

## CAPTIVE BREEDING PRACTICES IN PAKISTAN. A REVIEW

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### ABSTRACT

Captive breeding is one of the best ways to ensure future existence of any plant or animal. Through captive breeding practices efforts made to breed the animal species which are endangered or threatened, so that they could be reintroduced in their natural habitats. In Pakistan, all Wildlife and Forest Departments are working at provincial level. In captive breeding centers, *Gazella bennettii*, *Axis porcinus*, *Boselaphus tragocamelus*, *Antelope cervicapra*, *Crocodylus palustris*, *Chelonia mydas japonica*, *Lepidochelys olivacea olivacea*, *Capra aegagrus hircus*, Cranes, Peafowls and Pheasants kept for breeding. Successful breeding and reintroduction of *Antelope cervicapra* in Cholistan, *Gazella bennettii* and *Pavo cristatus* in Salt Range, *Axis porcinus* in Daphar Irrigated Plantation has encouraged the Wildlife and Forest Departments for further work. Captive breeding ensures the continuity of the progeny to ultimate survival rate of the species and helps to maintain healthy population for education, awareness and ecological studies.

**Keywords:** captive breeding, Pakistan, practices, wildlife departments.

### INTRODUCTION

Pakistan has over 109 species of small mammals and 65 species of large mammals (Roberts, 2005 a,b), 185 reptile species (Khan, 2006; Minton, 1966), only 22 species and 4 subspecies of amphibians (Khan, 2006) and more than 650 species of birds (Roberts, 1997; Grimmett *et al.*, 2001; Mirza, 1998; Mirza and Wasiq, 2007; Minton, 1966). Man and wildlife have a very close and old relation since the inception of the earth. In the recent past; over exploitation of resources, development of commercialized approach and unchecked trade of wildlife species has caused loss of many species of both, fauna and flora. Due to population explosion at the rate of approximately 3% throughout the history of Pakistan, forced the policy makers to give priority to feed the ever increasing population which converted wildlife species have already become extinct which include; Asiatic Lion (*Panthera leo persica*), Asiatic Rhinoceros (*Rhinoceros unicornis*), Wild Ass (*Equus hemionus khur*), Asiatic Cheetah (*Acinonyx jubatus*), Blackbuck (*Antelope cervicapra*), Cheer Pheasant (*Catreus wallichi*), Crocodiles (*Crocodylus palustris*) and Gavia (*Gavialis gangeticus*). At present wildlife species which are endangered include; Indus Dolphin (*Platanista minor*), Punjab Urial (*Ovis vignei punjabiensis*), Caracal Cat (*Caracal caracal*), Chinkara Antelope (*Gazella bennettii*), Nilgai (*Boselaphus tragocamelus*), Great Indian Bustard (*Ardeotis nigriceps*), Houbara Bustard (*Chlamydotis undulata*), Luggar Falcon (*Falco jugger*), White-headed Duck (*Oxyura leucocephala*), Lesser Whistling Teal (*Dendrocygna javanica*) and Lesser

Floricorn (*Sypheotides indicus*). Captive breeding is a process through which efforts are made to breed in captivity the animal species which are threatened or endangered so that they could be reintroduced in their natural habitats (Cade, 1988; Rahbeck, 1993; Snyder *et al.*, 1996; Komers and Curman, 2000).

Sometimes the population of a species drops to such low numbers in the wild that it is almost certain to become extinct unless we intervene to save it (Kleiman, 1989; MacKinnon and MacKinnon, 1991; Sarrazin and Barba- ult, 1996; Seal, 1991; Stuart, 1991). Wildlife management and conservation initiatives are only possible with the appropriate information on wildlife and its habitat (Kafley, 2008). Keeping this in mind, all provinces in Pakistan have established breeding centers, Wildlife Parks and Zoos to breed and protect endangered species. In captive breeding centers, Chinkara (*Gazella bennettii*), Hog deer (*Axis porcinus*), Nilgai (*Boselaphus tragocamelus*), Blackbuck (*Antelope cervicapra*), Peafowl, Crocodiles (*Crocodylus palustris*), Green Turtles (*Chelonia mydas japonica*), Olive Redley turtle (*Lepidochelys olivacea olivacea*), Ibex (*Capra hircus aegagrus*), Cranes, partridges and Pheasants kept for breeding. The breeding centers are being upgraded from time to time.

