

Snow Leopards in Nepal

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Snow leopards are shy and nocturnal, inhabiting high and difficult mountain country. Nevertheless the author, who spent two months in the winter of 1976-77 in the Langu Valley in the Nepalese Himalaya, is convinced that numbers are declining due to over-hunting, a decline in their natural prey, and the increased use of alpine pastures by man and his livestock. Probably none of Nepal's mountain parks harbour snow leopards, and a large sanctuary for them is urgently needed.

The snow leopard *Panthera uncia* is rare, and continues to decline throughout much of its vast range,⁴ despite conservation efforts and endangered species status. First described in 1761 by the French naturalist Georges Buffon, snow leopards are shy, sparsely distributed, generally solitary, well-camouflaged and usually nocturnal; consequently they are rarely seen and difficult to study. Usually they are to be found above the evergreen forest belt in alpine grassland, near glaciers and on rocky scree or moraine, but in Pakistan in winter they may descend as low as 1500m to oak scrub or spruce forest.⁷ Over much of the Himalaya, however, their typical habitat appears to be sparsely vegetated and dry alpine steppe above the treeline.¹⁰ Their southern range limit is the Himalaya where they are more numerous in the remote inner ranges and valleys. Little is known about their status and distribution in Nepal. This report summarises the available information and presents the results of a survey I conducted in the Langu Valley of west Nepal in the winter of 1976-77, coupled with information from people knowledgeable on Nepal's wildlife.

'Systematic' surveys have been conducted in three localities to date: the Langu Valley of the Mugu District,⁶ the upper Bhoti Kosi Valley west of Rolwaling in the East Ramechhap District, and the Shey-Phoksumdo Lake area of Dolpo District.¹⁰ Sightings have been reported from many other localities, but they are difficult to substantiate because snow leopards, especially their tracks, are easily confused with the more common forest leopard *Panthera pardus*. It is not yet possible to produce an accurate range map, but snow leopards appear to be largely restricted to areas north of the main Himalaya, along the sparsely populated Tibetan border.

In eastern Nepal, they have been recorded in the vicinity of Mount Everest, now Sagarmatha National Park,² and in 1972, Schaller⁸ observed the tracks of an estimated three individuals near Lapche in the Bhoti Kosi Valley on the Tibetan border. They have also been reported in the mountains around Gauri Shankar, Kanchenjunga, Makulu, Walungchung, and the Arun and Hongu Valleys (Cronin and Fleming Jr, pers. comm.). In central Nepal, they are likely to occur in the Buri Gandaki and Sajin Valleys of the Ganesh and Lamjung Ranges, Manaslu, although no recent sightings have been confirmed, and in the Annapurna and Dhauligiri massifs¹² (Fleming Jr, pers. comm.). In 1977, a single set of leopard tracks was observed at about 4500m in Langtang National Park near the Tibetan border,³ possibly made by a visiting animal from Tibet, since the inhabitants have not seen snow leopards there in recent years. The Durham University investigators, who spent 14 months in 1976/77 surveying the area,³ found no other evidence to substantiate either the presence or absence of snow leopards in this park.

Existing data suggest that in Nepal snow leopards are most abundant and widely distributed in the west, particularly the Dolpo Plateau and the inner valleys of the Mugu District, where there are few people. They occur in the Sisne and Kanjiroba mountains west of Dhauligiri and on the Dolpo Plateau to the north; they may also occur west of Mugu and north of the Humla Karnali in the Changla and Takh Ranges along the Tibetan border, and in the vicinity of the Saipal and Api Peaks in the far west, near the Indian border. In 1973, Schaller, after surveying about 500 square kilometres around Shey Gumpa and Phoksumado Lake on the eastern edge of the Kanjiroba Range in Dolpo,¹⁰ estimated that at least six snow leopards used this area in the winter months, and concluded that they probably ranged widely because of the limited food. None were thought to be wholly resident.

