

# CENSUS OF GREAT INDIAN ONE HORNED RHINOCEROS (*Rhinoceros unicornis* Linn) AT JALDAPARA WILDLIFE SANCTUARY, COOCH BEHAR FOREST DIVISION, WEST BENGAL, INDIA

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## Introduction

Jaldapara Wildlife Sanctuary is one of the last abodes harboring natural populations of the Great Indian One-Horned Rhinoceros (*Rhinoceros unicornis*), and one of the oldest sanctuaries in India. Since its inception, it has been managed scientifically to maintain the rhino population. Continuous monitoring, round-the-clock patrolling, and scientific management practices are the reasons for an increasing trend of this pocketed population. The rhinos of Jaldapara are monitored daily and a total census operation is undertaken every four years. Such a census was carried out in April 1996 when a total count of the rhinoceros population was undertaken by direct sighting method. A similar census operation was undertaken during April 1992, when there was a recorded population of 33 rhinos in the sanctuary (Govt. of West Bengal, Forest Department records). The 1996 census recorded 42 animals, showing an increasing trend in the population.

The census operation was conducted in the Jaldapara Wildlife Sanctuary and other parts of Cooch Behar Forest Division outside the sanctuary area on 20 April 1996 by the direct sighting method from 6 a.m. to 11 a.m. Out of the total 295.31 km<sup>2</sup> area of Cooch Behar Forest Division, depending on the primary reconnaissance and the reported occurrence of wild animals, more emphasis was given to a 194.63 km<sup>2</sup> area by dividing it into 28 enumeration blocks (EB). In between these EBs there were 22 monitoring parties to monitor the movement of animals from one EB to another. Eighteen departmental elephants were used in

different blocks and rest blocks were covered by staff moving on foot. In areas of known rhino concentration blocks and in bigger blocks, more than one elephant was used for better scanning. A practice exercise was carried out on 19 April 1996 for the same duration as a primary survey to help the staff get acquainted with the area as well as with the census methodology.

## Census Methodology

A total count of the rhinos was done by direct sighting method on 20 April 1996 from 6 a.m. to 11 a.m.

The known range of the rhinos, determined from previous reconnaissance and reports, was divided into a number of enumeration blocks (EB), comprising one or more compartments. Some of the EBs were meant for the purpose of monitoring the movement of rhinos from one EB to another, to ensure that no rhino was missed or counted twice. The size of the EBs was restricted to between 4.50-9.00 km<sup>2</sup>, depending on the primary reconnaissance report, for better coverage.

EBs were covered either on foot or on elephant back. Monitoring blocks were covered on foot or from watch towers. Enumeration parties were headed by an experienced forest guard or forest watchman. Each enumeration party on elephant back had 3 persons, including the mahout. Each enumeration party on foot had at least 4 members. The number of members in the monitoring party was decided depending upon the length of the boundary being monitored

(approximately 1 person per 0.5 km), so that they were within more or less visible distance.

Each enumeration party was asked to acquaint itself fully, at least one day in advance, with the enumeration block allotted to it and its boundaries and important points (e.g. wallow ponds, community latrines, glades, salt licks, fodder plantations, etc.) where the rhinos were likely to be found. They were also asked to identify the points of start and finish, as directed, in the field in advance.

A map of the enumeration block (scale 4"=1 mile) was supplied to each party with the important areas marked on it. The total length of the route to be covered was at least 12-16 km in the case of elephant parties, and 8-12 km in the case of foot parties. The entire enumeration block was thoroughly screened and all likely points where rhinos could be spotted were reached within the prescribed time (6 a.m. to 11 a.m.).

On the day of the census, each party was to reach the predetermined starting point equipped with the map, enumeration proforma, pen, pencil, pocket compass, wristwatch, etc. Khukris, guns, crackers, etc. were also to be carried for self protection. Sufficient precautions were taken against rains. Walkie talkies were also provided to most of the parties to be in touch with the nearest range office and control.

