

Rhino Research Project

1. Introduction

The Great Indian rhinoceros (*Rhinoceros unicornis*) formerly occupied a large geographical range across North India including the terai zone, the Indo-gangetic plains and the valley of the Brahmaputra. Today the total species population is approximately 1500 individuals of which 1200 are in India (300 being in Nepal). Of these, some 100 are in Kaziranga, the remainder being dispersed among approximately a dozen smaller populations in Assam and West Bengal (two populations).

Concern has been expressed about the unusually high density of the Kaziranga population (2.5/km) and the threat of poaching. While some of the small populations in Assam are not in protected areas, a number of possible sites for reintroduction have been proposed by Government of Assam. The Government of West Bengal reports poor reproduction in both its small populations and requested introduction of "new blood" from elsewhere. A Government of India Committee recommended (1981) limited introduction of new males into these populations on an experimental basis. It further recommended the experimental translocation of 6 rhinos into Dudhwa National Park, Uttar Pradesh which is a former haunt of the species and, in view of the Committee and international rhino experts, offers suitable habitat in a well managed national park. Both African species of rhino have responded well to reintroduction programmes, indicating suitability of the rhino group to this form of management.

Two recent studies on Great Indian rhinoceros (Laurie, 1978 and Patar, 1977) have provided some basic ecological data on the Chitawan population and winter feeding habits in Kaziranga respectively. However there is an urgent need of long-term studies of the species within India as a basis for more scientific management. Drug capture trials of the species have already been undertaken (Sale & Woodford, 1981).

Against this background it is proposed to set up a Centrally sponsored research aimed at assisting the improved management of the rhino, within the recognised principles of endangered species conservation. The project will be financed by the Department of Environment and affiliated to the Wildlife Institute of India who will appoint a supervisor for the project.

2. Objectives

To provide objective scientific data as a basis for improved management of the endangered Great Indian rhinoceros within India, including :

1. Up-to-date information on the numbers, distribution and conservation status of all existing populations in Assam and West Bengal.
2. A detailed study of the ecology of the Kaziranga population and comparison with other populations, with particular reference to density, distribution in relation to habitat types, and food supply, local movements, natality, mortality, incidence of disease.
3. The intra-specific behaviour of rhinos, especially adult males, should be monitored and comparison of such social behaviour as male-male fights be made between high and low density populations. Any harmful effects of high density on social behaviour should be described and quantified.
4. A study of the reproductive performance of the Jaldapara and Gorumara rhinos in West Bengal in the light of reported lowered fecundity of these populations.
5. The effect of high rhino density on other species of herbivores should also be studied, e. g. competition at water holes, loss of food supply and competition for shade.
6. An evaluation of possible protected areas for reintroduction within the species' former geographical range (i. e. Assam, West Bengal, Bihar and Uttar Pradesh), paying particular attention to ecological suitability and the quality of protection which should be afforded.
7. Monitoring of the ecology and behaviour of any reintroduced groups, in order to evaluate reintroduction as a management tool in relation to the conservation of Indian rhino.

3. Methodology

In addition to general ecological methods the following specific methodologies should be employed :

1. In order to study and monitor numbers and density, an efficient census method must be worked out for the species. The present blockwise visual counting from elephant back practised in Kaziranga should be thoroughly evaluated statistically. If it is felt necessary to try other methods, systematic aerial census, at an appropriate time of day, should be evaluated, using the services of a pilot familiar with wildlife census work (such a pilot is now available at the FAO project at W. I. I.). Census should be replicated annually for all populations.
2. Various habitat types in rhino occupied areas should be defined on the basis of presence of major factors, including terrain, open water, swamps and vegetation type characterised by frequency of dominant plant species and physiognomy. Habitat types should be mapped with rhino density at different seasons by use of map overlays and contingency tables.
3. Food habits should be studied both by direct quantified observation of feeding rhinos and analysis of faecal matter in the laboratory.
4. For studies of individual movements, home range, social behaviour, etc it will be necessary to identify individuals and a card index of readily identifiable characteristics such as horn proportions, wrinkles on upper lip, ear tears and other deformities should be built up and used in the field. photographic profiles should form part of the index card. If it proves difficult to keep track of individuals moving over a large area, radio-tracking may have to be resorted to. However, this sophisticated technique will probably not be necessary with a relatively sedentary species such as the Indian rhino.
5. To study effects of rhino feeding on the vegetation and its possible effects on the food supply of other herbivores, exclosures may be used to examine the vegetation in the absence of rhino grazing/browsing.

