# Managing people-wildlife conflict in Tibet's Qomolangma National Nature Preserve

**Full Text:**

Abstract

Since the Qomolangma (Mt. Everest) National Nature Preserve was established in 1989, crop and livestock damage due to wildlife has become a major management issue, especially within or near the 7 core zones. Over 20,000 people live along this interface, depending heavily upon forest and rangeland resources. A survey of 1 core zone indicated 5-22% of maize, barley and wheat production is lost to wildlife, valued at US $53 per household (in an area with an annual per capita income of $100 or less). As much as 9.5% of the livestock herd may be taken by such predators as the endangered snow leopard (*Uncia uncia*), lynx (*Lynx lynx*) and wolf (*Canis lupus*), resulting in significant animosity toward these species. Many causative factors are implicated in such losses, not least a widespread erosion of traditional guarding practices and knowledge and undue reliance on relatively ineffective deterrents. Worst-case scenarios involve "surplus killing" which occurs when a predator enters a poorly-made livestock pen during the night and kills as many as 100 goats or sheep. Such loss can be entirely avoided with well constructed and maintained corrals.

New techniques for involving local residents were used in several communities to protect key wildlife species. Small-scale community development investments were linked to biodiversity conservation commitments from the local people, using signed contracts as legal instruments, with co-financing being provided by local government, the preserve authority, and foreign donors. Villagers contributed their labor and assumed responsibility for implementing mutually agreed-to crop and livestock protection measures that are ecologically and socially responsible, and which meet protected area guidelines. In one area, crop production doubled in two years following fencing; villagers used time saved from guarding to improve their handicrafts and income-generation, significantly increase winter livestock forage production, and to build a school. Attitudes toward conserving wildlife improved substantially, but these were hard to quantify.

## Introduction

The Qomolangma (Chomolangma) National Nature Preserve (QNNP), established in 1989, is a 34,000 square kilometer area centered on Mt. Everest and the border with Nepal. It is renowned for its high biotic diversity and natural beauty. The extreme elevational range and topographic conditions found in the four major river valleys and which have cut deep gorges through the Himalaya support habitats ranging from temperate forests to alpine pastures and glaciers (Yangzom 1997). Although the 7 biologically-fragile core zones are virtually devoid of human settlement, some 68,000 farmers and herders live in the 5 buffer zones and mainly in the large "Economic Development or Peripheral Zone" located within the central and northern portions of the preserve. The close proximity of people and wildlife along the preserve's core-buffer interface has led to increasing conflict due to crop damage and livestock depredation that, unless addressed, may seriously erode public support for this internationally important protected area.

The objective of this paper is to describe new techniques for engaging local villagers in efforts to protect wildlife while simultaneously reducing crop and livestock damage. First, I review very briefly people-wildlife conflict due to crop and livestock damage. Then I discuss how these can be resolved in ways that build community self-reliance and strengthen their capacity for park management and wildlife stewardship.

## Scope of People-Wildlife Conflict in QNNP

Settlements located within or close to forested low-elevation core areas suffer the most from crop damage caused by species such as wild boar (*Sus scrofa*), Asiatic black bear (*Ursus thibetanus*), monkey and pheasant. For example, a survey in the Jiangcun Core Zone indicated that 5-22% of the maize, barley and wheat production was lost to wildlife in 1990, amounting to an average US $53 per household within the more seriously affected communities (Jackson 1991). This is a significant sum in a region where the per capita income is $100 or less. On the plateau blue sheep (*Pseudois nayaur*) and kiang (*Equus kiang*) may occasionally damage barley fields, but in the contiguous communities of Ngora and Khoryak, farmers reported losing as much as 40% of their annual production in recent years. Such loss occurred despite the night-time posting of family members as guards, in large part due to widely scattered fields. The situation was greatly exacerbated when households lost as much as 70% of their livestock (mostly sheep and goats) to the most severe winter in the last twenty years. However, even low levels of damage are viewed negatively, as many of these settlements cannot produce enough grain for their own consumption due to poor soils and limited irrigation, among other constraints.

As predator populations begin to recover, so livestock depredation is emerging as a significant problem in the Himalaya, especially in or near protected areas (Oli et al. 1994, Mishra 1997). Conflict between livestock owners and predators dates to when animals were first domesticated by humans, but little is known about the extent, cause and distribution of livestock depredation in QNNP or elsewhere in Tibet. A survey of eight settlements suggested loss rates range from none to as much as 9.5% of the herd in some depredation "hotspots", but generally average less than 1-2% (Jackson 1991, Table 1). Economic losses amount to some US $25 per household in the affected communities. The main predators are the endangered snow leopard (*Uncia uncia*), the wolf (*Canis lupus*) and lynx (*Lynx lynx*). Validating predation as the cause of death is exceedingly difficult. Herders often blame predators, without adequately accounting for other causes of mortality. Loss rates differ according to the kind of livestock involved, with sheep, goats, young yak and horses being most vulnerable due to small size, the lack of guards and habit of leaving large livestock unattended on the open range for extended time periods.

