NINA Special Report 45

Wildlife-Human Interactions:

From Conflict to Coexistence in Sustainable Landscapes

A Cooperative Research Project between India and Norway

NINA
Norwegian Institute for Nature Research

Cooperation and expertise for a sustainable future

Wildlife-Human Interactions: From Conflict to Coexistence in Sustainable Landscapes

The project "Wildlife-human interactions: From conflict to coexistence in sustainable landscapes" is a scientific cooperation between India and Norway. In a joint ecological and sociological approach this project aims to understand wildlife - human interactions in India and Norway, and explore potential mechanisms for coexistence suitable for each country.

This brochure presents the project's activities as well as some of its outcomes.

Project participants:

Norwegian Institute for Nature Research (NINA)
Centre for Ecological Sciences (CES), Indian Institute of Science (IISc)
Norwegian University of Life Sciences (UMB)
Hedmark University College, Norway
Ashoka Trust for Research in Ecology and the Environment (ATREE)
Asian Nature Conservation Foundation (ANCF)
Indian Institute of Science Education and Research(IISER), Pune
Nature Conservation Foundation (NCF)
Kalpavriksh

Funding:

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2007 – 2011

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Conflicts in the Face of Biodiversity Conservation

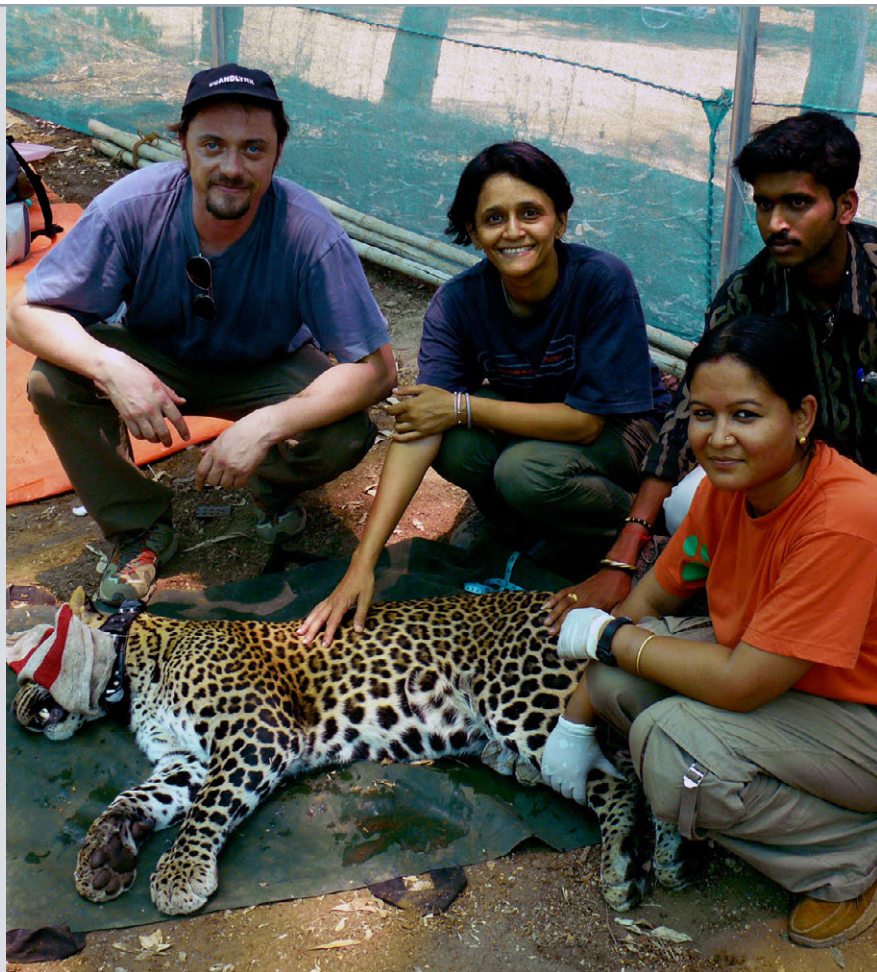
Over the last three decades we have witnessed an increasing focus on the environment and biodiversity, resulting in a number of international treaties and agreements. The Convention of Biological Diversity (CBD) stands out as the first global agreement on conservation and sustainable use of biological diversity. Since 1992 more than 150 governments have ratified the convention.

