

## **DIVERSITY OF WILDLIFE ZOO MANAGEMENT OF BARNAWAPARA SANCTUARY, DISTRICT BALODABAZAR, CHHATTISGARH**

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### **ABSTRACT**

The present investigation was carried out in the forest of Barnawapara Wildlife Sanctuary. Investigation was done by simple survey of the field, which was carried out in the morning and evening to estimate the diversity and the management of the sanctuary. Barnawapara wildlife sanctuary is divided into 9 circles and 45 beats. There are total 18 villages. Artificial meadow has established in three different area of Barnawapara Wildlife Sanctuary. There are total 45 waterholes and 72 in Barnawapara sanctuary. Solar pumps and solar purification plants installed in Barnawapara, which generated water for daily purpose. There are 7 checkpoints, 13 petrolling camps and 9 watchtowers in Barnawapara. Sanctuary management also includes the activities like fire line management and Removal of non palatable grasses and weeds.

Biodiversity of Barnawapara wildlife sanctuary consist of dense forest mainly comprises of Teak, Sal, Bamboo, Indian Laurel, Roxb, Indian Kino tree, Haldu and Crape myrtle. The major wildlife include Tiger, Leopard, Bison, Bear, Sambar Deer, Blue Bull, Spotted Deer, Barking deer, Four-horned Antelope, Wild Boar, Wild Dog, Striped Hyena, Fox and Wolf.

**KEYWORDS:** Wildlife, Barnawapara, Santuary.

## INTRODUCTION

Barnawapara covers an area of 244.66 sq. km. It is named after Bar and Nawapara villages which are in the middle of the sanctuary. Barnawapara was established by the Madhya Pradesh Government (Notification No. – F/15/76/2/X/76/2110) in 27/07/1976. During establishment of the sanctuary it had only one zone which is further divided into 21 sectors and 4 subdivisions. The headquarter was in Bar. Sanctuary is divided in 45 beat and 9 sub circles, by chief wildlife conservative officer, Raipur. As per management point of view barnawapara wildlife sanctuary is divided into two sectors i.e. (1) Barnawapara zone (2) Kothari zone Barnawapara is the most important wildlife sanctuary of the Chhattisgarh state because it is nearest to the capital of state – Raipur. The other main reason is the abundance of wildlife flora and fauna. Barnawapara zonal headquarter is situated at the left side of the Patewa village at 28 km, patewa is about 72 km from Raipur via Raipur – Saraipali highway no – 53. Barnawapara wildlife Sanctuary is located in the water-intensive area of the Chhattisgarh main river-Mahanadi. The assistant river of Mahanadi forms the western boundary of the sanctuary, while the Jonk river flows near its north-eastern border.



**Fig. 1: Barnawapara Wildlife Sanctuary.**

## DISTANCE OF BARNAWAPARA FROM DIFFERENT PLACES

Raipur – 100 km. Mahasamund – 60 km, Balodabazar – 65 km, Pithora – 24 km  
Kasdol – 35 km and Patewa – 28 km

## INFORMATION ABOUT FORESTS AND WILDLIFE

Barnawapara wildlife sanctuary is known for their dense forests. 21.5% of the sanctuary is occupied by the Teak forest. Sal covers only 6% of the forest and rest of the forest are covered by the mixed species of trees, mainly consist of Indian Laurel (*Terminalia tomentosa*), Amaltas (*Cassia fistula*), Roxb (*Sterculia urens*), Indian Kino tree (*Pterocarpus*

marsupium), Crape myrtle (*Lagerstroemia parviflora*), Haldu or yellow teak (*Haldina cordifolia*). Bamboo forests are found in approximately 18 areas of the sanctuary, which is highly overlapping with the forest of other species. Many species of shrubs and creepers are found in its ground cover, most of which are of medicinal value.

South-eastern part of the sanctuary is plain, while its northern part is surrounded by small hills, among which there is ground in the valleys. In view of Wildlife Manager, the habitat is divided into two parts. In the central part of the study, there is no human population in the area of about 46 sq. Km, which has been marked as core zone. Tourists are not allowed in core zone. In this area, only the function of management of wild animals such as drinking water management, residential area development etc. are done. The buffer zone has 21 villages, whose population is 8552 and the animal number is 10,962. Out of this 3 villages have been displaced out of the sanctuary. This area is open for tourists visiting. In the buffer zone, wild animals are in considerable quantities, which can easily be seen.

