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## **SOLVING CONFLICTS BETWEEN ASIAN BIG CATS AND HUMANS: A PORTFOLIO OF CONSERVATION ACTION**

**This document was produced by the Global Species Programme, WWF International.**

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### **THE PROBLEM**

As human populations expand and encroach ever further into natural habitats, humans and wildlife are increasingly having to compete over living space and food. Asian big cats are suffering not only from significant habitat loss, but also from a decline in their prey species within the habitat that remains. As a result, cats are moving into more marginal areas searching for food, finding easy prey in domestic livestock and also attacking humans. In some areas, Asian big cats have even been found to use domestic cattle herds to teach their young to hunt, exacerbating the situation by increasing the likelihood that the cubs will kill livestock in later life. Many communities in Asia are heavily dependent on their livestock for sustenance and income, and therefore when livestock predation occurs, cats are captured, killed in retaliation or actively persecuted to prevent similar events happening in the future. These killings are a significant threat to the survival of many Asian big cat species, who are also at risk from more direct poaching for skins or other parts used in Traditional Chinese Medicines.

### **Tigers**

Current tiger habitat extends through one of the most densely inhabited regions of the world, and human populations are increasing much faster than the average global rate across the majority of this area. For example, between 1973 and 1999 India's human population increased by over 300 million, and livestock increased by more than 100 million over the same period. As a result, conflict with humans is a significant and increasing problem for the 5,000–7,000 tigers left in the wild, particularly in the Russian Far East, Malaysia, Nepal, Bangladesh, Sumatra (Indonesia) and India. Methods used to kill tigers include snaring, trapping, or baiting the livestock carcasses in order to poison the tiger when it returns to its kill.

Tiger attacks on humans are also increasing. Between 1975 and 1999 in India's Sunderban region, tiger attacks caused 544 deaths. Last year more than 20 people were killed by tigers and leopards in the Terai region of Nepal and India. Occasionally, tiger poachers can seriously injure but not kill an animal and thus increase the likelihood that the tiger will attack humans. For example, in the Sungai Siput area of Malaysia, illegal hunters wounded a tiger leaving it unable to hunt and it went on to kill two people from the area. Tigers that kill humans are routinely killed by local authorities or the local community.



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### **Asian Leopards**

Like tigers, Asian leopards are rapidly losing their habitat and prey species. Wild sheep and goats, the natural prey of species such as the snow leopard, have been hunted out of many areas in the central Asian mountains, and growing human and livestock populations are putting increasing pressure on the remaining leopards and their prey.

For example, domestic livestock in Mongolia have increased from 20–25 million to around 33 million over the past 10 years, squeezing out wild sheep and goats. The habitat of the Central Asian leopard has declined from several million hectares in the mountains of Turkmenistan, southern Uzbekistan, southwestern Tajikistan, and parts of the Caucasus to less than 600,000–800,000 hectares today. Increases in livestock and a decrease in natural habitat has inevitably resulted in livestock predation by leopards, and subsequent retaliation by herders. In the summer of 2003 in Mongolia, snow leopard predation caused the death of 20 horses (worth an average of US\$100-150 each) in a WWF project area. Between 1996 and 2002 at least 16 snow leopards were reported killed in Zaskar in northern India, eight in one village alone.

The Amur leopard is particularly vulnerable in the Russian Far East, where farmers raise captive deer for human consumption and to produce antlers for the Asian medicine market. Deer are the natural predatory preference for leopards, and in absence of wild prey, leopards venture into the deer farms in search of food. Owners of these farms are quick to protect their investment by eliminating leopards attacking their stock. Presently, the Amur leopard's most immediate threat comes from such retaliatory or preventive killing.

In many countries, conflict killings and the trade in big cat parts go hand in hand; the bones and pelts of leopards killed primarily due to retaliation for livestock losses also enter illegal trade.

### **THE SOLUTION**

A wide range of different projects to mitigate human-big cat conflicts have been established by WWF and many other conservation organisations, in partnership with several governments throughout the Asian region. A common theme running through most of these programmes is the necessity for full and active participation of all stakeholders, most essentially the affected communities. Ideally, over the long term, the affected communities take on increasing levels of control over the programme, which eventually becomes as internally regulated and self-sustaining as possible.

In order to increase the level of conservation impact achieved, programmes are normally developed in critical cat habitats such as around a protected area (e.g. compensation schemes around the Corbett and Dudhwa Tiger Reserves in India), or in a corridor between protected areas or key habitats (e.g. snow leopard programmes in the Altan Khokhii Mountain range in Mongolia which links existing protected areas and is a migration corridor for snow leopards and their prey).

