Man-Elephant Conflict Problem : A Case Study

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The present study was carried out to obtain some information on wild elephant's behaviour in natural condition to understand the problem of man-elephant conflict. Information on human deaths caused by elephants, between 1984 and 2002, in parts of Rani Range forest, Assam, was gathered and analyzed. A total of 29 deaths occurred during the period of 1984 - 2002. It became apparent from the study that killing of human beings by elephants was mostly accidental in nature. Both short term and long term control measures were recommended to minimize the problem of man-elephant conflict in the study area.

Man-elephant conflict has become one of the most challenging problems in modern wildlife management in India. With continuous loss of habitat qualitatively as well as quantitatively, elephants are forced to extend their range and raid crops to meet their energy requirements. During such forays of elephants into villages or agricultural lands and human forays into forests, confrontation is inevitable. Although, large population of elephants are found in Northeast regions in India, very little efforts have been made to know as to why man-elephant conflict occurs. Therefore, keeping the above facts in view, the present investigation was carried out to obtain some information on causes for the man-elephant conflict.

The study was conducted at Rani forest range, Kamrup district, Assam, India. The main considerations in selecting the Rani Range forest as the study area was that it was a representative of elephant habitat, harboured a viable and observable elephant population and exemplified the problem of man-elephant conflict in the area. The study area is situated between 91°37'S and 91°43'E to the south of Brahmaputra. It comprises a total forested area of 160sq.km, which is fragmented. In the east side of the region, a natural lake called the "Deepor-beel" is present, which is a perennial source of water for the region. The basic tropical vegetation types found in the area are moist mixed deciduous forest. Degrade and shrubs types are also scattered over different habitats.

The following methods were employed in the study:
1. Observations of elephants: - The elephants were observed directly by visual methods, using binoculars and by direct visual observation.

2. Collection of records: - Details of man killed by elephants in the past were gathered from various sources like state forest departments, *"Gaon-burahs"* (village heads) and news paper clippings. In addition, questionnaires were also distributed.

A total of 29 human deaths caused by elephants were reported during the period of 1984-2002 and are presented in Table 1. A total of 14 out of 29 killed (48.28%) by wild elephants were in intoxicated state. Intoxication might have resulted in delayed reaction to the presence of elephants or total loss of fear, as is mostly seen in intoxicated persons. According to the data collected, 15 out of 29 kills (51.72%) were accidental i.e. the person and the elephant met at close quarters all of sudden (Table 2). This happens very commonly in forests. A group of people usually follows a forest path, which is mostly made by elephants. The people, usually drunk and in conversation, miss the sounds made by the elephant and meet the elephant head on. Almost all the kills' that take place outside the forest i.e. in agricultural field or village, were in the late evening or night and those in forest were during the day.

Out of the 29 deaths, 16 (55.17%) deaths occurred in the winter, 10 (34.48%) in summer and 3 (10.34%) in spring season (Table 3). The high deaths in winter maybe correlated to the increased outdoor activities of men in jungles during the season. Also, during that season the frequency of the elephants coming down from the hills towards the Deepor beel increases leading to confrontation with humans.

Significantly all killed human being were men. It was also found, based on questionnaires given to the villagers, that middle-aged man (35-45 year of age) were mostly killed by elephants. The respondents were not sure whether the deceased was intoxicated or not. The villagers feel that lack of feeds and fodders in the jungles have escalated the man-elephant conflict in the area. Some respondents feel that increase human population in the area is one of the causes while others feel that the presence of Deepor beel is another.

CAUSES OF MAN-ELEPHANT CONFLICT IN THE STUDY AREA:

Besides the usual causes like habitat destruction, encroachment of people, increase activities in forest by humans, etc., the following reasons were the main causes of increase man-elephant conflict in the study area.

1. Presence of country liquors: - It was observed that in the study area almost all the people make country liquor in their homes for commercial purposes. Elephants are also seemed to be fond of this liquor. When they get the smell of the liquor they tore down a house in search of the liquor.

2. Presence of the Deepor beel: - The Deepor beel is the perennial water source for the elephants. Elephants usually come to this beel round the year to meet their water requirement for drinking, bathing and to eat the aquatic plants. During crossover to the beel from forest, there was depredation by elephants.

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3. Unscientific methods to scare away elephants: - This was one of important cause in the study area due to which men were killed. It was usually seen that when a herd comes to raid an agricultural field, people try different ways to scare away the elephants. Some fire crackers, while others throw stones or shouts at them from different places. The elephant herd breaks due to so much noise and in the process some men comes in front of the elephant and gets killed.

CONTROL MEASURES

Measures for controlling man-elephant conflict has been divided into two categories, viz. the short-term measures and the long-term measures.

A. SHORT TERM MEASURES:

Short-term measures aimed at providing immediate relief to the people such as:

1. Driving away elephants physically with the help of wildlife officials.
2. Use of trained elephants (koonkie) to chase away wild elephants.
3. Use of barriers (Elephant – proof trench and watch towers).

B. LONG TERM MEASURES: Long term measures aim at removing the factors responsible for the elephant depredation and at creating ideal living conditions for elephants within the forests, viz, habitat development works, eco-development works, establish elephant corridors, promote conservation education and public awareness.

In the study area, following measures were recommended: -

1. VEGETATIVE BARRIER: - In this type of barrier, thorny plants or other plants which acts as repellent to elephants such as lemon trees, red chilly and *citronella* grass can be sown around the boundary of the protected area. Elephants, to some extent, avoid the way where this type of vegetation is grown.

