CHAPTER 6

CONSERVATION OF LEOPARDS IN HUMAN-DOMINATED LANDSCAPES IN INDIA

Leopard cubs founds in a sugarcane field in Karnataka and released back (Photo credit. S.R.Madhusudan photojournalist).
6.1 THE PRESENCE OF LEOPARDS OUTSIDE FORESTS
This research has found that a fairly high density of resident leopards and other wild carnivores occur in a highly populated rural Indian landscape. Such a situation is in contrast to the dominant perception among scientists, conservationists, managers, media and public that the leopards found in human-use landscapes are straying animals that have wandered out of forests. The perception of ‘straying’ animals is probably an urban construct because the rural people that were interviewed as part of the study were aware that leopards have been present in their landscape for at least a few decades. State forest department records indicate that leopards are present in all the sugarcane growing valleys of western Maharashtra. Even the rusty spotted cat which is found only in India and Sri Lanka was not uncommon in the study area, probably due to the high abundance of rodents in the farmlands. Furthermore the research findings tests the limits of our knowledge on the adaptability of wild carnivores in landscapes with high human densities where wild ungulate prey are absent.

The persistence of large carnivore populations in human-dominated landscapes with high abundance of livestock and other domestic animals is probably aided by the tolerance of the local people and the strict protectionist wildlife laws of India. Although no previous studies have looked into leopard ecology in human-use landscapes, there is ample evidence from natural history notes and British gazetteers that mention the presence of leopards in and around villages. Recent information from other studies across the world indicates that the usage of human-use areas by carnivores is not a unique phenomenon. In western countries, wild carnivores do reside in urban areas, including previous icons of pristine wilderness such as mountain lions and coyotes. In fact, population densities of urban black bears and foxes, are seen to be much higher than that of their forest counterparts because of the abundance of human associated food resources, such as garbage, pet food etc. Leopards residing in human-use areas are not an exception and there is evidence that even other large carnivores such as wolves, Asiatic lions and hyenas use human-dominated landscapes in India. There is an urgent need to focus on research and management outside protected
areas in India because it is in these areas that the potential for conflict is extremely high. Applying research recommendations and management measures that are based on information from wilderness areas to human-dominated systems are unlikely to factor in all the complexities of the issue. The importance of science-based management for dealing with potentially dangerous wildlife species that share spaces with humans outside protected areas can only be underscored.

6.2 WHAT IS CONFLICT

This study finds high density of leopards sharing the same space with high density of humans in a human-dominated landscape. Not a single human fatality due to leopard attacks was recorded in the area during the study period and the locals could not remember a time either when a fatal attack had occurred. Even attacks on livestock were relatively low despite a high density of leopards, humans and livestock. As with many other studies, more livestock die of other causes than leopard predation.

It is often presumed that forests have a much higher carrying capacity than human-use areas which also contributes to the commonly heard refrain that leopards are in human-use areas because of wild prey depletion in the forests. However, most human-use areas have very high density of livestock and domestic animals, making them extremely prey rich for wild carnivores. This study provides evidence of the extremely high prey biomass present in a human-dominated landscape with only the biomass of owned dogs and cats sufficient to sustain the observed leopard population density.

Carnivore population density is known to be related to available prey biomass and despite very high livestock biomass at the study site, due to effective protection by the farmers, livestock depredation was very low. More goats died due to illness and other reasons than to leopard predation whereas the major cause of owned dog mortality was due to leopard predation. All night time
livestock attacks occurred outside the houses and despite a potentially volatile conflict situation, attacks on people are very few, deaths none.

The term conflict is currently used in a variety of contexts, although it should signify only the most negative end of the human-wildlife interactions. Conflict implies aggression and this study finds that both humans and leopards are sharing the land in a manner that is more peaceful than aggressive. It is proposed that the term conflict be used very cautiously. Rather than it denoting all types of human-large cat interactions, the term should be restricted to situations when large cats and humans are overtly aggressive to each other, that is, attacks by people on large cats and vice versa. Most ecological studies on conflict implicitly assume that livestock attacks by large cats is the ‘fault’ of the predator thereby putting the onus of the problem on the large cat species. However studies point out that effective protection is the most important factor for reducing losses. Livestock losses, like other losses due to diseases, rabid dog bites, snake bites, electrocution are natural losses and should not be termed as conflict and can lead to a negative connotation that puts the ‘blame’ of the depredation on the large cat.

The lack of understanding of the spectrum of interactions between large cats and humans has lead to an unhealthy focus on the most negative aspect of the relationship. Therefore the interventions are also extreme and mainly aimed at removing large cats from areas where we believe they should not be present. Studying human - large cat interactions in cultures that accept their presence is likely to provide us better information on how to decrease problems for both humans and large cats in all contexts.

