Snow Leopard in Remote Districts of Nepal

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Manang district, one of the remotest districts of Nepal, lies in the north central part of the countxy.
High mountains occupy more than two-thirds of the total surface area of approximately 2,200 kIn sq. Besides the assortment of different flora and fauna, the trans-Himalayan zone of Manang is the home of the endangered and elusive snow leopard *(Uncia uncia)*.

Relatively luxuriant forests in the lower regions support musk deer, mountain serow, Himalayan tahr, red fox, weasel, yellow-throatedmarten, stone marten, wild dog and Himalayan black bear. Subalpine scrub land and alpine grasslands harbor blue sheep, wolves, weasel, marmot, red fox, pika, vole, snow leopard and the brown bear, which is migratory.

During 1990-1992 a livestock depredation study, in which the author was one of the investigators, found an annual depredation rate of2.8% in one of the villages in the Nyeshang area of Manang. Several factors were responsible for this. There has been a decline in the number of professional and experienced herders among the Nyeshangbas. the people of the Nyeshang valley, because they are becoming increasingly involved in trade outside their village. They are depending more on outside herders who are not as competent as the traditional herders. Also, some believe that the old methods of deterring predators, such as the use of fire and smoke around the sheds, have been undermined because of a livestock baiting program introduced by foreigners. A Japanese film crew used livestock baiting for four consecutive years to attract snow leopard and the people believe that snow leopard, over such a long time, became habituated to livestock.

However, it is difficult to determine if baiting is mainly responsible because many factors playa role in prey selection and predation. The biomass of livestock in the region is about three times greater than that of the wild blue sheep, the primary food item of snow leopards. Even though the blue sheep population in Manang is adequate to support the population of snow leopards, the cat will still prey on domestic stock if it is readily available and unguarded. In a country where almost every piece of land is grazed, dispersing sub-adult snow leopards and female snow leopards with cubs will be attracted to easy prey. This fact emphasizes the need for "core areas" which are free of livestock disturbance and can serve as refuges for wildlife.

The fact that herders engage in retaliatory killing of predators is hardly surprising, given the economic hardship imposed by loss of even a few animals. Tendorje Gurung, a resident of Manang, has lost twelve chauris, a cow /yak crossbreed, to snow leopard since last winter. Most of the individuals lost were calves, with the predation occurring J anuary to May 1994. This was 30% of Mr. Gurung's chauri. The monetary value of the loss was placed in the range of 60,000 to 70.000 rupees, or $800 to $1,200 U.S., a significant loss and within a short period of time.

Predation in the Nar valley by different predators, including snow leopard, is exceptionally high. In 1992 to 1993 people of Nar (Narbas) lost 6.5% of their total livestock. The depredation rate of 6.5% was 47.2% of the total mortality. This is difficult to quantify for local people often tend to exaggerate losses to wild predators by including animals which may have succumbed to other causes, such as disease, accidents and severe weather in the hope that the government will compensate them. However, it cannot be denied that predation is one of the major causes of livestock mortality.

Depredation is an extremely harsh blow to the subsistence economy of the people who live in Nar. Unlike the Nyeshangbas who have become successful in international trading, the Narbas are primarily herders and farmers. They draw their main income from animal husbandry. An adult yak can cost as much as 8,000 rupees and a good horse 35,000 rupees. When a yak or horse is lost in such a poor community, the maj ority of the people are not able to absorb the loss.

Uncontrolled hunting can be one of the major threats to the blue sheep population in N ar because for poachers blue sheep is a source of cash for both its meat and its hide. But hunting is decreasing in Nar because of the influence of the great lama Rinpoche Karma Sonam. The lama lives a day's walk from Nar in Phu village. When he came to Phu from Tibet about twenty years ago, the lama ordered that guns be destroyed in the village and prohibited the killing or hunting of all animals. Later the lama allowed villagers to slaughter domestic animals when they appealed to him that they had no alternative protein source. Still there is no hunting of wild animals in the Phu valley, including the endangered snow leopard. The blue sheep are easily seen on the hill slope and they frequently visit the gompa and the cultivated areas in Phu village, showing they are not harassed by human beings. Local people supplement their diets by sometimes going

out early in the morning and recovering a blue sheep carcass killed by snow leopard.

In June 1993 a rapid appraisal team, of which the author was a member, completed a general survey in Nar. The timing coincided with the establishment of a regional Annapurna Conservation Area Project (ACAP) office in Manang. Hunting of snow leopard was not recorded during our survey period but it was not possible to determine conclusively that there weren't some killed in retribution for livestock predation. Unlike wolves and wild dogs, the other large predators ofNar, the snow leopard's habit of eating slowly and returning to its kill makes it an easy target for being shot or poisoned.

In order to address long term survival of the snow leopard in this unique trans- Himalayan ecosystem, a snow leopard conservation project has recently been launched in the ACAP Manang sector. The

In Manang, one of the remotest districts of Nepal, a man plows a field with the aid of a chauri, a cow /yak crossbreed. Loss of chauris to different predators, including snow leopard, is one of the primary causes of people-wildlife conflicts in this region. *(Photo by* Rod *Jackson)*

backbone of this project is the snow leopard conservation committee in which one of the most active herders from each of the six village development committees will participate. An endowment fund will be provided to start the snow leopard conservation committee, but it is envisioned that the fund will be expanded by possibly levying a tax on livestock and even penalizing local hunters. The interest from the fund will be used to provide services such as veterinary care throughout the year, since survivors of preda tion attacks may have relatively minor wounds but often die from infection.

Another facet of the snow leopard conservation proj ect would be to relate it with cash from tourism. Eco- treks could be developed in sites of snow leopard/blue sheep habitat and local people. particularly herders. will be trained as guides. Conservation education is the backbone of ACAP philosophy; and school curriculums. tourists and local people will be made aware of the importance of the snow leopard and its role in maintaining a healthy ecosystem. Long-term strategies include adjustments in grazing management so that snow leopard core areas can be made free of livestock.

In conclusion. it should be noted that the snow leopards of Nyeshang. Nar-Phu and Mustang are interrelated and there is continual movement by snow leopards among these regions. This movement facilitates genetic interchange and minimizes the likelihood of detrimental genetic inbreeding. Scientists have postulated that a minimum viable population of 250 individuals is needed for long term genetic viability but that 500 individuals is the optimum viable population size. *There is* no *protected area in Nepal large enough to support these numbers.* Hence all the snow leopard pocket areas must be protected so that genetic interchange can take place in them and along corridors. It is vital that we conserve snow leopard not just in one particular pocket area, but in all the pocket areas throughout its range. This will ensure the long term survival of this elusive and beautiful cat in the Nepalese Himalayas.