
RHINO ESTIMATION 2012

POBITORA WILDLIFE SANCTUARY

Pobitora Wildlife Sanctuary situated in Morigaon district (26°12' N to 26°15' N and 91°59' E to 92°05' E) is one of the important areas for the population of One Horned Rhino (*Rhinoceros unicornis*). Though the extent of the PA is 3881 ha but Rhinos are concentrated within 1585 ha of flood plain area in the Sanctuary. The Forest department of Assam prior to 2006, Rhino estimation was organized in a span of six years; since 2006 onwards it is decided to carryout population estimation in every three years. The last census in Pobitora Wildlife Sanctuary was done in 2009, where the Rhino population estimated 84 in number that is the highest concentration among Rhino bearing areas in the country. Estimation of animal population is an essential tool for the Management of an area. Hence the estimation is done with following objectives

1. To know the number of individual present
2. To know the population dynamics
3. To know the present increment of the species.

Methodology:

The methodology adopted for Rhino estimation in Pobitora Wildlife Sanctuary is the Direct Total Count Method, which is a suitable method to estimate large mammal like Rhino in a small extent of area like Pobitora.

To carryout the census operation the 16 sq km Rhino bearing area of Pobitora Wildlife Sanctuary has been divided into 7 (seven) blocks namely Haduk (180 ha), Tamulidova (189 ha), Solmari (125 ha), Jogdal (146 ha), Pagladova I (314 ha), Pagladova II (282 ha) and Naltoli block (349 ha). Keeping in view of the stray behaviour of Rhino in Pobitora 5 (five) blocks were marked outside of the PA to count during the estimation which were covered on foot by Forest staff.

All the invitee and staff engaged in the census operation were briefed on the previous evening i.e. on 19th March 2012 at Forest Rest House, Pobitora and discussed about the block area, the demarcated boundary, the starting point and end point of each block. The detail discussion was held regarding the record of sighted individual Rhino in the supplied Enumeration Sheet and precaution to be adopted to avoid double count. Each of the enumeration team of seven blocks of the PA consists of one Dept. Elephant, one enumerator, a forest staff with arms who is well acquainted with the block entrusted to them. Few of the enumeration team were also accompanied by observers who are the member of a NGO working on the subject of Wildlife Conservation.

In the process of enumeration all the enumerators were the Forest officials other than Guwahati Wildlife Division and members of Non Governmental Organization (NGO) participated were Arranyak Natures Club, World Wide Fund, Wildlife Areas Development & Welfare Trust of Assam, Pobitora Conservation Society etc. as observer. The census was started on 20th March 2012 morning at around 6 am simultaneously in all the blocks and was completed by around 9.00 am.

After completion of the estimation operation all the enumerator sit together at the Forest Rest House for debriefing. The Chief Conservator of Forests (Wildlife), Assam was also present at the time of debriefing.

Result:

Following was the outcome of the Rhino census operation.

Haduk Block (180 ha)

Enumerator: Sri Pradipta Baruah ACF
 Forest Staff: Sri Lohit Ch Kalita Fgd
 Elephant: Shankar
 Mahut: Sri Bishnu Rabha

Adult			Sub-Adult			Calf		Total
Male	Female	Unsexed	Male	Female	Unsexed	Up to 1 yr	1 yr above	
5	9	-	-	2	-	-	6	22

Tamulidova Block (189 ha)

Enumerator: Sri Bhupendra Nath Talukdar DCF
 Forest Staff: Sri Madan Ch Thakuria Fgd
 Elephant: Bikram
 Mahut: Sri Baneswar Boro

Adult			Sub-Adult			Calf		Total
Male	Female	Unsexed	Male	Female	Unsexed	Up to 1 yr	1 yr above	
5	11	-	2	4	-	4	4	30

Jogdal Block (146 ha)

