Rhino Count - 2008, Nepal

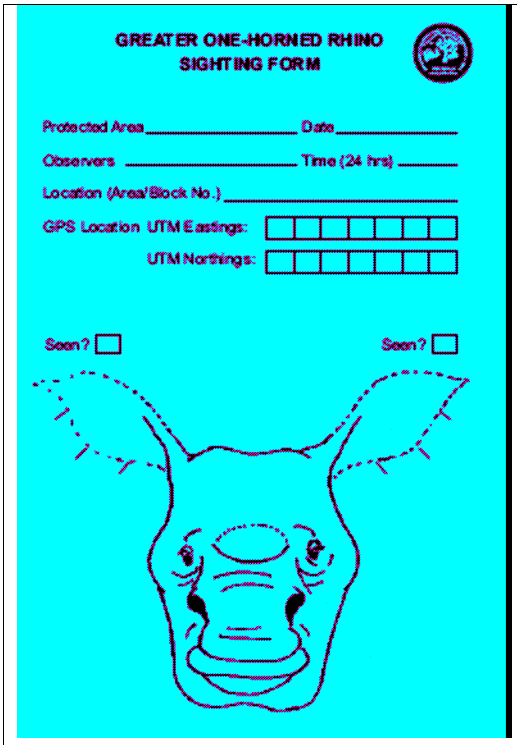
The Nepal National Rhino Count (2008) was conducted from 1st March to 9th March in Bardia National Park (BNP) and from 8th March to 23th March in Chitwan National Park (CNP). The census in Shuklaphanta Wildlife Reserve (SWR) was not undertaken as the population of 5 animals is known. The main objectives of the Rhino Count were to:

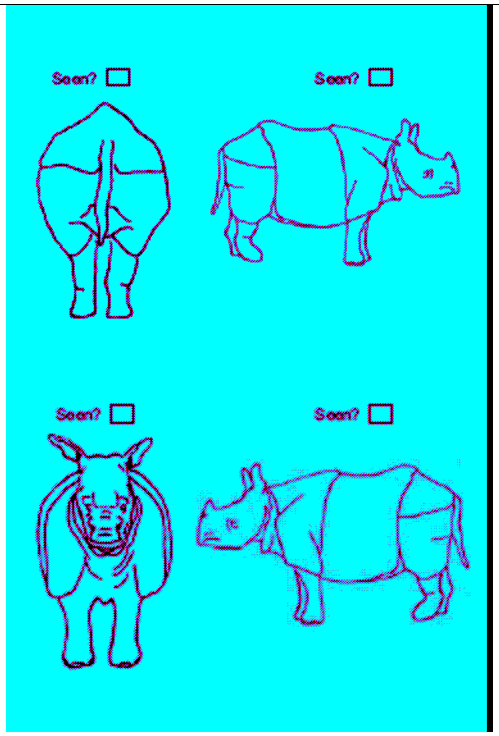
- Determine the status and distribution of greater one-horned rhinos in and around BNP and CNP.
- Assess the level of poaching threat on the rhino populations (in combination with intelligence data).
- Use the census information to develop and implement an effective strategy for the security, monitoring and meta-population management of the remaining rhinos in BNP, CNP and SWR.
- In addition, the census was used to obtain valuable information on the distribution and abundance of the invasive plant species *Mikania micrantha* which is now a major threat to the remaining habitats in CNP.

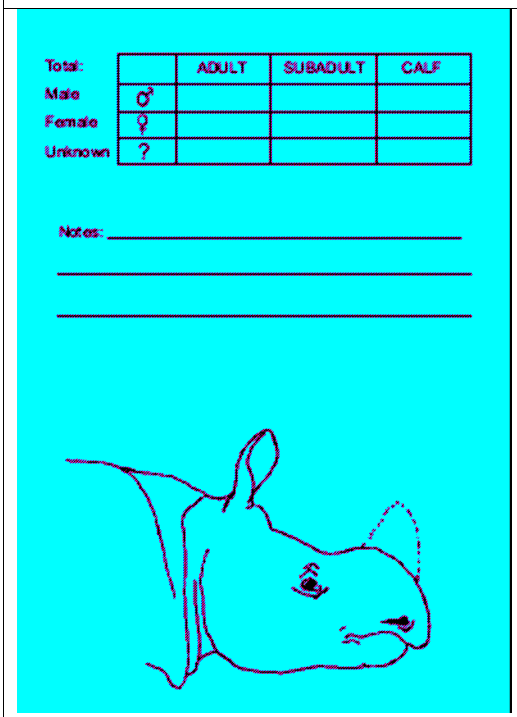
The Department of National Parks and Wildlife Conservation (DNPWC) coordinated the operation with support from National Trust for Nature Conservation (NTNC), WWF-Nepal and Zoological Society of London (ZSL - through the UK Darwin Initiative). In order to smoothly conduct the two census operations, two coordination committees, one at the central level and another at the field level (one for BNP and one for CNP) were formed. Technical staff from CNP, BNP, NTNC's Biodiversity Conservation Centre (Chitwan), Bardia Conservation Program and Suklaphanta Conservation Program, WWF Nepal Program and experienced staff from other local conservation organisations served as observers in the count.

