

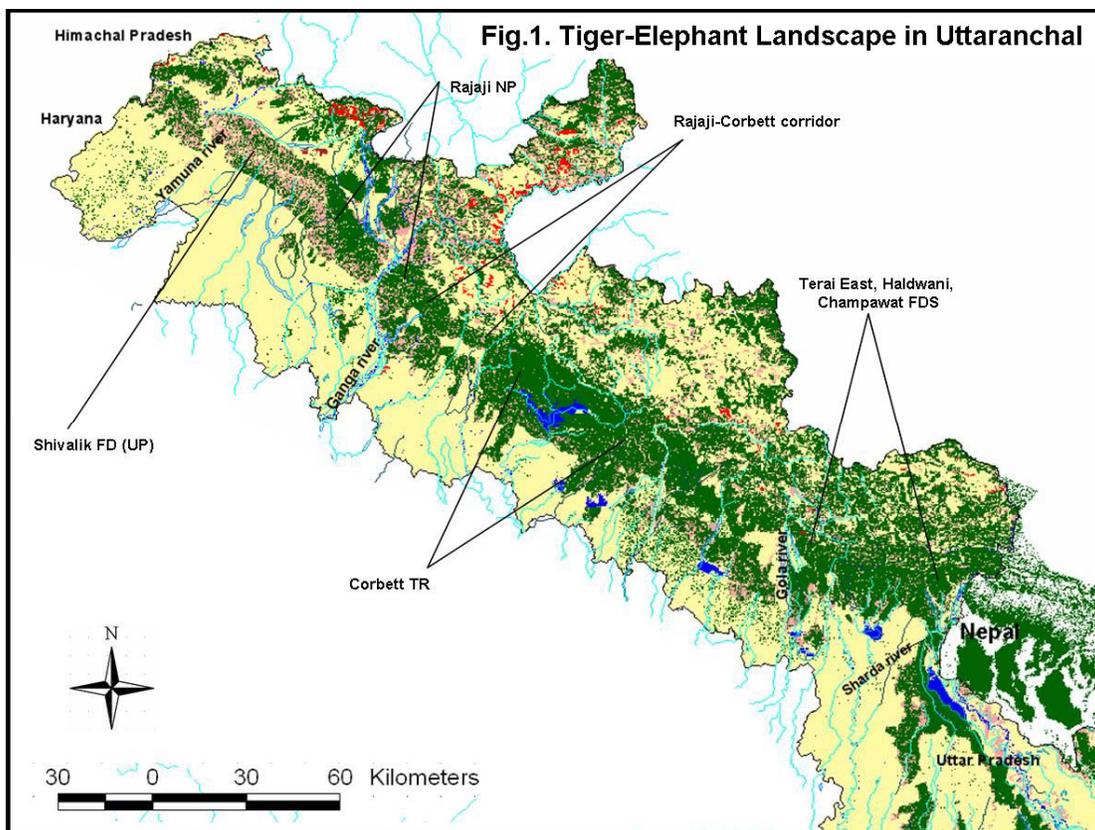
A ROAD MAP FOR CONSERVATION IN UTTARANCHAL

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The enchanting state of Uttarakhand, carved out of Uttar Pradesh on 9th November 2000, has a total area of ca. 53,485 km² with a population density of 160 persons/ km², much lower than the national average of 324/km². This young state can take pride in the fact that 13.42% of its area is under protected areas. The state has varied landscapes: snow-capped and conifer forest covered mountains in the north, forest covered foothills with numerous perennial rivers and streams, locally known as the *bhabar* tract which includes the Himalayan foothills and the Shivalik range. As a result, the land is home to a variety of fascinating wildlife such as the golden mahseer (*Tor putitora*), king cobra (*Ophiophagus hanna*), Himalayan monal (*Lophophorus impejanus*), great hornbill (*Buceros bicornis*), Himalayan tahr (*Hemitragus jemlahicus*), bharal (*Pseudois nayaur*), Himalayan musk deer (*Moschus chrysogaster*), goral (*Nemorhaedus goral*), elephant (*Elephas maximus*), snow leopard (*Panthera uncia*), leopard (*P. pardus*), black bear (*Ursus thibetanus*), and tiger (*P. tigris*). All across their range, most of these species are endangered.