Enumerator: Sri Salim Ahmed FR
Forest Staff: Sri Robin Singh BM
Elephant: Naga
Mahut: Sri Bhumidhar Deka

Adult			Sub-Adult			Calf		Total
Male	Female	Unsexed	Male	Female	Unsexed	Up to 1 yr	1 yr above	
6	6	-	1	1	-	2	3	19

Solmari Block (125 ha)

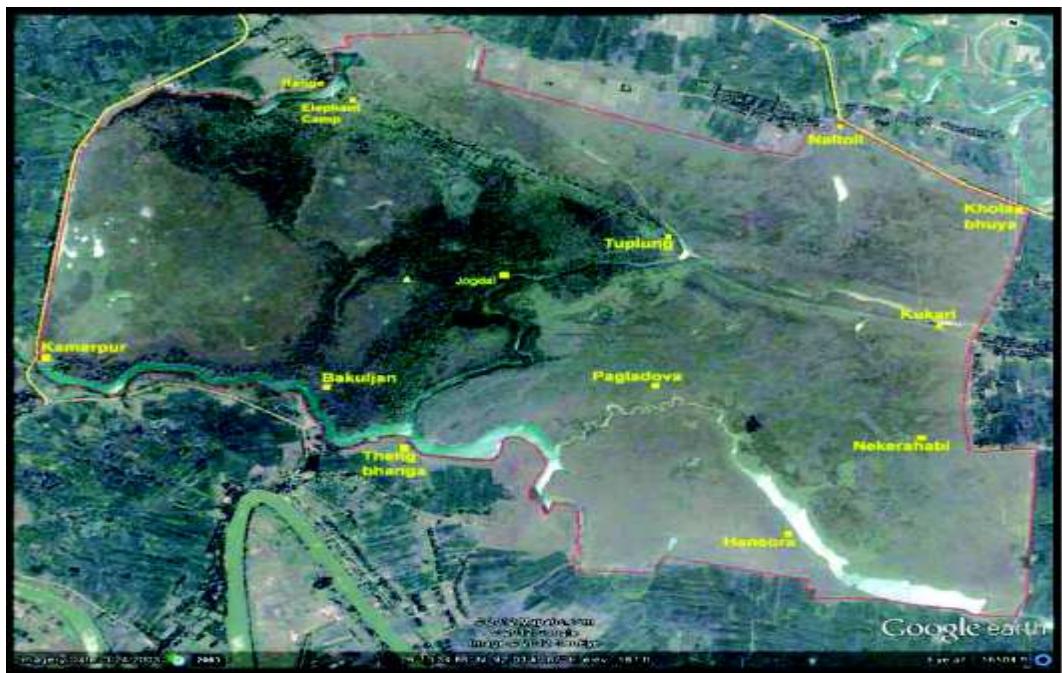
Enumerator: Sri Nirod Kr Sut FR
Forest Staff: Sri Suren Basumatary Fgd
Elephant: Mrigaraj
Mahut: Sri Biren Kutum

Adult			Sub-Adult			Calf		Total
Male	Female	Unsexed	Male	Female	Unsexed	Up to 1 yr	1 yr above	
3	4	-	-	-	-	4		11

