

# The importance of zoo research in captive management and conservation breeding of endangered species in Indian zoos

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As the mission of most modern zoos has come to focus on conservation of endangered animals, scientific research has become more acceptable in zoological facilities. Successful management of animals in captivity requires a thorough understanding of their species-specific behaviour in order to meet their housing as well as breeding requirements. Understanding various patterns of social and reproductive behaviour is essential to breed endangered species. Such knowledge may be crucial in addressing problems associated with social isolation of young animals or maternal rejection of young, in managing medical problems and in developing realistic and human exhibits (Moran and Soren, 1984). A pre-requisite for any successful coordinated conservation breeding program is to utilize the latest available knowledge on population management, reproductive biology, genetics, animal behaviour, nutrition, veterinary care and husbandry standards (WAZA,2005).

An on-going study on the behaviour and enrichment needs of Indian wild dog or Dhole *Cuon alpinus* at Indira Gandhi Zoological Park, Visakhapatnam showed that the presence of sub-ordinate female members in the pack is vital for survival of the dhole pups to maturity in captive conditions since they shared the duties of pup rising along with the breeding pair. A similar behavioural study on Maned wolves (*Chrysocyon brachyurus*) at the Sao Paulo Zoological Park Foundation, Brazil revealed that temporary visual and olfactory isolation of the breeding pair from other animals and minimizing the human disturbance around the enclosure improved the breeding success amongst the wolves. However, zoological research in Indian zoos is still in its infancy and many zoos in the country badly need research programs to be undertaken. Invariably, initiating and funding research is a significant challenge for all zoos and one of the most important ones to be faced straight on. The Central Zoo Authority's Small Grant Fellowship Programme is a very encouraging step towards initiating basic as well as applied research in Indian zoos. The main objective of this program is to address the local issues pertaining to captive management and husbandry.

## Designing a Zoo research project:

Most research in zoos is non-invasive and therefore, many studies are primarily descriptive based on observational data. Information is generally collected over a period of time and analyzed at a later stage to make some sense out of it. But such studies usually end up unpublished because of their unfocused nature. This predicament can be avoided by clearly identifying the problem questions before starting the data collection. Reviewing literature available on the target species will give a

comprehensive idea of the species biology and behaviour.

Basing on this knowledge, making pilot observations and formulating a hypothesis is the first step in designing any research program. Once the hypotheses are made, choosing an appropriate methodology for data collection is very important. A researcher must seriously consider the dependent variables (rates of aggression, sexual behaviour or social play) and independent variables (temperature or time of the day) before adopting the research methodology. Preliminary analysis may be performed on some sample data to finalize the data collection design. Collation and statistical analysis of the collected data at regular intervals is important.

## Dissemination of findings:

If the results of the study seem to be of general interest, they should be published. Dissemination of research findings may be made in the form of reports, recommendations and publications in the journals of the zoo and aquarium profession, as well as in the literature of the appropriate scientific disciplines. This would not only contribute to develop a liaison between *in-situ* and *ex-situ* workers but also serves as a reference tool for other zoos and *ex-situ* facilities for conducting further or similar studies. These reports should include information that is of direct practical use to zoo fraternity. Regular evaluation of the on going studies is also a critical component of the programme to ensure that the research efforts remain focused on stated priorities or objectives.

## The need for an integrated approach in zoological research.

Research in zoos may be taken up in various aspects such as Ethology, Ecology, Animal Physiology, Nutrition, Veterinary Medicine, Pathology, Parasitology, Genetics, Anatomy and Morphology, Systematics and Taxonomy. Planning environmental enrichment programmes for captive animals in zoos is undoubtedly one of the thrust areas in modern zoological research. It was also an important topic of discussion in the workshop on "India's Conservation breeding initiative" held in February, 2008 at New Delhi by Central Zoo Authority. Amongst all the branches of zoo research, behavioural research is popular, probably because it is non-invasive and can be conducted readily by outsiders such as students and professionals from nearby universities. Nevertheless, an integrated approach in all the branches of research from all the stakeholders is the key for successful captive breeding and management of endangered species.

