

## LEOPARD DEPREDAATION PROBLEM IN CHAMOLI GARHWAL

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### Introduction

The most volatile problem being faced by the Protected Area manager these days is the direct man-animal interface resulting in loss of human life and property. Such problems because of their nature require immediate sincere attention of the PA manager, any shortfall in which results in matters getting flared up to uncontrollable proportions.

Throughout the lower and middle Himalayas the Common Leopard (*Panthera pardus*) is a major predator responsible for man-animal interface conflicts. The Uttar Pradesh Himalayas are no exception and in this paper the author has made an endeavour to present the Leopard depredation problems and possible solution in Chamoli District of Garhwal in U.P. Himalayas.

### Study Area

Chamoli (Garhwal) is one of the three districts of U.P. forming border with China (Tibet). The district is situated between 78° 55' E and 80° 5' E longitude and 29° 55' and 31° 5' N latitude. It spreads over an area of 9125 km<sup>2</sup> and is the largest district of U.P. The altitude of the district varies from c. 600 m to 7816 m (Nanda Devi peak). The rainfall is also very varied from over 300 cm to less than 50 cm. Based on the satellite imagery the area under forest is 35% of the

total area of the district out of which two thirds of the area is under closed forests (more than 40% crown density).

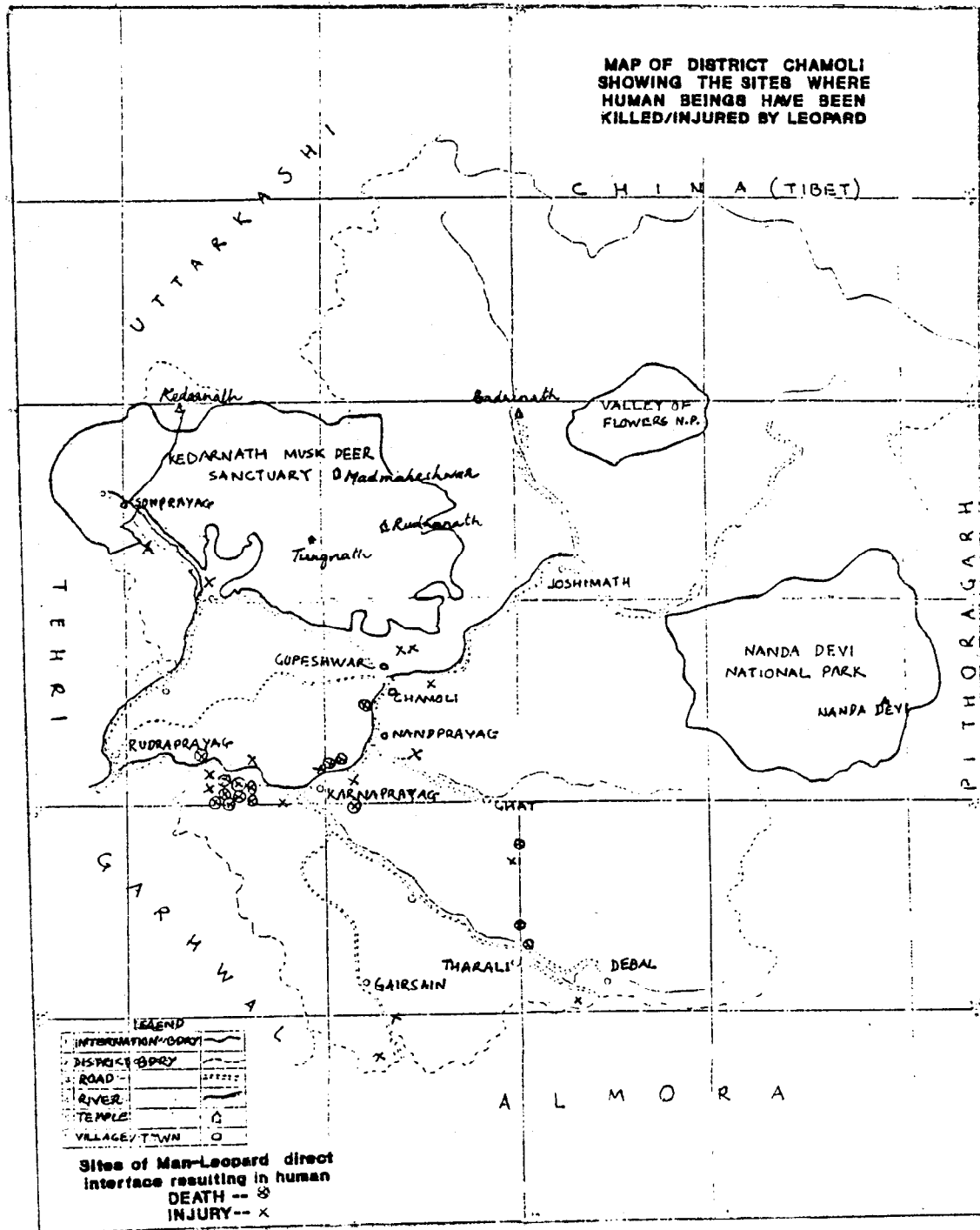
The entire area of the district forms the Alaknanda catchment. The important subcatchments are Mandakini, Pinder, Nandakini, Birahi and Dhauliganga and all these rivers drain into Alaknanda. The lower catchments of Alaknanda, Mandakini, Pinder, Nandakini and Birahi are densely inhabited. The heavy biotic pressures in these areas has resulted in loss of forest cover in the lower valleys except for the very steep areas. These areas are covered with villages interspersed with scrub forests which at places is thick and impenetrable. The middle catchments of these rivers are covered with thick temperate forests of broad leaves and conifers with fewer villages. The upper catchments lie in the alpine or trans-Himalayan zone devoid of tree vegetation. The Common Leopard inhabits only the lower and middle catchments of these rivers and hence these areas form the study area for the present study.

