

compensate damages as theoretical decisions are not always easy to carry out in practice. Many managers make do with applying methods that keep the peace in the countryside in the short term and prevent a climate of hate towards wolves from developing, and they maintain that there is no such thing as a perfect method. They may be right.

Snow Leopards and Local Livelihoods: Managing the Emerging Conflicts through an Insurance Scheme

by

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The global and local contexts

The snow leopard, *Uncia uncia*, is widely but thinly distributed throughout the Central Asian mountains. Globally, the snow leopard is listed as Endangered in the *Red List of Threatened Species* (IUCN 1996) and as Appendix I species in the Convention on International Trade in Endangered Species (CITES) checklist. One of the most severe threats for the snow leopard is the retaliatory killing by local people in response to livestock predation. In this situation the local farmers perceive the snow leopard without economic value, or rather, it is perceived as having a negative value since it threatens their livelihoods (Pearce 1996).

In order to reduce the retaliatory killings of the snow leopards, an innovative project, Project Snow Leopard (PSL) was initiated in 1999 in the community of Skoyo in the Baltistan region of northern Pakistan. The objective of PSL is to resolve the conflict between local farmers and the snow leopard through safeguarding the livelihoods of the farmers and providing them with an incentive to conserve the snow leopard. Since 1999, PSL has successfully tested a community based approach in achieving this objective. The main components of the PSL are a community managed and community run insurance scheme and an ecotourism company based around snow leopards.

Geographical and economic background

Baltistan – a high mountain environment area of significant conservation value – in the Northern Ar-

reas of Pakistan spreads over 26,000 km² and supports a population of approximately 300,000 people. The region is very poor especially when put in the context of one of the poorest regions in one of the poorest countries in the world. The region harbours some of the world's highest mountain ranges – Western Himalayas, Karakoram and Hindu Kush – with several peaks over 8,000 metres. The flora and fauna of the region are diverse with several globally significant species represented, including the snow leopard (*Uncia uncia*), markhor (*Capra Falconeri*), Himalayan ibex (*Capra ibex siberica*), blue sheep (*Pseudois nayaur*), musk deer (*Moschus moschiferus*), and a range of avifauna (Roberts 1997).

Local people extensively use the biological resources in the wild through complex institutional arrangements¹. Access to markets and other institutions (state or civil society) are minimal. Livestock, therefore, represents a major source of income, and is an essential technology and a vital form of security to the locals². Local farmers often invest surplus income in livestock, which they can sell in times of need. In difficult economic circumstances, local farmers cannot be concerned about the survival of snow leopards, which are seen to be destroying their security base. The PLS bears in mind the livelihood issues of the local people.

The idea behind the insurance scheme – institutions, incentives and collective action

When PSL proposed the idea of an insurance scheme to help to compensate the farmers for their losses of livestock from snow leopard predation, obvious doubts regarding the sustainability and management of the scheme were raised. Several experts pointed towards some of the inherent dangers associated with an insurance, for example, asymmetric information, moral hazard and cheating through fraudulent claims can be overcome. They claimed that in most cases compensation schemes have failed, apparently for lack of an effective mechanism to overcome these problems.

PSL overcame these problems through its emphasis on community participation and innovative financial design. PSL integrates local institutions in the management and operation of the scheme. Farmers pay premium contributions to a fund, Fund 1, per head of livestock. Fund 1 is managed and administered by the community of Skoyo, who also keeps a record of individual premium contributions to Fund 1. A second fund, Fund 2, is established, organised and operated jointly by the community of Skoyo and PSL

¹Local livelihoods tend to rely on a variety of resources such as agriculture for production of vegetables and grains, fruit trees, forest and livestock products. Recently reliance on migration and credit is also a part of local livelihood strategy.

²Draught cattle, in this context of subsistence communities, are a technology that can be substituted for.

staff. Fund 2 generates income from snow leopard based ecotourism activities.

