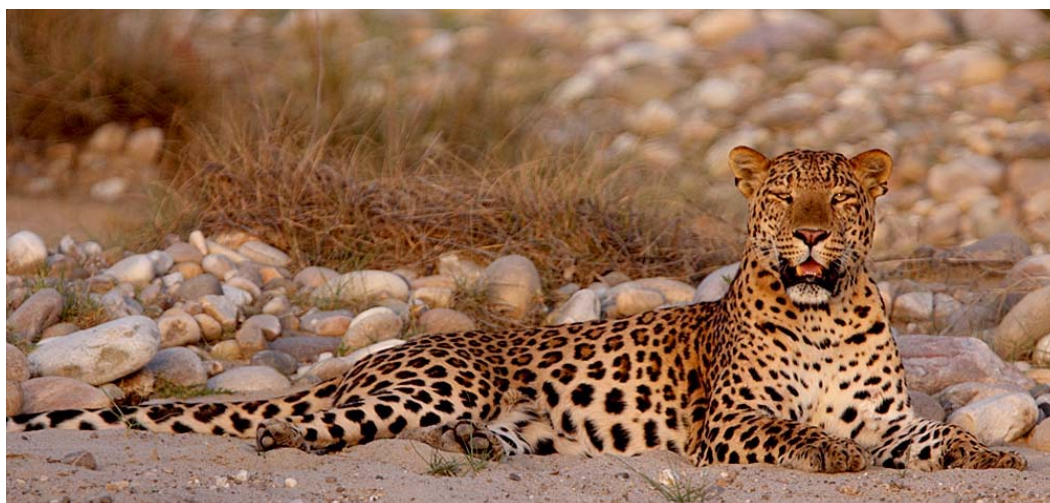


**Final Report  
(2004-2008)**

**Comparative study of man-leopard conflict and socio-economic impacts on rural community in Mandi and Hamirpur districts, Himachal Pradesh.**

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## **Project Objectives**

- i. To prepare land cover and landuse pattern maps and determine areas suitable to leopard using Geographical Information System.
- ii. To study distribution and relative abundance of leopard in relation to habitat characteristics (terrain and vegetation).
- iii. To assess impacts of biotic pressures on leopard habitat.
- iv. To study nature and extent of man-leopard conflict problems in relation to land use pattern.
- v. To study food habits in relation to prey species (wild and domestic) availability.
- vi. To study the socio-economic impacts of leopard menace on rural community.
- vii. To make comparison of man-leopard conflict problem of Mandi and Hamirpur districts with that of Pauri Garhwal.
- viii. To suggest measures to minimize/contain man-leopard conflict in Mandi and Hamirpur districts.
- ix. To develop education awareness package for people living in the vicinity of man-leopard conflict areas.

## **Recommendations**

Based on the records of the forest department, survey of affected areas and interview with the local people in Mandi and Hamirpur districts, the following general recommendations are made to minimize human-leopard conflict.

### **Short Term**

1. For mitigation of human-leopard conflict under given socio-economic and political framework, one of the ways is to minimize the ill effects of socio economic constraints and socio-ecological constraints in these areas. Human casualties and livestock killings are the socio-ecological constraint identified. To minimize their ill effects on people, education and awareness programmes related to ecology and behaviour of leopard, genesis of leopard menace, possible mitigation strategies need to be conducted for the villagers in these areas.

2. In Mandi and Hamirpur districts, forests were patchy and fragmented, and shrubs like *Lantana camera*, *Parthenium hystenophorus*, *Rubus biflorus*, *Eupatorium edinoforum* and *Colebrookia oppositifolia* were growing in abundance. These shrub species were found to provide hiding places and ambush cover for leopard.
3. In Mandi and Hamirpur districts, the forests were patchy and fragmented, and different shrub species were growing in abundance near around villages. Leopard increasingly used the shrub cover for hiding and attacking on people. Furthermore villages were scattered but most of them were located in the close vicinity of forests.
4. In Mandi, leopard attacks were significantly less as compared to other leopard menace areas. This might be due to strategic locations of villages and movement of people in hilly terrain. The villages were scattered all over in the hills but quite isolated and distantly located from forest areas. The forests were patchy but dense in some pockets. Near around villages, occurrence of shrub species which were found to provide hiding ground and ambush cover for leopard were absent or in scanty.
5. There is also opinion that the natural prey base in the forests around is adequate enough to support existing population of leopard in Mandi. On the contrary, there is also a view point that leopard population in Mandi is thin as compared to Hamirpur. Because of these reasons, human casualties are less.

