losses was provided by Dept. of Wildlife Protection, Jammu and Kashmir almost seven years back but due to lack of funds this was discontinued.

Livestock depredation (sheep and goat): Unknown predator

Since these were the first scientific surveys in Kargil and Drass, the villagers were expecting compensation from us and therefore they seemed to quote very high losses of livestock during the questionnaire surveys. To overcome this bias, the motive of surveys and institutional information was provided to locals. It was much clear that there is no scope of paying compensation but the view of locals will be taken to decision makers through findings of these surveys. Identification of

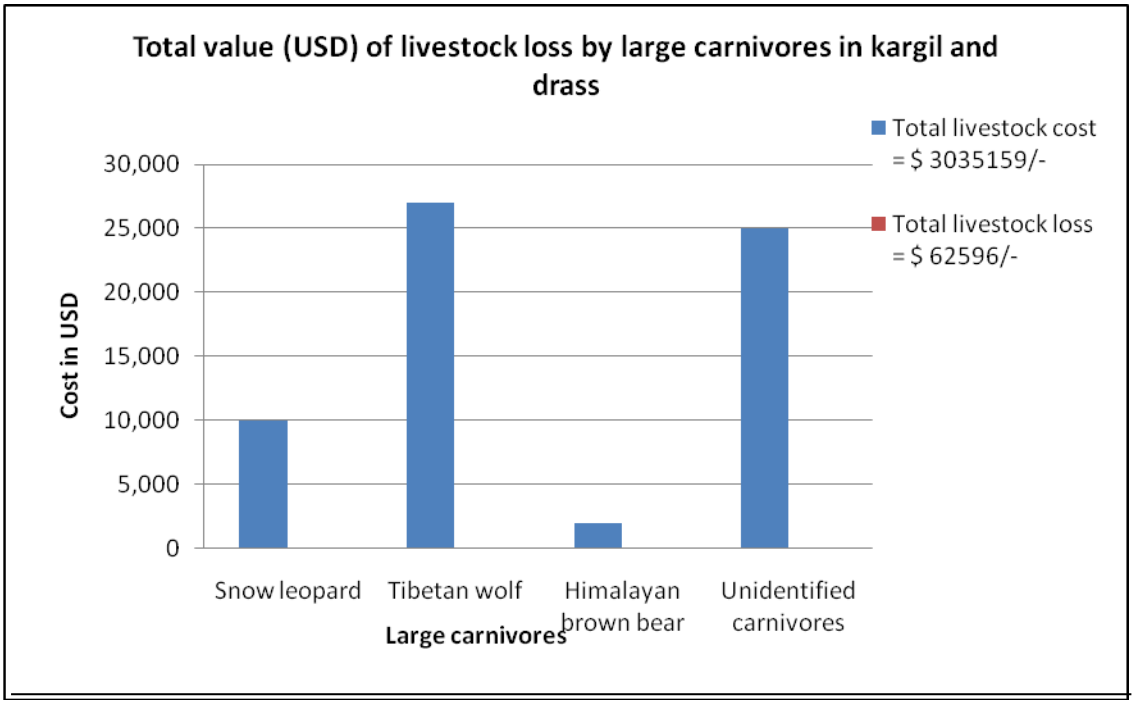
predator was done on the basis of description by the villagers, such as; have you seen the predator, please describe the predator, number of livestock killed, place of depredation, how the predator was identified if not seen (indirect evidence). Under these guidelines, it was found that many of the villagers were not able to identify the predator which means unsupervised livestock were killed by predators and villagers do not have proper infrastructure to maintain livestock.

Out of all 12 villages surveyed, 63 cases of sheep and goats depredation by snow leopard was reported by six villages. One village reported loss of one cow and two villages reported loss of eleven horse/donkey. Detailed livestock depredation by other large carnivores is summarised in table 4. Villagers reported that red fox was also involved in killing the about 45 young ones of sheep/goat. The overall average cost of the loss was calculated for each sheep/goat, cow/*dzo/dzomo* (yak hybrid) and horse/donkey. This helped to estimate the value of livestock loss by large carnivores (Figure 4). In addition, the loss for the unidentified predator was also calculated to estimate the share among the known predators.