Conceptually, the two components give farmers incentives to change their behaviour and protect the snow leopard population. Compensation removes the perverse incentive to farmers to persecute the snow leopard, while ecotourism income provides farmers with a positive incentive to conserve the snow leopard.

How does the scheme operate

The insurance scheme is meant to be largely self-sustaining and locally managed. A Village Insurance Committee (VIC) has been set up for this purpose. The members of the Committee are from Skoyo village and have been nominated by the villagers. Claimants must formally file applications with the VIC, which verifies the killings and makes recommendations. If the VIC recommends that a claimant should be compensated, the following steps are taken:

- 1 The claimant receives his/her individual accumulated premium amount from Fund 1 as compensation.
- 2 If the claimant's accumulated premium amount in Fund 1 is not high enough to cover the full value of the loss incurred, money is taken from Fund 2 to cover the remaining costs (see Figure 1). For example: a farmer has 30 goats. In the first year, he pays $30 \times \text{PKR}15 = \text{PKR}450$ into Fund 1 (1US\$ = 58 PKR). The same year, a snow leopard kills two of his goats, the value of which is $2 \times \text{PKR}1,500 = \text{PKR}3,000$. The VIC verifies that the goats were killed by a snow

leopard and approves the claim for compensation. To pay the amount agreed on, the VIC uses the total premium amount paid by the farmer into Fund1 (i.e., PKR450). The remaining amount of PKR2,550 comes out of Fund 2 (See Figure 1).

The VIC is the signatory on checks written from Fund 1. For Fund 2, the VIC and PSL's manager are cosignatories. Premiums are paid annually. The members of the insurance scheme are entitled to interests earned on the total amount, which is paid out annually to them in proportion to their individual accumulated premium amounts. Entitlement to money from Fund 2 is restricted to those members of the community who have paid premiums into Fund 1. In the case used as an example, the farmer exhausts his premiums paid into Fund 1 by receiving compensation. He must therefore make sure that he pays in the premiums on the remaining 28 goats to insure them for the next year. In such a case, the premium rate for this second payment may be higher as a result of his having received compensation the first year.

Conclusion

Since the start of PSL seven claims have been filed. They all were approved and compensation was paid out. Ongoing biological surveys in the area show that the snow leopard population in the area is stable and perhaps increasing. Sighting of snow leopard is reported to be more common since 1999. But this could also be an artefact of rigorous surveys, enthusiasm of the villagers or efforts of other conservation players. Moreover, the knowledge of the core habitat of the snow leopard in the project area is getting better and we pick up presence signs more eas-