### **Medium Term**

6. Within short time i.e. one or two visits it was not possible to scientifically establish the reasons for less human casualties here in Mandi. We recommend a detailed study on ecology including habitat use, movement and activity pattern and dietary pattern of leopard, and human-leopard conflict and mitigation for developing conservation and management plan for leopard.

### **Long term**

7. Leopard attacks on young boys and girls can be contained if they move in groups or accompanied by some elderly people. Most of the casualties have occurred when

children were alone or not accompanied by elders. A few cases of human injury were reported when leopard attacked on 2-3 young people moving together.

8. Children and women are more vulnerable to leopard attacks, so they should move in group and children going to their school can be accompanied by some elders. They should always move on regular paths, passing through open areas without bushes and shrubs.
9. Also when women go in forest area for collection of fodder or fuel wood, they should always move in a group. They should prefer moving to forest area avoiding peak activity time of leopard and return early in the evening.
10. Till people are awake in the late evening or night hours, they must light their houses. Though dogs are the delicacy of leopard, villagers must keep dogs in their houses. In the late evening and night time, dogs can be kept inside rooms or safe pet house. This will greatly help in keeping leopard away and attacks can be minimised.
11. In villages, people often go outside in open areas or near bushes or margins of forests for toilet in the late evening or morning time. This time coincides with the peak activity time of leopard. Such people become more vulnerable to leopard attacks. It is suggested that people should have some toilet facility in any form in their village houses or they should move out in a group of 2 to 3 people and use open areas away from bushes and forests.
12. The villagers must regularly remove all bushes or shrubs from the vicinity of houses and village area in a cooperative manner. Such vegetation clearance will increase visibility and keep the nuisance leopard away from their houses.
13. The villagers should be very vigilant and alert in early morning and late evenings when leopards are active. They should complete outside activities such as social visit, fetching water from streams or river, grazing cattle, collection of household items etc. during day time only.

14. When the livestock are taken in and around forests or pastures or near around crop fields in hilly areas, they should be attended by graziers. Any type of bell or sound producing device should be put around the neck of the cattle. When the cattle realize the danger or presence of leopard, it will try to escape or run and produce alarm sound for not only other cattle but also indicate to the graziers. This way, incidences of cattle killing by leopard can be contained.
15. The cattle shed in village houses should be constructed leopard-proof using wooden material and/or concrete structure, and should be lighted. The pet dogs kept in houses can also alarm the presence of predator in the vicinity of houses.

### **Long Term**

16. The land use patterns in the hilly areas are changing constantly. Under such circumstances, some ameliorative action is required. Problem mitigation efforts should be made by way of protection and improvement of natural habitat of wild animals. In the fragmented and degraded forest areas, habitat improvement through protection and reduction of biotic pressures need to be carried out to sustain wild animal populations. Local people should help and cooperate in protection of forests and wild animals therein, which will help increase in prey base in the wild for leopard. They should also protect forests from fire, and any outbreak of forest fire should be immediately informed to the forest department.

### **Policy Recommendations**

17. The scheme for payment of compensation for human casualties and livestock killings by leopard exists. The payment of compensation for menace is sometimes delayed due to completion of procedural requirement or untimely action. The payment cases need to be considered on priority and settled promptly by simplifying the verification procedure.

18. To avoid attacks on human beings by leopard in the hilly region, problematic nuisance leopard are captured by setting traps with live bait or killed when they become serious threat to the human life.

### **Medium Term**

19. We also recommend a detailed study on habitat use, movement and activity pattern and feeding ecology of leopard and mitigation of human-leopard conflict in Mandi and Hamirpur districts for developing conservation and management plan for leopard.

20. For conducting systematic research study on leopard menace, we should take into account people's feelings, perceptions and attitudes towards the menace, and involve them. It would help in confidence building and creation of awareness among the rural community.

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