Three Protected Areas lie in Chamoli District. The Nanda Devi National Park extends to an area of 630 km<sup>2</sup> and forms the catchment of Rishi Ganga river. It is one of the highest basins of the world and is surrounded by peaks many of which exceed an altitude of 7000 m, the most prominent being Nanda Devi (7816 m). Very few villages are located close to this National

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Fig. 1



Park on its North-Western corner. The Valley of Flowers National Park covers an area of 87.5 km<sup>2</sup> forming the upper catchment of Pushpawati river. The entire area exceeds the altitude of 3000 m. Only one summer village is located close to the boundary of the park. The Kedarnath Sanctuary is the largest protected area of the district covering an area of 957 km<sup>2</sup>. An area of high rainfall and dense forests, it is divided into parallel valleys draining into Mandakini and Alaknanda river. About 180 villages are located inside or within 5 km from the boundary of the Sanctuary.

### Methods

Data on the Leopard depredation problem was collected from the Divisional office of Nanda Devi National Park Division and office of the Wildlife Warden, Kedarnath Sanctuary. Data for cases of human beings killed or injured by Leopard was available for the entire district. For cases of cattle killed by Leopard data was available only for areas within or upto 5 km from the boundary of the Protected Areas viz. Nanda Devi National Park, Valley of Flowers National Park and Kedarnath Sanctuary. For other areas very little data is available on cattle lifting as such cases are normally not reported for compensation is not admissible for them.

The data was then analysed to see which areas are more susceptible to Leopard depredation, probable reason behind it and possible solutions.

### Results

The data on the human beings killed/injured by Leopards from the year 1990-91 to 1993-94 in different areas of Chamoli District (classified according to their

distance from the Protected Areas) is presented in Table 1.

Out of the 33 cases, 16 have resulted in the death of the individual and 17 in injury. All the death cases have occurred in areas out of the impact zone of the Protected Areas. Majority of the cases (11 in number) where human beings have been injured have again occurred outside the impact zone of Protected Areas. Impact zone is defined as the area within or upto 5 km from the boundary of the Protected area. As is evident from the map most of the cases have occurred in the densely populated belt along the major highways.

Nineteen of the dead/injured were adults, whereas 14 were children.

Table 2 shows the number of cattle killed by Leopard inside or upto 5 km from the boundary of different Protected Areas. The data for other areas is not available as cases occurring there do not qualify for compensation.

### Discussion

*Possible reasons behind the conflict* : The Leopard-Man interface conflict is not new to the hill regions of Uttar Pradesh. Corbett's writings describe a number of man-eating Leopards in the early part of this century with the most legendary being the man-eating Leopard of Rudraprayag in present day Chamoli District. Even today the Rudraprayag and nearby areas are most badly affected by the problem of man-eating Leopards.

One of the prime possible reasons behind the direct Man-Leopard interface conflict in the region is decline in natural prey base. The densely populated areas of

Chamoli which are most heavily plagued by the problem have very poor wild herbivore population owing to almost total lack of good forest cover. In the name of vegetation only scrub jungle particularly along ravines exists which provides good cover for Leopard but no forage for wild herbivores like Barking Deer and Sambar - the natural herbivores of the zone. The heavy competition from innumerable unproductive cattle also makes

existence very difficult for whatever small populations of herbivores that exists in the area. Lack of natural prey coupled with the easy availability of domestic livestock forces the Leopard to go for the livestock as is evident from the high number of cattle killed in small area of the district (Table 2). While going after the livestock and stray dogs and Leopards often roam around the villages and with almost stoppage of hunting

Table 1

*Leopard-Man Interface Conflict Chamoli, U.P.*

## Human beings killed/injured by Leopard

Year Area	90-91			91-92			92-93			93-94*		
	Dead			Injured			Dead			Injured		
	Ad	Ch	Tot.	Ad	Ch	Tot.	Ad	Ch	Tot.	Ad	Ch	Tot.
Inside or upto 5 km from KDMS	-	-	-	1	-	1	-	-	-	2	-	2
Inside or upto 5 km from NDNP	-	-	-	-	-	-	-	-	-	-	-	-
Other areas	1	-	1	-	-	-	1	2	3	3	2	5
Total	1	-	1	1	-	1	1	2	3	5	2	7

\*Incomplete data; Ad - Adult; Ch - Child; Tot - Total.