Wildlife such Leopards (*Panthera pardus*), Sloth Bears (*Melursus ursinus*), nilgai (*Boselaphus tragocamelus*), Four-horned Antelopes (*Tetracerus quadricornis*), Langur (*Semnopithecus dussumieri*), hyena (*Hyaena hyaena*), Bison (*Bos gaurus*), Muntjac, Monkey (*Macaca mulata*), Flying Squirrels (*Petaurista philippensis*), and Spotted Deer (*Axis axis*) are found in abundance in the sanctuary and are easily visible. In the crawling species, Monitor Lizard are found in large numbers in addition to many serpentine species like cobra, Krait, and python. In the sanctuary, more than 150 species of birds are found, including migratory birds coming in the winter season. Among the major bird species, three types of peacock, Indian Paradise Flycatcher, and parrot; three types of Golden Oriole, Drongo, Robin and woodpecker, three types of Bulbul, Hoopoe, Falcon include gulgul etc.

## **GEOGRAPHICAL DISTRIBUTION OF STUDY AREA**

GEOGRAPHICAL: GROUND AREA – 55%, HILL AREA – 45%

STRUCTURE

PLACE: BARNAWAPARA

STATE: CHHATTISGARH

DISTRICT: BALODA BAZAR

COORDINATE: LATITUDE - 21° 18' 45'' - 21° 30' 45'' NORTH

LONGITUDE: 82° 22' 30'' - 82° 37' 30'' EAST

OWNERSHIP: STATE

AREA: 24,466 Ha

ALTITUDE: 265 – 400 m

RAINFALL: 1,200 mm

TEMPERATURE: 4<sup>0</sup>C TO 46<sup>0</sup>C

BIOGRAPHIC ZONE: DECCAN PENINSULA

HABITATS: TROPICAL DRY DECIDUOUS

TYPES OF FOREST: TYPE 5 A/C 1b (iii) DRY TEAK

TYPE 5 B/C 1c (iv) DRY PENINSULAR SAL FOREST

TYPE 5 B/C 2 (xi) NORTHERN DRY MIX DECIDUOUS FOREST

TYPE 5 E/9 DRY BAMBOOS

OUTER: EAST: FOREST ZONE DEVPUR

BOUNDARIES SOUTH: FOREST DEVELOPMENT CORPORATION RAVAN

WEST: FOREST ZONE LAVAN

NORTH: FOREST ZONE SONAKHAN

DISTANCE FROM RAIPUR – 100 KM, FROM BILASPUR – 115 KM

HEADQUARTER: FOREST OFFICER, BALODABAZAR FOREST DEPARTMENT

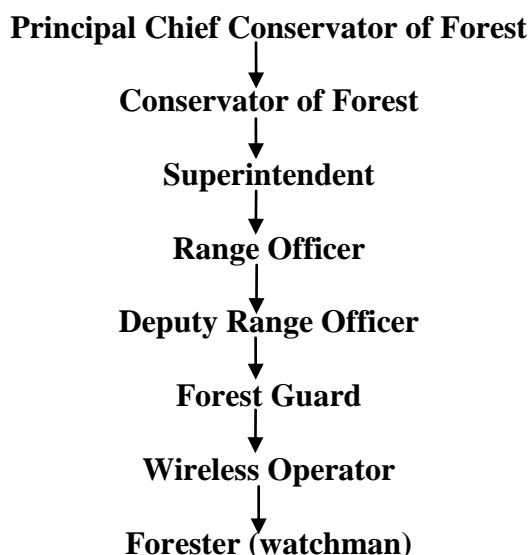
BALODABAZAR

SUPERINTENDENT: BARNAWAPARA

OFFICE

HEIGHT FROM SEA: 900 MSL LEVEL

## STRUCTURE AND ORGANISATION OF MANAGEMENT





Methodology includes selection of the site, observation method, collection of data, and photography.

The objective of the study is to study the diversity of wildlife zoo management. The selection of site is done in such a way that ecosystem should have a variety of wildlife species, natural vegetation and water resources as these components help in the study of management of wildlife sanctuary. View barnawapara wildlife sanctuary is divided into two sectors i.e. 1. Barnawapara zone 2. Kothari zone. Both zones were selected for study. Study site covers an area of 244.66 sq. km.

Observation is done by visiting the site with a forest guard. Observation is done in early morning and in evening. Visting were done in open jeeps and Tata jenon.



