Human-Elephant Conflict in Baripada Forest Division, Odisha, India

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Introduction

Around 50% the world population of Asian elephants (*Elephas maximus*) are in India. Elephant range in India consists of 11 Elephant Reserves covering an area of about 110,000 km^2 in the north-east, central, north-west, and south (Bist 2002). In the past elephants occurred over the entire peninsula. The Asian elephant is categorized as endangered by the IUCN Red List (IUCN 2015), listed on Appendix I of CITES and Schedule I of the Indian Wildlife (Protection) Act. The explosion of human population in twentieth century India has generated a growing conflict between man and elephant. Although life and property of human beings suffer losses due to this conflict, it also contributes considerably to the decline of elephant populations across their entire range. Elephant distribution and their sources of shelter, food and water have shrunk and now overlap with expanding human-use areas.

The area of the State of Odisha is 155,707 km^2, comprising 4.7% of the country's total area. It is divided into 30 districts, all of which have elephants (Fig. 1) except Jagatsinghpur and Kendrapada. Odisha held 1954 elephants in 2015 (2015 census Odisha Forest Department), which is about 72% of the eastern and 7% of the Indian population. Around 50% of elephants in Odisha use 12 of the 19 Wildlife Sanctuaries, while the rest move outside the sanctuaries, and are largely responsible for causing human elephant conflict.

Methods

Study area

Baripada Forest Division is situated in northern Odisha between 22° 33' 45" and 21° 17' 0" N and 85° 45' 30" and 87° 13' 15" E (Fig. 2), spreading over an area of 1642.42 km^2 and is bounded on the north by the Singhbhum Medinapur District, on the south by Balasore District, west by Keonjhar District, and on the east by Balasore and Medinapur Districts of West Bengal. May is the hottest month with a maximum temperature of about 48ºC and December the coldest with a minimum temperature of about 7ºC.

Baripada Forest Division is divided into eight ranges, all of which have elephants. Out of these Betnati and Bangiriposi ranges are low conflict zones. Deuli and Rasgovindapur have high conflict. Pithabata, Dukura, Kaptipada and Udala have a medium level of human-elephant conflict. Baripada Forest Division harboured 68

Figure 1. Elephants in the Baripada Forest Division during the year 2013.

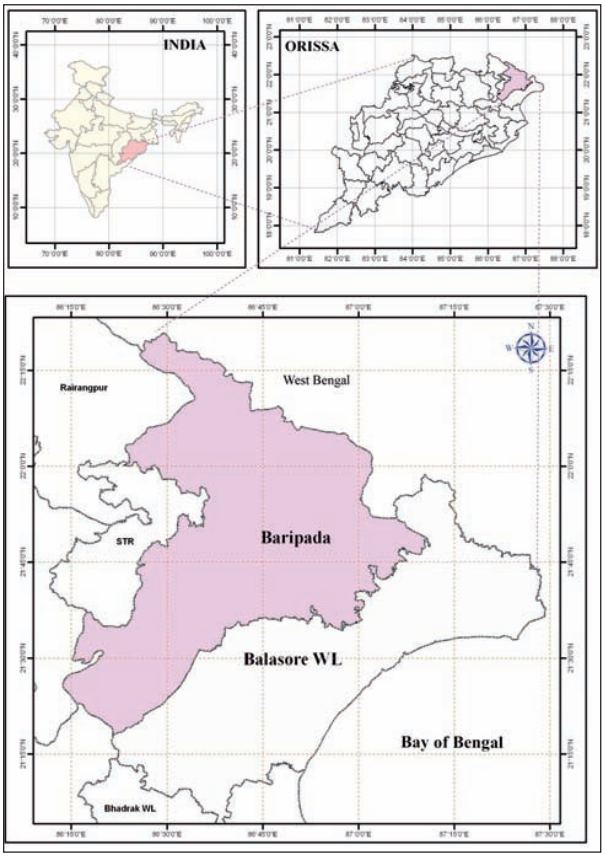

Figure 2. Map of Baripada Forest Division.

elephants in 2015, consisting of 4 adult males, 20 adult females, 10 sub-adult males, 20 sub-adult females, 3 juveniles and 11 calves (Palei & Rath 2015).

Methodology

Data was obtained from conflict records from 2001 to 2014 from the eight Forest Ranges of Baripada. Crop damage information was collected from 64 villages located in and around Baripada through questionnaires. The data was verified through field visits to specific sites and by conducting informal discussions with government officials and local people. Rapid assessments were carried out using focus groups, and field visits conducted to assess elephant damage, and to observe habitat types.