NDNP - Nanda Devi National Park

KDMS - Kedarnath Musk Deer Sanctuary

Table 2

*Cattle killed by Leopard (in 1990-93)*  
(upto 5 km from the boundary of P.A.)

Name of PA (Area)	No. of cattle killed (No. of cases)		
	1990-91	1991-92	1992-93
Nanda Devi National Park 630 km <sup>2</sup>	64 (46)	45 (38)	2 (2)
Kedarnath Musk Deer Sanctuary 957 km <sup>2</sup>	258 (179)	42 (23)	89 (38)

it has lost the fear for man. However still the cases of Leopard killing or injuring a man largely take place due to sudden encounters. Established man eaters are still rare.

The attitudinal change in the masses often hampers the follow-up by the Department when an injury or death case occurs. When Jim Corbett was trying to track down the Man-eating Leopard of Rudraprayag he was almost worshipped by the villagers wherever he went although the Leopard had claimed nearly 100 lives till his arrival on the scene. But today even after a single case the Forest Staff visiting the site is often abused by the villagers making their work difficult.

Delay in awarding compensation or ex-gratia relief also annoys the affected villager(s). The delay occurs primarily due to two reasons. Firstly the procedure involves furnishing an heir certificate by the claimant which the district administration issues. Post mortem report is also required. The other reason is lack of funds in the requisite accounts head.

#### **Present Strategy to mitigate the problem**

*Short term* : The present strategy to mitigate the problem is to provide compensation or ex-gratia relief as the case may be. In case of man-eating, once it is established that the animal is a man-eater and it is identified (mainly through the area of activity and partially by pug marks) it is declared man-eater by the Chief Wildlife Warden and efforts are made to trap/kill it. The declaration of a Leopard as a man-eater as well as its trapping/killing often take considerable time.

*Long term* : No long term strategy to mitigate the problem exists right now.

#### **Proposed changes in the strategy**

*Increase in compensation and budget* : The present rates of ex-gratia relief in U.P. are Rs. 10,000/- for the death of adults and Rs. 5,000/- for children. In case of injury the relief is Rs. 1,000/- and in permanent handicapped for Rs. 3,000/-. The compensation for cattle killed is Rs. 500/- and for improved breed Rs. 750/-.

The rate of ex-gratia relief and compensation is not adequate. The ex-gratia relief is less than what is provided in case of rail/road accident. There is an immediate need to increase the relief. In any case the total number of death cases in the entire State due to Wild predators is not much as compared to other reasons (less than 100 per year). The increase in the relief should be coupled with the increase in funds in the relevant budgetary head.

*Immediate removal of problem animals* : The first and foremost step in this is the declaration of the problem animal as man-eater by the Chief Wildlife Warden. For this the Field Officer has to apprise the CWLW of the happenings in a proper and convincing manner.

Often the Department does not have proper equipment and marksmen for eliminating the man-eating Leopards. Ever since the enactment of Wildlife Protection Act more than two decades ago hunting has come to an end and with that the breed of excellent marksmen also vanished. Today it is very difficult to get a person who can go man-eater hunting. There is a need to train at least one person from every Forest and

Wildlife Division in this regard. A small capsule of such kind can be included in the Diploma Course in Wildlife Management at Wildlife Institute of India, Dehra Dun and necessary help can be taken from Indian Military Academy, Dehra Dun or the State Police.

Trap cages have rendered good services in the recent past in Chamoli in trapping problem Leopards. But there is always a shortage of such traps as problem Leopards are active in many parts of the district at a given time particularly in winters. Moreover once the cage is placed somewhere, the villagers do not let the Department take it back until a Leopard is caught even if it takes a few months.

The two chambered cage is particularly useful and it has an added advantage that the baited animal is not killed. But there is a problem in transporting the Leopard as during transit the Leopard tries to bite or claw the cage resulting in serious injury to itself. The Zoo nearest to Chamoli in U.P. is Lucknow Zoo and it takes two days of road travel to reach there. The Leopards sometimes injure themselves so much during the long transit that they succumb to their injuries after reaching the destination. There is a need to develop good cages for the transit of the Leopards in

which they can not injure themselves so much.