**Fig. 3: Vehicles (Open Jeeps and Jenon).**

### **Survey method**

A simple inquiry is done for data collection. Different questions about the wildlife sanctuary to the forest guard, guides and other management staff.

### **Collection of data**

Collection of data includes total number of wildlife species, total number of each species, availability of natural water resources and artificial water holes, and other facilities in the sanctuary.

### **Photography**

Photography of different wildlife species, their habitat, water holes, ponds, watch tower, checkpoints, patrolling camps, meadows etc. is done in morning and evening schedule. Photography is done with the help of digital cameras.

## **RESULT**

### **TOTAL AREA OF SANCTUARY**

Barnawapara Wildlife sanctuary is organized into two zones, known as the Buffer zone and the Core zone. Buffer area accommodates tourism, experimental research and education facilities. Buffer zone mainly includes pastoral land, agricultural land and forest. Core zone is a legally protected area. Tourists are not allowed in core zone. In this area, only the function of management of wild animals such as drinking water management, residential area development etc. Buffer zone of Barnawapara Wildlife sanctuary is spread in 20444.9242 ha and core zone is spread in 4607.9456 ha.



**NUMBER OF ZONE ASSISTANT CIRCLE AND BEAT IN THE SANCTUARY**

Barnawapara wildlife sanctuary is divided into circles and beats. Forest guards are divided according to their beat. There are 5 circles in Kothari and 4 in bar. There are 24 beat in Kothari and 21 in bar.

**NUMBER OF VILLAGES IN THE SANCTUARY**

There are total 18 villages in the sanctuary. 10 villages are situated in the bar and 8 villages are situated in the Kothari.

**NUMBER OF VILLAGES DISPLACED FROM SANCTUARY**

Out of this 3 villages have been displaced out of the sanctuary, i.e. Rampur, Navapara and Latadadar. Rampur had 135 number of families displaced in compartment no. 500, 501 mahasamund forest department, mahasamund. Navapara had 168 number of families displaced in compartment no. 795, 796 mahasamund forest department, mahasamund. Latadadar had 98 number of families displaced in compartment no. 507, 509 mahasamund forest department, mahasamund.

**MEADOW (CHARAGAH)**

Artificial meadow has established in three different area of Barnawapara Wildlife Sanctuary. These artificial meadows are situated in Rampur (Zone no. 112 & 127) spread in 100.00 hectare area, Nawapara (Zone no. 106 & 168) spread in 239.66 hectare area, and Latadadar (Zone no. 106) Spread in 117.00 hectare area. The main purpose for establishment of artificial meadow is to providing feeding facilities to the herbivores wild animals like bison, deer and reindeer.



**Fig. 4: Meadow (Charagah) of Barnawapara wildlife Sanctuary.**

**INFORMATION ABOUT FOREST ROUTE**

Forest route of Bar measures about 115 km and forest route of kothari measures about 60 km. The total forest route of barnawapara wild sanctuary measures about 175 km.

**INFORMATION ABOUT TOURIST ROUTE**

Tourist route of Bar measures about 115 km and forest route of kothari measures about 60 km. The total tourist route of barnawapara wild sanctuary measures about 175 km.

**TEMPORARY WATERHOLE**

Artificial waterholes are made in the different areas of the sanctuary to provide extra water facilities to the animals. There are total 45 waterholes in barnawapara sanctuary. 15 waterholes are situated in Bar and 30 are in Kothari.



**Fig. 5: Temporary waterholes in Barnawapara wildlife Sanctuary.**

**NATURAL WATER SOURCES**

Standing water bodies are present in the Barnawapara sanctuary. Total number of ponds in the Barnawapara sanctuary is 72. 39 ponds are situated in Bar and 33 ponds are situated in Kothari.



**Fig. 6: Pacchi Vihar, Natural Water Source (pond), in Barnawapara wildlife Sanctuary.**



**SOLAR PUMPS INSTALLED IN PONDS**

Solar water pump is powered by solar energy. These pumps are used for extracting water from pond. There are total 15 solar pumps installed ponds in Barnawapara wildlife Sanctuary. 5 solar pumps are installed in Bar and 5 solar pumps are installed in Kothari.



**Fig: 7. Solar Water Pumps installed in Pond of Barnawapara wildlife Sanctuary.**

**BLACK BUG CUSTOMIZATION CENTER**

Black bug customization center is the center in the barnawapara wildlife sanctuary where black bugs are protected and special care are given to them. This center consist of artificial water hole, artificial grazing land, and shed facilities for the black bugs.