According to Punjab Parks and Wildlife Department six antelope and deer species as Nilgai (*Boselaphus tragocamelus*), Hog deer (*Axis porcinus*), Axis deer (*Axis axis*), Chinkara (*Gazella bennettii*), Blackbuck (*Antelope cervicapra*), and Punjab Urial (*Ovis orientalis punjabiensis*) were moved from Schedule III

(Protected animals and birds) to Schedule II allowing private sectors to breed them.

### **Captive Breeding Practices:**

**Punjab Wildlife and Parks Department:** The successful breeding of the animals at Jallo Park since 1979-1980 attributed to the following action taken by the department: establishment of pheasantries and cages for breeding of birds; development of proper natural environment within the enclosures and cages; provision of proper feeding and watering for animals and birds; prevention of disease within breeding stock; disease cure and studies on death causes and remedial measure; fencing of habitats was carried out and proper patrolling was started and visitor management. Due to successful captive breeding of these animals, similar breeding facilities by the name of wildlife parks also started by the establishment of different seventeen wildlife park/wildlife breeding centers/zoo in Punjab, Pakistan. The seventeen breeding centers covering with an area of 3,168 acres.

**Captive Breeding of Blackbuck:** Blackbuck is now considered to be extinct in the wild and especially in Cholistan Desert but an attempt has been made to reintroduce it in Lal -Suhanra National Park adjacent areas

**Captive Breeding of Cheer Pheasant:** Punjab Wildlife and Park Department in collaboration with World Pheasant Association undertook a project for the captive breeding of cheer pheasant and its release in its natural habitat. Eggs of cheer pheasant were flown from England to Lahore by the courtesy of British Airway, which were hatched at Jallo Hatchery. Keeping in view the successful breeding of several species the Punjab Wildlife Department is now seriously considering embarking upon reintroduction plan for the following selected species: Blackbuck in Cholistan; Chinkara in Salt Range; Hog deer in Daphar Irrigated Plantation; Common Peafowl in Salt Range.

**Captive Breeding of Vultures:** Changa Manga plantation constitute 40 acres of land specified for captive breeding of ungulates and is also an important place for restocking projects of Asiatic vultures in Pakistan. A Gyps Vulture Restoration Program was started in 2006 by WWF-Pakistan to conserve and breed endangered species of Gyps, especially *Gyps bengalensis* (website 6).

**Sindh Wildlife Department:** According to the information provided by the Chief Conservator of the Sindh Wildlife Department, at the present five breeding centers are working under Sindh Wildlife Department. Their names and locations are given below.

**Captive Breeding of Marine Turtles:** Turtles are last living remains of the dinosaurs, belonging to the oldest living order of class Reptilia and their fossil record

extending back to about 180 million years. Out of eight species of marine turtles found in the world, Green turtle (*Chelonia mydas*) and Olive Ridley (*Lepidochelys olivacea*) have natural breeding site at the beaches of Hawks Bay and Sandspit in Karachi their home. Considering endangered status of the two species, Sindh Wildlife Department started a pilot project in 1980 for conservation of marine turtles in collaboration with IUCN (International Union for Conservation of Nature and Natural Resources) and WWF (World Wide Fund for Nature) International (website 3).

**Water birds:** Lungh Lake in Larkana district at Larkana-Dadu Highway, at the distance of 19km from Larkana. The favorite hunting ground of the rulers of Sindh in the past and heaven for more than 63,200 birds, it provides an opportunity to scientist and birds watchers to study the behavior of birds. The main waterfowl species visiting this lake are Marbled Teal, Mallard, Shoveler, Pintail, Wigeon, Gadwal, Gargeny, Pochard, Common Teal, Tufted Duck, Coot, Moorhen, Purple Moorhen, Purple Heron, Night Heron, Spoonbill, Egrets, Curlew, Avocet, Lapwing, Waders like snipes, Shanks, Sandpipers, Plovers, Godwit, Ruff, Dunlin, Terns and Gulls. Sindh Wildlife Department providing maximum protection to the flora and fauna of this lake. However, despite financial constraints and lack of a management plan, the efforts of Sindh Wildlife Department are encouraging (website 4).

