

Interrelationship between livelihood, livestock and wildlife: enhancing through sustainable approaches to wildlife management

M. ANARBAEV

National Center for Mountain Regions Development of the Kyrgyz Republic, Bishkek, 22, avenue Manas, Kyrgyz Republic; e-mail: maskony@yahoo.com

Introduction

The vast region covering the arid and semi-arid lands of North America, the Middle East and Central Asia - the Palaearctic Desert - is the cradle of Old World civilization. While they have given us most of our domestic animals and some of our most important crops, these arid lands have been devastated by wars, overgrazing and the vagaries of climate for thousands of years (McNeely 2003).

The cold desert Pamir-Alai Mountains of the Kyrgyz Republic are home to some of the poorest mountain communities in Central Asia. Marginalized from political processes, poorly integrated into global markets due to isolation and dilapidated infrastructure and increasingly threatened by natural hazards associated with global climate change, local communities across the region have been struggling to meet their livelihood needs and aspirations since the country became independent in 1991.

Pamir-Alai is one of the key regions for rare mammals such as argali (*Ovis ammon*), ibex (*Capra ibex*), lynx (*Lynx lynx*), marmot (*Marmota* spp.) and snow leopard (*Uncia uncia*): IUCN Status: III, Critically Endangered, CR, C2a(i). The governments of the Kyrgyz Republic and the Republic of Tajikistan (hereafter referred to as Kyrgyzstan and Tajikistan, respectively), however, permit trophy hunting of several wild animal species (Watanabe *et al.* 2008). Both countries face problems with poaching, which has led to international concern, although almost no detailed studies on wildlife management in the Pamir are available to confirm its effects (Izumiyama *et al.* 2009).

In Kyrgyzstan, there are 36 hunting zones located close to protected areas and villages. In accordance with Kyrgyz legislation and institutional arrangements, hunting is regulated by the state agency for environmental protection and forestry service (SAEPFS). Hunting the following species is permitted: argali, ibex, roe deer (*Capreolus capreolus*), grey wolf (*Canis lupus*), red fox (*Vulpes vulpes*), hare (*Lepus tolai*), himalayan snowcock (*Tetraogallus himalayensis*) and chukar (*Alectoris chukar*). Trophy hunting of argali and ibex is only allowed by foreign

citizens. The fee charged by SAEPFS for a trophy hunting permit varies: e.g. 14,000 USD for an argali and 4,000 USD for an ibex.

Human-wildlife conflict attracts attention when the wildlife species is endangered or where the conflict poses a serious threat to human welfare (Saberwal *et al.* 1994). The Pamir-Alai cold desert is an important component of the habitat of snow leopards and wolves as well as their main natural prey species: the argali and ibex. In Kyrgyzstan and elsewhere, most such areas have also long been used by local farmers for livestock grazing. Livestock depredation by the snow leopard and the wolf has resulted in human-wildlife conflict that hinders the conservation of these globally-threatened species throughout their range (Mishra 1997).

The occasional killing of livestock by wild predators is almost inevitable when they are brought into close contact, and this gives rise to significant conflict between conservation objectives and the livelihood needs of herdsman. Over 68 thousand people live in the Pamir-Alai cold desert, with most deriving a substantial proportion of their income from livestock and crop production. In communities with a subsistence economy, even small losses can be of economic importance and this can generate negative attitudes towards wildlife and conservation in general (Mishra 1982).

According to the opinion of local people, wolf depredation on livestock has increased due to several factors (although no quantitative data exist), including:

- Increase of hunting of wild animals, original prey of the wolf
- Institutional and legislative arrangements do not work properly and need to be improved
- Wild prey populations have decreased
- Local communities do not participate in conservation activities, especially against poaching of wild herbivores
- Livestock is vulnerable to wolf attack due to inadequate husbandry (improper herding and sheep yard construction)
- Wolf numbers have increased and they occur closer to settled areas

Local herders and hunters face difficulties in maintaining use of guns due to poverty, leaving them unable to kill wolves even when livestock is attacked. Officers in the army and the National Security Agency who are equipped with modern automatic weapons have practiced massive illegal

hunting of argali and ibex in the Chong-Alai and Alai Range, and thus the natural prey base of wolves is likely to have decreased in the mountains. This in turn has brought communities into conflict with wolves due to depredation on livestock. Furthermore, the local community is not involved in the wildlife protection process and does not see any benefits from conservation. Wolf control legislation is too complicated for local herders to obtain permission to hunt wolves, without which they can be penalised.

