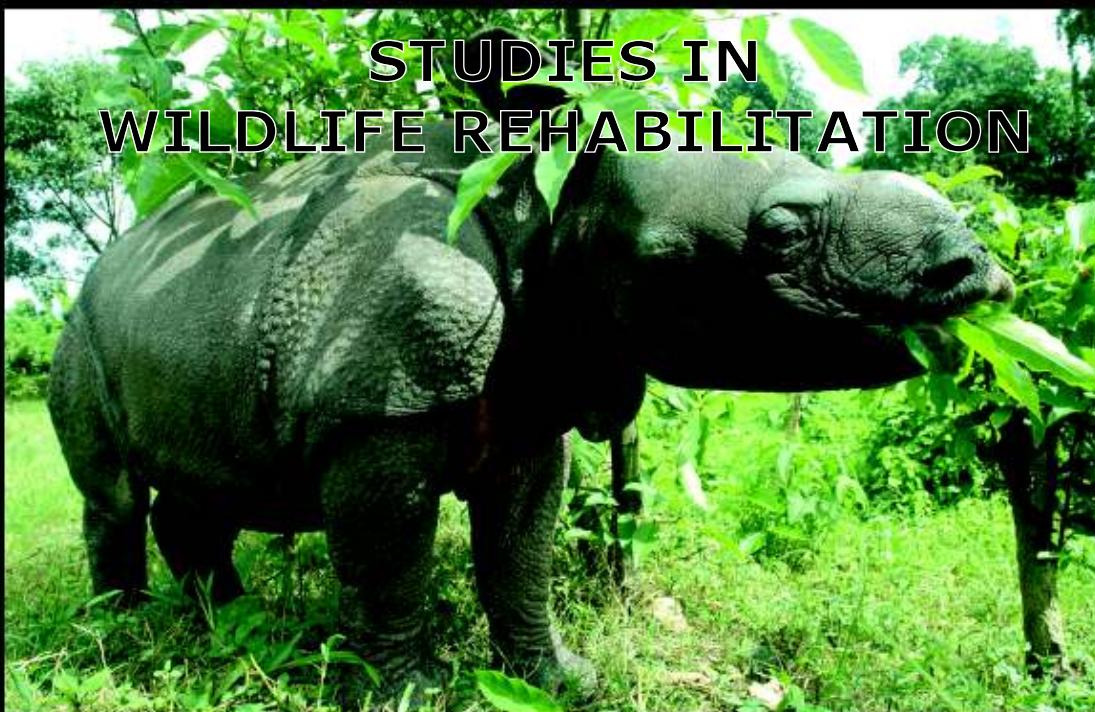


CONSERVATION REFERENCE SERIES NO. 2

BACK TO THE WILD

STUDIES IN WILDLIFE REHABILITATION



**Eds: Vivek Menon, N.V.K. Ashraf, Prajna Panda
and Kadambini Mainkar**

PRODUCED ON THE OCCASION OF KAZIRANGA CENTENARY 1905-2005





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and Kadambini Mainkar**

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The Principles for Rehabilitation of Large Mammals (Asian elephant, Asiatic wild buffalo, Asiatic black bear and greater one-horned rhinoceros)

**N.V.K. Ashraf,¹ Rathin Barman,² Kadambari Mainkar³
and Bhaskar Choudhury⁴**

Introduction

Guidelines, standards, protocols or management plans are an integral part of any wildlife management exercise. If we take the field of wildlife rehabilitation, standards exist for wildlife of the developed world, American and British wildlife in particular (RSPCA, 1994; Miller, 2000; BWRC, 1994) but none exist for Indian wildlife. Rehabilitators need not only these sets of general rehabilitation principles but also species specific guidelines. Currently rehabilitators in India bank on these wildlife rehabilitation guidelines, besides the two time tested IUCN guidelines on reintroduction and placement of confiscated wildlife (IUCN, 1998 and 2002). Moreover, hardly any published or unpublished information is available on the rehabilitation

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scenario in India to enable one in the preparation of standards and protocols. This paper is an attempt to place on record some of the rehabilitation principles followed for large mammals at two rehabilitation centres in north-east India.