Table 4. Livestock depredation by large carnivores in Kargil and Drass, 2009

Large Carnivores	Goat/Sheep	Cow/Dzo/Dzomo	Horse/Donkey	Total livestock loss
Snow leopard	63	1	11	75
Tibetan wolf	145	8	26	179
Himalayan brown bear	9	0	0	9
Unidentified carnivores	124	15	20	159
Total	341	24	57	422

Figure 4. Total value ($) of livestock killed by large carnivores in Kargil and Drass, 2009



Demographic information and conservation awareness workshop at Kargil

A total of 12 villages fall under the areas surveyed in Kargil and Drass. Total human population of these villages is 5232 with 664 households (details in table 5). The villagers own various types of livestock including goat, sheep, cow *dzo-dzomo*, donkey, horse and yak. There were about 13356 total livestock in the villages surveyed in Kargil (livestock details in table 6).

During surveys, it was realised that locals had very poor knowledge about the issues pertaining to wildlife conservation and its importance. They were not even aware of the Indian Wildlife Protection Act (IWPA). Therefore, two conservation awareness workshops were organized; one with the District Administrative Officers (civil and defence depts.) and another with the locals: students, teachers and villagers (details about both workshops in the Annexure II). It was necessary to provide on the ground information about carnivore-human conflicts to the Administrations of Kargil to develop and implement mitigation strategies. Similarly, in the workshop with locals, carnivore-human conflict issues were discussed and information was spread about the IWPA and importance of wildlife.

Table 5. Demographic information of the villages surveyed of Kargil and Drass

Village	Households	Human population	Livestock population
Bartoo	79	878	1428
Pangbar	20	134	490
Yarkashing	20	122	487
Bilching	30	234	585
Umba	100	967	2694
Ichoo	18	123	387
Mulbek	176	1340	2077
Shergandi	30	254	452
Fokar	48	336	1522
Kanji	50	267	1507
Sapi	90	560	1476
Shang-la	3	17	251
Total	664	5232	13356

Table 6. Livestock details of the villages surveyed of Kargil and Drass

Village	Goat/Sheep	Horse/Donkey	Cow	Dzo/Dzomo	Yak
Bartoo	375	458	526	67	2
Pangbar	325	4	70	90	1
Yarkashing	325	2	70	90	0
Bilching	350	4	100	130	1
Umba	1760	433	389	87	25
Ichoo	266	62	21	38	0
Mulbek	1345	131	337	250	14
Shergandi	341	0	68	40	3
Fokar	948	105	199	250	20
Kanji	678	61	430	300	38
Sapi	1069	57	102	230	18
Shang-la	190	17	20	7	17
Total	7972	1334	2332	1579	139

Discussion

As a pioneering initiative, this study confirmed the presence of snow leopard in Kargil areas of Ladakh. Snow leopard predation on Asiatic ibex was observed during the sighting of this elusive cat. The overall duration of the sighting was 17 minutes in which snow leopard chased a group of Asiatic ibex (n=32) but could not hunt and rested over a ridge. The scats and tracks were observed at sighting site but a high percentage of this track could not be traced due to a rocky terrain. Overall, it was found that the snow leopard had specific habitat preferences. It appears that the characteristic features of snow leopard habitat in Kargil is shrub land with rugged and broken terrain.

In addition, the distribution of snow leopard coincided with the presence of major prey species. Asiatic ibex is found and snow leopard also present in Kargil. There was no evidence of Asiatic ibex and snow leopard recorded from Drass. Similarly, Himalayan brown bear distribution is restricted to some of the localities of Kargil such as in Drass and North of Suru Valley. In contrast, findings showed that Tibetan wolf is widely distributed in Kargil and Drass. This was also confirmed through the questionnaire surveys conducted for carnivore-human conflicts.

