

## Status and Conservation of Asian Elephant in Chandaka-Damapada Elephant Sanctuary

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### Abstract

Chandaka- Damapada sanctuary is situated 20 km from the center of temple city of Bhubaneswar. Chandaka forest got the status of sanctuary by the Government of Odisha in 1982. It was established to provide inviolate refuge for elephant with a view to minimize their depredation. The aim was for overall protection of forest ecosystem, particularly for providing a safe heaven for resident elephants. It is a dense forest covering an area of 193.39 sq. kilometres where elephants roam freely. The sanctuary is abutting both Cuttack and Khordha district. Deras, Jhumka and Kumar Khunti are reservoir surrounded by forest hillocks. Flora is moderately diverse with intimate mixture of evergreen and deciduous forests. According to the Geological Survey of India (GSI), it was found that 37 species of mammals, 167 species of birds, 13 species of amphibians and 33 species of reptiles are present but due to some anthropogenic activities the life of wild animals are in danger. In Chandaka, elephant is a flagship species. According to 2012 census, the member of elephants was 24 but in 2015, it was found surprisingly declined to 8. The major causes of declining number of elephant in Chandaka are the scarcity of food and water sources, human settlement in forest area, urban development, construction of road, noise pollution, and corridor destructions. For this reason elephants are forced to come out from their original habitat and migrate towards connected forest to Nayagarh, Ganjam and Athagarh. Sometimes elephant also are entering nearby town, destroy the crop damages the house and kill the human beings. Conservation and protection of this key stone species in Chandaka is essential. Conservation priorities for this endangered species include revival of the corridors, conservation of forests, maintenance of habitat and social development along with avoidance of noise and light.

**Keywords:** Elephant; Key Stone Species; Conservation; Chandaka.

### Introduction

Chandaka- Damapada sanctuary is situated 20 km away from the centre of temple city of Bhubaneswar. Chandaka forest got the status of sanctuary by the Government of Odisha in 1982. It was established to provide inviolate refuge for elephants with a view to minimize their depredation. The aim was for overall protection of forest ecosystem, particularly for providing a safe heaven for resident elephants. Godibari is the main gate of the sanctuary (Figure 1). This is located in between Daspur and Bhola reserve forest on both of sides of Old Grand Trunk Road. The road has significance of creation during Shershah Suri having historical importance. During 16<sup>th</sup> century Buliagarh was an ancient fort of

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king Chodaganga Deva. In Chandaka sanctuary Deras, Jhumka and Kumar Khunti are the reservoirs surrounded by the forest hillock. Chandaka sanctuary enjoys undulating topography with rich floral and faunal bio-diversity. Flora is moderately diverse with intimate mixture of evergreen and deciduous type. Chandaka forest covers and dominates mainly Sal, Piasal, Asan, Bamboo trees etc. which offers a

congenial habitat of elephants (Figure 2). A good variety of wild animals and birds are distributed of which the Asian elephant is the flag ship species (Anonymous, 2014) along with chital, barking deer, mouse deer, wild pig, common langur, common Indian mongoose, hyena, sloth bear, monitor lizard and rock python. Among the birds are red jungle fowl, peafowl, crested serpent eagle, great horned owl etc. (Tiwari, 2000). Fragmentation of forest and destruction of habitats caused by farming, expansion of roads, railways, shortage of food and water have led elephants to move towards the nearby urban areas. This situation has percolated into destruction of houses and crops, human casualties and end in death of elephants (Khuntia, 2010). According to 2012 elephant census, 24 elephants were seen but in 2015 number of elephants in Chandaka surprisingly declined to eight (Anonymous, 2015). To prevent the migration of elephants from the sanctuary to nearby linked forest, management initiatives like educating villagers, pre-hand information about elephants' movement, installation of scare away devices, habitat improvement, providing adequate food and water in the forest, creation of an effective barrier around sanctuary, alternative crop production to deter elephant man interaction to a minimum extent are desirable (Kar and Lahiri, 2002; Swain, 2004; Menon et al., 2005). Compassionate payment is one of the most important measures in the field of animal depredation. The amount for compassionate payment has been revised for better mitigation (Khuntia and Mohanty, 2013; Pal 2015). Since there is a regular man-elephant conflict in Bhubaneswar (the capital of Odisha), the objective of this paper is to suggest the measures to overcome this alarming situation and maintaining the population of elephant.