The Department of Environment and Forest, Government of Assam and Wildlife Trust of India (WTI) in partnership with the International Fund for Animal Welfare (IFAW) have been involved in the rehabilitation of displaced, injured and orphaned animals in Assam through the Centre for Wildlife Rehabilitation and Conservation (CWRC) near Kaziranga National Park of Assam, India. The centre was established in the year 2002 following a Memorandum of Understanding signed between WTI and the Department of Environment and Forests, Assam (MoU, 2001). The centre has returned to the wild many temporarily displaced animals, especially during the annual floods, during the past three years. Amongst large mammals, the centre now has four rhinos (*Rhinoceros unicornis*), eight elephant calves (*Elephas maximus*) and two buffalo calves (*Bubalus arnee*). All of them are ready to be moved into the field for in-situ acclimatization for eventual reintegration or release to wild.

The other rehabilitation centre established by WTI focuses almost exclusively on the Himalayan black bears (*Ursus thibetanus*). Considering the tremendous potential that exist in returning rehabilitated confiscated bear cubs back to the wild, WTI signed a Memorandum of Understanding in March 2002 with the Department of Environment and Forests, Arunachal Pradesh, to establish a rehabilitation centre that will address the issue of displaced or orphaned bear cubs (MoU, 2002). Both these centres have been established with the support received from the Animal Welfare Division under the Ministry of Environment and Forests and IFAW. As on 31 December 2004, the centre had six bears undergoing rehabilitation, of which four are due for release in February and March 2005.

The species being dealt with in this paper are the Asiatic black bear, greater one-horned rhinoceros, Asiatic wild buffalo and Asian elephant. The stages of stabilization of new arrivals and hand-raising in the nursery are not dealt with in this paper as it has been dealt with in detail by different authors in this publication (see Easwaran; Bhaskar and Mainkar; and Mainkar *et al.* in this compendium). The principles laid down here are based on the information available on the rehabilitation of comparable taxa outside India, on the lessons learnt while visiting rehabilitation centres in other countries, on the expertise made available during the expert rehabilitators' visit to the above facilities, on the experience gained in reintroduction programs of species like rhino in India and most importantly, the authors' own experience in managing these species at the above centres.

Previous studies on rehabilitation of these species

There is a general assumption in India that permanently displaced elephants cannot be returned to the wild. However, elephants (both calves and adults of varying age

groups) have been routinely reintegrated into wild elephant herds with varying degrees of success at the David Sheldrick Wildlife Trust in Africa (Sheldrick, 1992) and rehabilitated elephants have been hard-released for eventual reintegration in Sri Lanka (Jayawardane, *et al.*, 2002). Though stray incidents of captive elephants going back to the wild has been reported, no concerted effort has been made so far to rehabilitate and reintegrate displaced elephants with wild elephant herds.

Bear rehabilitation is a major conservation and animal welfare activity practiced throughout the world. Bears have been successfully rehabilitated and released back to the wild in many countries including Russia, USA and Canada (Alt and Beecham, 1984; Wasserman and Clumpner, 1995; Pazhetnov, *et al.*, 1999). There is evidence of killing of bears in northeast India, for meat and the sale of body parts in medicinal preparations. Orphaned cubs are kept as pets for some time before they are handed over to the Forest Department for lifetime care. However, none of these bears have ever been rehabilitated for return to the wild in India.

The case of the greater one-horned rhinoceros and wild buffalo is also no different. Though not many individuals are displaced like the young ones of elephant and bear, every individual of these endangered species is important to the surviving population in the wild. Of all the four species of large mammals being dealt with here, it is only in the case of the greater one-horned rhino that there is information available on translocation, *in-situ* acclimatization and reintroduction (Singh and Rao, 1984; Suwal and Shakya, 2000). These reintroduction programs taken up by the Indian and Nepal Governments have shown us that the species is an ideal candidate for taking up release programs either for restocking or reintroduction.

Stages of rehabilitation

Rehabilitation of most mammalian young has the following stages of rehabilitation, namely stabilization of new arrivals, hand-raising until weaning, rearing at the centre after weaning, acclimatization at the release site, release, and monitoring following release or reintegration.

Stages of Asiatic black bear rehabilitation

Depending on the age of the bear cubs received for rehabilitation, they can be subjected to different stages of rehabilitation at the centre. This has been schematically presented in Figure 1. Unlike rhino, buffalo and elephants calves, bear cubs do not need to be intensively nursed beyond the age of two months. They can be isolated from human contact and fed remotely even before they are weaned from milk. While human contact is minimized to significant levels during nursing in cub enclosure (Stage 2), it can be reduced to negligible levels during the subsequent stages.

