

PROJECT DRENMO

Kargil, Ladakh



Photo: Karamjeet Singh

Drass, April 2021

Mitigating Human-Himalayan Brown Bear Conflict through Engaging Local Communities in Kargil District, Ladakh (India) - Phase II

October 2020 to June 2021

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Supported by:



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**DEPARTMENT OF
WILDLIFE
PROTECTION,
KARGIL**



TABLE OF CONTENTS

- 1. Executive summary**
- 2. Introduction**
- 3. Project Area**
- 4. Flora and fauna characteristics and potential threats**
- 5. RAP objectives & plan**
- 6. Methodology**
- 7. Field Observations**
- 8. Results and impact of the project**
- 9. Challenges**
- 10. Recommendations and the way forward**
- 11. Annexure**
- 12. References**

1. COVER LETTER

Kargil district in the Union Territory of Ladakh in the Indian Himalaya is home to a rare and critically endangered species of brown bears known as the Himalayan Brown Bears. In western Ladakh there are approximately 125 brown bears out of which 50 bears are thriving in the Drass Region of the Kargil District. For various reasons including access to anthropogenic food sources, human encroachment of habitat and climate change, there has been a steady increase in the number of conflict cases between humans and Himalayan Brown Bears when they try to intrude human habitations which often results in livestock depredation, raiding of grains and damage to property, and in some cases retaliatory killings of the animal itself.

The purpose of the Himalayan Brown Bear Conservation Project in Drass, Kargil aims to address the urgent need for the conservation efforts focused on the critically endangered Himalayan Brown Bear population. The Project will include research, community engagement and education initiatives to ensure the long-term survival of this iconic species while supporting local communities.

ABOUT THE ORGANISATION

The Brown Bear Trust was registered on 22/11/22 with a vision **“To create a conducive environment for human-wildlife coexistence through a community centric conservation model driven by research and local knowledge”** and mission to:

1. Mitigate Human-Himalayan Brown Bear conflict
2. Create awareness and build capacity for the local community.
3. Develop policy and advocate for wildlife conservation.

The aim and objectives of the Trust are:

1. Supporting wildlife research and conservation efforts through financial and technical assistance in Kargil district
2. Implementing tried and tested short term conflict mitigation strategies at the grassroots level
3. Creating and building a strong network on national and international scholars, researchers, wildlife experts and local community
4. Organizing international seminars and workshops for knowledge exchange on wildlife conservation and conflict mitigation
5. Ecosystem preservation and protection for long term conflict mitigation such as habitat revival, waste management

6. Developing awareness material such as films, books, comics and other educational materials for the local children, youth and even the international audience
7. Harness national and international collaborations and partnerships for raising funds and other resources
8. To create local human resources with the local community and train them as spotters, naturalists and proud wildlife homestay owners through capacity building and training programs, and exposure tours
9. Conducting awareness and education programs for the local children and youth in order to develop sense of ownership of the land and natural heritage
10. Career counseling for the local youth in the field of eco-tourism

Milestones achieved

Since 2018 before the inception of the Himalayan Brown Bear Trust the team has been working tirelessly to achieve the goal of creating a conducive environment for human wildlife coexistence through a centric conservation model driven by research and local knowledge. Below is a list of activities conducted by the team:

1. Awareness and capacity building of the local community.

A) Workshops with the School Children

The workshop was conducted at Govt Middle School, Holiyal with support from the school management. Four schools participated in the program namely,

1. Govt. Middle School Holiyal – 70 students + 10 staff members
2. Govt. High School Mushkow – 20 students + 4 staff members
3. Govt. Lower High School – 20 students + 2 staff members
4. Primary School Holiyal – 25 + 3 staff members

A total of 125 students and 19 staff members and parents took part in the workshop. The Zonal Education Officer was invited as the Chief Guest and the Commanding Officer of 3 Gurkha Rifles Unit (posted in Mushkow) was invited as a Special Guest. A painting competition was organised for the students on the theme 'Wildlife in kargil' and a Speech Competition on the topic "Importance of Wildlife".

Two short documentaries films were also screened for the students and staff members of the school. The idea was to educate the audience about the wildlife in their area especially Himalayan Brown Bears.

- Himalayan Brown Bears – Deosai National Park
- Science, Society & Snow Leopard

Medals and certificates were also distributed amongst the winners and participant students followed by refreshment and lunch. The school management and Indian Army appreciated the efforts and promised to extend their for similar programs in future as well.

B) Local Community (Villagers)



The

workshops with the local community focused on community sensitization and capacity building and were organized in Holiyal and Mushkow villages of Drass. A total of 140 participants were present during the workshops in Holiyal and Mushkow.

These workshops focused on the wildlife diversity of Kargil and presence of Himalayan Brown Bears in the area, the importance of Wildlife Tourism as a means for generating livelihood, the issue of Human-Animal conflict and the reasons for conflict and measures to mitigate such conflicts. The workshop also stressed upon the role of communities in conflict management and a team of experts oriented the community on the concept of Community Livestock Insurance Program. A film “The Community Livestock Insurance Program”. This was followed by a Q&A session with the participants where they shared their experiences with tackling conflicts with wildlife.

At the end of the program, **searchlights** and **binoculars** were distributed to the selected youth in front of the village community. They were also briefed on their role as members of the Community Wildlife Watch.

2. Installation of fox lights

Fox lights were installed at strategic points around the periphery or the extreme most houses facing the valley from where the bears typically enter. The idea behind setting up fox lights was to diffuse instances of bears before it enters the village as opposed to the existing methods of makeshift deterrents made by the villagers.

Over the course of nine months between October 2020 to June 2021 our team installed a total of 167 in Holiyal and 9 in Mushkow of Drass region. To monitor the lights and report any incidents or intrusions two members from both the villages from the committee of wildlife watch was formed in 2018.