The diet of a carnivore reflects the availability of prey and the morphological and physiological adaptations of the carnivore to the location to capture and digest the prey species. Blue sheep is reported as one of the major prey species of snow leopard in Hemis National Park, Leh (Chundawat and Rawat 1994) but in Kargil blue sheep is not present and this gap is filled by Asiatic ibex, which was reflected in the diet of snow leopard in this study. The present findings of vegetation in snow leopard scats is supported the one done by Chundawat and Rawat (1994) that also reported considerable amount of plant material (41%) in snow leopard diet with an interesting observation of snow leopard feeding on *Myricaria* plant. Due to inadequate sample size we are not able to comment on the food preference of snow leopard and Tibetan wolf.

In the present analysis, domestic livestock comprised 45.5% of the diet of snow leopard while for Tibetan wolf domestic livestock comprised 54.6% of the diet. It shows the high proportion of livestock depredation and represents the extreme of large carnivore-human conflicts in Kargil and Drass. This should be mitigated to ensure the better survival of large carnivores of these areas. In the present surveys, we could not make a positive identification of the unidentified scats of carnivores due to the high cost of genetic analysis. Therefore, results of scat analysis of unidentified scats are not included here for Tibetan wolf and snow leopard. Kargil district holds an area of almost 14000 km² and it is now realised that one year surveys were not sufficient to cover the entire range due to vast area, very difficult terrain and inaccessibility during winters. Therefore, population estimation and carnivore-human conflicts data was not produced for winters. But this report has come up with the first base-line scientific information on wildlife and carnivore human conflicts from Kargil. There is great need to do some intensive studies in Kargil on snow leopard and associated species to understand the population dynamics. Therefore, the findings of this report will be utilised to prepare a proposal for future conservation interventions of wildlife in Kargil with special emphasis on mitigation of carnivore-human conflicts.

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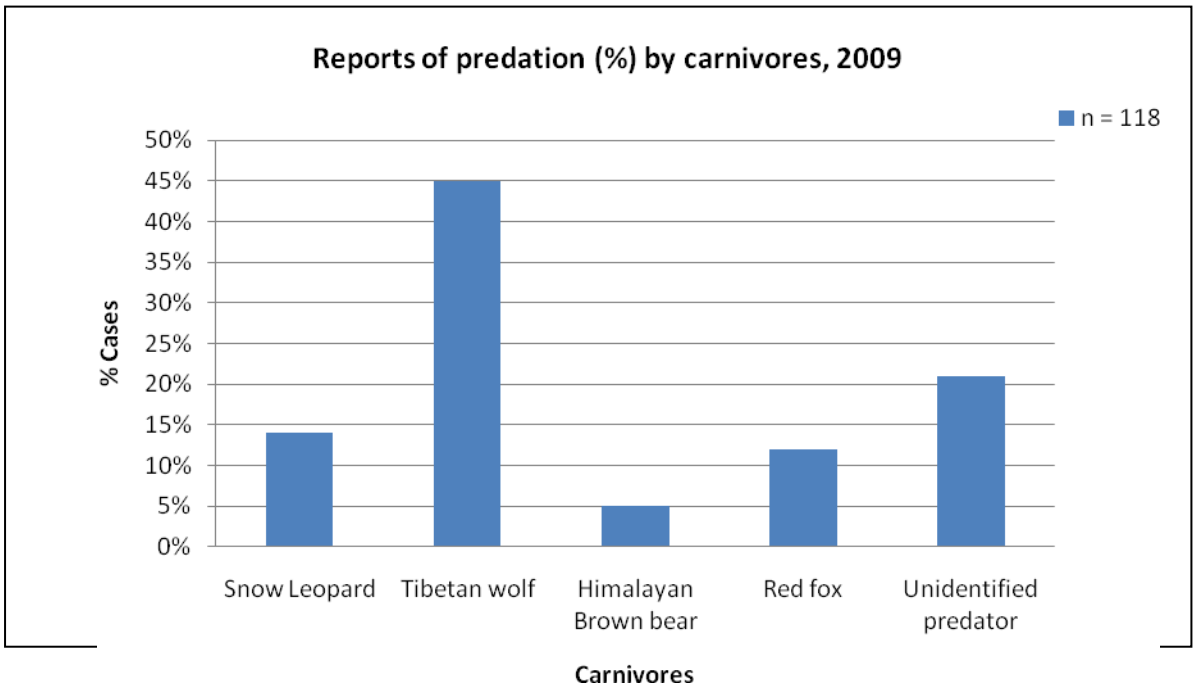
Red fox