The habitat inside the pre-release orientation yard should be similar to the habitat

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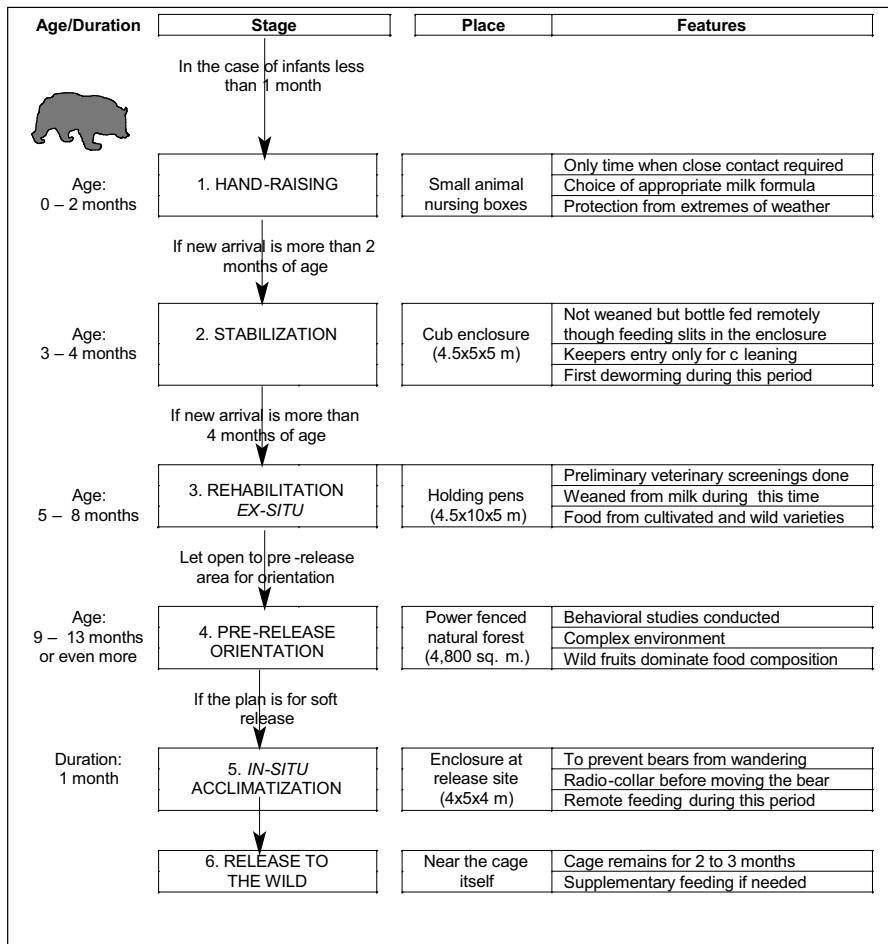


Figure 1: Rehabilitation flow chart for Asiatic black bear

type chosen for release. Asiatic black bears have a wide distribution range, occupying a varying altitudes and vegetation zones. If bears are meant for release in the higher temperate distribution range, it is imperative to orient them to the habitat conditions before considering them for release.

One of the most popular ways of hard-releasing bears in temperate and high-altitude regions is to release them into dens while they 'hibernate'. If the bears are meant for release in high altitude temperate forests of Eagle Nest WLS, they may be released in winter after induction of 'hibernation'. Simple withdrawal of food is known to induce 'hibernation' in bears (Sergey Pazhetnov, *pers. com.*).

The dens in which the bears are habituated during pre-release orientation can also be shifted to the hard release site. In this method, radio-collaring should be done well before hibernation is induced in the bears.

Stages of rhino and buffalo rehabilitation

Rhinos and buffalos are species of tall, wet grasslands and their rehabilitation stages are similar. Unlike in elephant calves, human contact can be withdrawn from rhino and buffalo calves at an early stage. They can be left on their own after one year, especially when there are conspecifics in captivity for social integration. The period of stabilization is followed by *ex-situ* rehabilitation for two years, by which time they are ready to be moved to the wild for *in-situ* acclimatization for a period of one to two years (see flow chart in Figure 2). For both these species, it has been proposed to confine them for a period of one to two years in individual large power-fenced enclosures (called boma) of not less than three acres each. While the rhino is expected to remain at or near the site of release establishing a home range of its own, the buffalo should eventually get reintegrated into wild herds.

