

Chapter 14

My Memoir of the Wildlife Surveys in Ladakh

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In 1980, there was only limited recent information on the ecology of Ladakh. Much of what was known was derived from old accounts, often detailing the depredations of British hunters. These accounts mainly referred to locations along the main route from Srinagar to Leh, and then upstream along the Indus Valley and on to the high plains of Rupshu in eastern Ladakh, where the most sought-after Tibetan species could be found (wild yak, Tibetan antelope, Tibetan gazelle, Tibetan argali). Although some recent information had been accumulated by the Department of Wildlife Protection, large areas had not been investigated in any detail. The most obvious gaps lay in the mountains between the south side of the Indus and the main Himalayan Range. In late 1980, civilian flights between Delhi and Leh were extended into the winter period. These greatly facilitated access and meant it was no longer necessary to remain there from autumn to late spring when road passes were closed by snow.

The first priority was a survey of the status of the Ladakh urial or shapu, initiated in winter 1980-81 and carried out at the invitation of the then Chief Wildlife Warden of Jammu & Kashmir, Mir Inayet Ullah. This involved methodical surveys and interviews in all the side valleys of the Indus between Upshi and Kalste which comprised the main part of their former range in the area. The terrain here is undemanding and surveying was relatively easy, though the interviews

proved more problematic at first. Local villagers did not understand why a foreigner should spend so much time trekking over the hills in the cold just to look for an animal. Many assumed I must have an ulterior motive, probably looking for gold. Old beliefs also still survived. On one occasion arriving in a settlement after dark, I could not get a response from any of the houses or find anywhere to stay, which was very unusual, and was forced to endure a cold bivouac on the hills. The next morning the local school teacher told me with great amusement that after dark people would not open their doors for fear of letting the *tsan* or bad spirits enter. The surveys found widespread but scattered small shapu populations surviving within the known range along the Indus Valley, the low numbers the legacy of illegal hunting. It is heartening to see that the population has now expanded to the extent described elsewhere in this volume.

Subsequent fieldwork involved wider baseline surveys of the mountains of Ladakh and Zaskar. The centre of the Zaskar Range consists of resistant sedimentary rocks that have been severely tilted and folded then incised by rivers leaving deep gorges. Progress through these is only possible in late summer and autumn when water levels fall. The gorge of the Zaskar river itself cuts right through the range and is impassable for 9-10 months of the year but it can be traversed in midwinter when the surface freezes due to the severe cold.



This ice route was utilised in four winter field visits to investigate all the side valleys between Markha and Zangla. Difficulties in moving around in the rugged terrain of the 'gorge zone' were initially compounded by route finding problems as GPS equipment was not available at the time and the only maps that could be obtained publicly were old Survey of India sheets at a 1:250,000 scale. Although these were based on surveys made in 1867-1926 and a number of settlements marked could not be found, most ridgelines and drainages were accurate and routes through the mountains were found with the help of sketch maps and route information from other trekking and mountaineering parties. One exception to the accuracy of the old maps was provided by the Tilat Chu. All my Zanskari guides said that this was the best place for snow leopards and other wildlife. They described it as a large tributary valley on the south side of the Zanskar Gorge and definitely situated above the Markha. The only possibility appeared to be a large unnamed north-south valley shown on the map just upstream of the Chang Chu. Two attempts to find this valley in consecutive winters failed and it became clear that no large side valley existed in that sector of the gorge. I then discovered that the Chang Chu (a major tributary mis-named the Khurna River on many maps) was actually called the Tilat Chu by the Zanskaris and the two were identical. Presumably the map makers, similarly confused had simply added in a second valley where they guessed it ought to be.

In attempting to cover such a large area, local information was vital. Some villagers could not distinguish between animal species or thought that male and female were different species, while others referred to all as *ridaks*, a generic Ladakhi

term for mountain ungulate. So extreme was the faith in their own knowledge that some Zanskari guides called everything *skyin* (ibex) and completely refused to believe in the existence of bharal. Only when I took them to see a dead male bharal killed by a snow leopard and was able to show them its distinctive horns and black chest would they accept the occurrence of two species. Eventually a network of knowledgeable reliable informants was built up and they were able to contribute a lot of information. In the course of more than 4300km of foot surveys all the main sub-catchments were visited, habitats recorded and the distribution of the larger mammals mapped. In addition, long treks into remote areas in the company of local people provided a wonderful opportunity to learn about their customs and way of life and to appreciate their skill in traversing the mountains. Apart from getting temporarily lost a couple of times and some nerve-wracking traverses on half paths over steep scree and cliffs 200-300 metres above the rivers, we had no real setbacks. In fact the greatest problems we encountered were both in villages. The first was in Kharnak, on the edge of Chang Tang plateau, where the dogs are so fierce and unfriendly that it was impossible to leave a tent for any reason, however personal, without being accompanied by a local person to stop them attacking. The second was realising that a cow was greedily eating my field notebook while I interviewed its owner, necessitating a struggle to pull the remainder out of its jaws before a whole weeks field notes disappeared forever.