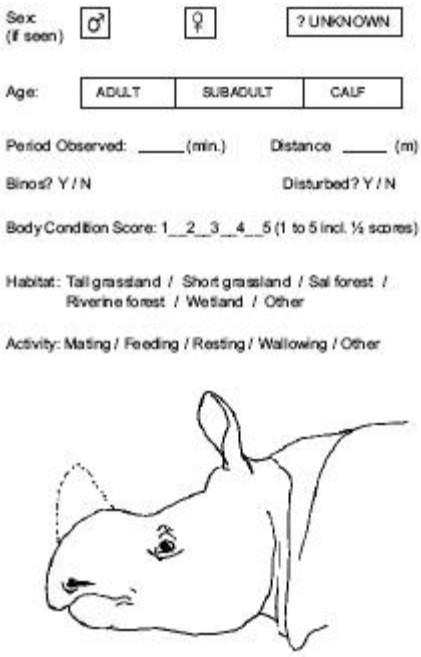
The census technique used to estimate the size and structure of the two rhinoceros populations was based on the methodology developed by Laurie (1982) and Dinerstein and Price (1991). This method has already been proven to be reliable and practical for estimating the population size, age and sex structures, and distribution pattern of rhinoceros (used in 2007, 2005, 2000, 1994 counts). Refinements were made to further reduce the likelihood of double and under counts.

Data recording booklet was designed to simplify the accurate recording of rhino identification features and demographic data.



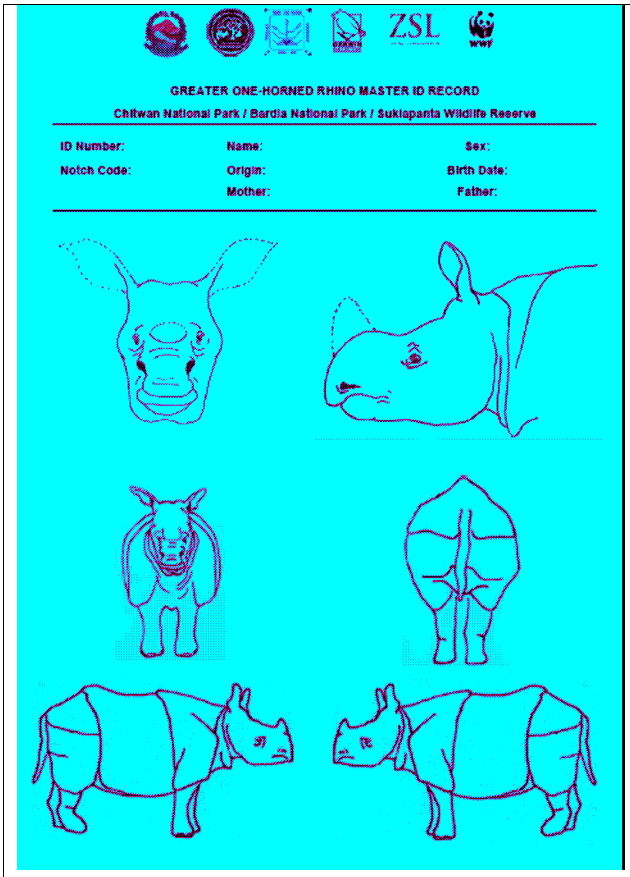






Rhino sighting form

Procedures were put in place for data validation at the end of each census day. The Rhino Master ID files created and updated through regular block monitoring in BNP and CNP (Barandabhar Corridor Forest– as a pilot project) were also used for this purpose.



Rhino master ID record

In addition, digital cameras were employed both for validating data and to further build up the master ID files. Experienced observers checked all rhino sighting information to ensure double counts did not take place. Uncertainties were resolved by carefully checking with the observer teams. Communication in the field was essential between the elephant observation teams to ensure rhinos were recorded accurately by the best placed team. Motorola handheld radio sets were used and found to be very reliable.

A 3-day rigorous training programme was conducted on-site prior to the counts. Training material was developed and observers trained in the following topics: 1) Ageing rhino; 2) Sexing rhino; 3) Use of the rhino data recording booklet; 4) Use of binoculars; 5) Use of GPS receiver; 6) Use of digital cameras; 7) Use of radio handsets. The observers were also practically trained to record basic information on invasive plant species (*Mikania micrantha*) scoring 0: absence; 1: <50%; 2: >50% cover within an approximate semi circular area of 50 m in front and sides of the elephant observer team. This information was recorded approximately every half an hour along with the GPS position.