Annexure I

Cases of livestock depredation (%) reported in Kargil and Drass, 2009



Annexure II

The local awareness programme to improve the conservation of high altitude ecosystem with special emphasis to snow leopard and associated species in Kargil and Drass, Ladakh, Jammu and Kashmir, India

Kargil workshop for District Officials was organized on 05th Oct. 09. In this workshop presentations and talks were made and local wildlife issues, status and presence were addressed Education, training activities and increasing public understanding of natural resources are the objectives of building local capacity in wildlife-human conflict resolution. Awareness seems to be very powerful tool at all local communities t mitigate the wildlife-human conflicts. Over time it would result in a change of behaviour towards the wild animals and reduce the conflict level. In an optimistic scenario, training would promote conservation of wildlife. Such workshops targeting school teachers in Kargil of Jammu and Kashmir were conducted a few years ago by Wildlife Institute of India, Dehradun, India in collaboration with Government Departments and NGOs. Only one such workshop was conducted in Kargil. Therefore, two workshops in co-ordinance with the Dept. of Wildlife Protection, J&K were organized at Kargil and Sanku.

Specifically in Kargil the administrators such as Ladakh Autonomous Hill Development Council, Kargil (LAHDCK), District Officials from Civil and Defence Departments were participated in this workshop. The talks and presentations were made in this workshop are summarized here with

brief description about the issues addressed in their talks and presentations followed by discussion with the participants.

In the first talk by **Chief Executive Councillor, LAHDCK** following aspects were addressed:

- Need of wildlife and our survival depends on wildlife.
- Sharing of natural resources.
- Status of wildlife in Kargil before 1999 war and adverse effects of war on the occurrence of wild animals.
- He also pointed the presence and absence of District Officials in this workshop.

Then **DFO, Kargil** made a presentation on the overview of wildlife status in Kargil and addressed following aspects:

- Occurrence of floral and faunal diversity in Ladakh.

He highlighted the following issues:

- Lack of adequate funds, logistic support and field staff.
- Need of up gradation of posts in Protected Areas (PAs)
- Need of management plans within and outside PAs.
- Lack of allowances incentives for field staff.
- Lack of appropriate conflicts resolution programmes.
- Lack of grazing policy.
- Lack of basic presence-absence data on wildlife.

Then **Project Officer, WWF-India** made a presentation on conservation of snow leopard in Kargil Himalayas; on-going surveys in Kargil and Drass for documenting base-line information on overall wildlife of Kargil and Drass. He also gave an idea about the planning of the survey and basics used for scientific surveys. In this presentation following achievements and aspects were addressed:

- The first scientific base-line surveys for documenting wildlife status in Kargil and Drass.
- Planning of a survey and basics about the methods used for wildlife surveys.
- Importance of wildlife in maintaining the ecological balance.
- Snow leopard as an indicator species of the health of high-altitude ecosystem.
- Basic idea about the wildlife-human conflicts in Kargil and suggest mitigation strategies.

He also addressed the following issue:

- Lack of wildlife awareness programmes.
- Need of field staff and local support in wildlife conservation.

Then **SRF, Wildlife Institute of India** (WII) made a presentation about the role of Biotechnology in wildlife conservation. It is one of the emerging fields in wildlife conservation and addressed following aspects:

- Basic idea about the biotechnological terms used for wildlife conservation.
- Biotechnology is a strong tool for maintaining gene pool for critically
- endangered and endangered species.
- These tools are also used for wildlife forensics to create legal frame to control
- and regulate wildlife trade.

Then **Chairman, Ladakh Ecological Development Group** (LEDeG) made a short presentation about the climate change and local perspectives:

- Basic idea about the climate change and global warming and how it effect the locals.
- Basic energy need of Kargil.
- Examples of climate change from Himalayas.
- Role of locals being an individual to minimize the global warming.