Camera trapping

2. INTRODUCTION

Himalayan Brown Bear (*ursus arctos isabellinus*) known as “Dren-Mo” in both, Ladakhi and Tibetan, is one of the most ancient of brown bear lineages. Found in three major mountain ranges, the Hindu Kush, the Karakoram and the Western Himalayas, and in four inter-mountain highlands, we can deduce that their favourable habitats range from 9,000 feet (3000 metres) to 19,000 feet (5500 metres) with varying landscape types, such as alpine pastures and rocky mountains, making the higher reaches of the Himalayas an ideal sweet spot for the species. However, their populations are small and isolated, making them extremely rare in many, scattered parts of these mountain ranges. Their shrinking habitats, due to political boundaries, are made smaller by increasing human presence and livestock conflicts.

Once found abundantly in Nepal, Tibet, Bhutan, India and Baltistan (now in Pakistan), the numbers are not very promising, today. In fact, the Himalayan Brown Bear is now extinct in Bhutan and on the brink of extinction in the Indian sub-continent. It is a protected species under Schedule I of the Wildlife Protection Act of India, 1972 Under these acts, hunting or killing this critically endangered species is an offense, punishable with imprisonment of minimum three years (extendable up to seven years) and a minimum fine of Rupees Ten Thousand.

Fortunately, a healthy number of the species can still be found in the Deosai plains of Baltistan, where their population has steadily grown, from 20 in 1993 to 56 in 2014, owing to the conservation work by local conservationists and international agencies.

In India, only as many as 15 or 20 Himalayan Brown Bears struggle to survive in their ever shrinking habitat inside the Kugti and Tundah Wildlife Sanctuaries, in Himachal Pradesh. There have been sightings in parts of Kashmir and Kargil district, along the Line of Control between India and Pakistan. However, in these areas, constant human intervention has led to a rapid decline in their natural habitat, especially in the Tiger Hill and Tololing ranges of Drass, due to the Indo-Pak conflict and the shifting borders thereof.

“The Himalayan brown bear continues to persist, albeit in fragmented populations. There are points of contact between the Indian and Pakistani brown bear populations, along the Zaskar

and Ladakh ranges. Movement of bears has been documented across the border, especially in some areas of military conflict where development has not taken place.”

(Excerpt from an Article published by Morgan Erickson-Davis on 2014-05-01 on Mongabay.com)

Considering that the total brown bear population in the world is approximately 100,000, living in Eurasia, the population of the subspecies, the Himalayan Brown Bear (found only in the Himalayas, as the name suggests) is an extremely small percentage of the total, only about 500 to 750 *(as per a questionnaire survey among forest officials in 2006, conducted by Sambandam Sathyakumar from the Wildlife Institute of India)*. Their habitat, spread among 23 protected areas and 18 other localities in the northern states of Jammu and Kashmir, Himachal Pradesh and Uttarakhand, is estimated at 4,300 square kilometers (about 1,660 square miles), of which very little is protected.

In Kargil district, Himalayan Brown Bears have known to exist in its higher mountain ranges since centuries. Only in the last 5 to 6 years more and more frequent sightings have been reported close to human settlements. Reports of Human-Animal conflicts have also increased since 2014, more frequently from Drass region and a few from areas of Suru and Wakha-Mulbekh region. At the outset, it is safe to assume that mountains surrounding these regions are their current habitat.

In the case of Drass, where most of the sightings occur, their natural habitat is shifting and shrinking at the same time. The valley of Muskhov moves towards Gurez and then on to the Deosai plains in Pakistan which is a known bear territory. For centuries Himalayan brown bears have traversed between the high mountains of Karakoram, Hindu Kush and the Himalayas. Constant border conflicts for the last 60-70 years has been a key factor for their dwindling numbers. Bears are omnivorous but mainly thrive on shoots and roots of shrubs in the mountains. Shrinking breeding grounds from one side forces them to travel to the lower reaches in Drass in search of food. With human settlements expanding into the mountain sides, conflicts with humans and livestock attacks are increasing annually. In 2020, there have been 38 conflict cases reported and in 2021, 18 conflict cases have been reported till August.

The Himalayan Brown Bear population in the Ladakh region has remained under-studied, so it is hard to ascertain whether its population is increasing or decreasing. The locals tell us that there have been a number of bear fatalities caused by humans in the last few years. Besides Drass region, Suru and Wakha-Mulbekh region also has had some reported sightings.

3. Project Area – Kargil (Western Ladakh)



Kargil is the second largest district of Ladakh region in the state of Jammu and Kashmir. Known as Purig in the olden times, It was once an important trade center on the Trans-Himalayan Silk Route. The region called Purig included the areas around Kargil town, the Suru Valley, Shaghar Chiktan, Pashkum, Bodh Kharbu, Drass and Mulbekh. It falls in the western region of Ladakh and today the district comprises of 9 blocks and 127 villages including the region of Zanskar.

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 Srinagar, 234km from Leh, and 240km from Padum (Zanskar).



The Project area focussed in the Drass Valley of Kargil district.

Drass is a sub-division of Kargil, situated at a height of 3230 m, is the second coldest inhabited place in the world. As per the 2011 census, it has a total population of 22,000 spread across 20 villages. Drass, due to its unique geographical location

at the intersection of lower Himalayas, greater Himalayas and the Karakoram range,

experiences extremely cold weather in winters with heavy snowfall. 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). 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 Ladakh.



Kargil Town



Drass Town

4. Flora and Fauna characteristics

The region of Drass is an alpine terrain at an average elevation of 3000m with summer temperatures ranging from minimum 15 degrees to maximum 35 degrees and winter temperatures ranging between min -40 to maximum -5 degrees. Infamously known as the second coldest inhabited place in the world, the average snowfall is about 4 to 5 feet in the winter and in the summer months (between May to September) the mountain slopes become green with vegetation and shrubs.

In terms of Fauna, the two main trees are poplar and willow along with few Juniper and wild rose shrubs. The region also has over 50 wild shrubs and herbs with a majority of them having medicinal properties. Some of the most commonly found are wild Asafoetida (*ferula jaeschkeana*) and Wild tulips (*tulipa sylvestris*), Wild rose hips (*rosa webbiana*) which is also a major source of diet for the Himalayan Brown Bears. Wild cumin (*bunium persicum*) is found only in the Drass region in Ladakh.