One of the most important exercises in rhino and buffalo rehabilitation is their translocation from the rehabilitation centre to the release site as they cannot be walked down to the release site. Invaluable experience has been gained from chem-

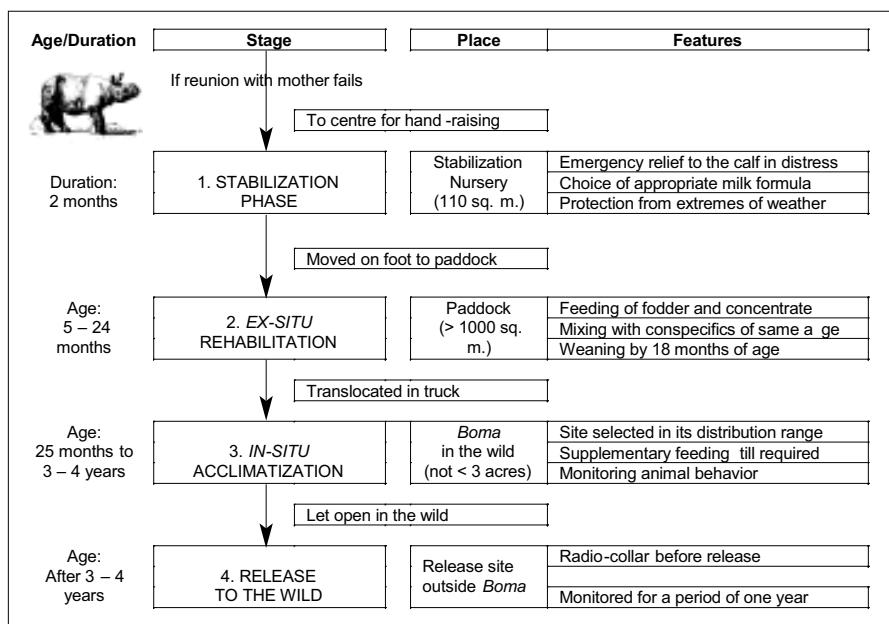


Figure 2: Rehabilitation flow chart for the greater one-horned rhino

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ical capture and translocation operations in India and Nepal (Singh and Rao, 1984; Suwal and Shakya, 2000). The translocation of captive rhinos for restocking programs, however, does not demand chemical capture as they can be habituated to walk into a truck. Nevertheless, the operation still requires meticulous planning and preparation.

Stages of rehabilitation of elephants

Rehabilitation of permanently displaced elephant calves would include a period of stabilization, hand-raising until weaning, formation of social groups and the most important stage of *in-situ* acclimatization for reintegration into wild herds (Figure 3).

- Unlike in any other species, human contact is maintained throughout the rehabilitation exercise. It is not withdrawn until the elephants re-integrate with wild elephant herds.
- Elephant calves can be nursed at the center itself for two years and then moved to the re-integration facility or alternately, the calves can be moved to the re-integration site soon after stabilization.