Discussion

It was believed that cases reported of livestock depredation by large carnivores from Kargil areas the number of large carnivores (Tibetan wolf, snow leopard and Himalayan brown bear) has increased. This issue was discussed in detail and outcomes from the on-going surveys on snow leopard in Kargil areas were shared with the participants. Actually, in many of the cases it was found that villagers were unable to identify the predator. First, cases were reported in summer when villagers graze their livestock in the high altitude areas. Unsupervised livestock grazing was also recorded from Kargil areas and sometimes inattentive livestock was killed by predator. Second, the wild prey availability for large carnivores was very low because of hunting pressures in these areas. It results decline in predators population extremely and at some extent livestock contribute in the diet of these large carnivores, therefore, the livestock depredations cases have increased.

It was suggested that the protection measures should take care in case of grazing in the mountains or at the time of keeping them in houses. Hunting of wild ungulates should be strictly banned so that prey availability for predators can be enhanced. It was also realized that there is a serious crisis of funds allocation and staff in the Wildlife Department of Kargil. From last five years there was no Wildlife Warden posted in Kargil. In addition, there were no efforts were made by other Government and Non-Government Organizations for documenting the wildlife status of Kargil. Therefore, it was obvious that locals were not aware about the importance of wildlife and other related issues. The on-going surveys in Kargil areas are the first efforts for documenting the base-line information about wildlife.

There were very serious effects of 1999 war on the wildlife of Kargil and it was almost wiped out or extinct locally from some of the areas. After ten years, it is now recovering but the process is too slow. Almost seven years back some compensation schemes were introduced in Kargil and locals received the compensation amount. But there is a long gap when there is no compensation is given by the Wildlife Department of Kargil due to lack of funds allocated. Therefore, because of

all these factors the acceptance of locals for conservation of wildlife is very difficult. Local awareness programmes can play an important role in changing the mind set-up of locals for conservation of wildlife. But to achieve the conservation goals it is very necessary to work together of all the civil and defence departments in Kargil.

This workshop was organized for the District Officials of Kargil in hope to receive good feedback from them and succeed. In this workshop, it was requested that wildlife awareness should go beyond the boundaries in which the workshop was held. It should become a matter of daily discussions/ talks of peoples of Kargil and would reflect in good viewing of wildlife in the future surveys in Kargil.

Workshop on Wildlife Awareness for District Officials of Kargil
05 Oct. 2009

Day's Programme

10.15 am	Welcome to the guests by DFO, Kargil.
10.30 am	Speech by Hon' CEC, LAHDC, Kargil, on the importance of this workshop.
10.40 am	Overview of wildlife status in Kargil by Mr. Sandeep Kujur, DFO, Kargil
11.05 am	Snow leopard conservation in Kargil Himalayas by Mr. A. Maheshwari, Project Officer, WWF-India.
11.30 am	Don't buy trouble, documentary filmed by TRAFFIC India.
11.45 am	Role of biotechnology in wildlife conservation by Mr. Mukesh, SRF, Wildlife Institute of India.
12.10 pm	Climate change a local perspective by Kacho A. Khan, Chairman, LEDeG.
12.35 pm	Living with change, documentary filmed by WWF-India.
01.00 pm	Views/ opinions from the participants.
01.30 pm	Vote of thanks by Mr. A. Maheshwari.
01.40 pm	Lunch.

The local awareness programme to improve the conservation of high altitude ecosystem with special emphasis to snow leopard and associated species in Kargil and Drass, Ladakh, Jammu and Kashmir, India

On 07th Oct. 09 a local awareness workshop was organized at Sanku (45km from Kargil). Villagers, school children, teachers, field staff of Dept. of Wildlife Protection, J&K participated in this workshop.