The CBD outlines concrete approaches on how to achieve conservation, primarily through its "ecosystem approach" and its guiding "Malawi principles". These principles were further developed in the "Millennium Ecosystem Assessment" and the "Addis Ababa principles and guidelines for the sustainable use of biodiversity".

Despite a focus on linking biodiversity conservation to human well being, many countries are struggling to implement these conventions. This is because of an often overlooked fact; wildlife conservation can actually generate many conflicts with human well being. People and wildlife often live in close proximity, and wide-ranging wildlife does not necessarily stay inside protected areas. Many species can create direct and severe conflicts with human interests. Conflicts occur in a variety of contexts, when wildlife species raid agricultural crops, damage property, kill people or livestock, or spread diseases. When conservation programs succeed, and wildlife populations expand in numbers and range, many of these conflicts increase, resulting in a need to adjust management procedures from a "preventing extinction" phase to one where the goal becomes "learning to live with success".

The goal of this project is to exchange experience and jointly conduct research on human-wildlife conflicts to such a level that we have equivalent data on ecological, economic, social and political aspects of the conflicts from both India and Norway. Interdisciplinary research that collects scientific and local knowledge is crucial to turn conservation conflicts into opportunities for coexistence.

Photo: Vidya Athreya

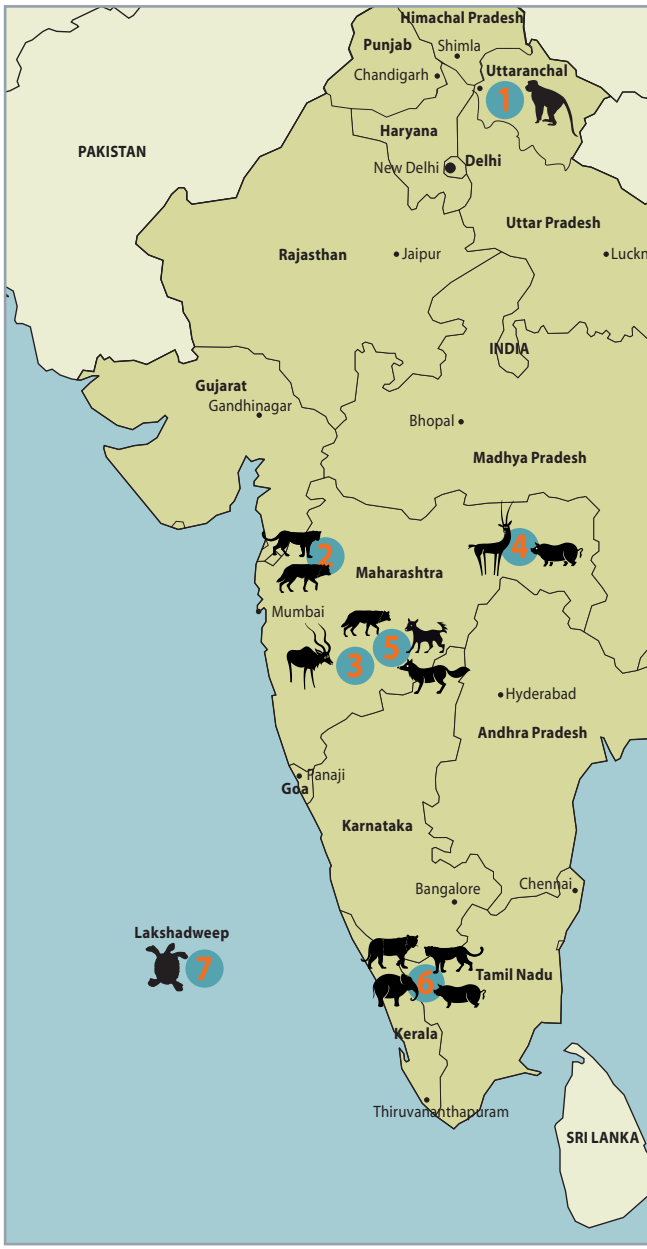


Research methods

This project has utilized a wide range of methodologies, from the cutting edge and hi-tech to the traditional and low-tech. To track the movements of individual leopards we captured leopards and equipped them with collars that contained a GPS unit which took a location every hour and transmitted this via the mobile-telephone network as an sms message. In order to census the population we used both automatic cameras, and collected scats for DNA profiles to identify the sex and the individual identity. The studies of blackbuck and other crop raiders involved conducting observational studies and surveying crops to assess damage.