In the winter of 1976-77, I surveyed the remote and essentially uninhabited Langu Valley along the northern slopes of the Kanjiroba Range, some 45 kilometres north-west of Schaller's study area. On the evidence of tracks, scrapings, and hunters' kills, I estimate that a minimum of five snow leopards occupied an area of at least 400-500 square kilometres.⁶ They evidently concentrated on sparsely vegetated south-facing slopes between 3000 and 4800m where the blue sheep or bhara *Pseudois nayaur*, their main prey, spend the winter. In November 1977, a snow leopard was photographed at about 4900m near the Jagdula glacier of the Sisne Range; this was immediately south of my study area (Justice, pers.comm.).

The lack of data makes it extremely difficult to estimate snow leopard numbers in Nepal. A crude estimate of the range available to them, using topographic maps (1:250,000 scale), worked out at approximately 27,000 sq km. All areas above 3000m were measured except areas of dense human population and isolated massifs south of the main Himalaya. The estimate of available range is believed to be reasonable since it includes land areas above 6000m that are rarely, if ever, used by snow leopards, as well as the more disturbed southern slopes of the Himalaya where very few individuals have been reported. Extrapolating the winter estimates for the Langu Valley⁶ and the Shey-Phoksumdo area¹⁰ to the cat's possible range over all of Nepal yields a population 'guestimate' of 150-300 animals. Since both census areas are atypically remote and sparsely populated, this estimate may be optimistic.

Judging by the few encounters early Europeans had with the cat, snow leopards have probably never been common. Burrard in 1925 and Stockley in 1936 noted that most snow leopard encounters were along the northern slopes of the Himalaya and the edge of the Tibetan plateau, a pattern that persists to the present. To what extent the Nepalese populations have declined is difficult to determine, but their increasing scarcity is reflected in fewer reports of snow-leopard related livestock losses, and the species has apparently disappeared from parts of its former range; for example, no sightings in the Sagarmatha National Park have been reported for at least two years, despite the increased number of visitors capable of identifying the species (Jeffries, pers.comm). However, reliable sightings have recently been made in the largely uninhabited Hongu valley to the south of Everest. Nepalese shepherds interviewed recently in the Dhorpatan area southwest of Dhauligiri, where snow leopards were reported several years ago,¹² knew of none, although blue sheep are still abundant (Wilson, pers.comm.). And this pattern appears to hold for other parts of the snow leopard's range. In the Chitral region of Pakistan for example, populations

as low as four or five animals per 3000 square kilometres have been reported, and the species's status has changed from tenuous to seriously threatened within four years.⁹ Even in the rugged and remote Karakoram Mountains of Pakistan, they are rare.¹⁰ Dang² estimated the snow leopard population of the Himalaya complex to be 'in the region of 400, give or take two hundred', but this figure is evidently low compared to my estimate for Nepal. Nevertheless, it can be said that they are extremely rare in many parts of their range in Nepal, India and Pakistan.

Conservation

The four main factors in the snow leopard population decline appear to be overhunting for pelts, the reduction of ungulate prey herds, the strong hunting traditions of many mountain tribes, and increased use of alpine pastures by man and his livestock.

In the Langu Valley of West Nepal, I found the Bhotia tribesmen continue to hunt snow leopards, despite substantial declines in the value of the leopard pelts and the availability of musk deer, a potentially lucrative source of income.⁵ Each winter, several dozen men spend two or more months poaching musk deer *Moschus moschiferus moschiferus*, blue sheep, and an occasional snow leopard. Bamboo spears are set upright in the ground and the sharp tip is smeared with a potent, locally concocted poison. Each spear is a highly effective weapon. Despite their wide-ranging nomadic habits, snow leopards are vulnerable to this method because they habitually use the same trails to traverse their large home ranges. In order to circumvent impassable sections of the Langu Gorge, they rely heavily on strategic trails, often ledges only a metre or less wide. Once poisoned spears have been placed in an appropriate place along a favoured trail, it is simply a matter of time before a snow leopard springs from a rocky ledge, impaling itself on the spears below.

