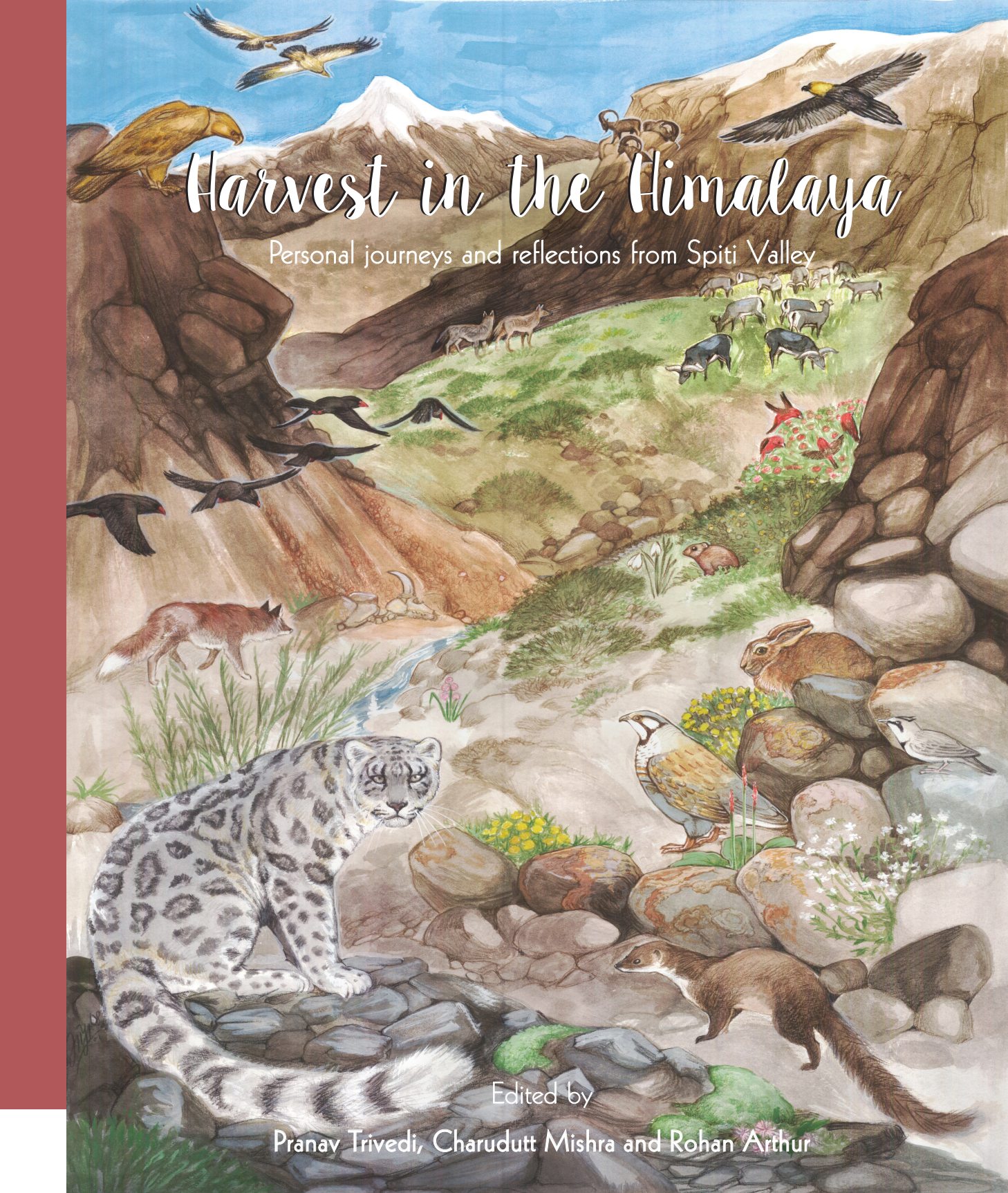




# Harvest in the Himalaya

Personal journeys and reflections from Spiti Valley

Edited by

Pranav Trivedi, Charudutt Mishra and Rohan Arthur



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*“Compassion is a mind that is motivated by cherishing other living beings and  
wishes to release them from their suffering”*

**–His Holiness the (14th) Dalai Lama**

*You are brother to the mouse;  
It is his world as much as yours.  
There is no sin as great as killing  
Because all life is connected.  
Treasure nature and she will repay you;  
Hurt nature and you will hurt yourself.  
therefore walk gently upon this earth.*

**–George Schaller**

**(from ‘Deki: the Adventures of a Dog and a Boy in Tibet’ 2014,**

**Hachette India)**





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# Foreword



I am very happy that the Nature Conservation Foundation (NCF) has brought out this collection of articles by individuals who visited Spiti over the years and have a strong interest in preserving its nature and cultures. Since Spiti is situated in the high Indian Himalaya, life in the area is very hard, particularly in winter, with temperatures dipping to  $-40^{\circ}\text{C}$  and remains  $-20^{\circ}\text{C}$  and below even in these days of global warming. With its high snow-capped and barren mountains, Spiti is home to many different kinds of wild animals and birds, including endangered species such as the snow leopard, wolf, blue sheep and golden eagle.

The authors of this book undertook extreme hardships during the winters in order to study the wildlife and its relationship with the local human populations at the first hand. They have discovered the realities of the local situation and have worked hard to ensure the survival of the wildlife whilst avoiding negative impacts on the human inhabitants in the region.

The NCF has been working in Spiti for the last twenty years towards the above mentioned purpose and it has achieved great success in its stated goals. I sincerely believe that it is an important task for the survival of mankind to take care of ourselves as well as the environment.

I congratulate the NCF for publishing this book which is very informative and a very good contribution towards nature conservation, and send my sincere prayers for great success in the future for the whole team.

May Buddha bless you,

**T.K. Lochen Tulku**

**Spiritual Head & Director**

**Key Monastic Institution, Spiti**



# Preface



Every child has a deep fascination for nature. Yet, somewhere along the road to growing up, with realities and road-bumps of life, this unbridled curiosity of things wild and beautiful gets left behind. Some of us are fortunate to be able to reconnect with nature at some point in our lives and fewer of us are even able to make conservation of nature our mission in life. Yet, conservation often has a benign beginning in the form of a rekindled fascination and the resultant journey of exploration into the world of nature—more as an outward pursuit. Over the course of time, our interactions with the species, landscapes and people lead to the forming or a revelation of one's own deeper values and belief systems. This prompts an inward journey of reflection and reorganisation of our own realities. As Aldous Huxley said, "Experience is not what happens to you, but what you do with it." Put simply, this book is a small attempt to capture such transforming experiences of individuals fascinated by nature and her myriad life forms.

The authors whose real-life stories unfold in this collection are a diverse bunch. They had set out, independently of each other for the most part, to the Himalaya to study wildlife or help nature conservation. They had some influence, but in the process, they also ended up being influenced by the place and her people. Through this book, we are happy to share with you a slice of their real 'harvest' in the Himalaya. The book will take you on a journey through the Spiti Valley, or the middle land, hidden away between the peaks of the mighty Himalaya and the high altitude plateau of Tibet. It will provide you with glimpses of the magnificent life inhabiting it and the vibrant culture of the local communities who have become our partners in conserving wildlife, in the process creating a conservation model that relies on respectful partnerships and cooperation. A model that is globally relevant and much needed. But this book is not about conservation. It is about the inner journeys of the people involved in conservation, either deeply or peripherally. It is about the impact of the place on the man, and not the other way around.

We are truly delighted to put this collection across for the larger community of readers. As Ralph Waldo Emerson says, “Nature and books belong to the eyes that see them”. So, this is our little gift for the eyes that have been seeking it! We would be most grateful to receive your feedback.

Julley!

# Acknowledgements



For this book to reach your hands, we had amazing ‘hands’ extending their help and support. We are most grateful to the Disney Wildlife Fund for their long-term support, patience and faith in our work. The entire cost of publishing has been covered by funds generously made available by them. Siri Okamoto of the Snow Leopard Trust, USA was instrumental in raising the Disney grant and we owe a special thanks to her! Our community-based conservation work has received incredible support from the Whitley Fund for Nature for more than ten years now. We are immensely thankful to them and all the other donors who have supported our work in Spiti.

We are extremely grateful to His Eminence TK Lochen Tulku Rinpoche of the Key Monastery for writing the Foreword for this book. We owe a deep sense of gratitude to all the contributors—from the Rinpoche of wildlife conservation, Dr. George Schaller, to conservationists who have carried out long-term work, PhD students, interns and field staff of NCF for enriching this book by sending their articles amidst their busy lives and field schedules.

Our field team in Spiti has been instrumental in this journey and all of us are grateful to Tanzin Thinley, Kalzang Gurmet, Lama Tanzin Chewang, Sonam, Rinchen Tobgay and Sushil aka Tandup Dorje. All those who assisted us in field at various stages and places including ‘Sherpa’ Lobsang Gailson, Takpa, Chhuldim, Dorje Jr., Kamaal and Damaal lamas (!), ‘Siri’ aka Chhunit Kesang and many others. Residents of Kibber, Chichim, Kee, Tashigang, Gete, Kaza and all the villages of Spiti Valley where we have worked provided daily wit and jovial company, added enthusiasm and positive spirit besides looking after our various logistical needs. We thank the principals, teachers and students of all schools of Spiti Valley who have whole-heartedly participated in and supported our nature education activities.

Able assistance provided by Radhika Timbadia, Ajay Bijoor and Rakhee Karumbaya at

different stages of this work has been of immense value. Our colleague, Aparajita Datta volunteered to proof-read all the articles and provided the much-needed final edits in the shortest time possible. Our design team consisting of Janhavi Rajan and Pavithra Sankaran ably saw yet another publication through with their skill and commitment. Our organisations—Nature Conservation Foundation (NCF) and Snow Leopard Trust (SLT) have facilitated these journeys in the past two decades and we gratefully acknowledge the help and strength provided by our colleagues in India and the USA. Himachal Pradesh State Forest Department has been our long-time partner and we acknowledge their support in different areas of our work. We would also like to thank Munib Khanyari for giving a final look to the text to see that all was well!

# Introduction



Letters from Chomoling

*George Schaller*

A head of us the foothills of the Himalaya emerged from the June haze of the Indian plain. I was keen to leave the endless paddy and wheat fields, the crowded towns, and cluttered highways for the freedom and peace of the mountains. Earlier that year, in March 2008, I had met Yash Veer Bhatnagar, Pranav Trivedi, and Charudutt Mishra from the NCF at a snow leopard conference in Beijing. Having read of their wildlife research and community-based conservation work, I was deeply impressed by it and wanted to emulate it. I had roamed Central Asia's mountains intermittently since 1970, studying animals such as bharal in Nepal and snow leopard in Mongolia. But now I was shifting my focus from natural history of animals more to conservation issues of Tibetan communities and monasteries on the Tibetan Plateau in China, collaborating with colleagues from Peking University. How do you encourage a community to tolerate snow leopards preying on livestock? How do you impart conservation values? From the work in India, I wanted to gain more insights into how we could strengthen our efforts across the border in China.

And here I was on my way to Spiti Valley, accompanied by Yash Veer. But an escape into the tranquil heart of the mountains was a pleasure deferred. The road was narrow and jammed with traffic. At one point I counted 153 trucks bumper to bumper and engulfed in noxious black fumes winding down a denuded hill. Farther on, beyond the 3870 m Rohtang Pass, was a line of stalled vehicles. In a statistical mood, I walked ahead to count them, all 513 halted by a small muddy patch. After a five-hour wait, we crawled on over a gullied, pot-holed track with the outer edge crumbling into a canyon. After a trip of two days from Delhi we reached Kaza, district headquarters of Spiti and only 20 km from Kibber. The small town was inundated by hitch-hiking, disheveled foreign travelers. Here in Kaza we met



*Chomoling: a serene and living plateau*

Pranav. Earlier, Sushil aka Tandup Dorje, a field coordinator of the program, had joined us in the town of Manali.

Kibber, a lovely village of some 90 households in Spiti Valley at an elevation of about 4200 m was to serve as a base for me for the next two weeks. The white-washed and flat-roofed houses were crowded on a steep hillside. Some official buildings of cement and metal roofs added a discordant note to the traditional and harmonious scene. A large sign painted on a wall proclaimed: Avoid AIDS. Knowledge is Power. Irrigated fields of barley and pea ‘greened’ the slopes near the village, and blue-blossomed wild geraniums traced their edges.

Behind the tranquility was the toughness of life in the high altitude mountain landscape. One of the critical issues for people and conservation is how to prevent retaliation by communities against large predators when they kill livestock. The loss of even a few animals to snow leopards and wolves can cause hardship if the family is poor. The obvious way



to prevent such killing has been by shooting, trapping, or poisoning the predators. This remains common even though, for example, the snow leopard is rare and protected by law in all the twelve countries in which it occurs. Much predation occurs because of poor herding practices, as I have often observed. To compensate households for predation losses, governments and conservation organizations have initiated simple payment schemes. These tend to work poorly. Villages are often remote and reports of losses difficult to verify, payment may take months, false claims are common—and the drain on funds is endless without incentive for households to improve their herding methods. How has Kibber handled this problem?

Over leisurely meals of rice, peas, and chapattis, Yash and Sushil told me about predator-livestock conflict in Kibber. I'm lucky, they informed me: the village committee will meet in a few days, enabling me to observe the way the compensation payments are handled. It's not a give-away but a community-based insurance program. Households are free to decide whether to join, and, if they do, which animals to insure. Each household determines which of its yaks, horses, cows and donkeys to insure. The premium is set by the community in consultation with conservationists, depending on the age and sex of the animal. Payment is for the full market value, or 13,000 rupees (about US\$ 300) for an adult yak or horse and less for a young animal. When the killings take place in the pastures, the household must not remove the carcass so that the predator can eat its fill and not immediately kill again. After initial financial help to start the insurance program, the program becomes self-sufficient, managed by the community.

Five members of the compensation committee met to make payments for recent losses. They sat in a circle on the grass in front of the village, notebooks open in front of them. The committee had already decided on the level of payment for each reported kill. One by one the claimants came up. After a check of the register, and taking oath of truth while paying respect to a photograph of HH the Dalai Lama, the claimant was handed his rupees. He counted them carefully and agreed; the transaction smooth and complete. During the previous 12 months, snow leopards had killed 13 yaks and 4 horses



*Children at the campfire*

of which only 3 were adults. Wolves had killed 4 donkeys. Payments totaled 85,000 rupees (US\$ 2024).

A few days later, in the small village of Demul, we were told that a snow leopard entered the village the previous night. It had jumped into a corral tucked against a house and killed all six sheep in it. No one in the house awakened. I examined the corral. It measured about 5 x 3.5 m and the lowest part of the stone wall was a mere one meter high. The snow leopard had carried one sheep into a nearby gulley, littered with plastic bottles and other refuse, where rumen contents and dark splotches of blood showed where it ate. The six carcasses had already been skinned and the meat distributed. Such incidents happened once or twice a year in the village. Yet, the sheep are often left wholly exposed at night. A sheep is worth 3000 rupees (US\$ 70), but the government pays in compensation only one-sixth that amount. The owner complained loudly to us, waving a bloody sheep hide, that payment is too low and slow. I refrained from noting that there should be no payment at all because he

had made no effort to predator-proof his corral. Since then, a programme to predator-proof the corrals, based on sharing of effort, resources and expertise between the community and Nature Conservation Foundation has been implemented to address this problem.

Individual initiative and social will are both essential in a community to reduce predator-livestock conflict. That is one important lesson I took away with me from Kibber. Innovative insurance programs with local variations have also been initiated in Afghanistan, Pakistan, and China, to mention just three countries.

A few days later, we gathered at Chomoling, an hour's walk from Kibber. Nine tents had already been set up on a level spot near a canyon, their yellow and blue colors brilliant in the dun landscape. A serrated range streaked with snow traced the skyline. Here, away from houses and roads, it was quiet and the views wide, a place for the spirits to dance. Yash and Sushil were here and Sumanta Bagchi had come too. I was much interested



*Himalayan Griffon vulture*

in Sumanta's in-depth study of these high Himalayan rangelands, the first of its kind to find out how the heavily used and often degraded pastures can be grazed sustainably by both livestock and wildlife. But this outing belonged to Pranav and his Spitian students from the Munsel-ling boarding school at Rangrik village. Twenty-four teenage students had come, 14 girls and 10 boys. Schools here focus on rote learning, Pranav informed me, and students are discouraged from expressing feelings. This three-day course would be different. Conservation requires passionate persons and Pranav is one.

