

# SAZARC: Sixth Annual Conference -- Committee Reports



## Transportation Guidelines for Animals Md. Abdur Razzaque\*

It was resolved at the 2005 SAZARC meeting that there should be a subcommittee to draft guidelines for transporting live animals, following the working group which met at CBSG/RSG meeting. Abdur Razzaque agreed to Chair the committee and report in the next meeting. The following are the points from his presentation. These will be discussed in committee and turned into official guidelines for SAZARC.

Transporting live animals — needs:

- International and national permits
- Health certificates
- Husbandry information
- Sender and recipient details



### General Welfare Conditions

- Animals should have priority over merchandise
- Only healthy animals should be transported
- Pregnant or dependent animals should not be transported
- Sedation is not allowed; in exceptional circumstances veterinarian should accompany
- Arrangements for feeding and watering depend on the species and duration of journey
- Journeys by land or sea, full facilities should be provided for adequate food
- Adequate water is essential
- Ensure that there is no danger of drowning
- To avoid cross-infection human contact with animals should be avoided
- Animals should not be housed near food stuffs.
- Animals should not be taken to areas where unauthorized person have access, particularly for prolonged periods in airports, ports, railway yards, etc.
- No animal should be transported with radioactive materials or other substances dangerous to health.
- Containers should be secured to the aircraft, lorry or ship.
- Ensure that the containers are kept in horizontal position

### Advance arrangement for transport

- In case of transportation over long distances and different climates, controlled environment should be available. Due to prolonged transit stops, proper arrangements be made in advance to ensure that the animals are not subjected to extreme temperature

- For emergency fans or heaters to be brought into service during the stopover
- Advance preparation should be made for any necessary quarantine measures or other health regulation at the ports of intermediate stops or final destination
- Animal consignments should be collected promptly at their final destination
- If live animals have to be left for prolonged period in airports, ports, railway yards, etc. they should be housed in places to which unauthorized persons do not have access
- Crated animals should be kept away from direct exposure to sun and inappropriate temperatures.



### Containers

- Preferred material for construction of containers is timber, such as bamboo, cardboard, hardboard, plastics and metal
- Polystyrene is recommended for reptiles, amphibians, fishes and invertebrates as it has excellent heat insulation properties
- To ensure sufficient rigidity and strength, build containers on a framework when timber or hardboard is employed
- In case of large animals, use of bolts and nuts in place of screws and metal reinforcement for corners, and for walls and roof, is also recommended.
- Inner surfaces of containers should be completely free from projecting nails, screws, end of mesh or sharp materials which could cause injury
- A slatted or mesh floor is preferable so that urine and excreta may be trampled and fall into liquid-proof trays beneath the floor
- For animals that have strong gnawing or clawing habits, the walls of containers should be lined with sheet metal or welded mesh of sufficient strength
- Birds travel may be done more satisfactorily in semi darkness. Ventilation must be confirmed
- Lack of sufficient air is one of the causes of death in animals, so great attention should be paid to ventilation of containers.
- Ventilation holes should be provided in all walls and in certain cases, also in the roof.

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## Aquarium Report for South Asian countries

Liyanarachchige Dushyanthi Renuka Munasinge  
Bandaranayake \*

An aquarium is a clear-sided container in which water-dwelling plants and animals are kept in captivity, often for public display. Aquariums are usually classified into freshwater and saltwater. Advance technology and modern equipment having been introduced over the past decade into the aquarium field, an increasing number of fish, corals and invertebrate species have been maintained in captivity.

### History of Aquariums

The beginnings of aquariums date back as far as thousands of years ago. Egyptians and Chinese held fishes in high regard, even considering them sacred. The Romans also kept fresh-water fish as a food source. The first scientific and popular aquarium was established in the London Zoological Gardens in 1853. In 1938, a marine aquarium was opened for the public in Florida.

