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## Human-elephant interface and its management in Odisha

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**Abstract** :Odisha lies in the 'eastern region elephant habitat' in India. According to elephant census (2012), about 1, 930 elephants are found in Odisha. The process of developmental activities like mining, construction of roads and railways, establishment of human settlements, deforestation and fragmentation of corridors gradually destroying elephant's habitat. Shortage of food and water in the forest has led these animal towards human settlements leading to human elephant conflicts. Five districts of Odisha, like Keonjhar, Mayurbhanja, Sundergarh, Balasore and Dhenkanal are affected frequently. It was recorded that 515 people were killed, 808 human injured by jumbos and 388 elephant died during last five (5) years. The major causes of death of elephants are due to poaching, electrocution, disease, accidents, heat stroke, starvation and lack of water. The death of elephants due to poisoning and train accident are on rise in Odisha. Different measures to prevent, control and manage degradation for minimizing confrontation between human and elephant adopted by government of Odisha. Unless a safe corridor with availability of food and water is ensured, increased anthropogenic activities near elephant habitat will be expected. This would lead to regular man-elephant conflict and ultimately death and extinct of large terrestrial animal on earth.

**Keywords:** Man-elephant conflict, elephant mortality, conservation, Odisha.

### INTRODUCTION

Odisha is an important state with respect to elephant population. According to 2012 census 1, 930 elephants are present which is 7% of the total Indian elephant population. (Anonymus, 2010)<sup>1</sup>. The elephants' habitat of Odisha extends over 10,000 kms connecting to the neighbouring states of Jharkhand, Bihar and West Bengal. Bio-geographically Odisha is a deciduous forest area of Keonjhar, Mayurbhanj, Dhenkanal, Khordha, Boudh, Nayagarh, Phulbani and Kalahandi districts irrigated by Mahanadi, Baitarani, Brahmani, Rusikulya, Bansadhara and Subarnarekha rivers. Three elephant reserves namely Mayurbhanj, Mahanadi and Sambalpur are found here (Swain, 2000)<sup>2</sup>.

Changing pattern of elephants' movement due to fragmentation and destruction of their habitats caused by farming, expansion of roads, railways, irrigation project,

mining, and shortage of food and water during lean season has led to the occurrence of man elephant conflict. These situations have percolated into human casualties, destruction of houses and crops ending in death of the elephants (Khuntia, 2010)<sup>4</sup>. To conserve these animals, national level projects on elephant management is under operation from 1991 till 2015. In the last ten years, human-elephant conflict has increased many folds. The largest number of incidence is seen in Keonjhar district and the lowest in Cuttack. Deaths of elephants are mainly due to poaching, accidents like hit by a train or falling into pits, diseases, starvation, sun stroke, poisoning and electrocution (Anonymus, 2010). To prevent elephants' death management initiatives like educating villagers, pre-hand information about elephants' movement, installation of scare away devices, drive off operation by deployment of 'kunki', removal of conflict causing elephants, habitat improvement, providing adequate food and water in the forest during lean seasons , creation of an effective barrierinteraction to a minimum (Swain, 2000)<sup>3</sup>.

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**MATERIALS AND METHOD**

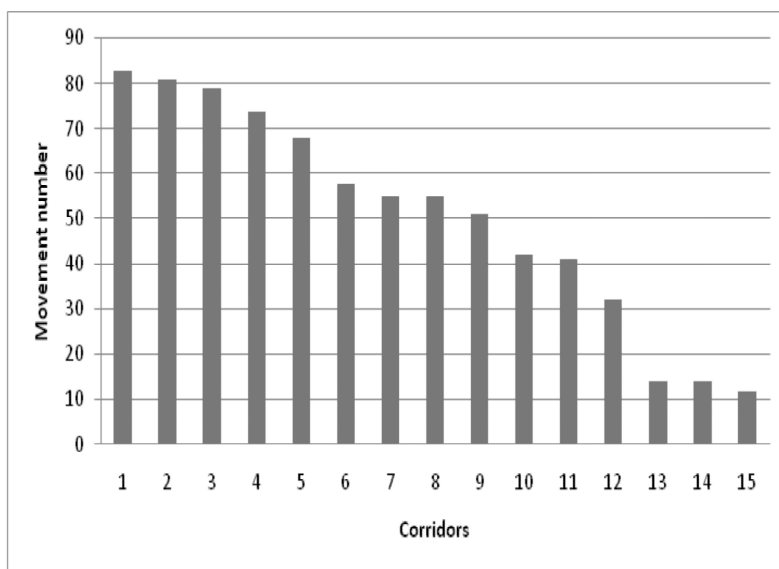
Data utilized in this investigation were collected from various locations degraded by elephants, Odisha forest department reports, news paper high lights and interactions with affected people. Crop grown in the affected areas, house and property damaged were estimated. Human and elephants' casualties were estimated in different years. Scare away devices to drive away elephants and their effectiveness were also studied.