The worst-case scenario involves "surplus killing" or catastrophic incidents involving a snow leopard or wolf that enters a livestock pen during the night, becomes confused and then kills as many as 100 goats or sheep. Ironically such loss could be entirely avoided if corrals were properly constructed in the first place. Poor households tend to be more vulnerable as they cannot afford to build good corrals or pay for shepherds. Some animals that escape immediate death may die later from infected wounds because of the lack of proper veterinary care. This is a notable problem among large-bodied livestock like yak which usually put up a fight when attacked. In Nepal, Jackson et al. (1996) found that depredation was not evenly distributed, but rather associated with the presence of cliffs, rocky areas and good stalking cover. Jackson and Nowell (1996) discuss management of felid predators. Traditional strategies for limiting predation losses in Tibet included maintaining a close watch over livestock while it was being grazed on the open range, avoiding predator-rich habitat, using good guard dogs and sheep or goat breeds with well-developed anti-predator traits, and keeping livestock in predator-proof corrals at night. Erosion of traditional knowledge, reduced herder vigilance, increased livestock numbers, and changes in animal husbandry management systems have aggravated the situation. Domestic animals now far outnumber natural prey for large carnivores, so loss of livestock is inevitable.

**Engaging local communities to address crop-livestock damage**

The first of several workshops to address people-wildlife conflict in QNNP was held in 1996 in two settlements suffering from severe crop damage due to kiang. Using a highly participatory planning process known as Appreciative Participatory Planning and Action (APPA), and drawing upon traditional Participatory Rural Appraisal (PRA) tools, workshop participants explored ways in which the multiple objectives of biodiversity conservation, alleviation of crop damage and alternative income-generation could be implicitly linked in a single village enhancement program.

APPA operates under the premise that interventions will provide the best results when local communities take a leadership role, focus on their opportunities rather than problems, and build on past successes of the community rather than highlighting its failures. It is practiced through a four-step iterative process which seeks to build consensus through (1) discovering the community's strengths and valued resources; (2) envisioning short-term and long-term development scenarios if feasible resources were suitably mobilized and the community acted in concert; (3) designing an action plan for guiding change in ways that emphasize what the community can accomplish on its own while diminishing long-term dependence on outside financial and technical resources; and (4) spurring participants to begin realistic community-improvement actions immediately, rather than waiting for external agents to act.

The sponsoring NGO offers technical assistance and seed-money on condition that "Best Practices" guidelines and operational criteria will be used in project design, implementation, monitoring, evaluation and reporting (Table 1). Project advocates foster community confidence by simultaneously addressing the concerns of both local residents and park managers. Project sustainability is significantly enhanced if there is strong community buy-in and commitment to the proposed measures and any other linked project activity. Therefore, project sponsors should mandate compliance to the following conditions before releasing any funding: (1) Each stakeholder (villager, community, NGO, or government) must be willing to make a reciprocal (co-financing) contribution, within their means, in support of the agreed-to activities. This may be in the form of cash or in-kind services like materials and labor, which are valued using existing market rates; (2) The project must firmly commit to active and equitable participation from each stakeholder group throughout its life; (3) The beneficiary community must assume all or a significant responsibility for repairing and maintaining any infra-structural improvement that may be provided by the

project; and (4) The stakeholders should be willing to identify and employ simple but realistic indicators for measuring project performance and its impact on reducing people-wildlife conflict or improving park management.

Workshop participants review crop or livestock damage patterns and attempt to identify the most important underlying causes. Traditional and modern remedial measures are examined and the most appropriate methods for controlling or reducing future loss are identified and ranked with respect to cost, effectiveness, technical and practical feasibility, and compliance with protected area regulations. Workshop sponsors seek to provide local residents with a basic understanding and appreciation of the needs of wildlife, particularly endangered species like the snow leopard. Local stewardship and responsibilities for protecting nature are explored within the context of strategies that simultaneously enhance local income and the standard-of-living. An action plan is drawn up identifying the measures to be undertaken upon the formal signing of a conservation agreement (ideally to which all households are party), along with a transparent budget, monetary and material contributions and the allocated responsibilities of each party to the agreement (Table 1).

