

Study of Habitat Patterns of Captive Animals in the Assam State Zoo

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ABSTRACT- Conservation of animal species is very important to recover the loss which occurred in the past. Zoo provides the better place for ex-situ conservation of threatened animal species. The artificial habitat in zoo should resemble with that of natural habitat so that animal will not face difficulty in adapting to that place. Generally, habitat means the place where an organism lives but that habitat must be provided with all the basic requirements like proper food, cleanliness, proper size of the enclosure, proper breeding sites, etc.

Key-Words: Habitat, Breeding, Behaviour, Space

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INTRODUCTION

Every individual have an equal right to live freely in the surroundings. In addition to human beings, animal too have that have right to live freely in their original habitat (Wild) and can move freely inside the forest. Due to poaching, forest destruction, environmental condition etc. the number of animals declining as time passes. However it is true that if extinction of animals continues, there will be nothing for the future generation. For example- Indian One Horned Rhino, Royal Bengal Tiger, Pygmy Hog etc. are in a threatened category. The present census of these animals is very less as compare to that of past census. Therefore, now a day's proper conservation of animal is very important in the artificial habitat. Zoo is the better place for their conservation as it can conserve large number of different animal species at a time. The zoos have historically been identified as sites for the entertainment of general public and continue to be dependent on the revenue through visitors. Contemporarily, zoos are now defined as active sites for wildlife conservation. They now act as sites for conservation, education, research and entertainment. ^[1]

The animals which are kept in zoo have lost their original habitat. Normally the animals kept in captive conditions but in Assam State Zoo shows some exception of it.

Animals like Tiger, Lion, Indian One Horned Rhino are though kept in a captive condition but they are getting wild environment to some extent. The main goal of animal mangers is conservation of species for future reintroduction to secured habitat. ^[2]

Simply habitat means a place where an organism lives perfectly with all their requirements such as food, shelter, space, proper environmental conditions. Animals housed in artificial habitat are confronted by a wide range of environmental challenges. Some of the potential stressors that may adversely affect animals living in captivity are abiotic, environmental sources of stress such as artificial lighting, exposure to loud or aversive sound, arousing odors, and uncomfortable temperatures or substrates. In addition, confinement-specific stressors such as restricted movement, reduced retreat space, forced proximity to humans, reduced feeding opportunities, maintenance in abnormal social groups, and other restrictions of behavioral opportunities are some factors which may influence animal in artificial habitat. ^[3] All the mentioned factors depend upon the zoo caretaker. However, abnormal behaviors may develop in animals housed in human-made environments, if those environments do not allow them to carry out their natural behaviors. ^[4]

According to central zoo authority, the construction of all the enclosures in the Assam State Zoo must correspond to the specifications laid down by them. Special care has been taken to make the enclosure resemble to the natural habitat of the animals. According to ASZBG Annual report 2014-15, the Assam State Zoo has achieved a success in the ex-situ conservation breeding of the Great Indian One Horned Rhino. As the Pygmy Hog is conserved by various organizations under Pygmy Hog conservation programmer, the Assam State Zoo took an initiative to house them in Zoo.

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Habitat study of captive animals in Assam State Zoo revealed their adaptation ability because the environment, surrounding, niche, etc. are totally changed. **For example:** The wild animals manage their food by themselves in the forest but in the ex-situ conservation, food is given at time i.e. feeding behavior is changed. Their space is reduced as a result their movement become restricted. The territory forming behaviour becomes vanished as there is no fear of danger from other animals. Animals make territory to keep away their predators in the wild.