### Concepts of Aquariums

There are a few concepts adopted by many aquariums at the global level, some of them are: **tanks** (cabinet type, the ordinary exhibit we often see in aquariums); **Ecotype** (habitat cum aquarium such as the Kelly Aquarium and Under Water World in Singapore, Sidney Aquarium, etc.); **Acrylic tubes** (fresh water as well as sea water such as KLCC aquarim and a Kelp forest in Two Oceans Aquarium); **Oceanariums** (sea water aquariums, live coral reef exhibits such as Kelly Aquarium and Under Water World in Singapore) and **open air river systems** such as at Sydney Aquarium.

### Public Aquariums in South Asia

- In Pakistan the only recorded public aquarium is Karachi Municipal Aquarium which is located in the zoo but there is an old aquarium called the Clifton Aquarium which is under repair for the last few years.
- In India there are a number of aquariums, such as Taraporewala aquarium in Mumbai, the marine aquarium of Mandapam, Kankaria aquarium, Patna zoo aquarium, Arignar Anna zoo aquarium and a few more.
- In Nepal the Central Zoo has a small but very attractive aquarium.
- In Sri Lanka, there are two public aquariums, the zoo aquarium and a privately owned public aquarium.
- Afghanistan - An aquarium has been almost completed at the Kabul Zoo.
- Bhutan, Bangladesh and Maldives have no aquariums

### Maintenance of Aquariums

- Freshwater aquaria remain the most popular due to their lower cost and easier maintenance
- The physical characteristics of an aquarium such as size, lighting conditions, density of plants, bogwood, overhangs, and substratum affect the behaviour and survivability of tank inhabitants as well as the appearance of the aquarium which attracts visitors.

### Fish Data Base

- I would like to suggest to maintain a database of fish fauna in the region under SAZARC.

- At the initial stage commence with endemic fishes of the region and eventually to develop further up to exotics and marine fish.

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## Nutrition Committee

Jayanthi Alahakoon\*

In 2003, a Nutrition Committee was established in SAZARC. when Dr. Ellen Dierenfeld, an expert in zoo nutrition was primary resource person at the 4th Annual SAZARC Conference, hosted at the National Zoological Gardens, Sri Lanka. Ellen taught SAZARC participants many things about zoo nutrition. It was decided to create a nutrition data base for South Asia. The following year, although Ellen was invited for Part II of Nutrition, it was not possible for her to come and the training was done by participants who had achieved successes with their nutrition programmes. This year there were no nutrition reports from different countries so as the Chair of this committee I respectfully submit a report from my zoo, that is the National Zoo.

In early January 2005, steps were taken to establish a nutrition section to the National Zoo, which was much required. This section consists of:

- Three graduates who have specialized knowledge on nutrition
- Kitchen staff
  - three employees to prepare wet foods
  - three employees to prepare dry foods

Diet charts were completed for all the zoo exhibits. This was prepared taking into consideration metabolizable energy, etc.

The supervisory staff monitors the preparation of food until distribution. The nutrition section ensures that a balanced diet is given to the animals on the basis of energy. This also ensures that food is not wasted and the animals do not gain weight unnecessarily.

The methodology used was based on the knowledge conveyed by Ellen at the sessions conducted on nutrition at SAZARC in 2003.

- For primates:
- offering food hidden in crumpled newspapers in a gunny bag
  - introducing a pumpkin with a hole
  - offering frozen food items at the hottest time of the day.

- For birds :
- hanging food almost as in a natural habitat

- For carnivores
- sending food on a cable
  - allowing them to play with Cocoa fruits

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## Report of the Training Committee and of the Wildlife and Trade Committees of SAZARC

R.K. Sahu\*

Despite training every year at SAZARC and other efforts made by individuals, zoos and their authorities through out South Asia, zoos still require training in different fields. In India there is an arrangement for animal keepers training programme but perhaps this is not so systematic in the South Asian countries. Other higher level zoo personnel also require training in order to catch up and keep up with zoos in other parts of the world. Even vets, curators, supervisory staff, etc. need regular training throughout the region. Every day the concept of zoo management is improving or changing. In order to equalise the playing field and matching the standards of other zoos in the world we need to have trained zoo personnel in all fields and levels. For that we also need some exposure to some of the better developed zoos of the world and also training. We think that WAZA, PAAZAB, SEAZA, SAZARC working together can do this.