This was the first camping trip for most of the students. They now sat in a circle on the grass full of anticipation, the boys on one side and the girls in the other. Standing at the edge of the circle, Pranav outlined the plan of activities. Fifteen ecological messages have been hidden around here: find them and follow the instructions and it will open windows to the world around you. The students were divided into five teams, each named after a local animal, among them snow leopard, bharal, and golden eagle. Full of enthusiasm and with much laughter the teams dispersed, searching in likely places.

Each message brought the students close to nature, very close. One said that a rainbow fell to earth and shattered. Discover flowers of the same seven colors as a rainbow and draw these. Observe ants, bees, and other insects and write down what they are doing. Don't just look at flowers but also smell their stems and leaves. Search for and discover signs of animals, a scat, a feather, a bone, a track. Sit down quietly and listen and think and the silence will speak to your soul. The students were learning the difference between just looking and seeing with new eyes. Above all, they became aware of the natural splendor around them, and of the need to protect the yellow-flowered *Potentilla*, the soaring Himalayan Griffon vulture, and the pika in its burrow.

Sometimes, while the students were busy learning about food chains and the interdependence of soils, plants, animals, and sunlight, Yash and I wandered along a nearby canyon. One time, nine bharal rams with thick, curving horns grazed a mere 30 m from us. They were in spring molt—their blue-grey coats tattered. In a niche of a cliff was a Golden Eagle aerie

with two large young huddling in it. Yash had observed the eagles there every year since 1996. I wondered if a snow leopard, this phantom of the peaks, was lying up among the rocks silently observing us with frosty eyes.

In the evening we gathered around a yak dung fire. The students were encouraged to read what they had written about their day's experiences or simply to relate them. The girls spoke fluently in English with flair and insight; the boys were more intent on nudging each other and guffawing at private jokes (this, however, as we learnt from their essays later, doesn't reflect their disinterest). The evening ended with communal singing under the stars.

On our last morning at Chomoling, we gathered again in a circle. The students had been asked to write essays about their thoughts and experiences, and several read theirs, all extolling the beauty around them and the opening of their minds to nature. I gave a brief farewell speech about always showing love, respect, and compassion toward all living beings. Conservation is based on knowledge and beauty, and we have all had the benefit of both at Chomoling. Together we had learned so much and had a delightful and memorable time. I gave each student a course certificate and the best ones a copy of 'Nono, the Snow Leopard' Pranav's story-book for children about snow leopards and people, set in Spiti.

As we concluded, the donkeys arrived to pack out our dismantled camp. Back home in the United States, I was honored to receive eight 'select' letters from the students, each two to four handwritten pages long, detailed and perceptive about their days at Chomoling. They revealed a deep concern for nature, as in these three brief quotes:

"Dear Sir: Open with a smile.

I was always thinking what I will become. Now I decided to become a scientist of animals and to save our environment." —Dhondop Lhamo

"I learnt that we should not harm animals and plants. Because they also want to live and

want to grow like us.” —Dikit Chhering

“I promise you that I will teach my school mates, friends, parents, villagers, and relatives not to cut or destroy the plants...to destroy the food chains. I will try save the wildlife. Wildlife is one of my sweet dreams. Never 4get us.” —Sonam Dikit

Pranav and his team enlarge the caring and compassion of children, opening windows to a new and splendid life for them. There can be no greater satisfaction than that. I am proud to have been with them at Chomoling.



# 1

## Tenzin and the wolf pups

***Charudutt Mishra** shares one of the most moving conversations with a local Spitian friend that possibly led him to think and do conservation the way he has done for the past two decades.*

How has Spiti influenced me? This is a very hard question to answer. It is akin to trying to describe my mother's influence on me. Or that of my son. When something is a part of you, it is hard to disentangle the skeins of influence that separate it from you. And, in truth, the details become unimportant. Let's just say that Spiti has been a part of me for a very long time. Let me, instead, tell you a small story.

This is the story of Tenzin, who lived in the village of Kibber. He was a fascinating person. Of stocky build, his slightly wrinkled and sun-burnt face radiated native wisdom, life's hardships in the high mountains, and its rich experiences, all at the same time. Amongst Tenzin's many skills, he was a seasoned trader in horses. With the advent of spring each year, he would go around Spiti's villages looking for specimens of the prized local Chhumurti breed of horses. After gathering his herd, Tenzin would wait patiently for the snow to melt and for the Parang La (la is the word for mountain pass in Spitian) to become crossable.

North of Kibber, it would take at least two days to cross over this pass located at 5600 m, and after a somewhat difficult descent over a glacier and its crevasses, Tenzin and his horses would be trotting along the headwaters of the Pare Chhu. Traveling through the day, and guarding the horses from snow leopards and wolves at night in makeshift camps.





*The beautiful Kibber village seen from Chomoling*

Continuing downstream, they would head towards settlements such as Korzok and Chumur on the western edge of the Changtang Plateau—the high altitude northern plains of Tibet—where Tenzin would barter the horses for a variety goods, such as carpets, saddles, Chinese made jackets, and some cash before returning home. This annual journey of about 250 km would typically be extended over several weeks of travel, sleepless nights, reunions, merry making, negotiation, and clinching deals with residents of the Changtang.

During his journeys, Tenzin and his herd would cross paths with several herds of kiang, an impressive wild equine that is extinct in Spiti Valley, but thrives in parts of the Changtang. The kiang, it was earlier incorrectly believed, was the stock from which the Chhumurti horse arose. Chhumurti is a hardy breed, largely used as a pack animal, and was much in demand in the Changtang. With his skills with horses, a rare flare for adventure and yet a remarkably calm demeanor, Tenzin was in the perfect business. He wasn't a bad negotiator either. I should know, considering the ease with which he once made me pay handsomely for

a Chinese-made jacket after first convincing me why I needed it so badly!

However, times change. Like the kiang in Spiti Valley, the trade with Changtang is nearly extinct today, and motorcycles and off-roaders have largely replaced the horses. Tenzin too, mellowed by age and life's realities, shifted trade to become a contractor of local civil works.

I first met Tenzin 20 years ago. I was then a young, somewhat idealistic, and impressionable researcher who had found his way to Spiti Valley in search of a place to conduct field research. It was my first summer of field work in Spiti, and I had just been through a confusing experience.

I had spent some time with friends at the forest department in Kaza, helping care for a litter of young wolf pups that had been 'rescued'. These were traumatized little creatures when we first saw them, tied tightly together with a thick nylon cord and nearly suffocating in the small cardboard box they had been stuffed into. They would have been killed. As I was learning, for a livestock-based people, any chance to eliminate the wolf would not be taken lightly. No mercy was to be shown, even to pups.

There was a sense of triumph at having been the part of an effort that had rescued these helpless creatures from certain death. They were eventually sent to a provincial zoo. There was sadness at the thought that they would lead the rest of their lives in cages. Also because one of them died under our care – the shock of witnessing human brutality had perhaps been too much for her to cope with. And there was this strong, unexplained sense of frustration. I had started living in Kibber a few weeks earlier. I came back to the village from Kaza, and coincidentally, so did Tenzin, from the Changtang. I was fascinated the moment I met him. On our first meeting itself, I had decided to follow in his footsteps and trek to Korzok and back. It was a memorable journey, but it would happen only later in the year.

For the moment, however, my confusion had grown. I had also learnt of an adult snow leopard that had been killed in Kibber, just a couple of years earlier. My long-held idea of a benign

people, coexisting in harmony with nature, was crumbling before my eyes.

I remember trying to gently discuss such persecution of wildlife with the villagers, and with Tenzin. He was wise, but at one point in our discussion, I thought I finally had him cornered. I asked him how could they kill these animals, especially since they were practicing Buddhism that teaches reverence towards for all forms of life?

Tenzin's answer to my question was both simple and honest. He agreed that Buddhism taught compassion towards all living beings, and he agreed that these animals had a right to live. But what he said next was very humbling, and in retrospect, it was perhaps one of my first lasting lessons in the real world of conservation. He said that he and his people, in trying to make a living and caring for their children, did not have the ability to conserve snow leopards and wolves.

Those were powerful words. Today, I am convinced that the problem is not so much with the willingness, but rather the ability of local communities to help conserve wildlife, as my friend Tenzin had put across so simply and eloquently 20 years ago. Over the years, I had countless other conversations with Tenzin that left me similarly enriched, often humbled. Sadly, Tenzin suddenly passed away a few years back, much before his time.

As I look back, if there's one important way in which I have made efforts to contribute to conservation, it is by trying to strengthen the ability of households and communities like Tenzin's to conserve. Did Tenzin set me off on this path? Or was it Spiti? Or my other wonderful Spitian friends from whom I learnt much? It is hard to decide. But then, when something is a part of you, these distinctions become unimportant.

## 2

# A paradigm shift

*A snow leopard has been killed in a hamlet, or so the rumour has it. **Ranjini Murali** goes to investigate and find out the truth. She hopes that the situation can be transformed so that no more snow leopards have to die before their time. Here, she recounts a radical transformation that takes place during her brief visit – her own.*

Rumours drifting in the cold wind, an incident spoken about in hushed tones, lest it be heard by wrong ears. It was this whispered story that led us to the sheltered valley of Lingti. Accompanied by the chilly late October wind, we entered Sherap, the first village at the mouth of the Lingti. Nestled amidst mountains, Sherap looked like any other Spitian village. An array of square white houses with bright blue windows haphazardly stacked together. Postcard perfect—yes! But a careful observer may notice the white paint peeling, the walls a tad dirtier than other villages, the roofs not as well maintained, people's clothes older, worn and torn.

We were in the Spiti Valley in Himachal Pradesh. I was with two of my colleagues from the Nature Conservation Foundation, Tenzin Thinley and Kalzang Gurmet. Thinley and Kalzang are from Kibber, another village in Spiti. NCF has been working in the Spiti Valley for over fifteen years. We had recently heard about a disturbing incident and we had come to the villages at the mouth of the Lingti Reserve to uncover more details.

The coldness of the October wind ensured that we walked hastily through the narrow streets in search of a roof over our heads, a warm fire, and hopefully our first informant. We purposefully made our way up to the house of Thinley's relative where we were immediately





*The hamlet of Dumling*

surrounded by three excited children. Thinley's cousin, Dolma, came out and joyfully welcomed us to her home. We huddled around the fire trying to dispel the cold from our bones. Soon we were joined by one of the neighbours. Thinley and Kalzang struck up a conversation with him, while I helped Dolma with the dinner.

The conversation slipped along smoothly and soon we were able to unearth some of the details of the story. "The snow leopard entered the corral in Dumling and killed thirty sheep. The snow leopard then became unconscious because it drank too much blood. When it was unconscious, "he ended with a small shrug, "people pelted it with stones and killed it." And there we had it—confirmation that the incident had actually happened. Dumling is a little hamlet a small distance away from Sherap. It is a common belief in Spiti that the snow leopard drinks the blood of its prey and becomes sluggish. There is little real evidence that this is true, but it was clear from the neighbour's words that he didn't, for once, doubt it.



*The corral where the snow leopard had entered*

We spent the night in Dolma's comfortable house and the next day we made for the beaten path out of the village. Leaving Sherap, I was nervous about meeting the man who had killed the snow leopard. What kind of a person kills a snow leopard, I wondered—Cruel? Violent? As we walked towards Dumling, the image of the murderer grew in my mind — large, boisterous and unscrupulous.

As the sun started to set, painting the sky a picturesque pink and purple hue, we saw Dumling on the opposite side of the river. We needed a place to stay. The hamlet had just three houses, the river on one side and the mountain on the other. It was situated right smack in the middle of prime snow leopard habitat.

We met a woman on our path. Kalzang spoke with her for a bit in Spitian. After the conversation, she politely smiled at me and continued on her way.

"What did you tell her?" I asked Kalzang.

“I said we were looking for a place to stay in Dumlina and she offered us her place” said Kalzang. “But she said her husband was drunk, so we would have to make our own food.” Coming from a bustling city, I could not imagine inviting a complete stranger to spend the night in my house. Yet in Spiti Valley, we could walk into just about any house and they would let us spend the night there treating us with the greatest hospitality they could provide.

A little, wide-eyed girl opened the door and ran back into one of the rooms. We followed her into a living room of sorts. The father, obviously drunk, was draped untidily on one of the beds, another little girl was snuggled under a heavy blanket on an adjacent bed, and her sister, who had opened the door for us, was snuggling in beside her. Seeing us, the father smiled and clumsily tried to stand up.

“Come in. Please sit down, I will get you some chai,” he said in Spitian.

“No, no, don’t worry about it. We’ll prepare chai and dinner. Your wife said we could spend the night here,” Thinley said.

We spent some time talking to them in the living room and then we made our way into the kitchen and started preparations for dinner. The man insisted on getting us some meat for dinner. Meat is precious in Spiti and his offering it to us was extremely generous. I was touched by his gesture. Thinley and Kalzang struck up a conversation with him in the local language while I played with the two young girls. The man seemed extremely polite and although both of us did not speak the same language he attempted to make conversation with me through Thinley or Kalzang and using bits of sign language.

After dinner, we retired to the comfortable beds they had prepared for us. Snuggling under my layers of blankets, I asked expectantly “So, what did you find out?”

“He was the man who killed the snow leopard,” Thinley said.

“What? Him?”

I couldn’t believe it! “He seems so nice. His daughters are so lovely. How could he be the man who killed the snow leopard?” Our mild-mannered host did not fit the picture I had painted of a snow leopard killer.



Thinley continued with his story. "Around twenty years ago a snow leopard had entered his corral and killed twenty livestock heads. In 2010, two snow leopards entered his corral, killing thirty-five livestock. One snow leopard escaped and he managed to trap one in the corral. He rushed to Bumla, a neighbouring village, and rounded up eight or ten young men to help. They tied a rassi (rope) into a noose, threw it over the snow leopard's neck, pulled from both sides and killed it."

"He gave away every one of the dead livestock to the villagers. They helped him rebuild his herd by giving him a lamb each" Kalzang added. "Every winter, at least two or three of his animals are killed because of the snow leopard."

"Really? They don't have a herder?"

"They have an old Tibetan refugee who herds their livestock during summer but in winter they don't have anyone. But he said that some depredation is expected as they live in the snow leopard's habitat and they can't do anything about it."

Having finally gotten all the facts of the snow leopard killing, a sombre mood fell on us. I had some difficulty falling asleep. I just couldn't reconcile the image of the gentle man with two daughters, our generous host for the night, with that of the man who killed the snow leopard.

We rose early next morning to a delicious breakfast of hot thukpa prepared by the man. The kitchen was warm with a fire burning in the tandoor. He gave us a few apples and invited us to stay at his place for another night. We politely declined telling him we had to be on our way. He had to leave to work early but he told us to relax and leave at our leisure. After breakfast we walked around the three-house hamlet. The mountains seemed to end at the rooftops of the houses. The hamlet was surrounded by prime snow leopard habitat. No wonder the attacks were so common.

"The snow leopard jumps onto their roof and looks down at them, from a hole in the roof, that's what the man said." Kalzang told me.

A few months later our team went back to the hamlet and initiated discussions and negotiations with the residents, including our host. Together, it was decided not to let such incidents repeat in the future. Led by Thinley, everyone worked together to make all the corrals in the hamlet predator-proof. We supplied them with the raw material to build the corrals. All the openings to the corral were carefully secured with strong grills to prevent snow leopards from getting into the corrals. This would prevent any further livestock attacks in the corral. In this hamlet, to which we were drawn because of the killing of a snow leopard, we had found our latest conservation partner.

In the two years that I worked as a Conservation Coordinator at NCF, this particular incident has stayed with me. It caused a paradigm shift in my views of conservation. While the man did kill a snow leopard, his identity is drawn from so much more than just that one act. He is a husband, a father, a generous host, an entrepreneur, a farmer. Sharing the roof with him for an evening helped me see the different sides to life. I realised that conservation was not just about statistics and data, it was about peoples' lives – real people with ambitions, dreams, feelings, and hopes—people who were more than just their actions. This was my real initiation into community-based conservation.

# 3

## Winter in the sky

**Mayank Kohli** *relives the hardships, tensions, and joys of field research in Spiti.  
His knowledge and skills evolve with hard work, much like those of his field-companion,  
a young golden eagle learning to fly.*

Do you know the long day's patience, belly-down on frozen drift,  
While the head of heads is feeding out of range?  
It is there that I am going, where the boulders and the snow lie,  
With a trusty and nimble tracker I know.

