

THE DISAPPEARANCE OF RHINO FROM SAURASHTRA : A STUDY IN PALAEOECOLOGY

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The Indian one-horned rhino (*Rhinoceros unicornis*), once believed to have been roaming the marshes of northern India from Sind to the valley of the Brahmaputra, is now confined only to Assam and some parts of the Himalayan Terai. The *genda* as it is called in India is related to its prehistoric ancestor *Rhinoceros sivalensis* whose fossilized remains have been found from the Siwaliks. Of the original scores of species distributed all over the world, only five remain which include, along with the Indian rhino, two African and two Indonesian species. The havoc wrought on the rhino habitats by anthropogenic deprivations has recently been brought under control. However, it serves to illustrate the degree to which the environment has fallen a victim to the whims of a bipedal creature called Man.

The story of man's physical and cultural evolution is closely entwined with his wielding incipient mastery over one aspect or another of the environment. Progressively man's technical expertise reaches a level when his control over nature becomes all pervasive and to some extent counterproductive. The more man becomes a parasite, greater the setback environment suffers. The result is an endangered ecological balance with some animal and botanical species disappearing altogether. As far as the rhino in India is concerned, the species was once distributed all over northern India including Maharashtra and Gujarat. The fact that the animal existed in great numbers in the Gangetic Valley, has been reported by some of the early travellers to India including Alberuni. Following him Ibn-Batuta (13th century A.D.) sighted the

rhino in the reed jungles along the river Indus. However, in Sind rhinos had existed in the valley of the Indus for several millennia before Ibn-Batuta's report. The people of the Indus Valley Civilization (2300-1750 B.C.) had a close familiarity of the animal. The seals from Mohenjodaro, Harappa and Lothal depict rhino with graphic fidelity. Toy rhinos made up of terracotta have been recovered from a number of settlements of the Harappan culture. In Gujarat, rhino bones from Chalcolithic context have been reported from several sites in the Cambay region. In fact during medieval period Portuguese sources have referred to rhino as being native to Cambay. In 1554 A.D. the Gujarat Sultan Muzaffar II gave a rhino as a gift to King Don Manuel of Portugal. The Portuguese monarch in turn sent it to the Pope as a present. However, the animal was lost on its way to Rome.

In north Gujarat the Mesolithic site of Langhnaj (2000 B.C.) yielded a shoulder blade of a rhino. The date of this Mesolithic site slots well within the framework of the Chalcolithic chronology in Gujarat. From the above discussion it becomes clear that at least in Gujarat rhinos existed very close to human habitation around 2300 B.C. down to the medieval period and that the animal was consistently stalked, captured and hunted. In Saurashtra, as has already been pointed out, the bones of one-horned rhino were found from Lothal which is located in an open, partly swampy and fertile tract of territory called Bhal. According to S. R. Rao, the excavator of Lothal, "Bhal was wooded with medium-sized and large trees, shrubs and grasses in

protohistoric times... the type of vegetation growing around swamps must have been congenial to rhinoceros and other animals". Khanpar near Morbi has also yielded a rhino bone dating from Late Harappan horizon. This shows the extent of penetration of eastern half of Saurashtra by rhinoceros.

In the light of these facts, it will be relevant to examine the ecological variables forming a rhino habitat that existed in Saurashtra some 4000 years ago. Generally it is assumed that rhino favours grassy lands with swamps and will not prefer too dry an environment. However, contrary to this belief, rhinos display a great deal of flexibility if it comes to adapt to a particular ecological backdrop and according to Professor Zeuner marshy habitat is not at all a precondition to rhino existence nor should it be treated as an indicator of any particular climate. In Africa rhinos live in areas which are semi-arid with xerophytic vegetation. The black African rhino which is more a grazer than a browser and bears close comparison to Indian rhino, prefers a grassy landscape with Acacia thickets and pans of accumulated rain water in which it wallows to cool off. The rhinos also display some form of territorial sense. It has been observed that they tend to be asocial when faced with dwindling food supply or pressures brought on by an increase in their population. The result in either case is tapering off in numbers and this decline may reach crisis proportions. The Zululand Parks in South Africa suffered a sharp fall in the rhino population in the sixties. The floral record from archaeological sites in Saurashtra indicates the existence of xerophytic vegetation in Saurashtra. From the Harappan settlement of Rangpur the evidence of *Acacia*, *Zizyphus* and bajra (*Pennisetum*) underline semi-arid conditions. Other sites like Chiroda, Rojdi and Lothal have yielded the seeds of different varieties of grasses and sedges. In fact the proportion of grass seeds far exceeds the recovered evidence of grains, legumes and fruits. The climatic

conditions over Saurashtra have remained more or less stable in the last four millennia with the reservation that the rainfall was a little higher and less erratic. Even today the monsoon rains bring in their wake a luxuriant growth of grasses along the river banks and which are taken advantage of by the cattle. Apart from the river banks, there were patches of grasslands as in the Bhal area of south-eastern Saurashtra. In addition to rhino, other animals and birds existed during the protohistoric times : the nilgai, sambhar, gazelle, spotted deer, mongoose, hare, ducks and geese. In fact the entire faunal spectrum suggests of an ecological and climatic set-up which is not too different from the conditions obtaining today. But what needs to be emphasized in this context is the present sparse vegetative cover and irregular monsoon which contrast sharply with the past conditions.

