

Human-leopard conflict in Mandi district, Himachal Pradesh, India

Kumar, D., Chauhan, N.P.S.

Wildlife Institute of India, P.O. Box 18, Chandrabani, Dehradun 248001, India, dev@wii.gov.in

DOI: 10.5073/jka.2011.432.098

Abstract

We studied the nature and extent of human-leopard conflict and circumstances of attacks in Mandi district during 1987 to 2007. There were 162 human casualties in Mandi district by leopards, out of which 37 casualties were in Mandi forest division (FD), 71 in Sundernagar FD, 34 in Jogindernagar FD, 10 in each Nachan FD and Karsog FD. Maximum cases occurred in the vicinity of villages (36%), followed by in crop field (19%) and grassland (14%). During 1992, 1993, 1998, 2001 and 2002, number of human casualties were 11, 12, 13, 12 and 22 respectively. Maximum human casualties occurred in November (n=21), followed by 18 casualties in January, 16 in October and 15 in July. Attacks on males were higher (n=99) than on females (n=53). Out of 162 cases, 13 persons were killed and 149 were injured. A maximum of 91 (56%) casualties occurred between 16:01-22:00 hours and 37 (23%), 22 (14%) and 12 (7%) cases occurred each during the morning (04:01-10:00), daytime (10:01-16:01) and night (22:01-04:00). Compensation for human casualties was paid for 68% cases within 3 month of occurrence of incidence and 27% cases within 3-6 months. Livestock killings were 8,905 in 4,967 attacks. Recommendations have been made to reduce the human casualties and livestock depredation by leopards in the Mandi district.

Keywords: human killing, injuries, Leopard, livestock killings, recommendation

Introduction

The leopard (*Panthera pardus*) is the most widely distributed of all the world's large cats (Bailey, 1993). Leopards are adapted to live well in savannah, rain forest, mountain elevation, dense vegetation, low scrub and thickets and even quite close to human habitation (Bailey, 1993). Leopards are widely distributed in India. But due to expansion of human influence and ever-increasing pressure on natural resources has greatly intensified the issue of human-leopard conflict in a wide variety of situations. Carnivore-human conflict is a worldwide problem for the wildlife management (Chauhan and Rajpurohit, 1996; Karanth and Madhusudan, 2002; Chauhan et al., 2002; Treves and Karanth, 2003). Carnivores are involved in a wide range of conflicts including predation on human and livestock and carnivore mortality by people (Chakrabarti, 1992; Chellum and Johnsingh, 1993). The problem of human-leopard conflict has recently increased in the Indian Himalayan region due to changes in land use patterns (Chauhan et al., 2002; Singh et al., 2008).

Methods

We examined casualties and predation activity throughout Mandi district by the common leopard (*Panthera pardus*) on humans and a variety of livestock types using data gathered over the last twenty years (1988-2007) from a compensation scheme for human casualties and livestock losses. Field data were collected using a combination of qualitative methods (unstructured interviews, participatory observation and focus group discussions) and quantitative methods (structured interviews). Information on human casualties, age and sex of victims, activity of victims, place of casualty, seasonal variation, mode of attack and nature of injuries etc. was collected in pre-designed questionnaire formats. This study aimed to investigate the nature and extent of injuries and deaths of humans and livestock kills by leopard and leopard deaths by human beings, spatial and temporal patterns of conflict between humans and the leopard, financial losses caused by leopard and local perceptions and tolerance towards the leopard and its conservation.

Result and discussion

Human casualties: A total of 162 human casualties by leopards were reported in all five forest divisions of Mandi district during 1988-2007. The highest number of attacks by leopards was 71 with 2 killing and 69 injuries in the Sundernagar forest division followed by Mandi forest division with 37 attacks comprising 2 killing and 35 injuries, Jogindernagar forest division with 34 attacks comprising 8 killings (highest recorded) and 26 injuries. Karsog and Nachan forest divisions had 10 attacks each - all 10 were

