

## **Conservation in the mountains of Uttarakhand: A Balancing Act**

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As the Air India 9609 from New Delhi flew through dense, dark and turbulent rain clouds towards Dehra Dun, it was like flying through a dense rainforest canopy. As the aircraft descended to land, the numerous lights in the villages along the foothills of Himalaya looked like small forest fires. In spite of the turbulence the aircraft had experienced while in the air the landing was exceedingly smooth.

This was the beginning of my visit to the 2390 sq.km Gangotri National Park in the Uttarkashi district of Uttarakhand. My trip was meticulously arranged by Dhananjai Mohan, Chief Conservator of Forests (wildlife) Uttarakhand, one of the most dedicated and extremely talented forest officers in the country.

After a night stay in the century old Thano FRH in the Dehra Dun forest division, on November 6, 2015, accompanied by Shrawan Kumar, the Divisional Forest Officer of the Park, my 250 km journey to Gangotri National Park began across the forest divisions of Mussoorie, Tehri and Uttarkashi. As we ascended the Mussoorie mountains what captivated my attention was the magnificent dark and dense oak forests to the west of Mussoorie a sight to behold. Interestingly a male tiger, which had dispersed from Rajaji NP (now a tiger reserve)

was camera-trapped in this forest on February 10, 2014 by Sejal Worah of WWF-India.

### *Grave problems of firewood need*

A severe problem faced by the poor living in the mountain habitats throughout the world is the lack of firewood; more of which is needed in the winter. This problem is more acute in locations, which have poor vegetation growth as the area may fall in the rain shadow area, be in the south-facing slope and the soil conditions may not favour tree growth. This was evident in the catchment area of the Yamuna river and parts of the Tehri Forest Division we crossed. People were seen cutting whatever tree growth was around their settlements and carrying them to their homes. Such continuous heavy cutting year after year can heavily degrade the habitat affecting the springs and the water table, eventually forcing the people to abandon the area to move elsewhere where there is more vegetation and water. This has already happened in many places in the outer Himalaya and if corrective measures are not taken as urgently as possible it is likely that it will be repeated in some sections of the Yamuna catchment and the Tehri Forest Division.



A south facing slope in Yamuna catchment area where availability of firewood could be a problem for the local people. A problem which needs the urgent attention of the Government.

### *Journey along Bhagirathi*

The scene along our route gradually changed for the better as we drove into the Bhagirathi valley in Uttarkashi district where the fields were fertile, tree growth more abundant and majestic mountains adorned with forests and grasslands on either side of the river that had a golden hue. As we traveled along I took pains to take clear pictures of the interesting plants I saw so that they could later be identified by my colleague GS Rawat,

Dean, Wildlife Institute of India, Dehra Dun, and probably the finest field botanist in the country.

Uttarkashi district is about 8000 sq.km in area (largest in Uttarakhand) the source of both the Yamuna and Ganga and with a low human density of 41/sq.km, it is the one of wildest landscapes in the country. As hunting by the locals is reported to be on the decline, the mountains should have an abundance of wildlife such as khaleej pheasant, barking deer, goral, serow, leopard and black bear. As if to prove that this surmise correct, in one place we saw four goral peacefully feeding in a meadow not far from the road on the other side of the Bhagirathi river.

Below the Maneri barrage only meagre water flowed in the river but above Maneri, in several places the glory of the river could be seen with rapids and greenish blue scenic pools.

According to Hindu mythology Bhagirathi is considered as the source stream of Ganges but hydrology confirms that

Alaknanda contributes more to the water regime of the Ganga.

Many of the forest patches particularly along the north-facing slopes have retained the autumn colour of the mountains and conspicuous among the tree growth with the red colour was *Rhus semialata*. In some locations the climber *Parthenocissus himalayana*, which can be grown as an ornamental plant, with its reddish purple leaves, also added immense beauty to the forest canopy.



One of the colourful spots on the north bank of the Bhagirathi river

The admirable khachhar

Our first night halt was in the forest rest house in the Gangotri temple complex area. The rest house is at an altitude of 10,000 feet in the Bhagirathi valley and the valleys in the higher Himalaya in winter are exceedingly cold at night. As if to compensate this cold, the morning was warm with a brilliant sunlight and our 14 km journey to Bhojvasa, the place of birch, *Butula utilis*, one of the tree species adapted to the extreme cold, was on the back of the *khachhar*.