SAZARC has already conducted many training programme to members but still some of the fields like Veterinary science and other disciplines need training. All remaining Directors can also join SAZARC for the development of their zoo. We SAZARC members have to join ZIMS / ISIS immediately to have communication with the world in the field of data management.

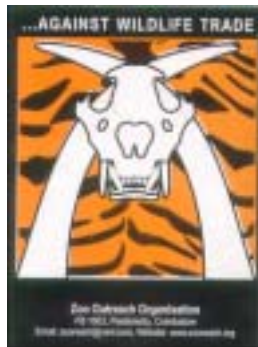
### Report of the Wildlife and Trade Committee

Educational programmes can develop awareness in the people, especially school children and visitors to inform them about legal aspects of wildlife and trade, the Wildlife Protection Act, CITES, etc.

With the materials of Zoo Outreach Organisation's programme "Against Wildlife Trade". we have done many education programmes in our zoos to develop awareness about trade of wildlife. Also programmes featuring tigers, vultures, bats, primates, etc. have been helpful.

We are also informing visitors and school children, students etc about how the purchase of animal products and articles made from animal products will lead to species loss. We are also creating awareness against the myths of tiger nails, bones etc being useful for better health or for better business; of snake skin for better education and other superstitions. We are educating visitors about how keeping of peacock, parrots, and other wild animals as a pet can create problems for individuals who do these things (legal problems such as arrest and punishment) and to animals.

\* *Superintendent of Kamla Nehru Zoo, Ahmedabad, Gujarat.*



## Report of the Conservation Committee Sally Walker\*

SAZARC is attached to 2 organisations ZOO (India & USA) & WILD (*India*), 2 thematic IUCN networks CBSG & RSG, a regional zoo educator network (SAN-IZE) and 7 Taxon Networks conducting conservation activities, Invertebrate, Amphibian, Reptile, Volant Small Mammal (bats), Non-volant Small Mammal (rodents, insectivores) and Primates. Since SAZARC is hosted by ZOO, all the technical resources of these groups can be made available to SAZARC for its conservation programmes.

**PHVA** — In February SAZARC Director visited zoos in Bangladesh and discussed various conservation issues with officers from Dhaka Zoo, Chittagong Zoo and Dulahazara Safari Park. These zoos and the Chittagong Veterinary College participated in the very intensive PHVA workshop for Hoolock Gibbon where they contributed information and ideas for improving conservation of this Critically Endangered Species. In May SAZARC was represented by the Director in ISIS / ZIMS meetings along with Brij Gupta from the Central Zoo Authority

**SAN-IZE** — A new development in conservation education — the South Asian Network of International Zoo Educators SAN-IZE — was announced and has great relevance for SAZARC. In keeping with the generous and practical gesture of WAZA to host the Secretariat of the International Zoo Educator Association, Zoo Outreach Organisation / SAZARC has resuscitated their Asian zoo education network but limited to the region of South Asia. The name of the network is South Asian Network (SAN) of the International Zoo Educator Association (IZE). ZOO education unit distributes thousands of items annually to zoos, foresters, botanical gardens, educational institutions, taxon specialists who want to conduct education in the field and others in India. SAN-IZE is sponsored by Columbus Zoo.

**WZACS** — The ZOO office in collaboration with SAZARC Secretariat published a South Asian edition of World Zoo and Aquarium Conservation Strategy (WZACS) and undertook many activities associated with it, including English version WZACS full (5000 copies), Posters (5000), Stickers (10,000) stickers and has distributed hundreds to each country. One thousand copies were given to the Central Zoo Authority and we thank them for distributing two copies to each zoo in their own Annual Report. All countries received 50-100 copies for immediate distribution; and were offered copies to take home at the SAZARC meeting. Indian zoos were recently sent an invitation to order up to five copies additionally for their staff. Zoo education officer, R. Marimuthu visited several zoos and found that the staff had not seen a copy. Pending are 10,000 summaries WZACS Executive summary which can be undertaken as soon as official version of the Executive Summary is approved.

