

# *Summary*



## SUMMARY

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The great Indian One-horned Rhino, *Rhinoceros unicornis* is one of the five extant species belonging to the family Rhinocerotidae of order Perissodactyla (odd-toed mammals). The animal once well occupied an extensive range across the whole northern India and Nepal, from Peshawar (Pakistan) in the west to Arunachal Pradesh (India) in the east. Habitat loss and over hunting during last couple of century has converted its past continuous distribution range into few isolated pockets in the Indian and Nepalese tarai regions including the Brahmaputra valley in Assam.

To protect the species from extinction as well as for its long-term survival, **Indian Board for Wildlife** commissioned, in 1979, a sub-committee to consider alternative areas, preferably in rhino's former distribution range for rehabilitation. Of the various areas considered, Dudhwa Tiger Reserve (U.P.) was found to be the most suitable alternate habitat. The fact is that about 160 years ago rhino used to roam freely in the tarai belt of U.P. including Dudhwa Forests.

In March-1984, five rhinos (two males and three females) were translocated from Pabitora Wildlife Sanctuary (Assam) to Dudhwa Tiger Reserve (U.P.). In order to establish a vigorous breeding nucleus, this

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reintroduction was aided by the translocation of four females from Chitwan National Park (Nepal). All these rhinos released in an area of about 28.11 sq km, which comprise more or less entire Kakraha Block and a part of Chhota Palia Block in south Sonaripur Range of Dudhwa National Park.

Dudhwa National Park lies on the Indo-Nepal border in the Nighasen Tehsil of District Lakhimpur-Kheri (U.P.). The Park is predominated by Sal (*Shorea robusta*) forest and interspersed with grassland meadows, number of annual and seasonal lakes and streams. Two important external factors- burning of grasslands and annual floods- influence the flora and fauna of the Park.

The Rhino Rehabilitated Area (RRA) is a vast alluvial plain, which shows the succession of beds of sand, loam, and clay. The surface soil is sandy in more elevated portions, loamy in the level uplands and clayey in the depressions. From the vegetation point of view the Rhino Rehabilitated Area comprises higher level woodland and low lying wet tall and less moist short grasslands. The grasslands are interspersed with trees like *Accacia catechu*, *Syzygium cumini*, *Dalbargia sissoo* etc. The tall grasses are mainly *Sclerostachya fusca*, *Saccharum munja*, *Themeda arundinacea*, *apluda mutica* etc. and short grasses comprise such as

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*Imperata cylindrica*, *Saccharum spontaneum*, *Vetiveria zizanioides* etc.

The aquatic habitats contain different hydrophytes, while marshy lands are generally covered by the grasses like *Typha augustata*, *Phragmites karka*, *Bothriochloa sp.* *Cynodon dactylon* etc.

The Great Indian One-horned Rhino, *Rhinoceros unicornis* is massive, thick-skinned mega herbivore, having three hoofed toes on each foot. It has one fibrous horn compressed of the matted hair on the upper surface of the snout (hence the name *unicornis*). The prehensile upper-lip acts a kind of finger to pluck the leaves and twigs. It has three upper and lower molar teeth. The vision is extremely poor, but the sense of hearing and smell are acute. Brain and eyes are small in comparison to its body size.

Indian rhino is essentially a grazer and prefers a variety of grasses and herbs. Rhino mostly feeds on swampy grasses. The climbers like *Tiliacora acuminata* and leaves and twigs of *Mallotus philippinensis* are specially eaten during the burning period. Rhino also feeds on burned swards of tall grasses and the bark of *Accacia catechu* in the same period.

Indian rhino often bath in lakes and spend hours for wallowing in the mud or static water bodies. Mostly it prefers to avoid man, but male particularly bad tempered during the mating period, and female with calf

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charges with little provocation. Regarding the interspecific relationship with other vertebrates, one can see the symbiotic birds riding the rhinos. A solitary nature with occasional associations with rodents and aquatic associates displays.

Rhino make a large dung piles in some selected spots and use the same defecation places over and over again. In male as well as female, both ritualized and non-ritualized urination occur. The bull produce localized scent marks by frequently squirting urine in the backward shower on the vegetation.