Musk deer are the primary targets of the hunters since the musk extracted from the gland of an adult male deer, worth as much as US \$250 to the hunter, can supply him and his family with one year's income.⁵ In 1973 the Nepalese Government banned musk harvesting and exporting, but this well-meant legislation has unwittingly stimulated a thriving black-market by increasing the price of musk. Prior to the 1973 international ban on trade in the pelts of spotted cats by member governments of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), snow leopard pelts were worth US \$50 or more to mountain hunters in remote west Nepal. By 1976, pelt prices had declined to around \$10 and traders in India, the main market for Nepalese pelts, had become increasingly reluctant to deal in these illicit furs. Yet some Bhotias continued to hunt snow leopards, probably for the social esteem attached to killing such an elusive predator. In the Langu area at least, snow leopards are no threat to livestock, according to local residents, who have reported few losses.⁶ In the Nepal areas studied to date, blue sheep are the most important item in their diet. Schaller reported that, of the 27 scats analysed from Shey and Lapche, 50 per cent and 73 per cent, respectively, contained the hair of blue sheep; livestock remains were only found in 13 and 9 per cent respectively.¹⁰ Blue-sheep hair was present in 82 per cent of the 17 Langu Valley scats I examined; domestic livestock hair was found in 6 per cent.⁶

As a result of hunting, the Langu snow leopard population declined an estimated 40 per cent in the 1976-77 hunting season. Although it may be

replenished by immigration from the uninhabited and largely un hunted terrain to the east and north, along the Tibetan border, it is doubtful that such hunting pressures can be sustained for long. Snow leopards are also hunted in other parts of Nepal; the use of poisoned stakes and pitfall traps is reported in areas as far apart as Dhorpatan and Makulu (Wilson, pers.comm.), and many mountain people still possess muzzle-loading guns. Leopards are heavily hunted near settlements in the Rasuwa District of the Ganesh Range.¹² Fleming (pers.comm.) attributes the disappearance of snow leopards from Sagarmatha National Park not only to hunting but also to the killing of cubs in dens. The depletion of blue sheep herds may be contributing to the rarity of snow leopards in the Manang and Annapurna areas.

Snow leopards are protected by the Nepal Government, but enforcement is hampered by poor communications, inadequate funds, and limited manpower to police the species's rugged habitat (Poppleton, pers.comm.). As wild ungulate populations decline, snow leopards will be forced to travel far in search of food or to prey on domestic stock, thereby increasing their vulnerability to human retribution. With growing human populations, shifts in traditional patterns of livelihood, and a weakening of Buddhist values, it appears inevitable that a shy and wary animal such as the snow leopard will decline and possibly become extinct.

Possible conservation measures include the development of large ecologically intact sanctuaries and the promotion of viable forest, range and wildlife management plans under the control of village councils. With a system of carefully regulated land-use plans responsive to human needs, yet subject to ecological constraints, as well as the designation of a few reserves encompassing year-round snow leopard range, it should be possible to foster coexistence between man and snow leopard. But in Nepal, with the possible exception of Langtang National Park, snow leopards appear to be absent from the three mountain parks, and the Shey wildlife reserve, although recommended, has yet to be gazetted. Its 400-sq km area is too small to afford year-round sanctuary to even a few snow leopards, but enlargement of this proposed reserve may be justified by locally strong Buddhist influences that promise minimal molestation of the resident blue sheep herds. Other possible snow leopard sanctuaries may exist in the controlled hunting areas presently being developed in several regions of the Nepalese Himalayas.

The conservation of snow leopards is a formidable task since the species is wide-ranging; furthermore, the presence of villages inside reserves or national parks is a fact of life in the Himalaya. But these very villages could easily become the strongest guardian of each local snow leopard population, provided a direct benefit existed between cats and man. To many tourists, snow leopards provide a powerful tourist attraction. Basic research and the economic and technical resources of the developed world are needed for this dream to become a reality.

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