

History of Zoo, Comparison of Different Zoo and Success of Captive Breeding in Bangladesh

Dr. Md. Farhad uddin¹

¹*Veterinary Surgeon and in Charge of Rajshahi Zoo, City Health Department, Rajshahi City Corporation, Bangladesh*

Abstract: *The purpose of the paper is to depict the zoo condition and captive breeding zoos animals of Bangladesh. The research is based on some primary data, which are collected from a structured questionnaire survey, interview, observation and also on some secondary data which are collected from different sources. It is found that different zoo has different kind of animals among the zoos of Bangladesh, Dhaka zoo have highest number of animals which is 1622 and interesting Rangpur zoo have logiest number of animals which is 181. Bangladesh homes to roughly 116 species of mammals, 380 species of birds, 139 species of reptiles, 53 species of amphibians, 19 species of marine reptiles and 5 species of marine mammals. The number of threatened amphibians, inland reptiles, resident birds and inland mammals are 8, 58, 41, and 40 respectively. In this situation Zoos and Safari park can play a vital role for the conservation of biodiversity. Captive breeding and ex-situ conservation are the best methods of maximizing chance of survival of a species by relocating part of the population to a less threatened location. As a sound and safe place, a number of animals can be nurtured in zoos and can be reintroduced into the wilderness. With that, by displaying animals in stimulated natural environment and through public education, visitors have a better appreciation for wildlife and conservation issues. With the overcome of some obstacles and by providing animal friendly environment Dhaka zoo, Rajshahi zoo, Rangpur zoo and Dulahazra safari park has the potentiality to conserve biodiversity. Additionally, zoos and safari park afford an opportunity for researchers to make further researches, particularly about the conditions in which diverse species will flourish.*

Keyword: *Comparison, zoo, captive breeding, Bangladesh*

I. Introduction

In 1828 when London zoo opened it was first called itself a Menagerie or "Zoological Garden" which is short for "Gardens and Menagerie of the Zoological Society of London" [1]. The term "Zoological Park" was used for more expansive facilities in Washington, D.C., and the Bronx in New York, which opened in 1891 and 1899 respectively [2]. The term "biopark" was first coined and developed by the National Zoo in Washington D.C. in the late 1980s. In 1993, the *New York Zoological Society* changed its name to the Wildlife Conservation Society and rebranded the zoos under its jurisdiction as "wildlife conservation parks" [3].

In 1907, the German entrepreneur Carl Hagenbeck founded the Tierpark Hagenbeck in Stellingen, now a quarter of Hamburg. It is known for being the first zoo to use open enclosures surrounded by moats, rather than barred cages, to better approximate animals' natural environments[4].

When ecology emerged as a matter of public interest in the 1970s, a few zoos began to consider making conservation their central role, with Gerald Durrell of the Jersey Zoo, George Rabb of Brookfield Zoo, and William Conway of the Bronx Zoo (Wildlife Conservation Society) leading the discussion. From then on, zoo professionals became increasingly aware of the need to engage themselves in conservation programs, and the American Zoo Association soon said that conservation was its highest priority [5].

Because they wanted to stress conservation issues, many large zoos stopped the practice of having animals perform tricks for visitors. The Detroit Zoo, for example, stopped its elephant show in 1969, and its chimpanzee show in 1983, acknowledging that the trainers had probably abused the animals to get them to perform [6]. Roadside zoos are found throughout North America, particularly in remote locations. They are small, unregulated, for-profit zoos, often intended to attract visitors to some other facility, such as a gas station. The animals may be trained to perform tricks, and visitors are able to get closer to them than in larger zoos [7]. Since they are sometimes less regulated, roadside zoos are often subject to accusations of neglect and cruelty [8]. A petting zoo, also called children's farms or children's zoos, features a combination of domestic animals and wild species that are docile enough to touch and feed. To ensure the animals' health, the food is supplied by the zoo, either from vending machines or a kiosk nearby.

When they arrive at the zoo, the animals are placed in quarantine, and slowly acclimatized to enclosures which seek to mimic their natural environment. For example, some species of penguins may require refrigerated enclosures. Guidelines on necessary care for such animals is published in the *International Zoo Yearbook* [9].

The position of most modern zoos in Australasia, Europe and North America, particularly those with scientific societies, is that they display wild animals primarily for the conservation of endangered species, as well as for research purposes and education, and secondarily for the entertainment of visitors [10]an argument disputed by critics.

To reduce the need for animals from the wild, the breeding of animals within zoos is encouraged. Eric Baratay and Elisabeth Hardouin-Fugier of the Université Jean-Moulin, Lyon, say that the overall "stock turnover" of animals is one-fifth to one-fourth over the course of a year with three-quarters of wild caught apes dying in captivity within the first twenty months. They say that before successful breeding programs, the high mortality rate is the reason for the "massive scale of importations" [11].

