

Ex-situ Wildlife Conservation and Zoos in India



केन्द्रीय चिड़ियाघर प्राधिकरण
Central Zoo Authority
(STATUTORY BODY UNDER THE MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

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Introduction:

Humans share the universe with fellow living beings. May be because of better developed mental faculties, humans tried to master the universe and his fellow living beings. It started with hunting/collecting for consumption followed by domestication/ cultivation for use. Which could not be domesticated or harvested made captive for pride and/ or for recreation. These collections were the prototypes of modern days parks or zoos.

In the 2nd half of 2nd millennium, these parks were more and more used for studies/ research. Most of today's Zoology and Botany originated from those captive populations of animals and plants. These parks/ zoos were gradually opened to general public for observations/ education/ recreation and became public zoos/ parks or botanical gardens.

Things become complicated in last century of the millennium with manifold increase in human population and its needs and greeds, resulting in large scale destruction of wild animals and their habitats. More and more wild animal and plant species become endangered, even extinct.

In this changed scenario, these parks/ zoos have to reverse their role from the takers from the wild to givers or collaborator to conserve the wild. To do that, the parks/ zoos need to play many roles and link up with *in-situ* managers for conservation of wildlife and its habitat.

Government of India recognized the importance of *ex-situ* conservation of wildlife soon after independence. It is noticeable that only five years after the independence, India constituted its Wildlife Board, indicating the importance the new governors wanted to give to wildlife. It was in its very first meeting in 1952, the Indian Board for Wildlife (now National Board for Wildlife) decided to have a modern zoological park in the national capital i.e. New Delhi. First All-India Zoo Superintendents Conference was held at Madras (now Chennai) in 1955 and a need for a training centre for zoo personnel in India was felt. Following the recommendations of the All-India Zoo Superintendents Conference, a zoo wing was set up as a technical sub-committee in the Indian Board for Wildlife. The sub-committee had its first meeting in Mysore on 10th May, 1956. The Indian Board for Wildlife re-constituted its zoo wing as 'the Expert Group on Zoos' in its 9th session held on 18th November, 1972 at New Delhi, to make detailed study for setting up and maintenance of zoos in the country. The Expert Group on zoos submitted its report in June, 1973 which was accepted by the Board in November, 1973 and still has the relevance in spite of sea change in the zoo world.

Zoo legislation, rules and policy

The Wild Life (Protection) Act, 1972 was amended and a separate chapter (chapter IV A, Section 38A to 38J) (**Annexure-1**) was added to the Act for establishment of Central Zoo Authority and recognition of Zoos in India. The Central Zoo Authority was established by the Government of India in the year 1992 to oversee the functioning of zoos in the country and to control mushrooming of unplanned and ill-conceived zoos that were cropping up as adjuncts to public parks, industrial complexes and waysides. With assistance from the Central Zoo Authority, Ministry of Environment & Forests, Government of India formulated "Recognition of Zoo Rules, 1992" under Section 63 of the Wild Life (Protection) Act, 1972 for fixing standards and norms for management of zoos in the country. On the proposal of the Central Zoo Authority Ministry of Environment & Forests, Government of India has decided to repeal the Recognition of Zoo Rules, 1992 and replaced the same with Recognition of Zoo Rules, 2009 (**Annexure-2**), which are more facilitatory than regulatory in nature.

To give proper direction and thrust to the management of zoos in the country, the National Zoo Policy was framed and adopted by the Government of India in the year 1998 (**Annexure-3**). The main

objective of the zoos under the National Zoo Policy is to complement and strengthen the national efforts in conservation of rich bio-diversity of the country, particularly the wild fauna. The objective can be achieved through the following protocol:

- Supporting the conservation of endangered species by giving species, which have no chance of survival in wild, a last chance of survival through coordinated breeding under *ex-situ* conditions and raise stock for rehabilitating them in wild, as and when it is appropriate and desirable.
- To inspire amongst zoo visitors empathy for wild animals, an understanding and awareness about the need for conservation of natural resources and for maintaining the ecological balance.
- Providing opportunities for scientific studies useful for conservation in general and creation of data base for sharing between the agencies involved in *in-situ* and *ex-situ* conservation.
- Besides the aforesaid objectives, the Zoos shall continue to function as rescue centres for orphaned wild animals, subject to the availability of appropriate housing and upkeep infrastructure. Where appropriate housing and upkeep is not available, state governments and the central government would ascertain setting up rescue facilities in off-the-display areas of the zoos, subject to the availability of land.

Central Zoo Authority

The Central Zoo Authority is a 12-member statutory body under the administrative control of Ministry of Environment & Forests, Government of India and is headed by a Chairperson. The Authority was first constituted in the year, 1992. The Authority was last reconstituted (6th time) in the month of September, 2007 with Minister of State for Environment & Forests as Chairperson. The Central Zoo Authority has had 23 sittings/ meetings in last 17 years of its creation, where decisions of far-reaching consequences have been taken for proper and scientific management of Central Zoo Authority and zoos in India. The functions assigned to the Central Zoo Authority under the Wild Life (Protection) Act, 1972 are:

- a) to specify the minimum standards for housing, upkeep and veterinary care of the animals kept in zoos;
- b) to evaluate and assess the functioning of the zoos with respect to the prescribed standards or norms;
- c) to recognise or derecognise zoos;
- d) to identify endangered species of wild animals for purposes of captive breeding and assigning responsibility in this regard to a zoo;
- e) to coordinate the acquisition, exchange and loaning of animals for breeding purpose;
- f) to ensure maintenance of studbooks of endangered species of wild animals bred in captivity;
- g) to identify priorities and themes with regard to display of captive animals in zoos;
- h) to coordinate training of zoo personnel in India and outside India;
- l) to coordinate research in captive breeding and educational programmes for the purposes of zoos;
- J) to provide technical and other assistance to zoos for their proper management and development on scientific lines;
- k) to perform such other functions as may be necessary to carry out the purposes of this Act with regard to zoos.

To carry out the functions of the Authority, two sub-groups of the members, namely Administrative

Committee (headed by the Director General of Forests, Government of India - to decide on administrative and budgetary issues) and Technical Committee (headed by the Addl. Director General of Forests (WL) – to take decisions on all technical matters) have been formed, which are coterminous with the tenure of the Authority. An Expert Group on Zoo Designing with one zoo designer, one architect and one civil engineer as members and member secretary, Central Zoo Authority as convener has also been formed in the Authority to give recommendations on approval of proposed zoo master plans and approval of enclosure designs submitted by different Zoos.

Central Zoo Authority has issued series of guidelines to the zoos to deal with zoo related activities for guidance of the zoos in the country. Recently, the Authority has compiled and updated these guidelines in form of "Guidelines for establishment and scientific management of zoos in India". The copy of the same is placed at **Annexure-4**.

Member Secretary, Central Zoo Authority is the chief executive officer of the Authority and is responsible for day-to-day affairs of the Authority. Member Secretary, Central Zoo Authority has been declared as head of the department for management of the affairs of the Central Zoo Authority. The administrative office of the Central Zoo Authority is presently housed at Annexure No. VI, Bikaner House, Shahjahan Road, New Delhi-110 011. There are 15 regular/ contractual scientific/ administrative personnel in the establishment of the Central Zoo Authority to assist the Member Secretary in discharge of his duties.

Recognition of Zoos

After its establishment in the year, 1992, the Central Zoo Authority had asked all the existing wild animal holding facilities functioning as zoos in the country to apply to the Authority for recognition as 'zoo'. Advertisements were given in the national newspapers for wide publicity to the same. After inclusion of the rescue centres and circuses in the definition of 'zoo' in the year, 2003, the similar measures were again taken asking all the rescue centres and circuses to apply to the Central Zoo Authority for recognition as 'zoo'. In response to the same, the Central Zoo Authority has received 509 applications till date from different wild animals holding facilities in the country. Based on the scrutiny of the records submitted by the facilities, as well as, by physical evaluations of the facilities, the Central Zoo Authority has given conditional recognition to 196 wild animals holding facilities as 'zoos'. These facilities have time and again been physically evaluated by teams of experts identified by the Central Zoo Authority from the panel of evaluators. The evaluation reports submitted by the evaluators are placed and discussed by the Technical Committee in its meetings. Depending upon the conditions of the zoo and compliance of conditions, the Authority gives conditional recognition as zoos to more promising wild animal holding facilities. The list of recognized zoos in the country is placed at **Annexure-5**.

Master Plans

Earlier the management of zoos in India was treated as non-forestry activity. On the initiative of the Central Zoo Authority, the Ministry of Environment & Forests, Government of India has issued one notification that zoo shall be treated as forestry activity, if managed as per the master/ management plans approved by the Central Zoo Authority. This is also true that most of zoos in India were initiated as menageries of captive wild animals for display and recreation of visiting public. Such unplanned and ill-conceived facilities can not play the roles assigned to them under the present National Zoo Policy. So, there is an immediate need to prepare well considered/ thought long term master plans for their development and short term management plans for execution of the approved master plans and their management.

An international workshop-cum-training programme was organized by the Central Zoo Authority at Bhubaneswar in the year 2006 to finalize the details for the preparation of master plans for the zoos. State level workshops/ trainings were also organized in some of the states for mini category zoos for training on preparation of detailed master plans. The Central Zoo Authority organized state level

facilitation meetings during 2008-09 for preparation of concept plans for preparation of detailed master plans for the zoos. The Chief Wild Life Wardens and/ or their representatives along with Incharges of the zoos (state-wise) attended the facilitation meetings. Teams from the Central Zoo Authority facilitated the proceedings in the meetings. A compilation of the agreed concept plans – for all the recognized zoos and conservation breeding centres as agreed in the facilitation meetings and as recommended by the Expert Group on Zoo Designing of the Central Zoo Authority were placed in the 50th meeting of the Technical Committee of the Authority held on 24.3.2009 and approved.

Guidelines and format for preparation of Master Plan have been prepared and circulated to all the zoos and zoos were given time upto 31st March, 2009 to prepare and submit the same to the Central Zoo Authority for approval. Central Zoo Authority is also providing some financial assistance to recognition zoos for preparation of detailed master plans for their future developments. The zoos are in the process of preparing the master plan and many have already been received/ approved by the Central Zoo Authority. It is hoped to complete the whole exercise within 2009-10.

Improvement of zoos

The management and maintenance of the recognized zoos is the sole responsibility of the zoo operators. Central Zoo Authority provides some financial assistance to the zoos for developmental activities for identified items of work. The Central Zoo Authority receives some grant-in-aid annually from the Ministry of Environment & Forests for the purpose. Before the establishment of Central Zoo Authority i.e. prior to 1992, there were two schemes under which Ministry of Environment & Forests was providing financial assistance to the zoos in the country. The schemes were “assistance for breeding of endangered species” and financial assistance for “the development of selected zoos”. A new scheme ‘Central Zoo Authority’ was initiated during 8th Five Year Plan with a total budget of Rs. 30.00 crore. The scheme was further extended to 9th Five Year Plan period with some changes. The EFC of the Central Zoo Authority for the 9th Five Year Plan period was further extended to the 10th Five Year Plan period. The scheme “National Zoological Park, New Delhi” was also merged with the scheme “Central Zoo Authority” for the Plan period (10th Plan). Total allotment under the scheme during 9th Plan period was Rs. 37.00 crore, whereas Rs. 75.00 crore were allotted to the Authority during 10th Five Year Plan. During the 11th Plan, the Schemes, “Central Zoo Authority along with National Zoological Park” and “Wildlife Crime Control Bureau” have been clubbed with another scheme under the Wildlife Wing of the Ministry of Environment & Forests, Government of India and re-named as “strengthening of Wildlife Division”. Share of the Central Zoo Authority along with National Zoological Park has tentatively been kept at Rs. 115.00 crores during the 11th Plan period.

As mentioned above Central Zoo Authority receives limited annual Grant-in-aid from the Ministry of Environment & Forests for providing financial assistance to the zoos. The Authority has decided to restrict the financial assistance to the zoos for improvement of animals housing only for the animals, which are already with the zoos and suffering because of bad housing and for the desirable endangered wild animals species of the area and for improvement of veterinary facilities including infrastructure. Funds for creation of off-display housing facilities for rescued/ surplus animals as per the needs (state wise) shall also be provided by the Central Zoo Authority. The Central Zoo Authority shall also provide funds for creation and maintenance of off-display conservation breeding centres in the coordinating zoos for the critically endangered wild animal species under the planned Conservation Breeding Programme of the Central Zoo Authority. Under the planned Conservation Breeding Programme the funds for creation of off-display conservation breeding centers; feeding, supplements, medicines, vaccines and marking materials for animals housed in these off-display conservation breeding centers; engagement of technical personnel (for scientific management of conservation breeding centres, coordinating planned conservation breeding of the species in Indian zoos, preparation of national/international studbooks of the species and preparation of conservation breeding management plan of the species in India and coordinating the same with zoos abroad) and required number of animal attendants in the centre in each coordinating zoo shall be provided by the

Central Zoo Authority.

All the proposals received from the zoos for construction of new animal enclosures and development of other infrastructure including veterinary care are placed in upcoming meeting of Expert Group on Zoo Designing for scrutiny of the proposed design and detailed estimates. The designs as well as detailed estimates recommended for approval by the Expert Group are placed in the next Technical Committee meeting for financial sanction.

There are 196 recognized zoos in the country. Many animal housings/ enclosures have been constructed/ improved in these zoos in last 17 years as per prescribed standards and norms under the Recognition of Zoo Rules. Many zoos have been relocated to bigger campuses or been recreated *denovo* on the same sites. But, there are still many animal enclosures in zoos which need improvements. Creation/improvement of animal housings is a continuous process. Better and bigger naturalistic enclosures, which are properly furnished/ enriched as per the biological needs of the animals housed there, are needed to have behaviorally healthy captive stock. Central Zoo Authority has signed a Memorandum of Understanding with Wildlife Institute of India, Dehradun (Uttarakhand) to work on "Housing and enclosure enrichment for some wild animal species in Indian zoos". Copy of the MoU is placed at **Annexure-6**. Outcome of the study will certainly be of help in keeping and breeding of behaviourally healthy animals in zoos.

Central Zoo Authority is also providing funds to the recognized zoos for development of other infrastructures like creation of the perimeter barriers, road/ foot path network, water distribution network, electricity network, drainage/ sewage disposal network, visitor facilities etc. on 50: 50 basis. The funds are also provided for creation of facilities like kitchen, food store, interpretation centre etc. in the zoos.

Conservation Breeding Programme

Today when wildlife habitats are under severe pressure and a large number of species of wild animals have become endangered, the zoos have not only to sustain their own populations, but also have to work to augment the depleting populations of endangered species in the wild. Keeping in view of these facts, a group of experts was formed by the Central Zoo Authority just after its creation in 1992 with a mandate to prepare a strategy for conservation breeding of endangered species in Indian zoos. The group identified about 35 mammals, birds and reptiles for their probable captive breeding in identified zoos. The Chief Wild Life Wardens of the States within the natural distribution range of the species, were selected as coordinators for the species under the programme. Responsibility for maintaining the studbook for selected endangered species was also given to zoos. However, because of varied ownership patterns of the zoos and divergent nature of animal collections, not much was achieved.

Taking note of the past successes and failures of *ex-situ* breeding of endangered species in Indian zoos, the issue was again taken up for discussion in the meeting of the Central Zoo Authority in the year 2005. The Authority has again decided to coordinate the programme and initiated a very ambitious programme of conservation breeding of different critically endangered wild animal species in India. The list of the species taken up for planned coordinated conservation breeding in India is placed at **Annexure-7**.

This is felt that Indian Zoos have to have at least 250 properly and scientifically bred and physically, genetically and behaviourally healthy individuals of each endangered wild animal species in captivity to act as insurance cover in case of population loss of the species in the wild.