The fauna of Drass ranges from large predators such as Snow Leopard, Himalayan Brown Bear, Tibetan Wolf, Red Fox. Ungulates such as Ibex, Urial, Musk Deer and other mammals such as Long tail Marmot, Pika, Woolly Hare are also found here.

There are over 60 species of both resident and migratory birds in Drass such as Robin Accenter, Rock Bunting, Rosefinch, Carrion Crow, Eurasian Magpie, Solitary Snipe, Brown Dipper, Eurasian Sparrowhawk to list a few.

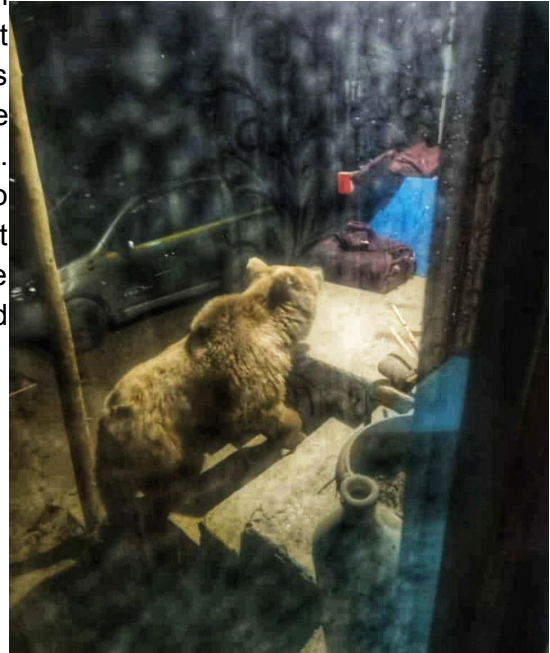
Threats:

In Drass, due to its proximity with the Indo-Pak border, a majority of the habitat range has remained out of bounds for the department of wildlife and for any studies and research. Till date it has not been notified as a protected area on account of issues with permissions This remains one of the main threats to the ecosystem. Besides this, other threats are listed below:

- **Overgrazing:** In recent years, although the locals have stopped keeping their own livestock such as sheep and goats, they have been leasing the pasture lands to the nomadic herders "Bakarwals" who come into these valleys from Kashmir in the summer months. Their livestock numbers range from 500 to 1000 goats and sheep. These

livestock graze in the brown bear habitat for over 5 months in the summer leading to loss of the food sources of the bears and other wildlife in the region.

- **Road and infrastructure construction:** Another development is the construction of metal corrugated sheet fencing around the military camps (across Ladakh). For the Drass area, this is particularly noteworthy since the food pits around the military camps are one of the main attractions for the bears. It remains to be seen if this has made any impact on the behavior of the bears.
- **Unregulated over tourism:** Wildlife tourism and sightseeing tourism is a recent phenomenon in Drass. However, due to its gaining popularity more and more tourists are visiting the area which is largely unregulated. Currently, there is no system in place to identify and regulate how many people visit each year. This may lead to damage to the habitat and even poaching if remained unchecked.



An adult Himalayan brown bear outside a house at night looking for food in Murad Bagh, Drass. Photo taken by the house owner. (5th May, 2020)

5. RAP Objectives & Plan

I. Background

Contrary to the official data on depredation, local knowledge suggests that in the last 5 years, Human-Himalayan brown bear conflict in Kargil district especially in the region of Drass, Suru and Zanskar in Ladakh has been steadily increasing. These encounters mainly take the form of intrusion of bears in human habitation which would lead to depredation of livestock, raiding of food grain or damage to physical property by Himalayan Brown Bears. This has resulted in heavy financial loss for the local villagers. In many cases it has reportedly led to retaliatory killings by locals as well. While the bears are thriving in this region, frequent human interaction is posing the biggest threat to its existence in its current habitat.

snowfall during the winter months

In my previous report, I had discussed the various reasons that are potentially leading to increased human-brown bear conflict. Some of the key reasons being:

- Ease of access to anthropogenic food sources for the bears in the form of garbage piles
- Overgrazing in the brown bear habitat by the local livestock such as horses, cows, goats and sheep
- Change in hibernation patterns on account of global warming leading to less

Bear movement, sightings and conflicts in 2020-21

While we have been confined to our homes since the beginning of the outbreak, this year we have been hearing reports of frequent bear movements in and around human habitations, notably in an around the main Kargil town during the months of March and April where one single bear raided multiple mohallahs (neighborhoods) over a period of two weeks.

