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Current Population Status of Asian Elephant in Keonjhar Wildlife Division, Odisha

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Abstracts: The Population of Wild elephants (*Elephas maximus*) is declining worldwide; therefore understanding the dynamics of the remaining population is critical for effective conservation. We monitored the population and distribution of elephants in Keonjhar wildlife division during 2015 and 2017. The Asian elephant (Elephas maximus) is facing a severe threat to its survival from large scale habitat losing and degradation, negative interaction between human and elephant and poaching across its range. India holds by far the largest number of wild Asian elephants, estimate as about 60% population of the species. *Elephas maximus* is placed in schedule 1 and part 1 of Indian wildlife protection Act (1972) conferring the highest level of protection. Most of the sightings were recorded near water bodies, foot paths & salt licks. During census period 2017 total 49 elephants were sighted out of which 25 were in Hadgarh, 15 in Deogaon, 9 in Brahmanipal Range. Simillarly in 2015 total 51 elephants were counts out of which 25 were in hadgarh, 16 in Dogaon, 9 in Brahmanipal Range It was found that in 2017 population of adult cow was high (43%) followed by calf (21%), adult bull (16%), sub adult cow (6%) and juvenile (4%). Simillarly in 2015 population of adult cow was high (33.33%) followed by sub-adult cow (19.60%), calf (17.64%), adult bull (13.72%), sub-adult bull (11.76%), adult/sub-adult U/K (1.96%) and juvenile (1.96%).

Keywords: Elephant Population, Keonjhar, Census

1. Introduction

The continuous destruction of forests in Asia had a negative on wildlife: particular Asian elephants (*Elephas maximus*). Currently, Asian elephants are classified as endangered (IUCN 2013). Regular census and studies of populations are required as part of conservation strategy for the Asian elephant. Asian elephant population in northern, east-central, north-eastern and southern India were enumerated and a total population of 27,312 estimated from 23 states during the 2017 elephant census. Among the states, the highest population was recorded in Karnataka followed by Assam and Kerala. The highest population was in southern region followed by the northeast, east-central and northern. The elephants of eastern india are distributed over 23,500 km^2 mostly in the chhota Nagpur plateau across the state of Orissa and part of Jharkhand [1, 2] Since 1986 some of the elephants have been moving into neighbouring states, in particular in the south- west to Chhattisgarh and more recently in the north –east Andhra Pradesh, where they are in serious conflict with people. The Population Composition is one of the most dynamic components in wild animals for survival of species with in an ecosystem and social factors which includes abiotic and biotic factors, home range, average group size and seasonality in breeding have a profound influence on the population dynamics of mammals, especially elephants as in their management [3, 4] and if any of these factors vary, may in turn influences the dynamics of animals and their habitat. These factors are important for the functioning of the animals societies [5, 6]. Various aspects of social organization has been intensively studied in African savannah elephant (*Loxodonta Africana Africana*) as compared to the Asian elephants (*Elephas maximus*) [1].