— Rudyard Kipling

**T**he bharal herd that I'd been following had vanished. All my efforts at finding them only yielded more mountains, more slopes, more scree and more snow. As I trudged up another slope and collapsed out of exhaustion and despair, I woke up with a start- throat dry, body tensed and sweating despite the inhumanly cold temperatures outside. I drew comfort from the realisation that it was just a bad dream. Just a bad dream.

It was close to 3 a.m. I looked out from my bedside window upon the quiet village – white huts glowing in the soft moonlight reflected off the snow-clad mountain slopes. Even a surreal scene like that only partly soothed my worries. I tried to reassure myself that come what may, by the end of my stay there, I would have had the time of my life. Then, reality set in and I remembered I was way short of data. Planning my next few days, I promised myself that from



*A bharal female with the typical curious look*

now on I was going to be like a man possessed and chase bharal from morning to evening, till they got me my MSc! Feeling the renewed hope spread warmth through me, I snuggled back into my quilt and slept.

I was in the trans-Himalaya, trying to understand how herbivores like bharal survive the harsh winter in these mountains when there are no green herbs or grasses to be found. Lured by thoughts of idyllic days spent ‘herding’ wild animals and nights gazing at stars, I had embarked on this once-in-a-lifetime- adventure—to be in the mountains in winters, living in a raw landscape amidst warm people.

I got there in December just at the start of the winter season. Almost immediately, Chhota Lama offered me the shelter of his warm house and company of his warmer family. After spending the first few days acclimatizing to the high altitudes under the family’s strict supervision, I ventured out to watch bharal herds. Males were sparring and chasing females

up and down crumbling rocks and cliffs on steep slopes, not missing a step. Occasionally, a male would get to mount a female and the act seemed to be over in a few seconds, only for the entire circle of events to start again soon afterwards. Bharal females had a rough time; sometimes 5 or 6 males would keep chasing and harassing a female, not letting her eat in peace. But suddenly, they would abandon their pursuit after she let them ‘taste’ her urine. Perhaps that told them that she wasn’t ready to be a mother just yet, or that she was already pregnant. Once after a skirmish involving 4-5 big males ended with the largest mounting the female of interest, I saw her limping miserably for the next few days.

Bharal females give birth in the early summer when there is an abundance of green grass for both mother and young. But this also means they are pregnant during winters when even the dried up herbs and grasses are hidden away under snow. A mere look at the landscape baffled me; all around I could only see brown scree and white snow with only small patches of dry vegetation here and there. It seemed that an animal might lose more energy trying to find



*Winter in the sky!*



food than it would get from eating it. The lack of abundant fresh vegetation during winters is bad enough, yet this is not all that wild herbivores like bharal have to grapple with. Bharal share much of their habitat across Asia with pastoral communities and consequently have to compete with livestock for forage. How could they even survive here, I thought?

A part of the answer lies in understanding how bharal manage their daily activities like feeding and resting. Over the next 2-3 months, along with my field assistants Tenzin Thukten and Lobzang Chhupil, I followed and observed bharal from morning to evening as they spent much of their time foraging or resting. On good days the sky was a perfect blue, and the warm winter sun made us upbeat. Everything bharal did seemed new and interesting. The slightest sound of rocks tumbling down cliff-sides was an indication of a snow leopard on the prowl, prayer flags fluttering in the wind—a symbol of all that’s good and agreeable about humans. On most other days though, we just tried to stay warm and get on with the work as icy winds tore into us through multiple layers of clothing, causing our eyes to water and turning our fingers stiff and numb.

The monotony of watching bharal was sometimes broken by other action around us. A pair of golden eagles rearing a young one offered plenty of excitement. Time and again, they swooped down on an unsuspecting snowcock to satisfy the voracious appetite of the chick. Later as the chick grew older, we saw it being taught the art of aerial combat by its parents. Once, the juvenile took off with a snowcock delivered to it, rose into the air and let the prey fall from its talons. The attempt to dive after the free-falling prey and retrieve it failed, and the hard earned meal was smashed against rocks. Growing in confidence and ambition everyday, the juvenile once tried to circle down on a bharal yearling, with talons out and ready to lift the animal. Timing it perfectly, the yearling’s mother stood up on her hind legs and kicked out at the bird, making sure its child would live to see another day.

Wintertime in Spiti is far from all work and no play; back in the village, the thilsi was on. First a festival for the men of the village, followed by another one for the women, and then one for everyone, and then one more! An organized supply-chain would efficiently create lots and



lots of meat dumplings or momos, which would be quickly washed down with the local brew or ara. This ritual was usually accompanied by talk of local village and panchayat politics, and less frequently, people would dance late into the night to Spitian songs.

Before I realised it, winter was coming to an end. We did a last dash of data collection that involved camping for about ten days in a temporary hut or dogri in the heart of a pasture called Ronglong. Camp routine was hard but great fun. We observed bharal from dawn to dusk, fetched water and fuel on our way back, cooked, ate and slept. Being in the heart of the wilderness gave us a chance to glimpse unusual animal behaviour, and see or hear rare animals- e.g., every time we napped between turns, a lammergeier would mistake us for carrion and circle down low and land close by. Once, answering nature's call late at night outside camp, I thought I heard the hoot of a large owl coming from the nearby gorge thus confirming the presence of these birds that I had asked everyone about. I must tantalize the reader by saying that on another occasion Tenzin and I also observed a snow leopard—that most magnificent of cats- for a good long 5 hours. But, like they say, that's a story for another day.

Back in Bangalore, all the numbers pieced together tell us a story. Much to my surprise, I realised that rather than feed for longer to make up for the sparse availability of forage during winter, bharal actually spent less time feeding and more time resting when there was less food in the pastures. Furthermore, as the lean season progressed from January to March the animals rested more and foraged less. This seems to suggest that as food depletes over the season, bharal reduce the energy they would need to spend in searching for food, opting instead to save energy by resting. This strategy may be crucial in helping them survive harsh winters.

Bharal, however, may be fighting a losing battle. As livestock numbers increase in large parts of the Himalaya and Central Asia, wild herbivores may be doubly disadvantaged. First, they are likely to enter winter in poorer condition owing to the competition for food with livestock in summer, and second, they are less able to supplement their body reserves with energy and

nutrition during winters. This can have several negative effects on bharal- direct mortality due to starvation, decrease in fecundity of bharal females, and poor body condition of neonates often leading to mortality.

Up until now, the remoteness and ruggedness of this landscape has ensured it remains a wilderness, more or less untouched by the ills of modern human societies. But the invisible hand of global change is causing the local precipitation and temperature regimes and with them the plant and animal communities to shift very gradually but noticeably, even as globalization is fast changing the aspirations of the human inhabitants. What does the future hold for this raw yet fragile ecosystem? I recall the soft moonlit glow and the gurgle of the stream under the crazy night sky and feel happy that for a few months every year at least, this place is still too daunting and too hostile for us to threaten. As I type this out and reflect on that winter, the romance of the mountains is once again swirling in my head. Though I shudder at the thought of trudging up those daunting slopes and the unforgiving icy winds, I will happily fall prey to that magic again.

# The dilemma of conflict

*Understanding how nature works requires curiosity, and it needs one to work like a detective.*

**Kulbhushansingh Suryawanshi's** research experiences in Spiti show how a fascination for natural history, an aptitude for scientific enquiry, and access to modern technology can combine to help unravel nature's complexities.

We sat overlooking the vast expanse of rolling mountains. Behind us were lofty peaks of the Greater Himalayan range and in front, beyond the rolling mountains, another range of tall peaks separating us from the Tibetan plateau; barely twenty five kilometers as the raven flies. A herd of about seventy bharal was busily grazing. As the sun swept the horizon, the reflection of snowflakes seemed to cover the mountains with a carpet of diamonds.

We were in the Spiti Valley. My companion Takpa—a local youth who was helping with my study on the foraging behavior of bharal, sat cross-legged. He had been exceptional with recording the daily activity of bharal throughout the winter. During such times, when we sat at a vantage, watching the bharal, we also had the opportunity to spot a lone wandering red fox or a pack of wolves preparing for a hunt. We had been lucky and even spotted snow leopards on a couple of occasions. Our most memorable sighting was when we saw a snow leopard get surprised by a herd of bharal. The young leopard just stood there frozen, watching the equally puzzled bharal!

Late in the evening as we left our perch on the high ridgeline and headed for the village, Takpa remarked that the population of bharal was increasing. This was obviously good



*The rugged yet luring landscape of the Spiti Valley*

news. More bharal meant that the place could support more carnivores such as the snow leopard. But Takpa said more snow leopards would mean that more of the village livestock would be killed by the predator. Takpa should know, having lost his own livestock to snow leopards. Conflict over livestock killing by snow leopards is one of the important causes of its endangerment. It made sense, but then “wouldn’t more bharal mean more food for the snow leopards so that they don’t have to kill the livestock?” I wondered.

Little did I know that this casual pondering was to become my obsession for the next four years. The following year, I started my doctoral study trying to answer whether livestock predation by the snow leopard would increase or decline when conservation efforts succeeded in increasing the populations of their natural prey. There were ecological and intuitive reasons to believe in either possibility. More natural prey could mean more food and so reduced need for snow leopards to kill livestock, or more natural prey could mean more snow leopards, and so increased livestock killing!

We began by looking for the villages where people were facing livestock predation by snow leopards. For this task, we needed a larger team, so our team included Rinchen Tobgay, Kalzang Gurmet, Tanzin Thinley, Sushil Dorje and Tandup Chhering—all from Kibber village. We started visiting all the villages in the valley one-by-one. After reaching a village we would split into two teams. One would survey the bharal and other wildlife species in the surroundings of the village, while the other team would interview the villagers to estimate the extent of livestock predation by snow leopards and wolves. We would also meet the herders of each village to find out the number of livestock killed by predators over the previous year. We also recorded the total number of livestock in the village. The idea was to see if villages with larger bharal population in the vicinity experienced higher livestock predation by snow leopards.

In this manner, we surveyed all the twenty-five villages in the upper part of the Spiti Valley – also called the Upper Spiti Landscape. As I analyzed the data, a clear pattern slowly started to emerge. While snow leopards occurred throughout the valley, areas with higher populations of their natural prey had higher density of their signs such as feces, scrapes, and kills, indicating their greater use of such areas. In addition, all the villages that had a sizable population of bharal or ibex in the vicinity were losing more livestock to predation. On the face of it then, I had answered the question that nagged me on that slope – snow leopard numbers were highest where wild prey was highest, but this also meant higher loss of domestic livestock.

But there was no closure for me. More questions popped up. What would happen if the populations of natural prey continued to increase? Would livestock killing by the snow leopard continue to increase as well? We were seeing a pattern, but was it really due to an underlying ecological process or just a chance correlation? We decided to investigate this further. This time around we wanted to understand the ecological processes through which the populations of wild herbivores, snow leopards and livestock were interacting with each other. Unlike our earlier surveys we sought to find out the actual number of wild herbivores and snow leopards in each area, using much more accurate ways of estimating their populations. And also find out what the snow leopards were eating through the year. Based on this information, we



sought to understand if the population of the natural prey was influencing the extent of livestock predation by snow leopards, and how.

For this purpose, we conducted surveys of snow leopards, their natural prey and livestock populations in seven different areas, two of which were in the upper part of the Spiti Valley, one in Lingti Valley and Pin Valley each (both tributaries of the Spiti river) and one in the lower reaches of Spiti. We also decided to add additional areas to our study by including one in Ladakh and the seventh one in the far out Gobi desert of Mongolia.

Counting wild animals is more challenging than it might first appear. You can go out to the pastures and mountain slopes, survey for bharal or ibex using binoculars and spotting scopes, and keep a record of how many individuals you saw. That would yield a minimum number of animals, assuming that you did not count the same animal twice. But is that the same as the population of bharal or ibex in the area? No, because one can only record what one sees,



*Bharal herd dotting a gentle slope*





*Winter is a good time to spot the ghost of the Himalaya*

and that usually is just a subset of the population. How does one account for all the animals that one missed seeing? For instance, animals which were far away and resting, making them inconspicuous. Or those that were hidden from view by a large intervening rock? Working with two local youth at each site, we worked out a statistically robust method – called the double-observer count—to estimate the actual abundance or population of prey through a combination of two surveys in each area. This new technique worked well enough for us to continue it as a tool for long-term monitoring of the snow leopard's prey populations.

In each area, we started by estimating the populations of natural prey, the ibex and bharal, using the newly developed method. The next step was to estimate the population of snow leopards. For this, we surveyed the entire three hundred and fifty odd square kilometers in each area on foot in search of snow leopard feces. These feces, called scat, are a smelly treasure trove of knowledge. Each fecal sample is packed with information. But to make any meaningful conclusions about snow leopards from their feces we needed as many of

these packets as possible. We combed each site for at least a week. Later in the laboratory, I extracted snow leopard DNA from the fecal samples. Each snow leopard has a unique genetic makeup. Of course, we often found different fecal samples with the same DNA in it. This meant that we had found multiple fecal samples of the same snow leopard. Based on unique identity established using fecal DNA, we could determine the total number of snow leopards represented in the scats collected from each area. But like the wild prey we surveyed, how could we account for the scats from individual snow leopards we had missed? Once again, I relied on statistical methods to estimate the actual abundances of snow leopards from the numbers that my data threw up.

Finally we wanted to know what the snow leopards were eating. Again, the same scats came to my rescue. From the remains of prey body parts such as hair in the scats, I could determine the diet of snow leopards in each area.

Teasing through this new information helped further clarify my initial results. The population of snow leopards was higher in areas with high populations of natural prey, irrespective of how many livestock were present. But the snow leopards sure ate the livestock too! This was a clue that while snow leopards ate livestock, they would breed and have a healthy population only if there was sufficient natural prey around.

The next piece of the puzzle to fit was the information on diet of the snow leopard. Snow leopards fed on both their natural prey species and the livestock. But, the occurrence of livestock was higher in their diet when there were fewer bharal and ibex around.

This was intriguing. We were getting clues in support for both the possibilities, Takpa's and mine. On the one hand, the population of the snow leopard itself appeared to increase with increase in wild prey abundance. So it was plausible that more snow leopards would mean more livestock getting killed. But the second piece suggested that if there was more natural prey around, then each snow leopard would kill fewer livestock.

So it looked like the solution to the puzzle would be found in the integration of both these ideas. Only, this had to be done mathematically—fairly complex mathematics at that. It was a long struggle, but as each piece of ecological information added to a small portion of a large mathematical equation, which I could finally plot as a single graph that captured a journey of understanding that began four years ago. Essentially, the graph plotted what was likely to happen if the natural prey population in an area continued to increase. We could see that as natural prey populations increased from a depauperate state, the recovery of snow leopard population was the first and strongest response. This implied an initial increase in the instances of livestock predation by snow leopards. We had already seen this pattern in our earlier study. However, as the population of natural prey kept increasing, this would saturate snow leopard diet, and instances of livestock predation should begin to decline even though there were more snow leopards in the system.

This was an exciting academic result as well as comforting news for the conservation of



*A mixed herd of ibex*

snow leopards. If conservation interventions could facilitate an increase in the population of natural prey, not only would it lead to an increase in the population of snow leopards, but it could also help reduce the instances of livestock predation by snow leopards in the long run.

To be doubly sure about our results, we continued to record the total number of livestock killed by snow leopards in over thirty different villages representing a gradient of abundances of livestock and natural prey. As predicted by ecology and our study, the highest numbers of livestock killed were in areas with matching number of livestock and natural prey. Areas with poor natural prey had too few snow leopards to kill many livestock, while areas with more natural prey than livestock had many snow leopards, which were satiated with eating their natural prey!

A seed, an idea, planted in my head during a discussion with Takpa and inspired by the natural beauty and wonder of the Himalaya had grown into a doctoral thesis. But more importantly, the work of four years has put my mind to rest—for a while. More questions remain, but I can once again allow myself to soak in the beauty of bharal herds grazing the mountain slopes of Spiti.

# Trapped with cameras

**Rishi Kumar Sharma** set out to use one of wildlife ecology's modern tools to develop a better understanding of the elusive and endangered snow leopard. As he goes about this challenging task, he also gets an inadvertent glimpse into the responses of local community members to this intervention.