The *ex-situ* conservation breeding of endangered species in India is a joint venture of *in-situ* and *ex-situ* wildlife managers. This is a need based activity. It was decided that endangered wild animal species with few hundreds/ thousands (or say less than 2500) left in the wild and less than 200 individuals in captivity need to be taken up for *ex-situ* conservation breeding in the zoos on immediate

basis in the country. Species with localized distribution should get preference in the scheme of things.

The existing zoos are the major component of the programme as there is huge infrastructure and trained manpower available there to deal with the issue. One major zoo just next to the natural habitat of the targeted species has been given responsibility as coordinating zoo for each identified species. Two to four zoos (participating zoos) in the habitat range of the targeted species will take part in the breeding programme of the targeted species. Conservation breeding facility in the form of off display Conservation Breeding Centre (if the appropriate land is available in the zoo compound) or in the form of satellite facility will be created only in one (coordinating zoo) to two zoos of the region. Other zoos in the country in addition to the coordinating zoo and participating zoos may continue to display the species in naturalistic enclosures.

The possibility of identifying around 25 animals as founders is assessed from the existing captive population in Indian zoos. Efforts will be made to acquire suitable founders from rescue centres and foreign zoos to initiate the programme or to induce new blood into the existing founder populations. If required, Government of India will also be approached for allowing acquisition of animals of wild origin from wild for initiation/ continuation of breeding programmes. The target is to have atleast 250 properly bred and physically, genetically and behaviourally healthy individual of each targeted species in captivity.

The creation of appropriate housing facility in the form of off-display conservation breeding centre/ satellite facility along with the project office in the coordinating zoos is funded by the Central Zoo Authority on 100% basis. The maintenance of the off display conservation breeding centre is also funded by the Central Zoo Authority.

Present stock of wild animals of the species from unplanned breeding of unknown lineage will be phased out and replaced by the individuals of the desirable species bred and kept in more planned and scientific ways, which are physically, genetically, behaviourally healthy and can be used as future insurance for the cases of exigencies. The conservation breeding programme is not necessarily to breed the animals of the targeted species for reintroduction in the wild, but to have proper stock for display in the zoos and to have the right animals as an insurance for future exigencies and for experimental release in the wild to begin with.

Rescue and rehabilitation

More than 20% of the geographical area of the country is under forests. There are more than 600 protected areas in the country including tiger reserves, national parks and sanctuaries dedicated to *in-situ* wild life conservation. Because of ever increasing human population, the incidences of man animal-conflicts are increasing day by day. The *in-situ* managers have to rescue, animals coming out of their habitats and entering into human habitations.

There is a long tradition of private ownership of animals in India. There are madaris involved in road side shows with bears and monkeys; snake charmers organizing snake shows; private ownership of elephants by individuals, organizations, temples and forest departments. In addition to that till very recently, there was a big legal/ illegal trade of wild animals either collected from the wild or bred in captivity and there are circuses having wild animals in use for performances. Some wild animals like vultures have to be rescued to save these animals from the effect of drugs like diclofenac.

The concerned Govt. departments have to rescue/ seize such wild animals under different provisions of the Wildlife (Protection) Act, 1972. The Indian zoos continuously receive such animals for immediate housing. That put additional burden on the zoos which are already over stressed. Display of sick, injured, infirm and young animals has been prohibited in the zoos. So, off display housing facilities for rehabilitation of such animals need to be created either as separate identities or in specified corners in existing zoos. Tiger, lions, leopards, bears, monkeys, elephants, vultures and star tortoises are the main wild animal species which need life time care facilities in the form of rescue centres in different corners of the country.

The Central Zoo Authority has created 7 Nos. such rescue centres for rehabilitation of lions, tigers, leopards, bears and monkeys rescued from the circuses (whose performance has been banned) at Bangalore, Chennai, Tirupati, Jaipur Visakhapatnam, Bhopal and Jalpaiguri. Maintenance cost including animal feed for these 7 rescue centres is also being provided by the Central Zoo Authority.

The Central Zoo Authority has also agreed to provide funds for establishment of rescue centers in the existing zoos (state-wise) in consultation with Chief Wildlife Wardens for rehabilitation of other rescued animals. The list of zoos identified for creation of off-display lifetime care facilities for rescued animals is placed at **Annexure-8**.

Animal health care in zoos

All the recognized zoos in India have basic animal health care facilities as per the category of zoos and their animal collections. The Central Zoo Authority is also providing funds for improvement of veterinary facilities in recognized zoos on 100% basis. This should suffice for day to day management to zoos and health care of animals kept there. Exact diagnosis of the cause of illness of zoo animals and providing an effective treatment is a very challenging task and no zoo can be self sufficient both in terms of technical expertise and diagnostic investigation facilities required for taking comprehensive health care of the large variety of animals housed in the zoos. Therefore, all the zoos have been asked to develop a mechanism with the local/ regional veterinary universities/ large veterinary hospitals to provide specialized services and diagnostic facilities to the zoos for better health care of animals. The Central Zoo Authority is also providing some financial assistance for establishment of the mechanism at the zoo/ regional level.

The Central Zoo Authority has signed a MoU with Indian Veterinary Research Institute, Bareilly (Uttar Pradesh) to act as a National Referral Centre to provide super specialty services and diagnostic facilities for better animal health care in Indian zoos. The National Referral Centre will be involved in tackling the extraordinary situations that are not effectively handled by the zoo veterinary infrastructure and by the regional referral centres. The National Referral Centre is providing services to the Central Zoo Authority and the recognized zoos on payments as per the rate list prepared and circulated by the Indian Veterinary Research Institute (as NRC) Bareilly (Uttar Pradesh). A copy of the MoU for establishment of National Referral Centre along with the current rate list for different services and facilities is placed at **Annexure-9**.

Research

Providing opportunities for scientific studies for conservation of wildlife in general and creation of database for sharing the same between the agencies involved in *in-situ* and *ex-situ* conservation is one of the main objectives of management of zoos in the country. Unfortunately, zoos are lagging behind in this activity, may be because of lack of scientific/ technical manpower in the zoos. Presently, there is no institution/ organization in the country directly dealing with the zoos related research/ studies. The Central Zoo Authority has signed MoUs with some National institutions working on related fields of activities. Indian Veterinary Research Institute (IVRI), Izatnagar, Bareilly, U.P. has been assigned long term studies on "animal diseases, health care and cure in zoos" and "diet and nutrition of wild animals in captive conditions". Centre for Environmental Education, Ahmedabad has just completed work on preparation of "National Zoo Education Master Plan" whereas School of Planning and Architecture, New Delhi is conducting sponsored study on "Zoo Architecture and Landscaping".

A Laboratory for Conservation of Endangered Species (LaCONES) has been established as a satellite facility of Centre for Cellular and Molecular Biology (CCMB), Hyderabad to work on "biotechnological interventions in conservation of wildlife". The Central Zoo Authority has signed one Memorandum of Understanding with Centre for Cellular & Molecular Biology, Hyderabad, where the Laboratory for Conservation of Endangered Species (LaCONES) is working on genetic finger printing of captive stock in Indian zoos and functioning as frozen zoo and experimenting on Assisted Reproduction (AR) in wild animals in captive conditions on behalf of Central Zoo Authority. A copy of

the MoU is placed as **Annexure-10**.

On the initiative of the Central Zoo Authority, Ministry of Environment & Forests has agreed to the creation of a Centre for Zoo Sciences in India to co-ordinate such studies at the national and regional (South Asia) level. The Centre shall also be providing consultancy services to zoos, give trainings to in-service zoo personnel and shall maintain National Studbooks of the animals in Indian zoos.

The Central Zoo Authority is also providing funds to the recognized zoos to conduct studies/ research to deal with the local issues/ problems under small grant fellowships. There are many such ongoing fellowships in different zoos at the movement.

Human Resource Development

Having qualified and trained scientific and technical personnel is pre-requisite to scientific management of zoos in modern times. Training of in-service zoo personnel is always a priority with the Central Zoo Authority and Indian Zoos. The Central Zoo Authority regularly organize short term training programmes for Zoo Directors, Veterinarians, Biologists, Curators (animals), Educators in alternate years. Trainings for Zookeepers and other lower level zoo personnel are organized at regional level every year. 4-6 such trainings are organized annually in regional languages.

Zoo Directors, Veterinarians and other senior level zoo personnel are also deputed to international level institutions outside India for trainings and attachments every year. The Central Zoo Authority regularly organize national/ international workshops/ conferences where international experts are also invited for interaction with Indian zoo personnel.

The Central Zoo Authority has also brought out number of publications for use in the zoos and related organizations. The list of publications of the Authority is placed at **Annexure-11**.

Recordkeeping

Proper and scientific recordkeeping is of paramount importance for scientific management of zoos. The Central Zoo Authority has asked all the zoos to follow the well-defined system of recordkeeping in the zoos. Separate proforma for keeper's diary, daily reports, animal history cards, studbooks, animal treatment cards and post-mortems have been prescribed. The Central Zoo Authority has also provided materials like transponders, rings, ear tags etc. for marking of animals of the desired species in the zoos. The Central Zoo Authority is sponsoring the membership of 57 major Indian zoos and 4 nos. related organizations starting from January 1, 2009 to the International species Information System (ISIS) and Zoological Information Management System (ZIMS) for a period of five years. Different training programmes are being organized under the programme. A copy of the MoU signed by the Central Zoo Authority and ISIS is placed at **Annexure-12**. The Authority is presently compiling National Studbooks/ animal profiles of individuals of endangered species in Indian zoos through Wildlife Institute of India, Dehradun and encouraging the zoos to mark and prepare the animal history cards of all the individuals belonging to endangered category in their collections. The data will become part of National/ International studbooks once the software "Zoological Information Management System (ZIMS)" become operational expectedly by the end of 2010.

International Cooperation

Zoos deal with very small populations of different wild animal species in captivity. Number of individuals of many endangered wild animal species of Indian origin is too small or even non existent in Indian zoos to plan for their conservation breeding on sustainable basis. Zoos have to continuously exchange individuals of almost all the species in captivity even with zoo abroad to maintain the genetic health of the individuals by introducing new blood into the captive populations. Only option is to treat the global captive populations of these critically endangered wild animal species as one population and plan breeding accordingly. For doing this, all the concerned zoos at global level have to maintain records of such individual animals of identified species as international stud books. It will certainly

increase the chances of success of conservation breeding by being part of Global Species Management Programme of World Association of Zoos and Aquariums. So, the co-operation among the zoos at local/ national / regional and international level is desirable to effectively contribute in *ex-situ* conservation of wildlife of desired species.

It will also be a better idea for the zoos to be part of World Association of Zoos and Aquariums, other regional zoos Associations and different species specialist groups of Species Survival Commission of IUCN. This will help the zoo management to make informed decisions for their future development. World Association of Zoos and Aquariums (WAZA) has decided to have its annual meeting at New Delhi in the year 2014. The meeting will also be preceded by the annual meeting of Conservation Breeding Specialist Group (CBSG) of SSC/IUCN during the year.

Vision - 2020

To play the assigned roles under the National Zoo Policy, 1998, the zoos in India need to have physically, genetically and behaviourally healthy, self sustaining captive populations of desirable wild animal species for display (education/ awareness) and as insurance for future exigencies and release/ introduction/ re-introduction in the wild, if required. Rehabilitation of orphaned, injured or sick rescued wild animals is an additional role, which zoos in India also need to play. All these wild animal collections also provide excellent opportunities for conducting research/ studies for conservation of wildlife.

To play all these roles, we need to manage our zoos more scientifically, based on sound management practices and keeping animals welfare in mind. This is needed to achieve the vision **“Our zoos will have healthy animals in ecosystem based naturalistic enclosures, supportive to *in-situ* wildlife conservation with competent staff, good educational and interpretative facilities, the support of people and be self sufficient” by 2020.**

**Wildlife (Protection) Act, 1972
(Chapter IV A)**

CENTRAL ZOO AUTHORITY AND RECOGNITION OF ZOOS

38A. Constitution of Central Authority

- (1) The Central Government shall constitute a body to be known as the Central Zoo Authority (hereinafter in this Chapter referred to as the Authority), to exercise the powers conferred on, and to perform the functions assigned to it under this Act.
- (2) The Authority shall consist of:
 - (a) Chairperson
 - (b) such number of members not exceeding ten and
 - (c) Member-Secretary to be appointed by the Central Government.

38B. Term of office and conditions of service of chairperson and members etc.

- (1) The chairperson and every member other than the member-secretary shall hold office for such period, not exceeding three years, as may be specified by the Central Government in this behalf..
- (2) The chairperson or a member may, by writing under this hand, addressed to the Central Government, resign from the office of chairperson or, as the case may be, of the Member.
- (3) The Central Government shall remove a person from the office of chairperson or member referred to in sub-section (2) if that person:
 - (a) becomes an undischarged insolvent
 - (b) gets convicted and sentenced to imprisonment for an offence which, in the opinion of the Central Government, involves moral turpitude.
 - (c) becomes of unsound mind and stands so declared by a competent court.
 - (d) refuses to act or becomes incapable of acting.
 - (e) is, without obtaining leave or absence from the authority, absent from three consecutive meetings of the Authority. Or
 - (f) in the opinion of the Central Government has so abused the position of chairperson or member as to render that person's continuance in office detrimental to the public interest.

Provided that no person shall be removed under this clause unless that person had been given a reasonable opportunity of being heard in the matter.

- (4) A vacancy caused under sub-section (2) or otherwise shall be filled by fresh appointment.
- (5) The salaries and allowances and other conditions of appointment of chairperson, members and Member-Secretary of the Authority shall be such as may be prescribed.
- (6) The Authority shall, with the previous sanction of the Central Government, employ such officer and other employees as it deems necessary to carry out the purposes of the Authority.
- (7) The terms and conditions of service of the officers and other employees of the authority shall be such as may be prescribed.

- (8) No act or proceeding of the Authority shall be questioned or shall be invalid on the ground merely of the existence of any vacancies or defect in the constitution of the Authority.

38C. Functions of the Authority

The Authority shall perform the following functions, namely:

- (a) specify the minimum standards for housing, upkeep and veterinary care of the animals kept in a zoo.
- (b) evaluate and assess the functioning of zoos with respect to the standards or the norms as may be prescribed.
- (c) recognise or derecognize zoos;
- (D) identify endangered species of wild animals for purposes of captive breeding and assigning responsibility in this regard to a zoo.
- (e) co-ordinate the acquisition, exchange and loaning of animals for breeding purposes.
- (f) ensure maintenance of stud books of endangered species of wild animals bred in captivity.
- (g) identify priorities and themes with regard to display of captive animals in a zoo.
- (h) co-ordinate training of zoo personnel in India and outside India;
- (i) co-ordinate research in captive breeding and educational programmes for the purposes of zoos;
- (j) provide technical and other assistance to zoos for their proper management and development on scientific;
- (k) perform such other functions as may be necessary to carry out the purposes of this Act with regard to zoos.

38D. Procedure to be regulated by the Authority

- (1) The Authority shall meet as and when necessary and shall meet at such time and place as the chairperson may think fit.
- (2) The Authority shall regulate its own procedure.
- (3) All orders and decisions of the Authority shall be authenticated by the Member-Secretary or any other officer of the Authority duly authorised by the Member-Secretary in this behalf.

38E. Grants and loans to Authority and constitution of fund

- (1) The Central Government may, after due appropriation made by Parliament by law in this behalf, make to the Authority grants and loans of such sums of money as that Government may consider necessary.
- (2) There shall be constituted a Fund to be called the Central Zoo Authority Fund and there shall be credited there to any grants and loans made to the Authority by the Central Government, all fees and charges received by the Authority under this Act and all sums received by the Authority from such other sources as may be decided upon by the Central Government.
- (3) The Fund referred to in sub-section (2) shall be applied for meting salary, allowances and other remuneration of the members, officer and other employees of the Authority and the expenses of the Authority in the discharge of its functions under this Chapter and expenses on objects and for purposes authorised by this Act.

