Linking Snow Leopard Conservation and People-Wildlife Conflict Resolution, Summary of a multi-country project aimed at developing grass-roots measures to protect the endangered snow leopard from herder retribution

Full Text:

Introduction and Rationale: This applied research/conservation project seeks to systematically investigate alternative means (by rigorously testing different approaches through a series of applied pilot studies) for better encouraging pastoralists to become stewards of the endangered snow leopard and its habitat.

Livestock depredation is emerging as a significant problem, especially in protected areas across the snow leopard's range in the Himalaya and the other mountains of Central Asia. "Surplus killing," an event in which a snow leopard enters a poorly constructed corral and then kills 20-120 sheep and goats during the night, occurs across the region. Hardly surprisingly, such incidents lead to considerable resentment from pastoralists and livestock owners, who then set traps to poison or otherwise kill snow leopards, wolves and other rare predators. Ironically, such loss of livestock could be avoided completely by making the enclosures predator-proof, improving animal husbandry techniques and educating herders on the importance of wildlife as a resource for generating sustained income (e.g., from tourism and related activities such as guiding and speciality handicrafts production).

Besides lax herding and guarding, other important factors in depredation include habitat loss and fragmentation, along with poaching leading depletion of the natural prey base. As the number of blue sheep, ibex, markhor, or marmot declines, so must snow leopards increasingly turn to domestic stock for their survival. Usually prey densities are lowest in unprotected areas, along park fringes, or along the mountain corridors that link adjacent protected areas. These areas usually support higher numbers of people and their livestock -- which snow leopards quickly learn are not as wary as their wild cousins. They then become habitual depredators or problem animals, perhaps represented by young dispersing males and older or injured animals. Breeding females are especially vulnerable to herder retribution because of the high food demand from the dependent cubs. The tendency of a snow leopard to consume its prey slowly and remain at the kill site for 2-7 days only increases the likelihood of it being killed. Herders often take snow leopard cubs from the maternal den, especially after they observe the female remaining within a small area for an extended time period (as it must do during the early part of its cub-raising cycle).

Livestock losses vary widely. For example, one survey that I conducted in Tibet's Qomolangma National Nature Preserve (QNNP) indicated loss rates from zero to as much as 9.5% in depredation "hotspots", but averaging less than 1-2% of the total stock present (valued at about US $25 per household within the affected areas). The main predators were snow leopard and wolf, along with the occasional lynx. In Nepal's Annapurna area, losses amount to 2.6% or an average of $ 38 for the 102 households interviewed (whose household income is less than $100-300 per annum). Most depredation occurs in winter and early spring. Like their counterparts in the US, Himalayan herders tend to place blame on predators, without adequately accounting for other mortality such as disease, accidents, severe winters or poor nutrition. Domestic stock differs widely in terms of its vulnerability to predation. Numerically, sheep and goats are most often affected. However, the loss of a single horse, valued at $500 or more has a far greater economic and physiological impact than the loss of 10 or even 20 goats. In some parts of Mongolia and Nepal, horses are especially vulnerable to snow leopard predation, a situation that is aggravated by the herders' tendency of leaving their animals unattended for days or even weeks on end. Animals (especially yak) which escape immediate death may die later from infection because of poor veterinary care. Typically losses vary greatly from one household to another, and from one site to another, being a matter of chance, proximity to good leopard habitat, or the result of poor animal husbandry. Many herders have abandoned their proven traditional shepherding practices,

becoming more lax in guarding, and allowing their stock to forage in areas offering better habitat or stalking cover for snow leopards (such as terrain well broken by cliffs, gullies and rocky outcrops). With more children going to school they are increasingly letting their stock roam freely during the daytime, or keeping them in poorly constructed livestock pens at night. It is, therefore, hardly surprising that depredation and resultant people-wildlife conflict is on the rise in many areas.

Fecal analysis supports the claim that livestock is an important component in the snow leopard's diet in Nepal, India, Mongolia and parts of China. Indeed, it has been argued that livestock allows for high densities of snow leopard or wolf by providing them with a ready supply of food! Central Asia's alpine pastures have long been used by resident and nomadic herders, so that eliminating livestock is not an option except in a few places.

Herders usually respond to predation by demanding compensation from the government; but paying for such loss is not a sustainable solution, as it fails to address the root causes of depredation. By contrast, it is a relatively easy and inexpensive proposition to predator-proof corrals, especially when these are located in villages or winter pastures since they are usually better constructed than corrals in summer pastures. Other options for reducing loss of livestock include employing trained guard dogs, the use of communal shepherds, and preferential access to sheep or goat breeds with well-developed anti-predator traits (native as opposed to exotic breeds).

Along with reversing the trade in fur and body-parts, snow leopard conservation hinges upon establishing and then soundly managing a series of protected areas, which are linked by corridors providing sufficient habitat at the landscape level. It is important to accept the fact that livestock predatory losses cannot be entirely eliminated, particularly in areas with high snow leopard numbers or a scarce wild prey base. The real question is how to maintain depredation at a manageable level while also discouraging herders from seeking retribution for the losses they suffer? We must find ways whereby local people are more willing to co-exist with large predators -- this means reducing livestock depredation losses, increasing local incomes and strengthening community stewardship of alpine ecosystems. Local people need to perceive the greater worth of having a live snow leopard than a pelt of one that took their livestock.

