

Veterinary Care and Breeding of Elephants in Nepal

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Introduction

Elephants were once abundant in the wild but are now becoming endangered over all of their range, with Asian elephants (*Elephas maximus*) being under greater threat than African elephants. Due to habitat fragmentation and loss, and illegal killing, elephant numbers have decreased and many have become limited to small isolated pockets of protected areas. In addition, the human elephant conflict has also increased in recent years.

The Asian elephant has long been associated with humans as a beast of burden, an instrument of warfare for kings, a symbol of status for wealthy individuals, a member of cultural functions and so on (WWF 2003). Thus, the history of capture, taming and use of elephants is very old. Currently, captive elephants are used for forest excursions, tourism activities in the parks and reserves and by some wildlife biologists, park managers and field investigators in research and management activities. In this context, elephant camps and breeding centres may play a key role in conserving these animals through breeding in captivity reducing our dependency to get them from the wild.

Elephants, both captive and wild are protected under the National Parks and Wildlife Conservation Act 2029 (1973) of Nepal. This Act completely banned capturing elephants from the wild, which was in practice long ago but nearly abandoned after 1979. The Nepalese Government is committed to protecting both captive and wild elephants. As part of this, an Elephant Breeding Center has been established and two action plans namely the Elephant Conservation Action Plan (DNPWC 2009) and the Nepal Elephant

Tuberculosis Control Action Plan, 2011 were prepared and are being implemented. At the same time, the government has focused on landscape level conservation approaches, giving special attention to mega-herbivores and big cats.

Veterinary care of newborn elephant calves and the mothers play a significant role in reducing calf mortality in captivity as well as in increasing the efficiency of breeding elephants. This paper describes some common problems and treatment of captive elephants and their calves in Nepal.

Status of elephants in Nepal

Historically, the forests of the Terai and inner Terai of Nepal have been the prime habitat of Asian elephants. These habitats are now fragmented creating obstacles for the free movement of elephants. Nepal currently has four small and isolated groups of resident wild elephants that are known as the eastern (7-15), central (25-30), western (60-80) and far western (15-20) populations (Shrestha & Gairhe 2006). Presently the wild elephant population in Nepal is estimated to be between 107-145 individuals (Pradhan *et al.* 2011).

Nepal has a long history of captive elephant management, which however was recorded only after 1903 (Kharel 2001). There were 31 elephant camps mostly in the lowlands of Nepal between 1898-1970, housing elephants owned by various members of the Royal family and other elite Nepalese (JBK 1985). The Department of National Parks and Wildlife Conservation (DNPWC) has been the government authority for the management of domestic elephants in Nepal since 1978.

Domestic elephants are now engaged in tourist and management activities of the Terai National Parks and Wildlife Reserves. Currently, the population of domestic elephants in Nepal is 215. Out of this 94 are owned by the Government and are managed in five locations. A small number (7) are used in the research field but significant numbers of privately owned domestic elephants (114) are used in the tourism sector. The majority of the latter are found in and around Chitwan National Park, which is the third preferred destination of international visitors to Nepal. A small number of elephants that are hired by entrepreneurs are moved between Nepal and India. Out of the total captive elephant population 36 (16.66%) are males and 179 (83.30%) females of varying ages.

Elephant Breeding Center

Realizing the need to conserve the declining population of wild elephants in Nepal, a taskforce was commissioned to study and recommend on the management of elephants in captivity in 1984. On the basis of its recommendation, an Elephant Breeding Centre was established in Chitwan National Park in 1986. The objectives of the centre were to start scientific breeding and research of elephants, recording of management experiences and to help fulfil the need of elephants for the management of protected areas. The breeding centre was established with 20 animals (16 Indian, 2 Thai and 2 Burmese) (Gopali 2003). The numbers and sex of captive bred elephants at the centre are presented in Figure 1.