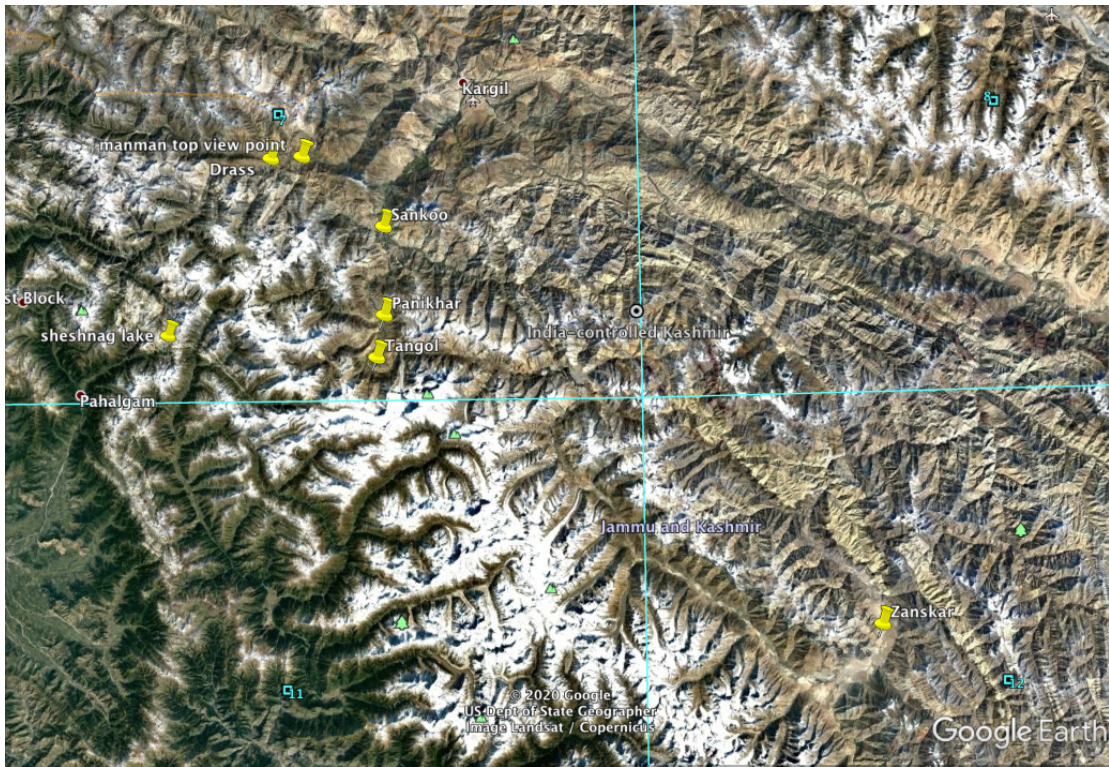
Overall, reports from locals in Drass and Suru region suggest that there has been an increase in the number of conflicts leading to livestock depredation and property damage compared to last year.

In the Drass region, bears have been quite active through the summer and have also been sighted around villages where there have been no reports in the past such as Simsha and Kharbu villages. Bear sightings in the villages where we work frequently such as Holiyal, Mushkow, Murad Bagh and Goshen, bears are quite active and are visiting the villages atleast once a week. Since we are not able to make field visits, we are not sure if these are the same bears from last year or if they are new in the area.

In the Suru region, we have many verified reports (from the Wildlife Department) about bear intrusions, especially raiding midday meal ration stores in schools. It is a typical behavior observed in this region since last year and is increasing year after year. Again, we don't have any data on this as yet.

As compared to 2019 reports of conflict cases have considerably increased not only in terms of frequency but also in terms of geographical spread. The conflict cases do not always result in livestock depredation. In Drass, more conflict cases have been reported from other villages besides Holiyal and Mushkow which earlier were not visited so frequently by the bears such as Goshan, Bearas, Lamochan, Gindyal and Chokiyal to name a few. Reports of frequent conflict in Suru valley particularly in areas of Sankoo (Lower Suru), Panikhar and Tangole (Upper Suru) and in Stod region of Zanskar have also been coming through social media. However, it has been observed that while in Drass most of the conflict cases are of livestock depredation, in Suru and Zanskar region the conflict cases are mostly of foodstock raiding.

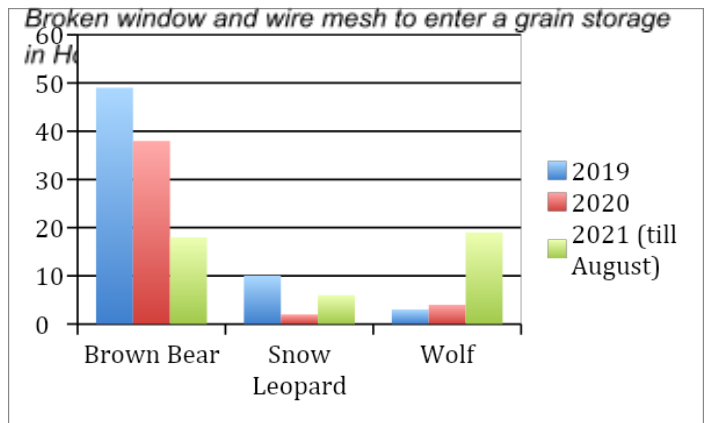
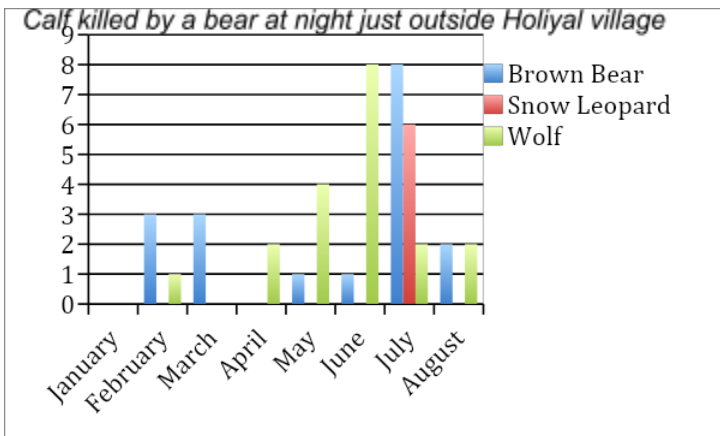
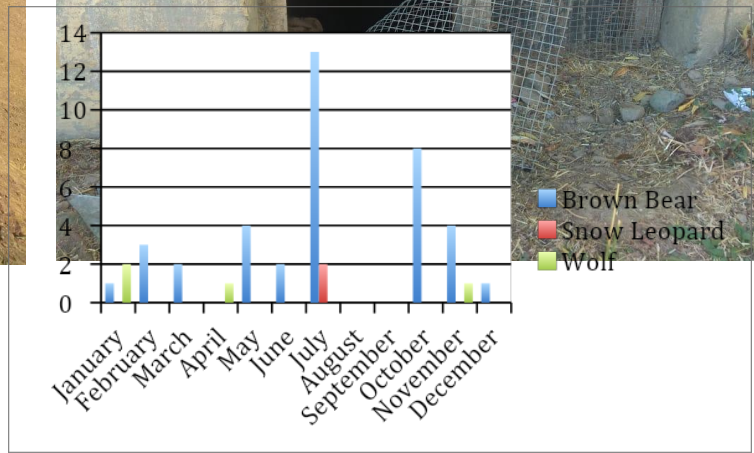
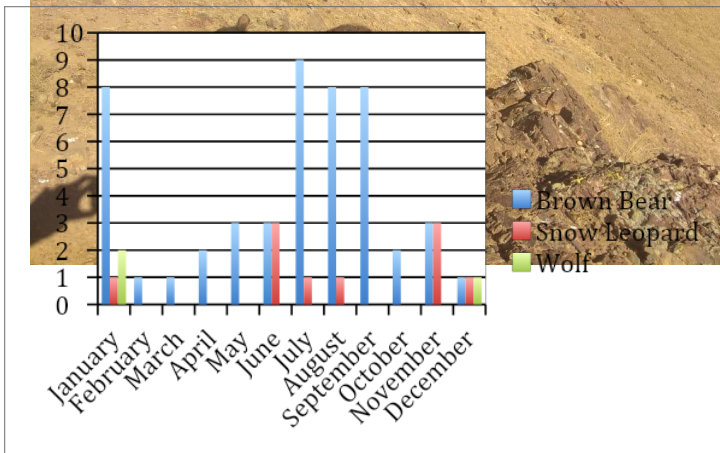
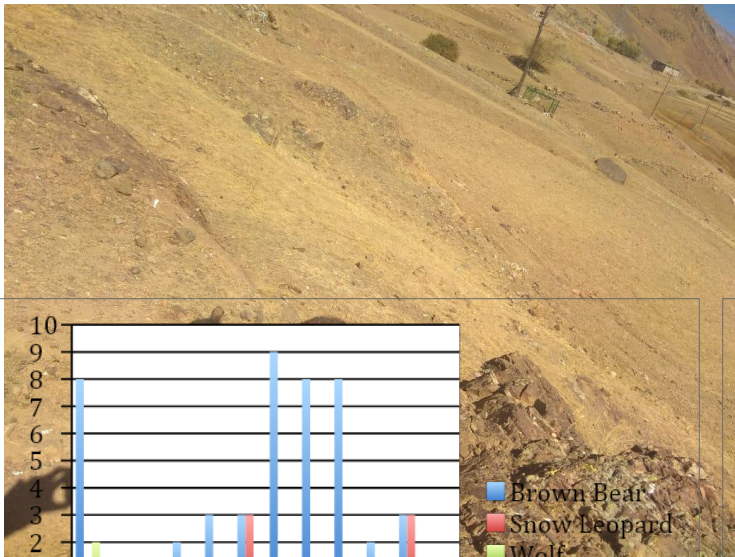
In Drass, it is noteworthy that almost all of the households in Holiyal and Mushkow have stopped rearing goats and sheep due to the incessant depredation by bears. Goat and sheep rearing is an economic activity for the local community. These livestock are reared with the objective to be sold in the wintertime for consumption when there is shortage of supply in the local market hence, was a major source of income.