My first reading of the toughness of the hill horses called by different names such as *khachhar*, mule or pony or hill horse was in the story of the Champawat man-eater in *Man eaters of Kumaon* by Jim Corbett. He writes that his little pony (had bred near the snow-line and could eat any thing from oak trees to nettles!) was strong on his legs as he was tough inside.

Therefore by holding his tail on the up-grades, riding him on the flat and running behind him on the down-grades Corbett covered 45 miles (72 km) from Dabidhura (c. 5000 feet) to Naini Tal (c. 7000 feet) between 9 a.m. and 6 p.m. (nine hours). The average speed he covered that day was 8 km /hr. The horse also carried the skin and head of the Champawat man-eater and of a leopard that Corbett had shot just before starting in the morning.

As we rode I observed that *khachhar* were quick to make use of any opportunity to feed on whatever food was available on the trail. They fed on the fallen leaves of poplar (*Populus ciliata*), willow (*Salix wallichiana*), birch (*Betula utilis*) voraciously fed on *Malva neglecta* which was creeping on the ground, ate the leaves of *Selinum tenuifolium* an erect and strong smelling herb and varieties of grass growing along the edge of the trail. Carrying us they crossed the nallahs with boulders and rocks with immense care and drank from the stream where the water had frozen along the edges.



The tough khachhar are capable of surviving feeding on any cold desert vegetation

If the ponies were tough the pony men were even tougher. On the morning of November 8, they came with the ponies from Gangotri carrying the provisions for the staff of the weather monitoring station based in Bhojvasa. Astonishingly, by midday in that rarified atmosphere, they also started back to Gangotri along with us covering a distance of 28 km that day, all above 10,000 feet. I was told that these men of immense fitness work like this till they are around 45 years of age and then the arduous vocation is taken over by their sons.

*Winter colours, snow leopard track, bharal and birds*

Although we traveled through the cold desert there were brilliant colours in the alpine vegetation: *Berberis jaeschkeana*, *Euonymus fimbriatus* and *Sorbaria tomentosa* painted the landscape with red, and willow, poplar and birch had golden yellow crown. There were two habituated groups of bharal near the entrance to the park and they were not at all disturbed by us watching and photographing. Although twinning is reported to be rare in bharal, one female had two kids. They were seen browsing on the leaves of the *Lonicera* bushes. Evidence from different places indicates that in the Indian Himalaya bharal has the tendency to get habituated to people. However, currently the Gangotri National Park seems to be the only protected area where bharal are seen habituated to people. The other place in the Himalaya which comes to my mind is the Cheri monastery in Bhutan where goral are habituated to visitors. In the Western Ghats in three places (Rajamalai in Eravikulam National Park, Ninth Hairpin Bend on the way to Valparai in the Anamalai Tiger Reserve and in the Western Catchment in Mukurthy National Park) the Nilgiri tahr, another mountain ungulate, has been habituated to people.



Eye-catching winter colours in Gangotri valley which is totally free of livestock grazing



A snow leopard track on the Gangotri-Gomukh trail. The lobes on the pad are note worthy.



Gangotri NP may be the only protected area in the Indian Himalaya where a large mountain ungulate (bharal) is habituated to people

At one place the trail became narrow with steps and with a precipitous drop to the Bagirathi below and we got down from the khachhar and walked. Trodden by the feet of the pilgrims, trekkers and the hooves of the khachhar, the trail in many places was covered by fine powdery earth where clear imprints of the pugmarks of the snow leopard were seen. What attracted my attention was the presence of three lobes in the pad of the snow leopard pugmark, which are not seen in the pad of the common leopard. Therefore it occurred to me that this difference in the pad of common and snow leopard can be used to differentiate these two large cats in locations where they may be sympatric in winter, when the snow leopard descends to the lower altitude following the prey and the leopard continue to stay around. Harsil (9000 feet), one of the apple valleys of Uttarakhand and a place described as the Switzerland of Uttarakhand, which is 25 km from

Gangotri, may be one place where this exercise could be conducted.