**ZOOS' PRINT** magazine is serialising chapters every month in their issue. Education Officer has undertaken visitations of zoos to interact with upper and middle level staff, assess their needs with respect to what SAZARC, ZOO, CBSG South Asia, and SAN-IZE can do to assist them with their conservation activities. He also distributed copies of WZACS to persons in the zoo who do not have a personal

copy. Educational material for youngsters is being designed focusing first on Animal Welfare aspects of the Strategy. A general packet on zoos and their potential will follow. This is sponsored by Chester Zoo Ravi Aryal, member of Wildlife Conservation Group WAG of Nepal organised a release ceremony for WAZCS in Central Zoo.

\* **Hon. Director/Founder, Zoo Outreach Organisation**

## **Stock/Animal Exchange Committee**

**M. M. Qazi\***

Every year the Chair of this committee collects information about the stock position of SAZARC zoos so that zoos wanting to exchange animals can do so. First, an email is sent to all the participant zoos requesting an electronic copy of the information. If zoos are not in a position to send an electronic copy, they can bring a copy to the meeting for circulation among all participants. This year 10 zoos sent an electronic copy of their stock position and one zoo brought hard copies with them. The zoos that contributed information about their animal holdings are :

Chittagong Zoo, Bangladesh / Landhi Korangi Zoo, Bangladesh Rangpur Zoo, Bangladesh / Dulahazara Safari Park, Bangladesh Dhaka Zoo, Bangladesh / National Zoological Gardens, Sri Lanka Phuentsholing Zoo, Bhutan / KMTNC, Central Zoo, Nepal / Lahore Zoo, Pakistan / Karachi Zoo, Pakistan

\* **Director, Karachi Zoo, Karachi, Pakistan**

## **Veterinary Committee**

**G. K. Dubey\***

**Introduction of medicines in wild animals** — A spoonful of sugar helps the medicine go down. One of the most challenging tasks for the keepers and vets in a zoo is to get their animals to take medications. Many medicines are distasteful and animals are often quick to learn that you are presenting them with medicine and refuse to take it. It is therefore a constant challenge in zoos to devise ways to deliver not just one dose, but a whole course of medication to wild animals without the need for restraint or sedation.

**Macaques** It is difficult to give macaques oral medication because their taste buds are very well-developed. It is therefore a good idea to use pediatric drugs since they are pleasantly flavoured and palatable. If no pediatric drug is suitable, the medication should be placed inside the animal's favourite food, e.g. apples/bananas, which are then fed to the animal. Unfortunately, this method only works on the first two or three occasions, after which the animals learn that the drug is in the food.

**Bears** Bears are very investigative in the wild, and are fond of honey. Bears can be provided with honey-filled wooden cubes as a form of environment enrichment. When medication is necessary, the medicine can simply be added to the honey which is placed in the cubes and the bear ingests the whole mixture.

**Deer.** For deer it is best to mix the medicine into their mash

feed. It is also possible to give them medicine inside the shells of their groundnuts. The medicine is put in the shell by making holes in it and removing the nuts. As with macaques, deer can also be fed medicine inside fruit such as apples, bananas etc.

**Birds.** Medicine can generally be added to the drinking water or food, and it is important to ensure that the medicine is well mixed in. However, if the bird is very sick it can be held and given the medicine through a dropper.