Studying tigers for years among the rolling hills of Madhya Pradesh, the Himalaya belonged to the landscape of my imagination. They were like a 'dreamscape'—beyond reach, while I tramped the ridges and valleys in the central Indian highlands. These modest hill ranges were enchanting, but the Himalaya kept beckoning my spirit. So, nothing could prepare me for the possibility of actually visiting and working in this abode of the snow. To add to the incongruity, the opportunity did come by in the most unexpected way as I sipped a cup of tea in Mysore, on the Deccan Plateau, as far as I could possibly be from the Himalaya! As I sat in the office of Nature Conservation Foundation, discussing my work on tigers with colleagues—the avenue to work in the trans-Himalayan region of Spiti suddenly opened up for me. The fact that the study species for my Himalayan adventure would be the mysterious snow leopard was an icing on the cake.

Six months later, here I was, making my way into the Spiti Valley, packing my dreams, my fears, and a whole lot of cameras. I would spend the next few years counting snow leopards but first I had to enter the "Forbidden Land". Reaching the area was an adventure in itself, the winding and treacherous mountain roads providing stunning views of the Dhauladhar and Pir Panjal ranges as the field jeep crawled slowly near the edges of yawning gorges. The formidable Rohtang pass at 3978 meters marked the end of lush green forests of deodar





*Setting up cameras is a tough task*

and pine and the beginning of the hypnotic cold desert Trans-Himalaya. The road then descended and slowly snaked up alongside the Chandra River. The altitude then began to rise sharply again at Kunzum pass at 4590 meters, where I left the Chandra behind and entered the magical Spiti Valley. Spiti Valley is a surreal mountain landscape dotted with hamlets and Buddhist monasteries. This cold desert landscape in the rain-shadow of the Himalaya is also known as the ‘Middle Kingdom’ and the ‘Forbidden Land’.

I established my base in the Kibber village (at 4200 m) in the winter. Inside the base camp, a traditional oven was burning livestock dung and wood to keep the interiors warm, as the thermometer outside read a minus 15° Celsius. Low oxygen in the high altitude environment makes even the simple tasks of climbing a stair strenuous. But after spending two weeks in the comfort of the base camp, my body was now better acclimatized. It was time to start exploring the landscape. At a cursory glance, these mountains looked dry, inhospitable and lifeless, but despite naturally low productivity, they supported a fascinating array of





*A curious snow leopard inspects the camouflaged camera*

montane flora and fauna. Sharing the jagged mountains with the pastoralists for several millennia was the enigmatic snow leopard, an elusive and charismatic predator found in the mountainous regions of Central and South Asia. My job was to estimate the population of this rarely seen animal and understand how it lived alongside pastoral people with whom it shared the harsh mountainous landscape.

While counting snow leopards sounds like an exciting job, it is really like looking for a needle in a haystack. And this is where technology helps. Biologists use myriads of tools ranging from basic graphite pencils and field notebooks to highly sophisticated radio-collars for wildlife research. Amongst these tools, camera traps have come to occupy a special place in ecological research. The main allure of camera traps lies in their ability to record natural events with minimal disturbance, without the need of a researcher to be physically present. This has tremendous implications especially for people studying rare and elusive species such as the snow leopard.

Using camera traps to collect scientific data requires a blend of science, technology and art. Like fingerprints used in human forensics, individual snow leopards can be identified from their unique coat patterns in the photographs the camera traps capture. The fascinating part is the fact that camera traps yield are not just data points, but wonderful images as well; the most effective way to observe and marvel at this amazing and elusive animal. Using camera traps, NCF has been able to for the first time, estimate the snow leopard population of the Upper Spiti Landscape and establish an annual population monitoring programme.

Installing and monitoring camera traps for several months year after year can become a drab and an exhausting exercise. In snow leopard country, a camera trap exercise is exceptionally challenging due to rugged terrain and poor road network. Almost 90 percent of the locations are to be approached on foot and that takes considerable time and resources. One has to constantly rush from one camera trap location to another worrying about batteries getting exhausted due to the extreme cold, or the memory cards running out of capacity. In this rush to meet the important deadlines of installation and upkeep of cameras, one often tends to miss, ignore or simply underappreciate the natural surroundings. One is unable to spend much time watching a herd of ibex grazing placidly in the meadows, or a lammergeier soaring high in the mountains. One tends to ignore the grandeur of wild animals that one encounters, only to appreciate their beauty in the images obtained later from camera traps. What could be more paradoxical! There are other challenges too. Once a village headman took away one of our cameras and handed it over to the local police, whipping up some espionage rhetoric. I was deeply anguished as several days were wasted dealing with the local police, paramilitary and intelligence.

Incidents such as these however helped us build better contacts with officials who were very helpful once they learnt about our project and its goals. Except once or twice, we never faced any problems in conducting a large-scale camera trapping in Spiti. No theft, no vandalism, and people always welcomed us wherever we went.

Once, our team was returning from a short trek after retrieving a camera trap from a small

gorge near a village called Kyomo. We had already started the jeep to proceed to retrieve other camera traps when a young villager invited us over for tea. While the kettle rumbled and fumed over the traditional wood stove, I punched in the memory card from the camera trap into my laptop computer. A young boy from the family was watching my computer screen. Two snow leopards hanging around together showed up among the pictures, and he shouted ‘shen’, the local name of the snow leopard. Soon the entire family was huddled around the computer excitedly, and the neighbors too were called in. I ran a thirty minute slideshow of camera trap images from all over the Spiti Valley. The images evoked varied reactions; while images of bharal and ibex were met with appreciation, images of the snow leopard evoked intrigue and excitement. There were images of people

too, going about their business, or sometimes looking into the camera traps—this evoked jokes and laughter. An identification parade ensued every time a livestock picture came up, with multiple people laying claim to the donkey or the horse on the screen.



*Into the mountains to retrieve the camera trap images*

When I got up to leave, they promised to take care of the camera trap near their village as well of the subjects it captured. They were proud that there lived not one but two snow leopards not very far from their hamlet. I felt gratitude for their hospitality and their promise to watch over the camera trap and wildlife. This was as wonderful as it was intriguing, since snow leopards often cause much economic hardship to people through livestock depredation while wild ungulates such as the bharal often damage crops the locals depend upon.

At a personal level, the more I have tried to understand these magnificent animals using camera traps as a window to their secretive lives, the more intrigued I have felt by their behaviour and life. I could not see a snow leopard for a satisfying window of time during the six years of my work! But, I have often sat alone on a ridgeline with a panoramic view of Spiti's snow peaks and drifted off into a reverie, as the mountains conjured up the silhouette of a man and a snow leopard gradually melting away into the valley...

# 6

## Taking root

*Plants—sessile and seemingly uninteresting, are the foundations of life on earth.*

*While **Siddharth Iyengar** is busy observing the fascinating interplay of plant life, Spiti's mountains and people quickly take their roots in his heart.*

**C**old air, colder water, an unending view from the window, a night sky packed with stars, and the blissful silence through most of the day. Living with a people who are as cheerful as they are strong, in a landscape that is as beautiful as it is harsh. Thanks to NCF, I spent 4 wonderful months at the village of Kibber in the summer of 2012, studying how the hardy high altitude plants interact with each other to help shape the arid rangelands of Spiti Valley.

When the environment is stressful, plants find it difficult to grow. Even a casual glance at any mountain slope in Spiti makes that abundantly clear—the mostly bare, rocky ground is a sharp contrast to the verdant green slopes of the Greater Himalaya, just a few mountain ridges away. Plants in Spiti have to make do with scarce supplies of water, harsh sunlight (yes, too much sun can be stressful for plants) and thin soils, while dealing with herbivores that chomp off anything green that is more than a centimetre off the ground.

These are difficult conditions in which to construct a life, yet the plant life in Spiti thrives. The grasses and herbs are capable of massive regrowth after being grazed, fuelled by large stocks of nutrition accumulated in their roots. And there is surprising diversity and beauty everywhere you look. A casual collection of plant specimens by a colleague and I during





*One of the many pretty plants of Spiti Valley*

field work yielded around 40 different grasses, mostly unidentified, and over 120 flowering plants, only half of which we could identify.

The altitudes between 4,000 and 5,000 m are dominated by a dwarf shrub locally called thama or dhama, or *Caragana versicolor* to science, which covers up to 40% of the ground in some areas. *Caragana* is a fascinating form of life and an ecosystem by itself. It is a prickly bush, the kind you wouldn't want to sit on even by accident. And yet, within this thorny canopy, many other plant species found in the rangelands appear to thrive. NCF researchers had been long curious to find out whether *Caragana* benefited these other plants, potentially helping them grow and survive better in these extreme conditions. I decided to try and find the answer.

The plants in these high altitudes have only a short growing season. I hurriedly reached Kibber in the middle of May, hoping to immediately start work on the plants as they began

growing after the long winter. Well, I discovered that the temperatures were still dropping to freezing every night, and plants had barely risen from their slumber. The 24-hour bus journey from Shimla, transporting over half my weight in luggage and equipment, was a bleary-eyed adventure that passed in a haze. The journey was soon forgotten in the warmth and kindness with which I was received at Chhota Lama's house in Kibber, my home for the next four months.

My initial days were spent getting used to washing clothes in freezing water, and walking around in low oxygen—a great deal of huffing and puffing for frustratingly small amounts of movement. Practicing my tabla and providing music support in parties helped me get to know the people of the village, and they were as beautiful and diverse as the plants that brought me here. Living in such a harsh environment makes them very hardy and strong, but loving and welcoming with a warmth that cannot be matched by the people who live neeche (lower down – basically everyone else in the world). In the course of a few weeks, my lungs, muscles and blood acclimated to the high altitude, and I could set out with Tenzin Sherap, my able field assistant (who taught me far more than I could give him), to start off my field surveys by mid-June.

Luckily, my stay coincided with NCF's nature education camps, held annually on the Chomoling plain, half an hour's climb from Kibber. The camps can always use extra hands to help, and Chomoling was conveniently located midway between the village and my field sites. Sherap and I jumped at the opportunity and spent a most memorable two weeks there. It was fascinating to watch Spitian school children discovering and learning about nature in their own neighbourhood. Something interesting happened every day. A red fox stealing our cheese and Lifebuoy soap from the ration tent, a squall collapsing the kitchen tent on top of us all, many evenings spent listening to and accompanying old Hindi songs... Towards the last few days of the camp, eight of us made a two day trip to climb Kanamo, a nearby peak standing at nearly 6,000 metres. We had an amazing climb, and were heartily welcomed back in camp with a victory (eggless) cake, made in a pressure cooker, without half the regular ingredients, in a tent, at 4,400 metres!



*The abode of Caragana*

Throughout this time, Sherap and I kept at our work. Measurements of the plant community within and outside the low canopies of *Caragana* shrubs showed some interesting patterns. We found that the *Caragana* canopy, standing just 5-15 centimetre tall, supports more plant species than similar areas of open ground outside. Good. Our casual observations were clearly right! Most of this diversity is located along the edge of the shrub, the narrow space between the outermost stems and the end of the canopy. This positive effect of *Caragana* on grasses and herbs is stronger at higher altitudes, indicating that the shrub could be helping plants survive better in harsher climates.

Why are more plants growing inside *Caragana*, instead of on their own? There might be multiple ways. The dense shrub canopy traps fallen leaves, and the nutrients from these decomposing leaves enrich the soil for the growth of other plants. This soil could also hold more water after the scanty rains. The thorny exterior of *Caragana* protects these plants from being grazed and trampled by herbivores, especially when they are small. However, the story



isn't happy for everyone. We found that removing all the other plants growing within the canopy of Caragana increased the extent of flowering of the Caragana shrub, suggesting that the presence of the other plants imposes a cost on the Caragana.

The value of Caragana extends much beyond the benefits it brings about for other plant species. While the Caragana itself is hardly eaten, these grasses and herbs that it helps grow constitute important forage for the livestock and wild herbivores of the region. People have been directly dependent on it as well. Prior to the use of kerosene, Caragana was used as fire starter in Spitian households. It is still used to line the rooftops of traditional mud houses to reduce water infiltration, especially along the joining of the walls and the roof. With the easy availability of kerosene and wood, the shrub isn't harvested much currently, but that could change in the future. Considering that Caragana grows very slowly, but plays an important part in the diversity of these rangelands, it would be useful to keep the shrub in mind while planning the future of this landscape.



*Oxytropis—a common flowering herb in the Spiti Valley*

I went to Spiti for the mountains, the snow, the animals and the plants. I realised there that I'm going to keep coming back, especially for the people—their simple happiness, unbounded kindness, and their intricate yet dynamic relationships with nature. It made me aware of the complexities of engaging with and carrying out conservation that is sensitive and responsible to people. NCF has positively impacted the lives of both people and wildlife in the Trans-Himalaya, and given many people the opportunity to be a part of this journey. I am much richer for it, and look forward to learn so much more from the wonderful people and the magical landscape of Spiti.



# A land of beautiful contrasts

***Shaina Sehgal** tries to understand the lifestyle and economic changes taking place in Spiti. Despite her two visits, much remains to be deciphered. So, she promises herself something in a unique way!*

I first went to Spiti in the summer of 2011 to study the changing social and economic patterns in Pin Valley. A few days in the field and it was apparent that much had changed since 1990s when a similar study had been last conducted. With another visit in the winter, I hoped to comprehend better the life in Sagnam village, the largest village in Pin Valley, located at the confluence of the Pin and Parahio tributaries.

I visited about half the households in Sagnam, asking questions pertaining to the livelihood activities, lifestyle, and perceptions of how things had changed over time. Every conversation added something new to my understanding of the people, place, and their relationship with each other. Spiti's extreme environment puts a very strong limit on what can and cannot be done in this landscape. State-led development projects in transport, communication, electricity, fuel and education have helped subvert these limits to a great extent, and at a scale that is unprecedented by the human ingenuity of the preceding periods. A very telling example is the motorable bridge constructed across the Parahio about 15 years ago. It improved village connectivity, and according to village elders, also facilitated different livelihood opportunities—especially the extensive commercial cropping of green pea that we see in the village today.



*Working on the water channels to irrigate the fields*

I quickly understood that studying the consequential changes in people's livelihood and lifestyles was not straightforward due to the diversified and interlinked nature of rural livelihoods. For instance, local livelihoods were in the broad spheres of salaried employment, cultivation and livestock rearing. In most households of Sagnam, at least one member was employed in a job, and almost all jobs were located within Spiti. The livestock holdings of the households were constrained by the financial and social capital required to maintain the animals. So, on the one hand the nature of employment constrained the manpower available for the daily work required in cultivation and rearing livestock, but on the other, it provided crucial capital investment to augment these livelihood activities. The subtleties went further, and below the surface of these broad trends there were clear gender-based divisions in work, and nuanced class, power and wealth dynamics unfolding in the village.

While I learnt a lot from the people of Sagnam, I realised that studying just one part of such a village system, such as cultivation, did not provide a comprehensive or dynamic picture

of the whole village, or even an accurate picture of agriculture itself. Spiti definitely is not a place to be understood based on a visit or two. One could spend a lifetime here, and still have more to learn!

I did realise one remarkable thing about Spiti when I got an opportunity to volunteer at NCF's nature education camps for school children. It happened when all of us sat in solitude and reflected on our surroundings as part of one of the camp activities. In that rare moment of tranquility among the otherwise excited and boisterous children, I realised that Spiti truly is a place of beautiful contrasts. The punishing terrain is inhabited by the most gentle and lively people! The sometimes bleak and daunting landscape supports many mammals, over a hundred species of birds, and numerous smaller creatures. The cold winds rush through the mountains under a bright and burning summer sun, while several feet of snow whiten the landscape in the winter. Everything in Spiti exists in defiance to the obvious challenges of living here, displaying an admirable and courageous zest for life.



*Reflecting in silence at Chomoling*

These mountains and their inhabitants are a celebration of the symphonic relationship of people and their environments across the world.

In our last few days at Sagnam village, a fellow intern and I had adventurously climbed the mountain that we watched everyday from our window. Near the top, after being unceremoniously chased by some yak foraging nearby, we found ourselves at a spot with a most spectacular vista of the village and valley. Here, we tucked a secret note under a rock, vowing to come back and retrieve it someday. I promise myself that that day will come very soon!

# 8

## Living with livestock

*Intern **Rashmi Singh** travels to Spiti to understand traditional livestock rearing practices. The friendships, peace and knowledge she acquires set her off on her own internal journey.*

‘Hurrr...hak...hak...meeeeeh...tuk-tak-tuk’, a persistent cacophony of the herder’s hooting, the bleating of sheep and goats, braying of donkeys and the jingle of cow bells woke me up from my slumber. The herder seemed to be at wits end trying to persuade the animals to maintain the lane. The livestock, apparently, were determined to thwart his plans. They whined and shrieked in protest, grumbling among themselves of despotic injustice and anarchic uprisings.