The potential of this state, with about 800 kilometers of riverine habitat, can only be surpassed by Arunachal Pradesh in terms of golden mahseer conservation. The mountains, bedecked with the scarlet flowers of rhododendron (*Rhododendron arboreum*) in the summer months, can be a veritable home to many forms of pheasants, mountain ungulates and carnivores, provided poaching for trade is eliminated and hunting for the pot is brought under control. The *bhabar* forests of this state, ca. 7,500 km², extending between Yamuna and Sharda rivers (Fig. 1.), can easily support a population of about 1000 elephants and 200 tigers as long as this large habitat, now fragmented in three blocks, is managed and protected as one continuous habitat for wildlife. Six villages, *gujjar* settlements and encroachments need to be moved away from the main wildlife habitat which goes along the *bhabar* tract. Although the conservation of these habitats can eventually bring in immense benefits through well-planned ecotourism programmes that are rapidly catching up in the state, initial conservation efforts would need a substantial amount of funds.

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This article is dedicated to Shri A.S. Negi, retired Chief Wildlife Warden, Uttarakhand. Photo: A.J.T.Johnsingh.

Rhododendron arboreum, an ecotourism species
Photo: A.J.T.Johnsingh.



Gorgeous Sharda river. It can be a fortress of mighty golden mahseer. Photo: A.J.T.Johnsingh



Uttaranchal has immense potential for sport fishing provided the fishes are protected on their spawning grounds. Photo: Misty Mahseer



Goral can be abundant in Uttaranchal provided poaching is under control. Photo: A.J.T.Johnsingh.



Uttaranchal continues to be a home to magnificent tuskers. Photo: Christy Williams



Uttaranchal can boast of a single population of ca. 200 tigers if the habitat from Yamuna to Sharda river is managed as one conservation unit. Photo: S.P. Goyal



An enchanting view above Munsiyari. Photo: A.J.T.Johnsingh.

The state gets various forms of assistance from the Government of India to manage Corbett Tiger Reserve (1286 km²) and Rajaji National Park (820 km², RNP). Most of us know that RNP is the richest Park in India, with a corpus of Rs. 50 crores (which now stands at 57 crores with the addition of interest gained) given by the National Power Corporation of India to compensate the loss of trees and habitat which arose as a result of transmission of the hydel power from the Tehri dam up in the Garhwal Himalaya to the plains through the Park. It should be emphasized that Uttaranchal Government has the potential to raise significant amount of money for conservation through the establishment of a **Pilgrims Conservation Fund**. Uttaranchal, being the Dev Bhoomi of northern India, is visited by more than one crore (10 million) pilgrims every year. It is suggested that each pilgrim entering Uttaranchal should be taxed a minimum “conservation fee” of Rs. 10/= (rupees ten only). This fund, every year, would add up to a little over two million US dollars, which should be effectively managed by a small, efficient and dedicated team of trustees. This fund, which is likely to grow from year to year, and other assistance available from Government of India should be used to:

- Strengthen *Van Panchayats* so that villagers can protect forests and wildlife around their homesteads and protect their fields from crop-raiding ungulates using rubble walls wherever needed.
- Pay for volunteers from *Van Panchayats*, to patrol the mountainous terrain with the wildlife guards, warding off poachers who kill animals such as musk deer and black bear for trade and indulge in large scale collection of medicinal plants (e.g. *Cordyceps sinensis*, *Picrorhiza kurrooa*, *Rheum australe*). Rawat (2005) suggests measures for protecting and managing medicinal and aromatic plants in Uttaranchal.
- Pay for volunteers from villages to protect the snow trout (*Schizothorax spp*), Indian trout (*Barilius bola*) and mahseer spawning habitats from dynamiting, poisoning and gill netting during and soon after the rains (July-October). Golden mahseer is a peerless resource which the state should assiduously protect.

- Strengthen the anti-poaching unit of the Uttarakhand Forest Department. Take special measures to wean *Ganjars* and *Rai Sikhs* from poaching. Promote gun replacement programme (Johnsingh and Negi 2003).
- Permit the villagers to kill wild pigs (*Sus scrofa*) when they raid the crops but get an assurance from the villagers that they will not venture into the forest and kill species such as sambar (*Cervus unicolor*), chital (*Axis axis*), barking deer (*Muntiacus muntjak*), goral and wild pigs. The best deterrent to leopard-human conflict is the abundance of wild ungulate prey. There is no report of leopards attacking humans in Bhutan, although hamlets are in the middle of forests (Johnsingh and Yonten 2004). The major reason for this could be that there is absence of rampant poaching of wild ungulates and the forests may have sufficient prey such as barking deer, sambar, serow (*Capricornis sumatraensis*) and goral.
- Relocate six villages, *gujjar* settlements and encroachers. The villages suggested for relocation are Kunaun *goth*, Gangabhogpur *Malla*, Gangabhogpur *Thalla*, Ringora, Amdanda and Tedha. Resettlement of the first three will significantly strengthen conservation on the left bank of the Ganga, leading to the establishment of nearly 300 km² (Gohri, Chilla and Shyampur ranges) of disturbance-free habitat. This habitat is connected to the 1500 km² tiger–elephant habitat in and around Corbett Tiger Reserve by the 200 km² Rajaji-Corbett corridor (Laldhang and Kotdwar ranges of Lansdowne Forest Division, 430 km²). This tract of nearly 2000 km² will ensure the future of tiger and elephant in Uttarakhand for decades to come. Barkot range in Dehra Dun Forest Division (510 km²), which has almost lost all its large mammals, except a herd of 20-30 elephants, as a result of enormous wood cutting from Rishikesh township, should be used for resettling the first three villages. Relocation of the other three villages would significantly strengthen the connectivity between Corbett Tiger Reserve and Ramnagar Forest Division (490 km²), across the Kosi river. Sufficient land is available in Gabua forest patch (13 km²) in Terai West Forest Division (350 km²) to house these villages. Uttarakhand (UA) Government should help Uttar Pradesh (UP) to resettle *gujjars* from Shivalik FD by providing sufficient land and UP, in turn, should help UA to evict the