**Carnivores.** (Lion/Tiger/Hyena/Jackal). At Maitri Baag Zoo, Bhillai, India, medicine is mixed in with the goat meat. However, if the medicine is distasteful it is given with a chicken. The chicken medicine is shown to the animals and then moved around close to the animals to stimulate them, without allowing them to catch it. When the chicken is finally thrown to them they consume the food and medicine straight away. Beef liver has a very strong flavour which disguises any other taste and is therefore useful for giving medicine in. "Bloodsicles" or sorbets can be made which numb the tastebuds before medicine is given. Another idea is to ask the local pharmacist to prepare the appropriate medicine and mix it with a flavour which will disguise the bitter taste of most antibiotics. Your vet may also want to consider using baytril taste tablets (if the infection you are trying to treat is sensitive to baytril) because they are meat-flavoured and easily taken by carnivores and omnivores. Some keepers use chicken broth to hide medicine in (home made is best) in place of fish juice for cats who don't like fish.

Sometimes it is helpful to fool the animal into thinking they have found the medicine. This worked very well with a sealion and an African leopard which would refuse all food until they found or tested the medication after then they would eat the rest of their food eagerly. When trying to give the animals tablets, the keeper would place an M & M (small sweet) or an aspirin into their first piece of food. After they found it, the animals would eat normally, making it easy to slip the real medication into a later piece of food. It is also helpful to show a second piece of food to an animal while giving them the first piece with the medicine in, so that they will anticipate the next piece of meat and hopefully eat the first containing the medicine quickly.

**Python.** Rats can be injected with medicine before they are presented be moved around close to the snake, to stimulate the snake into catching the prey.

**New Information about antibiotics — The long action penicillin.** In wildlife veterinary work, the capture and catching of wild animals for purpose of injection and treatment is a difficult task. In most antibiotics, the drug concentration level in the blood does not stay for a very long time. Hence repetition of injection is a MUST to maintain the optimum blood level of the drug. The long active penicillin "Benzathine Penicillin" provided prolong blood level of the drug, say 120 hrs. use of this drug can definitely reduce the number of pricks to the animals. A potent antibiotic "Ceftriaxone (INTACEF) injectable. This antibiotic has a broad spectrum of activity which cover both gram positive and gram negative bacteria.

\* **Chief Veterinary Officer, Maitri Baag Zoo, Bhillai**

## Reintroduction Committee

Shrawan Kumar Sinha\*

When a wild population declines and is in imminent danger of extinction, one of the ways to save the population is to bring the animals into captivity, build up their numbers and try to reestablish the species in the wild. This has been tried with a number of threatened species, but it involves many challenges. Several problems arise when a species declines to a very small population size, including genetic variability, inbreeding, selective breeding, demographic problems, environmental problems etc. There are an estimated 500,000 mammals, birds, reptiles and amphibians in captivity in zoos throughout the world. The technology for management of captive populations of endangered species in zoos is primitive in some parts of the world, but improving. Not all attempts of captive propagation have been successful as a result of behavioural problems in captivity, genetic problems including inbreeding and other factors. There are substantial difficulties in breeding some groups of animals. The potential role of zoos for species conservation also is limited by space and expense. It has been estimated that if existing zoos were used only for captive propagation of threatened species, a maximum of about 900 species of vertebrates could be kept in captivity, but at least 2000 mammals, reptiles and birds would have to be bred in captivity in the near future in order to insure survival of species. Improved genetic management of small captive populations and scientific management of other factors may lead to successful propagation. Zoos, aquaria and other *ex-situ* conservation centres are of much significance and could play a major role in restoring populations of threatened species thus saving them from extinction.

The data gathered from 10 representative zoos of U.K. for the year 1988 and 1997 shows that the percentage of threatened species kept in zoos increased significantly from 4.81 in 1988 to 25.02 in 1997, but there was no corresponding increase in breeding of these species. Similarly, there may be only few instances of planned and successful reintroduction/supplementation in the wild. The trend of reintroduction issues were analysed using information from the International Zoo Year Book form 1986 to 2003. Out of 701 published literatures, only 17 articles (2.42%) are related to such issues.

Only a few genuine attempts at reintroduction/release of animals after conservation breeding can be traced in India and other South Asian countries.