**Results and Conclusions**

Following partial fencing of Ngora and Khoryak's cropland in 1997, barley production increased by nearly 100%, with most households becoming food self-sufficient in place of being dependent upon annual government subsidies (The Mountain Institute 1997). Each settlement significantly increased its winter forage production for livestock, which should greatly ameliorate hardships like that experienced during the harsh winter of 1995-96, and more recently in 1998. Reduced time spent guarding the fields, especially at night, was another beneficial outcome. Following fence placement, only four persons were required for patrolling, compared to a minimum of 20-26 persons previously. The fences help to keep livestock out of fields following the planting of barley, but this may turn out to be a mixed blessing should depredation incidents increase because livestock are being less closely tended than before. The time freed from guarding fields was used to build a school, repair houses and construct several new livestock enclosures. As a result, many villagers reported their feelings toward wildlife had improved markedly.

In order to retain these gains, villagers will have to ensure that the fence is properly maintained. Toward this end, they have started a small community fund capitalized from infraction fines and income from handicrafts production (with weaving and dying training being provided by the project). Ngora and Khoryak independently obtained county assistance and recently opened a small handicrafts production unit on the main Kathmandu-Lhasa highway, 25 km to the east. The agreement signed by each household with the preserve authority called for setting aside an area where wildlife would receive special protection, a subcomponent currently being implemented. Hopefully, future tourism development will offer locals with additional income-generating opportunities through the rental of pack animals, horses and guides.

A linked effort by the International Snow Leopard Trust centers around making night-time livestock pens or corrals predator-proof, but it is too early to assess the results from a pilot program being undertaken in QNNP's Rongshar Valley.

A number of important conclusions should be made. The local people's expectations have to be focused closely on explicitly stated biodiversity conservation objectives (Sanjayan et al. 1997). Funding agencies must demonstrate the will to immediately withdraw support if stakeholders violate key project agreements, especially those relating to park management and biodiversity conservation. Project sponsors need to repeatedly highlight the fact that external investment and overall support for the project is implicitly linked with biodiversity conservation, i.e., that wildlife conservation is the reason funding is being made available to implement measures to reduce crop or livestock damage, improve local incomes and livelihoods, or support community amenities. Since donor funds are limited, people-wildlife conflict alleviation projects are best undertaken in or near sites known for their biological significance or when there is a clear threat to the maintenance of rare species.

Small-scale, grass-roots initiatives appear to offer a viable approach to localized biodiversity conservation and management where funds for large-scale Integrated-Conservation Development Projects (ICDPs) may not be available or appropriate. Heightened expectations by local residents or government and the long-time commitment of ICDPs (on the order of 5-10 years) are important considerations (Sanjayan et al. 1997). The approach described in this paper appears especially well-suited to addressing people-wildlife conflict where communities are reasonably self-reliant, trustworthy and without substantial social or economic differences between the households. Further experimentation is required to develop effective, participatory monitoring systems.

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Table 1: "Best Practice" Design and Operational Criteria

Damage alleviation and any linked activity should not adversely compromise or threaten the management goals of the Protected Areas. Project activities should be:

**Environmentally sound** -- negligible or no harm to species, habitats or ecosystems (for example, no overall reduction in predator numbers; no hunting, trapping or poisoning, especially of endangered species; should lead to improvement in prey species numbers; should avoid rangeland deterioration and over-grazing; and should help rehabilitate disturbed areas and restore ecosystem functioning).
**Economically sustainable** -- actions should be affordable, contain cost-sharing mechanisms and be capable of being sustained with minimal outside cost or technical input (communities should share in the cost of implementing and monitoring control measures; there should be minimal dependence on high-tech, expensive deterrents; control measures should be well integrated with land-use and income-generation opportunities; cost of implementation and maintenance should be reasonable, and preferably supported internally).

**Socially responsible** -- measures should build upon proven traditional customs and "good" agricultural or animal husbandry practices (measures implemented should strengthen religious precepts prohibiting the killing of wildlife; encourage or empower local communities to act responsibly and achieve greater economic independence while operating in an environmentally responsible manner).

**Imbedded with clear responsibilities and a transparent budget** -- Implemented based on a signed agreement that clearly sets forth the responsibilities and contributions of each party, in accordance with a mutually-agreed to work-plan and budget. [The work-plan should specify details such as: "where

(location); who (responsible party); what (inputs/activities); how much (quantity); when (scheduling); how implemented (method) and how monitored (indicator and process to be used).”]