Reliable scientific information on the linkage between wildlife, food security and livestock in the Pamir-Alai are not available. Furthermore there is a necessity to analyse present institutional arrangements to safeguard and conserve Kyrgyz's unique natural heritage of high altitude wildlife populations and their habitats through participatory policies and actions for sustainable use of natural resources.

Research potentials

The group under the leadership of the author tend to establish long-termed research on the relations between wildlife (especially wolf, argali, ibex). The researchers will analyse the spatio-temporal trends of interactions between key large mammalian carnivores (wolf and snow leopard), wild herbivores (argali and ibex) and livestock, and their implications for food and livelihood security and biodiversity conservation.

The study will analyse the strengths and weakness of existing mechanisms for reducing and compensating livestock depredation by wildlife (specifically wolves).

The study also will explore the interactions between the farming economy, wildlife conservation and hunting economy, and the ways in which economic and social synergies might be created or exploited more effectively for the benefit of economically marginal communities and endangered species.

The researcher aims to identify potential institutional (including legal, economic and organisational) interventions for improving the quality of rural life and food security whilst achieving conservation of globally significant biodiversity and ecosystem services.

Methods and Study area

A variety of institutional and social research methods will be used. Field surveys will be conducted including interviews with local residents such as hunters, herders and administrative officers and mapping using GIS tools for visual demonstration of results and preparation of a brief report for policy makers.

Desk research and comparative case studies from different jurisdictions will be used in the development of recommendations.

The principal study will be in the Alai valley, a territory between the Chong-Alai – Pamir Alai Mountain and Alai Mountain range. The region is located within the Osh Oblast (Province) and belongs

to the Chong-Alai and Alai rayon (District), which is among the most remote areas of Kyrgyzstan. The region's economy is mainly agricultural and the main enterprise is animal husbandry: traditional transhumance of sheep, goats, horses, camels and yaks.

Chong-Alai Rayon is divided into three Aiyl Aimak - sub-district area: Kashka-Suu, Chong-Alai and Jekendi. Alai rayon (district) is divided into seven, but only three local municipalities are located in Alai valley: Sary-Mogol, Taldy-Suu and Sary-Tash – Nura.

Taking into account the fact that all these municipalities are located along the Kyzyl-Suu River and are characterized as riverside settlements with common landscapes, Kashka-Suu sub-district unit will be considered as a focal case study. Pilot site for research will be located at Kashka-Suu Ayil Aimagy – Sub-district unit. Total human population is 6,548 (2010). Number of households - 1,205, and average family size is 5.4. The majority of agricultural land is private except for pasture, reserve land and forest, which belong to the state. Pasture management is delegated to associations of pasture users at the municipality level, with all residents of the sub-district being members of this association. They have an executive body, the pasture committee, which is responsible for fee collection, pasture rotation, monitoring and other obligations defined by the Pasture Law (Adopted in 2009). Farmers cultivate potatoes (since approximately 1980), barley (fodder for livestock) and perennial grasses like lucerne-alfalfa (*Medicago*) and holy clover (*Onobrychis*). Wheat is not popular and is risky due to the harsh climate. Until 1991, the villages Kashka-Suu and Achy-Suu were units of the Chong-Alai sovkhov, mechanized stations for livestock farming, and became separate (independent) sovkhoves. Since 1991, the Kashka-Suu and Achy-Suu units were organized as Kashka-Suu sovkhov. In 2001, Kashka-Suu was registered as Aiyl Okmotu, a local municipality, part of Chong-Alai rayon of Osh oblast.

Local livelihoods and subsistence are grounded in the natural resources in the region mainly as agriculture, especially livestock farming (Table 1).