Above: Locations across Kargil district with high reports of Human-Bear conflict

Below: Affected villages in Drass





No. of reported conflict cases in 2021 (till August)

Objective

No. of reported conflict cases in 2019

ii.

Conflict cases in the last 3 years

***Data from Department of wildlife, Kargil
No. of reported conflict cases in 2020**

Based on the field report submitted in 2018, one of the short term mitigation measures recommended was to study the use of wildlife deterrent lights to diffuse the instances of intrusion by brown bears into human habitations. The objective of this study was to:

1. Test the effectiveness of deterrent lights in mitigating Human-Himalayan brown bear conflict
2. Gauge the responsiveness of the local community towards such short term mitigation measures

III. Identified locations for the study

Our area of study has been the region of Drass and the the villages identified for this particular study was based on the following criteria:

1. High frequency of conflict cases compared to other villages in Drass
2. Past rapport with the local community in these villages and an already established field staff

Initially, we identified three villages namely Murad Bagh, Muhskow and Holiyal in Drass block. However, it was later on decided to conduct the study in only **Mushkow and Holiyal** due to the following reasons:

1. The department of wildlife was already monitoring Foxlights in Murad Bagh
2. Availability of limited number of Foxlights

6. Methodology

I. Approach:

While deterrent lights have been used for other mammals frequently in the past, it has not been tested enough on bears in India (except in a few places), in order to understand what exactly works and what doesn't. To understand and gather some preliminary information, Kirti Chavan, a wildlife researcher and conservationist with SLC (Snow Leopard Conservancy) who has been studying Himalayan Brown Bears in the Zaskar region and who has also been testing the effectiveness of deterrent lights against brown bears, was contacted and consulted. Based on some insights from him, we gathered some preliminary data about the installation strategy and the efficacy of such deterrent lights.

Below are some key insights shared by him based on his field experience (over verbal communication):

1. Foxlights to be installed at strategic points around the periphery or the extreme most houses facing the valley from where the bears typically enter rather than installing them inside the village
2. While the manufacturer claims that the product has a maximum visibility range of 200m, it is advised to aim for a range of 100m so as to not compromise on its effectiveness
3. Average height of the foxlight from the ground should be around 5ft to 6 ft. However, it may vary based on the inclination of the ground. (Incase of upslope place it lower, incase of downslope place higher)
4. Camera traps may prove to be counterproductive as it also emits light.
5. Annual or quarterly depredation survey pre and post installation of deterrent lights to monitor its effectiveness
6. Ownership of the light to be kept with the community even if it is placed at an individual's house. This allows for scope to change the location of the light if required, without any conflict.

The idea is to diffuse the instances of bears before it even enters inside the village as opposed to the existing methods of makeshift deterrents made by the villagers, (which are normally placed inside the village.)

Therefore, the objective was to look for ideal locations at the peripheries of the village facing towards the valleys from where bear movement is reported. In the first round of field visits, we chose to install 5 Foxlights each in Muhskow and Holiyal village, location and position was subject to change/modify based on further observations and real time information from the locals about bear movement.

Due to the COVID-19 restrictions on movement, our team was unable to initiate the field work on time. However, we were able to install the lights just before the hibernation period in October 2020 and were able to monitor it till November 2020. We resumed our work in April 2021 and installed the remaining lights during this month.