Human-Asian big cat conflict mitigation programmes often form part of a wider portfolio of conservation action, and their efficacy can be considerably increased when they are supported by complementary work such as:



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- 1) Programmes aimed at improving the livelihoods of affected communities, thus providing a clear incentive for local communities to support conservation and find ways to live alongside wildlife. (See Box 1 for an example.)
- 2) Programmes that raise awareness and support for Asian big cat conservation amongst affected local communities and the surrounding populace.
- 3) Programmes that will improve the quality and quantity of Asian big cat habitat and the abundance of their prey species.

#### **Box 1 – Royal Chitwan National Park**

In the area surrounding the Royal Chitwan National Park in Nepal, efforts to reduce human-tiger conflicts have been complemented by projects aimed at reducing the dependence of humans on forest resources. Many villagers from communities surrounding the Park depend on the adjacent forests for fuelwood, fodder and timber. However, by entering the park they are increasing the likelihood of tiger attacks and also degrading the habitats of tigers and their prey. In collaboration with the Park, King Mahendra Trust for Nature Conservation and the Buffer Zone User Groups, WWF created timber and fuelwood plantations in a buffer zone area surrounding the park that was leased from the government as degraded land. The project was expanded to include a community-based ecotourism programme. When the plantations were six years old, they were thinned to yield firewood for the community and \$8,300 was raised from the sale of saplings. The plantations will provide a future income after additional successive thinnings, and when they are clear-felled at 20 years of age. In addition, the ecotourism programme generated \$306,000, half of which is shared with the National Park. The benefits of this programme were enhanced by federal legislation requiring that 30-50% of all revenues from the National Park be returned to a local development fund for dispersal to village communities. The funds were used to build three schools, refurbish a health post, and to assume management costs of the community-based ecotourism programme.

Although this document mainly outlines only the projects which WWF has some involvement in, we recognise that there are many additional projects and techniques that have been developed by other organisations and governments with great success. This document is designed to highlight a selection of case studies and sample projects, looking at several innovative solutions to this pressing conservation problem.

This document considers only the methods used to lessen the problems arising specifically from the predation of livestock by Asian big cats. We do not outline here any of the specific anti-poaching work that is being undertaken by WWF and many other organisations throughout Asia.

Six separate techniques for mitigating human-Asian big cat conflict are outlined below. In many cases, two or more of the methods are incorporated into a larger programme of work which is tailored to suit the specific needs and requirements of the region. Most of these examples are based on WWF programmes or field projects, as we are most familiar with our own projects; this does not imply we believe we have all the solutions or the best solutions. We are eager to continue to work collaboratively with government partners and other NGO partners on this issue.



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### 1) Livestock compensation schemes

The most immediate solution to human-wildlife conflicts is the provision of compensation to the herder/farmer. However, government efforts to provide compensation have historically been problematic. In India, government compensation is much lower than the full market value of the animal killed, and lengthy governmental procedures mean that in most cases, compensation does not materialise early enough to avoid retaliatory action towards tigers by the livestock owner. Finally, payment often arrives incrementally, making it difficult for the livestock owner to reinvest in new stock.

In order to combat these problems, WWF India initiated a cattle compensation scheme in 1997 around various tiger reserves and wildlife sanctuaries where the threat to the livestock was high. WWF provided funds to the livestock owner equivalent to the difference between a near market rate and the compensation provided by government. The funds were routed through local NGOs and compensation was usually paid within 24-48 hours of kill. One thousand and fifty cases were compensated between January 1998 to September 1999 at a cost of Rs. 9,30,902 (~US\$20,000). Informers of cattle kills were paid a reward, pre-inspection vigils were maintained where necessary, and cattle carcasses were disposed of by burial or burning after inspection to prevent the poisoning of carcasses. In addition, WWF-India has made provisions to provide payments to the kin of humans killed in tiger attacks, in order to help with the costs of the funeral and other formalities.

WWF and its partners have also established a compensation fund in Bhutan for livestock kills by snow leopards and tigers.