encroachers from UP part of Kalagargh township.

- Secure welfare measures such as schools, hospitals, water supply for drinking and cultivation, electricity and all-weather roads in the colonies of resettled *gujjars*. They should be educated to limit their families, learn to cultivate the land, maintain a few high milk yielding buffaloes that can be supported by the produce of the land, and educate their children. Evil-doers should be kept away from the *gujjar* colonies. Otherwise, one day, the *gujjars* would end up as labourers on their own valuable land allotted by the Government.
- Remove encroachments. The encroachments that need immediate attention are the ashram in Sidh *sot* in the heart of Shyampur range, encroachments on the left bank of the Ganga near Shyampur range, and Sundar *khal* and the Indian Medicines Pharmaceutical Corporation Limited (which may be a Government approved encroachment) in Ramnagar Forest Division. Removal of the first two would significantly strengthen the 300 km² conservation area suggested on the left bank of the Ganga. Resettlement of the last two will remove the cancerous growth near the famed Corbett Tiger Reserve. Sundar *khal* should be relocated in Gabua forest patch and the Pharmaceutical Corporation near Ramnagar. Terai East Forest Division (800 km²) has lost more than 60 km² to encroachment. Removal of these encroachments will be extremely challenging. Nevertheless, efforts should be made to establish the Kilpura-Khatima-Surai corridor so that the 30-50 elephants, presently pocketed in Haldwani Forest Division (750 km²), would revive their migration to Royal Sukhlaphanta Reserve in Nepal.
- Establish 250-300 km² Nandhour Valley protected area in Haldwani FD so that the wild ungulates in this valley are protected and tigers survive in the ca.1800 km² isolated forest tract between Gola and Sharda rivers. Wild ungulate poaching is rampant in this entire tract now.
- Control weeds and unpalatable species, convert monoculture plantations into polyculture plantations, particularly in Terai Central FD, that would benefit wildlife (Johnsingh and

Negi 2003), and manage garbage. The flat areas in the *bhabar* tract have an abundance of various species of weeds and unpalatable species, which reduces the carrying capacity of the land for wild ungulates and carnivores. Even rivers, revered in the scriptures, are used for dumping garbage.

- Establish numerous nurseries to grow saplings of firewood species (e.g. *Holoptelia integrifolia*, *Acacia auriculiformis*), so that several square kilometers of fuel wood plantations are raised all along the *bhabar* tract and sustainably harvested to meet the growing needs of the people living in the vicinity. Md. Abdullah Abraham Hossain (Trainee Officer XXVII Post Graduate Diploma in Wildlife Management, Wildlife Institute of India) informs that in Bangladesh bulk of the firewood for the high density human population (ca. 1000/km²) comes from *A. auriculiformis* plantations. The nurseries should also be used to grow forage species such as *Dendrocalamus strictus*, *Zizyphus mauritiana* and *Bridelia retusa* for 3-4 years. The saplings of the forage species should be planted in all possible areas, at the onset of rains, in the midst of dense *Lantana* patches which would serve as biofences. All the above programmes would generate thousands of jobs for the men and women of Uttaranchal.
- Put up wildlife and conservation related signs in Hindi and English, for the benefit of locals as well as wildlife tourists from abroad and other states.

