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Breeding of Indian Rhinoceros (*Rhinoceros unicornis*) in Nehru Zoological Park, Hyderabad

By

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The Nehru Zoological Park, Hyderabad, India has so far recorded birth of three male Great Indian Rhinoceros and one abortion, from a single pair within a period of nine and one half year of rearing of the species in captivity. The conditions provided for successful breeding in this zoo areas follows :

a) Large open enclosure with arrangement for wallowing, and spacious night houses or compartments for immediate separation of the pairs if they are found irreconcilable during courtship and mating.

b) Proper nutritious diet.

c) Timely health care and disease management.

The animals and the enclosures :

A sub-adult male estimated to be two and one half years old was purchased and brought to the zoo in April 1964 from the Kaziranga Reserve Forests of Assam—the natural home range of the species. The animal is kept in a 0.20 ha dry moated oval shaped enclosure with two night houses and an open backyard. The night houses act as feeding room, isolation chamber for treatment and for close observation. The rooms measure 9m x 6m with a 2m wall on all three sides. The open exhibit area separates the visitors from the animal by a 2m deep and 2m wide dry moat gently sloping towards the land area for easy accessibility of the animal into the moat. A pool of water in the middle of the enclosure serves both for drinking and wallowing purposes. A few tall *Acacia* trees provide the required shade (Fig. 1).

In June 1968 a female aged about four years was purchased from Kaziranga. Reserve Forest of Assam and was housed in a newly constructed extension moated enclosure (Fig 1). The new female shared the common night house and backyard of the male's enclosure. This separate enclosure for the female was later found convenient for separating the animals whenever they were found to be antagonistic to each other during the time of courtship and mating. A pool of clean water has also been provided in both the enclosures. These pools are not deep and the overflow of tap water forms a slush where the animals enjoy to wallow.

Feed and feed supplement :

Initially the animals were fed with a diet of boiled rice, pulses, banana and milk to which they were used to in the Kaziranga Reserve Forest. All this was mixed up and sweetened by adding

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jaggery (brown sugar) and hand fed. Gradually the diet was changed to cattle feed pellets, consisting of wheat bran, rice bran, broken maize, powdered ground nut cakes and mollasses. To this concentrate mixture vitamins and mineral supplement is also added. The quantity of the concentrate varied with age. An adult animal is given 8 kg/day divided into two meals given in the morning and afternoon. 50 kilos of green consisting of *Ficus* leaves, Lucerne (Alfa Alfa) grass and carrots are also given.

Health care and Hygiene

Besides the vitamin and mineral mixture broad spectrum antibiotics are also added in the feed to check the condition of stress during inclement weather, shifting and during transfer.

Faecal samples are screened under the microscope once a month to detect the worm load of helminthic parasites and the animals are dewormed once in every three months.

BREEDING

Courtship and mating

The female was observed on estrus for the first time at an estimated age of 5 years and two months. When in estrus the female behaved very restlessly, with switching of the tail, micturation at short intervals; emitted low grunting noises and approached the partition wall of the male's enclosures frequently. The average interval in between two estrus is 48 days and the duration of each cycle is about 24 hours.

Estrus cycle of the female was observed on 27th August 1970 and the first calving took place on 25th November 1971. Courtship and mating was not observed. However; observations of courtship and mating during the next three breedings resulted in the recording of the following. The male and female were allowed to mate only after the calf has been totally weaned from the mother at an age of three years.

On the morning of 7th November 1974 the female was observed in estrus and the male was introduced into the female enclosure at 12.50 hrs. Mating was observed between 13.10 hrs to 14.22 hrs. Initially, the male charged at the female, mounted and after a few unsuccessful attempts was able to copulate. Interestingly, it was the female's pushing backward that helped in mating and not the pelvic thrust by the male. At 14.22 hrs the female became extremely aggressive and the animals were separated. On 12th May 1975 the female aborted and a still calf was born. X

A month later on 11th June 1975 the female was observed in estrus and the male was introduced. The male was extremely violent and inflicted several injuries on the female within 5 to 10 minutes, before she turned back and charged in return toward off the male. This combat and injury made us defer the breeding programme till 23rd July 1977.