Over the course of 9 months between October 2020 to June 2021, we installed seven (7) foxlights in Holiyal and nine (9) foxlights in Mushkow village.

II. Selection of locations to install Foxlights

Holiyal – No of households - 7

Mushkow – No of households - 9

In order to select the locations to install the lights, we first conducted a walking recce in both the village periphery along with our community support staff (Bahudin and Ajaz in Holiyal and Iliyas and Shabir in Mushkow) along with the village Panch (Head). The objective was to gather local knowledge about the passages and accesses through which bears frequently enter the village. **It was observed that there was no fixed path the bears took. Infact there were possibilities of intrusion from all directions. It was decided that we cover maximum ground around the periphery possible with the limited number of Foxlights. The locals advised, keeping in view the safety of the Foxlights, that the they must be placed next to a house to avoid any damage or theft.** We identified houses along the periphery that seemed ideal in terms of the light covering maximum distance and area. We realized that we needed more Foxlights for all the locations that we have identified. Additionally, In order to avoid any conflict locally we ensured that it is communicated clearly to the homeowners that the equipment is for the community (and not just for that particular household) and we may remove it from that location if we feel that the position of the Foxlight needs to be changed for it to be more effective. The final locations of the Foxlights are shown below in the map.





Holiyal village – Second phase - April 2021 (7 foxlights installed)





Mushkow village – Second phase - April 2021 (9 foxlights installed)

III. Positioning of Foxlights

Based on some insights received through a personal communication with Kirti Chavan from the Snow Leopard Conservancy who have also installed the similar Foxlights in Zanskar region for brown bears, the height from ground was kept at a min of 6 feet (on flat ground) and a maximum of 10 feet (on inclined slopes) so that the flashing light is in the line of sight of the approaching bears.



FL5 in Muhskow

IV. Appointment of local staff

Two members each in Holiyal and Mushkow from the CWW (Committee for Wildlife Watch) that was formed in 2018 have been appointed to keep a watch on the lights and report any incidents or intrusions. The members provide updates once or twice every week over the phone. They also share pictures of any depredation or damage via whatsapp if possible.

Names of local staff incharge for monitoring:

| S. No | Name | Parentage | Residence |
|-------|---------------|--------------------|-----------|
| 1 | Bahowudin | Late Mohd. Shafi | Holiyal |
| 2 | Mohd. Younus | Late Abdul Hamid | Holiyal |
| 3 | Shabir Ahmad | Ghulam Moah-Ud-Din | Muhskow |
| 4 | Shakeel Ahmed | Ghulam Qadir | Mushkow |

V. Camera trapping

While our initial plan was to install the camera traps at the places where we had set up the Foxlights for a longer duration of time, there were issues of safety and security of the cameras. We decided setup the camera traps near the Foxlight locations for the duration of time our team was on field but we did not get any bear footage during that period. We removed the camera traps while returning back from the field during each visit.



Installing camera trap at Mushkow

7. Field Observations

While it has been difficult to make frequent visits to the field due to COVID-19 lockdown restrictions in 2020 and early 2021, our team managed to install a total of 7 Foxlights in Holiyal and 9 Foxlights in Mushkow in October 2020 and in August 2021.

Regular monitoring also became difficult due to the lockdown restrictions and we could only make 2 visits per month. We relied mainly on the field staff in Mushkow and Holiyal to get updates on the status of the lights and the movement of bears. Based on personal observations, interactions with the local community and information from the field staff, we were able to maintain a rough data on the bear movements and conflict over the months and also gauge the effectiveness of the foxlights.


Note that we had removed the foxlights in December keeping in mind its safety and security as it becomes difficult to monitor the foxlights in the winter and also based on the assumption that the bears will go into hibernation till March. We reinstalled the foxlights again in the Month of April.

I. Unusual movement of bears during the hibernation season (Winter of 2021):


After the installation of foxlights in October, it was notified to us by the local team that while there were bear movements in other areas of Drass, there was a considerable reduction in the number of conflict cases in Mushkow and Holiyal village.

However, it is noteworthy to mention that there were reports of bear movement in the peak of winter when they are supposed to be in hibernation. The reason for the same may be a result of less snowfall and warmer temperatures on account of global warming. Below is an outline of some of the reported bear movement incidents during the winter months:

Below are some of the highlight incidents related to depredation:

| | | |
|--------------------------|--|--|
| 15th February 2021 | Reports of bears moving in Holiyal. Two cubs and a mother |  |
|--------------------------|--|--|

| | | |
|-----------------------------------|---|---|
| <p>19th February 2021</p> | <p>Reports of depredation in Khandiyal village. One horse killed. Another livestock attack in Bhimbat village. No confirmed reports.</p> |  |
| <p>24th February 2021</p> | <p>Report of one mother and cub walking through the village of Murad bagh In broad daylight. No confirmation of any damage to livestock.</p> |  |
| <p>4th March 2021</p> | <p>5 bears reportedly entered Holiyal village. However, no damage to property or livestock. Another bear was seen eating a carcass at Murad bagh at noon time</p> | <p>Picture NA</p> |

| | | |
|----------------------|---|--|
| 5th March 2021 | Mother and a cub at Jololo village . Raided a livestock shed and killed multiple sheep |  |
| 6th March 2021 | Bear raided a chicken and fish shop in Drass market | Picture NA |

II. Data from Camera trapping

One of the methods we had used to monitor the effectiveness of the foxlights was to install camera traps near the foxlight location so as to capture any bear movement or any reaction to the foxlights thereof. While we could not leave the camera traps unmonitored for longer periods of time due to security and safety reasons (susceptible to theft and damage by local village children), we installed camera traps during our personal visits to Drass.

So far we are unable to capture the intended footage of bears reacting to the foxlights but we are planning to continue this endeavour till the end of 2021. Therefore, at the moment we do not have any first hand evidence of how effectively these foxlights work against bear intrusions.