In spite of the fact that *insitu* conservation is the ideal, suitable conditions for survival of a large number of species in the wild do not exist. No doubt, the recovery of a large number of species is required to prevent further loss. Thus, the linkage of *insitu* and *exsitu* conservation of threatened species remains a focal area. Conservation strategies to achieve viable populations entail population management strategies, include :

- Better protection of large populations in the wild.
- Intensive *insitu* management of small wild populations
- *Exsitu* programmes to reinforce wild populations.

## Recent initiatives undertaken for Reintroduction / Supplementation/ Release in South Asia

Though few efforts have been made for reintroduction/ supplementation/ release into the wild for conservation of species there is, nonetheless, better awareness for saving such species generated during recent years, and these attempts will give beneficial result in this area. Some of the notable recent/ongoing initiatives are briefly mentioned here. *Editor's note : The foregoing briefs have been very much summarised. For a complete version of this detailed report see the Report of the 6th SAZARC meeting, 2005 on CD from Zoo Outreach Organisation.*

### Initiatives in Pakistan:

Studies conducted on Oriental White-backed vulture between 2000 and 2001 at two sites in the Punjab province of Pakistan showed high mortality rates 11.4% and 18.6%. The necropsy of dead vultures showed that 80% of adults, 63% of sub-adults, 19% of juveniles and 13% of nestlings had visceral gout (Gilbert et al 2002) and this finding was consistent with the earlier reports ref diclofenac from India (The Peregrine Fund 2000). The rate of decline in Pakistan was observed to be much higher than the conspecifics in India WWF – Pakistan in collaboration with the Federal Ministry of Environment and IUCN – Pakistan arranged a one day workshop on the Vulture Conservation at its Head Office on the 2<sup>nd</sup> September, 2004. Recommendations from this workshop will help in developing the conservation plan for this vultures.

### Initiatives in Nepal:

A Kathmandu Summit meeting called by the Peregrine Fund and Bird Conservation, Nepal took place in Kathmandu, Nepal during February, 2004 and identified the priorities necessary to prevent the extinction of vultures in the wild. On September 19, 2005, the King Mahendra Trust for Nature Conservation (KMTNC) hosted a meeting to discuss the decline of white backed and slender billed vultures in Nepal over the past 10 years and to consider solutions to this situation. The meeting was well attended with representatives from all relevant government departments and conservation NGOs in Nepal. It was agreed that the establishment of a captive breeding facility was a priority to enable vultures to be brought into safety. Once the results of trials on meloxicam are completed and published it is hoped that a real drive can be made to replace the use of diclofenac with meloxicam. It was recognized that an awareness programme was important to prepare users to the threat posed to vultures by diclofenac and to prepare them for safe drugs.

### Initiatives in India:

#### Pigmy Hog, India

*(This project has been described elsewhere in this issue of ZOOS' PRINT magazine by its project head, therefore it has been deleted from this report. Ed.)*

**Project Red Panda, India:** Padmaja Naidu Himalayan Zoological Park, Darjeeling, undertook a conservation breeding and release programme starting in the 1990's

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with six Red Pandas from various foreign zoos to augment an existing population of five wild caught Red Pandas in the zoo. The project aimed at systematic breeding of Red Pandas in captivity and their ultimate release into the wild. A total of 37 Red pandas were born in the zoo during the last nine years under this programme and three females released in Singhalila National Park, Darjeeling and monitored by radio collaring.

#### **Vulture Conservation Initiatives in India:**

Because of an unprecedented scale and speed of population declines in the last few years, it has been necessary to bring vultures of all three species Oriental White backed vulture (*Gyps bengalensis*), Long billed vulture (*Gyps indicus*) and Slender billed vulture (*G. tenuirostris*) into captivity to ensure the survival of these species. Removing diclofenac from the environment will allow the eventual recovery of vulture populations however, it is essential to protect these species in an environment where they can propagate without being exposed to the drug. A vulture conservation breeding centre was established at Pinjore in 2003 by the Forest Department of the Government of Haryana State and RSPB, ZSL, the International Centre for Birds of Prey and the U.K. Government Darwin Initiative. Also a vulture conservation programme with assistance from Central Zoo Authority, New Delhi, is in initial stage of planning in Nandankanan Zoo. So that wild caught vultures can be protected, bred and ultimately released.