injuries in Karsog and there was 1 killing and 9 injuries in Nachan. The total number of casualties showed an increasing trend over these years. The number of male casualties (n=99) was higher than the female casualties (n=63). Out of the total of 162 cases, 13 people were killed and 149 people were injured. Among 13 killings, 6 were male and 7 were female. Whereas, of the 149 injuries, 93 were male and 56 were female. The highest number of human casualties (n=22), including 1 killed and 21 injured occurred in 2002, followed by 13 human casualties which (all injured) in 1998. Leopard attacks on human vary across the season as 38.9%, 30.2% and 30.9% cases were reported during winter, monsoon and summer season, respectively. A maximum number of 28 (17.2%) casualties occurred in the age group of 25-30 years, followed by 23 (14.2%) casualties in the age group of 40-48 years. A maximum of 91 (56%) casualties occurred during the evening (16:01-22:00 hours). There were 37 (23%), 22 (14%) and 12 (7%) cases occurred each during morning (04:01-10:00), daytime (10:01-16:01) and night (22:01-04:00) hours. A total of 36% of human casualties by leopard were reported in villages followed by crop field (19%), grassland (14%) and other places like nallah/ravine, school playground etc. (12%). 10% human casualties were reported from forest and a lowest of 9% from cowsheds.

Livestock killings: A total 4,967 attacks and 8,905 killings of livestock by leopards were reported in five different forest divisions of Mandi district during 1987-2007. The maximum attacks were 2,222 with 3710 livestock killed in Sundernagar forest division followed by Jogindernagar forest division with 17,02 attacks and 2,545 killed. The lowest number of attacks was 224 in which 683 livestock got killed in Karsog forest division. Livestock killing showed much variation over the years; it showed increasing pattern from 1987 onwards and reached a maximum in 1991 and then declined to a minimum in 2007. Goats, sheep and cows suffered maximum killings, i.e. 3,043, 2,598 and 1,677, respectively, followed by ox and buffalo with 855 and 328, while 182 calves, 165 horse/mule with and 57 donkey/mares also were killed. Out of the total 8,905 numbers, most number of killings i.e. 8,723 were adults while only 182 were young. Out of the total 4,967 cases, 83% occurred in the cowshed followed by forest, village and grassland, and crop field and other (nallah/ravine etc.) with 5%, 4% each and 2% each, respectively. A maximum of 74% of casualties occurred in night time (22:01-04:00 hours) followed by 15% in the afternoon/evening (16:01-22:00 hours). Some 8% and 3% of cases occurred during the daytime (10:01-16:01) and morning (04:01-10:00) hours. We propose the following management recommendations 1. Community awareness programs, 2. Introduction of prey species in forest, 3. Establishment of insurance scheme in the targeted villages, 4. Regulated livestock grazing, 5. To avoid leopard attacks, clearing of bushes at village fringes, 6. Restricting activities especially in morning, evening and night time, 7. To scare away leopard, lighting or fire or light in nights. 8. Habitat management, 9. Artificial and natural barriers, 10. Confirmed man-eaters should be captured and kept in zoos or killed.

References

- Bailey TN 1993 *The African Leopard: ecology and behaviour of solitary felid*. Columbia University Press, New York, USA
- Chakrabarti K 1992 *Man-eating tigers* Darbari prokashan, Calcutta.
- Chellum R, Johnsingh AJT 1993 Management of Asiatic lions in the Gir forest, India. In: Dunatone N, Gorman ML (eds.) *Mammals as predators*. p. 409-424, The proceedings of a symposium held by the Zoological Society of London, 22nd and 23rd November 1991, Clarendon press, Oxford.
- Chauhan NPS, Kavita A., Kamboj N 2002 *Leopard-human conflicts in Pauri, Thailisen, Chamoli and Pithoragarh - A Report*. Wildlife Institute of India, Dehradun
- Chauhan NPS, Rajpurohit KS 1996 Survey of animal damage problem in and around protected areas and managed forests: Phase-1 Madhya Pradesh, Bihar and Orissa. A report, Wildlife Institute of India, Dehradun
- Karanth KU, Madhusudan MD 2002 Mitigating human-wildlife conflicts in southern Asia. In: Terborgh JW, Van Schaik CP, Davenport L, Rao M (eds.) *Making parks work: strategies for preserving tropical nature*. p. 250-264, Island Press, Washington, DC
- Singh U, Singh R, Satyanarayan K, Seshamani G 2008 Conservation and science: Human-leopard conflict study in Jammu and Kashmir, India, to bridge the gap between community and wildlife. Annual meeting of the International Congress for Conservation Biology, Convention Center, Chattanooga, Tamil Nadu
- Treves A, Karanth U 2003 Human-carnivore conflict and perspectives on carnivore management worldwide. *Conservation Biology* 17: 1491-1499