- (4) The Authority shall maintain proper accounts and other relevant records and prepare an annual statement of accounts in such form as may be prescribed by the Central Government in consultation with the Comptroller and Auditor General of India.
- (5) The accounts of the Authority shall be audited by the Comptroller and Auditor-General at such intervals as may be specified by him and any expenditure incurred in connection with such audit shall be payable by the Authority to the Comptroller and Auditor-General.
- (6) The Comptroller and Auditor-General and any person appointed by him in connection with the audit of the accounts of the Authority under this Act shall have the same rights and privileges and the authority in connection with such audit as the Comptroller and Auditor-General generally has in connection with the audit of the Government accounts and, in particular, shall have the right to demand the production of books, accounts, connected vouchers and other documents and papers and to inspect any of the offices of the Authority.
- (7) The accounts of the Authority as certified by the Comptroller and Auditor-General or any other person appointed by him in this behalf together with the audit report thereon, shall be forwarded annually to the Central Government by the Authority.

38F. Annual report

The Authority shall prepare in such form and at such time, for each financial year, as may be prescribed, its annual report, giving a full account of its activities during the previous financial year and forward a copy thereof to the Central Government.

38G. Annual report and audit report to be laid before Parliament

The Central Government shall cause the annual report together with a memorandum of action taken on the recommendations contained therein, in so far as they relate to the Central Government, and the reasons for the non-acceptance, if any, of any of such recommendations and the audit report to be laid as soon as may be after the reports are received before each House of Parliament.

38H. Recognition of Zoos

- (1) No zoo shall be operated without being recognised by the Authority.

Provided that a zoo being operated immediately before the date of commencement of the Wildlife (Protection) Amendment Act, 1991 may continue to operate without being recognised for a period of [eighteen months from the date of such commencement] and if the application seeking recognition is made within that period, the zoo may continue to be operated until the said application is finally decided or withdrawn and in case of refusal for a further period of six months from the date of such refusal.

- (1A)- On and after the commencement of the Wild Life (Protection) Amendment Act, 2002, a zoo shall not be established without obtaining the prior approval of the Authority.
- (2) Every application for recognition of a zoo shall be made to the Authority in such form and on payment of such fee as may be prescribed.
- (3) Every recognition shall specify the conditions, if any, subject to which the applicant shall operate the zoo.
- (4) No recognition to a zoo shall be granted unless the Authority, having due regard to the interests of protection and conservation of wildlife, and such standards, norms and other matters as may be prescribed, is satisfied that recognition should be granted.
- (5) No application for recognition of a zoo shall be rejected unless the applicant has been given a reasonable opportunity of being heard.

- (6) The Authority may, for reason to be recorded by it, suspend or cancel any recognition granted under sub-section (4):

Provided that no such suspension or cancellation shall be made except after giving the person operating the zoo a reasonable opportunity of being heard.

- (7) An appeal from an order refusing to recognise a zoo under sub-section (5) or an order suspending or canceling a recognition under sub-section (6) shall lie to the Central Government.

- (8) An appeal under sub-section (7) shall be preferred within thirty days from the date of communication to the applicant, of the order appealed against:

Provided that the Central Government may admit any appeal preferred after the expiry of the period aforesaid if it is satisfied that the appellant had sufficient cause for not preferring the appeal.

38I. Acquisition of animals by a zoo

- 1) Subject to the other provisions of this Act, no zoo shall acquire, sell or transfer any wild animal or captive animal specified in Schedules I and II except with the previous permission of the Authority.
- 2) No zoo shall acquire, sell or transfer any wild or captive animal except from or to a recognized zoo.

38J. Prohibition of teasing, etc., in a zoo

No person shall tease, molest, injure or feed any animal or cause disturbance to the animals by noise or otherwise, or litter the grounds in a zoo.

**GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT AND FORESTS**

New Delhi, the 10th ^{November} 2009

NOTIFICATION

G. S. R. ~~867~~ (E).____ In exercise of the powers conferred by clauses (f) and (g) of Sub-section (1) of section 63 of the Wild Life (Protection) Act, 1972 (53 of 1972), and in supersession of the Recognition of Zoo Rules, 1992, except as in respect of things done or omitted to be done before such supersession, the Central Government hereby makes the following rules, namely; :-

1. Short title and commencement

- (1) These rules may be called the Recognition of Zoo Rules, 2009.
- (2) They shall come into force on the date of their publication in the Official Gazette

2. Definitions

In these rules unless the context otherwise requires:

- (a) "Act" means the Wild Life (Protection) Act, 1972 (53 of 1972);
- (b) "Central Zoo Authority" means the Central Zoo Authority constituted under section 38A of the Act;
- (c) "Conservation Breeding Centre" means the facility specially dedicated to planned conservation breeding of an endangered species of wildlife.
- (d) "Enclosure" means any accommodation provided for zoo animals.
- (e) "Enclosure barrier" means a physical barrier to contain an animal within an enclosure.
- (f) "Endangered Species" means species included in Schedule I and Schedule II of the Act.
- (g) "Critically endangered species" means an endangered species whose total number in all the zoos in the country put together does not exceed 200.
- (h) "Form" means a form appended to these rules.
- (i) "Performance" means any effort to force the animal to carry out unnatural act including performance of circus tricks.
- (j) "Rescue Centre" means an establishment for the long-term care of animals specified in the Schedules to the Act.
- (k) "Stand-of-barrier" means a physical barrier set back from the outer edge of an enclosure barrier.
- (l) "Zoo Director" means an in-charge of the zoo with whatever designation, responsible for day to day management of the zoo.
- (m) "Zoo Operator" means the person who has ultimate control over the affairs of the zoos provided that
 - I. in the case of a firm or other association of individuals, any one of the individual partners or members thereof; or
 - II. in the case of a company, any director, manager, secretary or other officer, who is in-charge of and responsible to the company for the affairs of the zoo ; or

III. In case of zoo owned or controlled by the Central Government or any State Government or Union Territory Administration or any Trust or Society funded by the Central Government or a State Government or a Union Territory Administration, the Secretary of the concerned Department of that Government, or as the case may be the Union Territory Administration, shall be deemed to be the Zoo Operator.

3. Application for Recognition

- (1) An application for recognition of a Zoo under section 38H of the Act, shall be made to the Central Zoo Authority in Form I.
- (2) An application for obtaining prior approval of the Central Zoo Authority under sub-section (1A) of section 38H of the Act for establishment of a new zoo shall be made to the Central Zoo Authority in Form I along with the a detailed project report.

4. Fees for Application

There shall be paid in respect of every application made under rule 3, a fee of ten thousand rupees to be paid through Demand Draft or Postal Order in favour of the "Central Zoo Authority, New Delhi".

5. Documents to be filled along with the application and particulars it should contain. ———

Every application under rule 3 shall be accompanied by the fee specified under rule 4 and shall also contain documents and particulars as to the matters specified in Form I.

6. Power to make inquiries and call for information

The Central Zoo Authority may, before granting recognition to a zoo under Section 38H of the Act, make such inquiries and ask for from the applicant such further information, as it may considers necessary.

7. Form of recognition ——— (1) The Central Zoo Authority may, on being satisfied with regard to sufficiency of facilities and standards in the zoo, grant recognition to such zoo.

- (2) The recognition granted to a zoo under sub-rule (1) shall be subject to the following conditions, namely;
 - (a) that the recognition unless granted on a permanent basis, shall be for such period not less than one year as may be specified in the recognition.
 - (b) that the zoo shall comply with such standards and norms as are, or may be specified or imposed, by or under the provisions of the Act or the rules made thereunder; and
 - (c) the zoo shall comply with the directions and guidelines issued by the Central Zoo Authority from time to time, for the purpose of maintenance and upkeep of the zoo.

8. Renewal of recognition ——— (1) A zoo, recognized under these rules, shall make an application to the Central Zoo Authority in Form I three months before the expiry of the period of recognition..

- (2) The provisions of rule 3, rule 4, rule 5, rule 6 and rule 7 shall apply in relation to renewal of recognition as they apply in relation to grant of recognition except that the fee payable in respect of an application for renewal of recognition shall be five thousand rupees.

9. Classification of zoos. ——— (1) For the purposes of deciding standards and norms for recognition of zoo and monitoring and evaluating its performance, the zoo, on the basis of area, number of visitors, number of species and animals, endangered species and number of animals of endangered species in its collection shall be taken into consideration and the zoo shall accordingly be classified into following four categories as specified in the Table, namely:-

S. No.	Category of zoo	Criteria for Qualifying to the category					
		(3)	(4)	(5)	(6)	(7)	(8)
(1)	(2)	Area of the Zoo (hectares)	No. of visitors in a year (in lakhs)	No. of species	No. of Animals	No. of endangered species	No. of animals of endangered species
1.	Large	75	7.5	75	750	20	100
2.	Medium	35	3.5	35	350	10	50
3.	Small	10	1.0	10	100	3	15
4.	Mini	Less than 10	Less than 1.00	Less than 10	Less than 100	--	----

(2) The zoo which meets at least any four of the aforesaid criteria (but including number of species and number of animals) shall be classified as such by the Central Zoo Authority.

Provided that the Central Zoo Authority may, by order in writing, allow a mini zoo to keep animals of endangered species subject to the conditions, if any, laid down in that order with regard to the area of the zoo, housing, upkeep and healthcare facilities including deployment of veterinarian and supervisory level staff.

10. Standards and norms for recognition.-----

The Central Zoo Authority shall grant recognition to a zoo, with due regard to the interest of protection and conservation of wildlife, and on being satisfied that the standards and norms and other matters specified in the Schedule are met by such zoo:

Provided that the Central Zoo Authority may, if it considers appropriate, and for reason to be recorded in writing, grant recognition, with conditions, if any, to such zoo which have shown considerable improvement in the past and have the potential and resources to come up to the prescribed standards and norms within a reasonable time frame and are willing to do so. Such an action would lead to qualitative improvement in the zoos, and avoid logistic problems arising due to the closure of the zoos on the basis of their present status.

11. Maintenance of Records and submission of Inventory

(1) Every zoo shall maintain record of the births, acquisitions, deaths and disposals of animals of each species in its collection in the manner and in the format determined by the Central Zoo Authority and the inventory of the animals in the collection of each zoo, along with the details mentioned above for each financial year shall be submitted to the Central Zoo Authority by 30th day of April of the ensuing year in Form II.

Provided that the details in respect of the animals pertaining to the species included in Schedule I and Schedule II to the Act, along with the detailed reasons of death identified on the basis of the post-mortem examination reports shall be submitted to the Central Zoo Authority every quarter, within a period of fifteen days of the end of that quarter.

(2) Every zoo shall submit an annual report of its activities and compliance of the conditions stipulated by CZA for each financial year to the Central Zoo Authority by the 30th day of June of the year.

THE SCHEDULE

[See rule 10]

1. General requirements.-----

(1) Every zoo shall endeavour to establish and sustain population of physically, genetically and behaviorally healthy animals for furthering the cause of wildlife conservation and communicating credible conservation message to the visitors through display of healthy animals in naturalistic settings.

(2) Every zoo shall, through proper landscaping and planting of appropriate species, provide a naturalistic environment within the zoo to enable the visitors to have communion with nature and get motivated for living in harmony with nature.

(3) Every zoo shall endeavour to regulate the movement of visitors in the zoo in such a manner that zoo animals are not unduly disturbed, stressed or provoked and the zoo shall be closed to visitors at least one day in a week.

(4) Every zoo, as a safeguard against the un-regulated access of visitors to the zoo and zoo animals being subjected to injury, pilferage and predation, shall design appropriately the barriers along the boundary of the zoo in accordance with the standards issued by the Central Zoo Authority in this regard.

(5) Every zoo, which is surrounded by human landscape shall be encompassed by a perimeter wall of at least two meter in height from the ground level on both sides.

(6) No residential colony shall be constructed within the zoo premises.

Provided that where such colony already exist, it shall be separated from the zoo premises by a boundary wall with a minimum height of two meters from the ground level. The entry to the residential colony shall not be through the zoo premises.

(7) Every zoo shall carry out its operations in a manner that causes minimum stress on natural resources and produces the minimum of solid wastes and effluents and the zoo shall also endeavour to put in place the practices of effective waste management through reducing, reusing and recycling and disposing the effluents and the solid wastes in a manner that causes least adverse environmental impact.

(8) Every zoo shall refrain from display of sick, injured, infirm and tethered animals to the visitors and such animals shall be housed in off-display facilities specially earmarked for and providing appropriate upkeep and healthcare for such animals

(9) Every zoo shall refrain from housing of domestic animals and pets within the zoo premises and adequate safeguards shall also be put in place to prevent the entry of domestic livestock, stray animals and pets into the premises of the zoo.

2. Administrative and Staffing Pattern

(1) The zoo operators shall post an officer of appropriate rank as “whole time in-charge” of the zoo with powers to take decision and ensure that adequate financial resources and infrastructural support is made available to such officer for proper housing, upkeep and healthcare of the zoo animals and managing the zoo in a planned manner.

(2) Every zoo operator shall provide adequate scientific and technical staff to support the officer-in-charge of the zoo in carrying out the responsibilities of housing, upkeep and healthcare of zoo animals, research and visitor education as specified in the Table below, namely:

S. No.	Category of Staff	Large Zoo	Medium Zoo	Small Zoo	Mini Zoo
(1)	(2)	(3)	(4)	(5)	(6)
1.	Curator	1	1	1	Mini Zoos shall avail the assistance of appropriately qualified individuals available locally
2.	Veterinarian	2	1	1	
3.	Education Officer	1	1		
4.	Biologist	1	1	1	

(3) In cases the scientific and technical posts are filled by direct recruitment, the recruitment rule for such posts shall provide for their career progression including the benefit of flexible complementing scheme for their promotions.

3. Development and Planning

(1) Every zoo shall prepare and get the master plan approved by the Central Zoo Authority

(2) Zoos which are in operation at the time of the commencement of these rules, shall prepare and get the master plans approved from the Central Zoo Authority within one year from the date of commencement of these rules.

(3) The master plan referred to in sub-paragraphs (1) & (2), shall inter alia, include all round development of the zoo for a period of twenty years which shall be revised every ten years along with a detailed layout plan prepared on the basis of the theme adopted by the zoo, indicating the locations of green belts, lawns, gardens, animal display area, visitor facilities, support infrastructure for animal upkeep and healthcare, buildings for administrative and maintenance unit.

(4) Atleast 30% of the area earmarked for the zoo shall be kept under green belt and natural vegetation and the area for animal housing shall not exceed 30% area of the zoo.

(5) Every zoo shall take adequate care to locate and design all 'pucca' buildings including the visitor facilities in such a manner that the natural landscape of the zoo and animal enclosures are not masked and the cleanliness and hygiene of the zoo is not affected.

(6) Every zoo shall, in consultation with the Central Zoo Authority, prepare a collection plan indicating the names of the species and maximum number of animals of each species to be housed in the zoo, having due regard to the congeniality of the climatic conditions of the locality for the general health and well being of the species, availability of the space and infrastructural support for proper upkeep and healthcare of the species, proximity of the zoo to the habitat range of the species and the past record of the zoo in management and breeding of the species and no zoo shall compromise on housing and upkeep standards of animals for accommodating new species or additional animals of the species in its collection.

(7) No zoo shall accept any rescued animal unless it has appropriately designed enclosure and upkeep facilities for the animal as well as the facilities for keeping it in isolation during quarantine period.