#### **Western Tragopan, India:**

Western Tragopans (*Tragopan melanocephalus*) are threatened (IUCN) pheasants of North West Himalayan region covering temperate and Subalpine forest zone. The species is covered under Schedule I WL(P)A and CITES. There are an estimated 1600 to 2100 Western Tragopan pheasants in Himachal Pradesh. A conservation breeding and release programme has been taken up recently with the assistance of CZA and Himachal Pradesh government at Sarahan Pheasantry in Himachal Pradesh with a founder population of 5.3 Four chicks were hatched and raised during June, 2005 with integrated efforts.

#### **Lion - tailed Macaque, India:**

The Lion-tailed macaque (*Macaca silenus*) endangered (IUCN, 200?) and endemic to Western Ghats and associated hills of Karnataka, Kerala and Tamilnadu. The total population of 3000-4000 is declining, being threatened with habitat loss and poaching. The Central Zoo Authority is funding and supporting the Lion-tailed Macaque conservation project in three collaborating Zoos (Arignar Anna Zoological Park, Sri Chamarajendra Zoological Gardens, and Thiruvananthapuram Zoo, Thiruvananthapuram). At present, population under planned breeding programme is being maintained in three zoos and it is aimed to build a viable sustainable population in due course through conservation breeding. Three Lion-tailed macaques have been born since inception of the project during last one year in Arignar Anna Zoological Park). Captive born LTMs will be released to the wild after proper assessment and following required protocols and guidelines once a good sustainable population base is built up.

#### **Asiatic Lions, India:**

The last of the Asiatic lions are now confined in a small sized protected area, the Gir National Park in Gujarat, the decline due to fragmentation and destruction of its original extensive range of distribution throughout the Indian peninsula. This led to a search of a second home for lions for which Palpur-Kuno Sanctuary was selected by Government of India and Government of Madhya Pradesh accepted the recommendations, submitted a proposal and is engaged in preparing the habitat with funds from the Government of India. Once the habitat at Kuno WLS has been adequately secured and developed with sufficient prey, lions and dependent young from a pride, from central Gir are to be translocated. The project is at present in initial first phase of implementation. The relocation of families and habitat management of the site are being attended at present.

#### **Release of Star Tortoise:**

In June-July 2002, Singapore CITES management authority confiscated about 1,800 star tortoises (*Geochelone elegans*) which were later shifted to Hyderabad Zoo, India. A long process of identification of their habitats by taking up genetic analysis through CCMB, Hyderabad and their tallying and pre-release survey of habitats was undertaken by Nehru Zoological Park, Hyderabad. The collaboration of Wildlife Institute of India, Dehra dun for technical inputs were also ensured. The first soft release of these star tortoises was done at Srisailam on 15.11.2003. The second soft release was done at Tirupati and Chittoor on 05.12.2003. The final release of Star Tortoise was completed during 2004-2005.

The above examples of Reintroduction/release/ supplementation present diverse scenario/situation and thrust. What ever be the case, such efforts are required to be handled scientifically and with required care. Careless and unscientific releases are to be prevented. The following action points may be taken care in the larger interest of conservation of species.

- Such projects are to be scientifically managed with clear objectives.
- Population Management (both under *ex-situ* and *in-situ* conditions) is required to be scientifically planned for long term survival and sustainability.
- Required protocols and IUCN Guidelines are to be followed for reintroduction/ supplementation/release.
- Integrated and multi disciplinary approach are required for success.
- Pre-release surveys and assessments of release sites, population structure and other factors and post release monitoring on regular basis are to be attended.
- Involvement of local community is also desired.
- Research/scientific study form the integral part of such efforts on long term basis .
- Education/Awareness and Advocacy are essential ingredients for desired result.
- The information base/data for successful efforts and even on unsuccessful results are important ( there may be many learning inputs from failures also).