

## Man-eating and cattle-lifting by tigers and conservation implications in India

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### Abstract

We investigated the incidences of human casualties and cattle-lifting by tigers and circumstances of attacks and suggested mitigation strategies. In India, tigers mostly survive in small numbers in protected areas which are isolated due to habitat fragmentation and disturbances. Man-killing behaviour and predation on cattle are the main issues of confrontation, and as a result, the conservation efforts are adversely affected. In the states of Uttar Pradesh, Uttarakhand, Rajasthan, Madhya Pradesh, Orissa and West Bengal, tigers have caused 161, 51, 7, 133, 25 and 445 human casualties respectively during 1990-2009. In Madhya Pradesh, 133 human casualties occurred in and around 6 national parks, 14 sanctuaries and 20 forest divisions. Male casualties were more (n=656) than female casualties (n=166). Out of 822 human casualties, most human casualties (n=376) occurred in the age group of 25-30 years. Most tiger casualties of humans (51%) occurred between 16:00-20:00h. Tigers in Uttar Pradesh, Uttarakhand, Bihar, Orissa and West Bengal killed 511, 1938, 1899 and 733 cattle, respectively, during this period. In Madhya Pradesh, tiger and leopard killed 18736 cattle and a majority of cattle kills occurred within protected areas and reserve forests (92.6%) than in cattle sheds and outside the forests (7.4%). This has led to a strong resentment among people and they showed increased apathy and antagonism towards tiger conservation. Recommendations for reducing the human-tiger conflict include are suggested.

Keywords: cattle killings, conflict, human deaths, injuries, man-eater, mitigation, Tiger, tiger reserves

### Introduction

Tiger, being a large and magnificent carnivore, have attracted considerable attention the world over. Tigers mostly survive in small numbers in protected areas which are isolated due to habitat fragmentation and disturbances (Panwar, 1987; Johnsingh et al., 1991). Presently, the tiger population is threatened due to increasing biotic pressure, leading to habitat loss, degradation and fragmentation, which make such populations very unstable (Soule, 1986). Poaching activity is adversely affecting tiger numbers in reserves. Since inception of the Indian Wildlife (Protection) Act 1972 and the 'Project Tiger', a considerable effort has been made towards the conservation of tigers in India (Panwar, 1987). Over 60% of the world's tiger population survives in the Indian sub-continent and the future of this endangered cat lies in India. But large carnivores like tigers, lions and leopards which attack humans and kill cattle have always been the concern of the wildlife manager. The problems of man-killing and livestock depredation by tigers have been studied by Khaire et al. (1994), Koppikar and Sabnis (1989), Sawarkar (1986), and Chauhan and Rajpurohit (1998). An attack on a human has been considered as an aberrant form of behavior of tigers. In recent years, the problem of human-tiger conflict is on the increase in and around the sanctuaries. Little scientific information is available on the genesis of human-tiger conflict and mitigation strategies from different tiger areas in India. For conservation of tigers on a long term basis, mitigation of human-tiger conflict is necessary. This paper deals with assessment of the problems of human-tiger conflicts in and around the tiger reserves and suggests mitigation strategies.

### Methods

Well designed questionnaire formats were used for collecting information on human-tiger conflicts from field areas and from victims or their families. Based on the information gathered, affected areas were visited to collect the information on the area profile, level of the conflict, human casualties, livestock killings, place, time and seasonality of incidences and causes of conflict. Selected villages located on the edge of the forest were surveyed to determine the areas frequented by tigers. Information on compensation paid for the losses was also recorded.

## Results and discussion

**Human casualties:** Human deaths and cattle lifting by tigers mostly occur outside the protected area boundaries because the agricultural fields offer continuity of habitat out of the forest areas and good conditions for resting, hiding and ambush cover for tigers. A total of 822 cases of human casualties by tiger were reported from six States. In Uttar Pradesh, Uttarakhand, Rajasthan, Madhya Pradesh, Orissa and West Bengal, tigers have caused 161, 51, 7, 133, 25 and 445 human casualties, respectively, during 1990-2009. In Dudhwa and Corbett tiger reserves, 23 and 56 human casualties respectively occurred. In Madhya Pradesh, 133 human casualties occurred in and around 6 national parks, 14 sanctuaries and 20 forest divisions. Male casualties were higher (n=656) than female casualties (n=166). Among males, there were 435 human killings and 221 injuries. Among females, there were 86 killings and 80 injuries. Human casualties showed a decreasing trend during 1990-2001. Males had an increased likelihood of casualties because they moved extensively inside forests for the collection of non timber forest produce, and in agricultural fields for farming activities. During 1990-2001, most of the human casualties by tiger occurred in the periphery of the sanctuary and few occurred inside. We observed marked monthly variation in these years. The monthly and diurnal patterns of occurrence of human casualties can be correlated with the activities of people and movement of tigers in and around the reserves. Of 822 human casualties by tiger, the age of 695 cases was recorded. Most human casualties (n=376) occurred in the age group of 25-30 years. Tiger were responsible for most human casualties (51%) between 16:00-20:00h, followed by 23% of cases between 12:00-16:00 h.

**Cattle killings:** From 1990 to 2008, tigers in Uttar Pradesh, Uttarakhand, Bihar, Orissa and West Bengal killed 511, 1938, 1899, 733 and 2111 cattle, respectively. In Madhya Pradesh, tigers and leopards killed 18736 cattle during this period. In Palamau tiger reserve, on average 268 cattle were lifting every year. A majority of cattle kills occurred within protected areas and reserve forests (92.6%) than in cattle sheds and outside forests (7.4%). A high density of humans and livestock gives rise to a high probability of encounters. In the Sundarbans, high human casualties were related to people collecting non-timber forest produce. A man-eating tiger is actually very rare (Siddiqi and Choudhury, 1986). Chakarbarti (1984) believed that the ferocity of the tigers in the Sundarbans was related to the salinity of the surrounding water. Cattle in these areas serve as a supplement to natural prey. All the same, it contributes significantly to the human-tiger conflict. Recommendations for reducing the human-tiger conflict include: 1. People should be alert and vigilant, 2. Ameliorative measures for protection and habitat improvement, 3. Restoration of prey base, 4. Restriction on livestock grazing in tiger reserves, 5. Cattle should be attended by graziers, 6. Compensation for losses needs to be settled promptly, 7. Man-eaters should be captured and kept in zoos or destroyed, 8. Relocation of villages outside tiger reserves, 9. Involvement of people in planning and implementation of mitigation strategies, and 10. Public education and awareness.

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