Each enumeration party was supplied with an Enumeration Proforma in which the following facts were recorded about the rhinos observed:

- a) Sex (Male/Female/Unsexed)
- b) Age Class (Adult/Sub-Adult/Calf)
- c) Time of observation
- d) Compartment where seen (the approximate location was also to be indicated in the supplied map)
- e) Direction of movement (the compartment, river, watch tower and/or other landmarks towards which the rhino was moving was indicated on the map, including the approximate direction using an arrow)
- f) Observations regarding shoulder height of rhino, length and shape of the horn, tail,

ears, spots on face, injury marks, etc. were recorded in the 'Remarks' column.

The observers were asked to take observations from a convenient position and without undue haste, and the rhino was never to be disturbed or chased unnecessarily.

In some important EBs, each census party were provided with 2 elephants. The 2 elephants were moved together in the same direction, maintaining a distance of 6-10 m from each other, depending on the density of the grass. However, there was only one leader for recording the observations.

Each census party counted only those rhinos sighted within its own area. If any rhino was sighted in a nearby block, all its particulars (e.g. sex, age, time, location and direction) were recorded in the 'Remarks' column.

#### Age and Sex Classification

The following age and sex classifications were adopted and followed during the census:

##### A. Age Classification

- a.) Adult: 1. Shoulder height above 160 cm (5'4") and horn base above 18 cm (7") and with prominent neck folds. 2. All females with calves.
- b.) Sub-Adult: 1. Shoulder height above 135 cm (4'6") but below 160 cm (5'4"); horn base above 8 cm (3") but below 18 cm (7") and neck fold small but visible and growing. 2. Not moving with mother.
- c.) Calf: 1. Shoulder height below 135 cm (4'6"); horn above 5 cm (2") but below 8 cm (3") or absent or just growing. 2. Always moving with mother.

##### B. Sex Classification

- a.) Male: Penis visible from the side or the rear (urination indicating the location of

the genitalia); deeply folded skin around the neck; large horn with wider base.

- b.) Female: 1. Female genitalia visible from the rear (urination indicating the location); the folds around the neck and the horn comparatively smaller. 2. Accompanied by calf.
- c.) Unsexed: If sex could not be determined with certainty.

### Results and Observations

A total of 42 rhinos were counted during the census period. Cases of double count recorded by the enumerators were excluded from the final count. The census report shows that JP-3, JP-5, MLG-1, MLG-III, CP-II, CP-IIIb, Torsa-3 and Bania compartments are frequently inhabited by rhinos.

Indirect evidence such as dung heaps, footprints, etc., show that rhinos visit JP-4, Torsa-1, Torsa-II, Malangi-II, CP-I, parts of Bania, Mendabari and BD 6,7 compartments regularly all year round. At present, rhinos do not prefer to visit Titi and Hasimara compartments, which they used to do in the past.

It is encouraging that out of the 18 female rhinos, 13 had calves of different age groups and one was pregnant, which shows the increasing status of the population and also indicates that they will be adding more calves in the future, being in the reproductive age group. A healthy male-female ratio of 1:2 also indicates good future growth of the population, provided they are well protected against poaching, habitat destruction and natural calamities.

### References

Bist, S.S. 1994. Population history of Great Indian One-horned Rhinoceroses in North Bengal and major factors influencing the same. *Zoos Print*, Vol.IX:No.3-4, March/April 1994.