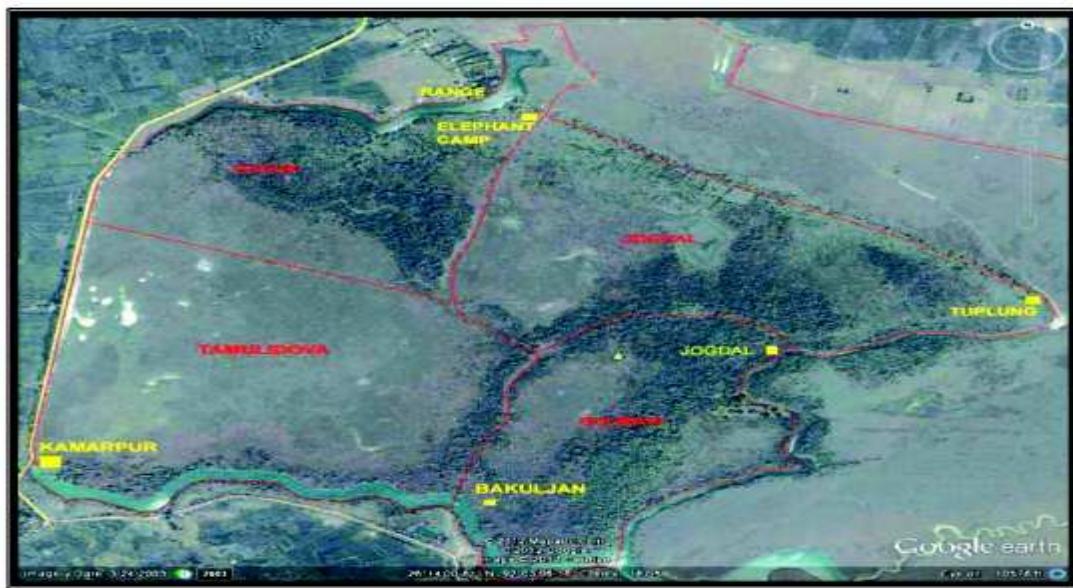
Pagladova I Block (314 ha)

Enumerator: Sri R P Gardwar IFS
Observer: Sri Jayanta Das
Forest Staff: Sri Babul Ch Deka GW
Elephant: Pawan
Mahut: Sri Holiram Gogoi

Adult			Sub-Adult			Calf		Total
Male	Female	Unsexed	Male	Female	Unsexed	Up to 1 yr	1 yr above	
-	3	1	-	-	-	1	2	7