## Materials and Method

Data utilized in this investigation were collected from various locations depredated by elephants. Report of the Government of Odisha, newspaper highlights and interaction with affected people, crop, house and property affected by elephants in the areas have been taken into account. Moreover, human and elephants' casualties were recorded in different years. Scare away devices to drive away elephants to their original habitat and their effectiveness were also studied.

## Findings

Chandaka sanctuary is situated in the city of

Bhubaneswar which amalgamates both in Cuttack and Khordha district. It is located in latitude 20°-12' to 20°-26' N and longitude 85°-34' to 85°-49' E (Figure 3). The sanctuary enjoys a dense forest covering area of 193.39 sq. km where elephants roam freely. There are 47 villagers nearby Chandaka forest. The average temperature is 40° C in summer and 10° C in winter. The annual rainfall is 1200 mm to 1400 mm having humidity 80%. According to Geological Survey of India (GSI), there are 37 species of mammals and 167 species of reptiles where elephants are considered as a key stone or flag ship species of the ecosystem. In other words, the sustenance and development of the forests is hinged with elephants. But the population of elephant is decreasing in an alarming rate regularly chiefly because of anthropogenic activities. According to 2015 census, the number of elephant is eight (Tables 1 and 2). It was found that during harvest season of paddy crop, the elephant depredation is at the peak and many villages get affected in the month of November, December and January. Elephants do not move normally during the day time and take shelter in place where there is tree cover and stay in the particular area for food, water and shelter (Anonymous, 2010). In 2007, the number of elephant in Chandaka sanctuary was 67, but in 2015 census, it was found to be eight. (Figure 4) in which male, female and young was 3, 3 and 2 respectively. According to the report of Forest Department of Odisha, only two elephants were dead due to different reasons in last three years (Table 3). 18 elephants moved towards linked forest area Athagarh-Narshingpur forest and 8 towards Nayagarh forest. Bhubaneswar, the capital city of Odisha, is magical combination of ethnic heritage and modern town planning. The city is rapidly growing with population and space. The Chandaka wildlife sanctuary is the only green patch and protected area near the city. Being an ecologically sensitive area, the rapid growth, expansion and development of Bhubaneswar at the cost of its fringe comprising areas of high conservation value have caused emerging environmental concern (Khuntia and Mohanty, 2015). The haphazard mushrooming growth of the real estate business in Bhubaneswar is also the biggest threat to Chandaka and Bharatpur sanctuary. Large institutions, apartment complexes, closed colonies etc. are being built on boundary of the sanctuary and their powerful lights, construction, noise and increased human movement restrict the movement of pachyderms (Anonymous, 2016). Because of all these, they lead a wretched life through drinking water from leaking pipe lines, improper habitat and stroll outside the sanctuary at night. Elephants have been observed to leave their habitat and corridor to the human

habitation and institutions for various reasons especially for food and drink leading to varieties of casualties (Table 4). Therefore, the Government is forced to pay compensation under various aspects of damage, loss and casualties (Table 5).

### Conclusion

Chandaka- Damapada is now a popular destination for solitude seekers, haunt of eco tourists, laboratory for researchers and temple of learning for all. The major cause of decreasing number of elephants in Chandaka has been observed to be due to fragmentation of corridors, increased human activities in the forest, vehicular noise and disturbance and scarcity of food and water. To overcome such conflicts, some measures like implementation of forest laws providing alternative source of income to the villagers, restriction of tourists and their vehicles in the reserve forest and use of bio-gas fuel instead of forest wood are suggested to be introduced. People living in villages located on high ground or on the migration path of elephants or habitat of elephants need to adopt a few preventive steps. An important

aspect in the management of elephant-human conflict is to enable the people residing in elephant zones to live in harmony with elephants. Government of Odisha has taken many preventive measures to overcome the problems like erection of trenches, elephant proof barriers, solar fencing deploying anti depredation squads etc. (Figures 5 and 6). In order to restrict the movement, elephants belonging to Chandaka-Damapada sanctuary works have been initiated for restoration of the elephant proof trenches, water passages, for which Rs 590.00 lakh have been sanctioned during the current year.