However, a major focus was spent on simply talking to people face to face, asking questions and encouraging them to discuss issues and tell us their stories. Some of this interview data was used in statistical analyses, while the rest was interpreted in the contexts of social science theories to understand the views of people whose lives are intertwined with, and affected by wildlife. The knowledge that local people displayed about their relationships with wildlife was often crucial in shaping our own understanding of the issue. Finally, the project collated government records, trying to build up an overview of human-wildlife conflicts across India.

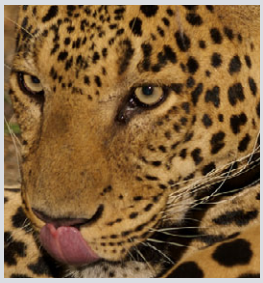
Project Activities:



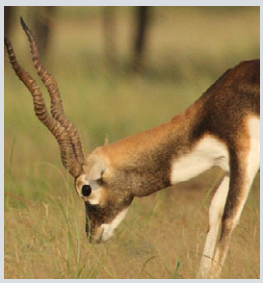
All India survey of human-wildlife conflicts:
questionnaire survey delivered to all Forestry Department Divisions in India.

1
Monkeys in Terhi Garhwal:
study of crop raiding by monkeys.

2
Leopards in Akole:
a study of leopards living in croplands and their interactions with local people.



3
Blackbuck in Nannaj:
a study of the patterns of crop damage around the Great Indian Bustard Wildlife Sanctuary.



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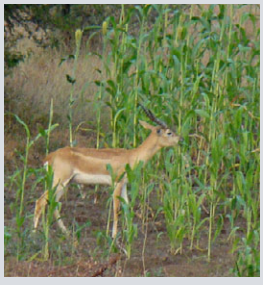
Crop-raiding around Tadoba-Andhari tiger reserve:
an exploration of how different herbivores raid crops with increasing distance from the protected area border.



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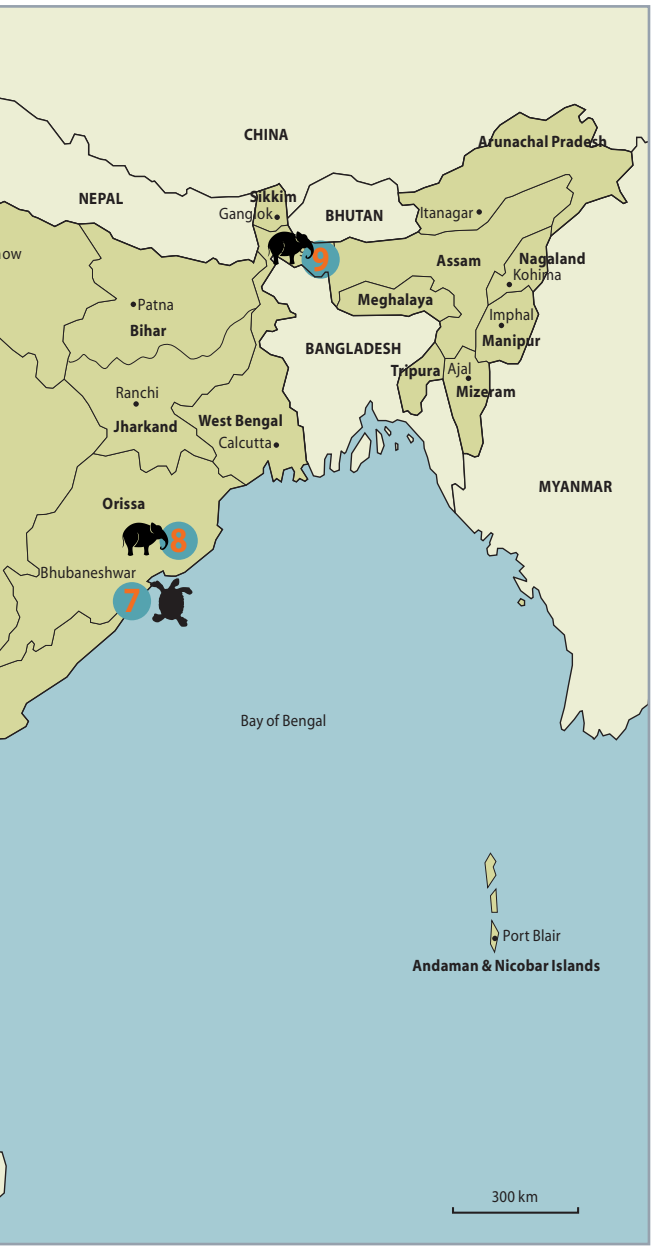
Wolves, dogs and rabies in Nannaj:
a survey of the extent of rabies infection in wild canids and level of transmission to humans.