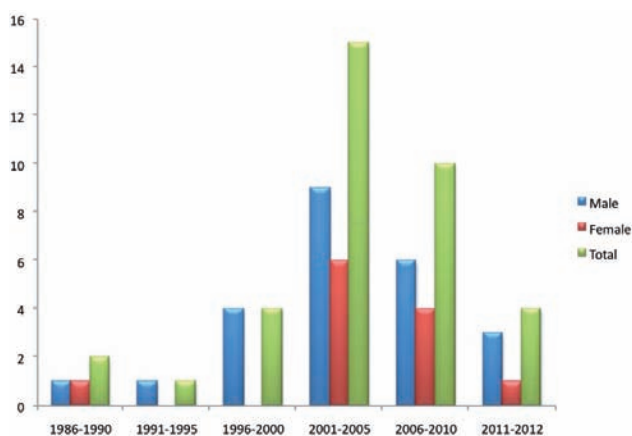


Figure 1. Elephant births in the Elephant Breeding Center, Chitwan National Park.

Breeding management

Breeding elephant bulls are difficult to manage in captivity due to their seasonal musth. Mahouts in Nepal have gradually become more fearful over time of bulls. The food and grazing of non-breeding bulls, is controlled by mahouts so that they do not attain musth. Just one bull named Birendra Prasad from Thailand was used as the stud bull in the past. Due to its elevated aggressiveness, the diet and grazing time was reduced which degraded his health, and it got tuberculosis and died in 2007 before treatment was instituted.

In view of breeding elephants, several biological aspects of elephants need to be considered. One should decide how many cows should be bred, because raising elephant calves is very expensive in terms of food, medicines and withdrawing the mothers from regular work for several years. The increase in staff to take care of newborn calves is also an important consideration.

Oestrous and mating

An experienced elephant keeper can suspect the possible period of heat by regular checking. Analysis of blood progesterone concentrations has proved that the average oestrus cycle length is approximately 16 weeks. The cycle is composed of an approximate 11 week luteal phase and a five week follicular phase with a three day oestrus period. Thus, a female that is not impregnated may be fertile three to four times a year. Typically a female will not show any obvious signs of oestrus so one is dependent either on hormonal analysis or on the behaviour of a bull to detect it.

Striking the genitalia by an experienced mahout with a stick in the early hours of the day is a local technique to detect heat. Upon being struck, cyclers spread their hind legs apart or if in peak heat, urinate and lift their tail horizontally. Those not in heat, shrink their legs and tend to hide the genitalia. Growling and squeaking sounds may be produced by females in heat to invite bull elephants. Mating should be allowed in a peaceful environment. Noises and fun-making by people

may be very dangerous and we have records of attacks in our centre upon such incidents.

Recent elephant breeding in Nepal was initiated by a semi wild elephant bull in Koshi Tappu Wildlife Reserve (KTWR) popularly known as Ganesh in the 1980s. He mated with several captive cow elephants and produced eleven calves. Of them, three died at early ages- one being killed by the mother, one suffering from a paralytic disorder after 6 years of birth and one from enteritis.

Dominant wild bulls in musth usually visit the Elephant Breeding Center and mate with female elephants. The same has occurred in other elephant camps such as Shuklaphanta Wildlife Reserve (SWR), Bardia National Park (BNP), and Parsa Wildlife Reserve (PWR) and Koshitappu Wildlife Reserve (KTWR) as well as in private elephant camps of jungle lodges and hotels.

Veterinary care of parturient elephants and their calves

Elephants have been bred at the Elephant Breeding Center since 1987. A number of issues have been observed.

Primiparous cows often did not produce live calves. However, in such cases delivery was assisted with calcium, glucose and oxytocin injections to save the mother. One Government elephant (Mangolakali) and one private elephant of Machan Wildlife Resort died of dystocia.

After calving, the parturient elephants are injected oxytocin (100 to 150 i.u.) intramuscularly every 24 hours for 72 hours. On many occasions inner vulvar mucosal tears occur due to passage of calves. These are treated by antiseptic washes.