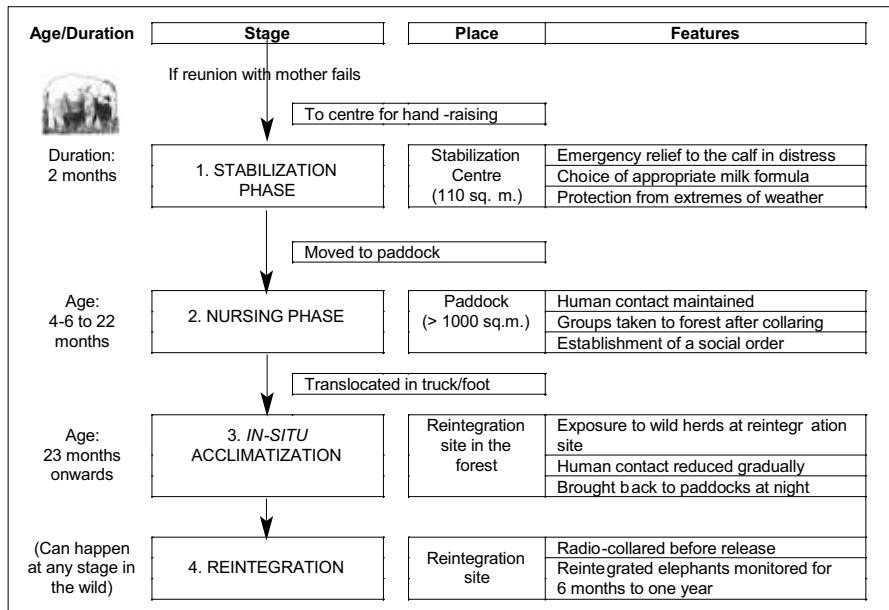


Figure 3: Rehabilitation flow chart for Asian elephants

- Since visual contact with calves is often lost in the forest and calves sometimes get 'lost' in the wild, all calves should ideally be radio-collared by seven months of age when they are taken to the forest in groups.
- Once the calves are two years old, they are ready to be moved to an area isolated from human interference in a suitable elephant habitat which has a large resident wild elephant population. The young calves need to acclimatize to the wild environment where they come in contact with their wild counterparts and socialize with them. Unlike other rehabilitation procedures, like bears and rhino for instance, the process is more of a "reintegration into the wild" as opposed to "acclimatization in confinement".
- Eventually the elephants are expected to get integrated into wild herds as individuals or into the surrounding wilderness as isolated herds of their own.
- In this process of gradual reintegration which is a kind of soft 'release', elephants may or may not be able to assimilate into a wild herd due to rejection by the herd or excessive attachment to their human family. However, at no point should the elephants be pressurized into going 'wild' or be alienated for the sake of honing their wild instincts.
- Elephant calves need not be released at the same area of acclimatization. As the Sri Lankan experience shows that they can be released far away from the place they were raised in social groups (Jayawardane, *et al.*, 2002).

Selection of release or reintegration sites

Factors to be considered while selecting a suitable release site include overall habitat suitability, food availability, presence of predators in the area and public attitude towards the species in the area (Verdoorn, 1995; Miller, 2000). Following general guidelines should be followed while choosing the site for release:

- All sites chosen for release should fall within the natural distribution range of the species. It should ideally fall within a protected area and enjoy a good level of protection.
- The area should be free from anthropogenic pressures like human encroachments, cattle grazing, history of hunting or man–wildlife conflict.
- The site should also be easily approachable by road for easy release and post-release monitoring.
- The project being reinforcement in nature, the site chosen will have minimum number of resident animals in the case of bear and rhino, but a good population

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of animals in the case of social animals, such as the elephants and buffalo.

- The proposed site of release should be assessed— for habitat suitability, food availability and other minimum requirements mentioned above— by a committee of rehabilitators, biologists and representatives from the government.
- The site thus chosen should be conveyed to the Chief Wildlife Warden (and the Ministry of Environment and Forests for their approval in the case of species belonging to Schedule I and II of the Indian Wildlife (Protection) Act, 1972) and approval sought.

Veterinary considerations before release

General quarantine and health screening protocols for wild animals prior to release to the wild is now available (Woodford, 2001). However these guidelines have to be adapted to suit specific species and local conditions. Most of the instructions in this paper are based on the African experience.

Veterinary intervention or advice is required during three stages of rehabilitation:

- (i) During quarantine and stabilization,
- (ii) During the process of rehabilitation for routine veterinary procedures
- (iii) Screening and immunization procedures before considering the animal for release.

- Animals with permanent physical deformities and chronic disease shall be moved to appropriate captive facilities for lifetime care.
- The health of animals at the release or reintegration destination shall be assessed by consulting the local veterinarians to determine if any disease of concern are known to be endemic in the area.
- Two to three months before any animal is transported to the release site, either for release or *in-situ* acclimatization, blood smears and whole blood should be collected for conducting basic hematology, blood chemistry (if necessary), haemoparasites and serological investigations against infectious diseases.
- The decision on whether to add or omit a test, treatment or vaccination shall be made by the attending veterinarian in consultation with the veterinary expertise available on the particular species.
- Animals that fail to pass through these veterinary considerations shall not be moved to the *in-situ* acclimatization yard.

Asiatic black bear

- Rehabilitated bears should be screened for infectious disease like mange, tuberculosis and, if necessary, infectious canine hepatitis (ICH) before release. Evidence of pruritis and alopecia are signs of possible mange, multiple dermal tuberculin tests is one way of determining the presence of tuberculosis, and fecal samples can be screened for ICH virus.