(8) Whenever any zoo decides to accept any rescued animal for housing, a detailed report regarding the source from which the animal has been received, legality of its acquisition and the facilities available at the zoo for housing, upkeep and healthcare shall be sent to the Chief Wildlife Warden of the State.

Provided that in case, the rescued animal pertains to an endangered species a copy of the report shall also be sent to the Central Zoo Authority.

(9) Any decision of the Central Zoo Authority about any animal being sent to a particular zoo for augmenting the number of founder animals for the conservation breeding programme of the species shall be binding on the concerned zoo.

4. Animal housing, display of animals and animal enclosures

(1) Every zoo shall endeavour to display the animals in nature immersing enclosures.

(2) The designs and dimensions of every enclosure shall be determined having due regard to the biological behaviour of the species and the number of animals to be housed therein as per the standards specified by the Central Zoo Authority in this regard from time to time.

(3) The zoo shall ensure that the enclosure is safe and secure for the animals, animal keepers and the visitors and has requisite space for free movement, exercise and expression of natural behaviour by the animals.

(4) Adequate space shall also be made available to the animals in order to maintain safe distance from the dominant animals in the group or herd.

(5) No zoo shall display any animal in the enclosure that is not in accordance with the standards specified by the Central Zoo Authority in this regard.

(6) Every zoo shall make special efforts to enrich the environment of the enclosure to meet the species specific behavioural requirements of the animals in accordance with the standards specified by the Central Zoo Authority.

(7) Adequate screening shall be provided between adjacent enclosures to safeguard against the animals getting unduly excited or stressed due to visibility of animals housed in these enclosures

(8) No new enclosures for endangered species shall be constructed without prior approval of the Central Zoo Authority.

(9) Every zoo shall provide appropriately designed and effective stand off barriers at every animal display enclosure to regulate the movement of visitors in the zoo in a manner that facilitates the visitors in getting unobstructed view of wild animals, without reaching in the vicinity or proximity of the animals and getting the opportunity to physically touch or provoke the animals and shall also display adequate sign boards so as to give warning to the visitors to keep a safe distance from the animals.

(10) Every zoo shall provide appropriate signage with relevant information on the biology, behaviour and the population status of the species in the wild at every display enclosure.

Provided that large and medium zoos shall endeavour to provide interactive interpretation facilities for the purpose of explaining behaviour and biology of the species displayed in the enclosure.

5. Upkeep and healthcare of animals

(1) Every zoo shall house and maintain the animals in its collection in socially and behaviourally viable groups. No animal shall be separated from the group unless doing so is necessary for the security and welfare of the animal or other animals in the group.

Provided that the animals, so separated, shall be housed in accordance with standards specified by the Central Zoo Authority in this regard.

(2) Every zoo shall endeavour to provide all the animals in its collection timely supply of quality food of such a composition and in such quantities that nutritional and behavioural requirement of each animal are fully met and adequate safeguards shall be taken to ensure that no animal remains under-nourished on account of dominant animals not permitting other animals getting their share of the feed and the zoo operator shall ensure round the clock supply of potable water to all the animals in the zoo.

(3) The timing of distribution of food, placement of food and way of distribution of food to the animals shall be regulated in such a manner that the animals get maximum opportunity to express natural instincts and skills and behaviour related to feeding.

(4) As a safeguard against feral animals, free ranging wild animals and scavengers sharing the feed of the zoo animals, each animal shall be provided feed in the feeding cells/ kraals specially earmarked for the purpose and such feeding cells and kraals shall be so designed that these can also serve as indoor enclosures for the animals during extreme weather conditions as well as for secure stay during the nights:

Provided that the dimensions and designs of the feeding cells and kraal shall be as per the standards specified by the Central Zoo Authority.

(5) Every zoo operators shall ensure that the left over feed, excreta of animals and all other wastes are removed promptly from the feeding cells and kraals and the feeding cells and kraals are washed and

disinfected as per the advice of the authorized veterinary officers and the solid and the liquid waste generated during the process shall be disposed off in such manner that has no adverse impact on the hygiene and cleanliness of the zoo and the landscape surrounding the zoo.

(6) The curatorial and the veterinary staff shall keep a close watch on the general behaviour and health parameters of the zoo animals. The animals shall be handled only by the staff having experience and training in handling the individual animals.

(7) Any animal that shows any sign of dullness, loss of appetite, injury or abnormal behaviour shall be thoroughly assessed and provided medical attention promptly as per the standards specified by the Central Zoo Authority in this regard from time to time and the direction of the Zoo administration.

(8) Every zoo animals shall be screened for parasitic loads as per written schedule prepared by the zoo in consultation with the veterinary officer and prophylactic medicines administered as per clinical requirements and vaccination of animals against infectious diseases shall also be done, as per the schedule prescribed by the Veterinary Officer from time to time.

(9) All staff involved with upkeep and healthcare of zoo animals shall be screened against zoonotic diseases once every year and those found positive to any communicable disease shall be provided appropriate treatment till they get cured and freed of the infection and during the period of such treatment, the infected employees shall be kept away from the responsibility of upkeep and healthcare of the animals.

(10) Every zoo shall maintain detailed records of observations of biological and social behaviour and health status of the animals including feed intake, medication and treatment provided in the keeper's diary, daily reports, animal history cards and treatment cards, as per standards specified by the Central Zoo Authority.

6. Veterinary and infrastructure facilities

(1) Every zoo shall, ———

- (a) have veterinary facilities appropriate to the size and type of the animal collection of the zoo;
- (b) have a full fledged veterinary unit with all basic diagnostic facilities, comprehensive range of drugs, operation theatre and in-patient wards.
- (c) Provided that a mini zoo shall have at least facilities of a treatment room.

(2) No zoo shall acquire sophisticated and costly diagnostic equipments unless there is adequate technically qualified manpower to operate and use the same.

(3) Every zoo, except mini zoo, shall have a postmortem room, isolation ward, quarantine ward, animal restraining and tranquilizing equipments and a veterinary care reference library.

(4) Tranquilization of any animal shall be done exercising utmost care and following the standards specified in this regard by the Central Zoo Authority from time to time.

(5) Every zoo operator shall provide each zoo the veterinary support staff as specified in the Table below; namely:-

Sl.No.	Support Staff	Large Zoo	Medium Zoo	Small Zoo
(1)	(2)	(3)	(4)	(5)
1.	Lab. Assistant	1	1	--
2.	Stockman or Compounder	2	1	1

Provided that a Mini zoo shall have atleast one whole time employee to take care of upkeep and feeding of the zoo animals.

(6) Every zoo shall have linkages with the eminent institutions and organizations working in the field of wild animal healthcare with the objectives to provide for:

- (a) the assistance in scientific diagnosis of diseases of serious nature and advise on the effective remedial treatment.
- (b) the training and upgrading technical skills of zoo staff; and
- (c) the development of protocols for preventive medicines and vaccination

7. Post-mortem and disposal of carcasses of animals

(1) Every animal died in the zoo shall be subjected to a detailed postmortem examination by registered veterinarian to determine conclusively the cause of the death.

(2) The findings of the post-mortem examination referred to in sub-paragraph (1) shall be recorded in such format as may be prescribed by Central Zoo Authority and in this regard and shall be maintained for a period of not less than six years.

(3) In the event of the post mortem being inconclusive and no specific reason for death is identified, the zoo authorities shall send the samples of the tissues and organs, blood, viscera etc. for further examination to the qualified diagnostic laboratory having adequate specialization for further investigation and identifying the causes of death.

(4) Every zoo shall ensure that the carcasses of the animals, after the post-mortem has been conducted, is disposed off by burying or burning in a manner that does not have any adverse impact on the hygiene and cleanliness of the zoo:

Provided that the carcasses of large cats shall be disposed off by burning in the presence of the Director of the zoo or any officer in the next rank to him and authorized by him in this behalf..

Provided further that the carcasses of animals died due to Anthrax or such other communicable diseases shall not be opened and subjected to post-mortem, as a safeguard against spread of the disease. These shall be buried intact.

8. Euthanasia of the animals

(1) No animal in the zoo shall be euthanized unless doing so is essential for the health of other animals or relieving the animal from unnecessary suffering or agony and whenever such exigencies arrives, action may be taken in accordance with the norms specified by the Central Zoo Authority in this regard.

9. Acquisition and breeding of animals

(1) Every zoo shall endeavour to keep and maintain animals of various species in their collection in such a sex ratio that optimizes breeding and helps in developing a self-sustaining population of each species.

(2) To safeguard against ill effects of inbreeding on the zoo population, the zoo shall endeavour to introduce unrelated animals to zoo stock through exchange, loaning and getting gifts of animals from other zoos.

(3) No zoo shall acquire single animal or genetically non-viable number of animals unless such acquisition is necessary for pairing of single animals or making the group genetically/ biologically viable.

(4) Every zoo shall endeavour to acquire mates for single and unpaired animals on priority basis and in the event of any zoo failing to find a mate for single and unpaired animal within a period of six months, the

unpaired or single animal shall be transferred or exchanged or given on breeding loan to any other zoo in accordance with the norms specified by the Central Zoo Authority in this regard.

(5) For the purpose of transportation of animals from one place to another, the standards specified in this regard by the Central Zoo Authority shall be complied with.

(6) The Central Zoo Authority shall assign the responsibility of conservation breeding of the identified critically endangered species to identified zoos having technical capabilities and housing facilities, preferably close to the distribution range of the species and every zoo shall help the identified zoos in implementing the breeding programme.

(7) The surplus animals from the breeding population shall be made available to the contributing zoo for display purposes on the basis of quality of housing and infrastructural facilities available with the zoos.

(8) Every zoo shall, with a view to prevent inbreeding and the loss of heterozygosity, the zoos shall maintain the animal history cards & stud and herd book for the animals of endangered species housed in the zoo and put appropriate identification marks and transfer or exchange animals with other zoos.

(9) Every zoo shall endeavour to limit the number of animals of each species within the limits set by the animal collection plan of the zoo by implementing appropriate population control measures like segregation of sexes, vasectomy, tubectomy and implantation of pellets etc., with due consideration of the health and welfare of the animals and interest of their long term survival.

(10) Every zoo shall take effective measures to safeguard against escape of the zoo animals from the premises of the zoo and in the event of any accidental escape, immediate action shall be taken to retrieve the escaped animals.

(11) No zoo shall release any captive animal into the wild except in accordance with the norms specified by the Central Zoo Authority in this regard.

(12) Every zoo shall ensure that no hybridization of species or races of same species takes place in the zoo.

10. Research activities — Every zoo shall endeavor to carry out collaborative research for evolving innovative strategies for providing the animals housed in the zoo a better quality of life, enhanced longevity, higher genetic and behavioural viability and improved reproduction potential and to achieve the said goal the every zoo, other than mini zoos, shall make arrangements for meticulous recording of data on the social behaviour, group dynamics and reproductive biology of the species housed in the zoo and developing a data base to be shared with other zoos and the identified institutions, in accordance with norms specified by the Central Zoo Authority in this regard.

11. Education and outreach activities — (1) Every zoo shall endeavour to educate the visitors to the zoo and the people at large about the significance of wildlife conservation for the general well being of the people and keeping the life support system of nature intact and the efforts shall be made to make people aware about the role played by the zoos in this regard and the ways and means through which general public can participate and contribute for the same.

(2) No physical handling or performances by animals shall be permitted as part of educational activity.

12. Visitors facilities

(1) Every zoo operator shall provide adequate civic facilities for visitors at appropriate and convenient places in the zoo including for physically disadvantaged persons and such facilities shall be so located that they do not mask or impact the view of enclosures.

(2) Every zoo shall have first aid facilities including snake anti-venom and life saving drugs, readily available in the zoo premises.

(3) Every zoo shall make arrangements for providing access to the handicapped persons for viewing wild animals at various animal enclosures.

FORM- I

[See rules 3 & 8]

APPLICATION FOR GETTING RECOGNITION FROM THE CENTRAL ZOO AUTHORITY UNDER SECTION 38H (Sub-section 2)

To

The Member Secretary
Central Zoo Authority
Annexe No. VI, Bikaner House,
Shahjahan Road,
New Delhi – 110 011

We want to get recognition under section 38H of the Wild Life (Protection) Act, 1972 in respect of _____ . Bank Draft for Rs. _____ drawn in favour of Central Zoo Authority, New Delhi is also enclosed. The required information in respect of _____ is as under :

1. Name of the Zoo:
2. Location and area of the Zoo:
3. Date of Establishment:
4. Name and address of the Zoo Operator:
- *5. Total number of visitors to the Zoo during the last three years: (Year wise):
- *6. Total number of days on which zoo is open to visitors during a calendar year:
7. Number of animals/ species exhibited by the zoo:

Stock position during the current financial year

Number of Species	Stock Position on the close of Preceding year	Births/Acquisitions/ Deaths/Disposal	Stock as on the date of application
Mammals			
Birds			
Reptiles			
Amphibians			
Fishes and			
Invertebrates			

8. Total number of enclosures:
 - *(I) Open air enclosures:
 - (ii) Closed cages/ aviaries:
9. List of endangered species bred during last 3 years:
10. Veterinary facilities:
 - (a) Whole time veterinarian available or not:
 - (b) Facilities available in the Veterinary Hospital:
 1. Operation theatre/ Surgical room

2. X-ray facility
3. Squeeze cages
4. In-door patient ward
5. Quarantine ward & Isolation ward
6. Dispensary
7. Veterinary care reference library
8. Nursery for hand-rearing of animal babies
9. Pathological laboratory
10. Tranquilizing equipments/ drugs
11. Post-mortem room
12. Whether the following facilities exist in the zoo:
 - (a) Kitchen
 - (b) Food store
 - (c) Deep freeze
 - (d) Portable water facility
 - (e) Food distribution van/ rickshaw etc.

11. Sanitary care and disease control:

Whether:-

- (i) Pollution free water to animals for drinking is available? (ii) Proper drainage system exists in enclosures? (iii) Regular disposal of refuse material is done? (iv) Programme for control of pests and predators exists? (v) Preventive measures like deworm and vaccination are being provided?

*12. Amenities to visitors:

Whether:

- (a) Public facilities like toilets/ bathrooms exist?
- (b) Sufficient number of drinking water taps available?
- (c) Visitor information centre and nature interpretation centre exist?
- (d) Zoo education facilities have been provided?
- (e) Public telephone booths are available?
- (f) Kiosks and restaurants are available at the zoo?

*13. Safety measures for visitors:

Whether:-

- (a) Effective stand-off barriers have been provided around enclosures?
- (b) Adequate number of warning signboards exist?
- (c) First-Aid measures are available?

14. Budget of the Zoo for the last 3 years Revenue Grants Total expenditure:
15. Annual Report, Guide books, Brochure or any other publication (copies enclosed)
16. Master plan/ detailed project report of the zoo (enclose a copy)

Signature of the Applicant

Name of the Applicant

Date:

*Rescue Centres and Conservation Breeding Centres are not required to provide information.