Ventral edema may develop soon after or before parturition. Sometimes this can be very serious, extending towards the sternal area and abdomen almost touching the ground. This has successfully been treated by injecting frusemide (Ridema®, 50 mg/ml, Wockhardt Ltd., India) @ 40 ml (2 g total) per elephant once daily for 3-4 days.

A very common concern after birth is the detachment of a tissue block from the umbilicus leaving a deep sore in the newborn calf. This probably occurs due to a strong umbilical cord not breaking off during the fall of the calf. Though tincture of iodine has been applied on the wound, infection frequently occurs and there have been several instances of swelling, oozing of serum and in extreme cases maggot infestation. A 2.5 g vial of penicillin and streptomycin (Dicrysticin LD, Sarabhai Chemicals, India) for 3-5 days and antiseptic powder such as Nebanol (Square Pharmaceuticals, Bangladesh) or Nebasulf (Pfizer India Ltd.) or Neosporin (Glenmark Pharmaceuticals, India) and a maggoticide (Negasunt® dusting powder, Bayer HealthCare, Germany) has been very useful in treating such cases.

Parturient elephants are vaccinated after calving with 4 ml (0.5 ml ampoules) of Tetanus toxoid® adsorbed I.P. (Serum Institute of India Ltd.). The elephant cows are fed with a special diet composed of rice cooked with molasses. Calcium (Ostovet®-Virbac India,) and vitamin supplements (Vimeral®Virbac, India) are added to this meal for increasing milk production.

Abnormal behaviour by parturient elephants has been observed after delivery of the calf on a number of occasions. A calf born at KTWR was killed by the mother (Tribhuwankali) in 1986 while another was badly attacked at NTNC, Chitwan (Mankali) in 2001. Identifying elephants with such behavior and quickly removing the newly born calf from the stable can save the calf.

Some cows are found with poor lactogenic activity, which necessitates bottle feeding. Bottle feeding has mostly resulted in death of elephant calves, due probably to *E. coli* or *Salmonella* infection. Dhirendrakali's calf at KTWR and Rupkali's three consecutive calves at SWR died due to formula intolerance and enteritis.

Currently, 23% of Nepalese elephants are infected with elephant tuberculosis. Regular testing, segregation of test positive elephants and treatment is progressing.

A new disease named elephant endotheliotrophic herpes virus EEHV was detected in Nepalese captive elephants and may be a challenge for bringing up the captive born elephants (Nolen 2011; Gairhe 2011).

Deworming of both adults and calves is done with Fenbendazole (Panacur®, Intervet India Pvt. Ltd.) twice a year @ 5-10 mg/kg body weight (Tiwari & Rao 1996). Fasciola and Paramphistomum spp. are controlled by oral administration of Triclabendazole (Fascinex®900 mg bolus @ 7.5 mg/kg bodyweight, Novartis Animal Health Inc.) or Oxytoclozanide (Distodin®, Pfizer India Ltd.) boluses at recommended doses once every year before monsoon season.

Elephant lice (*Haematomyzus elephantis*) are controlled by feeding injectable Ivermectin (Ivomec® Merial Limited, USA) @ 0.15 mg/kg live weight (Karesh & Robinson 1985).

Benzathene penicillin (48 lac vials x10), Streptopenicillin 2.5 g vials x10 and Ceftriaxone (Ocef®/Ceftriax®, Karnataka Antibiotics and Pharmaceuticals, India) injections @ 5 mg/kg body weight are frequently used in adult females to control bacterial infections while any types of colic is treated with Hyoscine butyl bromide (Buscopan®, 20 mg/ml ampoules, 10-12 ampoules, 200-240 mg) injections.

Elephants while in the forest may be stung by hornets and bees for which injections of Triamcinolone (Vetalog®, 3-6 vials, 90-180 mg; Zydus Animal Health, India) or Antihistamines (Anistamin®, Intas Pharmaceuticals Ltd., India, 40-60 ml/adult) have been used.

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