METHODOLOGY

Study area- Assam State Zoo Cum Botanical Garden

Location of study area- Zoo Road, Guwahati, Assam

Coordinate of study area- 26.1632°N 91.7868°E



Fig. 1: Location of Assam State Zoo

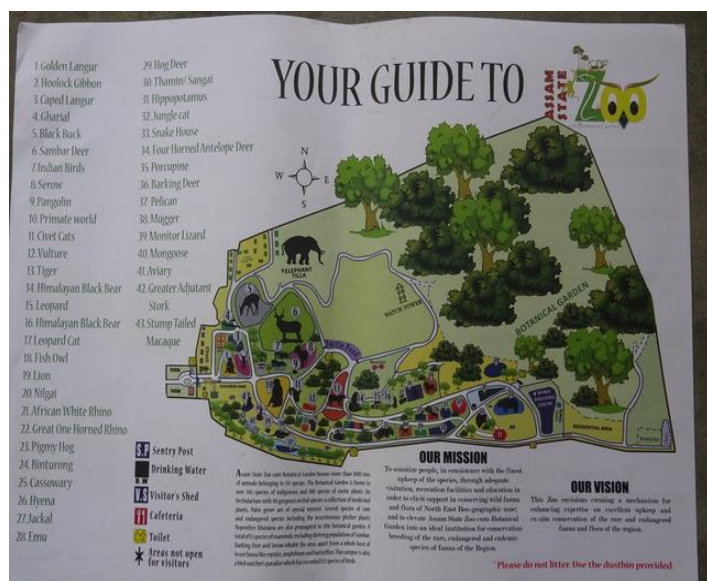


Fig. 2: Guide map of Assam State Zoo

This study was conducted for a period of 3 months, viz: January to March, 2016 (only Sundays) in the Department of Zoology, B. Boroah College, Guwahati, India. The methods applied to meet the objective of the study are as follows:

I visited Assam State Zoo Cum Botanical Garden for collection of data which is required for my project. I have selected the following animals for study of habitat pattern in the Assam State Zoo.

1. Indian One Horned Rhino (*Rhinoceros unicornis*)- IUCN status- Vulnerable
2. Royal Bengal Tiger (*Panthera tigris tigris*) – IUCN status- Endangered
3. Hippopotamus (*Hippopotamus amphibus*) – IUCN status- Vulnerable
4. Pygmy Hog (*Porcula salvania*) – IUCN status- Critically Endangered
5. Gharial (*Gavialis gangeticus*) – IUCN status- Critically Endangered

The animals which are chosen for study as because they are under threatened category. So, there is a need to conserve them in a proper artificial habitat which must be resembled to their natural habitat.

I interacted with the officials of State Zoo several times during study and collected the valuable information regarding the habitat pattern of animals, their feeding time, food given to them etc. I supposed certain assumptions for this study so that I can stress more upon the basic requirement of animals kept in captivity.

1. **Breeding-** it is a physiological activity of all animals for increasing their population. However they are kept in captive condition, the reproduction rate should be high and efficient. Proper breeding faculties are very essential to compensate the loss.
2. **Feeding-** food is the basic need of all the animals. As they adapt themselves in the artificial habitat, there may be observed change in feeding behavior. Proper quantity and quality of food must be given to the captive animals.
3. **Space-** Depending upon the size of the enclosure and behavior of animals, a particular number of animals should be kept in that enclosure. Sometimes conflict occurs due to lack of space.
4. **Environmental condition-** maintenance of artificial lights, temperatures etc. are very important for survival of the animals in captivity. After analyzing the habitat pattern with certain assumptions, the result is drawn.

RESULTS AND DISCUSSION

Subsequent observation of habitat and adjustment of my study animal in Assam State Zoo revealed their adaptability power in the artificial surroundings (Man-Made). It shows that for survival in the nature, animals must adapt themselves in the environment in which they are. It is also true that nature selects only those who can adapt themselves according to the environment. The animals in the Assam State Zoo are dependent on zoo workers for everything. When they are rehabilitated from other place to zoo, they feel suffocated for few days but as time passes they become adapted. The calves born in the artificial habi-

tat or captivity can no longer survive in the wild as they don't have any idea of predator. Those animals in the artificial habitat which once lived in the wild may not survive in the wild if they are exposed after few years because they lost some of their wild behavior in the captive condition. The main problems of most of the zoos are space, food and animal-man conflict ^[5]. A proper understanding of life in captivity is based on the closest possible study of life in the Free State. ^[5] The habitat pattern of particular animal are observed during this project which are as follows:

Indian one horned rhino (*Rhinoceros unicornis*)

As it is a symbolic animal of Assam and due to their vulnerable status (as stated by IUCN), their proper conservation and breeding are very essential. Poaching is the major cause of extinction.

Assam State Zoo provided Rhino Breeding Centre for their proper breeding to recover the loss. It shows that Assam State Zoo take care of their health. During my study, they were not in the enclosure instead of them Spotted deer were observed. Rhino were in the breeding Centre. But the flaws which I found is that the sign board in front of their enclosure was still remaining there which creates misunderstand-

ing among school students and common people.

According to my observation, the area provided to the Rhino is large enough. Shade and water pool are provided to them. The land of their enclosure is not grassy as that of natural habitat instead seems like burden land. They were provided grass and other vegetables for feeding. Lightening for a long period may acts as potential stress which may change their behavior, so it was found that lightening is not given directly to their enclosure.