Alternatively, we installed camera traps at the dumpsites inside the village for the first two nights to capture any movement of bears around the site. However, there was no activity recorded during that time. On the 3rd night while on a night patrol around multiple villages in Drass with the local team, we spotted 3 bears at a newly created dumpyard right along the NH1 Kargil-Srinagar highway. We decided to place the camera traps at this dumpyard for the next couple of days. The camera trap footage revealed that atleast 5 bears (one mother and cub and one mother and two cubs) visit the dumpyard in the evening after it gets dark. Foxes and dogs have also been recorded scavenging along with the bears. The trash consists of leftover livestock carcasses thrown by local butchers, and also expired packaged goods from the local market. Based on the local reports (about a mother and a cub and a mother and two cubs) and also from our personal observation, these are the same bears that also raid villages for food and livestock. However, it was noticed in the last month that intrusions inside the village have reduced (to almost nil) as these bears have been visiting the dumpyard instead.



Camera trap footage of two bear families scavenging at the dumpyard

III. Condition assessment of installed Foxlights

During our visits to the field, we also checked the condition of the Foxlights. So far all the lights were intact and working except one in Mushkow (FL 2M) and one in Holiyal (FL 4H) near the bridge were found damaged and stolen respectively. These particular lights were placed away from the households and hence were more susceptible to theft and damage.

Overall, the Fox Lights are all in full working condition till date.

IV. Feedback from local community on effectiveness of Foxlights

While we could not gather any camera trap evidence of bears reacting to the foxlights, we have been having constant discussions with the local community about the effectiveness of the foxlights.

The locals of Mushow and Holiyal have shared with us that they have noticed a considerable amount of reduction in bear intrusions after the installation of Foxlights which is also further validated by the field staff and wildlife department who have not reported any major damage or depredation cases since then as compared to other villages where there are no mitigation measures in place. However, it remains to be seen if this measure works for a longer duration or whether the bears will get habituated to the foxlights within one or two years.

V. Other observations

A. Problem bears

It is clear from these visual evidences that easy access to anthropogenic food is leading to a peculiar change in their food behavior and habituation to human presence. This behavior is being transferred to the cubs leading to a “multi-generational problem bear” situation which may require more long term mitigation measures.



F

“Scarface” – A resident bear strolling through Holiyal in April 20201

B. Self supported mitigation measures

1. **Metal doors:** We observed that apart from hanging metal boxes and tying barbed wire around the doors and windows, some locals have started to put strong metal doors and windows and cement plaster for doors and windows of ground floor sheds and storages which seem to work.



Above: This metal door in the picture has chickens behind it which the bear tried to raid. The bear tried to dig through the ground but was not successful. The owner later on plastered the floor with cement as well.

- 2. Guard dogs:** A pressing issue with wildlife conservation in Ladakh (Indian Himalaya), which is being talked about a lot, recently is the increasing number of feral dogs in the habitats of other wild animals. Their ability to multiply fast is considered a threat to the other animals thriving in the same habitat.

However, in Dras region, dogs that were previously feral are now being domesticated by the locals as a means to deter bears from entering the village. They seem to work effectively to shoo the bear away and also alert the locals especially at nighttime. While for conservationists it remains an ethical question, for the locals it's working like a charm.



“Scarface” and domesticated dogs in Holiyal having a face-off, April 2021

C. Issue of garbage management

There is an increasing problem with managing the plastic as well as food waste in Holiyal and Mushkow and in other villages of Drass. All the waste is being dumped along the water streams within the village and the main river below the village. Bears have been often observed scavenging in dumping pits around the military camps in Drass. Such makeshift dumpyards could be a potential attraction for bears into the village. The garbage is usually a mix of plastic, sanitary waste and livestock carcasses. Most of these villages don't fall in the municipal committee area hence there is no system in place for garbage disposal.



Water stream is Holiyal village

D. Comparative study of Foxlights and Katidhan lights

After our previous visit to Drass, we were informed by the Department of Wildlife that they acquired an Indian make deterrent light by the name of “Katidhan”. They were willing to provide us 5 nos of these lights. We sent these lights to Drass where the CWW team installed three in Holiyal and two in Muhskow at some of the pre-identified locations.



Katidhan light installed at Holiyal

This product is bulkier but has a strong metal build. Unlike the Foxlights, it only emits a white light at random intervals with double the intensity.

Locals in Holiyal village inform that the kathidan lights are effective in deterring the bears as according to them it actually made the bear change its course while entering the village which they think is because of the strong light it flashes (as compared to the Foxlights). It is important to note that the Katidhan lights are placed at a height of maximum 6 feet from ground (as compared to the foxlights which are between 8 to 10 feet).

8. Results and impact of the project

- I. **Reduction in number of conflict cases based on data and feedback:** So far we have installed seven(7) foxlights in Holiyal and nine (9) foxlights in Muradbagh which are in full working condition. Based on the feedback from the villagers, we are able to gauge that these deterrent lights have an average of 70% efficacy to keep bears at bay. We conducted informal interviews with all the households where we installed the foxlights (14 households) and 5 people at random (3 in Holiyal and 2 in Mushkow). 70% of the respondents said that they find the foxlights to be effective. 20% of the respondents said that they don't find the foxlights to be effective and 10% said that they don't know.

“Who (Bhalu) pehle usi raastey se aata tha. Pechili baar usne ek bachde ko nikaal kar khaya tha. Kal us raaste se who wapas ho gaya tha light ki wajah se (The bear used to take the same path earlier. Last time it ate one calf but last night it turned back because of the Foxlight there)” – Local Resident of Holiyal

“Hum aapka bohot shukurguzaar hain lights ke liye magar humein aur lights chahiye kyunki area bohot bada hai aur bhalu kahin se bhi aa sakta hai. (We are very thankful to you for the lights. But we need more Foxlights because the village area is big and the bear can enter from any side)” – Local resident of Holiyal

- II. **Implementation of other recommendations based on the report from 2018:** Since the submission of my field report and policy document in 2018 to the department of wildlife, they have considered some of the short term mitigation measures recommended in the report and have implemented the same as listed below:

- a. **Installation of street lights:** The department has sanctioned 10 street lights each in Holiyal and Mushkow village and are being installed at various locations in consultation with the local community.