Results and discussion

Human death and injury

A total of 16 cases of human death and 15 cases of injury by elephants were reported in the period 2000 to 2014 (Fig. 3). Of these, 9 deaths occurred in the winter, 4 in the summer and 3 in the monsoon season. The high deaths in winter may be related to increased outdoor activity in winter, such as non-timber forest product collection in forests during that time.

The highest number of human deaths was reported in 2011-12. Out of the 31 human death and injury cases, 42% occurred in agricultural areas, 35% in forest areas and 23% close to villages.

Crop damage

Elephants damaged 2984 acres of paddy out of 368,362 acres paddy cultivation in the study area during the period 2000-2014 (Fig. 4). Other crops damaged included banana, jackfruit, pineapple, coconut, sugarcane, cauliflower, cabbage, bamboo and jute. The highest number of crop depredations occurred in the year 2010-2011. Highest crop damage was recorded from September to December (Fig. 5), which is the harvesting season. During the months of July and August, crop damage was moderate and in the

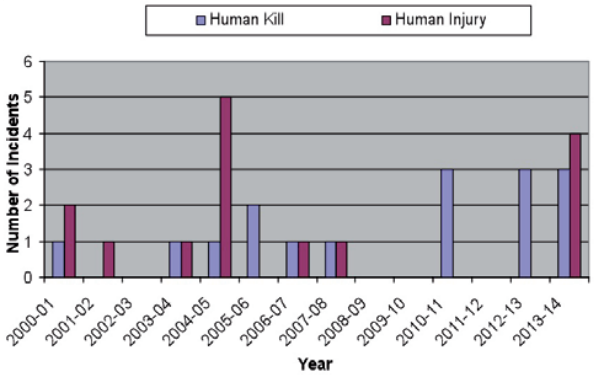

Figure 3. Human death and injury during the period 2000 to 2014.

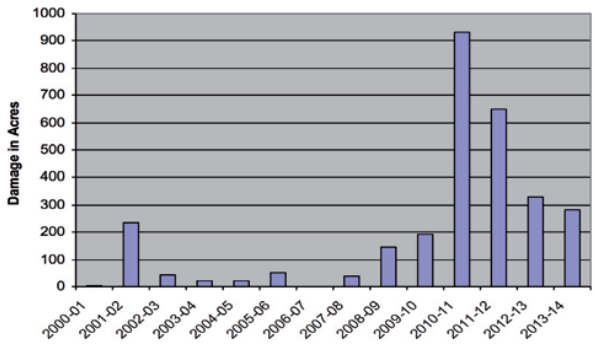

Figure 4. Crop damages during the period 2000 to 2014.

other months it was less. More crop damage was recorded outside the protected area, where there was extensive agriculture. In some instances crop damages increased because of unruly behaviour of the public who gathered in the thousands to see elephants and prevented their movement to the forest.

House and property damage

During the study period 888 houses were damaged out of 390,835 households in the study area, with 658 being partly damaged and 230 being completely damaged. The highest numbers of houses were damaged during 2012. Most damages occurred in December after harvesting, when stored grain was the target. In 70% of cases, houses with stored paddy and brewed rice were damaged. Highest household and property damages were caused by adult males (60%), followed by herds (25%) and single adult females (15%). Elephants raided tribal houses for rice beer, brewed rice and local country liquor made with Mahua flowers. After drinking the brew they ran amok destroying fields and breaking houses.

Human-elephant conflict could be prevented by minimizing habitat disturbance and adjustment of agricultural practices. Villagers should avoid cultivating rice near elephant habitat and should grow crops of lesser attraction to elephants. Authorities should earmark areas with high elephant presence for elephant conservation, even though they may be good agricultural areas. Areas where chances of elephant depredation are less could be chosen for agricultural use.

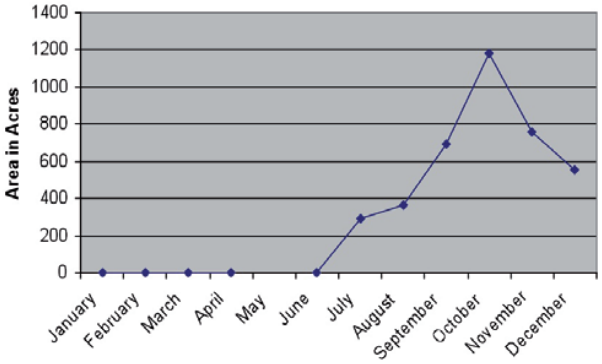

Figure 5. Monthly crop damage during the period 2000 to 2014.

Acknowledgements

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