4. Duration

The project should be set up for 3 years in the first instance and progress should be reviewed after 2 years when the possible need for an extension should be considered.

5. Reporting

Brief progress reports should be made at 6-monthly intervals to the Department of Environment and copies to the Project Supervisor at W.I.I. A fuller Annual Report, containing a summary of research findings should also be made.

6. Location

The project should be headquartered in Assam, preferably at Kaziranga where a small field laboratory and office accommodation will need to be provided. Arrangements for living accommodation for project staff will also have to be worked out.

Frequent research travel to rhino areas elsewhere in Assam and in West Bengal, as well as to prospective reintroduction sites in other States will be necessary. For such trips temporary F. R. H. accommodation can be arranged.

7. Personnel

Senior Research Officer : This officer will be in charge of the field research programme and in addition to his own area of investigation (e.g. rhino numbers, density, distribution, reproduction, monitoring, conservation strategy) supervise the work of other team members. He should possess a Ph.D in large mammal ecology or behaviour and have experience in carrying out a wildlife research programme of international standard. Tropical experience is desirable and an ability to work well within a team context essential.

Financial support for this post should be sought from international sources such as I. U. C. N., W. W. F., F. A. O., New York Zoological Society etc, and their assistance taken in identifying a suitable candidate for the S. R. O. post.

Research Officers (2) : Each R. O. will be responsible for a specific aspect of the programme such as habitat studies, feeding, behaviour etc. They should possess a Ph.D in an appropriate area of specialisation i. e, vegetation ecology and mammalian behaviour respectively.

These posts will be financed at the level of Government of India Research Associateships.

Research Fellows (4) : Two fellows will be attached to the Senior Research Officer (in different locations) and one to each of the R. O's.

They will carry out the more routine aspects of data gathering under the direction of the officer in charge of that part of the programme. A good M.Sc with emphasis on either animal or plant ecology will be the minimal qualification for these posts. Registration of the allocated research topic within the rhino project for a Ph.D at a reputable university will be encouraged.

These posts will be financed at the level of Government of India Junior Research Fellowships.

Field/Laboratory Assistants (5) : One assistant will be attached to each Research Fellow whom they will assist in the field and laboratory with routine tasks such as measurements, collection of samples, care and maintenance of equipment, washing of glassware etc.

Stenographer/clerk : To maintain office records, files, type correspondence, research results, papers etc and to maintain project accounts.

Drivers (3) : One attached to Senior Research Officer and each Research Officer.

8. *Financial estimates* : (for 3 year project)

i) <i>Non-recurrent items</i>	<i>Rs.</i>	<i>Rs.</i>
Jeeps (3)	@ Rs. 85,000	2,55,000
* Binoculars (5)	@ Rs. 1,000	5,000
* Spotting scopes (2)	@ Rs. 2,100	4,200
* Cameras with telephoto lens (2)	@ Rs. 5,000	10,000
* Walkie-talkie (2) pairs)	@ Rs. 2,700	5,400
Scientific calculators (3)	@ Rs. 250	750
Monocular research microscope(1)	@ Rs. 4,000	4,000
Binocular microscope (faecal analysis (1)	@ Rs. 5,000	5,000
Laboratory equipment (glasware, ovens balances etc)		25,000
Mapping equipment		10,000
Field equipment spotlights, plant presses, (plastic bags, wire for enclosures etc)		30,000
Office furnishings and equipment		30,000
Erection of laboratory, darkroom etc—to be provided by Government of Assam)		50,000