- b. Increase in number of field staff by the department:** Another issue that we had pointed out in the previous report was the shortage of staff with the wildlife department. Since then, the department has appointed 20 (twenty) contractual field staff out of which 5 are in the Drass area (as compared to just one staff initially). These staff members are responsible for continuous monitoring of not just conflict cases but also regular record keeping on bear sightings. They are also the first responders at any conflict site and subsequently reporting and redressal.
- c. Faster redressal of compensation cases:** One major point of conflict between the local communities and the wildlife department was the issue of less amount of depredation compensation and the disbursal procedure issues attached to it. Following our recommendations to streamline the process, it was informed to us by the department that the process has been sped up with the help of the newly assigned field staff (who assist in quick and authentic reporting). So far, all pending compensation cases since 2001 have also been expedited up till 2020. Additionally, the compensation amount has also been revised since. Below is a comparative table:

| | Ex Gratia Amount (INR) 2018 | Ex Gratia Amount (INR) 2019 Onwards |
|-------------------|------------------------------------|--|
| Horse | 5000 | 8750 |
| Mule | 5000 | 8750 |
| Cow | 5000 | 10000 |
| Zo/Yak | 5000 | 10000 |
| Goat/Sheep | 750 | 2500 |
| Donkey | 2000 | 2000 |

9. Challenges

Since it was for the first time that such a conflict mitigation measure was being implemented in Kargil, especially in the context of bears, there was hardly any data or insights on how to install them in the most effective way. While, we did gather some information from people who have used similar methods in other areas, there were contextual challenges that had to be addressed:

- a. Location and safety of foxlights:** Due to the COVID-19 lockdown restrictions it was difficult to continuously monitor the foxlights. Moreover, placing the foxlights and keeping them unchecked for longer periods of time also would have proved unsafe as they may

be damaged or stolen. To tackle this problem, we decided to install them at selected households which were at the periphery of the village and gave the accountability to the house owner for its safety and monitoring. Over the months, we noticed that two foxlights which were not placed at or near any house were either stolen or damaged.

- b. Large number of households per village:** In Drass, the average number of households per village is about 100 as compared to other villages in Kargil which averages around 30 households. In some cases the houses are spread out in a large area which makes it difficult to identify ideal locations to install the foxlights. Given the limited number of foxlights, it becomes even more difficult to decide where to place the foxlights. To address this, we did a survey of the two villages along with a few local community members to understand the most probable paths on which the bears frequently enter the villages and installed the foxlights accordingly.
- c. Monitoring of the foxlights:** We were unable to find any suitable method to monitor the foxlights and gather any direct evidence of how the foxlights work against bear intrusions. So far, we have relied mainly on the feedback from the community members and the official data on depredation from the department of wildlife

10. Recommendations and the way forward

Based on the field observations and learnings, it is recommended that a multi-pronged approach may be used in order to tackle the issue of human-Himalayan brown bear conflict. Using stand alone techniques of mitigation may prove to be less effective over time. The mitigation strategy must include both long and short term measures and direct involvement of the local community. Below are some recommendations going forward:

- a. **Installing more foxlights:** Given that wildlife deterrent lights are proving to be effective in the short term, it is recommended that more of such deterrent lights be installed in the existing villages of Muhskow and Holiyal and also across other affected villages.
- b. **Using non lethal wildlife deterrent methods:** There is a lot of research available supporting the effectiveness of non-lethal methods for predation or conflict management such as rubber bullets, bear horn, bear spray and flare guns to name a few. Each of these methods are effective to a certain degree and have proven to be more effective when used as complementary techniques with each other. Further research and data may be analysed in order to understand each of these methods and implement them on field as short term means of mitigation in combination with Foxlights.
- c. **Training local community members and empowering them to get involved in the conservation work:** The department of wildlife has done a commendable job in establishing a wide network of community members as a part of the field staff. However, there is a need to provide extensive training and do capacity building of these community members to effectively manage conflict and implementation of mitigation techniques, and to be able to motivate and sensitise local communities towards wildlife conservation.
- d. **Garbage management:** It is evident from our field observations that access to human generated waste and food sources have become one of the main attractions for bears. Additionally, the rural areas of Kargil do not fall under the municipal limits and there is no disposal system in place. This has led to creation of multiple dumpsites where all types of waste is being thrown. These dumpsites are mostly found around the water systems. Therefore, it is imperative that this issue may be taken up on priority. While the local community needs to be sensitized about waste management and conflict mitigation, a suitable waste management system may also be put in place such as incinerators or bear proof dustbins.
- e. **Notify the area as protected or Eco-Sensitive zone:** Since the existing habitat of the Himalayan Brown Bears in Drass falls along the Indo-Pak Line of Control there is heavy presence of the defence services and majority of area remains unprotected. As this area is gaining more and more popularity, unchecked visitors in the long run may prove detrimental to the species and its habitat. Therefore, it is recommended that this area may be identified as an “Eco-Sensitive Zone” so that visitors in this area may be monitored and regulated.

12. Annexure

1. Foxlight location kml (from google earth)
2. Camera trap footage
3. Photos and videos from field
4. Watch group and household list and details

5. Press release

12. References:

1. Use of non-lethal methods
6. <https://www.conservationevidence.com/actions/2385>
7. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1013&context=icwdmsheepgoat>

8. <http://www.bearsmart.com/managing-bears/non-lethal/tools/>
2. Human-Bear conflict definition and prevention
9. <https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1732&context=hwi>
10. https://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/pa_bear_problem%20bear%20pilot%20action%202015.pdf
11. <https://www.researchgate.net/publication/343815433> *Levels of conflict over wild life Understanding and addressing the right problem*
12. <https://www.researchgate.net/publication/343307188> *Patterns of Livestock Depredation and Large Carnivore Conservation Implications in the Indian Trans-Himalaya*
- 13.