2. TRENCHES: - Trenches could be built around the boundaries of the protected area after putting the vegetative barrier. This would further prevent the elephants crossing the boundary. (Trench specification-Top width = 2.10 mt; Bottom width = 1.20 mt; Depth = 2.40 mt.). The dugout earth is to be used as mound towards the inner-side of the protected area.

3. REFORESTATION: - The habitat of the elephants should be restored. This can be achieved by plantation of natural fodder species and bamboos in the forest. If sufficient amount of fodder, bamboos and other plant species liked by elephant are available in the forest, it will seldom come down to raid crops.

4. CHANGE OF CROP PATTERN: - People in the study area are mainly dependent on the paddy, which the elephants are also accustomed to. A change in the pattern of cultivation of the crop may be tried viz. the vacant area between the forest and the agricultural land, which are full of edible grass, are to be removed and planted with red chilly, lemon trees, *citronella* grass or other plants with thorns and spikes.

5. PRECAUTIONARY MEASURES: -

1. People should stay within their houses rather than run berserk when an elephant is around. They are much safer indoors than outdoors.

2. People should be warned not to cause injury to an elephant using bullets, fire or any other means.

3. The area should be properly electrified. It is seen that wild elephants are shy of electric lights. Moreover, people can protect themselves against elephants in a better manner in the presence of electric lights than otherwise.

Data of the human killed was collected and are presented in Table1. A total of 29 deaths caused by elephants were reported. Datye and Bhagwat (1995) reported a total of 208 human deaths by elephants from south Bihar and south West Bengal during 1980 to 1991.

It was also found that the highest kills were during the winter season (Table 3). This can be attributed to increase forest activity by humans during that period. Significantly all the killed human beings were men. The reason for the men being killed could be attributed to the fact that men were involved in most of the activities of the jungles.

The results of the present study are in agreement with the findings of Datye and Bhagwat (1995). They reported that, 21 out of 25 human killed by the elephants of the Dalma wildlife sanctuary in Bihar, were accidental, with the highest numbers of kills in summer. Sukumar (1992), Lahiri Choudhury (1980) and Dey (1991) also reported similar observations.

In the study area different causes for the increasing problem of the man-elephant were found. Similar findings were also attributed by Singh (1995), Sukumar (1992), Barua and Bist (1995), Dey (1991), Jayawardene (1989) and WWF (2000) in their studies.

During the study period control methods were divided into short term and long term measures. Singh (1995), Barua (1995), Datye and Bhagwat (1995), Neelkantan (1995) and WWF (2000) also suggested similar measures.

Finally from the findings of the present study, the following conclusions were drawn: -

1. The basic reason for man-elephant conflict is the encroachment of man on the habitat of elephant.

2. Habitat improvement with the help of local people maybe tried out to see if it would minimize the human casualities resulting out of long forays by elephant outside forest areas. Education of people at unit level (village) about the problem and precautions to be taken to minimize sudden encounters would at least help people in the area.

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Table 1: Humans killed in the study area in the past

Year	# Humans killed
1984	Nil
1985	Nil
1986	4
1987	6
1988	1
1989	1
1990	Nil
1991	2
1992	1
1993	3
1994	1
1995	2
1996	1
1997	1
1998	Nil
1999	3
2000	1
2001	2
2002	nil
Total	**29**

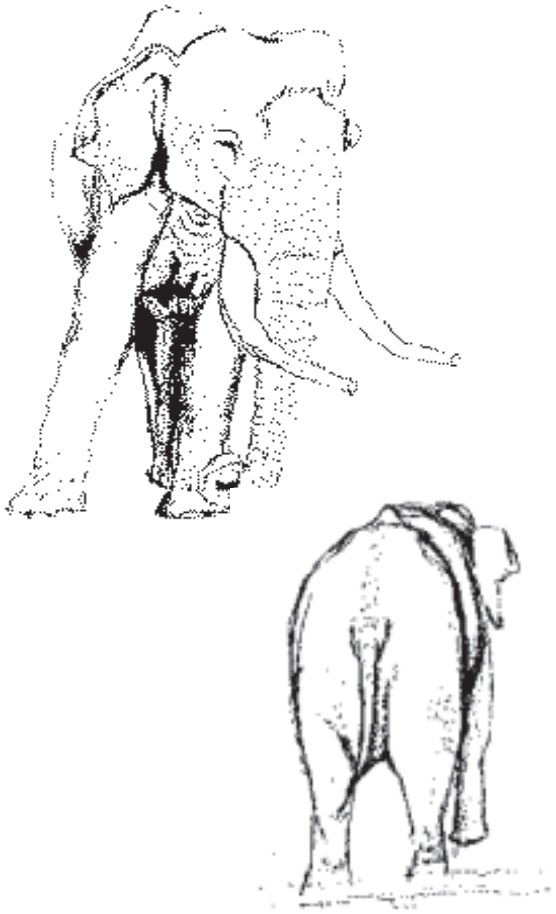

Table 2: Percentage–wise deaths of humans due to different reason

Causes	Human deaths #	# Total deaths	Percentage
Accidental	15	29	51.72
Intoxicated state	14		48.28

Table 3: Season wise percentage of human deaths

Season	# Human deaths	# Total Deaths	Percentage
Summer	10		34.48
Winter	16	29	55.17
Spring	3		10.34

Fig.3.MAP OF RANI RANGE FOREST AND DEEPOR BEEL