6.3 HUMAN ATTACKS AND ITS PRECURSORS

Leopards have attacked a large number of humans in many parts of India. Nevertheless, no human fatalities occurred at our study site despite a very high human density and a relatively high leopard density. A comparison with the nearby area of Junnar where large number of human deaths occurred in a similar landscape finds that the biologically inappropriate intervention of a large scale
translocation programme was related to an increase in leopard attacks on humans. What makes a large cat which usually flees from humans overcome its fear and attack a person? Very few studies try to address the reasons that triggered the attack. Most studies provide patterns of attacks which are not by themselves enough to understand what made the wild carnivore, otherwise very shy of humans, attack humans with an intent to kill. In the case of tigers in the Russian Far East, all attacks on humans were due to intentional or unintentional provocation by the person and most of the attacks were during the hunting season when large numbers of hunters are present in the forests.

In all the studies detailing predatory attacks on humans, a change in the behaviour was noticed where the species (Asiatic lions, African lions, Amur tigers, leopards) overcame their innate fear of humans and exhibited aggression that was not noted before, for example, lions entering into houses and compounds and carrying away the people. Aggression is closely related to stress and the neurological pathways involved in aggression are seen to be very similar among different vertebrate species. Not only do the neurological circuits for stress and aggression overlap but aggression towards an individual induces a stress response that can produce violent behaviour. The different types of aggression noted in non-human vertebrates are anti-predator, fear-induced, predatory, shock-induced, territorial, inter-male, maternal and sex-related and the first four are applicable to large cats in stressful interactions with humans.

In the case of the Asiatic lions, man-eating was first reported in 1988 (with a few instances reported in 1904 but none between), which coincide with 57 translocations of lions from human-dominated areas outside to areas inside of the Park. The pattern closely resembles Junnar, and in both cases a similar biologically inappropriate intervention was carried out. In Chapter 5 the reasons why capture might induce stress in the leopards has been discussed. In Tanzania, the largest number of human deaths in the croplands adjoining Selous Game reserve coincided with the highest recorded off-take of lions within the reserve. Trophy hunting in mountain lions was seen to result in increased conflict
compared to a lightly hunted population. In India, leopard attacks on humans have been reported during the last 100 years since the time of the hunter Corbett in the state of Uttarakhand where large numbers of leopards are killed legally and illegally and yet humans are still killed by leopards.

In all the sites where large number of attacks on humans by large cats are reported across the world, the one thing in common is the high levels of intervention, be it killing or translocation and usually, a relatively high density of humans using the same space. At Akole, the current study site, interventions are minimal and high densities of leopards and humans coexist without much damage to each other despite an enormous potential for conflict. Whether this theory is true can be tested by halting all interventions in an affected area and assessing the levels of conflict.

6.4 MANAGEMENT OF LEOPARDS IN INDIA

The results of this thesis demonstrates that different species of wild carnivores occur in high densities in human-dominated areas in India. We as a society, especially the urban populace from where policy makers originate, need to accept that wild animals will not respect man-made boundaries and therefore mitigation measures have to take into account this crucial aspect. More importantly, any direct intervention with potentially dangerous wild animals, such as leopards, either in the form of trapping, killing, sterilisation has to be very carefully planned because of the high interface between humans and large cats in India. An inappropriate intervention could directly affect human welfare.

The only two management interventions used in India today to deal with leopard presence in human-dominated areas are the trapping of leopards and payment of compensation for loss of livestock and human life. Both are reactive methods carried out once the conflict has occurred and neither solves conflict. The removal of animals to forested areas is not effective because other individuals colonise the resource rich areas and also because translocated individuals may return to the site of capture. Removals also increases attacks on people and compensation
might not increase tolerance like it is expected to. It also has to be noted that the trapping of a schedule I species like the leopard, requires a written letter of permission to the field forest officer from the Chief Wildlife Warden and violations are in contravention to Section 11 of the Wildlife Protection Act, and therefore illegal. Thus it is recommended that leopards trapping should be used with caution and that other proactive methods, such as increasing awareness among people should be focused upon by the forest department.

This study finds that the probability of a farmer wanting the leopard removed from his area increases if he has faced a livestock loss in the past. This is despite the presence of the compensation system. Large amounts of money are spent on compensation from state funds and this amount will always increase. The results of this study also show that protection is effective in reducing losses and therefore it is recommended that the states move away from the compensation system to a proactive method of assisting the people in better protection of livestock, by providing better designs and maybe explore the option of providing subsidies for goat sheds. This will lead to fewer livestock deaths due to predators, is a long term measure and will also create goodwill towards the forest department.

This study contributed to an increased understanding of leopard ecology in a human-dominated area. The acceptance of science based management inputs from this study by the Maharashtra State Forest Department as well as the Ministry of Environment and Forests in their Guidelines on human leopard conflict underscores the need for science based management in India.