FORM - II
[See rule 11 (1)]

PART - A

Proforma for Quarterly / Annual Inventory Report

Inventory Report for the Quarter / Year :

Endangered Species*

S.No	Animal Name	Scientific Name	Opening Stock as on			Births			Acquisitions			Disposals			Deaths			Closing Stock as on					
			M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T		
Bird																							
1.																							
2.																							
&																							
Total Birds																							
Mammal																							
1.																							
2.																							
&..																							
Total																							
Mammal																							
Reptile/																							
Amphibians																							
1.																							
2.																							
&..																							
Total																							
Reptile/																							
Amphibians																							
Invertebrate																							
1.																							
2.																							
&&																							
Total																							
Invertebrate																							
Total																							
Animals																							

*Animals under Sch- I and Sch- II of Wild Life (Protection) Act, 1972
Curator (Animals)

Director

PART - B

Proforma for Annual Inventory Report

Inventory Report for the Year :

Other than endangered Species

S.No	Animal Name	Scientific Name	Opening Stock as on 1-4-			Births			Acquisitions			Disposals			Deaths			Closing Stock as on 31-03-					
			M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T		
Bird																							
1.																							
2.																							
&																							
Total Birds																							
Mammal																							
1.																							
2.																							
&..																							
Total Mammal																							
Reptile/ Amphibians																							
1.																							
2.																							
&..																							
Total Reptile/ Amphibians																							
Invertebrate																							
1.																							
2.																							
&																							
Total Invertebrate																							
Total Animals																							

Curator (Animals)

Director

National Zoo Policy, 1998

Preamble

- 1.1 The growing awareness for nature & wildlife conservation has made zoos a popular institution. Estimates indicate that 10% of the world's population visit zoos every year. There are about 350 animal collections in India, which are visited by more than 50 million people annually.
- 1.2 While there is a history of scientific interest, conservation and welfare of captive wild animals in the country, many zoos have evolved from menageries and private collections, and most zoos until the last two decades were set up mainly for entertainment and recreation. As wildlife resources were abundant in the past, scientific knowledge about the behavioral and biological requirements of animals did not receive adequate attention, with the result that scientific management of wild animals in captivity has evolved slowly.
- 1.3 The need for making conservation as one of the main objectives of management of zoos was realized by Government of India soon after independence and the Indian Board of Wildlife made important recommendations in this regard. The Government set up an Expert Committee on Management of Zoos in November, 1972 and its recommendations were accepted in June, 1973. The recommendations are relevant even now for improving the management of Zoos. The National Wildlife Action Plan of 1983 again emphasized the role of *ex-situ* conservation in national conservation efforts. However, because of varied ownership patterns and divergent nature of animal collections not much was achieved.
- 1.4 Today when wildlife habitats are under severe pressure and a large number of species of wild fauna have become endangered, the zoos have not only to sustain their own populations but also augment the depleting populations of endangered species in the wild. This new role has been acknowledged by the global conservation community and Article 9 of the Convention on Biological Diversity.
- 1.5 As zoos are visited by a large number of visitors, zoos are a point a potent tool for education people about the close linkage between protection of natural areas and maintaining the life supporting processes of nature. Well-planned and appropriately designed zoos can sensitize visitors to the dangers of a hostile or indifferent attitude towards nature.
- 1.6 In India, many well designed zoos were set up in some of the States but for the most part, zoos have not been able to meet the challenges imposed by the changing scenario and still continue with the legacy of past i.e. displaying animals to the animals nor educative and rewarding to the visitors.
- 1.7 The amendment of the Wildlife (Protection) Act, in 1991, provided for the enforcement of mandatory standards and norms for management of zoos through the Central Zoo Authority. However, it is realized that the objectives of the Act can be achieved only through co-operation and participation of various government agencies, non-governmental organisations and people at large.
- 1.8 The National Zoo Policy aims at giving proper direction and thrust to the management of zoos by mustering co-operation and participation of all concerned.

Objective

- 2.1 The main objective of the zoos shall be to complement and strengthen the national efforts in conservation and strengthen the national efforts in conservation of the rich biodiversity of the country, particularly the fauna. The objective can be achieved through the following protocol :-

2.1.1 Supporting the conservation of endangered species by giving species, which have no chance of survival in wild, a last chance of survival through coordinated breeding under *ex-situ* condition and raise stocks for rehabilitating them in wild as and when it is appropriate and desirable.

2.1.2 To inspire amongst zoo visitors empathy for wild animals, an understanding and awareness about the need for conservation of natural resources and for maintaining the ecological balance.

2.1.3 Providing opportunities for scientific studies useful for conservation in general and creation of database for sharing between the agencies involved in *in-situ* and *ex-situ* conservation

2.1.4 Besides the aforesaid objectives, the zoos shall continue to function as rescue centres for orphaned wild animals, subject to the availability of appropriate housing and upkeep infrastructure. Where appropriate housing and upkeep is not available, State Government and the Central Government would ascertain setting up rescue facilities in off-the-display areas of the zoo, subject to the availability of land.

Strategy for Achieving the Objectives

General Policy about Zoos

3.1.1 Since zoos require a significant amount of resources in the form of land, water, energy and money, no new zoo shall be set up unless a sustained supply of resources including finance and technical support are guaranteed.

3.1.2 Zoos shall prepare a long-term master plan for development to ensure optimum utilisation of the land, water, energy and finance.

3.1.3 Every Zoo shall maintain a healthy, hygienic and natural environment in the zoo, so that the visitors get an adequate opportunity to experience a natural environment.

3.1.4 Zoos shall give priority to endangered species in their collection and breeding plans. The order of preference for selection of species shall be (in descending order) locality, region, country and other areas.

3.1.5 Zoos shall regulate the number of animals of various species in their collection in such a way that each animal serves the objectives of the zoo. For achieving this objective, a detailed management plan of every species in the zoo shall be prepared.

3.1.6 Every zoo shall endeavor to avoid keeping single animals of non-viable sex ratios of any species. They shall cooperate in pooling such animals into genetically, demographically and socially viable groups at zoos identified for the purpose.

3.1.7 Zoos shall avoid keeping surplus animals of prolifically breeding species and if required, appropriate population control measures shall be adopted.

Acquisitions of Animals

3.2.1 Except for obtaining founder animals for approved breeding programme and infusion of new blood inbred groups, no zoo shall collect animals from the wild.

3.2.2 Zoos shall not enter into any transaction involving violation of the law and provisions of international conventions on wildlife conservation.

3.2.3 Zoos shall not enter into any transaction in respect of their surplus animals with any commercial establishment. Even the animal products should not be utilised for commercial purposes. The trophies of the animals could, however, be used for educational or scientific purposes.

Animal Housing

3.3.1 Every animal in a zoo shall be provided housing, upkeep and health care that can ensure a quality of life and longevity to enable the zoo population sustain itself through procreation.

3.3.2 The enclosure for all the species displayed or kept in a zoo shall be of such size that all animals get adequate space for free movement and exercise and no animal is unduly dominated or harassed by any other animal.

3.3.3 Each animal enclosure in a zoo shall have appropriate shelters, perches, withdrawal areas, wallow, pools drinking water points and such other facilities which can provide the animals a chance to display the wide range of their natural behaviour as well as protect them from extremes of climate.

Upkeep of Animal Collections

3.4.1 Zoos shall provide diet to each species, which is similar to its feed in nature. Where for unavoidable reasons any ingredients have to be substituted, due care will be taken to ensure that the substitute fulfills the nutritional requirement of the species.

3.4.2 For the well being of the animals, round the clock supply of portable drinking water shall be made available to all animals kept in the zoo.

3.4.3 With the objectives of avoiding human imprinting and domestication of animals. zoos shall prevent physical handling of animals by the staff to the extent possible.

3.4.4 Zoos shall not allow any animal to be provoked for tortured for the the purpose of extracting any performance or tricks for the benefit of the visitors or for any other reason.

Health Care

3.5.1 Zoos shall ensure availability of the highest standards of veterinary care to all the animals in their collection.

3.5.2 Adequate measures shall be taken by every zoos for implementing wildlife health and quarantine rules and regulations. Appropriate vaccination programmes shall also be taken up for safeguarding against infectious diseases. Timely action to isolate infected animals from the zoo population shall be taken to avoid further spread of disease.

Research And Training

3.6.1 The zoos shall encourage research on the biology, behaviour, nutrition and veterinary aspects of animals in their collection. They shall also endeavor for creation of expertise on zoo architecture and landscape designing, cooperation of recognised institutions already working in relevant fields in this regard shall be taken.

3.6.2 Zoos shall endeavor for transfer of technical skills available in the field for zoo personnel. The Central Government, Central Zoo Authority and State Government shall provide due support to zoos in these efforts. Assistance of Wildlife Institute and India (WII), India Veterinary Research Institute (IVRI) and other institutions within India and abroad, having appropriate expertise shall be taken in this regard.

3.6.3 Zoos shall also endeavour for dissemination of information on scientific aspects of management through publication of periodicals, journals, newsletters and special bulletins. Help of non-governmental organisation (NGOs) and government institutions shall also be availed in such efforts. The Central Zoo Authority shall provide technical and financial support to the India Zoos Directors Association (IZDA) and other institutions in this regard.

Breeding programme for species

3.7.1 Before taking up breeding programmes of any species, zoos shall clearly identify the objectives

for which the breeding programme is being taken up. The targeted numbers for the programme would be decided keeping in view the identified objectives.

3.7.2 All zoos shall cooperate in successful implementation of identified breeding programmes by way of loaning, pooling or exchanging animals for the programme and help creation of socially, genetically and demographically viable groups even at the cost of reducing the number of animals or number of species displayed in individual zoos.

3.7.3 Breeding programme shall be taken up by zoos after collection of adequate data like biology, behaviour and other demo-graphic factors affecting the programme. including the minimum number of founder animals and the quantum of housing facilities available.

3.7.4 Programmes for breeding of zoo animals for re-introduction in the wild shall be taken up after getting approval of the State Government, the Central Zoo Authority and the Central Government as the case may be.

3.7.5 Zoos shall give priority in their breeding programmes to endangered species representing the zoo-geographic zones in which they are located.

3.7.6 For carrying out breeding programmes in a scientific and planned manner the zoo shall mark every individual animals involved in the programme in an appropriate manner and maintain appropriate records.

3.7.7 Zoos shall take utmost precaution to prevent inbreeding. They shall avoid artificial selection of traits and make no explicit or implicit attempts to interbreed various genera, species and sub-species.

3.7.8 Special efforts shall be made to avoid human imprinting of the stocks raised for reintroduction purposes by providing off exhibit breeding facilities.

Education and Outreach Activity

3.8.1 Each zoo should have a well drawn-up plan for education the visitors as well as other in the community. Zoos shall keep a close liaison with other *ex-situ* facilities in this regard.

3.8.2 The central theme of the zoo education programme being the linkage between the survival of various species and protection of their natural habitat, enclosures which allow the animals to display natural behaviour are crucial to zoo education. Zoo shall, therefore, display animals in such enclosures only where the animals do not suffer physiological and psychological restraint.

3.8.3 Attractive and effective signage methods and interactive displays to explain activities of various species to visitors, published education material and audio-visual devices are proven methods for driving home the conservation's message. A formal education programme should also be persuaded for strengthening the education message.

3.8.4 Beside signage, the zoos shall also use guided tours, talks by knowledgeable persons and audio-visual shows for effectively communicating the message for conservation to the visitors.

3.8.5 The help of universities, colleges and non-governmental organisation shall be taken to educate the students about the benefits of supporting nature conservation programmes.

Extension Activities

3.9.1 To provide the urban population with a window to nature and to serve as green lungs for the polluting environment, zoos shall extend their expertise and help to State Governments and local authorities to create nature parks extending over extensive areas near big cities.

Amenities to Visitors

3.10.1 Zoo shall provide basic civic amenities to the visitors like toilets, drinking water points, shelters

and first-aid facilities. Ramps shall also be provided for the benefit of visitors in wheel chairs, for approach to animal enclosure and other civic amenities.

3.10.2 Zoos shall not provide any infrastructure for recreation/entertainment of visitors that is inconsistent with the stated objective of zoos.

**Guidelines for Establishment
&
Scientific Management of
Zoos in India**



Central Zoo Authority
(Ministry of Environment & Forests, Government of India)

Guidelines for grant of approval by the Central Zoo Authority for establishment of new zoo under section 38H (1A) of the Wild Life (Protection) Act, 1972

The Justification for continuance of existing zoos and establishment of new zoos lies in their capacity to develop self-sustaining and genetically and behaviourally viable populations of animals pertaining to endangered species in the wild, for use as gene pool to be used for long-term conservation of these species and to muster support of the zoo visitors in the national efforts for conservation of wildlife. It is well established that the potential of the zoos to discharge the expected role as mentioned above is directly linked to the presence of dedicated scientific staff that has the requisite skills in various aspects of planning and management and the availability of resources necessary for maintaining the highest standards of animal housing, display, upkeep and healthcare of the animals housed their in. With a view to provide the desired direction and thrust to zoos of the country, the Central Government has through amendment of the Wild Life (Protection) Act, 1972 and notification of Recognition of Zoo Rules prescribed minimum standards and norms for housing , upkeep and healthcare of animals housed in the zoos and set up a Central Zoo Authority to oversee the operation of the zoos in the country and to provide technical and other assistance to the zoos for achieving the prescribed standards and norms for animal housing, upkeep and healthcare. However, the endeavour of the Central Government to bring a qualitative improvement in the management has not yielded the desired results because of the fact that most of the zoo operators still continue to perceive zoos as adhoc animal collections maintained for public recreation. There is little awareness among the general public about the role of zoos as centres for conservation of wildlife. As a result, requisite technical manpower and necessary equipments for carrying out the management of the zoos in a planned and scientific manner are not made available. Many times getting adequate feed for the animals and providing proper upkeep and healthcare also becomes a challenging task on account of serious resource constraints being faced by the zoos. Such unplanned and sub-standard zoos are not only counter productive to the cause of conservation but also paints a very poor image of the zoos of the country.

Surprisingly proposals for establishment of new zoos continue to be developed taking little care to ensure adequate inputs for proper planning, zoo designing, construction and operation of the zoo, often leading to further impoverishment of the existing zoos.

Being concerned with the state of management of zoos in the country Hon'ble Supreme Court of India, vide their order dated 27.11.2000, have directed that the State Governments and Union Territories shall not set up any new zoo without getting approval of Central Zoo Authority and order of the Hon'ble Supreme Court. A provision has also been made by the Central Government in the Wild Life (Protection) Act, 1972 to the effect that no new zoo shall be established without prior approval of the Central Zoo Authority.

The Central Government hereby makes following guidelines for grant of approval by the Central Zoo Authority for establishment of new zoos:-

1. Central Zoo Authority shall not entertain any proposal for establishment of a new zoo unless it is accompanied by a "Detailed Project Report" giving detailed appraisal of the proposed zoo site, 'mission-vision-theme' of the zoo and detailed strategy for housing, upkeep and healthcare of the animals and their display for developing amongst visitors an empathy for wild animals and motivation for supporting the national conservation efforts.
2. Central Zoo Authority shall not grant approval for a new zoo unless it is satisfied that the establishment of the zoo shall be instrumental in:-
 - (i) Providing highest standards of housing, upkeep and healthcare to significant number of animals, presently housed in sub-standard and inappropriately managed zoos.

- (ii) Carrying out of path breaking research for developing innovative strategy for enhancing the reproductive potential, neonatal care and genetic and behavioural management of endangered species of wildlife.
 - (iii) Setting up of state of art facility on use of innovative methods of display of zoo animals that is congenial to the welfare of the animals and motivates the visitors for conservation.
3. Central Zoo Authority before granting approval for establishment of a new zoo shall satisfy itself:-
- (i) that zoo site has adequate land of appropriate quality (free of all incumbrances, water logging, sewage and storm water drains) is available for construction of the zoo and for raising tree belts of adequate width to act as buffer against noise pollution and air pollution.
 - (ii) project proponents have requisite availability of water, energy and finances on-sustained basis for construction and operation of the zoo, including payment of salary/emoluments of technical personnel, to be required as per the provision of Recognition of Zoo Rules.
 - (iii) There is likelihood of part of operation cost of the zoo being met through revenue earned by the zoo.
 - (iv) Requisite numbers of qualified and experienced persons are available for preparing the detailed plan of the zoo and its effective execution.
 - (v) No animals from wild are proposed to be acquired for display purposes.
4. Central Zoo Authority while examining any proposal of the State Government/ Union territories for establishment of a new zoo and recommending such cases to the Hon'ble Supreme Court shall satisfy itself on following additional points:-
- (i) State Government/ Union Territory has made adequate provisions in its budget to meet the operational costs of all the existing zoos being operated by it, including the salary of zoo personnel as per standards and norms prescribed under "Recognition of Zoo Rules" and all the posts sanctioned in the budget have been duly filled.
 - (ii) All the conditions stipulated by the Central Zoo Authority at the time of grant of recognition to the zoos being operated by the State Government/ Union Territories have been fully complied with.
 - (iii) All the zoos operated by the State Government/ Union Territories, that have been refused recognition have stopped their operations and the animals housed therein have been rehabilitated appropriately.
 - (iv) No resources and professional experts from existing zoos are being re-appropriated for establishment of the new zoo.