Observers were tested (written and practical tests) in each of the topics to ensure high quality of observation and data recording.

	
Observer training programme at the Biodiversity Conservation Centre, Chitwan	**Practical session – Use of field monitoring equipment**

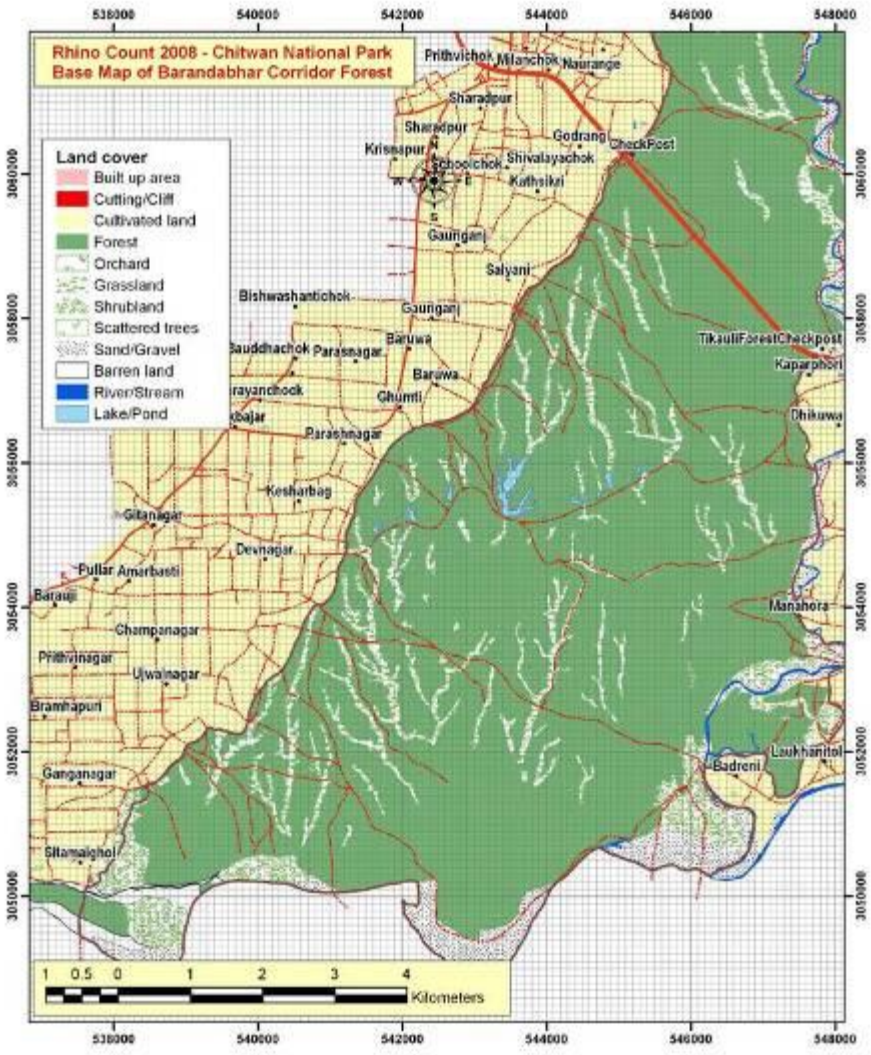
All potential rhino habitats (both inside and outside the protected areas) were divided into blocks based on physical demarcation and field operation experience. The blocks were marked on a topographic map (scale 1:25000) and a reconnaissance survey was also conducted in more difficult areas before the actual count. This was done by a team of experienced field staff led by the Chief Warden of each park.

Designing the survey blocks - Chitwan National Park

Where necessary, tall grasses were also cut and burnt to allow the greatest degree of visibility to observe animals. A maximum of 45 elephants were used in CNP and 15 elephants in BNP. Elephants were lined up and moved parallel along transects marked on the map to sweep individual blocks. Maps were provided to each of the observers for navigation purposes. Radio communication was used to coordinate and maintain distances between two elephants at approx 50 m in dense forests and 100 - 200 m in open grasslands. Each elephant carried 1 – 2 well trained observers; over 80% of the observers had experiences from previous counts.