There are several problems with this method however. It requires a high level of donor input that must be maintained indefinitely unless other methods are used to reduce the frequency of livestock predation, and it may not be feasible for use in remote areas where predation levels are particularly high. For example, a livestock compensation scheme in Hemis National Park in Ladakh, India, sponsored by the Ladakh Wildlife Department, failed to be effective primarily due the high costs involved. The rate of predation on cattle was high (a survey in the area indicated that over a 14 month period, the average household lost six animals, valued at almost USD300, with snow leopards responsible for 55% of these kills). The Wildlife Department needed to spend 60% of its annual budget on the scheme, although payments received by herders were only 20-30% of the market value of the animal killed. The remote locations of many herders also caused problems. Some herders had to walk for up to three days to report their losses and wildlife rangers had to verify the claims before approving any case for the scheme.

A slightly different method has been employed in the Kopet Dag mountains of Turkmenistan which holds the most important leopard population of Southwest Asia (approx. 70 individuals in 1999, up to 85 in 2004). However, a reduction in leopard prey species caused by poaching has led to an increase in leopard predation on livestock over the last 5 years. WWF's Central Asian programme (c/o WWF Russia) has built up a compensation scheme based on live animal replacement rather than compensatory funds. WWF funds were used to buy a flock of sheep that could be used to reimburse livestock owners who lost animals to leopards. A council of local community representatives was elected to manage the newly formed flock and two experts within the community were chosen to investigate cases of supposed leopard attacks. Ranchers who lost livestock are given a set period of time to register the attack with one of the experts who would determine not only whether or not it was a leopard that had killed the animal, but also whether the rancher's herd was being properly managed at the time of the kill. For example, if the herd



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had been left unattended for a long period of time, or if it was grazing in a reserve, compensation would not be provided. Once a flock has increased to around 650-700 sheep, it becomes self-sustaining and generates enough income to cover the costs of shepherds and veterinarians. Currently, the first flock numbers 550, and the project has been replicated in a second area.

## **2) Livestock insurance schemes**

Closely related to the above schemes, livestock insurance schemes provide compensation for losses through a fund generated by the community. These are not specifically WWF programmes, but are very useful and provide important lessons.

Project Snow Leopard has set up an insurance scheme combined with eco-tourism for snow leopards in Pakistan. Farmers pay insurance premiums per head of livestock into a fund managed and administered by the community. Compensation for livestock losses due to snow leopard predation aims to remove the incentive for farmers to kill the cats, while additional income through eco-tourism provides farmers with a positive incentive to conserve the local snow leopard populations. Since the start of the scheme, seven claims have been filed. They have all been approved and compensation has been paid out. Surveys in the area show that the snow leopard population is stable and perhaps increasing. A new component was added to Project Snow Leopard in 2003 when the village's collective corral was made predator proof by erecting barbed wire around it. It is hoped that this will substantially reduce livestock depredation rates, thus decreasing the intensity of the conflict and the number of claims made to the insurance scheme. In 2004, with the help Snow Leopard Conservancy, Project Snow Leopard set up remote camera traps at the project site in order to monitor the snow leopard population. The traps have proven to be highly successful: a photo of a snow leopard was taken by the remote camera within one month of setting up the camera traps.

## **3) Improving the protection of livestock from predation**

This method aims to reduce human-Asian big cat conflict by protecting livestock from predation by big cats. This can involve physical barriers such as fences or changes in livestock management practices which reduce the risk of livestock coming into contact with cats.

In Hemis National Park in Ladakh, India, the Snow Leopard Conservancy (SLC) is collaborating with herders to reduce people-wildlife conflict resulting from livestock predation by snow leopards and wolves. Building on a programme initiated by the International Snow Leopard Trust - a WWF partner - and The Mountain Institute in Markha - the village with the highest predation rate in the park - existing corrals were predator proofed using wire mesh, poles, and secure wooden doors, together with locally available stones, mud and labour contributed by the villagers themselves. In exchange for the programme's help, herders agree to protect snow leopards and wild prey like blue sheep or ibex. Unavoidable depredation losses are offset through economic incentives including traditional homestays, nature guiding and improved parachute cafés for tourists visiting the popular Markha trekking circuit, under a joint venture with UNESCO and The Mountain Institute. This ongoing project is viewed positively by local communities, and SLC believe that five or more Snow Leopards have been removed from the risk of retributive killing as a result of such actions at each site.