- IV. Apprise the visitors of the composite and complex nature of different ecosystems.
- V. Provide the visitors an absorbing and rewarding experience at the zoo.

The themes generally adopted are:

1. Traditional Themes:-

- (a) zoo-geographic – Continent wise or region wise display
- (b) Taxanomic – Class, family and genera wise display
- (c) Behavioural – Nocturnal, aquatic, burrowing, arboreal
- (d) Mixture of the above – Based on popularity

2. Recent Concepts ---

Simulation/ replication of in-situ sites e. g. Chilka lake, Annamalai hills, Western Ghats, Aravalli Hills, Kanha meadow, Sunderban wetlands, Indian deserts, Gir forests, Shiwalik Foothills, etc.

Bio-geographic grouping – High mountain fauna, riverine fauna, Mangrove fauna etc.

Eco-system display – Nilgiri fauna, Desert fauna, Wetland fauna, etc.

Replication of in-situ site and eco-system display require greater technological expertise and involves high costs but are more aesthetic and absorbing. Zoo-geographic and taxonomic displays are easier to implement but often fail due to non availability of animals to replenish the dead animals stock.

Adoption of a particular theme should be done taking into consideration the available space, species held in collection of the individual zoo/ possibility of procurement from other zoos and the financial resources and technical expertise available with the zoo. Having adopted a particular theme, zoo should strictly follow it. Any deviations from the theme would result in paranoic displays sending wrong conservation message and convert the zoo into a unplanned wild animal display facility.

Adopting themes based on local/ regional animals suited to the local climate have greater chances of success. Highly endangered species should normally not be made part of thematic displays.

Under the present state of management of zoos taxonomic displays with few specialized display on bio-geographic/ ecosystem themes shall be a practical approach.

Visitor circulation plan

Traditionally the zoos have extensive network of roads. As all the roads are inter connected, there is every likelihood of the visitors getting disoriented and moving haphazardly in all directions. It is desirable that the zoo should have only one main approach road to take the visitors to the zoo animal display areas. The main road should be connected to various animal exhibits with loop roads and subloop roads of lesser width and specifications on the basis of hierarchy (importance) assigned to each road. The loop roads and subloop roads should intersect the main road at prominent junction points, where appropriate signage indicating the directions of prominent animal exhibits and visitor facilities should be available.

Due safeguards should be taken so that visitor road does not pass through the area adjoining the animal feeding cells, feeding kraals, animal service areas, service road and off the exhibit areas.

If required, zoo could fix different timings for visitors viewing specific animal facilities.

All civic amenities and visitor facilities should preferably be located by the side of main road only.

Animal collection plan

Every zoo shall take a strategic review of the species of animals and their number to be housed in

the zoo for preparation of appropriate animal collection plan, with reference to:-

- (a) Space available to each species/ animal and the space actually required for housing all the animals of all the species held in its stock, as per prescribed norms.
- (b) Past and present performance of the zoo in upkeep, healthcare including the congeniality of the local climate for upkeep of the species.
- (c) Records of births and deaths of the animals of each species and the survival of the young ones.
- (d) Cost of upkeep and healthcare of each species.
- (e) Adopted theme of the zoo and the relevance of the species in the thematic display.
- (f) Species identified for planned conservation breeding by the zoo.
- (g) Species with surplus number of animals which are available with other zoos.

Following should be the guiding principles for finalizing the collection plans for different categories of zoos in Indian conditions

I. Large Zoo (National Collection)

Wild animal species of the area/ locality/ ecosystem the zoo is part of (around 30% of the total species displayed); representative wild animal species of region (North, South, West, Central, East or North-east) the zoo is part of depending upon suitability to the climatic condition (around 30%), representative wild animal species of the nation which are comfortable in the climate of the zoo (around 30%) and not more than 10% exotic wild animal species.

II. Medium Zoo (Regional Collection)

Wild animal species of the area/ locality/ ecosystem the zoo is part of (around 40% of total species displayed); representative wild animal species of the region the zoo is part of (around 40%) and not more than 10% selected species of nation and exotics each.

III. Small Zoo (Local Collection)

Wild animal species of the area/locality/ ecosystem the zoo is part of (around 60%), re representative wild animal species which are comfortable in the climate from the region (20%), nation (10%) and exotics (10%).

IV. Mini Zoo (Local common wild animal collection)

Few identified common wild animal species of the area/locality/ecosystem the zoo is part of, may be 1-2 common exotics wild animal species.

V. Rescue Centre

Identified problem wild animal species and orphaned, infirm captive animals not fit for display of the area/ locality/ ecosystem the Rescue Centre is part of:-

- (i) All rescued sick or injured wild animals should be rehabilitated back in wild or in regular lifetime care facility/zoo/rescue centre within 30 days of treatment/ healing depending upon the condition/ suitability of the individuals.
- (ii) All seized wild animals should also be rehabilitated back in wild or in regular lifetime care facility/ zoo/ rescue centre depending upon the condition/ suitability of the individuals with 30 days of the seizure after getting permission of the court dealing with the case.

- (iii) All rescued/ abandoned young wild animal should only be reared in nurseries attached to the Veterinary facilities/ hospitals of the recognized zoos/ rescue centres.

V. Specialized Zoo

Exclusive (Reptile/ Snake/ rodent/ bird/nocturnal/ aquatic park and aquarium etc.) specialized zoo may decide housing animals of one step above level i. e. small of region, medium of nation, large of international level in its collection plan.

2. On the basis of the result of the review as mentioned above, list out the species and the number of animals of each species that are necessary for planned thematic display and conservation breeding in the zoo.

3. With a view to enhance the conservation role of the zoo, some of the glamorous mega specie may have to be excluded from the list to accommodate the animal of endangered species and designing of outstanding exhibits.

Taking into consideration the outcome of detailed analysis as mentioned above, draw out the final list of the species and the number of animals of each species to be housed in the zoo. Fewer species with viable population are always preferable to a collection of larger number of species with non viable numbers.

Master Layout plan for the zoo

Master layout plan is a detailed landscape map of the existing zoo site in a scale of 1:1000 to 1:5000 depending on the area of the zoo. All the existing facilities and infrastructure and the locations of the proposed developmental activities in animal display area, conservation breeding area, rescue centre area, visitor circulation routes, animal upkeep and healthcare facilities including animals' quarantine facilities and isolation wards, visitor education facilities and civic amenities, service roads, administrative blocks, entry plaza, car parking should be clearly indicated on the map. Allocation of land for each activity should be made available having due regard to the provisions made under "Recognition of Zoo Rules" in particular to the Sub rule 11.

Disaster and crisis management plan

Every zoo should prepare a detailed plan to deal with crisis in management, arising out of natural disasters like cyclone, flood, drought and earth quake or accidental happenings like fire, animal escapes, out break of diseases, etc. The crisis sometimes may also arise out of vandalism by unruly visitors, strike by the staff, stoppage of supply of water, power and animal feed due to circumstances beyond the control of the zoo management.

The plan would comprise of:-

- I. Assessment of the degree of subjectivity of the zoo to each type of crisis and list out the crisis which are encountered at the zoo more frequently.
- II. (a) List out necessary equipments to deal with crisis like diesel generators, portable saws, axes, showels, bill hooks, water tankers, diesel pumping sets, ropes, spot lights, emergency lamps, siren, hooter, loud speaker, tarpaulin, chains, nuts and bolts and acquire and stock the same.
(B) List and keep a stock of consumables like diesel, petrol, LPG, kerosene, lubricants, fuelwood, batteries, saw blades etc.
- III. Prepare a line of command for dealing with the crisis and a support contingency plan in case the line of command does not prove effective for some reason.
- IV. Train all concerned to deal with the situation through periodic mock drills. It should be ensured that all equipments are fully functional and effective at all times.

- V. Network and coordinate with specialized agencies like fire fighting units of the State Government/ Union Territories and upgrade the equipments and rationalize the operations on the basis of their inputs.
- VI. Be on lookout for new potential crisis and develop the strategy to meet the same like bird flu, anthrax, retaliatory killing of wild animals etc.

Management Plan

Every zoo should prepare a management plan listing out the activities to be taken up by the zoo for implementing the master plan over next 5 years indicating realistic costs of executing the identified activities and financial year wise targets both physical and financial including anticipated source of funding.

Detailed strategy for achieving the target should also be explained in explicit and elaborate manners.

VI Dimensions and size of animal enclosures

The land area to be given to any animal exhibit enclosure should be decided having due regard to the maximum number of animals that can be displayed in the animal enclosures. Sambar, Spotted deer, Swamp deer, Sangai and some other ungulates can live in large social groups. Enclosures for such species can easily be designed for displaying 15-20 animals. However, the maximum number of animals that can be displayed in a single enclosure of Chinkara, Chowsingha and Barking deer and similar species should not exceed 5-7.

The area of the enclosure should have adequate land space for facilitating the animals to have free movement and exercise, adequate area to rest in shade and bask in the sun and have safe refuge from dominant animals and express their natural, social and reproductive behaviour.

The animal exhibit enclosures should not be given geometrical shapes, as the presence of corners is not congenial to smooth and unrestricted movement of animals. Enclosures with greater depth facilitate the animals to keep a safe distance from the visitors and are always preferable.

The dimensions and the area of any enclosure should be decided having due regard to various factors mentioned above and the topography and naturalistic features of site identified for construction of the enclosure. However, indicative sizes for the enclosures, both feeding cells and outdoors of important wild animal species are given in **Annexure IIA and IIB** respectively to these guidelines. The indicative sizes for outdoors are minimum, zoo operator should always try to provide for larger and bigger outdoor to the extent possible.

The area of the outdoor enclosures for herbivore safari and carnivore safari should not be less than 30 hectares and 20 hectares respectively. Mini zoos being operated as Deer Parks and displaying mega species should not be of less than five hectares.

Display of animals in nature immersing enclosures

- (1) Landscape around every animal exhibit/ enclosure should comprise of plantations of appropriate tree and shrub species of adequate extent and such shape that the enclosure should not be visible to the visitors from any place other than the animal viewing areas.
- (2) All the hard exteriors of the enclosure i.e. the enclosure barrier and the frontage of the feeding cells, feeding kraals should be effectively camouflaged through planting of bamboo, dwarf tree species and shrubs.
- (3) Planting of appropriate trees and shrubs should be done around the animal viewing areas to break up the visitors into small viewing groups.

- (4) Visitors should be made to move through the green landscape around the enclosure for reasonable distances.
- (5) Planting, appropriate trees species should be done in the enclosure to ensure that entire animal enclosure is not visible to the visitors from any of the viewing points. The animal should be seen to the visitors in near natural settings.

Making the animal enclosures safe for animals, animal keepers and the visitors

(a) Enclosure Barrier

Barrier of every enclosure should be of a design, dimension and material that can effectively contain the animals housed within the enclosure and safeguard against any animal escaping from the enclosure. Due care should also be taken to ensure that the shutters and doors fitted in the enclosure, kraal and feeding cell are of such material and design that these can not be broken/ opened by the animals housed in the enclosure. The barriers of all the enclosures, except the animal viewing area could comprise of natural cliffs (if any), wall, glass, power fence or chain-link fence, etc. of prescribed dimensions. However, in animal exhibit enclosures, provision of a moat could be made in the animal viewing area, to facilitate the visitors in having an unobstructed view of the animals without getting close to them. Wet moats shall normally not be used as enclosure barrier for the viewing area except in case of water loving animals. The total land area under moat should not exceed 20% of the land area of the enclosure. The indicative design type and dimensions of enclosure barrier are given in **Appendix III** to these guidelines.

(b) Other safeguards :

- (i) Due care should be taken to ensure that no power line/ power cable passes over any animal enclosure.
- (ii) Enclosure barrier should be erected/ constructed at a safe distance from such trees that can aid the animals to escape from the enclosure or damage the enclosure barrier.
- (iii) Where walls are used as enclosure barriers, due care should be taken to plaster the same with such proportion of cement mix that the plaster does not wither away leaving gaps that could be used by the animal as holds for escaping out of the enclosure.
- (iv) Live wire overhangs or chainlink should be used to prevent the animals from escaping out of the enclosure.
- (v) Water pipelines and sanitary fittings should be fixed within the enclosure in such a manner that the same can not be used by the animal as aid to escape from the enclosures.
- (vi) Adequately deep foundation to be provided for enclosure barrier housing the burrowing species.
- (vii) Attention should be given to different barrier materials, fixtures, shutters etc. to see that they are safe and can not be broken or cause injuries to animals.

Specialised Animal Displays

1. Walk Through Animal Enclosures

- (i) The area open to access by visitors should be clearly delineated and demarcated in such a manner that animals are not impacted by the presence of visitors and that animals are not in a position to injure the visitors.
- (ii) Visitors should be allowed to enter the walk through animal enclosure in controlled groups under proper supervision. Visitors must be adequately informed about the dos' and don'ts, while in the enclosure.

- (iii) All walk through exhibits should have double entry gates and double exit gates to safeguard against any animal from escaping out of the enclosure.
- (iv) Every visitor should be made to walk through a disinfectant footbath before entering the walk through enclosure.
- (v) The carrying capacity of the visitors in the walk through enclosure should be clearly defined and at no point of time the visitor number should exceed the same.

2. Drive Through Enclosures (Safaries)

- (i) Entry and exit to every drive through enclosure should be through a system of double gates. There should be sufficient space in between the two gates, to allow the gates to be securely locked at the front and the rear of every vehicle that enters the drive through enclosure.
- (ii) The gates for drive through enclosure should be so designed and located that the person operating the gates can see and ensure that no animal is standing near the gate at that time when the gate is being opened for the vehicle getting into the enclosure.
- (iii) Arrangement should be in place to ensure that the two gates provided under the double gate entry and exit system do not open simultaneously. The 2nd gate should open when the first gate has been securely locked.
- (iv) Design of the double gates should be such that the same can be operated conveniently by one person only.
- (v) Visitors should be allowed to enter in the enclosure of large cats and Bears only in closed top vehicle and the windows and glasses of the vehicle should be kept securely locked during the period the vehicle remains in the drive through enclosure.
- (vi) Supervisory staff accompanying the vehicle should be armed with appropriate weapons and communication equipment and should be authorized to use the same effectively, if required to do so, to save the visitor from attack by the animals.
- (vii) Trained personnel shall be suitably positioned over the entire drive through enclosure, on appropriately designed watch towers to keep a watch on the movement of vehicles, the animals and intruders, if any and to provide necessary guidance to gate staff, the vehicle drivers and the animal keepers in carrying out the jobs assigned to them safely and effectively.
- (viii) A rescue vehicle capable of affecting recovery of the vehicles from the drive through enclosure should always be available at the command of supervisory staff as long as there are any vehicles within the drive through enclosures.
- (ix) The layout of roads in the drive through enclosure should be such that the visitors can be shown all the highlights of the enclosure without disturbing the animals in their withdrawal areas.