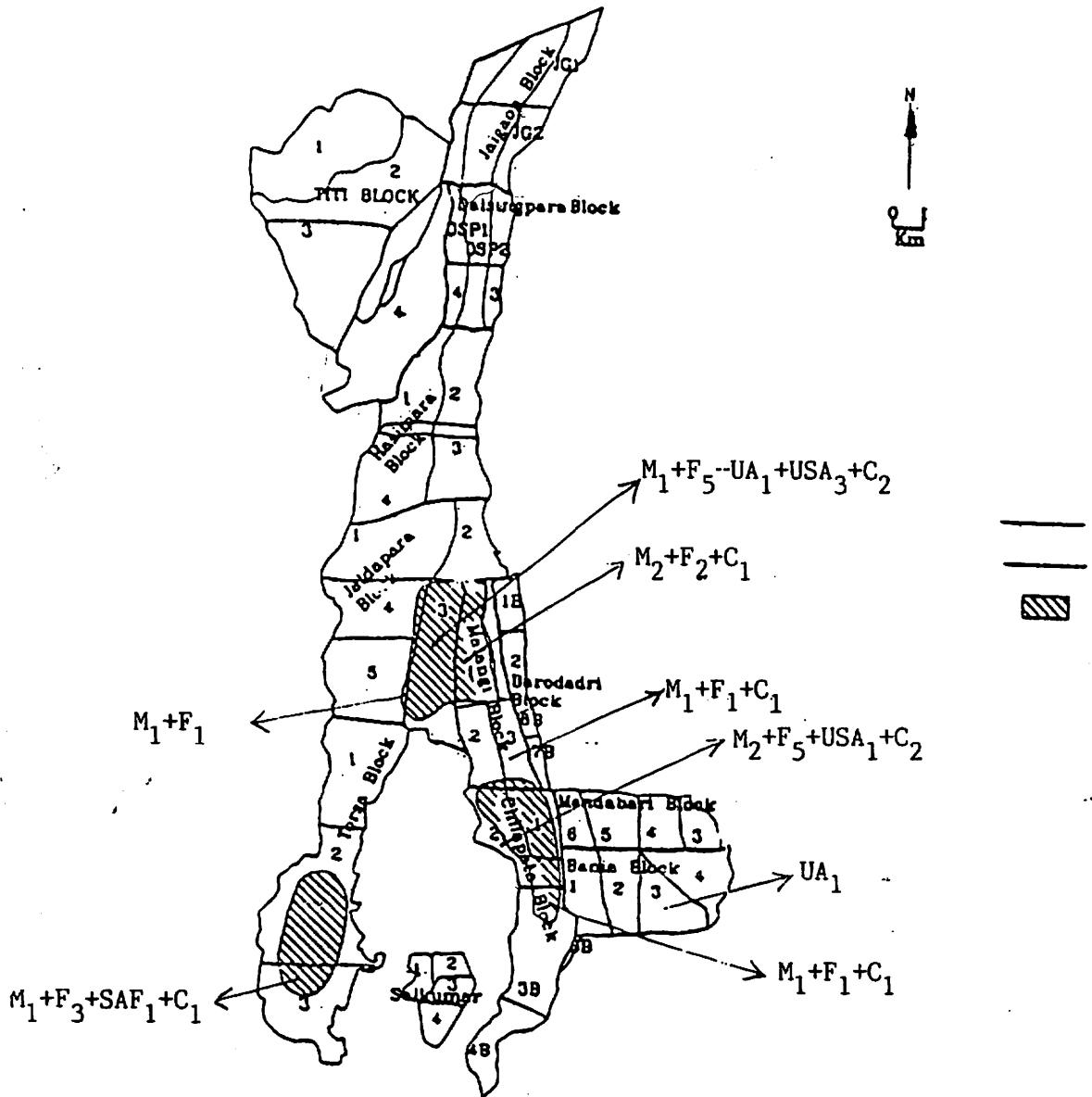
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**Table 1: Compartment and Sex-wise Break Up of Rhinos Sighted**

Compartment	Total No. of Rhinos Sighted	Adult			Subadult			Calf
		M	F	U	M	F	U	
Jaldapara-3	12	1	5	1	-	-	3	2
Jaldapara-5	2	1	1	-	-	-	-	-
Malangi-1	5	2	2	-	-	-	-	1
Malangi-3	3	1	1	-	-	-	-	1
Chilapata-2	10	2	5	-	-	-	1	2
Chilapata-3b	3	1	1	-	-	-	-	1
Torsa-3	6	1	3	-	-	1	-	1
Bania-3	1	-	-	1	-	-	1	1
<b>Total</b>	<b>42</b>	<b>9</b>	<b>18</b>	<b>2</b>	<b>-</b>	<b>1</b>	<b>5</b>	<b>9</b>

Note: M=Male; F=Female; U-Unsexed

**Figure 3: Map showing blocks and compartment boundaries and main rhino concentration areas in Jaldapara Wildlife Sanctuary with the number of rhinos counted during the census operation.**



25.58'  $\pm$   
89.08'

$\pm$  25.58'  
89.55'

- M = Male
- F = Female
- C = Calf
- UA = Adult sex unknown
- USA = Sub adult sex unknown
- SAF = Sub adult Female