**Indus Dolphin Reserve:** Indus Blind Dolphin is a freshwater mammal and inhabitant of the Indus River. In 1974 Sindh Wildlife Department notified the area between Guddu and Sukkur barrages as the reserve for the Indus Dolphin which stretches along 190km in length. It is only endemic to Pakistan and the second most threatened species of river Dolphin in the World. Sindh Wildlife Department provides maximum protection and secured environment to the Indus Dolphin. Department has also established a research centre near Sukkur Barrage for Dolphin (website 7).

**Khar Centre:** Khar Centre located near Kirthar National Park. In this breeding centre following species are under captivity, *Antilope cervicapra*, *Crocodylus palustris*, *Gazella bennettii*, *Ovis orientalis*.

**Haleji Lake Wildlife Sanctuary:** Haleji is the wintering place and home for thousands of waterfowl. Some waterfowl are resident while others are migratory. Asia's largest waterfowl reserve, Haleji lake covers an area of 1704 hectare, 70 km away from Karachi and is perennial freshwater with associated marshes and brackish seepage lagoons, set in a stony desert. It supports a very diverse fauna and flora, including several threatened species, and is one of the most important breeding, staging and wintering areas for waterfowl in Sindh. Here the captive breeding of *Crocodylus palustris*, *Anas platyrhynchos*,

and *Axis porcinus* seen. The Government of Sindh has provided legal cover to preserve ecology of the region and Haleji has been declared a Wildlife Sanctuary and later on as a Ramsar wetland site (website 5).

**Hazari Forest:** The Hazari forest is situated in Thatta district. Here the captive breeding of *Axis porcinus*, Partridges and native waterfowl was under captivity before flood but after flood it has been washed out; now department is working to re-established it.

**Khyber Pakhtunkhwa Wildlife Department:** According to the information provided by the Department of Forest and Wildlife Peshawar, the Hog deer, Chinkara, Blue bull, Cranes, Pheasants, and partridges are under captivity in different breeding centers of Khyber Pakhtunkhwa department. Their detail is given below.

#### A. Breeding Centers for Partridges and others:

According to the information provided by Chief Conservator of Khyber Pakhtunkhwa Department, at present thirteen breeding centers working on the captive breeding of partridges and others, by covering an area of 11.02 hectare. Their names are Lakki Breeding Center, Bezen khel, Lakki Crane Refuge Enclosure, Chikarwanda main Enclosure, Crane conservation center, Panjtar breeding enclosure, Kas koruna breeding enclosure, Lakkana breeding cage, Darangi banda breeding cage, Shezadi banda breeding centre, Kajori breeding cage, Rakh Sardaran partridge breeding enclosure, Lalazar mini zoo/Safari. They all are famous due to the captive breeding of Monal pheasant, Cheer pheasant, Ring-necked pheasant, Wood green pheasant, Silver pheasant, White kalij pheasant, Black shoulder peafowl, White tro-pheasant, Grey partridge, Black partridge, Chukur partridge, See-see partridge, Blackcrown crane, Grey crown crane, Common crane, Demoiselle crane, Flamingo, Turkey, Mallard, Blue peacock, and White peacock.

**B. Pheasantries:** According to the information provided by the Chief Conservator, at the present this province has eight pheasantries working on the captive breeding of pheasants by covering an area of 5.169585 hectare. The names of the pheasantries are Dhodial Pheasantry, Bannu Pheasantry, Patanay mini pheasantry, Fizagat pheasantry, Kotal Pheasantry Enclosure, Zafar park pheasantry, Safari Park Pheasantry, Kund Park Pheasantry. All these pheasantries are famous due to the captive breeding of following species; Ring necked, White tro-pheasant, Wood Green, Silver Pheasant, Golden Pheasant, Yellow Golden Pheasant, Lady Amherst's pheasant, Reeves Pheasant, Cheer pheasant, Nepal kalij pheasant, White Crested kalij pheasant, Temminck's Tragopan pheasant, Satyr Tragopan pheasant, Edward's pheasant, Blue-eared pheasant, Grey peacock, Hume's Bar tailed pheasant, Siamese fire-back pheasant, Vicillot fire back pheasant, Bronean fire-back pheasant, Mikado pheasant, Imperial