Every morning since I first arrived here, this ragtag passed in front of my window. Every morning they threatened an uprising, and then marched clumsily on in the village of Kibber with snow-capped peaks in the background. While the rest of my friends sweltered in the heat of Delhi, I was spending my internship here with the NCF. This place is home to a variety of mountain wildlife including the charismatic snow leopard. After the bustle and unbearable heat of Delhi, coming to this beautiful place in July of 2012 felt uplifting and inspiring, to say the least.

Snowcapped mountain peaks all around, colorful Buddhist prayer flags atop the houses, manes constructed with natural rocks and pebbles (the traditional Buddhist prayer structures that dot the landscape) inscribed with the prayer ‘om mane padme hum’,





*Livestock in the pastures of Kibber village*

old men and women with wooden rosaries in their hands, women with stoll covered faces to avoid sunburn, kids with tomato red cheeks and non-stop runny noses, and the hardworking busy men and women were a few sights that would remain etched in my memory forever.

I was here to document a part of the traditional ecological knowledge of Spitians, to find out how they used important fodder species for their valuable livestock. This Trans-Himalayan region is a cold desert, and little grows here. To successfully rear different livestock species, as the Spitians have done for generations, one needs to understand the forage and nutritional requirements of different kinds of livestock, the availability of important forage species in the pastures and how these villages manage and herd their livestock. This is what I set out to record, and later extended this work to understand the socio-economic changes in the local communities and the drivers of these changes.

Let me be clear. Growing up in Delhi doesn't give you too many opportunities to develop

close relationships with livestock! Yet here I was, staring them in the eye on a daily basis. After a while they develop personalities, and I came to recognize them by their distinct and often priceless individual traits. Donkeys wore sad, resigned faces and would always trudge off to find some corner away from the weary world. Goats, in contrast, could not get enough of the world, and would be invariably jumping around. They appeared a little scornful of their cousin sheep with their bent necks and dumb expressions. Quietly philosophical, the cows and dzomos took it all in with a calm, satiated dignity while the spectacular yaks arrogantly showed off their muscle to all who would attend and the cheerful horses wandered into town occasionally for a rare cameo. There was more unique personality pushing and shoving in these mountain corrals than I could expect to find in a metropolitan college campus.

If the animals were interesting, the people who herded them were even more fascinating. People living here are agro-pastoral Buddhist communities, who depend on their livestock to sustain agriculture, which is restricted to a very small window of time due to the harsh, cold climate. Agricultural residue plays a key role in the diet of livestock. In turn livestock dung is critical in fertilizing the agricultural fields.

Every morning, disturbing my morning slumber, the sheep and goats would head as usual to the high altitude pastures. Each pasture has grazing rights, usually belonging to a particular village. The story goes that the grandfather of one of the rulers of Spiti, Chuang Tubgye, divided the pastures between the villages some 300-400 years ago. There is another view that the pastures and their management are as old as the settlements here, the pasture allocations having been made by the village elders without any interference from the rulers. The information related to pasture ownership is available in an old document, earlier written in Urdu language and translated into Hindi some 30 years ago. Most decisions and disagreements on pasture use are resolved by the traditional administration bodies. Currently, each village also has a Panchayat, which is elected democratically, and can also be approached to resolve local issues.

The Spitians are a gentle lot and generally tolerated my nagging presence with a polite grace. Only rarely did this veil slip. One such incident took place when I was collecting data

on the fodder species consumed by different livestock. I kept running behind a lady who was really busy irrigating her crops, and I kept pestering her with questions about what different livestock species ate. ‘What you think donkey likes to eat? What about goats? Do sheep and cows like the same food?’ Finally, she turned around and snapped “O phunshi ko puchho na kya khata hai”. ‘Ask the donkey what it likes to eat’! Despite these occasional, fully understandable and amusing rebuffs, I feel grateful to so many people who answered my queries, invited me over for tea, offered me their food and shared their knowledge.

People in Kibber have an interesting way of managing their livestock. All the livestock except yaks and horses are herded communally. Every day, four members from different families are assigned herding duties. The main herder or Lugzi, who takes care of all the livestock, guides the others and decides where the livestock would be grazed. Of the other three, the one responsible for sheep and goat is called Rayok, while Phuyok takes care of the donkeys and Phanyok looks after the cows and dzomo. Unlike the other livestock, horses and yaks are not brought back to the village on a daily basis and range free for a large part of year. For horses, two people called Tirzi and Tayok are responsible. The person who brings back yaks to the village from far away pastures is called Yakziya. Yaks and horses are only brought back during agricultural season and festivities, or during extreme winter.

Livestock species are grazed at different areas within the pastures, depending upon their varied foraging needs. Cows, sheep and donkeys tend to graze on relatively lower slopes, dzomo and goats at middle slopes and yaks and horses at higher altitudes. Villages which have more pastures such as Kibber, allow yaks from other villages like Kee, Khurik, Gete, Chichim and Teshigang to graze on their land.

I was amazed at how well some Spitians knew not just the foraging needs and habits of different livestock, but also the quality and distribution of forage within the pastures. They know with a great degree of confidence when and for how much time a pasture will be accessible, and what each kind of livestock prefers to eat. The forage needs of livestock have



also had been documented quantitatively by scientific studies undertaken by NCF, and perhaps not surprisingly, I found that the traditional ecological knowledge of local people, through generations of meticulous sampling and resampling, matched well with what our science was uncovering with our careful experiments and complex statistics.

This was my first experience of field based research. During the course of this study, I met several young and inspiring researchers who were working in different fields of ecology and



*The art of changing skins!*

wildlife sciences. These researchers were addressing a range of issues including rangeland quality, climate change, carnivore ecology and community-based conservation programs. The small village of Kibber seemed to be buzzing with research activity and the positive energy and enthusiasm of people were contagious.

Being from Delhi, a metropolitan city, I found this place so peaceful and people so encouraging that for the first time I started thinking seriously about my future. The solitude and peace I experienced in Spiti Valley set me off on my own internal journey, a beautiful journey that seeks to understand my own connection with nature and its many wonders.



# A dogged challenge

*Ajay Bijoor helps organise a birth control camp for free ranging dogs in Spiti, and experiences the power of community-based initiatives.*

“We don’t have doctors to care for people, where will we find doctors to care for them?” Not one to mince words, Padma Dorje—the Pradhan or elected administrative head of Kaza, the only township in Spiti put down the problem the way he saw it. Everybody else in the room remained silent. Most of them were either high-ranking officials in the district administration or respected community members. An unlikely critter had brought us all together—dogs!

Spitians combine farming during the short summer with rearing livestock. Traditionally, they have evolved ways to use and recycle available resources and generate little waste. But this is changing with increased accessibility and a rise in tourism. While it serves as a new source of livelihood, tourism is also generating significant amounts of garbage, whose management hasn’t been able to keep pace with its generation.

One person’s waste is another’s bounty. And as the waste kept mounting up, the first beneficiaries were the free-ranging dogs. Lack of systems to deal with garbage has helped their proliferation and Kaza, the tourism capital of this region, is also attracting dogs in large numbers. Apart from being a potential health hazard, dogs also attack livestock; research by NCF scientists has shown that more livestock have been killed in Spiti over the last two



*Free-ranging dogs are a threat to wild herbivores and livestock*

years due to attacks by dogs, compared to those by wolves and snow leopard combined. Such is the impact of damage that several villages neighbouring Kaza have given up rearing of sheep and goats for the fear of depredation by dogs. There have also been confirmed reports of packs of dogs chasing bharal, ibex and of them scaring snow leopards off their kills.

Everyone agreed that we had to act. The question was, how? There had been a few attempts in the past. Some years ago, while preparing for a large spiritual gathering—the Kala chakra ceremony, people of Spiti had caught over 200 dogs and released them 200 km east in another Valley. The dogs waited politely for the ceremony to get over, and then promptly returned! Culling was not an option—it didn't agree with their religious sentiments. A sterilization drive seemed the only way out. But there were two challenges facing us: setting up the necessary infrastructure and catching dogs while ensuring they are managed humanely. As we left the room that afternoon Padma Dorje put it down simply, “If you can help set up a camp, we will ensure it is successful.”

Within a few weeks we had the backing of local administrative officers. The Animal Husbandry and the Forest Departments both swiftly sanctioned a modest budget allowing us to procure the drugs that would be required. By now we had also contacted animal welfare organisations in Dharamshala seeking their technical expertise. It was through them that Dr. Takpa Tenzin, a veterinary surgeon, entered the picture. He had only two questions. When was he expected to reach Spiti and how soon could we start?! A team of two doctors representing Dharamshala Animal Rescue and Tibet's Charity would soon arrive in Kaza to join two more doctors of the Animal Husbandry department. Essential medical drugs and basic equipment had been procured and an under-construction building in the heart of Kaza was assigned to us to organise the sterilisation camp. But there was one little glitch: Who would catch the dogs?

Padma Dorje came to our rescue. The following morning, the Pradhan invited us to the local monastery to join a gathering of over a hundred villagers. With the same no-nonsense style with which he initially dismissed our ideas, he found an easy solution to our problem. It was agreed (although it sounded more like a decree!) that every household in Kaza would be responsible for catching at least one dog, to have it sterilised at the camp, and to take post-operative care of 'their' dog for at least four days.

On the morning of the camp there was another hiccup. The Animal Husbandry department had called for their paravets from the neighbouring areas to assist in the camp. But landslides had blocked the roads to Kaza, and the paravets were unlikely to reach on time. A bunch of people from the local community immediately volunteered to help, and Dr. Tenzin, himself a local, spent the next two hours orienting these men on their tasks. One final problem; where were the dogs?

When we reached the venue, no less than 25 dogs and their caretakers welcomed us for the first session itself. Catching dogs, facilitating surgeries and vaccinations, managing the crowds, ensuring that the patients were taken back by their caretaker; all was done under the supervision of local volunteers. The doctors ensured that each dog was handled humanely,

in a manner best possible within the resources available. This first camp lasted three days, with over a 100 dogs handled. There has been another one since, and there will continue to be more. Such is the power of community involvement and collective work.

Our collective efforts helped us realise that together, it was possible to tackle this challenge—even in an area, as remote as Spiti. However, this was just the start. So while we continue our sterilisation drives, we have now shifted our focus to also tackling the real problem at hand: garbage. Alas, it is the lack of systematic garbage disposal and management that is helping dogs thrive in Spiti. With a similar effort involving the community, we are hopeful of working on the larger part of this problem of setting up systems locally, to manage garbage systematically. Wish us luck!

# The way I've experienced Spiti

*The fortunate few are able to experience Spiti, and perhaps only the blessed get the opportunity to work there. **Abhishek Ghoshal** narrates his Spitian journey of science and emotion.*

I first went to Spiti in the summer of 2011 to study the changing social and economic patterns in Pin Valley. A few days in the field and it was apparent that much had changed since 1990s when a similar study had been last conducted. With another visit in the winter, I hoped to comprehend better the life in Sagnam village, the largest village in Pin Valley, located at the confluence of the Pin and Parahio tributaries.

Back in 2010, I had never imagined where my life's journey was to take me. And what a journey it has been! I was then a post-graduate student at the Forest Research Institute, Dehradun, enjoying the lush foothills of the Himalaya. My interest for the Himalaya and its large mammals made me stumble on the long-term conservation programs implemented by the High Altitude Program of NCF with the local communities in Spiti. Although I had read casually about Spiti earlier, the thought of being associated with the landscape and working towards conserving its large mammals thrilled me. Fortunately, I got the opportunity to begin my research career in Spiti during the winter of 2011. And today, as I continue my journey, Spiti keeps adding enriching experiences to my life.

Spiti is a hidden land beyond the Himalaya, not only geographically, but also from social and cultural perspectives. Guarded by the high Kunzum La (a mountain pass) in the north





*The meandering Spiti river*

and the deep gorge of the lower Spiti River in the south, Spiti is perfectly shielded from the outside world. A snapshot of the Upper Spiti Valley from the Kunzum La, looking at the vast expanse of the desolate mountains of the cold desert, or the Lower Spiti Valley from Sumdo, looking at the sharp serrated edges and earth pillars overlooking the gushing river is at once scary and exciting. The journey itself is a life-time experience. No matter how many times I visit Spiti, the marvel of its natural beauty never fails to take my breath away. One of the most striking features is the transition to this arid Trans-Himalayan landscape from the greener Greater Himalaya. The transition is so distinct it leaves one awe-struck. The thirsty landscape looks eternally bleak and its lethal magnificence is indubitable. The milieu of isolation and bliss seem irrevocable.

While working in Spiti, I have been fortunate enough to spend considerable time with families in my study villages and to interact with other local people. Their lifestyle is simple and yet remarkably daunting. Their phlegmatic attitude, even in the face of major hardship,



*Bharal females and young*

surprises me the most. They believe that the great pious souls of the Buddhist monks from the monasteries such as Key and Tabo keep the entire Spiti Valley and its inhabitants safe from misfortunes. This faith in an age old culture has possibly helped them fight against all odds in this geographically and climatically harsh landscape. In my brief stays with families from Spiti, it was wonderful to see how men, women and children support each other in day to day household chores like chopping fuelwood, storing water, cooking and even preparing beds for the night. The older children help in caring for livestock, milking and grazing. Elderly men and women chant religious scriptures most of the time, holding prayer wheels or rosaries—to let purity prevail in the households. Women, in their free time, weave sweaters, socks, and carpets, quietly imparting lessons of life to their children. On auspicious occasions or festivals, the people of entire village gather for prayers and rituals and later celebrate with local music and dance accompanied by barley and rice brews, locally called chhang and ara.

Yet, despite the remoteness and seasonal isolation from rest of the country, Spiti is rapidly receiving its share of globalization and allied manifestations. Today, almost all the villages in Spiti are connected by motorable roads, electricity and telecommunication. Spitians grow cash crops like the green-pea and apple, which fetch considerable cash income. Villages such as Kaza, Tabo, Kibber and Lossar are expanding and have become popular tourist destinations. These villages are also witnessing a mushrooming of hotels, homestays and restaurants. Villagers, in general, can afford an improved lifestyle cultivating high-yield varieties of crops, exporting local production to distant markets, and hiring labourers to assist in agricultural, grazing and household works. Imagine, all these developmental and socio-economic changes sweeping the landscape of Spiti, which, on average, is above 3,500m.

The changes are certainly positive in many ways. Improved education opportunities and varied livelihood opportunities are available to the young generation, and products of Spiti are increasingly getting more exposure to the larger national and global market. On the flip side, however, are the threats to the rich and unique biodiversity and cultural heritage of Spiti. Expanding villages and road network, increasing tourism infrastructure and immigration of labourers from distant Indian states such as Bihar and also other countries like Nepal, are changing the way Spiti looks, feels and works every year. There is increasing disturbance to the natural habitat and littering, leading to an increase in unmanaged garbage, which, in turn, is facilitating the booming population of free-ranging dogs. Introduced species as that of the dogs may have severe implications on the native wildlife and the fragile ecosystem.

The issue of the dogs brought me to Spiti in the winter of 2011. I wanted to understand how a highly adaptable wild commensal (species deriving benefit from host without harming the latter), the red fox, responds to increasing village size and population of free-ranging dog. Our expectation was the red fox will benefit as village sizes increase. This is because with increasing village size, we expect an increase in food availability in the form of human origin wastes (e.g. garbage), which the red fox should be able to utilize. However, dogs will also benefit from human origin food sources, and being a generally larger and superior competitor in comparison to red fox, will negatively affect the latter in larger villages. Red



foxes were found to be considerably dependent on food of human origin, thus indicating the importance of human settlements in their ecology, especially in winter months when natural food sources are scarce. The response of red fox to village size was initially positive, but later turned negative as village sizes increased. Red fox and dogs seemed to co-exist in smaller villages, while red fox showed a negative relationship with dogs in larger villages. This study indicated the red fox will continue to benefit from expanding human settlements if such an expansion is not accompanied by an increase in the population of dogs. Such a scenario highlights the necessity to strike a balance between expansion of human settlements and maintaining native wildlife while offsetting the negative influences of introduced/exotic species in human dominated landscapes.