Part of the rhino census team in Chitwan NP

Chitwan rhino census team

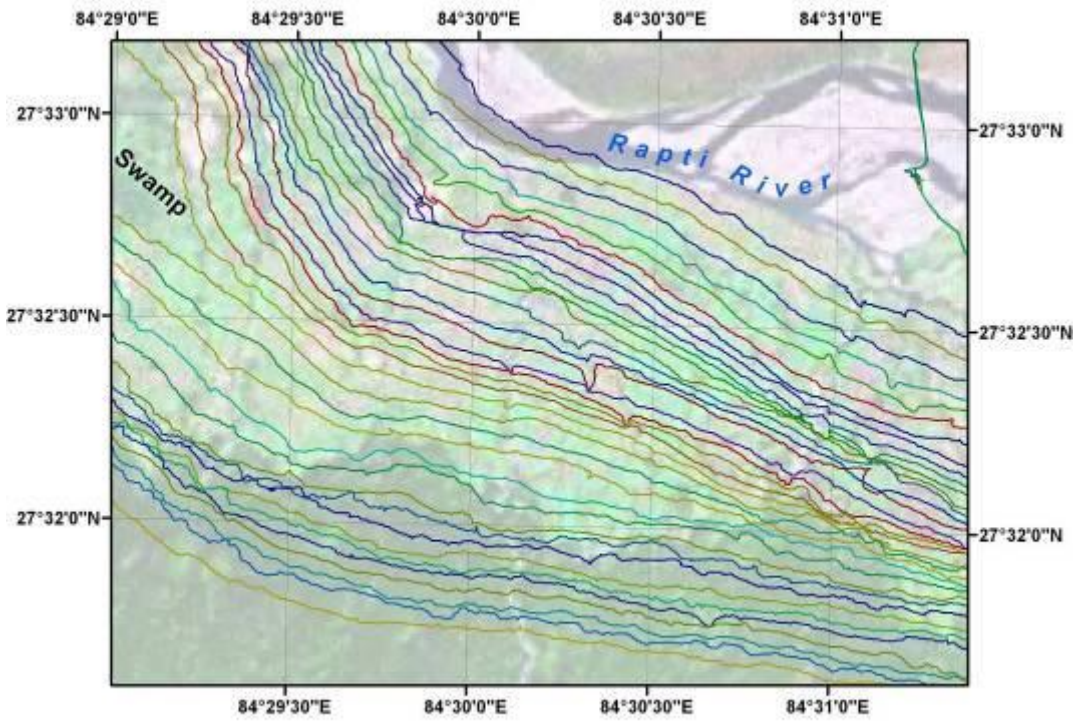


Example of a base map provided to the observers each day

The observers used binoculars such as Opticron (10 x 50) where possible for observing rhino. Individual rhinos were identified using a range of features such as horn shape, ear tears, skin folds, knobs, deformities, body scars and tail shape. Where necessary, at the end of each day, observers also cross checked their sighting data with observers sitting on elephant of either side to avoid double counting. This was in addition to the data form validation by experienced observers. The validated data were then entered into an excel spread sheet and final list tabulated for each day.

Elephant backed observer team recording rhino information

To avoid under counts, each elephant team carried a Garmin (High Antenna) GPS receiver which were all set at the start of each day census to record the tracks. The data was downloaded at the end of each day on to a computer, processed and coverage maps produced. Daily de-briefing sessions, led by the Chief Warden, were conducted with the whole census team. This included a detailed review of the day's tracks to ensure all potential rhino areas were covered well and a final review of the following day's survey operation. All equipments were checked and batteries re-charged for the following day's operation.



GPS tracks map showing daily coverage

Sweeping time for individual blocks ranged from 5 to 11 hours depending on size of blocks and vegetation types. Blocks consisting of riverine and Khair - Sissoo forests with dense under story always took longer time to survey. A total of 3,108 elephant hours were spent surveying 15 blocks in CNP and 328 elephant hours surveying 5 blocks in the Karnali floodplain, BNP. A survey of Babai valley was also conducted which confirmed that no rhinos now existed in the valley. The extensive survey in 2007 had found no rhinos or their signs in Babai valley.

A team of over 250 persons including biologists, observers, elephant staff, kitchen staff and logistic crew were mobilized throughout the survey period in both parks.

The results of the rhino count were as follows:

Rhino Population in Chitwan National Park

Sex	Adult	Sub-adult	Calf	Total
Male	85	8	7	100
Female	113	9	8	130
Unknown	79	34	65	178
Total	277	51	80	408

Rhino Population in Bardia National Park

Sex	Adult	Sub-adult	Calf	Total
Male	3	1	1	5
Female	6	-	-	6
Unknown	6	-	5	11
Total	15	1	6	22*

* 2 adult rhinos have been poached since the count

The rhino population at SWR is as follows:

Rhino Population in Suklaphanta Wildlife Reserve

Sex	Adult	Sub-adult	Calf	Total
Male	1	-	-	-
Female	2	-	-	-
Unknown	-	-	2	-
Total	3	-	2	5