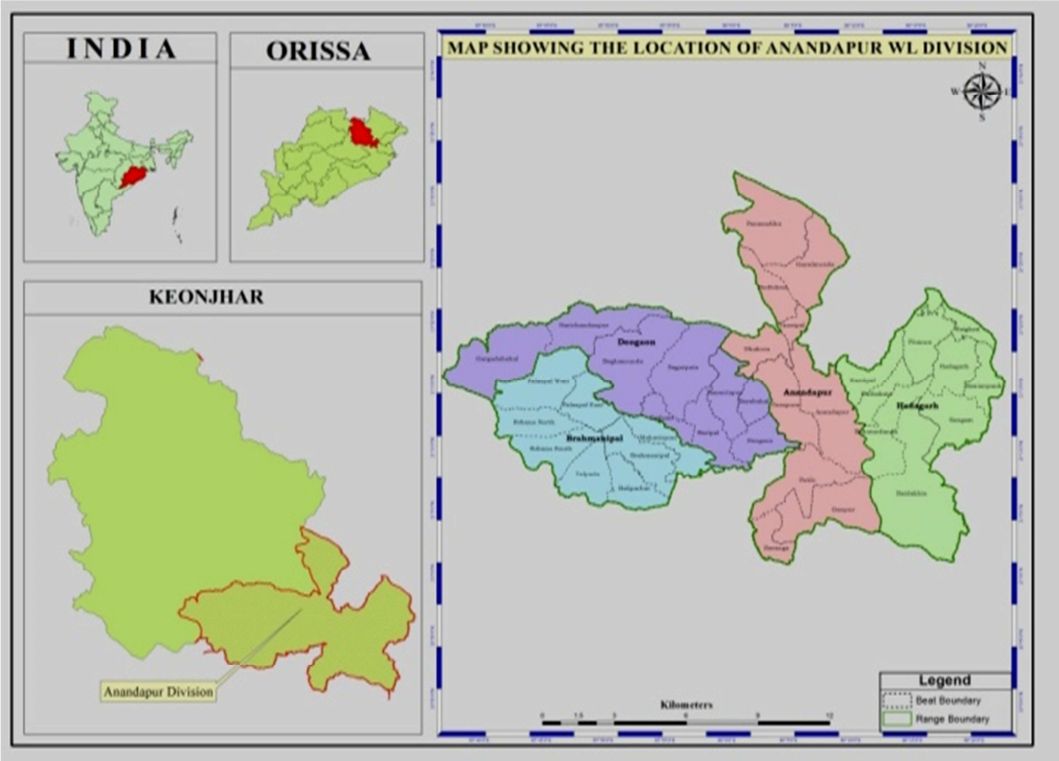

Figure 1. *Map Showing the Study area.*

2. Materials & Methods

Keonjhar Wildlife division is situated in Keonjhar districts of Odisha. It is located at 21° 33' to 20° 59' North latitude and 86° 37'' to 86° 21''. East longitude. Keonjhar wildlife Divisions extends to the whole of Anandpur Sub-division. Hadgarh Sanctuary lies in this wildlife divisions. This division with miscellaneous vegetations and smaller hills contains variety of flora and fauna and surrounds Salandi reservoir, which contains fresh water. The entire landscape is an ideal habitat for many wild lives in general and flagship species like elephant in particular. The wildlife division has immense biodiversity and aesthetic and geomorphologic values withan unique still water mass of 31.83 sqkm. The main portion of division comprises of mixed deciduous forests with miscellaneous species. The major forest types are northern tropical dry deciduous forest, Dry peninsular sal forests, Northern Dry mixed deciduous forests. Climbers found are *Bauhinia vahalii*, *Millettia quriculata* and *Buted superb* in hadgarh sanctuary. Some common grasses found are spear grass, Sabai and broom grass. Anandpur wildlife division is also famous for migrating elephants and resident population of wild boars, bears, deers, hares and sambars. In additions to its common langur, macaques, Tiger, Leopard, Jackal, hyaena, Jungle cat, Mongoose are also found.

The elephant census for the eastern part of India was carried out simultaneouslyin Odisha, between 9th May to 12th may 2017 by Govt of india, Project elephant. During the census period total 1,976 elephants living in different forest of odisha. All the forest staffs were trained and counting the elephants by direct counting methods. This paper only represents the population data elephant during the census period of Keonjhar wildlife division.

Total Direct count

This Method is popular with the Forest officers because of its simplicity but not liked by the Scientists as it is not amenable to statistical analysis. It involves two essentials step (a) Searching and counting all the elephants in a given area (b) Eliminating double count through suitable precautious and scrutiny of data. Total Direct Count is usually carried out during the dry season when elephants are easy to locate around the limited water sources. In Some protected areas, grasses are burnt during winter which increase visibility and thus provides an oppournity for enumeration of wild elephants. Such total count can provide information on the structure and composition of the population (eg; Sex, Classes, ageclasses, the number of tuskers and makhans (tusk less bull).

3. Results & Discussion

The Study was carried out in 2017 (month of May) in all the ranges of the study area. The ranges of the study area were divided into several census units. These units were covered simultaneously by the census unit members (Forest Department staffs) on foot. Different habitats including water holes, Saltlicks Open grass lands and other places where sighting probability was high were searched during the census periods. The age group and size of elephant was

divided under the following categories. Calf Shoulder height upto 4ft (120cm), Juvenile shoulder height up to 4ft to 5ft (121cm to 150cm). Sub-adult Bull height upto 5ft to 8ft (151cm to 240cm) and Sub-adult Cow height upto 5ft to 7ft (151cm to 210cm). Adult Bull shoulder height above 8ft (above 240cm) and Adult Cow shoulder height above 7ft (above 210cm).

Most of the sightings were recorded near water bodies, foot paths and Saltlicks. A total 49 elephants were sighted out of which 25 (51.02%) were in Hadgarh Range, 15 (30.61%) in Deogaon Range and 9 (18.36%) in Brahmanipal Range. No elephants were encountered in Anandpur Range. It was found that in 2017 population of adult cow was high (43%) followed by calf (21%), adult bull (16%), sub adult cow (6%) and juvenile (4 %).

Similarly In 2015 total 51 elephants were counted out of which (1.96%) were in Anandpur Range, (49.01%) in Hadgarh Range, (31.37%) in Deogaon Range and (17.64%) in Brahmanipal Range. It was found that in 2015 population of Adult cow was high (33.33%) followed by sub-adult cow (19.60%), Calf (17.64%), Adult bull (13.72%), Sub adult bull (11.76%), Adult/Sub-adult U/K (1.96%) & Juvenile (1.96%).