**Fig. 8: Black Bug Customization Center in Barnawapara Wildlife Sanctuary.**

**WILD BUFFALO BREEDING CENTER**

In Wild Buffalo breeding center special care are given to wild buffalos. This breeding center consist of artificial water hole, artificial grazing land, and sheds for wild buffalo.



**Fig. 9: Wild Buffalo Breeding Center in Barnawapara Wildlife Sanctuary.**

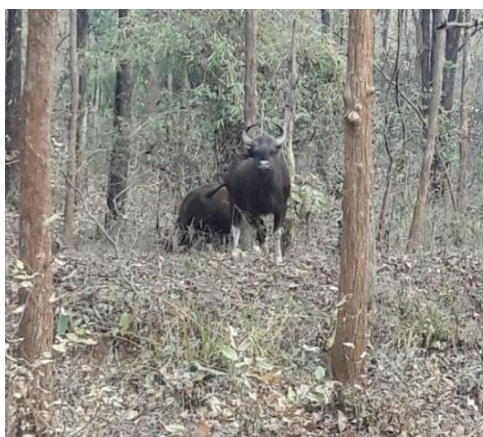
### **CROCODILE OBSERVATION CENTER**

Crocodile observation center is the artificial habitat created for crocodiles. There is a artificial pound in the center. Number of crocodile is three.



**Fig. 10: Crocodile observation center in Barnawapara Wildlife Sanctuary.**

### **WILD ANIMALS IN BARNAWAPARA WILDLIFE SANCTUARY**



**Fig. 11: Bos gaurus (Bison).**



**Fig. 12: Axis axis (Spotted Deer).**



**Fig. 13: Sus scorfa (Wild Boar).**



**Fig. 14: Crocodylus palustris (Crocodile).**



**Fig. 15: Pavo cristatus (Peacock).**





**Fig. 16: Cuon aplainus (wild dog).**



**Fig. 17: Boselaphus tragocamelus (Blue Bull).**



**Fig. 18: Semnopithecus dussumieri (Gray Langur).**



**Fig. 19: Macaca mulata (Monkey).**

**Table 1: Wild Animals Observed In The Wildlife Sanctuary.**

S.n.	Common name	Scientific name	Number of animals
1	Indian Bison	<i>Bos gaurus</i>	6
2	Spotted Deer	<i>Axis axis</i>	13
3	Wild Boar	<i>Sus scrofa</i>	2
4	Crocodile	<i>Crocodylus palustris</i>	3
5	Peacock	<i>Pavo cristatus</i>	9
6	Asiatic Wild Dog	<i>Cuon alpinus</i>	2
7	Blue Bull	<i>Boselaphus tragocamelus</i>	1
8	Langur	<i>Semnopithecus dussumieri</i>	35
9	Monkey	<i>Macaca mulata</i>	2

## CONCLUSION

The Barnawapara Wildlife Sanctuary derives its name from Bar and Nawapara forest valleys which are situated in the middle of the sanctuary. It is one of the most popular wildlife sanctuaries in Chhattisgarh, established in 1976 under the Wildlife Protection Act of 1972. It is situated 15 km north of block headquarters Pithora on National Highway 6 and 100 km from Raipur. It is approachable in all seasons. This small wildlife sanctuary spread over an area of about 244.66 sq km in the Balodabazar district of Chhattisgarh. Sanctuary is divided in 45 beat and 9 sub circles, by chief wildlife conservative officer, Raipur. As per management point of view Barnawapara wildlife sanctuary is divided into two sectors i.e. 1. Barnawapara zone 2. Kothari zone. Barnawapara Wildlife sanctuary is organized into two zones, known as the Buffer zone and the Core zone. Buffer area accommodates tourism, experimental research and education facilities. Buffer zone mainly includes pastoral land, agricultural land and forest. Core zone is a legally protected area. Tourists are not allowed in core zone. In this area, only the function of management of wild animals such as drinking water management, residential area development etc. Black Bug customization center, Wild Buffalo breeding center and Crocodile observation center are established for the protection and to provide special care and facilities to the black Bugs, Wild Buffaloes and Crocodiles.