Appropriate conservation measures, alternative food source and restricted anthropogenic activities are strongly suggested to maintain the corridor, habitat and population of this keystone species.

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**Table 1:** Population of elephant in Chandaka 2002-2015

S. No	Year	No of elephant
1	2002	62
2	2007	67
3	2010	23
4	2012	24
5	2015	08

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

**Table 2:** Census of elephant in Chandaka, 2002-2015

S. No.	Year	Male	Female	Calf	Total
1	2001	13	35	10	58
2	2002	13	40	09	62
3	2005	13	40	12	65
4	2007	14	39	14	67
5	2010	7	9	7	23
6	2012	9	11	7	27
7	2015	04	01	03	08

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

**Table 3:** Death of elephants from 2010-2015

S. No	Year	Tusker	Female	Calf	Total
1	2009-10	-	01	-	01
2	2010-11	-	-	-	-
3	2011-12	01	-	-	01
4	2012-13	-	-	-	-
5	2013-14	-	-	-	-
6	2014-15	-	-	-	-
				<b>Total</b>	<b>02</b>

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

**Table 4:** Human death and injury by wild elephants 2010-2015

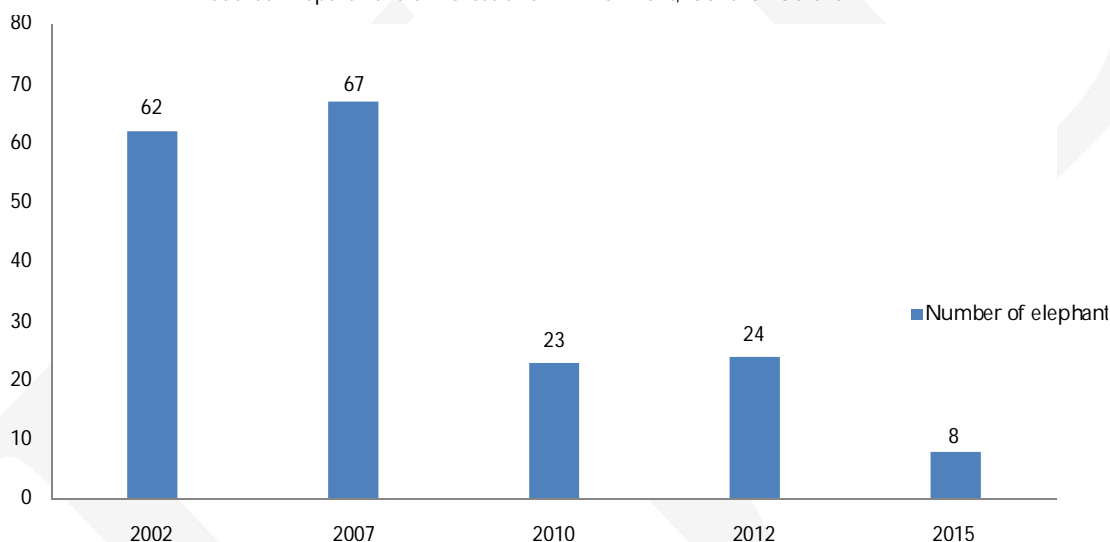
S. No	Year	No of Death	No of injury
1	2010-11	-	-
2	2011-12	02	-
3	2012-13	-	-
4	2013-14	-	-
5	2014-15	-	-

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

**Table 5:** The rate of compassionate payment by the government

S. No	Type of loss	Amount in Rs
1	Human kill	3 Lakhs
2	Permanent injury	1 Lakhs
3	Temporary injury	5,000/-
4	Crop Damage	10,000/ ha
5	Vegetable and cash crop	12,000/ ha
6	House damage	
	Full damage	10,000/-
	Partial	2,000/-

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

**Fig. 4:** Population of elephant from 2002-2015.

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