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While there is increasing interest among zoo professionals in the return of the captive bred animals to their habitats, there has been little systematic research directed at the problems involved in this challenging enterprise. In 1985, the Consortium of Aquarists, Universities and Zoos (C.A.U.Z) was founded for the purpose of establishing communication links between university based scientists and educators and their counterparts at zoos and aquariums (Hardy, 1992). The creation of a centralized database for exchange of information between Indian zoos as well as from the foreign zoos is quite important in the field of *ex-situ* research. The increasing difficulty of obtaining additional wild animals for exhibition and the decline in the wild populations of many species means that there is an urgent need for research with integrated approach in Indian Zoos.

**Conclusion:**

Systematic data collection in the zoo setting can provide answers to management questions as well as basic information about the biology of captive animals. Research is now being recognized as important and is expanding in many zoos (Finlay and Maple, 1986). Promotion of conservation-

relevant research on the captive endangered species in our zoos is the need of the hour as more species in the wild are getting close to the brink of extinction. In these times of uncertainty zoos, aquariums and other *ex-situ* breeding facilities could be their last refuge.

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**References :**

Adriana G. Consorte-McCrea, 1994. The Maned Wolf in Captivity, *Canid News*, Vol.2  
 Altman, J 1974. Observational study of behaviour, 49: 227-67.  
 WAZA, 2005. Building a Future for Wildlife, WAZA Conservation strategy. Pg: 22-30.  
 Dhole *Cuon alpinus* Ex-situ project, Indira Gandhi Zoological Park, Visakhapatnam, zoos final report to Central Zoo Authority, New Delhi Pg: 14-15.  
 Kleiman, D.G., M.E. Allen., K.V. Jhompson and S. Lumpkin (1996). Wild Mammals in captivity. Principles and techniques, Pg: 531-536.

**What’s funny about these stories ? funny-“Ha ha”& funny-“Boo hoo”**

**Prague zoo sets out to save Indian gharial**

Prague Zoo, Chekoslovakia, has launched a test programme to save the Indian crocodile-like gharial from the brink of extinction with a million-dollar pavilion for the animals to bask, and hopefully reproduce, in. There are only between 150 and 200 of this species, the *Gavialis gangeticus* also known as the gavial, living in the wild along India’s rivers today.

**Another 20 or so are in captivity in India, Japan, Singapore, Sri Lanka and the United States, according to figures from the Prague zoo.** “All of the conservation plans launched in the world have failed up until now. The gharial is one of the most critically threatened reptiles in the world.” [http://news.yahoo.com/s/afp/20080510/wl\\_sthasia](http://news.yahoo.com/s/afp/20080510/wl_sthasia)

**City zoo swarmed with gharials**

Sanjay Gandhi Biological Park finds itself at its wits’ end as the number of gharials here have gone up from 13 to 129 in the last five years. The “population explosion” has led to space congestion and, of course, additional expenditure on their feed: 11 adults consume 50 kgs of fish twice a week. “We have decided to discourage breeding of gharials,” zoo director Rakesh Kumar said and added so many gharials are not needed in the zoo. Among zoos in India, the Patna zoo today has the largest number of gharials with even the Nandankanan zoo, which initiated the process of breeding gharials in captivity some 40 years ago. [http://timesofindia.indiatimes.com/Cities/City\\_zoo](http://timesofindia.indiatimes.com/Cities/City_zoo)

**Myanmars’ Misery so acute even escaped monkeys run back to the zoo**

We have all watched with growing pain how the world rushed to help the poor people of Myanmar as they dug their way out of collapsed houses or shelters, tried to find food and water and watched their military government refuse to permit foreign disaster workers and even foreign aid, day after day, in the face of so much suffering and death.

The situation seems to have come to the attention of a baboon which escaped through the roof of one his cage which was one of which that had blown off and damaged by the tornado at the zoo. Onlookers saw him sitting on top of a giant ruby in a traffic circle near a pagoda. <http://www.nytimes.com/2008/05/07/world/asia/07myanmar.html?>

Later news reported that seven escaped monkeys returned to Yangon Zoo after spending a few days sifting through debris strewn around the city, the zookeeper said on Thursday. <http://www.dawn.com/2008/05/09/int13.htm>

Perhaps this gives a better perspective of the facilities available after the storm ... even monkeys could not tolerate the lack of amenities and necessities and had to return to captivity to save their lives!