MAP OF THE RHINO ESTIMATED AREA



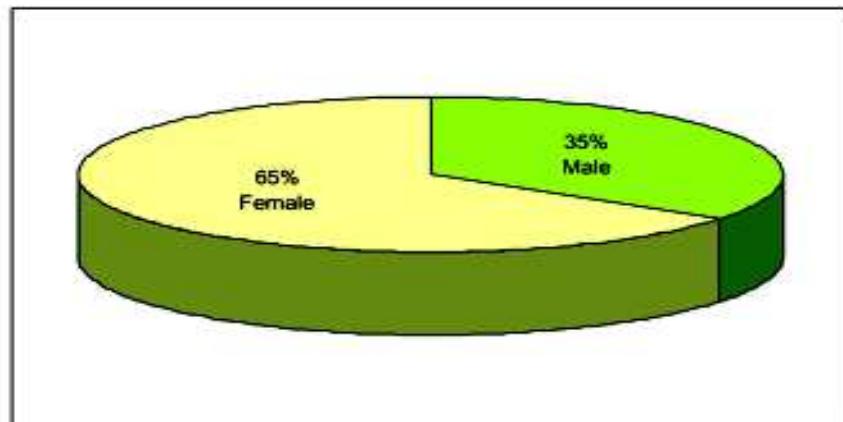
BLOCK MAP



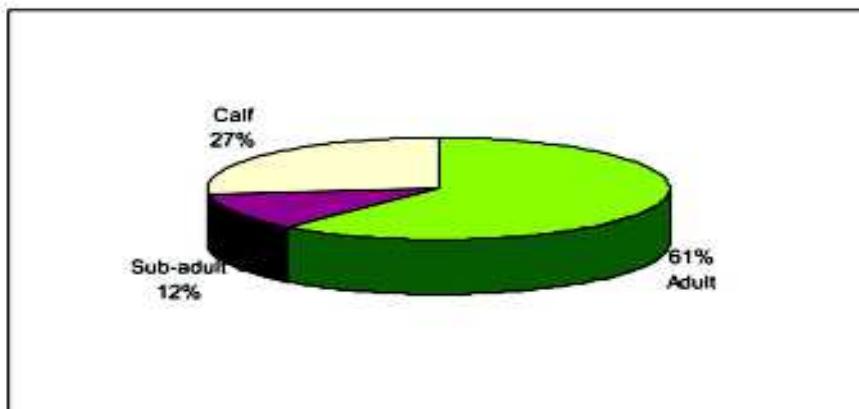
BLOCK MAP



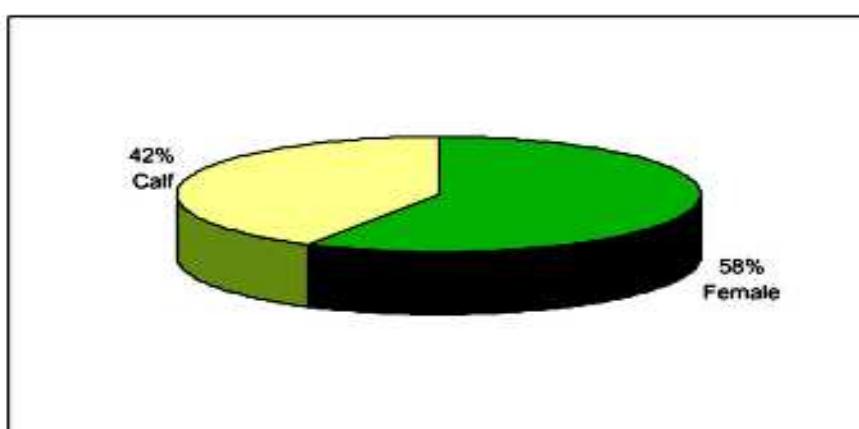
BLOCK MAP



Pied chart showing composition of males and females of Rhino estimated on 20th March 2012

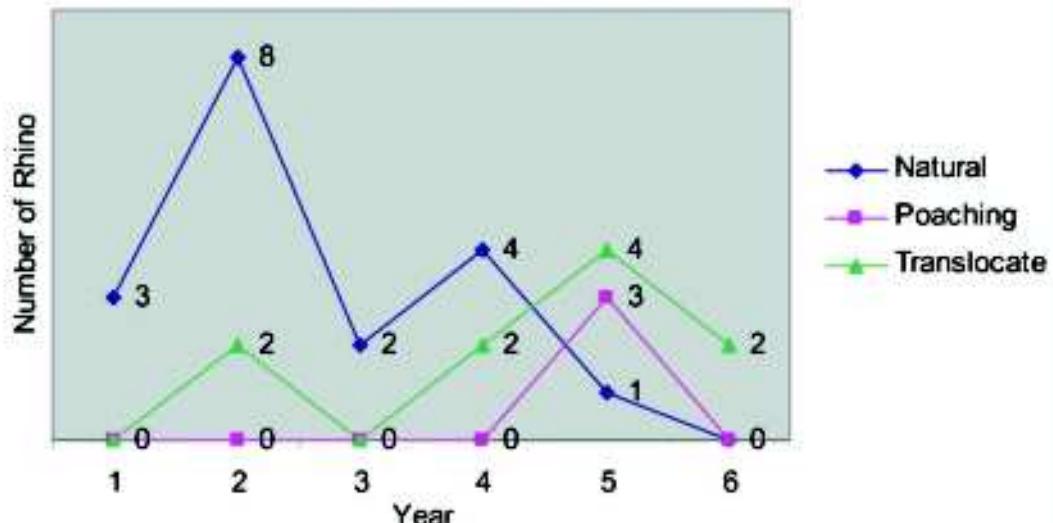


Age structure of Rhino in Pobitora Wildlife Sanctuary as estimated on 20th March 2012