pheasant, Elliot's pheasant, Monal pheasant, Swinhoes pheasant, Red jungle fowl, Sonorates jungle fowl, Blue peacock, Pied peacock, White peacock, Black shoulder peacock, Green java peacock, Purple neck peacock, Mallard, Pin tail, White eyed Pochard, Common Pochard, Swan, Bar headed goose, White mandreen, Carolina, Gadwall, Demoiselle crane, Grey goral, Chinkara, Urial, Common leopard.

**Kund Park in Kabul:** Kund Park was situated on the confluence of river Indus and river Kabul over an area of 176 acres and the wildlife department, an important site for number of wild species at display, like common leopard, spotted deer, hog deer, black buck, golden pheasant, silver pheasant, ring-necked pheasant, kalij pheasant, Cheer pheasant, Blue peacock, White peacock, Cranes, partridges, Bar-headed geese and Ruddy Shelduck. A bear center was also established in the park with the assistance of the World Society for the Protection of Animals (website 1). This Park has been washed out due to flood. Flood has washed all the animals. It was a great loss to wildlife (website 2). It could be reestablished if funds are given by the Government agencies.

#### Baluchistan Forestry and Wildlife Department

**Quetta:** According to the information provided by Baluchistan Forestry and Wildlife Department Quetta, in Baluchistan, Lehri Park is the only park where captive breeding practices are currently occurring.

**Lehri Park:** Lehri Park is situated in Sibi District. It is famous due to the captive breeding of *Gazella bennettii*. There are total 31 individuals of *Gazella bennettii*, 19 females and 12 males. The total area covered by this is 3.55 km<sup>2</sup>.

**Multidisciplinary Approach for Reintroduction:** The main aim of reintroduction is always to establish a viable, free ranging population in the wild with the help of some extra care, with the objectives of reintroduction, like to enhance the long-term survival of a species; to re-establish a keystone species in an ecosystem; to maintain and restore natural biodiversity; to provide long-term economic benefits to the local and or national economy and to promote conservation awareness or a combination of these. A reintroduction requires a multidisciplinary approach involving a team of persons drawn from different backgrounds.

**Pre-Project Activities:** A detailed ecological and biological studies of the reintroduces stock is a pre requisite. A population and habitat viability analysis will aid in identifying significant environmental and population variables and assessing their population interactions, which would guide long term population management. Human ecology and impact assessment, cost and benefits of the reintroduction program to local

human populations is also necessary. Where the security of the reintroduced population is at risk from human activities, measures should be taken to minimize these in the reintroduction area.

**Post-Release Activities:** Animal behavioral studies of released stock and adaptations must be undertaken, their mortality rate and disease infestation should also be considered.

**Conclusion:** All over the World, captive breeding in zoological gardens, parks and others similar facilities has been undertaken as conservation tool. Successful captive breeding practices are continued in Pakistan too. In Pakistan all Wildlife and Forest Departments working on the captive breeding of several species especially captive breeding of *Gazella bennettii*, *Axis porcinu*, *Boselaphus tragocamelus*, *Ovis orientalis*, *Crocodylus palustris*, *Chelonia mydas japonica*, *Lepidochelys olivacea olivacea*, waterfowl, cranes, pheasants and partridges. Attempts to establish a species in an area which was once part of its historical range being taken by release of Blackbuck in Cholistan, Chinkara and common peafowl in Salt Range and Hog Deer in Daphar. Such types of attempts were very successful and encouraged the Wildlife Departments to work on the restoration of the population of endangered species through captive breeding. For this purpose complete knowledge about the ecology of a species is very important. The main aim of any reintroduction should be to establish a viable, free ranging population in the wild of a species.

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