The more remote parts of the range contain the largest remaining fragments of riverine woodland in the area. In the valley of the Chang Chu, there are dense



thickets of *Salix*, *Hippophae*, and *Populus* some of which are virtually impenetrable. Even rarer are small stands of Juniper (*Juniperus indica*) and Himalayan birch (*Betula utilis*) trees. In one or two side valleys, there are remnants of a type of open steppe woodland. The presence here of rufous-naped tit (*Parus rufonuchalis*) a non-migratory passerine species, is evidently a relict from a period when dry open juniper extended more widely across the Trans-Himalaya. Elsewhere, riverine woodland has been incrementally removed over the centuries for building timber and fuel. Even in some remote areas it was incredible to find that a few people from remote villages such as Lingshet had travelled up the gorge in search of trees for use as building timber which they cut and man-hauled back for 2-3 days over the ice and up the valley to their home.

A relatively simple pattern of mountain ungulate distribution emerged. Shapu occur at lower elevations in a narrow band along the Indus and its tributaries, extending upstream along the Zaskar as far as the confluence and into the Markha Valley, with ibex and bharal distributed across the mountains of Ladakh and Zaskar south to the main Himalayan Range. Shapu habitat is characterised by open, relatively even terrain, much of which coincides with a band of ancient, well-weathered sedimentary rocks along the line of the Indus suture zone and is dominated by semidesert vegetation. Bharal and ibex prefer more rugged, broken terrain, with cliffs for escape, and both occur at much higher elevations.

Two characteristic Tibetan Plateau species also have very limited distributions in the central mountains. Kiang or Tibetan wild ass (*Equus kiang*) range from the high

plains of eastern Ladakh into the Karnak area of the upper Chang Chu, and single animals sporadically wander farther west into nullahs of the upper Markha catchment. Tibetan argali (*Ovis ammon hodgsoni*), much scarcer than kiang, have established small outlying populations in the central mountains on at least three occasions during the nineteenth and twentieth centuries. One of these was reported in the 1880s at an unnamed locality south of the Indus, and another in the 1930s. The latest of these appeared in the late 1970s in the upper Rumbak valley and is still thriving (Fox *et al.* 1991).

Habitat separation between shapu on the one hand and bharal and ibex on the other is a typical example of that between wild sheep and goats. Of more interest are the distributions of bharal and ibex, with bharal occurring principally in the eastern parts of Ladakh and ibex in the west. The habitats they occupy are usually indistinguishable on a number of observed factors, such as solid geology, ruggedness, vegetation, altitudinal range, yet the geographical separation between the two species is quite clear-cut and there is little range overlap (perhaps 3-4% in Ladakh) along the contact zone. A few mixed groups of ibex and bharal have been reported in the Shun-Shadi area of Zaskar, but such occurrences are the exception rather than the rule and hybridisation has not been reported. This pattern of largely exclusive ranges, with a long contact zone is repeated elsewhere when the two species' ranges meet. Discussing the separate distributions of ibex and bharal in the Karakoram, Schaller (1977) observed: "Competition for resources would be inevitable and coexistence impossible without a



geographic partitioning of ranges. Sympatric survival is not possible in a simple habitat for caprids of a similar size". They have apparently partitioned the habitat geographically, reflecting dispersal from different directions: ibex from the west and bharal from the east. A similar zoogeographical pattern is repeated by other species pairs in Ladakh: marmots (*Marmota himalayensis* and *M. caudata*); hares (*Lepus oiostolus* and *L. capensis*); and snowcock (*Tetraogallus tibetanus* and *T. himalayensis*).

The two sheep species, shapu and argali, have generally separate distributions in Ladakh that just come into contact at the eastern edge of the mountains in the Gya-Miru area, and also in Rumbak valley, a tributary of the Indus. Hybrids between the two very occasionally result, with 3-4 specimens reportedly obtained during the last ca.140 years, one of them from the Rumbak area, from Miru and in the 1870s from an unspecified locality (Ward 1924; Mallon 1998).