The developmental and socio-economic changes mentioned earlier are not only likely to affect relatively small commensal species, such as the red fox, but may also have negative impacts on larger species. After the fox study, I, thus, went back to the mountains during the summer of 2012, to document the occurrences of the apex predator of the landscape, the endangered snow leopard and its primary prey, bharal and Asiatic ibex, and the extant conservation issues to the snow leopard habitat. Through this study, we established for the first time, the widespread occurrence of snow leopard, bharal and ibex across the landscape, alongside humans. All these three species consistently occur outside existing protected areas (PAs). Bharal and ibex show distinct distribution ranges, with marginal overlap, constituting important prey base for the snow leopard in mostly mutually exclusive areas. Migratory livestock grazing, immigration of labourers and developmental activities (road construction/maintenance and hydro-electric projects) were found to be the primary conservation issues across the snow leopard habitat. Based on the findings, we emphasized the importance to consider a science-based, inclusive and participatory conservation approach as an alternative to the conventional protected area-centric conservation approach for a large-ranging species, such as the snow leopard.

An old man in his eighties, sitting in front of his door, enjoying the bright summer afternoon sun in Komic village, recollects the days from his teens. With his father and a few other

villagers, their small caravan would walk for days and even weeks, carrying meagre surplus of the local food grain (barley) and butter. They would repeatedly cross freezing cold waters of the Spiti River, the mighty Sutlej River or the Chandra River, over snow, ice and glaciated mountain passes to reach the towns of Kullu or Rampur. They would barter their products for other daily necessities for the rest of the year and then again walk all the way back to Spiti. At the thought that today Kullu is only a half-day's drive from anywhere in Spiti, he satirically chuckled. The 'present' to both of us seems mundane in the face of the treasured memories of Spiti, though at highly differing time scales with varying characteristics.

I have learnt much from Spiti and its people, and there is much more to learn. The Spitians believe they have enough space in their pastures, and in their hearts, not just for their children and livestock, but also for the wildlife they have revered and historically shared spaces with. Smaller issues notwithstanding, Spiti, to me, seems to be a living model of human-wildlife coexistence.



# A passion for the mountains

*Getting caught in a blizzard could indeed be a turning point in your life. **Yash Veer Bhatnagar** recounts tales of his forays in the high mountains of Pin valley following herds of the Himalayan ibex as he ponders over conservation of high altitude wildlife.*

From the heights of the Ka dogri (temporary dwelling) in Pin Valley National Park, Chimed and I looked out for Male 13. It was last tracked at the eastern edge of the National Park a week ago, but there were no signals whatsoever now. We carefully scanned the vanilla white snow slopes and spotted three ibex groups—distinct dark specks making furrows in the deep snow with craters dug out to reach the sparse food. All these groups were very close to the security of cliffs. What had happened to the #13? Was it something to do with the unlucky number? Of the seven collared animals, an adult male was regularly crossing a high ridge towards the Ratang nala, making regular monitoring difficult. Was I going to lose another individual from an already small sample? ‘Thirteen’ is a sub-adult male ibex and in the peak of the January rutting season this adolescent was being shooed away by both adult females and big males when last seen. We looked through the spotting scope at every single male, just in case the transmitter had stopped working, but no luck. As per our understanding, the areas further east from here were not good ibex habitat for many kilometres and then there were many villages there too. We gave up our search for the day, and having checked all areas north and west of Ka, decided to send a search party downstream towards the eastern exit of the Pin Valley to try our luck with # 13. But this would have to be done on another day. There was already waist-deep snow at most places and progress in this was extremely slow.



*The pride of Pin Valley*

Snow, especially deep snow, is a big challenge to walk through. One has to invest huge effort in extracting one's legs each time it sinks. Once snow is more than knee-deep, the effort increases multi-fold. Waist-deep—just unthinkable! My then institution, the Wildlife Institute of India, had provided us with racquet-shaped snowshoes. These are smart devices which may look unwieldy, but let you walk on top of snow, sinking only a bit under your weight. This also helps in compacting the snow along the path we take. We used three such pairs to 'open' up routes along our regular paths. These would become trails on which we could walk with the normal snow boots, about two feet above the rocky surface. Opening up paths would normally take about a kilometre per hour, and walking on it once it was made still took about 2 km/hour, about double that of summer. Opening up the routes was time consuming and one step out of place meant disaster, as I would soon get to learn.

Looking from Ka, our base camp Gechang was just 4 km away but would still be a 2-hour slog. We should reach there by 4 pm and I could already dream downing hot cups of tea with some

local bread, khambir. Chimed and I descended the steep slopes below Ka easily, sliding down most of the way. Ominous clouds had gathered and it had suddenly become grey and breezy. We crossed the frozen Kidul Chu River and headed along our well-traversed path. The breeze had by now become a strong gush, throwing up fresh snow into the face. Chimed was walking ahead and soon I lost track of him. I had never realised that walking against strong winds can be so tough. In places it was swirling around throwing cold snow powder that was somehow finding its way through my clothes. I called out to Chimed, but no response. The sounds were deafening and there was no way he could have heard me. Will he return to look for me? By now the drifting snow was covering our tracks. One wrong step and I was almost thigh deep in snow. Pulling myself out, I found the track, or so I thought, and moved on. By now all traces of the track were getting obliterated. I traced the firmer portions of the track with my willow walking stick and took laboured steps, one at a time. I crisscrossed to find it, but it wasn't our track. As I struggled with this, I fell full body into the deep snow, grappled around with fresh snow on my face, in my clothes and more and more blowing on to the face making me breathless. I looked up and to my horror, what I saw was only whiteness all around! It was a complete white-out – absolutely boundless with no features visible, no mountains, no sky, no plants, no undulations on the ground, no rock...It was a scary, yet surreal vision. I heaved myself up not knowing which direction to head. It was like being in a white void...I poked around to look for our path, and found no sign whatsoever. Every time I would try to stand, I would sink deep in accumulated snow. Chilled to the bones, crouching at the spot, my fingers and toes had frozen. I was in pain. I knew roughly where I was, maybe still about two kilometres from camp. To go towards my camp there should be some cliffs on my right and the Parahio River on my left. If so, I should just try to reach for either place and walk along the edge. But then I heard some faint rumbling which increased in intensity. This was surely an avalanche, hopefully not anywhere above me or on my path... I stiffened, and wondered if I was right below this slope. The chill, ear-splitting sound of the blizzard and, I must confess, some fear, had now numbed my mind. I consoled myself that this was otherwise a well-known route—a narrow flat stretch, with little scope for getting lost. Curled up in the numbing snow, I saw images of hot cup of sweet tea, maybe some hot and spicy thukpa too...The temperature had touched -35°C last night and it was extremely cold now. The wind chill would have





*Crossing a partially frozen river*

brought down the temperature even further. It was close to five pm and the sun had been below the mountains for hours now. It would be dark very soon. I told myself that I should just endure a bit more till the blizzard lasts and then somehow walk up to the camp. Since there was no trace of the tracks, it would be an ordeal wading through snow in the dark. 'I should have carried along the snow shoes', I thought, but then this adds weight and we had never had such a problem in weeks. My benumbed mind drifted to the warmth of the plains, my friends who were already executives in multinational firms. I wondered if it was a right decision to switch from a secure life in agricultural science to wildlife ... Why am I here? Out in these extremely remote mountains...the nearest village is 10 kilometre away...Extreme weather... But then I remembered the thrill of being in these beautiful mountains. I chose this field because I loved the mountains. I always wanted to be among the snowy peaks—curious about the wild sheep and goats. Truly the most majestic wild herbivores, all sport a striking, strong body, males with big powerful horns, and so adept to make the most of these cold deserts. How are they able to find something to eat? How do they traverse steep cliffs so effortlessly?

They must be here right now, managing with all the snow, extreme cold and wind. How do they survive these trying conditions? Isn't it an ordeal for them too? There is so much to learn... Well, these are all surely worthwhile. I told myself that I have a great life here. I am here for my passion for the mountains. Mountains are not just serene meadows and brooks; like all things (and people!) on Earth, they have wonderful and difficult sides. I need to get over this small ordeal and there is much to live for and enjoy. I remembered what my icon, George Schaller, had written in his masterpiece, *Stones of Silence* "...for one tends to complain of discomfort and relish hardship: the more difficult a journey, the greater is the satisfaction of completing it". Brushing aside the worries, buried in snow, I began feeling good and positive.

Presently, after about three hours, the winds subsided and from where I was crouched, I could see some tamarisk (*Myricaria* species) bushes. Interestingly, these plants are eaten by snow leopard and just this morning, we had seen fresh snow leopard tracks and foraging signs all over these bushes, much like how ibex would feed on a wild rose bush! I was amused. But more importantly it was just reassuring that I was very close to our track. With difficulty, I 'waded' towards the bushes and got a foothold. After a long and delicate effort I was able to stand erect on the track. As suddenly as it had come, the blizzard cleared into a mild breeze. Through the fading glow of the sun, I could see the mound on which Gechang was perched. I began my walk back to the camp, clumsily slumping into the snow many times. I seemed to remember the faint orientation of the trail! Taking many breaks to rest and look out for tracks or bulges above rock, I managed to finally see the faint lights of our camp. I knew that Chimed and Zangpo, my other assistant would have kept a warm fire ready and of course the tea. Krishna, my wife, was in the camp and gave a warm hug as I scampered back into camp. Life is good! I was now wiser after facing my first blizzard. And felt a greater acquaintance with the mountains. Chimed was feeling miserable for leaving me behind. He had in fact, retraced his steps to look for me, but then gave up thinking that it will be better if he comes back for me with Zangpo once the blizzard subsides.

Winter is a challenging time in the remote mountains on many accounts, and I learnt the



importance of braving an adverse situation by accepting it the way it is. In fact, the severe cold, deep snow, pain, isolation, all appeared totally fine; it was a transient, totally natural moment, and the best way for me is to accept and enjoy it. In hindsight, the fear and uncertainty of the few hours could be life-threatening, but was nothing compared to say, what many mountaineers routinely face. Pursuing ones passion, whether it is mountaineering, working in humid rainforests, or cold deserts, gives immense satisfaction, but one needs to be prepared for the agony it may have in store. That is what makes adventure memorable and urges us for more...

A few days later, Zangpo and Chimed set out to their village in Sagnam and further downstream to look for Male #13. It was going to be a trip of unknown duration, but if they found the ibex early, they wanted to get back as fast as possible. I was monitoring other ibexes and I agreed that both of them going would be faster than me accompanying them. Further, they had not seen family for over a month and were keen to look them up. Probably more than I was, they were worried about leaving Krishna and I back in Gechang while they were away, especially after the recent episode in the blizzard. They left on a long march down the valley and fortunately, the first day itself found faint signals downstream. They felt that it was from near what was called the Kin Tokpo (translating to 'ibex stream'). After reaching Guling, the snow became more manageable as the trail was used often by villagers walking down to the road head at Attargu, about 20 kilometre downstream. They did this entire trek in a single day, went up the slope to locate the vagrant male, and came back with an interesting story. They then visited their families just for a day and returned the third day—an amazing feat that was clearly driven by motivation for the work and concern for our safety.

Well, within a few days, we were pleasantly surprised to get #13's signals. He was back near the Ka slopes! The story Zangpo narrated was similar to what we had seen near Ka—in the Kin Takpo too he was showing immense interest in the females during the rut. He was being severely stabbed and driven away. The big males did not tolerate him as-well, and threatened him with a subtle threatening glance every time he approached a female. Number 13 had probably learnt last summer not to mess with these huge males. Zangpo joked that adolescents

in all species appear to be the same, they are neither kids nor adults, and can't fit with either. Number 13 was not tolerated in his natal group and same was the case in this far-off place. He wandered and was back after the rutting got over by when all animals were back on their drill of surviving through the snowy winter, foraging and resting. 'He just needs to focus and become a big, strong male someday', advised Zangpo.

During the course of my six-year study beginning 1991, I had some amazing insights about my work as well as about life in the mountains. Against general expectations, ibex mostly remained along the top-most crests and ridges throughout winter as these areas had the least snow depth, with most of it either blown off these crests or eroded away from the upper gullies from where the avalanches were usually triggered.

I had a mindset, similar to most conservationists, that local people and all forms of dependence were essentially detrimental for the wildlife. I was beginning to realise that this was not true —



*Ibex herd busy foraging*

at least not always. My study on understanding interactions between local livestock and ibex showed that there seemed little evidence for competition in the six warmer months that the livestock were out. The local livestock numbers were naturally controlled by people's ability to feed them during the winter. There was however a severe negative impact of the migratory herders from the foothills that grazed at densities many times higher than the local stock during the short summer growth season. They were not constrained by winter forage availability as they migrated back to the lush foothills. Ibex were naturally confined to the vicinity of cliffs and didn't venture to the lush pastures that were farther away. Clearly this was a sign of their inability to outrun predators over long distances, but giving them the slip once on the cliffs. Interestingly, I found that the snow leopards also appeared to stalk ibex from the cliffs and outcrops higher up as there was more 'stalking cover' compared to open slopes. Towards this, ibex actually preferred foraging sites where cliffs existed on at least three to four sides, so that if a solitary predator like the snow leopard cut off access to one cliff, others were within reach, giving a better chance of escape. The avalanche chutes I mentioned earlier were also sites that often had relatively high grass and other plant biomass tucked in areas that had probably better moisture and lower grazing pressures. The people designated these patches as fodder reserves and they extracted forage in autumn for stall-feeding livestock through the winters. These were small sites, but clearly important for ibex to combat winter.

Living in the area through the entire year, I often wondered about the challenges faced, and the amazing capacity of the local people surviving in these mountains under these demanding conditions. That too happily! Their entire summer seemed to be geared towards preparing for the winter, when they maintain livestock indoors, pray and enjoy togetherness and festivities. Living in an area with scarce resources, they seem quite aware about sustainably extracting their resources and regulating key ones such as the willow stands near streams used for construction of houses and Ephedra bushes used for fuel. During discussions it emerged that they are also concerned about the dwindling wild rose bushes and also tamarisk, which are not just cut but often uprooted. I thus realised the need for careful objective studies without any preconceived beliefs.



Krishna did some pioneering work in the region to document the dependence of the people on the local resources and one clear finding was that they are apprehensive about the National Park cutting off access to traditional resources, but at the same time, were sensitive to the right of the wild animals to exist. Ibex and blue sheep were *ri-dak* for them, *ri* meaning mountain and *dak* meaning monarch. These were divine creatures, able to fend for themselves even through the winter unlike their stock, which needed tremendous amount of care. They further informed that not only were the plants in the pastures meagre, but pastures themselves were scarce. These were carefully divided among villages and if any community was to lose access to resources, alternative areas were impossible to find. Conflicts with wildlife were rare but in spite of some deaths of high value *chumurti* horses and other livestock, we had not heard of a single instance of retaliatory killing of the snow leopard in Pin Valley. Krishna discussed with the community members and many ideas for joint work emerged, including those dealing with reducing resource use, improved income through innovations in agriculture, livestock rearing, harnessing tourism, improving energy efficiency and so on.



*A young male ibex*

We realised that wildlife was spread far beyond the National Park with no one really knowing the entire range or the best areas. In this situation, the only options for conservation appeared to be to work with communities to ensure maintenance of status quo or invest time and resources to improve the situation – a long-term endeavour. With these insights we departed from Pin Valley. We didn't have the know-how or the resources to pursue these new and somewhat maligned concepts of participatory conservation, and we moved on. I had a PhD to write and defend, but had no idea how I could help with conservation of Pin Valley.

Coming back to Male 13, we left Pin in 1995 when he was about five years old, and Zangpo continued to monitor him in Gechang till the year 2000, by when, as a prime male he had fathered many an ibex in Pin Valley. His ear tag was recovered from an avalanche in the spring of 2001 when he must have died as a grand old male, his genes destined to survive many more winters through his progeny.



# A Spitian educator's voice

***Kalzang Gurmet** didn't need a visit to Spiti's mountains to transform him. He is one of the privileged few to have been born there. Here he expresses his gratitude to his team, and betrays his deep, hidden desire to secure the future of Spiti's environment by working with her children.*

**K**ibber is a picturesque little village situated at an altitude of 4,200 metres in the Spiti Valley. What makes this village special is the beauty of its surroundings and its rich wildlife. People from many parts of the world just come here to see the wildlife and cultural heritage of Spiti. For every traveller who passes through this valley, Spiti is an exotic adventure, an escape from his or her daily urban routines. I am different. I call this place home. I was born here.