Asiatic wild buffalo

Of all the four species under discussion in this paper, the wild buffalo is the only one that has a domesticated equivalent (*Bubalus arnee bubalis*). The populations of wild and domestic buffalo intermingle in the fringe of Kaziranga National Park and the possibility of inter-population transfer of pathogens and parasites is a possibility. In fact the entire population may have to be considered a meta-population while considering the formulation of health monitoring protocol for the wild buffalo. Therefore, the buffalo calf should be subjected to all regular veterinary procedures for maintaining a disease free and healthy captive period.

- Buffalo calves are very prone to worm infection especially Ascarid worms. The calf should be dewormed with Fenbendazole or any other suitable anthelmintic once within a month of its age, and subsequently every two or three months till it is 10 months. Fecal samples should also be analyzed for parasite ova every two months.
- Two to three months before the animal is transported to the in-situ acclimatization yard, the animal should be drug-immobilized to collect blood samples and blood smears for conducting the following disease investigations:
 - a. Basic hematology (PCV and CBC), and also blood chemistry if found necessary by the attending veterinarian.
 - b. Blood smears for haemoparasites
 - c. Serology for some of the bovine infectious diseases like brucellosis, blue tongue, bovine rhinotracheitis and anaplasmosis.

These tests could be carried out if considered essential by the attending veterinarian and if facilities are available. Some of these diseases like Brucellosis, for instance, occur naturally in the free ranging populations (Choudhury, *unpubl.*).

- Tuberculosis is an important disease that should be ruled out before considering the animals for release. Serological tests for tuberculosis through ELISA, gamma-interferon, etc. (Cook, 1999) should be performed. Any decision on further screening against infectious diseases like tuberculosis should be based on the hematological results.

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- Some part of the samples collected should be frozen for genetic studies in future. Considering the fact that most of the present populations of wild buffalos are not genetically pure as they are suspected to have bred with domestic populations (WII, 1994; Kikkawa, *et al.*, 1997), it is important to preserve biological samples for subsequent laboratory investigations.
- All buffalo calves, if living in areas where HS, BQ and FMD are endemic, should be vaccinated against these infectious diseases before being taken for *in-situ* acclimatization. The veterinarian may also decide on immunizing the buffalo against anthrax before moving the animal to the field. Vaccinations should be instituted several weeks prior to the movement of the buffalo to the release site in order that adverse reactions, if any, could be detected in advance (Woodford, 2001).

Asian elephant and the one-horned rhinoceros

Elephants and rhinos do not have corresponding domestic equivalents and thus the possibility of transmission of infectious disease from domestic animals to the wild does not exist. Captive elephants can be a threat to elephants being rehabilitated at rehabilitation centres but this can be ruled out in a situation where rehabilitation centres are located away from captive elephant camps. Since parasitism is a possibility in all captive animals, the fecal samples of all elephants should be regularly screened for parasite ova. All elephants, at the discretion of the veterinarian should have received one dose of dewormers against nematodes, trematodes and cestodes before they are taken to the forests for reintegration. Vaccinations for elephants would include, if necessary, against haemorrhagic septicaemia and anthrax.

Traditionally rehabilitated animals have been either soft released or hard released. Sometimes a combination of these two methods may also be considered depending on the field realities. The soft-release method follows the assumption that animals must feel at home when they are released in an area. Here they are provided adequate exposure to the habitat at the release site.

As far as bears are concerned, monitoring should start during stage of pre-release orientation itself. The bears have to be monitored while they are in the *in-situ* acclimatization cage and after release. Though bears are territorial, it is said to be advantageous to release them in pairs or in groups (Sergey Pazhetnov, *pers.com.*). Efforts should be made to release in pairs or groups of more than two as far as possible. However, in the case of elephants and to some extent wild buffalos, the question of 'release' does not arise but only a slow 'reintegration' into the wild.

It is crucial that animals being rehabilitated after release during initial stage are monitored for determining the success of the operation. Eventually not every animal released will require the full expense of evaluation (Karesh, 1995). More important

than collaring temporarily displaced animals is to monitor the permanently displaced animals that have been released after long period of rehabilitation.

All radio-collared animals have to be monitored for a minimum period of six months and up to one year where feasible. Every animal meant for release should go through five stages of "Decision Chain" duly signed by representatives from the project team (manager, biologist, or veterinarian) and representatives from the state government or central government. These four stages of decision making include:

- (i) Subjecting every animal to the complete prescribed protocol (especially veterinary)
- (ii) Testing the animal for behavioural soundness
- (iii) Approval of the release site chosen for release
- (iv) Confirmation of the legal permits obtained for release of the animal.

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