Education, training activities and increasing public understanding of natural resources are the objectives of building local capacity in wildlife-human conflicts resolution. Awareness seems to be very powerful tool at all local communities to mitigate the wildlife-human conflicts. Over time it would result in a change of behaviour towards the wild animals and reduce the conflict level. In an optimistic scenario, training would promote conservation of wildlife. Such workshops targeting school teachers in Kargil of Jammu and Kashmir were conducted a few years ago by Wildlife Institute of India, Dehradun, India in collaboration with Government Departments and NGOs. Only one such workshop was conducted in Kargil. Therefore, two workshops in co-ordinance with the Dept. of Wildlife Protection, J&K were organized at Kargil and Sanku.

Locals were addressed about the different issues pertaining with wildlife. The talks were made in this workshop are summarized here with brief description about the issues addressed in their talks followed by discussion with the participants. For better understanding of the locals one talk was delivered in their language.

- **Project Officer, WWF-India**, talked about the occurrence of wildlife in Kargil specifically about the presence of wild animals around Sanku Block. He also addressed the on-going surveys on wildlife in Kargil and importance of wildlife in our life.

- One **Wildlife guard** made a talk in the local language (Balti) on the overall status of wildlife of Kargil and appeal for protection of wildlife. He also addressed about the Indian Wildlife Protection Act (IWPA) with special emphasis to legal banning of wildlife hunting.

- Then **Range Officer, Sanku** briefed about the role of tourism in Kargil and Sanku for betterment in employment. He also addressed the wildlife-human conflicts issues and suggested to protect their livestock to avoid depredation by predators.

- Two **wildlife movies** (TRRAFIC-India and WWF-India "Don't buy trouble" and "Living with change") were shown in this workshop to give them an idea about the wildlife trade and climate change and global warming.

At last, locals were suggested to give their views about the wildlife and interestingly, two persons came forward to deliver their views:

- One **student** of 12th standard said, "this is the first time we are listening the name of wildlife and the hunting pressure is too high in our areas, we are thankful for organizing this workshop and making us aware."

- Another **senior person** from village said, "The wildlife movies were very good and informative, hunting was too high in previous years but after 1999 war, all the weapons such as local guns were seized and villagers do not have even time for hunting and we were not aware about hunting as a crime therefore we will try to avoid hunting completely."

Discussion

People of Sanku are primarily concerned for livestock depredation and support from compensation schemes. But lack of compensation schemes for livestock depredation is one of the factor initiating locals for killing the large predators of the area. Almost seven years back some compensation schemes were introduced in Kargil and locals received the compensation amount. But there is a long gap when there is no compensation is given by the Wildlife Department of Kargil due to lack of funds allocated. Therefore, it seems that there are unappreciated common interests between the locals and Government. Creating awareness through these workshops is thus needed as a first step to break the impasse. We tried to make them realize that protection of their livestock is very necessary. Inattentive or unsupervised livestock grazing may lead to increase in depredation. Additionally, killing of such wild animals is a crime under IWPA. But to achieve the

conservation goals it is very necessary to work together of all the civil and defence departments in Kargil.

This workshop was organized for the peoples of Sanku in hope to receive good feedback from them and succeed. In this workshop, the local misbelieves about wildlife such as snow leopard feed on the blood of livestock, Tibetan wolf feed only on the flesh of livestock; were discussed and it was requested that wildlife awareness should go beyond the boundaries in which the workshop was held. It should become a matter of daily discussions/talks of peoples of Kargil and would reflect in good viewing of wildlife in the future surveys in Kargil.

Workshop on Wildlife Awareness for locals at Sanku
07 Oct. 2009

Day's Programme

11.00 am	Welcome to the participants by Mr. A. Maheshwari.
11.15 am	Overview of wildlife of Kargil with special emphasis to snow leopard conservation in Kargil by Mr. A. Maheshwari.
11.45 am	Living with change, documentary filmed by WWF-India.
12.15 pm	Status of wildlife in Kargil and brief about Indian Wildlife Protection Act (talk in local language; Balti) by Syed Ali, Wildlife Guard.
12.30 pm	Role and importance of tourism in Kargil and wildlife-human conflicts in Kargil by Mhd. Bashir, Range Officer.
01.00 pm	Don't buy trouble, documentary filmed by TRAFFIC India.
01.30 pm	Views/ opinions from the participants.
02.30 pm	High tea.

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