**FINDINGS**

Odisha has a geographical area of 1, 34, 000 sq km with a forest area of 61, 000 sq km. The average rain fall per year is 1400 mm which is spread throughout the year

without consistency. Monsoon is spread from June to August. The elephant population of Odisha during 1999 was 1,827, and during 2002, 2007, 2010 and 2012 were 1841, 1862, 1886 and 1,930, respectively. Out of 1,930 elephants, 334 are males, 1087 are females 463 are young calves and 46 of unknown sex. Several elephant corridors exist in Odisha in which herds move from one place to other in search of food, water and breeding. The most important among them are Baripada-Similpal, Barunei-Chandaka, Similpal-Satkosia, Usakothe-Deogarh, and Keonjhar-Similpal. The herd movement between there corridors in (Table 1) were 81, 83, 74, 79, and 68 respectively.

**Table 1 Number of elephant herd movement between different corridors of Odisha**



**Source: Forest and Environment Department, Govt of Odisha.**

- 1- Barunei-Chandaka (83)
- 2- Baripada-Similpal (81)
- 3- Usakothe-Deogarh (79)
- 4- Similpal-Satkosia (74)
- 5- Satkosia-Kuldiha (72)
- 6- Keonjhar-similpal (68)
- 7- Kuldiha-Hadagargh (58)
- 8- Chandaka-Nuagaon (55)
- 9- Saptasajya-Athagargh(51)
- 10- Saranda-Sidhamata (42)
- 11- Kuldhia-Baula (41)
- 12- Kotgarh-Lakhari (32)

- 13- Kotgargrh-Chandrapur (14)
- 14- Badampahar-Dhoba dhobani (14)
- 15- Kotagarh-Rairakhhol (12)

There are 14 elephant corridors in Odisha. Among them 4 corridors are within the state and 10 are within the district. Recently severe drought, scarcity of food and water have increased the herd movement from one forest to other which have brought them near human settlement and other human activities. This has caused confrontation and loss of human life as well as death of elephants.

It was observed that death due to poaching has decreased while death due to accident and electrocution has increased (Table 2). Elephants have fallen into pits caused by construction of canals, roads, railways, mining

**Table 2 Death of Elephant in the Odisha from 2009-14.**

| Sl No              | Causes         | Total death of elephant |
|--------------------|----------------|-------------------------|
| 1                  | Poaching       | 35                      |
| 2                  | Accident       | 24                      |
| 3                  | Disease        | 70                      |
| 4                  | Electrocution  | 60                      |
| 5                  | Poisoning      | 27                      |
| 6                  | Natural death  | 74                      |
| 7                  | Train accident | 14                      |
| 8                  | Unknown        | 84                      |
| <b>Total death</b> |                | <b>388</b>              |

**Source: Forest and Environment Department, Govt. of Odisha.**

**Table 3 Death of elephant, human death and injured from 2009-14.**

| Sl No        | Year    | Elephant death | Human death | Human Injured |
|--------------|---------|----------------|-------------|---------------|
| 1            | 2009-10 | 51             | 108         | 160           |
| 2            | 2010-11 | 83             | 74          | 124           |
| 3            | 2011-12 | 68             | 120         | 109           |
| 4            | 2012-13 | 81             | 96          | 182           |
| 5            | 2013-14 | 95             | 117         | 233           |
| <b>Total</b> |         | <b>378</b>     | <b>515</b>  | <b>808</b>    |

**Source: Forest and Environment Department, Govt. of Odisha.**

and ponds. Sagging of electrical transmission lines in the forest and electrification of fence to guard rice and vegetable field has caused electrocution of animals. Deforestation and fragmentation of corridors have made animals stray away from forest and hit by trains. Scarcity of food and water during summer also leads animals to visit villages situated in fringe areas of the forest. Due to their acute sense of smell, elephants visit houses storing ‘mohua’ flower used for breweries. Other major problems are industry, mining, power transmission lines, construction of road and railways, irrigation and river valley projects, utilization of forest land for human settlement and deforestation due to lumbering. Every year property damage and casualties were on the rise (Table 3). To manage the conflict most important measures are to educate villagers regarding elephants’ behaviour, establishment of communication network regarding movement of elephants, provision of scare away devices like crackers, sirens, drive away operation with ‘kunkies’, habitat improvement like creation of water bodies,

identifications of sanctuaries and elephant reserves, prevention of forest fire, unauthorized grazing and deforestation and prevention of ‘podu’ cultivation. Alternate crop production like long awned rice to distract elephants and construction of an effective elephant barrier (rubble-wall, trench and electric fence) around the sanctuaries can prevent elephants straying out.

#### **CONCLUSION**

The major cause of man-elephant conflict has been observed to be deforestation, destruction of elephant’s habitat encroachment of forest land, increased human activities in the forest and scarcity of food and water in the summer season. To overcome such conflicts some measures like implementation of forest laws providing an alternative source of income to the villagers livestock, restriction of too many tourists and their vehicle in the reserve forest, use of bio-gas fuel instead of forest wood, use of bamboo in place of wood for construction of houses, can be implemented. The Government of Odisha has adapted various programmes for protection and

conservation of elephants. State Government utilised 15 percent of money in the 2013-14, economic year in the budget for the improvement of elephant corridors and Government also increase the amount of compensation for villagers for their crop damage and house destroyed by the Jumbos. However, with all precautions man-elephant interface is on the rise. Man is more innovative in killing the animals while elephants adopt strategies to reduce interface. Through ages, elephants have survived with people's care but now to prevent their extinction they need the commitment of people.

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