In Peninsular Malaysia, one of the last remaining strongholds for Indochinese tigers, tiger attacks on humans had become such a problem that in 2002 the local government of Kelantan announced that all



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tigers should be killed by the army. After considerable efforts to revoke these policies, the state government has now entered a partnership with WWF to work on human wildlife conflict mitigation. In Terengganu, Malaysia, plantation workers supplement their low salaries by farming cattle which also help to fertilise and remove weeds from the plantation. However the cattle are vulnerable to predation by tigers from the surrounding forests, and livestock losses due to tigers is estimated to have cost over US\$400,000 in the last decade. In 1998-1999 alone, tigers killed 433 head of cattle in 30 oil palm estates. Efforts to mitigate this problem began with studies into the movements of both the farmers and the tigers at a model site. Twenty infra-red heat sensitive cameras were set up within the plantation and surrounding jungle to monitor the movements of each individual tiger living in the area. The study found that cattle loss could largely be attributed to poor livestock management. Many of the livestock paddocks were positioned directly in the paths that are taken by tigers through the plantation, and were not secure enough to prevent tigers entering or even to prevent cattle escaping in panic when tigers are in the vicinity. Farmers were informed about better placement and protection of paddocks, and how this can greatly reduce losses attributable to tigers.

In the Turgen and Tsagaan Shuvuut Mountains, WWF Mongolia has been working to reduce predation of livestock by snow leopards by keeping livestock out of key snow leopard habitats. The removal of livestock from snow leopard habitats also increases the amount of good grazing available for snow leopard prey species, and reduces the contact between wildlife and people which often leads to poaching. WWF signed agreements with local authorities and herders in which the herders agreed to move their livestock out of Special Protected Areas. WWF provides compensation, such as livestock fodder, to those herders who comply with the agreements. New, alternative grazing areas for livestock are provided outside the protected areas.

#### **4) Improving livestock husbandry**

Improving livestock husbandry can reduce the significance of livestock losses due to predation by reducing livestock losses from other causes such as disease. This is particularly effective when livestock losses due to disease are greater than those due to predation, and when the veterinary care is provided in return for a commitment from local villagers to stop all retaliatory killing of Asian big cats.

The International Snow Leopard Trust (ISLT) and WWF Pakistan have established a network of Livestock Health and Husbandry Workers to provide animal health care to herders on a regular basis in the project area. A two-part programme has been developed:

##### *Phase 1 - Animal Health and Disease Control*

The process started as a result of a demand from the community for livestock vaccination. Terms of Partnership were signed with the community, in which the community agreed not to kill snow leopards after their livestock was vaccinated against fatal diseases (disease losses are higher than depredation losses). In most cases the community contributed a small percentage of the vaccination cost.

##### *Phase 2 - Good Animal Husbandry*

Herders are encouraged to focus on keeping a few good quality animals rather than many poor quality, low producing animals in terms of milk and meat. In this way the numbers of livestock can be decreased and their value increased. This will reduce pressure on pastures and free up more space to encourage ungulate growth, providing a larger natural prey base for the snow leopard and therefore helping to minimise snow leopard attacks on livestock and subsequent retaliatory killings.



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### **5) Relocation**

In Sumatra, where there are likely only 400-450 wild Sumatran tigers still remaining, tigers still pose a considerable threat to both livestock and humans. The Indonesian government has had a long-standing policy of live-trapping problem tigers and removing them from the wild, normally to zoos. However, the extent of human contact that the animals are exposed to in a zoo means that successful reintroduction back into the wild is normally not feasible. In addition, zoos throughout Sumatra were becoming full.

Therefore in 2003, for the first time, efforts were made by the government, in collaboration with the Sumatran Tiger Conservation Programme (STCP), to translocate problem tigers to other blocks of habitat far from human habituation or interference. After a particularly bad spate of tiger attacks on humans and livestock in Riau province (between 2000-2003, tigers killed at least six and possibly as many as 30 people) the mayor of Dumai suspended logging concessions in a 600km<sup>2</sup> region of the Sungai Sembilan district, and the area was formally declared as the Senepis Tiger Conservation Area. Further tiger attacks to livestock resulted in the translocation of two adult male tigers to the Conservation Area. The tigers are monitored by camera traps set up in the area, and a management plan is being developed which will include an intensive GPS-collar monitoring project to better assess the movements and fate of both 'normal' tigers and the translocated problem tigers. The Indonesian government is working with the STCP to develop a tiger-human conflict protocol, and has proposed the Senepis Tiger area as a National Park, representing a national and provincial commitment to mitigate conflicts. Finally, the STCP has established industrial partnerships with the forest concessions surrounding the park in order to develop an extensive multi-use buffer zone that will strengthen the park boundaries whilst reducing the potential for conflicts between tigers and neighboring human settlements.