Forest Departments should note that the skewed sex ratio means that very few males in the population. Under such circumstances, the poaching of even single male will have a disproportionately large and adverse impact on the population. Therefore what is seen as low intensity poaching at this stage still poses serious threats. Current anti-poaching activities should be sustained and strengthened further. The lower proportion of Juveniles in the population could be cause for worry, if it is due to reduced breeding as a consequence of the highly skewed sex ratio. This vital aspect points to the need for monitoring of all demographic parameters on a systematic basis in the future. Information on elephant range and numbers is important for the effective conservation and management of elephants in the wild. Despite their large size, counting elephants is not often task. Nevertheless, reliable estimates of elephants numbers both within protected areas and outside are necessary to determine whether elephants are increasing, decreasing or remaining stable in an area. In many parts of India where competition for land is severe between man and elephants, it is important to know large a protected area ought to be in order to support a viable population of elephants further more many management objectivities cannot be achieved in the absence of reliable information on elephants range and numbers. In Similipal during the year 2002 enumeration of elephants was carried out during the monsoon [13]. This is based on a study that has demonstrated that with the least input of time and effort, the success rate in elephants sighting is the highest during August. However during the year 2002 enumeration was done all over the state from 5-7 May. The actual enumeration was preceded by a survey to find out the beats where elephants are either regularly seen or elephants were seen during the last one month or where elephants are known to visit during certain month. All such beats were selected as Elephant Census Unit. Each unit was assigned to an enumeration party comprising a Forest Guard and Field staffs. During the three days of census the area of a unit was searched thoroughly. Some observer were also put on watch towers set up close to water holes, pools and stram beds. Analysis of data involved the elimination of over lap in elephants sightings in a particular unit during the same dayor different days and between adjacent days. The elephants of eastern India are distributed over 23,500sqkm^2. Mostly in the chotanagpur plateau across the state of Orissa and parts of Jharkhand [1, 2]. Since 1986 some of these elephants have also been moving into neighbouring states in particular to southern west Bengal, chhatisghar, More recently to northeastern Andhra Pradesh where they are in serious conflict with people. The elephant habitat of this region are a diffused mosaic of natural forest often degraded or fragmented, village forest as well asas cultivation and mining. Large scale mining for minerals such as Iron, Manganese and chromate is the single largest threat to the congregation of elephants in northern Orissa and southernJharkhand. The most viable habitat and population of this region is undoubtedly the Mayurbhanj Elephant Reserve that includes the Similipal Tiger Reserve, Kuldiha & Hadgarh Sanctuary in Orissa while other sizeable population are also found in the Mahanadi and sambalpur Elephant Reserve. Study on Population structure of elephant inMayurbhanj Elephant Reserve was studied by [7-12].

Table 1. *Census figures during 2017.*

Range	Adult bulls	Adult cows	Sub-adult bulls	Sub-adult cows	Juveniles	Calves	Total
Anandpur	0	0	0	0	0	0	0
Hadgarh	3	12	0	4	0	6	25
Deogaon	3	4	3	1	2	2	15
Brahmanipal	2	5	0	0	0	2	9
Total	8	21	3	5	2	10	49

Table 2. *Census figures during 2015.*

Range	Adult bulls	Adult cows	Sub-adult bulls	Sub-adult cows	Adult/Sub-adult Unknown	Juveniles	Calves	Total
Anandpur	0	0	0	1	0	0	0	1
Hadgarh	5	9	3	2	0	0	6	25
Deogaon	1	6	2	5	0	0	2	16
Brahmanipal	1	2	1	2	1	1	1	9
Total	7	17	6	10	1	1	9	51

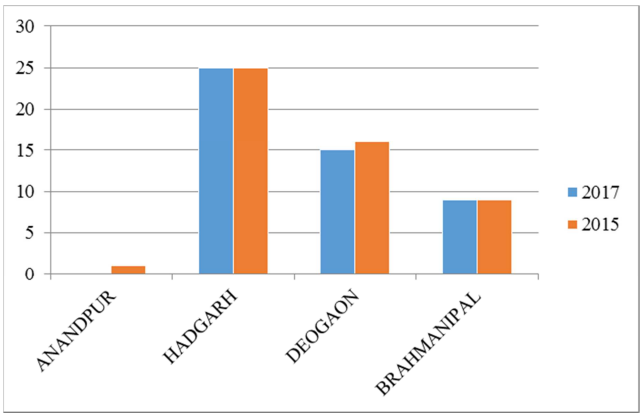

Figure 2. *Range wise Elephant population during 2015 &2017.*

4. Conclusions

The Impact that elephants have on their own habitat and how that in turn affects biodiversity is not clearly known in the Asian situation. The decline in preferred tree species and recent proliferation of exotic weeds in the elephants point to a worrying future. A study of this aspect is urgent especially because elephants are key stone species. There is a need to standardize data collection (on population) using robust methods capcity building by training and developing a core team of forest department staff and others NGOs is essential to systematically monitor elephants population in the future. There is also a need to monitor the other aspects of elephant population and shift focus from primarly determing the densities.

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