And above all the design and fabrication of cages and also procurement of good guns/rifles and ammunition requires funds, the shortage of which often plagues the working of the Department.

For a long term solution to the problem there is an urgent need of research. Often the idea of reducing the population of Leopards by shooting them down is mooted. But before such a step is taken one needs to assess the population of Leopard and study its behaviour. Surprisingly enough an animal as extensively distributed as Leopard, is one of the least studied large mammals. We do not even have fairly reliable methods of estimating Leopard population in the hills and even crude estimates do not exist.

In order to spread the wildlife conservation movement to the masses it is important that Leopard-Man interface conflicts are brought down considerably. It is high time that premier research institutions take up research in this field which would greatly help the managers device long term strategies to mitigate this serious problem.

### SUMMARY

Chamoli District of Garhwal is one of the three districts of Uttar Pradesh, bordering China (Tibet). Spread over an area of 9,125 km<sup>2</sup> the District has wide altitudinal range from less than 600 m to 7817 m (Nanda Devi peak). Three Protected Areas viz. Nanda Devi National Park (630 km<sup>2</sup>), Valley of Flowers N.P. (87.5 km<sup>2</sup>) and Kedarnath Musk Deer Sanctuary (957 km<sup>2</sup>) are located in the District. The common Leopard (*Panthera pardus*) inhabits all kinds of habitats (wild and altered) in the District upto an altitude of 3,500 m. The Leopard's habits bring it into far more frequent contact with man than any other predator. The District has a history of problem Leopards (cattle lifters, man-eaters) with the Man-eating Leopard of Rudraprayag which was active in 1920s being the most legendary. Even today cattle lifting is frequent and man-eating occasional. In the last three years 16 people have been killed by Leopards and 17 have been seriously injured. 500 cattle have been killed

in the last three years in or around (upto 5 km from boundary) Nanda Devi National Park and Kedarnath Musk Deer Sanctuary by Leopards. The possible reasons behind the depredation on human life and property by Leopards in Chamoli District have been discussed. An attempt to identify areas more prone to such incidents has been made. The possible solutions to mitigate the problem have been discussed at length.

### चमोली गढ़वाल में तेन्दुओं द्वारा हो रही हानि की समस्या

धनंजय मोहन

#### सारांश

चमोली गढ़वाल जिला उत्तर प्रदेश के उन तीन जिलों में से एक है जिसकी सीमाएं चीन (तिब्बत) से मिलती हैं। 9,125 वर्ग किमी क्षेत्रफल में फैले इस जिले की ऊंचाई में बहुत अन्तर है जो 600 मी० से भी कम से लगाकर 7,817 मी० (नंदादेवी शिखर) तक की है। इस जिले में तीन आरक्षित क्षेत्र अर्थात् नंदादेवी राष्ट्रीय उपवन (630 किमी<sup>०</sup>), फूलों की घाटी, नंदप्रयाग (87.5 किमी<sup>२</sup>) और केदारनाथ कस्तूरी मृग संश्रय (957 किमी<sup>२</sup>) स्थित हैं। सामान्य तेन्दुआ (पैन्थेरा पार्डस) इस जिले के सभी तरह के प्राकृतावासां (जंगली और परिवर्तित) ने 3500 मी० की ऊंचाई तक पाया जाता है। तेन्दुओं की आदतों अन्य हिंसक प्राणियों की अपेक्षा उसे मानव के सम्पर्क में कहीं ज्यादा बारम्बारता से लाती हैं। यह जिला समस्या बने तेन्दुओं के इतिहास, पालतु जानवार मारने वाला, नरभक्षी वाला रहा है जिनमें 1920 वाले दशक में सक्रिय रहा रुद्रप्रयाग का नरभक्षी तेन्दुआ तो सबसे ज्यादा कुख्यात हो गया था। आज भी वे बारम्बार पालतु पशु उठाते रहते हैं कभी-कभी नरभक्षण भी हो जाता है। पिछले तीन वर्षों में तेन्दुओं ने 16 लोगों को जान से मारा तथा 17 को गम्भीर रूप से जख्मी किया है। पिछले तीन वर्षों में नंदादेवी राष्ट्रीय पशु उपवन और केदारनाथ कस्तूरी मृग संश्रय के चौगिर्द (सीमा से 5 किमी० दूरी तक के) क्षेत्र में तेन्दुओं ने 500 पालतु पशुओं को मारा है। चमोली जिले में मानव जीवन और सम्पत्ति की तेन्दुओं द्वारा की गई बरबादी के पीछे रहे संभावित कारणों का विवेचन इस अभिपत्र में किया गया है। ऐसी घटनाएं जहाँ अधिक हो सकती हैं, उन क्षत्रों को पहचानने का प्रयास भी किया गया है। इस समस्या को कम करने के संभावित समाधानों पर भी विस्तार से विचार किया गया है।