3. Composite Animal Enclosure

Composite animal enclosures by and large are quite attractive and are quite in vogue these days. The zoo operators, while designing any composite enclosure shall take due care to ensure that:

- (a) Species housed in composite enclosure are compatible in nature.
- (b) There is no competition between the species for utilization of space, food and natural resources.
- (c) The species do not inter-breed.

4. Elephant Enclosures

The elephants being voracious eaters and producers of extraordinary amount of solid wastes can not be maintained aesthetically in the display enclosures. Presence of 'mahaouts and chara cutters' makes the issue of aesthetic display further complicated. It would therefore be desirable to leave elephants in display enclosure for limited period of 6 to 8 hours. For rest of the time, the elephants should be kept in elephant houses of appropriate designs in off the display areas at isolated places. Elephants can be loosely chained with spikeless chains for their own safety. However, suitable padding should also be provided on their legs to safeguard against injuries being caused on account of chaining.

VII Environmental Enrichment

Any wild animal living free in nature carries out wide range of activities viz foraging, exploration, territorial patrolling, marking territorial boundaries, avoiding predators, wallowing, climbing, burrowing and seeking mates etc. Its social behaviour includes parenting, courtship and other interactive activities viz. chasing each other and indulging in mock fights. All these activities involve constant alertness of visual, olfactory and adulatory stimuli. Even during the inactivity period in wild, the animals are involved in setting up and construction of secure refuges such as nests, burrows, dens, searching tree holes etc.

Under the zoo environment, the environmental complexity is missing and the animal has to make little effort for getting its food and security. The availability of space for movement and other physical activities like digging, burrowing or nesting, is also limited and the animals can no longer express their natural behaviour. Lack of stimuli to take up any physical activity (absence of hunger and insecurity) and continued stress due to non-fulfilment of natural behaviour leads to development of aberrant/ stereotypic behaviour in the animals, which make them look pathetic.

There is no denying the fact that it is neither feasible nor practical to simulate the conditions of wild in the zoo, still the zoo operators can provide the zoo animals ample opportunities to express their natural behaviour through imaginative enclosure designing and planned enrichment. The technical help of behavioural biologists may be obtained in developing the appropriate enrichment plan for the wild animals.

Important components of Environmental Enrichment of animal enclosures are briefly summarized below:

Behavioural Enrichment:

- (i) Keep animals in compatible social groups. Provide adequate three dimensional space for exercising the normal movement behaviour patterns i.e. walking, flying and climbing.
- (ii) Provide suitable substrate to facilitate the animals to satisfy their digging, burrowing and exploratory instincts.
- (iii) Provide suitable trees, shrubs and bushes in the enclosures to provide the animals opportunities for climbing, swinging, feeding, clawing, playing, rubbing the antlers, etc. Trees take substantial time in growing to required sizes, during the interim period, appropriately sized logs/ branches of trees could be used to meet the behavioural needs of the animals. There should be provision of alternative enclosures for the ungulates living in larger social groups, bears and primates so that the animals could be shifted from one enclosure to the other to facilitate recovery of vegetation.
- (iv) Burrows/ dens could also be constructed to facilitate the animals to hibernate or to take shelter during extreme weather conditions.
- (v) Plant grass and reeds to provide cover area for the animals.

- (Vi) Fix mud pots, tree hollows, bamboo baskets to meet nesting and egg laying by birds.

Remarks:

Use of nylon ropes, tyres, and swings should normally be avoided because these do not add to the over all aesthetics and natural environment of the enclosure. These should be used as last resort, when functional requirement of animal can not be met with natural enrichment materials.

VIII. Providing effective Stand off Barriers

Minimum height and distance of stand off barriers from the enclosure barriers should be as follows :

Sl. No.	Barriers type	Height	Distance from the barrier
1.	Along moated viewing barrier	75 cm	75 cm
2.	Along chain-link barrier	75 cm	150 cm

Space between the stand off barriers and enclosure barriers shall be planted with thorny evergreen hedges to safeguard against the visitors crossing the stand off barriers.

IX Appropriate educational signage

- (i) Signage boards should be made of weather proof, durable, tough and strong material which can last for reasonably long durations and can be reused and repainted.
- (ii) The signboards should be attractive but due care should be taken to ensure that this should not obstruct animal viewing, legible from reasonable distance and should highlight details about the biology, behaviour, distribution and conservation status of the species. Interesting informations like animal diet and longevity should also be highlighted.
- (iii) Signboards should not be loaded with too many informations. Signboards should be understandable to a child/ average literate person.
- (iv) Appropriate graphic illustrations should be provided on sign boards to explain ecological linkages, taxonomical relationships and evolution of species.
- (v) Signage should also provide information on the conservation efforts being made in the country and the role being played by zoos in this regard.
- (vi) Signage should be designed in such a way that they catch the attention of the visitors and the visitors are tempted to read them.
- (vii) Negative signages like the animal being cattle lifter/ man eater should not be displayed as these dilute the message of conservation.
- (viii) Signages should be monitored and evaluated regularly and updated constantly.
- (ix) Signages should be fixed at prominent places at such heights that these can be read conveniently. Avoid fixing signages on trees inside the animal enclosure or along the side of hedge planted between the stand off barrier and the moat wall. Sign boards fixed near the animal viewing line of visitors look quite attractive.

- (x) Avoid use of gaudy colours for preparation of signage. Use such colours that merge with animal exhibit environment.

Interpretation facilities

Animal - habitat relationship, population dynamics, animal adaptations, animal evolution, ecological role of animals are some of the important areas for interpretation. Interactive devices to get some feel of main strengths of various species, history of animal management in zoos through obsolete animal exhibits- may also interest the visitors.

Nature trails to educate the visitors on local species of fauna and flora in well managed hedge and tree groves and water bodies can help in providing the visitors insight to nature and generate empathy for wildlife. Recorded commentary on different facts about animals in the vehicle used for different safari's can be excellent educational material. Deployment of trained zoo guides for use of visitor groups shall be quite effective

X Animal housing, upkeep, hygiene and healthcare

- (1) Zoo operators should keep a close watch on the animals housed in every enclosure and any animal that is unduly aggressive and causing grievous injuries to other animals and its continuance at the enclosure is risky to the life of other animals of the enclosure shall be removed from the group/ herd at the earliest and taken to isolation enclosures in off the display area and kept under close observation.
- (2) Efforts to reintroduce the animal in the original herd/ group, alternative herd/ group should be made as soon as the animal has mellowed down, taking adequate safety measures/ precautions.

Explanation Reproductive behaviour of various species should be studied and understood thoroughly so that it is not confused with aggressive behaviour and the animals separated, marring the chances of future procreation of the species.

- (3) Zoo operators should ensure that the number of animals housed in every enclosure is within the carrying capacity of the enclosure. Wherever, it is found that the number of the animals in the enclosure has exceeded the carrying capacity, measures to shift the excessive animals to alternative enclosure should be taken with due safeguards to ensure that the animals already breeding shall not be removed from the original enclosures. For this purpose, it is always preferable to move sub adult males and females from the group/ herd.

XI Quality of food for animals

- (1) Feed supplied to animals should not only meet the nutritional requirements but should also meet the functional need of animals.
- (2) The feed should be hygienic and of high quality.
- (3) Appropriate food supplements should be added in the animal feeds to avoid nutritional deficiencies or specific needs.
- (4) Larger cat should be provided meat with bones. Occasionally, they should be allowed to feed on full carcasses, if feasible. Pieces of liver should always be added to the meat supplied to the carnivores.
- (5) Ungulates should be provided with tree fodder, wherever feasible in addition to other fodders. Salt licks should also be provided at appropriate places in their enclosures.

XII Placement and timing of feeding

- (1) Mammalian species should be provided feed in the feeding cells/ feeding kraals on a sterile surface. However, the animals should not be required to stay on a hard surface beyond the feeding time.
- (2) Feed for the animals living in social groups should be sub divided and placed at as many locations as necessary to safeguard against weak and young animals remaining under nourished.
- (3) For satisfying the behavioural instincts, the feed for bears and primates could be hidden in log hollows, burrows, etc.
- (4) Hidden scattered feed dispensation devices could be used where ever necessary.

Timing of Feeding

- (1) Larger animals which are fed only once a day should be provided their full diet towards the closing hours of the zoo for the visitors.
- (2) Intermittent feeding in small quantities could be done to manage and keep the animals active.

XIII Feeding Cells and Kraals

- (i) Every animal enclosure would be provided with feeding cells and feeding kraals at the farthest point from the animal viewing area. No animal would be provided feed in the main enclosure.
- (ii) The design and size of the feeding cells and feeding kraals should be such that these do not stand out and affect the natural environment of the enclosure. To achieve this goal the feeding cell should be constructed in depressed ground, whenever feasible, in other cases feeding cells and kraals should be screened through plantations of appropriate species.
- (iii) All the feeding kraals should have pucca floors and should be covered from the top. Approach to the service door of the feeding kraal should not be through the main enclosure. These should be serviced through a service gallery which is so designed that adequate natural light and aeration is maintained in the gallery.
- (iv) Animals should be in the feeding cells/ kraals/ indoor enclosures only for such duration as it is absolutely necessary for ensuring better health, physical comfort and security of the animal. The number and the area of feeding kraals should be decided on the basis of the number of animals housed in the enclosure.

XIV Watch on the general behaviour and healthcare

Veterinary care/ treatment to any animal should be provided causing minimum possible stress to it. With this objective, every enclosure should have inbuilt facilities for restraining/ examining and treating the animal at the enclosure itself. No animal should be shifted from its enclosure to the treatment ward in the hospital/ isolation ward unless its continuance at the enclosure involves risk of other animals being infected by the disease or the sick animal requires intensive care/ supervision round the clock. The animal so removed from the enclosure should be brought back to the enclosure and introduced in to its social group/ herd as soon as it has recovered from the disease and is fit to fend for itself in the group. Keeping the animals for long durations away from the social group/ herd may lead to problems at the time of reintroduction of the animal in the group/ herd.

XV Record Keeping

Every zoo should have mechanism for recording of observations regarding social, biological and reproductive behaviour and health status of zoo animals including preventive and curative treatment provided, birth and care of young ones, sicknesses and mortalities as per details given below:-

Keeper's Diary

The Keepers/ In-charges of all sections or beats under the Animal Section of a zoo should maintain keeper's diary in the format as **Annexed IV-A**, giving animal/ specie-wise details of all the important events and activities pertaining to his section/ beat. The format should be in vernacular language and should be available with the Keeper in the shape of printed ledger register with serial numbered pages. There should be 2 pages with each serial number so that one copy of the report also remains in ledger register after submission of the second copy to the Incharge, Animal Section daily through his supervising officer before submission the supervisor should also record own comment on the Keeper's Diary.

Daily Report

Curator (Animal)/ Incharge, Animal Section of zoo should compile the important aspects of the reports submitted by the Keepers of the different sections/ beats (Keepers diary) in the format as given in **Annexure IV-B** and submit the same daily within two hours of opening of the zoo to the Director through the Veterinary Officer. The Incharge, Animal Section; Veterinary Officer and Director of the zoo shall record their observations/ comments in the daily report and take the required action accordingly. Copy of the daily report will go back to the Incharge, Animal Section the same day after the biologist has made necessary entries into the Animal History Cards of the animals/ species reported upon.

Animal History Cards

Animal history cards of each animal which is identifiable shall be maintained by the Biologist (or the Education Officer as the case may be) in the format at **Annexure-IVC**. The animal history cards shall be maintained as permanent record. For the species where the individuals are not identifiable, the animal history cards should also be maintained herd/ group/ species-wise giving important events as a compendium of information for future use.

Studbook

Studbook of all the animals of endangered species including those born under the planned conservation breeding programme shall be maintained in the format at **Annexure-IVD** by the biologists of the zoos and National Studbook Keepers of each identified species.

Treatment Card

Individual treatment card for each identifiable animal should be initiated and maintained by the zoo veterinarian in the format at **Annexure-IV E**, giving date-wise observations made and treatment given to the animal through out its life. The treatment card shall always remain at the place where the animal is housed/ kept. For the individuals which are not identifiable, the treatment cards should also be initiated and maintained species wise. The copies of the same should also be kept at the place where the individual is housed/ kept along with other members of the species.

Remarks- The zoos should endeavor to acquire and become members of the National/International Record Keeping System/ softwares like International Species Information System (ISIS)/ Zoological Information Management System (ZIMS) for scientific management of zoo populations.

XVI Tranquilization of animals in zoos

Tranquilization of zoo animals is a highly specialized procedure that requires thorough knowledge about the chemistry and physiological effects of the tranquilizing drugs on various species of animals, the reversibility of the drug effect and the specific antidotes of the drug. The person taking up the responsibility of tranquilizing any animal should also be fully conversant with the health details, behaviour and the temperament of the animal. In view of the facts stated above, tranquilization of zoo animals would not be resorted to where the traditional methods of restraining the animal viz. squeeze cage, luring the animal into a feeding cell/ appropriate sized cage are likely to yield the desired results, without undue stress to the animals. .

The circumstances under which urgent tranquilization become absolute necessity are :

- (i) Dangerous animals escaping from the enclosure
- (ii) Capturing the animal which is posing threat to the life of some other animals/ people
- (iii) Carrying out surgical operations on seriously injured wounded animals.
- (iv) Close examination and treatment of sick animals.

The decision for tranquilization of such animals can be taken by the veterinary officer/ animal curator of the zoo. The Director of the zoo shall be kept informed on such decisions. The tranquilization team will be lead by a person having adequate experience in tranquilization of animals and the tranquilization shall be carried out under the direct supervision of a veterinary doctor.

Planned tranquilization involving capture of animals for translocation, collection of blood and semen for diagnostic purposes etc. shall be carried out only after getting written permission of the Director of the zoo and subject to such safeguards and conditions as may be prescribed by him.

The normal safeguards during the tranquilization shall be :

- (1) Not more than one animal will be tranquilized at a time. Second animal should be tranquilized only after the animal tranquilized earlier has fully recovered.
- (2) Tranquilization will be carried out by a team comprising of 3-4 persons. Visitors and the other zoo staff, who are not involved in the operation, should not be permitted to be present at the time of tranquilization.
- (3) Tranquilization of any animal shall be done in a manner that the animal is not unduly stressed by way of chasing and making noise.
- (4) All precautions and safeguards given in the literature supplied with the drugs should be followed.
- (5) The physical parameters like body temperature, heart beat, muscle reflexes, eyelid movement, and respiratory rates should be constantly monitored till the animal has fully recovered. Necessary mitigative measures would be taken as soon as some abnormalities in these parameters are observed.
- (6) It shall be ensured that the animal during the recovery phase is kept in a position that the chances of arrest of heart beat and the saliva/ food particles getting into lungs are totally ruled out.
- (7) The animal shall be kept under close observation for at least 24 hours after its revival.
- (8) It is advisable to tranquilize the animal during the cooler parts of the day.

- (9) In case the body temperature is high, the body should be covered with wet cloth.
- (10) The eyes should be covered to prevent exposure to bright light.
- (11) Tranquilization should not be carried out in an area close to a water body to prevent drowning of animal during tranquilization.
- (12) Before tranquilization operation, the prescribed human antidote should be loaded and kept with another person for immediate administration when such need arises, due to the narcotic drugs contact with human body.

XVIII Linkages with eminent institutions/ organizations working in the field of wild animal healthcare

All the recognized zoos in India have been provided with basic animal healthcare facilities as per the category of the zoo and its animal collection. This should suffice for day-to-day management of zoo and healthcare of the animals kept there. The zoos have been asked not to acquire sophisticated and costly diagnostic equipments unless there is adequate technical manpower to operate and use the same.