There is no stable (long-lived) group, except mother-calf unit, occur among them. Even adult male and female avoid meeting each other except in mating period. They are reluctant breeder and prefer to breed between the months of March to June. The females on heat utter a typical rutting call and also release urine at short intervals to attract bulls. Pre-mating contact often involves some aggressiveness vocalization. Mating takes place mostly in dark cover of the night. Gestation period observed is about 470 to 490 days. The newly born calf is able to rise within an hour of birth. Approximately, 2.6 years the calf is independent and 3-4 year female is sexually mature. Normally 4.6 to 5 years old cow gives birth to the first calf.

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After the death of an old male (Raju) in 1988, and an abortive attempt to introduce a captive male (Lohit) in 1992, Dudhwa Tiger Reserve has not got any other adult male from outside even after a long gap of about 14 years. Consequently only one male i.e. Bankey is mating with all the females of the population, which has resulted in-

1-Slow rate of population build up due to availability of single breeding male.

2-Severe inbreeding and in future possibilities of imbalance in sex-ratio.

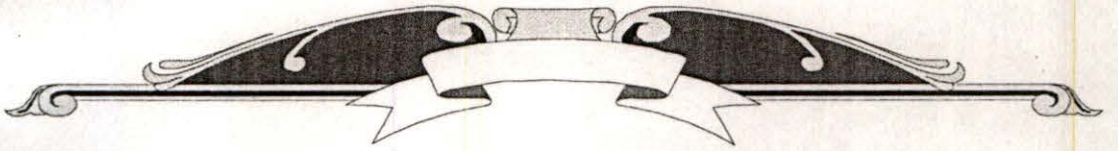
The male calves born in the Rhino Rehabilitated Area are becoming

mature, it will also result into inbreeding. Selection of new area in D.T.R. for Rhino rehabilitation is right decision for long-term success of the programme but experienced person in the field of the forest staff should be deputed for this programme.

In newly created area (Belrayan-Churaila Sector), at least three females and Bankey of the existing RRA should be released to check the inbreeding and conflict of males. In spite of old individual, only sub adult individual should be selected for the translocation. There is immediate

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need of appointment of a veterinary person to look after the health of Rhinos and the Elephants that are used in monitoring.



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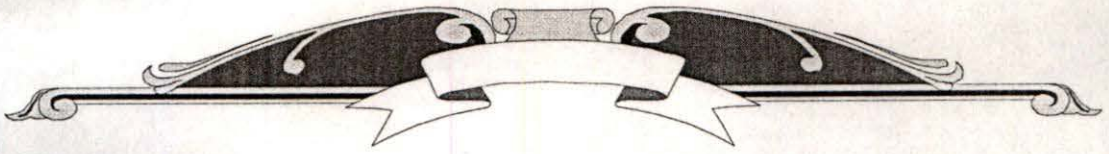
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*Appendix*





## Annex-I

Following tables were used during direct observation of the animal:

**Table-1 Daily Activity Cycle**

Type of Study- Non-Retualized Behaviour Pattern

Study Area -----, Date -----

Activity	Period	Remark
Lying		
Standing without grazing		
Moving without grazing		
Grazing		
Chewing while feeding		
Resting		
Moving		
Drinking		
Mud wallowing		
Standing in water		
Alert		
Head and horn rubbing		
Tail and Ear movement		

**Table-2 Daily Activity Cycle**

Type of Study- Retualized Behaviour Pattern

Study Area -----, Date -----

Activity	Period	Remark
Defecation		
Urination		
Scent marking		
Earth and Dung Scraping		
Other activities		

**Table-3 Habitat Study I**

(Vegetation Type and Soil Analysis)

Study Area -----, Month -----

S.No.	Place	Type of Vegetation	Type of Soil	Moisture in Soil	Remark

### Table-4 Habitat Study II

(Availability of Water Bodies in Different Seasons)

Study Area -----, Month -----

Date	Compartment/ Area	Type of Water Body (Lake, Stream, Rivulets etc.	Water available/ Recede	Remark

### Table-5 Food Preference

Study Area -----, Month -----

S.No.	Date	Type of Plant fed	Part of Plant fed	Species	Remak

### Table-6 Habitat Utilization

Study Area -----, Date -----

Type of Habitat	No. of Individual located	Remark
1. Woodland		
2. Tall Grassland		
3. Short Grassland		
4. Marshy land		
5. SSD Grassland		
6. Water Body		
7. Scrub Forest		

**Annex-II**  
**Monitoring of Rhinos in RRA**

There is regular monitoring of Rhino population in RRA by riding elephant, from watchtower, by bicycle or motorbike. Four teams every day monitor all rhinos to identify and watch their activity. Their sighting located is recorded in registers (table given below) and separately maintained at both halting station (Salukapur and Base Camp). A consolidated report is submitted fortnightly to Deputy Director through Range Officer, which further forwarded to Director Dudhwa National Park and finally to Chief Wildlife Warden.