		4,34,350

ii) *Recurrent items*

Travel (between study areas)	@ Rs.	10,000 pa	30,000
Fuel & vehicle maintenance	@ Rs.	100,000 pa	3,00,000
Films, chemicals, batteries	@ Rs.	10,000 pa	30,000
Stationery & office supplies	@ Rs.	10,000 pa	30,000
Field contingencies (hire of elephants etc)	@ Rs.	12,000 pa	36,000
Salaries : S.R.O. (external funds)			
R.O's (2)	@ Rs.	1,300 pm	93,600
R.F's (4)	@ Rs.	650 pm	93,600
Assistants (4)	@ Rs.	700 pm	1,00,800
Steno/UDC (1)	@ Rs.	900 pm	32,000
Drivers (3)	@ Rs.	700 pm	75,600
			8,22,000

* These items may be supplied on loan via UNDP/FAO Project at W.I.I. TOTAL 12,56,350

Note : Should aerial census prove necessary supplementary estimates will be made for this and funds sought accordingly

Literature cited

- Anon (1981). Final recommendations of the rhino Sub-committee, of the Wild Life Status Evaluation Committee of the I.B.W.L., on the translocation of Great Indian rhinoceros.
- Laurie, W.A. (1978). The ecology and behaviour of the Greater One-horned rhinoceros. Ph. D thesis, University of Cambridge.
- Patar, K.C. (1977). Food preferences of the one horned Indian rhinoceros, *Rhinoceros unicornis*, in Kaziranga National Park, India. M.Sc thesis, Michigan State University.
- Sale, J.B. & Woodford, M.H. (1981). Preliminary report on drug immobilisation and transport of the Great Indian rhinoceros. IND/74/046/, Field Document No. 7. Food & Agriculture Organisation of the United Nations, Rome.

DUDHWA NATIONAL PARK

Area

613 Sq. Kilometres (Core 490 Sq. Km. and Buffer Zone 123 Sq. Km.)

Location

The Park is situated on Indo-Nepal Border in Lakhimpur Kheri district Uttar Pradesh.

Open Season

November 15 to June 15.

Approach

From Delhi : BY ROAD (430 Km.)—Delhi - Moradabad - Bareilly-Puranpur-Khutar Crossing-Mailani-Bhira-Pallia-Dudhwa.

BY TRAIN—Delhi-Moradabad-Bareilly-Bhojipura-Mailani-Dudhwa.

From Lucknow : BY ROAD (238 Km.)—Lucknow-Sitapur-Lakhimpur-Sharadanagar-Nighasan-pallia-Dudhwa, OR, Fair Weather only (215 Km); Lucknow - Sitapur - Lakhimpur - Pachapedighat - Nighasan - Pallia-Dudhwa.

BY TRAIN—Lucknow-Sitapur-Lakhimpur-Mailani-Dudhwa.

Wildlife

There are natural Sal Forests in the Park. Grass lands and wetlands including lakes and ponds cover about 20% of the area. The abundance of varieties of animal life and flora in the park is a great attraction to the tourists.

The estimated number of wild animals in the area according to the census of 1982 is as under :—

Sl. No.	Name	Estimated No.	
1.	Tiger	65	
2.	Leopard	10	
3.	Swamp Deer	2600	In addition to these, jungle fowls, partridges and quails of different varieties are found in large number. In winter season a number of migratory birds are also seen. There are also fishes, amphibians and snakes of different types.
4.	Chital	9800	
5.	Hog Deer	2150	
6.	Barking Deer	675	
7.	Sambhar	560	
8.	Wild Elephants	5	
9.	Sloth Bear	65	
10.	Blue Bull	600	
11.	Wild Pigs	3300	
12.	Black Buck	20	
13.	Otter	15	
14.	Crocodile (Mugger)	6	

The main attraction of the park is Swamp Deer, locally known as 'gond' or 'barasingha'. This species is one of the endangered ones. At present there are about 2600 swamp deer in the area which is the largest population of this species at some place.