The disappearance of rhinoceros from Saurashtra has been made into an issue here for the simple reason that other animals who shared the rhino habitats survive today. On the basis of above discussion and the available archaeological evidence, the following hypothesis or rather hypotheses can be generated which have a bearing on the rhino's exit :

- A. By the time Harappans arrived on the scene rhinos were confined to limited areas in the eastern part of Saurashtra.
- B. The Harappans located their settlements near the water-courses which were close to rhino habitats and in that way biotic pressures were brought to bear on rhino's existence.
- C. By the Late Harappan times there was a phenomenal increase in human population which strained the carrying capacity of the environment in the immediate vicinity of the settlements which greatly jeopardised rhino's capacity to survive.

As can be seen from the distribution pattern of rhino habitats during the protohistoric times, Saurashtra appears to have been a marginal area of rhino ecosystem that extended

eastwards to Bengal and Assam. The patches of grassland after monsoons formed a restricted niche for rhino's survival. By the time Harappans arrived in Saurashtra, the animal was already struggling for existence. The western part of Saurashtra was covered by extensive and thick tropical forests that radiated from the Girnar and the Barda hills. These seemed to have presented a formidable barrier to the rhino penetration westwards. Zeuner is of the opinion that the animal remained close to water and did not venture into shrub jungles.

As long as the Harappans of the Mature phase (2300-1750 B.C.) remained a trading community they did not pose any danger to their immediate environment as their settlements were too few and far between. But by the Late Harappan times there was a tremendous increase in the population as the Harappan settlements multiplied ten times from 18 during the Mature phase to 200 in the Late phase. The Late Harappans depended on subsistence economy based on agrarian pursuits. As a result they located their settlements along the rivers and rivulets. They also adopted dry farming by growing bajra (*Pennisetum*) to meet the increasing needs of a growing population. This was a great departure as far as the food habits of the Harappans were concerned who in fact were wheat and barley growers. It seems the dry farming was adopted to accrue maximum returns from the land and that led to the maximum utilization of the natural resources. The location of the Late Harappan settlements along water-courses began to overlap rhino habitats as catchment areas began to expand due to the fact that more and more land was being brought under cultivation. In addition, the Harappans were cattle keepers and the need for grazing must have increased pressure on land that could be exploited economically. From the available evidence it seems the number of cattle far exceeded human population. The Late Harappan site of Chiroda in

the Bhavnagar district is a camp site of the Harappan cattle keepers which in course of excavations yielded evidence of transhumance. The site measures some 4 hectares. The bovine bones belong to some 1200 individuals on the basis of conservative estimates. Each 60 cubic meter soil deposit turned up bones enough to belong to three individuals which by any reckoning is of high order for any protohistoric settlement. At Chiroda the emphasis appears to be on cattle and less on sheep/goat. The actual breakdown is :

Cattle 75-85 per cent
Sheep/goat 10-25 per cent
Domesticated pig 7 per cent

This shows the required amount of forage must have been obtained through intensive grazing of cattle. These herds of cattle grazing over a limited area must have had debilitating effects on the rhino population. As has been pointed out, the rhinos become asocial if the food supply dwindles. As a result, the death rate progressively increases. In a sense the Late Harappans gave *coup de grace* to the already embattled rhinos which were surviving in the face of heavy environmental and ecological odds. By the Late Harappan time large herds of deer, nilgai and bear were descending on the countryside. There is an increasing evidence of their presence in the excavated data.

The human ecological set-up during the Late Harappan period was something of this order. Along the river was located a village or hamlet. Around it was the cultivable land cleared of trees, grasses and hedges. Beyond this open patch were grasslands and shrub jungles. Therefore a clear territorial distinction between the sown (human) and the wild growth (animal) was discernible. The only common factor between man and animal was perhaps the river which formed the single-most important factor that induced the Harappans to found their settlements close to it. The movement of cultivators to and from

their fields, the long haul into the grasslands by cowherds drove the wild animals into the interior parts of shrub forests and grassfields which not only resulted in overgrazing but also nudged the large animals like the rhino out of their habitats. To add to this, intrusion by cattle made the situation poignantly vulnerable for the rhinos.

From the above discussion we can conclude that :

1. In Saurashtra and for that matter Gujarat rhino habitat formed the marginal area of rhino ecosystem.
2. During the Mature phase the Harappans were given to trade and commerce. There was no organized and intensive pattern of land use.

3. By the time Harappans arrived in Saurashtra the rhinos had been living only in restricted niches in eastern Saurashtra as the western part of peninsula was covered by thick forests.

4. By the Late Harappan times there was a great increase in population which entailed an intensive pattern of land use by the introduction of dry farming.

5. The expanding catchment around the settlements drove the fauna to more congenial niches which led to overgrazing and stiff competition to the rhino existence.

6. The intrusion by cattle into grasslands which formed rhino habitat, greatly reduced the chances of rhino survival in Saurashtra.

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