On 23rd July 1977 the male and the female were left together and allowed to fight. It was the female that charged first. The combat took place

TABLE
*Details of Breeding Record of Indian Rhinoceros (*Rhinoceros unicornis*)
In Nehru Zoological Park, Hyderabad, India*

Date and time of Estrus mating	Date of Parturation	Gestation period	Sex of calf	Inter-calving period	First estrus after calving	Remark
27.8.1970 27.8.1970	25.11.1971 10.30. hrs	459 days	Male	Y M D	7.7.1972	
7.11.1974 7.11.1974 13.10 hrs	—	—	—	3.6.15	11.6.1975	X
23.7.1977 23.7.1977 morning 14.55 hrs	12.11.1978 01.05 hrs	478 days	Male	3.6.0	1.7.1979	
16.1.1980 16.1.1980	15.5.1981	484 days	Male	6.2.3	17.7.1981	

for 62 minutes. The third calf was born on 12th November 1978 after a gestation period of 478 days. The new born was a male. Estrus and mating for the fourth time was observed on 16th January 1980 and after a gestation period of 484 days a male calf was born on 15th May 1981. The first calf was born to this pair when the estimated age of the male was nine years and the female was seven years of age.

The breeding details are given in Table 1. During the weaning period of the calf which is usually initiated after one year the female has been observed to have come to estrus several times, but she was not allowed to mate to avoid injuries and to maintain a healthy growth of the calf. The shortest time gap for mating allowed by us is 18 months.

The female aborted a six months old foetus on 12.5.1975.

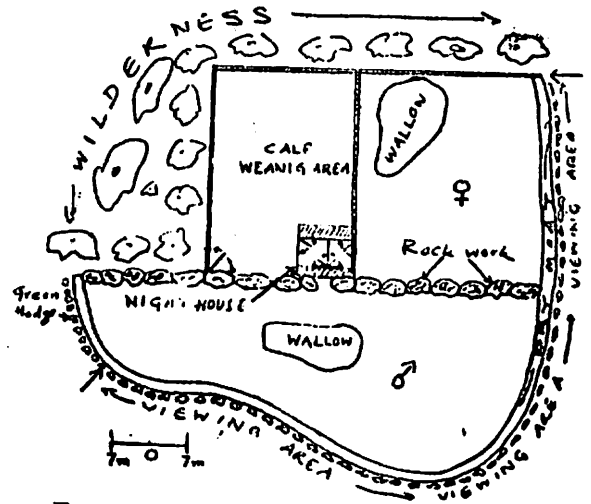


Fig. 1 : The 0.20 ha. Great Indian Rhinoceros Enclosure at Nehru Zoological Park, Hyderabad. Note the Dry Moat in front, common night house with independent entrance for animals and separate exhibit area for male, female and weaning area for the growing calf. Designed to avoid the antagonism of Animals in the Breeding Seasons. Birth and Hatchings since February or so

How to Start A Friends of the Zoo

With financial assistance from the Department of Environment, Government of India, Zoo Outreach Organization has developed a set of four books on various aspects of volunteer activity in the zoo. The first of these is concerned with ORGANIZATION, i.e. how to get a Friends of the Zoo started in your city.

Utilizing the successes and failures of zoo organizations all over the world including India, we have collected a variety of sample By-laws, Code of Ethics, and Agreements between Zoos and Friends of the Zoo for you to use in formulating your own set up. A list of "do's" and "don't" garnered from years of painful experience is included.

Sample features include Volunteer position Description from Woodland Park Zoo, FOZ Handbook by the New York Zoological Society Friends, and Volunteer Coordinator by the Minnesota Zoo.

In addition a variety of suggested beginning projects are included as well as several newspaper articles about the activities of the Friends of Mysore Zoo over the years.