The condition of the animals varies widely, especially in zoos in countries with little or no regulations. The majority of zoos continue to work to improve their animal enclosures, although constraints like size and expense make it difficult to create ideal captive environments for some species, such as dolphins and whales [12,13].

Smith, T. (2004) [14]says, in Zoo Research Guidelines: Monitoring Stress in Zoo Animals. BIAZA, A protected animal is any living vertebrate, other than man. This includes mammals, bird and reptiles from halfway through gestation or incubation periods and fish and amphibians from the time at which they become capable of independent feeding. Trivedi P.R. and Raj Gurdeep, 1997, Some species have become extinct due to natural causes, but the greatest danger to wildlife results from human activities. Thus, we ourselves have created this need for wildlife conservation.

Conservation biology matured in the mid-20th century as ecologists, naturalists, and other scientists began to research and address issues pertaining to global biodiversity declines [15,16,17]. The conservation ethic advocates management of natural resources for the purpose of sustaining biodiversity in species, ecosystems, the evolutionary process, and human culture and society [18, 19].

Many nations have government agencies dedicated to wildlife conservation, which help to implement policies designed to protect wildlife. Numerous independent non-profit organizations also promote various wildlife conservation causes [20].The purpose of the study is to understand the condition of zoo and also to see the scenario of captive breeding.

II. Materials and method

During the research work there are several procedures been followed. First we select four zoos out of several zoo of Bangladesh. All the selected zoos and safari park in Bangladesh surveyed by visiting and collecting data. Questionnaire survey and Observation were two primary source of data collection. Secondary data were collected from register and record books of zoos and safari park, different journals, books related to zoo management and wild life conservation, newspapers etc. Photographs were taken from all the zoos and safari park about their infrastructure, cages, enclosure and the habitat of the captive zoo animals.

III. Results and Discussion

3.1. Comparison of different zoo in Bangladesh.

There are about seven mostly recognized zoos and two Safari Parks present in Bangladesh. These are Dhaka Zoo, Rajshahi Zoo, Rangpur Zoo, Chittagong Zoo, Khulna Zoo, Comilla Zoo, Savar Cantonment Zoo, Gazipur Bangabandhu Safari Park and Dulahazra Safari Park. Among them Dhaka Zoo, Rajshahi Zoo, Rangpur Zoo and Dulahazra Safari Park were considered for the research work.

Table 1 Comparative study of Animals Species of Selected Zoo

Class	Dhaka zoo	Rajshahi zoo	Rangpur zoo	Dulahazra Safari Park
Mammals	54	13	13	28
Reptiles	10	3	2	14
Birds	57	18	7	42
Total	121	34	22	84

We discussed on the basis of mammals, reptiles and birds. Dhaka zoo have the most, total 121, species varieties. Dulahazra Safari Park has the second most species varieties. Rangpur has the least amount of species, only 22.

Table 2 Comparative study of number of Animals of Selected Zoo

Class	Dhaka Zoo	Rajshahi Zoo	Rangpur Zoo	Dulahazra Safari Park	Total
Mammals	368	155	90	1482	2095
Reptiles	64	5	6	118	193
Birds	1190	249	85	331	1855
Total	1622	409	181	1931	4143

In terms of number of species, Dhaka zoo comes second. It has 1622 species of mammals, reptiles and birds. Dulahazra Safari Park has the most number of species. It has the most number of mammals and Reptiles too. But Dhaka zoo has highest number of birds. Rajshahi has least amount of reptiles, only 5 of 3 different species.

3.2. Status of Captive Breeding in zoo

Some captive animals performing continuous reproduction actively, 673 animals born in Dhaka Zoo during the year 2000 to 2009. Breeding performance rate is exclusively high incase of spotted deer, monkey, ass, rabbit, pigeon, dove, tiger, lion, rabbit etc. Dulahazra Safari Park is known as Samber Deer Breeding Centre in Bangladesh. In India, National Zoological Park, Delhi is a part of conservation breeding programs of the Central Zoo Authority for the Royal Bengal Tiger, Indian rhinoceros, Swamp deer, Asiatic lion, Brow antlered deer, and Red jungle fowl [21].

Alipore Zoological Garden, Kolkata, India was among the first zoos in the world to breed white tigers and the common reticulated giraffe. While it has successfully bred some megafauna, its rate of breeding rare species had not been very successful, often due to lack of initiative and funding. One notable exception is the breeding programme of the *Manipur brow-antlered deer*, or thamin which has been brought back from the brink of extinction by the breeding program at the Alipore Zoo.

Nandankanan Zoological Park, Odisha, India enjoys a good reputation internationally for successfully breeding black panthers, gharials, and white tigers in captivity. Endangered species such as the Asiatic lion, three Indian crocodilians, Sangal lion-tailed macaque, Nilgiri langur, Indian pangolin, mouse deer and countless birds, reptiles and fish have been breeding successfully at Nandankanan [22].