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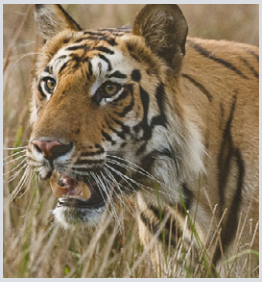
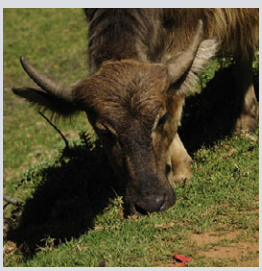
Nilgiri hills:
a broad study of human-wildlife conflicts in one of the largest and most intact forested areas in India.



Todas and sacred buffalos:
a study of conflicts associated with tiger predation on sacred buffalos and transformation of culturally valued grassland habitats to forest.



9

Elephants in West Bengal:
identification of conflict around migration corridors between fragmented forest patches.

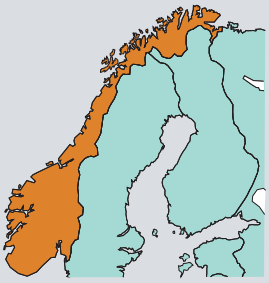
8

Elephants in Orissa:
identification of conflict around migration corridors between fragmented forest patches.

7

Sea turtles on the Lakshadweep Islands and Orissa coast:
a study of conflicts between local fishers and turtles concerning resource access.

Norway:
summary of 20 years of research into human-wildlife conflicts in human-dominated landscapes.



International biodiversity conventions:
interpreting project results in the context of implementing international biodiversity conventions.

Convention on Biological Diversity

Photos: John Linnell, Jan Ove Gjershaug, Ashok Captain, Nature Conservation Foundation, Kavita Isvan, Ketil Skogen, Espen Lie Dahl, Raman Sukumar, Rohan Arthur

Dimensions of Human-Wildlife Conflicts – Comparing Norway and India

Conflicts between humans and wildlife occur where humans encroach into natural habitats and increasingly where wildlife expands into human-dominated landscapes. This Indo-Norwegian cooperative project provides the opportunity to compare human-wildlife conflicts in two very contrasting countries, differing greatly in climate, habitats, human densities and wildlife species. Despite these differences, many of the conflict dimensions are similar, although differing greatly in relative intensity and magnitude.

Material and economic conflicts. Both countries experience damage from wild herbivores (e.g. deer, antelope, elephants) to agricultural crops and forestry plantations. In Norway there are also widespread conflicts associated with collisions between trains and motor vehicles with several deer species. In India there are many cases where elephants destroy houses and other property. In both countries there is a major conflict associated with large carnivores depredating domestic livestock and pets.

Loss of life. Although there are historical cases of bears and wolves killing people in Norway, there has been no direct loss of life for over a century. In India, there are hundreds of cases per year of people being killed by leopards, tigers and sloth bears or trampled by elephants in addition to thousands of people being killed by zoonosis diseases like rabies.

Social and cultural conflicts. In both India and Norway many of the conflicts have a strong social / cultural component associated with the way in which people view the landscapes in which they live and how they regard the presence of conflict-causing wildlife. In many cases people simply do not feel that the species "belong" in their landscape.

Symbolic conflicts. Many conflicts in both countries deal with the politics of power, where the conflict concerning a particular species may be used as a symbol to represent a wider conflict. This may for instance be conflicts between local people and wildlife management departments or with a wider society, or simply reflect conflicts between traditionality and modernity.

The benefits of cooperation. The cooperation in this project has provided a rich mutual exchange of experience, research methods, insights and most of all perspectives. Although there were many contrasts, we recognised common themes which has greatly advanced our conceptual understanding of this research area.

Photo: John Linnell

Photo: John Linnell

Lessons Learnt I: Building Bridges

The process of conducting research can be as conflict reducing as the results obtained. This is because working on human-wildlife conflicts brings researchers into dialogue with local people – which induces a sense that their problems are being taken seriously.