I joined NCF in 2007 as an assistant in our education programme. Fascinated by their activities, I assisted NCF staff as a volunteer for a while. During that period, my interest grew, so I was determined to work with NCF more completely. In 2007, when we conducted our first nature education camp for Spiti's children, I remember being plagued with several doubts and uncertainties. Would the schools agree to the idea of sending their children to our camps? Would the teachers be willing to rough it out in our tents for three days at a stretch? I was pleasantly surprised. Not only did the schools willingly agree, the school principals and parents were very kind-hearted toward us. The first camps, which we conducted with Highlander school, Kaza and Munsel-ling school, Rangrik, were very good for the children, but they were the best camps for me. We conducted several activities that the children learnt from, and which were very informative and very interesting for me.



*Participants pose for a group photo*

One of the activities involved hiding ecological messages on the mountain slopes and pastures that the children try to find. The enthusiasm of children running around the pasture of Chomoling to find the hidden ecological messages planted by our team is a special memory for me. Similarly etched in my memory is their deep concentration while observing and drawing the plants and giving them their own names based on the plant characteristics they observe without any help.

If there were happy moments and memories, there were many lessons for me too. For even small things, I had to ask Pranav ji. When the children questioned me about the scientific names of plants, I had to call my senior colleague Sushil (aka Tandup Dorje) and ask him. My colleagues helped me in many ways as they selflessly shared their knowledge of plants, birds, and ecological processes. Although I am a father, I also learnt many things from Pranav ji about children. Other people from NCF also contributed in improving my knowledge and understanding.

I have seen many changes from the first camp in 2007 to the last camp of 2014. Before we started, many children couldn't recognize the wildlife of Spiti, despite living at its doorstep. The strangest thing is that even I had never seen a snow leopard in my life before I began working with NCF. Even though I was born here and had been living here for the past 25 years! Wildlife was a thing of little concern for me – it was part of my “normality” and I never gave it much thought. These kinds of camps had never been held earlier in Spiti, when I was growing up.

Earlier, when we asked the children to tell us about the wildlife found here, they answered “deer, lion, elephant etc.”—animals that they had never seen outside their school books. Now most children who participate in our camp can recognize the native wildlife which is found in Spiti and the surrounding regions. Whenever we visit their schools for conservation education activities conducted under our Himalayan Nature Club (HNC) programme, they keep recounting the wildlife they have recently seen—blue sheep, ibex, snow leopard etc.



*Kids performing a skit depicting wildlife-human interface*

Our kitchen staff is very professional in preparing delicious food and nobody can stop without over-eating! It is not surprising then that the children love our camps! I think NCF provides the best platform to learn about the environment and nature and our nature education camps are the best way to learn for the children who are right now doing their schooling in Spiti. I was born here. But, like the children that we educate in our camps, I am learning everyday what it really means to call this place my home... Julley!

# Spiti minus the snow leopard

*Intern **Neha Mohanbabu** confesses that it wasn't just the pursuit of science, but a deep desire to see a snow leopard that took her to Spiti. Did she see one? Well, that's a revelation worth finding out yourself!*

**N**o one suspected my real agenda as I prepared for a two-month long stay in the Spiti Valley. The opportunity to visit Spiti was an unexpected outcome of the right things having been said at the right time and place to the right person! Thanks to this happy coincidence, I set off with a bunch of friends to assist in the high altitude programme of the Nature Conservation Foundation and Snow Leopard Trust in the Spiti Valley. I arrived with almost no experience in trekking or ecological sciences, or for that matter, spoken Hindi. I arrived hoping to see the lush, green Himalaya with far away snow-capped peaks (and catch a glimpse of the ghost of snow). Instead, I landed in a cold desert! The next few days were going to be a big chapter of learning for me.

After having adjusted to the climate and altitude, which didn't come about quite as smoothly as it sounds, I was pronounced fit to assist in some research work. My friends and I were able to help around with field work for several ongoing projects. All the while scanning the landscape for what could be a snow leopard, we travelled around in the surrounding villages of Chichim, Gete and Tashigang and also the far off ones like Sagnam, Mud and Gechang in Pin Valley, meeting people of all ages and different walks of life.

What struck me the most was the simplicity of their life, and their ever-smiling faces. For





*High altitude cricket at Chomoling*

a city-dwelling person like me, it was always gratifying that while travelling in a bus or the route gaadi, every passenger knew everyone else, and in the rare case when they didn't, they were ever willing to welcome a newcomer like me with a cheerful and heart-felt "Julley!" I soon picked up the habit, and a modified version of the greeting stays with me to date.

During my stay I saw Spiti in her different moods- bright and sunny, windy and cloudy and even snowy in the middle of 'summer'. The nature education camps that I volunteered for taught me to appreciate nature in all its glory—observing a landscape and admiring each of its hues, listening to bird calls and identifying them, recognizing plants, feeling them, and sometimes even tasting them. I spotted quite a few of the rare trans-Himalayan fauna including two Tibetan wolves devouring their prey. However, the elusive snow leopard remained faithful to its image and never made its appearance. I was introduced to bird-watching and was able to spot the golden eagle, a majestic bird of prey which shone like a block of gold against the sun's rays. A shed eagle feather found during one of the nature walks

adorns my diary today, bringing back all the memories of the place.

A vegetarian like me could not fully enjoy everything that the Spiti cuisine had to offer. However, I do have favourites in the vegetarian version of dishes like the momo and timo. Sadly, I didn't succeed in mastering the skill of making momos despite being tutored by several capable teachers. Having never been a huge fan of coffee or tea, I initially despised the idea of drinking tea multiple times a day, but Spiti changed that forever. The most innovative tea for me was the chirul, which is Tsampa or roasted barley flour added to milk tea that one eats or drinks depending on the consistency.

These villages are relatively cut off from the world in terms of communication. I surprised myself at the joy I felt in devouring every word of the two day old newspaper which I was fortunate to receive on occasion. Making a phone call was in itself a herculean task, involving a ritual dance with the phone at a particular point in the village. If the higher



*Lunch time at the nature education camp*

forces were pleased with the ceremony, the blessing would show up in the form of a single signal bar in the cell phone. And access to internet was an even more tedious affair with a 20 km travel and plenty of luck involved in between. But, I did have the pleasure of watching a live cricket match on TV in a village with four households.

I must confess I went to Spiti with the sole aim of wanting to see a snow leopard, but I came back with a lot more minus the snow leopard! This visit gave me a chance to learn science and experience the charms of a wonderful way of life- walking through the barley fields, staring at the night sky counting the shooting stars, sitting by the fire talking to friends, playing cricket in the valley or simply sitting in the village shrine watching people come and go. Spiti for me is an experience of simple, yet deep and meaningful joys of life.

# That still and surreal night

*Having just joined the programme, starting a new venture is not easy. **Radhika Timbadia** shares the joy and excitement of her first dose of Spiti on a special, moonlit night!*

**M**y first day in Spiti was an exceptionally happy one. I was naturally thrilled to reach my destination after a long, tiring journey from Leh to Manali and then on a non-existent road from Manali to Kaza. I was also excited since this was my first visit to Spiti after having heard countless stories about it. On the way I was completely mesmerised by Kunzum-La, at 4590 m, the pass that connects Kullu and Lahaul valleys with Spiti Valley. The icing on the cake was a phone call just as we entered Kaza, telling me that I had become an aunt that day to my most darling niece, Aradhana.

Since then I find myself working with high-spirited sunny people in the most stunning high altitude landscape. In Spiti, the two projects I've been deeply involved with are the nature education camps with local children of ages 11 to 15 and a newly started social enterprise with the women.

The children's nature education camps take place at Chomoling, a gorgeous flower-filled (in summer) pasture above Kibber village in June every year. Around 20 to 30 children from each school come camp with us over three days in this picturesque landscape. The programme, designed by Dr Pranav Trivedi, involves a 3-day long treasure hunt in which the clues direct the children to do fun nature-based activities ranging from observing and





*A full moon rises over the mountains*

drawing the local flora and fauna to understanding deeper ecological concepts about interdependence and even a bit about conserving wildlife. The children enjoy being outdoors, love staying in tents and adore the activities; so much so that there have even been instances when they didn't want to go back. This is a fun way for the children to reconnect to their environment and something they remember for many years. These camps are not only special for these kids but also for the staff who conduct them. Watching these children learn, interact, giggle, sing, dance without inhibitions rejuvenates the rest of us and makes us do the same. It does not matter how hard we have to work on these camps it still feels like a break for us all. It is a time to exchange songs and stories around the campfire, take long walks to secluded spaces early in the morning and enjoy quiet but bright moonlit nights.

The project closest to my heart is Snow Leopard Enterprises, a social enterprise started as a pilot with 50 ladies in the villages of Kibber and Chichim. The idea is to offset losses due to wildlife with profits from this venture and to improve people's (specifically women's)



attitude to wildlife and increase their involvement in our conservation efforts. The ladies are currently learning how to crochet to make beautiful and unique handcrafted products. The ladies are warm, loving, funny and vibrant. They regularly crack jokes that make me blush and have such a strong and amazing spirit. The last time I went to Spiti some women from Chichim decided to throw us a farewell party the night before we left. There was delicious food, free-flowing chang or ara and great music. The women would use upturned pots or jerrycans to provide a beat and sing traditional and sometimes quirky songs. We danced until late in to the night suddenly realising that we have to head back to our office in Kibber as we were leaving early the next morning. A group of 5-6 ladies decided to escort us to the jhula, a contraption to carry loads across a gorge, which is now used by people due to the



*Observing plants with kids*

lack of a bridge. It was a bright full moon night. Snow was shining on all the peaks around us especially Mt Kanamo, at 5900 m the mountain looms over Kibber. We sang and danced all the way to the jhula in this surreal and still night.

It was like a wedding procession. In that moment I felt like I was a part of that community, that landscape and I would forever belong here. This feeling still stays with me and I think with pleasure the next time I'll be there with these ladies.

# Harvest in the Himalaya

*When **Pranav Trivedi** set out to Spiti to develop a conservation education programme for the local communities in the year 2005, little did he imagine that it would be the one of most engaging and rewarding experiences of his life; one that would help him connect deeper with nature and his inner self; and also one day bring him face to face with his icon!*

“Thus shall you think of this fleeting world:

A star at dawn, a bubble in a stream,

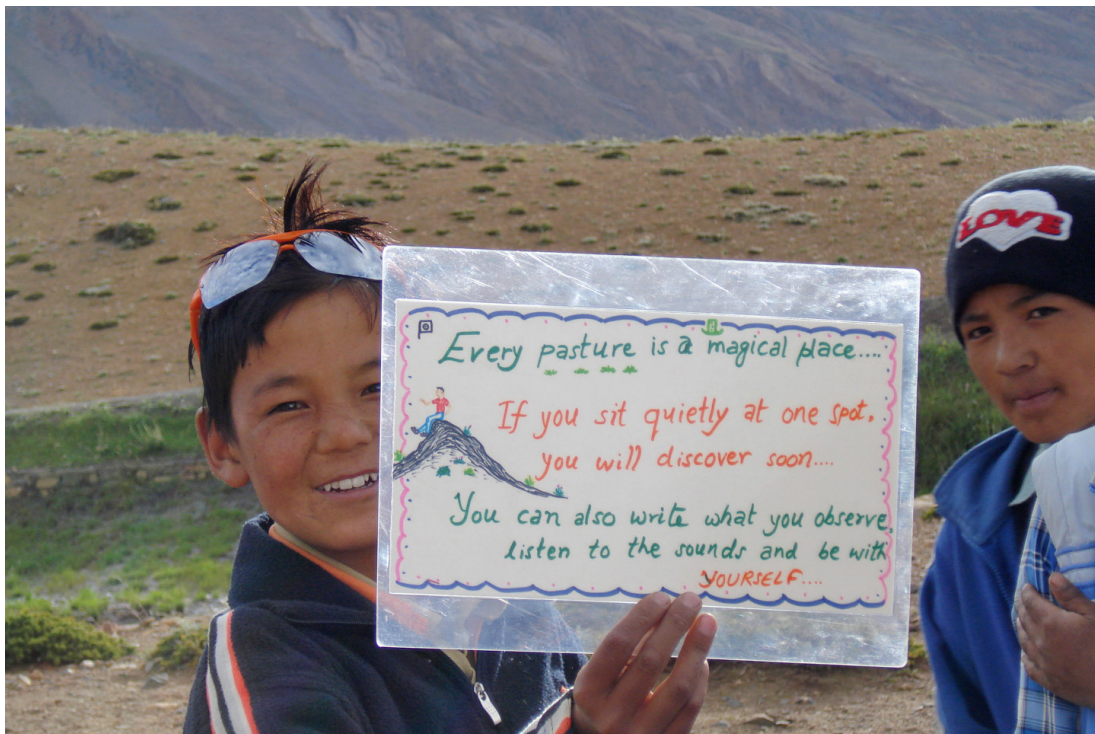
A flash of lightning in a summer cloud;

A flickering lamp, a phantom, and a dream”

— Gautama Buddha

(Diamond Sutra – Prajna Paramita)

The cave is in full view now. The last rays of the evening sun cast a beautiful orange glow on its dilapidated entrance. I stand mesmerized by the sight of the illuminated entrance and its invisible recess hiding behind the veil of darkness. It reminds me of a Rembrandt painting showing the delicate interplay of light and darkness. Nestled in a precarious depression of the Bandang gorge and surrounded by snow-clad mountains, this cave is our favourite spot to bring children and teachers coming to attend nature education camps. It evokes the memory of Gampo Dorje—the hunter who lived here many decades ago and whose legend lives on in the people of Spiti. Kalzang who was quiet until now, brings alive the legend one more time for the eager children. Soon, the children and teachers are transported back in time, drifting in their respective mind spaces—looking for their own meaning in the story.



*Found the hidden message!*

I watch the curious and attentive faces of children as Kalzang's version of the story unfolds thus: "A hunter by the name Gompo Dorje lived in this cave long, long ago. He hunted blue sheep and other wildlife and shared a small part of the quarry with a lama (a Buddhist monk) who lived nearby. One day, not finding anything to hunt, he went to tell the lama of the situation. As he reached closer to the dwelling of the monk, he saw a huge mound of bones. These were the remains of what the lama consumed from the kills shared by the hunter. Gompo was horrified by the sight and felt deep remorse and regret for his 'evil' deeds. Unable to bear this pain, he decided to end his life and jumped off the cliff into the gorge. Lo and behold, his body transformed into a brilliant light that soared up to the heavens! Seeing this, the lama too got enthused and thought; "if this lowly hunter can go to the heavens, I too, would attain the higher realm". Filled with anticipation, he leapt off into the gorge, and promptly plunged to his death!"

There is a perceptible silence now in the group and we slowly turn to children to seek their



feedback on what they thought the message of the story was. Amidst their myriad views, I add that a new hunter now occupies the cave – the snow leopard! This new piece of information regarding the presence of this almost mythical creature, also called the ghost of the mountains evokes excitement and leads to many questions. And thus begins a conversation.

The legend of the hunter brings alive the context of this outdoor exposure and helps deliver the message of compassion to the young minds. Legends and folk tales such as these are important tools to raise awareness and act as precursors to discussions about harmonious co-existence of people and wildlife, particularly the large predators. The negative attitudes that these

agro-pastoral communities living at the very threshold of existence harbor towards snow leopards and wolves stem from the killing of livestock by these carnivores, which cause considerable economic losses to the rural folk. These attitudes often get culturally transmitted to their children as well. The 3-day/2-night nature education camps that we have been conducting



*The soap-stealing fox*



here in the Spiti Valley since 2007 provide a chance to better grasp this human-wildlife interface and help the children appreciate the linkages between natural and cultural heritage of the Himalaya.

Indeed, such outdoor wanderings in childhood and youth had brought me to the world of nature education. Growing up in a suburban wilderness in Ahmedabad city situated in Gujarat—the westernmost state of India, my childhood and youth were filled with sights, smells, sounds, tastes and touches of nature. As a young boy, my world was literally out-of-doors, where nature provided real excitement and unparalleled joy. This strong bond with the natural world has only strengthened over the years. And it is this very bond that has been a catalyst in creating a deep faith in my heart about the undeniable relevance of such exposures and their crucial role in expansion of consciousness to connect with the earth and her diversity of life in deeper and more meaningful ways. No wonder then that it ultimately led to my involvement with the High Altitude Programme of NCF in Spiti and Ladakh.