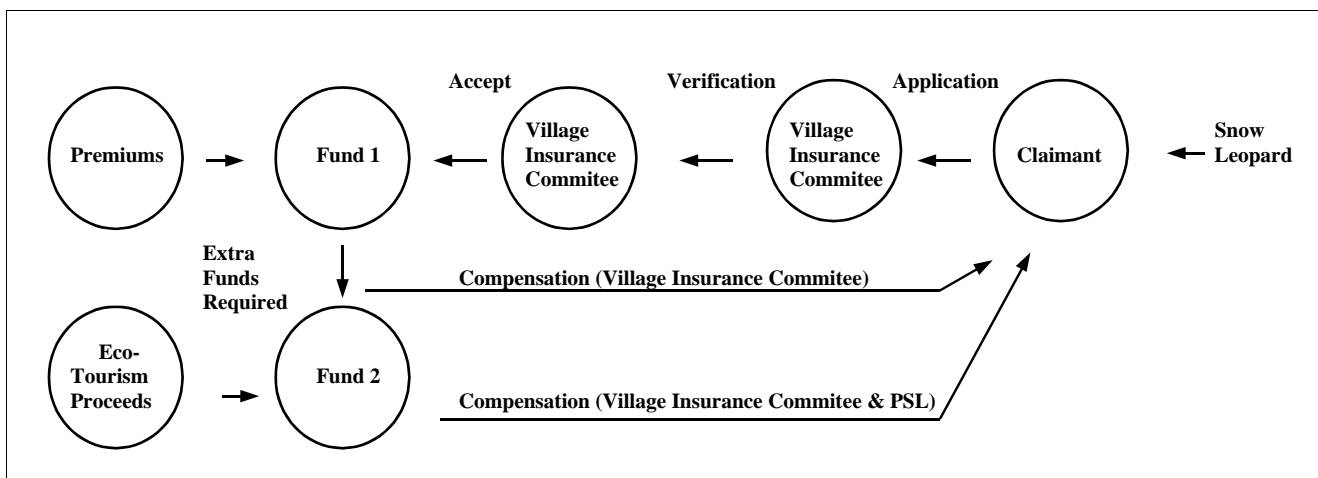


Figure 1: Model demonstrating steps in claiming predation insurance in Baltistan, Pakistan.

ily, resulting in a statistical increase in presence signs.

One major advantage of this two-tier financial scheme is that, unless the entire village colludes and decides to cheat, it is very difficult to abuse the scheme. Indeed, the villagers treat Fund 2 as their collective pool of money generated from *their* common resource – the snow leopard. A false claim by one single individual would mean that he benefits from Fund 2 at the expense of the whole community.

PSL is making an attempt to be self sustaining and does not intent to rely on donor money to run the scheme. This approach however leaves the scheme exposed to potential financial crises. The income from eco-tourism is subject to many uncontrolled factors: Perceived or real security issues in Pakistan could seriously decrease the flow of tourists to the area thus leaving the scheme in risk of going bankrupt. PSL faced this problem after September 11, 2001. All bookings for the year 2002 were cancelled and no income was raised for Fund 2. Fortunately, there is still enough money in Fund 2 from previous years. Therefore, two insurance claims in 2002 could be compensated.

A potential drawback of PSL could be the reliance on an economic incentive approach to conservation. Throughout the world a common feature of community based conservation programs is reliance on economic incentives to induce a pro-conservation behaviour among the people. PSL is also going down the same path. While economic incentive is a quite powerful motive for conservation, however, it is not clear how its propagation is effecting other non-economic incentives for conservation. It may be that other institutional motives based on aesthetic, religious, and cultural aspects are being crowded out because of the heavy emphasis on economic motives alone.

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Compensation for Large Carnivore Depredation of Domestic Sheep 1994-2001

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The development of large predator populations and sheep farming.

Like other European countries, Norway expended considerable resources attempting to eradicate carnivores during the 19th and early 20th centuries. The system of local bounties was consolidated in 1846 in the "Law on the extermination of predators" which introduced state bounties for a wide range of predatory mammals and birds, including wolves, bears, lynx, wolverines and golden eagles. By the early 20th century, populations were approaching all time lows, and there was discussion among contemporary zoologists about whether the species were faced with national extinction.

In the absence of large predators, the pattern of sheep farming changed, and flocks grew in size and were no longer guarded by shepherds. This pattern of husbandry continued to develop into its present form. Lambing generally occurs in spring (April-May) and indoors under close supervision. As soon as snow has melted and lambs are large enough, the sheep are released onto fields surrounding the farms. However, because <5% of Norway's area is cultivated land, it is not possible to sustain the number of grazing animals on fields. Instead, sheep farmers are dependent on exploiting the grazing resources provided in the forests (mainly boreal forest) and mountains (alpine tundra above the tree line). In June, the ewes with their attendant lambs are generally released into these wildland habitats, where they disperse into family groups and establish their traditional home ranges. These grazing areas are scattered throughout Norway to such an extent that it is virtually impossible for a large predator's home range to not overlap with at least one grazing area. The sheep are generally unherded, unguarded and unsupervised, although the owner is required to patrol the area at least once a week. In the absence of large carnivores this pattern of husbandry was successful, and losses of sheep to accidents and disease were minimal. From 1996 to 1999, an average of 2.1 million sheep were released each summer into the wildlands for grazing.