Involving local field staff from the wildlife authorities in the fieldwork also creates an opportunity for dialogue where the researcher acts as an informal mediator. Conducting interdisciplinary research that combines ecological and social sciences also helps to reinforce the impression that the needs of people are being considered as well as the needs of the wildlife. The results of research are also important as there can often be considerable disagreement about the actual extent of conflict impacts, especially with crop-raiding. Objective data provides a common platform for negotiation.

The organization and quantification of different issues of concern to local people into a systematic framework helps to establish a platform for communication between the local people and responsible officials.

The trouble with turtles

In the blue lagoons on Agatti island in the Lakshadweep group off the west coast of India, green turtles are the source of a complex conflict. Fishers have the perception that the recovery of turtle numbers has led to a decline in fishing catches. They believe that turtles are heavily grazing sea grass meadows making them less attractive to large fish.

On the other side of India, large numbers of olive ridley turtles migrate to nest in Orissa on the east coast. Incidental catch in fishing kills many thousand turtles each year, and conservation measures for the protection of sea turtles have affected the livelihoods of fishermen.

Researchers are exploring the complex and indirect pathways by which wildlife can indirectly cause conflicts with humans.

Photo: Kartik Shanker

In our field work in Akole, Maharashtra, we interviewed several hundred local people, asking them about their experiences with leopards and documenting the conflicts that they had experienced. Leopards killing their dogs and goats turned out to be the biggest conflicts, with leopards often entering houses and barns.

Photo: John Linnell

Lessons Learnt 2: Complicated Conflicts

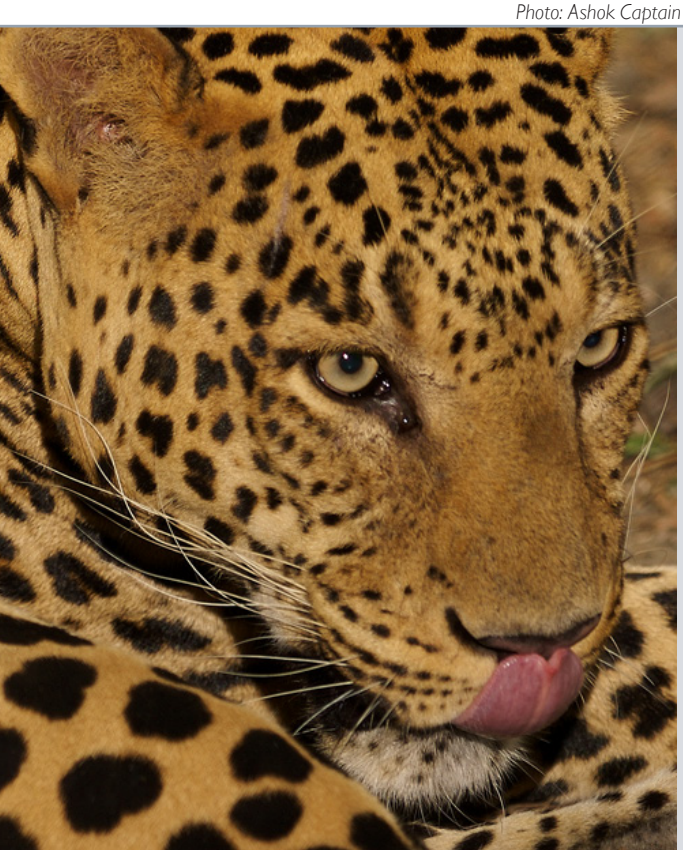
Human – wildlife conflicts are widespread and complicated, and do not necessarily only involve economic or material factors. They are often social, cultural or political in nature.

Identifying the complexity of conflicts and exploring the underlying factors requires that economic or ecological investigations are complimented by social science studies. Such studies are crucial because the perceptions that local people have of conflicts can be even more important than the actual objective assessment of the material or economic component of the conflict.

Photo: Ketil Skogen

For the Todas in the Nilgiri hills the water buffalo is of great cultural importance, and some breeding lines are considered sacred. The Todas perceive that aforestation of their traditional grasslands has led to an increase in tiger and leopard populations which have begun to kill their buffalo. When a sacred buffalo is killed it is impossible to replace, such that its value to the Todas far exceeds its commercial value. The loss of their grassland habitat to forest plantations is also viewed as a major threat to their cultural heritage which is viewed as being intertwined with the landscape which they inhabit.