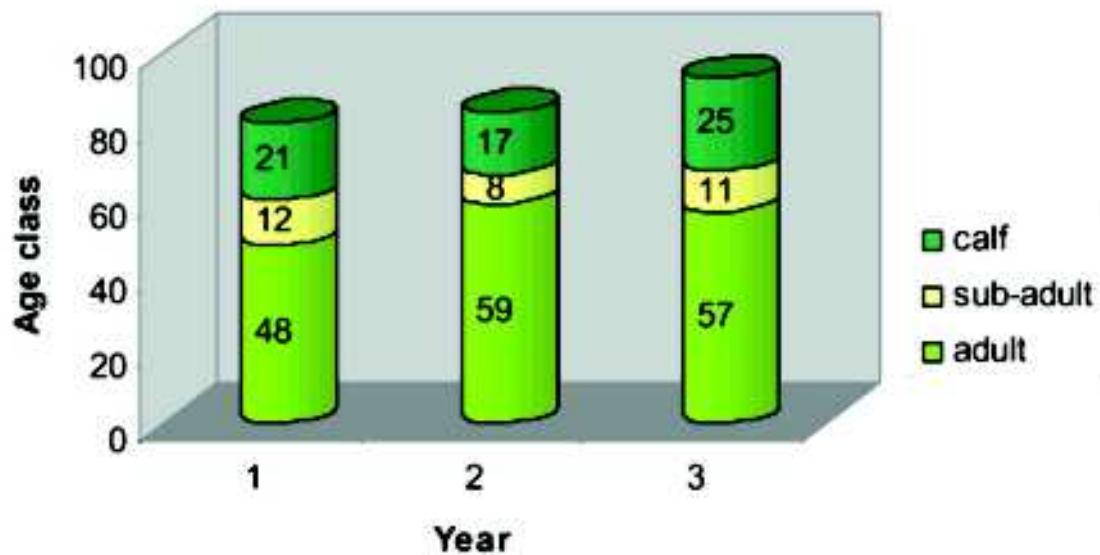


Pied chart showing the composition of mother and calf estimated on 20th March 2012

Removal of Rhino from Pobitora (2007 to 2012)



Rhino estimation (2006 to 2012)



Pagladova II Block (282 ha)

Enumerator: Sri Ashok Das FR
Forest Staff: Sri Pushpa Bora Fgd
Elephant: Joytara
Mahut: Sri Mohan Bordoli

Adult			Sub-Adult			Calf		Total
Male	Female	Unsexed	Male	Female	Unsexed	Up to 1 yr	1 yr above	
-	1	1	-	1	-	-	-	3

Naltoli Block (349 ha)

Enumerator: Sri Sahjad Ali Fr I
Forest Staff: Sri Dimbeswar Nath GW
Elephant: Rudra
Mahut: Sri Dehiram Bora

Adult			Sub-Adult			Calf		Total
Male	Female	Unsexed	Male	Female	Unsexed	Up to 1 yr	1 yr above	
1	2	-	-	-	-	-	-	3

Outcome of the estimation before debriefing:

Name of the Block	Adult			Sub-Adult			Calf		Total
	Male	Female	Unsexed	Male	Female	Unsexed	Up to 1 yr	1 yr above	
Haduk	5	9	-	-	2	-	-	6	22
Tamulidova	5	11	-	2	4	-	4	4	30
Jogdal	6	6	-	1	1	-	2	3	19
Solmari	3	4	-	-	-	-	4	-	11
Pagladova I	-	3	1	-	-	-	2	1	07
Pagladova II	-	1	1	-	1	-	-	-	03
Naltoli	1	2	-	-	-	-	-	-	03
Outside PA	-	-	-	-	-	-	-	-	-
Total	20	36	2	3	8	-	12	14	95

As mentioned earlier, the debriefing was taken place after the census operation and in the process it was revealed that one pair of mother and calf has been counted twice by Jogdal and Solmari block. After ascertaining such double count, 2 individuals have been deducted from the total count of Jogdal block and the count has been recorded as 17 individuals. No Rhino was recorded by the enumerators of the 5 blocks marked out side the PA.