While a number of international and national NGOs have offered mountain communities with conservation incentives, to my knowledge none has or is currently systematically monitoring which incentive measure is most effective in removing root causes of depredation or erosion of biodiversity. Very few employ scientifically valid measures to determine whether snow leopard and prey numbers are decreasing or increasing, or attempt to quantify the extent of attitudinal change among direct and indirect beneficiaries. Sadly, project benefits often end when the funding runs out. Existing initiatives do not adequately address fundamental questions of how to institutionalize the entire process, vital to the empowerment and sustainability of rural communities and for linked conservation/development efforts to operate entirely or largely upon locally available skills and resources in the future.

Goals & Objectives: The project's primary goal involves in-situ biodiversity conservation of snow leopard, its prey and habitat using community-based resource management and income-generating incentives. These will be offered in exchange for well-defined conservation actions that reduce the primary threats to predator, prey and habitat. As a large predator, the snow leopard serves as an "umbrella species" for protecting high-altitude ecosystems with their associated array of plants and animals.
Specific project objectives are to (1) Reduce loss of livestock to snow leopard and other predators by improving animal husbandry and guarding practices; (2) Increase household incomes by

providing technical assistance, grants and incentives to enhance or develop community-based livelihood activities which are (a) environmentally sound and socially responsible, (b) linked to specific stewardship and biodiversity conservation commitments; and (c) designed to maximize community "buy-in" and long-term self-reliance and ecosystem health.

Program Design and Overall Approach: A series of "test sites" will be established where different community-based remedial measures will be implemented, using an integrated and highly participatory process of project planning, implementation and monitoring, in close partnership with local communities, government and in-country NGOs. By using different remedial control measures and linked incentives, and by comparing conservation success with sites in which no action is taken, we will assess which actions are most effective in reducing depredation loss while also instilling strong stewardship ethics. Another important question will be how remedial measures can be adapted to the diverse cultural conditions which exist across the Himalaya and Central Asia.

All activities will be undertaken according to an *Action Work-Plan* developed in full participation with all key stakeholders under an enabling agreement signed at project start-up and that clearly specifies project conditionality. Each stakeholder's contribution, responsibilities and obligations must be fully transparent. The work-plan provides the primary blue-print for the project, specifying implementation and operational 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)." Serving as a legal document, it should be signed by the leading implementing NGO (this project and/or a collaborating NGO), the protected areas management authority and, if possible, by all involved households. Otherwise, elected village leaders and representatives of recognized user groups will be signatory to the terms collaboratively developed and which meet the established criteria. My colleagues and I have successfully applied this approach in Tibet, Sikkim and Ladakh on a small scale, and have confidence that it can be employed more broadly.

We will use standard PRA (Participatory Rural Appraisal) procedures with APPA (Appreciative Participatory Planning and Action) as the primary facilitation process for involving local people. 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 (DISCOVERY); (2) envisioning short-term and long-term development scenarios if feasible resources were suitably mobilized and the community acted in concert (DREAMING); (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 (DESIGNING); and (4) spurring participants to begin realistic community-improvement actions immediately, rather than waiting for external agents to act (DELIVERY).

At each site, we will monitor predation rates, predator/prey populations, socio-economic status and opportunities, and the conservation attitudes of local residents before, during, and after project intervention. The project will use measurable, scientifically justifiable but relatively simple indicators for assessing impact of project activities (including participatory monitoring by local residents). We will specify penalties for non-compliance (immediate withdrawal of project funding) as well as conflict-resolution procedures. There must be a clear and transparent linkage between snow leopard conservation and the activities the project supports, so that invested funds create sufficient incentives to commit people to specific, measurable actions for reducing

depredation and protecting endangered predators and their prey. Assessing changes in attitudes toward snow leopard and other wildlife is a key component and this will be investigated with carefully sampled household and key informant questionnaires and group interviews. We will attempt to track the incidence of hunting and poaching (involving a network of informants and possibly some type of reward system), while snow leopard and prey populations will be monitored using the SLIMS (Snow Leopard Information Management System) protocol.

Villagers and NGO staff will be trained in APPA procedures during the regular workshops that will be held during the life of the project. Study tours will be used to broaden exposure to the project. Results of the project will be presented at an international workshop (Year 3 or 4) and in popular and professional magazines and journals.