The site where we hold the nature education camps is known as Chomoling. Bordering the village fields on one side and Kibber Wildlife Sanctuary on the other, it is an apt symbol of our efforts to harmonise co-existence between humans and nature in the Spiti Valley. Located at 4,400 metres, it is a lush and serene plateau above the Kibber village, the birth-place for all our community-based conservation efforts in Spiti. Staying at Chomoling for 15 to 20 days each year since 2007 has given me a unique opportunity to immerse in nature and mingle with young, enthusiastic local children who come to attend the camps. The half-day to one-day gaps between successive batches provide me with my ‘free’ time when I have explored the area like a nascent naturalist or a bemused child on his first-ever outing. The rewards have been deep and plentiful and entail surprising a blue sheep or bharal at 20 feet distance, walking into a lammergeier (bearded vulture) perched on a cliff, feeling my spirit soar at the sight of a golden eagle in flight, watching sunrises, sunsets and most beautiful cloud formations; and not to forget a sky bursting with millions of stars or adorning a full rainbow to brighten up the spirits! Interacting with the livestock herders from Kibber village and providing tea and snacks to every passer-by (literally) has been one of the most exhilarating and compassionate experiences.

Besides, there are endless stories of fun, shock and surprise that occupy a large chunk of the most memorable time spent in Spiti.

The Trans-Himalaya is now akin to a second home and the Chomoling camp-site like my backyard. The familiarity I have developed with local weather and wildlife is quite surprising to me too. In particular, I have become so tuned to the presence of bharal around the camp-site, experiencing great joy and bliss in their company. On many occasions, the bharal have allowed me to literally be a part of the herd as I have happily loitered at 10 to 20 metre distance from them for hours. Another neighbor—red fox does not believe in such sharing of space or proximity, but it has provided me the lure to stalk and reach as close as possible to this small carnivore. One such exploratory endeavour ended at the entrance of a fox's den, where I found our stolen 'Lux' soaps; creating waves of laughter among camp staff and volunteers about how a particular vixen could have been fond of such an item!

Birds are next on my favourites list and topping it are Tibetan Sandgrouse, Horned Lark, Desert Wheatear, Tibetan Snowfinch, Black Redstart, Yellow-billed Chough, lammergeier, Brandt's Mountain Finch, Robin Accentor and Himalayan Griffon. To observe the behaviour and ways of these species unfold so casually has been highly fascinating and rewarding, to say the least. Their calls are familiar and pleasant sounds for me now, and I know where some of these birds nest. The nest of a pair of Golden Eagles, atop a bluff in the Rong gorge has served as a landmark for the past 6-7 years, where we like to take the children and admire watching these eagles soar majestically and deliver food to the chicks.

All these folks living on the Chomoling plateau have in a way become my neighbours now with whom I've developed a deep bond. As if the place, its life and the natural phenomena aren't enough, I have had the pleasure of the company of some of the most innocent rural children. Their 100% participation, interest and enthusiasm are contagious. If the smiles on their faces are tell-tale signs of the joy that they derive from these camps, some deep insights that some of them reveal during the campfires or intermittent sharing sessions are moving to say the least. How deeply gratifying could the sharing of experiences by children be is gauged



*George Schaller addressing local children participating in the camp*

by a glimpse of their feedback depicted below:

*“I learnt that nature is full of surprises and peaceful...we are so lucky to be born in the Himalaya...I’ll remember for my whole life that we went for summer camp..” —Lobzang Tandup*

*“We should not kill snow leopards because they are less in population all over the world...” —Sonam Dhomden*

*“Blue sheep, I like very much because he run very fast, I saw very good, I am proud of him...” Sonam Norphel*  
*“I learn that how is big world for small insects and how they protect them...I learn how we feel when we are quiet..” —Tenzin Dolker*

*“I learnt how to make out which creatures are found in a pasture based on droppings, footprints and feathers” —Tanzin Dolkar*



*“The best activity that I liked was of smelling the plants.” —Deachen Dolma*

*“Tibetan Sandgrouse is almost invisible when it’s on the ground, it’s colour is like that of the soil..”  
—Dikit Lamo*

*“I like the most activity ‘Magical Spot’ because..I sit quietly and think about God and my mother, they bring me on earth...” —Tanzin Saldon*

*“Mujhe apne gaon ko Chomoling ki tarah saaf aur swachchh rakhna hai (I want to keep my village as neat and clean as Chomoling)...” —Tashi Yangzom*

*“Chomoling kayee praniyon ka ghar hai (Chomoling is home to many fairies)...” —Tanzin*

*“Charaan ko bachane ke liye hum jitna upyog karenge us se jyada ugane ki koshish karenge (We will*



*A child's depiction of bharal*

*protect pastures as much as we use them)...” —Nawang Londun*

There are many fascinating stories worth sharing, but I’ll only narrate a couple of these here. One of these is particularly special because it is a ‘dream-come-true’ kind of experience for me. This happened in 2008 during the visit of Dr. George Schaller—my icon and a living legend owing to his contributions to research and conservation of so many species of wild animals from gorillas to snow leopards and pandas to tigers! To my utter joy, he expressed a desire to stay at our camp-site and watch the proceedings during his trip to Spiti. To celebrate this moment, I designed a module of our nature education camps around his visit for class 9th children of the Munsel-ling School from Rangrik village. But, I didn’t want to reveal to children that he was with us, so we requested him for anonymity to which he readily agreed (that’s him!). So, each day the kids would go about doing various activities with us and he would watch them taking pictures, mingling with them at times and remain present unfailingly during the camp-fires at night – sitting on a used oil tin (since we didn’t have a chair or any other suitable object to offer him at the camp-site) and listening to the sharing and stories that children conjured up to sum up the day’s learning and experiences.

Finally, on the last day the kids got to know that indeed he is the famous naturalist-scientist George Schaller who’d travelled round the continent researching wildlife for the past half a century and advocating the cause of their conservation. He gave a motivating speech about how conservation and future of the wildlife of Himalaya lay in the hands of local children and youth. The children were so gratified and touched that they all wrote letters (which we later mailed to Dr. Schaller to USA!) wishing him luck and success and praying for his long life. Most of them also committed to conserve local wildlife and a couple of them even mentioned they’d like to undertake wildlife research like him! Here is the response that I got when Dr. Schaller had read each of the 28 write-ups we sent him:

“When I looked through my mail there was the envelope from you... I read the essays by the students with great pleasure. You obviously are having a great impact on them. I am sure that they will carry the few days with you in the field far into the future that they will listen to, smell,



and look at nature in a different way and be concerned about protecting all beings...The essays are also very well written not only the English but also with insight...the students obviously enjoy your course tremendously and it will remain with them as a happy memory.”

This was not only a moment of great joy and fulfillment, but it was also one of the most gratifying experiences for me.

The second instance also concerns another group of students of Munsel-ling school (all 7th graders hailing from Kibber village). They had attended our nature education camp at Chomoling in 2007 and took to the pastures for grazing livestock the following winter. When they were questioned by their parents and one of the post-graduate students involved in field-work for his Master’s thesis with us; they replied that it is the camps that have ‘motivated them’ to do what they were doing! So, they voluntarily chose to go to the pastures with livestock, opportunistically watching wildlife, making notes and observations. Their hot favourite was the nest of a golden eagle pair, which is a star attraction for all camp participants too. These young lads visit the gorge, where the nest is located and watch for a long time with a pair of binoculars borrowed from us!

This very group of kids (now studying in college), for the past six years has been coming up to the camp-site each year to volunteer for a few days depending on the holidays that they have and helping us. One of the boys has now become a full-time volunteer and aspires to be a teacher in Spiti! On asking to write why are they doing this and what they have seen on the first such adventure, they not only provided a beautiful written account, but a pictorial feedback on some events that they had been witness to in their wild wanderings. I have been left speechless and can only feel gratitude for this gift. Indeed, aren’t these the very seeds of hope and change that we are banking on?

It’s my 10th year in these cold, desolate highlands. A decade is a good time to reminisce over your experiences and I can see that it has helped me expand my consciousness to a great degree. Spiti is a rather curious place where you go thinking you’ll bring a change and soon

you start realising that the place and people have transformed you on the other hand! There's something profound and yet indescribable about the space, the apparent emptiness of this trans-Himalayan landscape. The immense vastness, deeply engulfing silence and vicissitudes have provided creative and spiritual dimensions to the whole experience. Dwelling in Spiti for 2 to 3 months every year and visiting the monasteries, I have been drawn to the message of impermanence and compassion of Lord Buddha; which I do see getting reflected in the day-to-day lives of many people in Spiti. Experiencing the solitude has led to deep meditation and bouts of creativity in the form of haikus (short poems generally expressed as three-liners in English) which express in very few words the transcending experience which is mostly inexpressible (see below):

“Sombre sky,  
Bleak mountains,  
I naturally turn inwards”

“Clouds drifting overhead,  
Thoughts in my mind,  
I remain a witness”

Often, I find myself mentally chanting “Om mani padme hum”—the mantra of compassion given by Buddha Avlokiteshwara as I walk in silence negotiating a steep slope. And this, I think I'll take back as my biggest ‘harvest’ from this sacred land.

# About the authors



**George Schaller** has during the past decade continued his wildlife research and conservation efforts in various countries, among them Afghanistan, Iran, India, and Mongolia. But his main focus has been China, particularly the Tibetan Plateau. There along with his Chinese co-workers, he studied various species from Tibetan antelope to Tibetan brown bear and snow leopard. Special emphasis was also placed on community-based conservation, on training local persons, including monks in monasteries, to monitor and protect wildlife and habitat. Some of this information is summarized in his book *Tibet Wild* (2012, Island Press, Washington DC). He have also been much involved again in South America—Brazil, Guyana, Ecuador, and others—promoting the conservation of jaguars on behalf of Panthera, an organization devoted to the conservation of all 38 wild cat species in the world.

**Charudutt Mishra** is a Founder Trustee of NCF and serves as the Science and Conservation Director of the Snow Leopard Trust. Charu has a long association with Spiti Valley, and feels privileged to consider it as one of his homes where he began his first attempts at real world conservation several years ago.

**Ranjini Murali** worked as the Conservation Coordinator in the high altitude programme of Nature Conservation Foundation and was involved in various conservation interventions and conservation education for school children. She is currently studying ‘the use of ecosystem services, the resulting trade-offs and its overall impact on the resilience of the ecosystem in snow leopard habitats’ for her PhD with the Nature Conservation Foundation.

**Mayank Kohli** completed his Master’s in Wildlife Biology and Conservation in July, 2012 from WCS India-NCBS program in Bangalore. He has been working in the Spiti landscape since his dissertation project in winter 2011-2012. He studied the winter foraging behaviour of bharal and its correlates. He currently works with Charudutt Mishra and Mahesh Sankaran

at NCBS to understand how plant communities in high altitude rangelands like Spiti will respond to future climatic and grazing conditions.

**Kulbhushansingh Suryawanshi** is the Director of the India Programme of the Snow Leopard Trust. His first stint with Spiti Valley was a six-month study on winter foraging strategy of bharal as an MSc student in 2007. Since then he has been motivated to conserve the high-altitude ecosystems in Spiti and other parts of the Himalaya. He returned the next year to help develop the management plan for the Spiti Wildlife Division and later studied the impact of wild-prey availability on the population and diet of the endangered snow leopard in the Spiti Valley for his PhD.

**Rishi Kumar Sharma** obtained a Master's in Wildlife Science from the Wildlife Institute of India, Dehradun. The wonders of ecology and complexities of conservation both fascinate him and carnivores more so. For his PhD, he studied snow leopard habitat use at multiple spatial scales in a multiple use landscape of Spiti Valley. He currently works with WWF-India.

**Siddharth Iyengar** finished a dual degree BS-MS at IISER Pune in 2013. For his MS thesis work, he studied plant interactions in the rangelands of Spiti from May-August 2012. He is currently a Research Fellow in the laboratory of Dr. Mahesh Sankaran at NCBS, Bangalore; setting up experiments to observe the effects of global change on grassland plant communities. Apart from his scientific interests, he has an avid interest in classical music and culture, participatory governance and environmentalism.

**Shaina Sehgal** was an intern with the Nature Conservation Foundation in Summer 2011 for a project titled, 'Changing socio-economics in and around Pin Valley National Park: exploring effects of alternative sources of income, access and energy'. She is presently a Research Assistant & PhD Scholar at the School of Human Ecology, Ambedkar University, Delhi (AUD).

**Rashmi Singh** obtained a Master's in Environment and Development from School of Human Ecology, Ambedkar University, Delhi. She is interested in the multitude of interactions

between humans and nature and the way these interactions shape nature conservation as well as human well-being. She studied livestock and pasture management by local communities in the Spiti Valley for her Master's dissertation.

**Ajay Bijoor** works as an associate in the NCF-SLT High Altitude Programme in Spiti. As part of his role, Ajay works with both local communities and government agencies to support the implementation of conservation plans within the programme. He also supports in some of the research activities.

**Abhishek Ghoshal** is a Research Associate with the High Altitude Program of Nature Conservation Foundation. His research in Spiti started with looking at impact of increasing village sizes and free-ranging dogs on a native commensal, the red fox. His current research work in Spiti and adjoining districts focus on understanding occurrences of snow leopard and its primary prey species across large spatial scale.

**Yash Veer Bhatnagar** is presently leading the Global Snow Leopard Ecosystem Protection Program's initiative to prepare scientific management plans for large landscapes identified by each of the 12 snow leopard range countries to enable participatory conservation of the ecosystem. Earlier, he headed the High Altitude Program of the Nature Conservation Foundation for about a decade and was also a faculty at the Wildlife Institute of India, Dehradun. With more than 25 years of experience in field research and conservation, his primary interests lie in understanding species ecology, resolving conservation threats, and alternative and participatory models for conservation planning/action in the cold-arid landscapes of the Trans-Himalaya.

**Kalzang Gurmet** was born in the village of Kibber, Spiti Valley. As a young boy he shared responsibilities at home, like all village children of his age and used to spend a lot of time in the village pastures—grazing livestock, collecting dung, perform several other duties and also occasionally observing local wildlife. He received a Master's degree in History from Dharmashala, Himachal Pradesh. Over the past 10 years, he has been associated with NCF's High Altitude programme as Education Coordinator, where he gets to take local children



back to those very pastures where he grew up as a boy, and introduce them to the wonders and joys of nature.

**Neha Mohanbabu** visited Spiti as a summer student in the year 2011 while pursuing BS-MS degree at IISER-Pune. Along with three of her friends, she studied variation in plant communities as a result of intense grazing in the rangelands around Kibber and conducted surveys to assess the impact of snow leopard conservation on the local people.

**Radhika Timbadia** was involved with implementation of conservation education and community-based conservation initiatives such as livelihood enterprise and conflict mitigation. This role required close contact with the local communities in Ladakh and Spiti to implement and maintain conservation activities, ultimately leading to the development of an initiative called the Snow Leopard Enterprise.

**Pranav Trivedi** grew up in the suburban wilderness of an institutional campus in Ahmedabad, Gujarat; where he had the fortune of an intimate childhood contact with nature. This led him to a journey of self-discovery and professional interest in studying and interpreting nature. His interest has always been nature-human interface and how one can harmonise it using nature education. He first visited the Spiti Valley in May 2005 when he joined the High Altitude Programme of the Nature Conservation Foundation as a Senior Scientist. He has also served as the Head of Education and Director of Conservation of the Snow Leopard Trust (India Program) developing a unique and effective conservation education programme for the Indian trans-Himalaya.

This book is about a magnificent Himalayan landscape bestowed with a transcendental and transforming ambience. Written by a diverse set of people, all brought together by a fascination for nature, a flair for adventure and a shared concern for the future of our planet's biodiversity, it captures the rhythm and nuances of mountain life in all its beauty, charm and complexity. The contributors range from a local community educator to a young man just out of high school on another continent; from a doctoral scholar to a scientist and from a student intern to the most respected and legendary conservationist of our time—Dr. George Schaller. This book is not so much about how their work has impacted the conservation of the Himalayan biodiversity; rather, it is about how the Himalayan experience has impacted each one of them, their world views, their emotions and their conservation journeys. This book is a sort of homage to Spiti Valley. It is a celebration of Spiti's enchanting landscape; and of her peoples, culture and the fascinating diversity of life including the almost mythical, grey ghost of the mountains—the snow leopard.

*“...Conservation is based on knowledge and beauty, and we have all had the benefit of both at Chomoling. Together we had learned so much and had a delightful and memorable time.” —George Schaller*