Barnawapara wildlife sanctuary is divided into 9 circles and 45 beats. There are total 18 villages in the sanctuary. Three villages have been displaced out of the sanctuary. Artificial meadows are situated in Rampur spread in 100.00 hectare area, Nawapara spread in 239.66 hectare area, and Latadadar spread in 117.00 hectare area. The forest route of wild sanctuary measures about 175 km and tourist route measures about 175 km. There are total 45 waterholes in barnawapara sanctuary. Total number of pounds in the Barnawapara sanctuary is 72. There are total 15 solar pumps installed in ponds for the extraction of water from pond.

Total 18 solar purification plants installed in Barnawapara, which generated water for drinking purpose. There are 7 checkpoints, 13 petrolling camps and 9 watchtowers in Barnawapara. Sanctuary management also includes the activities like fire line management and Removal of non palatable grasses and weeds.

Barnawapara wildlife sanctuary is known for their dense forests and unique wild life species. 21.5% of the sanctuary is occupied by the Teak forest. Sal covers only 6% of the forest and rest of the forest are covered by the mixed species of trees, mainly consist of Indian Laurel (*Terminalia tomentosa*), Amaltas (*Cassia fistula*), Roxb (*Sterculia urens*), Indian Kino tree (*Pterocarpus marsupium*), Crape myrtle (*Lagerstroemia parviflora*), Haldu or yellow teak (*Haldina cordifolia*). Bamboo forests are found in approximately 18 areas of the sanctuary, which is highly overlapping with the forest of other species. The major wildlife includes Leopards (*Panthera pardus*), Sloth Bears (*Melursus ursinus*), nilgai (*Boselaphus tragocamelus*), Four-horned Antelopes (*Tetracerus quadricornis*), Langur (*Semnopithecus dussumieri*), hyena (*Hyaena hyaena*), Bison (*Bos gaurus*), Muntjac, Monkey (*Macaca mulata*), Flying Squirrels (*Petaurista philippensis*), and Spotted Deer (*Axis axis*). The sanctuary also has a large population of birds like several species of Parrots, Parakeets, bulbul, White Rumped Vultures, Egrets, Green Avadavats, Lesser Kestrels, herons, Peafowl, Woodpeckers and Racket-tailed Drongos.

## REFERENCES

1. Conover Michael R. Resolving Human – wildlife conflicts: The Science of Wildlife Damage Management. CRC Press 2001; ISBN 9781566705387.
2. Deem Sharon L., Karesh William B., Weisman Wendy. Putting Theory into Practice: Wildlife Health in Conservation. Conservation Biology, October 2001; 15(5): 1224-1233.
3. Geldmann J, Barnes M, Coad L, et. Al Effectiveness of terrestrial protected area in reducing habitat loss and population declines. Biological conservation, 2013; 161: 230- 238.
4. Green Ronda, Giese Melissa. Negative effects of wildlife tourism on wildlife. Wildlife Tourism: Impacts, Management and Planning. CRC for Sustainable Tourism and Common Ground Publishing, Altona, 2004; 106: 81-97.
5. Macnab J. 1983. Wildlife Management as Scientific Experimentation. Wildlife Society Bulletin, winter, 1983; 11(4): 397-401.



6. Mawdsley Jonathan R., Malley Robin O., Ojima Dennis S. A Review of Climate Change Adaptation Strategies for Wildlife Management and Biodiversity Conservation. *Conservation Biology*, 23(5).
7. Orams Mark B. A conceptual model of tourist-wildlife interaction: the case for education as a management strategy. *The Australian Geographer*, 1993; 27(1): 39-51
8. Riley Shawn J., Decker Daniel J., Carpenter Len H., Organ John F., Siemer William F., Mattfeld George F., and Parsons Gary, *The Essence of Wildlife Management*. *Wildlife Society Bulletin*, 2002; 30(2): 585-593.
9. Songorwa Alexander N., Buhrs Ton, Hughey Ken F.D. *Community-Based Wildlife Management in Africa: A Critical Assessment of the Literature*. *National Resources Journal*, 2000; 40(3).
10. Svensson Tobias Haggmark, Elofsson Katarina, Engelmann Marc, Gren Ing Marie. 2015. A Review of the literature Benefits, Costs, and Policies for Wildlife Management.
11. Wobeser G. Disease management strategies for wildlife. *Revue Scientifique et Technique-Office international des epizooties* 2002; 21(1): 159-178.
12. Yahner Richard H. 1988. Changes in Wildlife Communities Near Edges. *Conservation Biology*, Dec., 1988; 2(4): 333-339.