As such the following is the outcome of the **Rhino Estimation 2012 in Pobitora Wildlife Sanctuary on 20th March 2012**:

Name of the Block	Adult			Sub-Adult			Calf		Total
	Male	Female	Un-sexed	Male	Female	Un-sexed	Up to 1 yr	1 yr above	
Haduk	5	9	-	-	2	-	-	6	22
Tamulidova	5	11	-	2	4	-	4	4	30
Jogdal	6	5	-	1	1	-	1	3	17
Solmari	3	4	-	-	-	-	4	-	11
Pagladova I	-	3	1	-	-	-	2	1	07
Pagladova II	-	1	1	-	1	-	-	-	03
Naltoli	1	2	-	-	-	-	-	-	03
Outside PA	-	-	-	-	-	-	-	-	-
Total	20	35	2	3	8	-	11	14	93

Analysis:

From above records it comes to a conclusion that census operation was done very methodically and result was satisfactory. The reason of recording two unsexed individuals was as follows. Pagladova I block recorded the adult Rhino which was lying on ground for which they were unable identify the sex and Pagladova II block recorded the adult Rhino from distance that had crossed to Pagladova I from their behind for which they were unable to ascertain the sex. During debriefing it was established that Pagladova I did not recorded the same individual.

The over all male: female sex ratio in the PA is 1:1.87 which may consider as a healthy sign of Rhino population in the Sanctuary (prescribed sex ratio of male: female is 1:1.5 to 2.0). The adult female: calf ratio in the PA is 1:0.714. Male population represent 24.73% and female of 46.24% of overall population of Rhino in Pobitora Wildlife Sanctuary. The increment of calf is of 26.88% against the over all increase of total population 9.68%.

The census operation in a span of 3 years has been adopted in Assam's Rhino bearing areas from 2006 onwards. The Census of 2006 was done on 8th April where total population was estimated as 81 in numbers out of which 18 adult male, 30 adult female, sub-adult male 9, 9 female 2, unsexed 1 and 21 calves were recorded. The census of 2009 was done on 8th May where total Rhino population recorded was 84. The breakup of the estimation were adult male 19, female 40, sub-adult male 5, female 3 and calves 17. In both the census the calves were not recorded as did this year. This year calves were in two categories i.e. up to 1 year and above 1 year, which gave us a clear picture of annual increment of Rhino. Between 2006 and 2009 census, PA had recorded the natural death of 5 matured males, 2 matured females, 2 male calves and 2 female calves. Besides these, two adult male Rhinos were translocated to Manas National Park under IRV 2020 programme. In the process 13 individual Rhinos were removed by different means from the PA.

Between 2009 and 2012 census, 10 Rhinos were died in the PA for different reasons. Due natural cause 3 adult female and 4 female calf death were recorded. After a gap of five years 1 male and 2 female Rhinos were poached in the PA. Besides these 2 male and 6 female Rhinos were translocate to Manas National Park under IRV 2020 programme. As such 18 individual Rhinos were removed from the PA.

In order to study the population trend based on birth rate and mortality rate all data from 2007 to 2012 were compiled and shown above. Based on above analysis the average birth rate is 0.7 births per year and mortality is 0.3 deaths per year. It has been seen that the methodology adopted for the Rhino census is suitable for area like Pobitora Wildlife Sanctuary. The descriptive analysis in comparing the birth and mortality rate from 2009 to 2012 has shown a net population growth of 15 Rhinos within the 3 years period (0.41 net growths per year) against the overall growth of population of 9 Rhinos within the 3 years period (0.25 net growth per year).

The estimation done on 20th March, 93 individual rhinos were counted in 16 sq km Rhino bearing area of the PA where the density has estimated as 5.8 rhino per sq km. The overall population growth of Rhino in Pobitora Wildlife Sanctuary will be more if the translocated Rhinos are also considered.