Photo: Ashok Captain



Leopards in Akole

Leopards were studied in the sugar cane growing areas around the town of Akole in central Maharashtra. The ecological part of the study focused on censusing the leopard population using both conventional camera trapping (automatic cameras placed on paths) and DNA profiling from their scats. Scats were also examined to study their diet. In addition, a few animals were equipped with GPS collars that tracked their movements. Local people were interviewed to assess both the level of conflicts they experienced with leopards and their perceptions of the leopard.

The study documented that leopards are able to live in a totally human-dominated landscape in the absence of natural habitats and prey. One female with young cubs even made regular use of the town's streets at night when hunting free-ranging pigs. Conflicts were restricted to depredation on dogs, goats and sheep, and pigs. No people had been killed in the study area for decades. People in the area had a general high acceptance for the leopards, and some cultural groups even worshipped the big cat deity, Waghoba. The fact that leopards are resident throughout the area and occur at high density implies that there is little point in continuing with the widespread reactive practice of translocating leopards following a complaint. Rather, management should focus on proactive conflict mitigation activities.

Lessons Learnt 3: Diverse Solutions

The main objective of conducting research on human – wildlife conflict is to identify potential ways to reduce or prevent conflicts for the better well being of both people and wildlife. Understanding the details, mechanisms, and nature of conflict is a prerequisite for finding effective solutions. Our research has pointed the way towards a diversity of potential solutions that range from the very simple, low-tech and local to the very complex and large scale.

Wolves in Norway

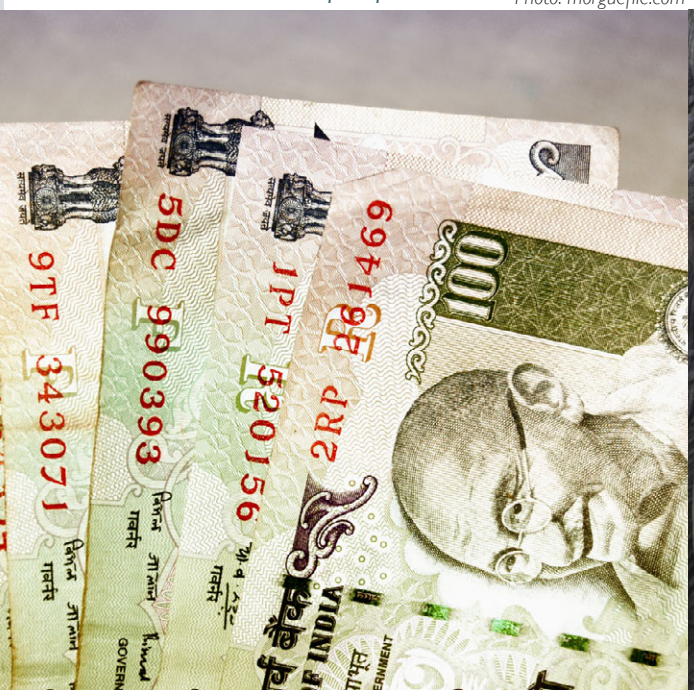
Wolves were exterminated in Norway in the mid 20th century, but naturally recolonised in the 1990's. Since their return there have been constant studies of their ecology using GPS-collars and DNA techniques and the observations by local people. Their return has been highly controversial and associated with major conflicts. The material conflicts are diverse and include depredation on free-ranging domestic sheep, depredation on valued hunting dogs, and a fear of competition with local hunters for wild game species such as moose. In addition, wolves have become symbols of a wide range of social conflicts between rural communities and the urban population. Finally, many rural people have expressed a great deal of fear for their personal safety following the return of the wolf.

In response to these extreme conflicts, the government has placed severe limits on the numbers and range of wolves which are maintained through intensive monitoring and lethal control. Somewhat paradoxically our research has shown that these measures, which were designed to limit conflicts, may have actually increased them instead. This is because a wide range of the public, including those both for and against wolves, feel that this level of management is removing the "wildness" and "naturalness" from the wolves. The main conclusion from our work so far is that wolf conflicts in Norway do not only concern the wolf itself or the reality of wolf recovery, rather they concern the idea of the wolf and all that its return symbolizes.