Engagement Procedures (Conditionality and Best Practices), Study Sites and Indicative Interventions: Conflict alleviation projects are best undertaken in or near sites known for their snow leopard numbers and biological importance, and where the threats to the species are clear. Wildlife conservation is the primary reason funding is being made available to implement measures to reduce livestock damage, improve local incomes and livelihoods, or support community amenities. The project will *only invest in and work with* communities who are willing to meet most or all of the following conditions in Table 1 (see Annex). All interventions will be designed according to "Best Practices" procedures (Table 2). Potential study sites and partners are indicated in Table 3. Indicative activities to be funded may include all or some of the following:

- Grants to improve or construct predator-proof livestock pens
- Education of herders on improved animal husbandry and guarding practices for avoiding or reducing depredation, including awards for exemplary herders
- Sale of "Predator-friendly" wool and handicrafts using the Irbis Enterprises model currently being implemented in Mongolia
- Various incentives for reducing livestock numbers in depredation hotspots during predation prone periods
- Improved opportunities for income generation from sustainable livestock, eco-tourism or other activities with emphasis upon tourism linked income-generation, including trekking
- Protection of natural prey base including patrolling, establishment of special wildlife areas, livestock-free blue sheep wintering areas, etc.
- Improved predator detection and avoidance skills of existing livestock (especially sheep and goats) through inclusion of suitable indigenous breeds from Tibet
- Use of guard dogs and community-based shepherding systems
- Monetary compensation under strictly limited conditions only (households suffering catastrophic loss despite practicing preventive measures and accepted animal husbandry)

Project Duration, Staffing and Budget: Pilot testing will require 3-5 years to complete. Year 1 involves baseline gathering and community planning meetings; project interventions will start in year 2, followed by monitoring and evaluation through year 5. An independent evaluation will be conducted at mid-term and project end. The second phase (to be continued indefinitely) involves applying lessons learned in this project to other sites across the snow leopard's vast range.

Dr. Rodney Jackson (former Conservation Director, ISLT) will serve as Principal Investigator and Project Manager. An advisory working group of recognized experts and extension specialists will be established to provide guidance. The project will be staffed through the range country professionals, possibly including ISLT's Snow Leopard Conservationists (SLCs), local protected

areas management agency and from existing staff of local NGOs, as well as elected village representatives.

The budget is estimated at $125,000-250,000 per annum depending upon the number of countries and sites involved.

ANNEX:

Table 1: Conditions Governing Community Engagement and Donor Support

Project (external investment) *will only* made available to prospective communities *if* the following conditions are met:

1 **Conservation** - Project activities should be implicitly linked with snow leopard and mountain biodiversity conservation;

1 **Reciprocity** - Each stakeholder (whether villager, NGO, or government) must make a reciprocal (co-financing) contribution, within their means, in support of the agreed-to project activities. This may be in the form of cash or in-kind services like materials and labor, which are valued using existing market rates and prices;

2 **Participation** - There must be strong commitment to active and equitable participation from each involved stakeholder group throughout the life of the project (from planning to implementation, monitoring, evaluation and reporting). In addition, project supported activities should benefit as many households as possible;

3 **Responsibility** - The beneficiary community must be willing to assume all or a significant responsibility for repairing and maintaining any infrastructural improvements that may be provided by the project; and

4 **Monitoring & Evaluation** - Stakeholders should be willing to employ simple but realistic indicators for measuring project performance and impact, according to a Monitoring and Evaluation Plan.

Table 2: "Best Practices" Design and Operational Criteria (adapted from Jackson, 1999).

Project activities should be designed so that they are:

Environmentally sound -- measures which are compatible with habitat, species and ecosystem requirements of the area, as well as the Protected Area regulations *(i.e, there should be no overall reduction in predator numbers; no hunting, trapping or poisoning of endangered species; should lead to improvement in prey species numbers; should avoid rangeland over-use and grazing; and should help rehabilitate disturbed areas and restore ecosystem functioning, for example. However, it may be necessary in some situations to identify and remove or eliminate habitual livestock predators although they may be a rare or endangered species)*

Economically sustainable -- measures which are cost-effective and contain cost-sharing mechanisms that are capable of being sustained with minimal outside cost and 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 sound animal husbandry practices *(measures implemented should strengthen Buddhist 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 upon a mutually-agreed-to work-plan and budget which sets forth responsibilities, contributions and obligations of each partner. *Thus, 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)."*

From: Jackson, R. 1999. Managing people-wildlife conflict in Tibet's Qomolangma Nature Preserve. Proceedings of the second International Wildlife Management Congress, Hungary, June 1999.
Table 3: Potential Candidate Countries, Sites and Partners

County (Geographic area)	**Partner Organization**	**ISLT Staff in Place**	**Primary Interventions[1]**
Pakistan (Chitral Gol NP, Khunjerab NP and lower Baltoro, Skardu)	WWF-Pakistan	yes	CI, CG, T
Nepal, ACAP/Mustang	ACAP	no	CI, T, PM
Tibet QNNP	TMI, Forest Dept.	no	CI, CG
Mongolia (Altai, South Gobi)	MACNE/ Irbis Enterprises	yes	PM, EI, T
India (Hemis NP) LEDeG, WII	Leh Nutrition Project	yes	CI, PM, Z, T

CI = corral improvement; CG = communal or improved guarding; PM = pasture management; Z = land-use zoning; EI = use of economic incentive (such as handicrafts production); T = conservation linked with support for community-based tourism