Bagirathi peaks and chirvasa, a breath-taking scene on the way to Bhojvasa

The highlight of our stay in Bhojvasa was the presence of seven bharal, six adult males and one female, near the camp and they were not shy of visitors. In the morning when we saw them they were all coming down from the mountain possibly with the intention of going to the river to drink water. We were on our way to Gomukh and when we returned we saw all of them resting in the flat terrain between the mountain and the river, each of them looking in different directions. This was understandable as in the same location amidst the short bushes I saw the remains of a female obviously killed and eaten by a snow leopard, the only large predator reported to occur in Gangotri National Park.

Wolves may find it difficult to hunt in the rugged and glaciated valley of Gangotri as the terrain is extremely mountainous with many scree slopes and broken with deep ravines. Peak rut in bharal is reported to occur in late November and early December and therefore I observed only one incident of a male briefly testing the female and then continuing feeding. Once two males rose on their hind legs and butted with their horns more like goats fighting and such behavior made George B. Schaller, the world's most celebrated wildlife biologist, conclude that the bharal show closer affinity with goats than sheep. Thereafter the group led by the female went up the mountain slope where there was an abundance of palatable grass *Danthonia cachemyriana* that had already turned yellow.

The birds that attracted our attention were a flock of snow pigeons, which were resting on a large rock, and a large flock of yellow-billed chough, which were foraging on the red fruits of rose bushes (*Rosa sericea*, pear shaped fruits and *R. macrophylla*, flask shaped fruits). Two Himalayan griffons were soaring in the sky. Red fox tracks and droppings were seen along the trail.

### *The trail and the suggestions*

As I rode and walked along the trail I could not but admire the dedication of the forest staff in maintaining the narrow trail walkable for the pilgrims and the trekkers as at any time a landslide caused by a bharal running across the scree can block the path. Two suggestions came to my mind: one is the removal of barbed wires from Bhojvasa erected to protect the birch plantation from livestock, which does not exist there! The other is the removal of garbage bins placed by the Forest Department in places like Chirvasa (the place of chir pine - *Pinus roxburghii* - but



It is a challenging task for the forest staff to keep the trail clear of rocks that can roll down the slopes any time

Forest Department has planted several other pine species in the area) and instead of the garbage bin a signage in Hindi and English requesting the pilgrims to take back the garbage should be placed. If the garbage bins are kept it involves additional responsibility of taking back the garbage to Gangotri by the forest department personnel. The signage can have this message: *Leave nothing but foot prints and take back nothing but memories and photographs.* On our way back we briefly stopped in Harsil for breakfast and in the lawn of the forest rest house there were several species of butterflies either basking or drinking nectar. Krushnamegh Kunte, the leading authority on butterflies in India, identified the winged beauties for me.



Indian tortoise shell, one of the many butterflies photographed in Harsil

*Bright future for the mountain wildlife in Uttarakhand*

Dhananjai Mohan and Rawat are of the opinion that the conservation status of mountain mammals in Uttarakhand is bound to improve in the years to come. The string of protected areas in the upper reaches of Uttarakhand such as Govind Pashu Vihar, Gangotri National Park, Kedarnath Musk deer Sanctuary, Nandadevi National Park and the strip of cold desert all along the northern part of Uttarakhand will ensure the viability and protection of charismatic mountain species such as bharal, Himalyan tahr, musk deer, snow leopard and perhaps even the brown bear.

The Great Himalayan range would ensure the future of the barking deer, goral, serow, black bear and leopard. The beautiful

monal pheasant, the vulnerable western tragopan and the near threatened satyr tragopan will be the showpieces of these mountains. Special efforts should be made to bring back the magnificent sambar deer in all possible places. The presence of sambar may even eventually attract tiger to the upper reaches of the Greater Himalaya. It should be borne in mind that with sustained effective conservation, conflict with species such as black bear, leopard and wild pig is bound to increase. And then befitting conservation, wise and practical management decisions should be made and implemented benefitting both the wildlife and the people affected by this conservation success.



Winter habitat of bharal below Gangotri where snow and common leopard may be sympatric in winter