The mountain ungulate community in Ladakh shows a typical Trans-Himalayan pattern. In Spiti, which lies southeast of Ladakh, bharal and ibex occur in separate ranges which just meet in the Kibber area, and argali appear sporadically via valley-head passes on the Tibetan border (Burrard, 1925; CADARI, 1996). The mountain ungulate fauna of Hunza in Pakistan occupied Kashmir, northwest of Ladakh, also matches that of Ladakh. Shapu are (or were) restricted to a narrow band along valley bottoms, ibex are widespread and occur at higher elevations up to the snow line, but have a separate range from bharal. Kiang occurs in northeastern Hunza and argali (in this case *O. ammon poloi*) occur on the

fringes of the area around the Khunjerab and Kilik passes.

Mountain ungulate densities in Ladakh are not notably high, in comparison with other areas, and their significance lies much more in their extensive and unfragmented ranges and the fact that overall, populations for most species are not declining. This is in large part due to the lack of a hunting tradition among local people and traditional Buddhist disapproval of killing animals. The species that has suffered most through illegal hunting is the shapu, whose habitat, lying along the main Srinagar-Leh highway, is easily accessible. The narrow-linear pattern of distribution, with its high ratio of periphery to area also makes it susceptible to fragmentation because it is accessible at many points, and there is no remote central core to act as a population reservoir, unlike the case with bharal and ibex.

More importantly from a conservation point of view, the mountains of Ladakh and Zaskar are a stronghold for the endangered snow leopard, which also has a continuous range throughout the area. Snow leopard sign is most common across the 'gorge zone' of the central mountains, where high terrain ruggedness, prevalence of cliffs, secure prey base, and low levels of human disturbance provide excellent habitat. There are very few locations there where human settlement and agriculture are feasible, and over 3000km² of contiguous habitat in the Chang Chu catchment, Shun-Shadi, and similar areas east of the Zaskar River can be considered as de facto core zone of the Hemis National Park for conservation of the snow leopard and its prey. Closer to inhabited areas, snow



leopards may have a negative impact through attacks on livestock, particularly in winter. Local people accept some level of depredation as an inevitable hazard, and few precautions are taken. For example, dogs are often not taken onto the pastures with grazing flocks, unlike in eastern Ladakh where Changpa herdsmen are always accompanied by ferocious Tibetan mastiffs. Livestock corrals and ground-floor rooms where sheep and goats are kept at night are often in a poor state of repair, allowing snow leopards to gain entry and when multiple killings result, real economic hardship is caused. Retaliatory killing causes some mortality but snow leopards often are simply chased away, and direct persecution in the form of hunting or trapping appears to be rare. Every one of more than 350 local inhabitants interviewed had a more hostile attitude towards wolves and considered them a greater threat to their livestock than snow leopards. This sentiment is reflected in the presence of wolf traps, known as *shangdong*, near several villages. These are quite large, circular constructions made of stone, with an overlapping lip and built close to a bank. They are baited with a dead sheep or goat and a wolf, once it has entered by way of the bank, cannot get out and is stoned to death. The overlapping lip makes them very difficult for humans to get out of too, as I once found to my cost, have jumped in to look for wolf bones and had to be helped out by two highly amused guides.

There is no doubt that Ladakh has a key role in the conservation of Trans-Himalayan biodiversity. The factors most favourable to wildlife conservation are demographic patterns and traditional

attitudes to hunting. The low human population is not distributed evenly, but clumped in major valleys at sites where cultivable land and water for irrigation coincide. The study area contains several tracts of rugged terrain unsuitable for settlement or agriculture which are thus available to act as reservoirs of wild animal species. Extensive and largely unfragmented populations of the major species still survive. Wildlife has shown a limited retreat from around main centres, but bharal, ibex, wolf and snow leopard maintain virtually continuous distributions across the study area, while shapu have increased. The current conservation situation is relatively favourable when compared to many other parts of the Himalayan region. Firstly, Ladakh does not have the acute hunting problem faced by many parts of the Himalayan region. Secondly, the Trans-Himalayan environment is not susceptible to the sudden degradation following deforestation that has devastated wide tracts of the monsoon Himalaya. However, it is still fragile and no-one knows to what extent increased exploitation of pastures and hill slopes can take place before irreversible damage occurs, with serious long-term consequences for ungulates and animal husbandry. A clear priority is an inter-disciplinary study on the interaction of land use and available natural resources, to assess the impact of current rates of grazing and shrub removal on the vegetation and on wild animal populations. An adequate legal framework exists and a good protected area network has been notified: the success of future conservation will depend on successful translation into effective action on the ground.



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