All zoos in the world are trying to formulate a captive breeding program to conserve the threatened and critically endangered species of wild animals.

In Bangladesh Captive Breeding and Rehabilitation by Ex-situ is not more but progress slowly.

Table 3 Location and species under captive breeding of Bangladesh

Breeding Place	Mammals	Reptiles	Birds
Dhaka	Royal Bengal tiger (<i>Panthera tigris</i>), Leopard (<i>Panthera pardus</i>), Rabbit, Hog deer (<i>Axis porcinus</i>),		Stork
Rajshahi	Rabbit		
Rangpur	Royal Bengal tiger (<i>Panthera tigris</i>), Rabbit		
Safari	Rabbit, Sambar deer (<i>Cervus unicolor</i>), Fishing cat, Wild cat, Spotted deer, Civet cat, Jackale, Resus monkey, Maya deer, Wild boar	Bostami tortoise, Sundi tortoise, Python, Dragon, Bon rui	
Others		Crocodiles (<i>Crocodylus porosus</i>): in the pond of Khan Zahan Ali Mazar of Bagerhat, Turtles: in St. Martins Islands Centre for Natural Resource Studies (CNRS- for sea turtles)	Zalali Kobutor at the Mazar of Hazrat Shahzalal in Sylhet

Dulahazra forest near Cox’s Bazar, A protected safari Park known as Sambar Deer Breeding Centre. Total Area 42.5 hectares, Started from 1995 with only one pair of Sambar Deer. It has a good natural condition and vegetation for deer culture. Management system provides a good model for rearing sambar. It could be a successful example of our country for conservation and breeding of some essential faunal diversity. From the Table 3 we can see, Dhaka Rangpur and Safari parks are playing major role in captive breeding, especially for mammals. Royal Bengal Tiger (*Panthera tigris*) is an important example of captive breeding.

IV. Conclusion

Modern zoos have an important role to play in biodiversity conservation. By displaying animals in simulated natural environment and through public education, visitors have a better appreciation for wildlife and conservation issues. Breeding of endangered animals is an important role of all zoos. While for many reasons, it may not be possible to reintroduce most captive-bred endangered animals into the wild. They have played a vital role in the preservation and protection of wildlife by serving as refuge for threatened species. A number of animals nurtured in zoos have been reintroduced into the wilderness.

Zoos are considered educating the visitors on environmental issues but most important contribution to conservation. A little over half a century ago, zoos had the animals kept in bare cages for public viewing. Today, with the help of scientific research, most zoos try to create an environment that closely resembles the animals' natural surroundings. Many of the zoos today also try to make their visitors more cognizant of the distinctive behavior of each animal and of the importance of their (zoos') conservation efforts. The presence of certain species in zoos guarantees their continued existence or prevents their kind from becoming extinct.

One very important tool in ensuring the conservation of endangered species is 'captive breeding.' Many species have been bred successfully inside zoos and a number of them are now being reintroduced in their respective habitats. A complete cognizance of the species involved is required to achieve a high degree of success in captive breeding. Additionally, zoos afford an opportunity for scientists to make further researches, particularly about the conditions in which diverse species will flourish.

In addition to contributing to conservation indirectly through research and efforts to raise public awareness, zoos are also involved in more direct conservation projects. The most obvious efforts are in the area of captive propagation. Breeding endangered animals in captivity as a conservation initiative usually requires participation of several, sometimes many, institutions due to space limitations. Unfortunately, the resources available for this purpose do not meet the demand because of the high cost of maintaining captive populations of wild animals. Many birds held in zoos are not endangered and are held in large numbers. Captive populations of these species are not managed intensively (e.g. blue and gold macaws). Other species are managed more closely with the aid of studbooks. The latter are used to record important information about individual specimens in the captive population including age, sex, identity of parents (if known), location (present and previous), and transfers. This information is used when setting up breeding pairs and for monitoring captive populations. Some species are managed more intensively through Species Survival Plans (SSPs). An SSP is a cooperative population management and conservation programme that North American zoos use for selected species. The objective is to maintain a healthy population that is self-sustaining, genetically diverse and demographically stable. Each SSP has a coordinator who looks after day-to-day activities and a management committee that makes decisions regarding such things as pairings for breeding, research, and reintroduction (if appropriate). Management decisions are based on the SSP master plan which details the specific goals for the population. Studbooks are maintained for each SSP species and husbandry manuals have been prepared for many species. Some SSPs also incorporate reintroduction projects.

The breeding of endangered species is coordinated by cooperative breeding programs containing international studbooks and coordinators, who evaluate the roles of individual animals and institutions from a global or regional perspective.

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