It has been reported that till now total number of Rhino is 4, out of which 2 are adult and 2 are calves.

Royal Bengal Tiger (*Panthera tigris tigris*)

At one time there were total eight Tiger subspecies but out of all 3 subspecies become extinct due to hunting and forest destruction which reduces their number fewer than 2500, that is why there is a need to conserve them properly in such a suitable place which is out of reach from poachers or hunters. Assam state zoo provides a suitable place to them to certain extent. The following are the observation of habi-

tat during my study-

1. Enclosure area is satisfactory with dense forest, water pool and cage.
2. Aggressive behavior is observed in them, it may be due to reduced space.
3. Their enclosure consists of 5 Royal Bengal Tiger out of which 3 are female and 2 are male.



4. Successful breeding in the captivity is also reported by the officials.
5. Proper diet is given to them in a particular time.
6. Direct light is not given to their enclosure as it may cause negative influence on their behavior



Hippopotamus (*Hippopotamus amphibius*)

Recently, a PIL was filed against Assam State Zoo and Forest department regarding the unhygienic health and various types of diseases of Hippopotamus (source: newspaper). Present status of Hippopotamus is now vulnerable (as stated by IUCN). If it is not conserved properly then one day they will become extinct.

During my study, a new enclosure is constructed for them as the old one is damaged. Naturally they like to live in the river water, lakes and swamps whole day and at dark the feed on grass, the Assam State Zoo provided such habitat to

certain extent. A small water pool is constructed for them. But the quality of water was very dirty and unhygienic which leads to the reproduction of various types of bacteria and viruses which affects both visitors as well as Hippopotamus. Water is changed in every 9-10 days, "official said". If possible they must change water every day because they excrete every day and they itself spend most of the time in water pool in which excreta remains, obviously this condition affects the health. However, proper diet is given to them.

Pygmy hog (*Porcula salvania*)

The reason for pygmy hog's disappearance was largely related to extensive destruction and degradation of grassland habitat due to rapid expansion of human settlement and farming activities.



Pygmy hog attained a status "Critically endangered" (as stated by IUCN). Various project activities have been done for their conservation and breeding. Recently, Assam State Zoo took an initiative to house Pygmy hog in the enclosure. According to official, they rehabilitated 3 old Pygmy hog, out of them 1 is male and 2 are female, from Basistha Pygmy Hog Breeding Centre, Guwahati, Assam.

Their cage is surrounded by grasslands. Habitat was clean. As they rehabilitate from other captivity, change in any behavior may not be observed. This new conservation programme in the Assam State Zoo leads to increase in population of Pygmy hog which may overcome the loss. Diet is provided in proper amount.



Gharial (*Gavialis gangeticus*)

The Gharial is listed as "Critically endangered" on the IUCN Redlist of threatened species. The major threat at present is habitat loss due to human encroachment and disruption of population through fishing and hunting activities.

It has been reported that there has been some recovery and reasonable amount of hope lies with the conservation and management programme now in place.

During my study in the Assam State Zoo, the habitat pattern is not as good as natural habitat. As they like to live in river system, the water pool of Gharial in the Assam State Zoo contains stagnant water from the past few years. Eutrophication occurs in the water pool which results the death of many insects, fishes etc., which serves as food

source for them. Breeding of Gharial is also not reported till now. Only 2 Gharial were there since the last few years, both are female.

Proper diet is given to them but only diet is not enough for any organism for survival, cleanliness as well as maintenance of habitat is very important.



CONCLUSIONS

The main objective of the study of habitat patterns captive animals was to know about their actual condition and the habitat provided to them which resembles with that of natural habitat or not in the Assam State Zoo. From the above discussion it is clear that Assam state zoo provided the natural habitat to a certain extent. After analyzing it is concluded that the habitat of Hippopotamus was very dirty which leads to the reproduction of viruses and bacteria. It is also concluded that the habitat as well as reproduction rate of Gharial was very poor. However, Assam State Zoo took a very good initiative by providing house to critically endangered Pygmy Hog as well as by providing Rhino Breeding Centre for proper conservation. In view of ex situ conservation the habitat of Royal Bengal Tiger was good in terms of enclosure size and the facilities like dense forest, resting place etc. It is suggested that Assam State Zoo should focus on the habitat of Gharial and their reproduction which helps to recover the loss from this study it is also suggested that the habitat ground of Rhino should cultivate with green grass as that of natural habitat and if possible Assam State Zoo should clean water pool of Hippopotamus everyday which help to prevents them from various diseases.

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