In the Terai Arc landscape of Nepal, WWF India will support the training of field veterinarians in the techniques of immobilizing conflict tigers for translocation or removal.

### **6) Alternative income generation schemes with specific links to Asian big cat-human conflict mitigation**

These programmes aim to address conflicts between herders and Asian big cats by offering herders and others an opportunity to increase their household income in return for a commitment to protect Asian big cats and their natural prey.

The International Snow Leopard Trust (ISLT) and WWF Pakistan have established a project in response to persistent requests by the herders and rural communities to help them develop alternative sources of income to compensate their livestock losses to the snow leopard. Herders and livestock owners are given training that modifies their existing skills base to enable them to produce materials that are in demand in both the National and International markets. In return, villagers commit to:

- Save the snow leopard from retaliatory killing and poaching
- Forego pasturing their domestic livestock in certain areas to maintain land for the snow leopard's natural prey base.

This programme has been established at a demonstration site in Kuju, Chitral. The strong existing skill base in embroidery was developed by a trainer to enable the women to produce embroidered napkins which can be produced affordably and for which there is an international demand. The products are then sold to environmentally conscious companies who will continue buying the products on the condition that the



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community abides by its commitment to snow leopard-friendly herding practices and the snow leopard and its natural prey species flourish at the demonstration site.

In Mongolia, WWF partners extensively with Snow Leopard Enterprises (formally Irbis Enterprises), a programme of the International Snow Leopard Trust, which has also been offering herders alternative income generation schemes in return for signing contracts in which they agree not to kill snow leopards or their natural prey. If herders comply with the contract and no snow leopards are killed, they are provided with a bonus, but this benefit is withdrawn from the whole community if just one incident of poaching occurs. In return for these agreements, herders are trained to produce hand-made, woollen handicrafts which are marketed by the project both within Mongolia and internationally. The products are sold via the internet and in zoo shops in the UK and the US. Currently, 20 communities are involved in the project in Mongolia, Kyrgyzstan and Pakistan, with 300 participants from 200 households in Mongolia alone.

With the aim of enabling local communities to develop and expand their own alternative income generation schemes, WWF-Mongolia precedes its alternative income projects in the Altan Khokhii Mountains with project proposal development training for local herders to ensure that they have the capacity to develop proposals and generate funding themselves for alternative income generation schemes. WWF has so far conducted several small scale pilot projects such as milk cream production for marketing in the provincial centres, hand made carpet production for local consumers, and braided leather rope production intended for sale to international tourists.

The development of ecotourism ventures can provide significant alternative income for local communities, particularly in areas that are not overly remote and already have a moderate tourist visitation rate. WWF Mongolia has conducted a training workshop in horse and camel guiding to provide local communities living in snow leopard habitat areas with the skills required to organise local tours using their available resources without damaging their environment.

## **Conclusion**

It is clear from just a preliminary review that there is a wide range of methods currently being used to prevent or mitigate conflicts between Asian big cats and humans, and that many methods that are currently fairly geographically specific could also be implemented with success elsewhere in Asia. This suggests that a wider review of all methods that have or are being used to mitigate human-cat conflict across Asia (or even globally), by all involved organisations and governments, including a basic analysis of the efficacy of each method and the lessons learned through implementation, would be an extremely useful resource for organisations and governments working in this field worldwide.

WWF International Species Programme is keen to work with the WWF Network, and in collaboration with range state governments, donor governments and aid agencies, other NGOs, IGOs, the CITES Secretariat, and other interested parties and organisations to develop this kind of review, or in the development of other initiatives that would help to address this issue at the local, national and regional level.

References and citations for this document are available on request from the WWF Global Species Programme.





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For more information on the Snow Leopard Conservancy, visit:  
[www.snowleopardconservancy.org](http://www.snowleopardconservancy.org)

For more information on the International Snow Leopard Trust, visit:  
[www.snowleopard.org/](http://www.snowleopard.org/)

For more information on The Mountain Institute, visit:  
[www.mountain.org/](http://www.mountain.org/)

For more information on the Sumatran Tiger Conservation Programme, a collaboration between the Directorate General of Forest Protection and Nature Conservation (Department of Forestry, Indonesia), The Tiger Foundation (Canada) and the Sumatran Tiger Trust (UK), visit:  
<http://www.tigertrust.info/stcp/>

For more information on Project Snow Leopard, visit:  
[www.fmntrekking.com.pk](http://www.fmntrekking.com.pk)