Livestock farming (90%) (head):	Crop cultivation (10%) (tons per year):
Cattle – 3,517	Potatoes – 2,078
Sheep/goats – 31,845	Fodder plants – 10,000
Horses – 1,732	
Donkeys – 337	
Yaks – 295	
Poultry – 1,229	
Camels – 3	

Table 1. Natural resources in the region

In general, the annual profit of each household from livestock farming and agriculture makes up 80% of its total income. Other seasonal sources come from alpinism and tourism (Lenin Peak, 7,134 m a.s.l., is located in the territory of Kashka-Suu),

coal mining (which operates in the neighbouring – Sary-Mogol), and coal export to Tajikistan and other neighbouring territories.

Expected results

The present research will investigate the design and implementation of more effective community engagement mechanisms or institutional frameworks for wildlife governance which could have a positive effect on the quality of rural life and food security. It will examine the main factors driving increased livestock depredation by wolves and its relation to broader wildlife issues (ungulate populations).

It will design improved management approaches for the conservation of endangered species and propose reforms to the relevant legal and institutional

arrangements to support and enable effective community participation in improved management.

References

- Izumiyama, S., Anarbaev, M. and Watanabe T. 2009: Inhabitation of larger mammals in the Alai Valley of the Kyrgyz Republic. *Geographical Studies*, **84**: 14-21.
- McNeely, J.A. 2003: Biodiversity in arid regions: values and perceptions. *Journal of Arid Environments*, **54**: 61-70.
- Mishra, C. 1997: Livestock depredation by large carnivores in the Indian trans-Himalaya: conflict perceptions and conservation prospects. *Environmental Conservation*, **24**: 338-343.
- Saberwal, V.K., Gibbs, J.P., Chellam, R. and Johnsingh, A.J.T. 1994: Lion-human conflict in Gir forest, India. *Conservation Biology* **8(2)**: 501-507.
- Watanabe, T., Anarbaev, M. and Iwata, S. 2008: Protected areas and tourism development in the Kyrgyz Republic. *Geographical Studies*, **83**: 29–39.

Appendix

Current local knowledge on snow leopard (Uncia uncia Shreber, 1775)

IUCN Status: III, Critically Endangered, CR, C2a(i): R. Occurs in Pskem, Chandalash, Talas, Kyrgyz, Suusamyr, Chatkal, Fergana, Turkestan, Alai, Kungoi, Teskei, Naryn-Too, Moldo-Too, At-Bashy, Sary - Jaz and Kakshaal - Too Mountain Ranges of Kyrgyzstan. Inhabits subalpine and alpine belts: 3,000 - 4,000m above sea level. Prefers partitioned relief with hills for observations and hiding spots among stones and bushes (Caragana, Juniperus). Visits forest belt only during transition from one river valley to another. Present in the forest zone in winter, following wild goats. It was a common species in the past: at the beginning of the 1980s the total number was up to 1,400 animals. During the last decade leopard numbers have drastically reduced and now do not exceed 150 - 250 individuals. The highest density is in northern Tien - Shan. The global population totals 5,000 - 7,000 individuals.

Resident animals are most active at dusk and night time. The mating season begins in February - March, pregnancy lasts for 98 - 103 days, litter size is usually 1- 3, rarely up to 5, once every two years. Common prey items are wild goat, sheep and marmot, relatively rarely deer, hare, snow cock and partridge. Diseases have not been thoroughly investigated, although rabies and mange are well known. Limiting factors are: reduction of wild goat and sheep populations and poaching. Before the end of the 19th century the leopard was hunted, but this has been prohibited in Kyrgyzstan since 1948. The snow leopard is listed in the Kyrgyz Red Book and CITES convention. In 1975 it was added to the list of the most protected species of Kyrgyzstan. It is protected in all Koruks (protected areas). Sarychat - Ertash protected area was established primarily for snow leopard conservation. It is recommended to establish a protected area in the Alai range, to increase public awareness among local communities, to better implement wildlife conservation law and to improve other related legislation and institutional arrangements.