Date	Name of Person doing monitoring	Time of Departure	Time of Arrival	Area visited	Details of Rhino Sighted	Place Sighting	Time of Sighting	Details of other animal seen		Signature
1	2	3	4	5	6	7	8	9	10	11

(Source- Management Plan of 2000-2001 to 2009-2010)

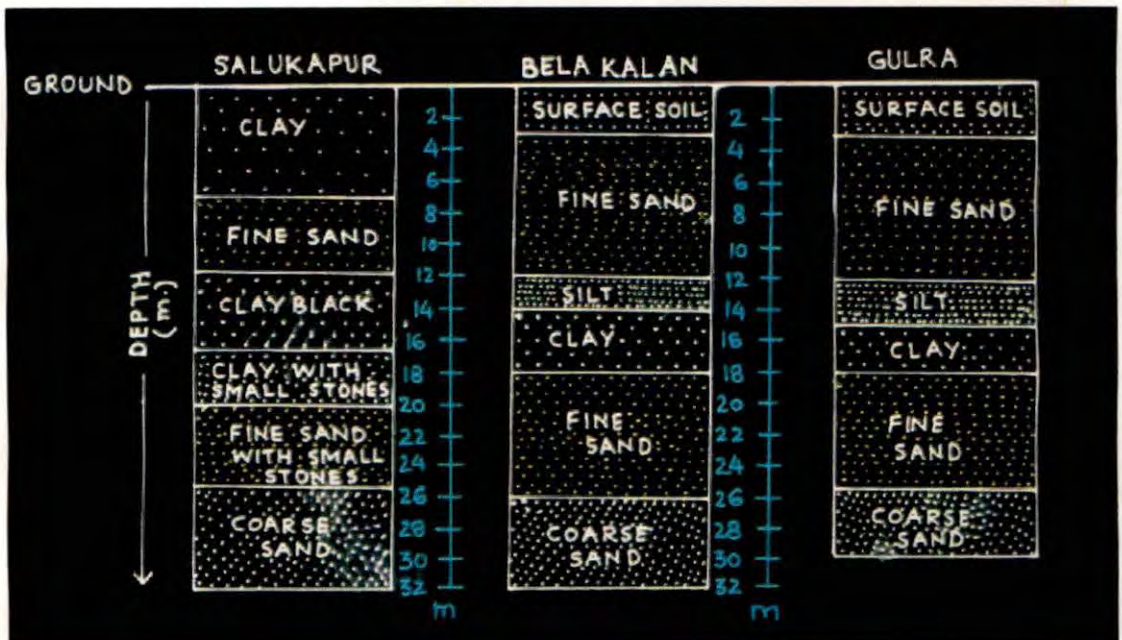
## Annex-III

Table : Threatened species of Mammal, Bird and Reptile occurring in Tarai Forests of Uttar Pradesh. IUCN Red List Categories (IUCN,1996) are as follows : CR = Critically endangered, EN = Endangered, VU = Vulnerable, LR = Lower risk.

Species	IUCN Red List Category
<b>Mammals</b>	
Tiger, <i>Panthera tigris</i>	EN
Sloth Bear, <i>Melrsus ursinus</i>	VU
Asian Elephant, <i>Elephas maximus</i>	EN
Rhinoceros, <i>Rhinoceros unicornis</i> (Rehabilitated)	EN
Swamp Deer, <i>Cervus duvauceli duvauceli</i>	VU
Black Buck, <i>Antelope cervicarpa</i>	VU
Hispid Hare, <i>Caprolagus hispidus</i>	EN
<b>Birds</b>	
Saurus Crane, <i>Grus antigone</i>	
Swamp Francolin, <i>Francolinus gularis</i>	VU
Bengal Florican, <i>Houbaropsis bengalensis</i>	EN
Lesser Francolin, <i>Sypheotides indica</i>	CR
<b>Reptiles</b>	
Indian Python, <i>Python molurus</i>	LR

## Annex-IV

Soil profile of the three regions viz. Salukapur, Bela Kalan & Gulra located near the Kakraha Block of Dudhwa National Park.



(Source: U.P. Jal Nigam, Lakhimpur Kheri)