Photo: John Linnell

Compensation is widely used as a way to minimize the impact of conflicts on human livelihoods. However, across all our study sites there was a common complaint voiced by local people that existing procedures were too complex, too slow, too bureaucratic, or simply corrupt. Reform of the system is crucial if it is to serve its purpose and help reduce conflict impacts because at present the flawed system actually increases the level of conflict.

Photo: morguefile.com



In our elephant studies it appears that large scale landscape planning is needed, to prevent fragmentation of forest patches and to even restore connections between disjunct forests in order to reduce the interface between elephant habitats and people. Equipping some bull elephants with satellite location collars may also function to alert villagers to the seasonal approach of habitual crop-raiders.

Photo: John Linnell

Lessons Learnt 4: Wildlife does not recognize borders

Most of our research was conducted outside protected areas. We documented the existence of leopards, tigers, elephants and many antelope in such habitats. This poses many challenges for Indian wildlife conservation because almost the entire research platform, the legislation, and the attitudes of people is based around an equation where forest = wildlife = protected areas.

In many cases local people feel that wildlife in human-dominated landscapes is lost or "straying" and that it needs to be "helped" back to the forest. Our research indicates that many wildlife species live entirely in such human-dominated areas. There is therefore a need to develop new management frameworks (both legislative and philosophical) that accepts that wildlife exists outside protected areas. This requires a whole landscape approach to conservation that jointly considers both the protected areas and the human-dominated matrix in which they are embedded.

This is good news for wildlife as it means that there are many more areas where they can live than is often thought, but it also poses many challenges for managing conflicts. Despite the challenges, there is no other option, because it is impossible to adopt a sustainable policy that tries to return wild animals to natural areas which are already fully occupied.

Crop-raiding by blackbuck

Blackbuck antelope were studied around the Great Indian Bustard sanctuary in central Maharashtra. This very small protected area was designated to protect remnants of grasslands and its associated fauna, like wolf, blackbuck and bustards. The expanding blackbuck population has begun to raid crops in farmlands adjacent to the reserve.

The study consisted of surveying blackbuck movements by observing animals along transects and assessing levels of crop damage. It appeared that blackbuck were very shy of human disturbance and only raided crops close to the sanctuary's border or close to areas of cover. They also only raided crops that were palatable and increased their crop raiding activity in the dry season. Levels of crop damage were often lower than that perceived by the farmers, but in some cases could reach 50%. This implies that risky areas can be accurately identified and it should be possible to plan for the planting of unpalatable crops in these areas during the dry season.

Photo: John Linnell

Photo: Espen Lie Dahl

The landscape surrounding Akole is totally human dominated. There is no natural habitat and no wild prey bigger than a rat or a hare, with the entire area given over to sugar cane and crop production. There are almost 300 people per square kilometer. Despite this our studies documented a dense and reproducing population of leopards. In addition, there are striped hyena, jungle cats, rusty spotted cats, jackals, Indian foxes and civets.

Lessons Learnt 5: Multi-Scale Solutions

Our studies have shown the diversity of conflicts that occur between humans and wildlife – both in terms of the nature of the conflicts and the way that people perceive them. This implies that solutions also need to be diverse and adapted to local ecological, economic, social and cultural conditions. At the same time our results point out a need to adopt large scale (whole landscape and state or national scale) coordination of wildlife conservation activities that embrace both protected areas and the surrounding landscapes. The challenge is to maintain the need for local adaptation while keeping a large scale coordination.

The secret here lies in the goal of seeking "coordination", rather than "standardization". One size does not fit all. Rather many different local efforts need to join together to achieve large scale goals. Achieving such coordination requires a combination of central planning of main objectives and a delegation of details. A central component is also to achieve effective dialogue with local people to give them ownership and knowledge of the situation and ensure that their views are respected and communicated to more centralized decision making processes. The conservation adage, "think global, act local" has never been truer.

Elephants in Orissa

Orissa is a crucial state for elephant conservation, being home to over 1700 elephants. Data on elephant human conflicts were collected from the various Forest Department divisions. An average of 50 people were killed, 400 houses damaged and 3000 ha of crop was damaged each year. It appears that most conflicts were occurring in the areas where forest was heavily fragmented and where mining activity was it greatest.

Photo: Nature Conservation Foundation

Traditionally forest department staff have been mainly involved in policing activities in connection with protected areas. When dealing with wildlife in human-dominated landscapes there is a need to adopt a far greater focus on communication, dialogue and outreach towards local people as well as a focus on proactive conflict mitigation measures.

Photo: John Linnell

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