The fund, which is likely to grow bigger and bigger, if assiduously managed, would help Uttaranchal Government to establish and manage the vital Chilla-Motichur corridor across the Ganga as early as possible. One should remember that the plan to establish this corridor is on the anvil since 1984, and yet we have miles to go before the corridor is fully established and becomes functional for the unhindered movement of large mammals. Hopefully, the Government will eventually even stop boulder mining in Gola river, where thousands of labourers from eastern Uttar Pradesh and Bihar are required to stay, leading to the decimation of the forests of Gola, Dowli and Tanda ranges between Haldwani and Lal Kuan for their firewood and small timber needs. This will increase the possibility of restoring the habitat connectivity between Terai Central (400 km²) and Terai East Forest Divisions for elephant and tiger movement. The

annual revenue the Government gets now (about Rs. 50 crores) through boulder mining in Gola river may be high, but this money comes at a great cost of growing ecological degradation of about 300 km² area between Haldwani and Lal Kuan, and should be stopped. The Government of India could intervene to stop this ecological degradation and restore connectivity between Terai Central and Terai East forest divisions, thereby making Uttaranchal a proud possessor of ca. 7500 km² of continuous elephant and tiger habitat between the Yamuna and Sharda rivers, something that would be unmatched by any other state in the Himalayan foothills. The Government of India could come up with sufficient financial assistance to Uttaranchal to compensate for the loss of finance to the state from the stopping of boulder mining. When Uttaranchal becomes financially richer, with the sale of hydel power, which is likely to happen in a few years' time, this specific assistance of the Government of India could be withdrawn. Johnsingh *et al.* (2004) discuss most of the above points in detail.

Postscript: Lessons from Rajaji National Park

I have been a regular visitor to Rajaji NP since March 1985, when I joined the Wildlife Institute of India. In the company of my colleagues (G.S. Rawat, S.P. Goyal and Bivash Pandav) and students I have walked through most of the Park. Little more than a decade ago, it was common to see several groups of sambar on the hill slopes in the Dholkhand range that we frequented. On winter nights, whenever we stayed at the Dholkhand forest bungalow, we have often heard, with rapt attention, the haunting *A-oongh A-oongh* of tigers echoing through the mist-shrouded forests. Over the years, tiger calls have become extremely rare and sambar no longer occurs in abundance as in the past. As a result, there was growing concern that the Sariska tragedy may be repeated in the forests west of the Ganga where the western portion of Rajaji NP is situated, not due to poaching but due to growing disturbances and lack of food for the tiger.

Fortunately, our fears seem to be unfounded. During our field exercises in November 2005, we realized that as a result of two measures taken by the Uttaranchal Forest Department since November 2004, the tiger may stage a come-back in the western portion of the Park. One measure, thanks to the thoughtful and bold initiative of G.S. Pande, present director of the Park, was the stopping of the collection of *bhabar* grass (*Eulaliopsis binata*) by the local people for rope making and sale. When people came to the Park to collect the grass, which they did in the winter, from November to March, they wandered all over the hilly tract where the grass grows on

steep slopes and where the tigers retreat to the deep *nallahs* and often cache their kills. In the process of their wandering, the people, who are extremely poor, often stole the kills of tigers and leopards aided by the large-billed crows (*Corvus macrorhynchos*) which locate the kills in the forests to scavenge on the remains. We believe that stealing of kills all through the winter, was a great deterrent to the tigers to breed successfully. This also possibly contributed to the gradual decline of sambar abundance as the kills stolen were largely of sambar. Between 1990 and 2000, in the forests around Dholkhand forest bungalow, an area of about 10 km², Mohamed Yasin, one of our reliable and able field assistants, has recorded stealing of 40 sambar kills.



Elephant sightings, particularly in summer, are very common in Chilla range after *gujjar* relocation
Photo: Bivash Pandav

The other measure taken by the Uttaranchal Forest Department was the resettling of *gujjars* from Haridwar and Motichur ranges, thereby reducing the disturbance levels significantly. Recent recovery of tigers in the Chilla range (150 km²) of the Park, on the east bank of the Ganga, soon after the resettlement of *gujjars*, is a conservation success story now (Harihar 2005, Johnsingh 2005). During our November 2005 exercise, we saw tiger pugmarks in all the four river beds (Harnol, Chidak, Rawali and Ranipur) in Haridwar range, where we had never seen pug marks in

the past. It appears that the effective ban on *bhabar* grass collection (which should continue forever as it would enable tigers to feed on their kills to the maximum) would help tigers to breed and increase in number. This may also help the recovery of sambar population. The ongoing resettlement of *gujjars* from the other five ranges in the western part of the Park would certainly facilitate tigers to have access to a larger part of the Park, thereby making their future much more secure on the west bank of the Ganga. Our ultimate objective should be to enable tigers range from the forests west of Yamuna river to Sharda river near Nepal border (an area of nearly 7,500 km²), which they did half a century ago. This would require banning of boulder mining across Yamuna and Gola rivers and the establishment of the long awaited Chilla-Motichur corridor. Going by the positive trend so far, it is likely that this objective would become a reality soon.

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