Exact diagnosis of the cause of sickness in a zoo animal and providing it an effective treatment is a very challenging task and no zoo can be self-sufficient both in term of technical expertise and diagnostic investigation facilities required for taking comprehensive healthcare of the large variety of animals housed in the zoos. It is, therefore, incumbent upon every zoo to augment its healthcare facilities by entering into agreement with local/ regional veterinary university/ college/ large veterinary hospital capable of providing appropriate scientific inputs for diagnosis of the diseases of sick animals and advice on the proposed line of treatment of the disease as well as on preventive measures to safeguard against the recurrence of the disease. The above veterinary institutions will be providing specialized services and diagnostic facilities to the zoos for better healthcare of zoo animals. The Central Zoo Authority has also agreed to provide some financial assistance for establishment of the mechanism at the zoo/ local/ regional level.

The Central Zoo Authority has signed MoU with Indian Veterinary Research Institute, Bareilly to act as National Referral Centre to provide super specialized services and diagnostic facilities for better animal healthcare in Indian zoos. In case the zoos feel that the agreement arrived by them with the organization/ institutions within the region are not able to provide required specialized healthcare, they can approach the National Referral Centre for (a) getting baseline data on the health parameters of various species of animals (b) micro biological, bio-chemical and pathological analysis of the samples taken from live animals and histopathological and forensic examination of tissues and organs of dead animals. The National Referral Centre shall not normally be able to entertain requests for diagnosing and treating the cause of sick animals of zoos/ regional referral centres except on a request by the Central Zoo Authority to tackle the extra-ordinarily situation that cannot be effectively handled by the regional referral centres.

Constitution of Health Advisory Committee: Despite their best efforts, the Regional Referral Centres identified by the zoos can not help the zoos on dealing with sick animals on day to day basis. For dealing with this problem, every zoo should have a Health Advisory Committee comprising of experienced veterinarians with a professor of veterinary college/ eminent wildlife/ zoo veterinarian as its Chairman and the Senior Veterinary Officer of the zoo as its coordinator. The Committee would advise the zoo on all matters related with sanitation, hygiene, prophylactics, nutrition and management of sick animals. The Committee may opt any other veterinarian or specialist as and when required.

The Committee should be kept involved with the visits of the team of the Regional Referral Centre to the zoo. It should also be taken into confidence about the implementation of the advice rendered by the Regional Referral Centre/ National Referral Centre on treatment and management of sick animals. Zoo Director and the Curator (animal) should be actively involved in the meetings of the Health Advisory Committee.

Organization of hands on training for zoo veterinarians

The Central Zoo Authority should facilitate the National Referral Centre to have hands on training of the veterinarians posted/ working with the zoos at the place identified by the centre.

These trainings could be held on national or regional level with support from the Central Zoo Authority.

XVIII Post-mortem and disposal off carcasses

Findings of the Post-mortem conducted as prescribed under Sub Rule 32 shall be recorded in the format at **Annexure-V**. The report should be preserved atleast for 6 years.

XIX Euthanasia of a zoo animal

Decision to euthanize any animal shall be taken only on the basis of the recommendations of the committee constituted for the purpose by the Chief Wildlife Warden of the State on the recommendations from the Director of the zoo to the effect that:-

- (1) The animal is terminally ill and is in such state of agony and pain that it is cruel to keep it alive.
- (2) The animal is suffering from incurable diseases of infectious nature and keeping the animal alive poses a serious threat to the health of other animals at the zoo.

The Committee shall comprise of 2 veterinarians (inclusive of zoo veterinarians) and a representative from the local Society of Prevention of Cruelty to Animals.

Remarks :

Euthanising any zoo animal in contravention of these guidelines would tantamount to illegal hunting under Section 9 of Wild Life (Protection) Act, 1972 read with Sub Section (16) a of Section 2 of the Act.

XX Exchange of animals

Central Zoo Authority shall grant approval for exchange of animals of Schedule I and Schedule II subject to following norms and safeguards :

- (i) All the exchange proposals for zoo animals shall be decided on the basis of information available in the studbooks about the pedigree of the animal and its likely contribution in maintaining the heterozygosity level of the species in the breeding programme. The order of priority for allocating the animals under the planned coordinated conservation breeding programme shall be as follows :
 - i. Coordinating zoo
 - ii. Participating Indian zoo
 - iii. Participating foreign zoo

- iv. Other Indian zoos having appropriate upkeep and healthcare facilities and required technical expertise.
- (ii) Exchange proposals for the species which are not candidate for planned breeding programme shall also be approved having due regard to strengthening of the breeding gene pool for the planned breeding programmes.
- (iii) Gift of animals to zoos outside the country shall also be made having due regard to the interests of conservation breeding and long term conservation of wildlife.
- (iv) The zoos having single male/ unpaired male should spare the same to provide mates to unpaired females housed at other zoos as directed by the Central Zoo Authority. The recipient zoo shall bear the cost of crating and transportation of the animals.
- (v) The Central Zoo Authority while approving other exchange proposals shall give preference to such zoos who are complying with the conditions stipulated at the time of grant of recognition and the provision of Recognition of Zoo Rules, and having housing and upkeep facilities and the climate congenial for the long term survival of the animals proposed to be acquired by the zoo.

The detailed guidelines in this regard are as in **Annexure – VI A**. The format in which the proposals for exchange of animals are to be submitted by the zoos to the Central Zoo Authority is at **Annexure VI B**.

The detailed guidelines for transport of captive animals from one place to another are at **Annexure – VI C**.

XXI Conservation Breeding

Conservation breeding of identified endangered species shall be taken up in India and the Central Zoo Authority shall coordinate conservation breeding programmes of identified species in Indian Zoos at national level with following objectives:

- (i) Developing physically, genetically and behaviourally viable populations of healthy animals of identified species for the purpose of display in zoos.
 - (ii) Developing physically, genetically and behaviourally viable populations of healthy animals to act as insurance and raise stock for rehabilitating them in wild as and when it is appropriate and desirable.
2. The breeding should be planned in such a manner that the animals bred as part of the conservation breeding programme should not have less than desirable heterozygosity (genetic variation) level in the 10th generation.
 3. The conservation breeding programme should preferably start with around 25 founders, which are unrelated and have high heterozygosity. The founders should preferably be of wild origin or of known lineage. Where on account of restricted availability it is not possible to have 25 founders, the programme could be started with fewer animals. Additional founders could be added to the programme in subsequent years, as and when available.
 4. For retaining maximum possible heterozygosity, it should be ensured that all founder animals should be represented in each generation equally and no interbreeding is permitted among the progeny of same founder. This would require that each animal born as part of the programme is appropriately marked and sent to the identified zoo for breeding with the progeny of the other founders.

It should be ensured throughout the breeding programme that all the founders are equally

represented in the progeny. Surplus or spillover stock can be used for display purposes or released into wild on pilot project basis to develop necessary expertise on reintroduction of animals into the wild.

5. Since loss of heterozygosity with each generation is inevitable, it is important that the target effective population is reached in minimum possible generation. This would necessitate that reproductive potential of every animal in the programme is fully utilized and no founder animal remain unproductive.

Remarks: The effective population size is dependent on the number of males and females, available for breeding purposes. The thumb rule for determining the effective population size is:–

Effective population size = $4(M \times F)/(M + F)$

M = Male and F = Female

Consultation with National Referral Centre and Laboratory for Conservation of Endangered Species (LaCONES)

For initiating the conservation breeding programme, each founder animal should be thoroughly screened for its physical health, preferably under the supervision of the National Referral Centre. Appropriate disease prevention safe-guards shall be drawn and strictly complied with.

For genetic health analysis and for reproduction potential evaluation, help of LaCONES shall be taken before induction of any founder animal into the breeding programme. The National Referral Centre as well as LaCONES should continuously be kept involved into the breeding programme. In case of breeding failure detailed reproductive examination could be conducted and if necessary assisted reproduction methods could be used.

Marking of the animals

Every animal which is part of the Conservation Breeding Programme shall be given an identification number and the same would be marked on it in a manner that it remains permanently on the body of the animal. The details guidelines are annexed at **Annexure VII**.

Record keeping

Individual animal history card for each animal would be maintained giving details of pedigree, date of birth, identification mark, studbook number in the format prescribed by the Central Zoo Authority. The National Studbook Keeper shall give national studbook number to each individual under the programme. The National Studbook Keeper (coordinating zoo) of the species would act as the species coordinator and would issue guidance to the respective zoos regarding the destination each animal is to be sent i.e. for purposes of breeding or display. The species coordinator would also decide as to when particular animal is to be taken out of the breeding programme. The Central Zoo Authority would also be consulted regularly while making decisions mentioned above.

The National Studbook Keepers (Species Co-coordinators) of the species identified to be part of Global Species Management Plan (GSMP) of the World Association of Zoos & Aquariums (WAZA branding) shall be touch with the International Studbook Keeper of the species and arrange for International Studbook Numbers of the identified individual animals and exchange of other scientific details. National Studbook Keeper will be the link between the concerned zoo and International Studbook Keeper of the species.

Price Tags

No zoo will ask for any costs/ animals in exchange for sending any animal for the programme to

the other zoos in compliance of the direction of the Central Zoo Authority on the basis of National Studbook Keeper's/ Species Coordinator's recommendation.

XXII Population Control Measures

The zoo operator should ensure that the number of each species housed in the zoo remains within the limit stipulated in the collection plans of the zoo and the carrying capacity of the housing facilities available with the zoo.

In the interest of operational efficiency, better management and optimal utilization of resources, number of animals of various species housed in the zoo should not exceed the number indicated below :

Category of zoo	Optimum number of animals to be housed in a zoo			
	Tiger	Leopard	Bear	Ungulates/ Herbivores of each species
Large	10	10	10	20
Medium	6	6	6	12
Small	4	4	4	10

XXIII Safeguards against animals escaping from the animal enclosures/ zoo

- (1) The perimeter wall/ fence of the zoo/ enclosure barriers should be inspected regularly for identifying the weak points/ likely breaches/ unnoticed designing defects which could be used by the animals to escape from the enclosure/ zoo and getting the same rectified and repaired on top priority.
- (2) The trees standing close to the barrier/ perimeter wall should be regularly pruned and lopped as may be necessary to prevent escape of animals from the enclosure/ zoo.
- (3) Pieces of logs, poles that can be used by animals as aid to escape should not be allowed to remain lying in the enclosure.
- (4) Round the clock security should be maintained to prevent the intruders entering the zoo and damaging the enclosure barriers, harm the animals in zoo and damage/ steal other valuable property.

XXIV Release of zoo animals into the wild

Release of genetically, biologically and behaviourally viable zoo bred animals in an objective and planned manner in accordance with a well conceived guidelines is an important tool for conservation of wildlife. However, unplanned release of zoo bred animals of unknown pedigree and genetic make up and poor health status often lead to disastrous consequences. In this background strict adherence to the guidelines while releasing any zoo bred/ captive bred animals into the wild is crucial.

Objectives of release of zoo bred/ captive bred animals into the wild

1. Augmenting the depleting number of endangered species in any ecosystem.
2. Reintroducing the species in an area which was part of its historical range, from which the

species has disappeared or become extinct due to various factors.

3. Introduction of the species in areas outside its recorded range of distribution, in the habitat that have the potential to hold and support the species on a sustained basis without becoming a vermin/ pest.
4. Experimental releases for developing expertise in rehabilitating the zoo bred/ captive bred animals in the wild and preparing detailed protocol for planned release of the species for any of above objectives.

Pre requisites for a successful release programme

1. Capacity of wildlife habitat at the release sight to accommodate and support the released animals and their progeny on a sustained basis, without adversely impacting the population of other species inhabiting the area.
2. Capacity of the animals that are being released to adopt itself in the wild and fend itself successfully.
3. Mitigation/ redressal of the factors that have been responsible for the decline in the size of the in-situ population of the species/ extinction of the species from the area.
4. Release of the animals not posing/ having a potential to pose any physical or health hazard to the local human population and their live- stock.
5. Acceptability of the release programme to the local population.
6. Availability of trained and dedicated man power to execute the preparatory phase, carrying out planned and successful release and conducting post release monitoring of the released animals.
7. Commitment of the Government to support the programme and provide finances and other resources on a sustained basis for various phases of the release programme.

Strategy for successful release of zoo bred/ captive bred animals in the wild

A. Preparatory phase

I. Biological

- (i) Assessment of taxonomic status of the animals earmarked for the release and ensuring that they pertain to the same species/ race that is naturally occurring/ occurred in the area.
- (ii) Assessment of the critical needs of the species to be released including habitat preferences, intra specific variations and adaptations to the local ecological conditions, social behaviour and group dynamics, home range shelter and food requirements, foraging and feeding behaviour, predators and diseases etc. Over all to have and analyse a firm knowledge of the natural history of the species to be released.
- (iii) Species if any, that has filled in the void created by the extinction of the species from the area and effect of the release on the status of the population of that species.
- (iv) Determining the optimal number of animals that can be released each year and most appropriate period for the release.
- (v) Evaluation of previous releases of the species and identification of the problems,

mitigation of which is crucial, and priority areas which need to be attended for making the release successful.

II. Choice of the release site

- (i) The site of release should have an habitat that has all the biological attribute necessary for sustained survival of the released animals and their progeny and have adequate carrying capacity to accommodate the released animals and their progeny. As a rule no releases of zoo bred/ captive animals should be done in adequately stocked habitat.
- (ii) The area of release should have assured long term protection against all the factors that can inhibit the future propogation and healthy growth of the population of species released.

III. Suitability of the stock for release

- (i) Animals for release in the wild should be drawn out from the planned conservation breeding programme being carried out under the supervision of the Central Zoo Authority.
- (ii) Animals selected for the release should be thoroughly screened for their biological, behavioural and genetic health in accordance with protocol development by the National Referral Centre and LaCONES. No animal that is found lacking in any of the prescribed standards should be selected for release.

Release of the zoo bred/ captive bred animals in the wild

The animals earmarked for the release should be initially shifted to facility specially created near the release site which has all the attributes of the wildlife habitat in which the animals are to be released to give them time and opportunity to acquire necessary information and skills to survive in the wild, through training, through experts if so required. They should be released in the wild when their behaviour becomes comparable with their wild counterpart.

Socio-economic-Legal Requirements

- (i) Socio-Economic studies should be made to assess the impacts, costs and benefits of the proposed release to the local population.
- (ii) Thorough assessment of the attitude of the local people to the proposed release project should be made and their apprehension if any, should be properly redressed. No release of animals in wild should be made in the wild against the wishes of the local people.
- (iii) Public awareness programme about the benefits of proposed release should be made both through print media and electronic media.

General

- (i) The execution of all the phases of the release programme should be carried out under the supervision of multi disciplinary team of experts.
- (ii) Long term and short term indicators for quantifying the success of the release programme should be identified.
- (iii) Detailed programme for all the phases of the release should be developed so that each stage can be meticulously implemented in planned and scientific manner.

- (iv) Necessary vaccinations against local endemic and epidemic diseases should be given to all the livestock that is likely to share the habitat with the released species.
- (v) Transport plan for the animals should be so prepared and executed that no mortalities take place during the transport.
- (vi) Appropriate orientation and training programmes should be organized for all the persons involved in the release programme.

Post release activities

- (i) Continued demographic, ecological and behavioural studies on released animals should be done both through direct (telemetry/ monitoring of movements) and indirect methods (information provided by local people).
- (ii) Status of adaptation of the animal in the wild should be regularly assessed and desired interventions should be made wherever necessary. Released animals should be retrieved and brought back to the captive facilities in case the intervention do not succeed despite all efforts.
- (iii) Habitat protection/ restoration and enrichment should be done wherever necessary.
- (iv) Continued evaluation of the success of the programme with reference to identified parameters and results should be published in scientific journals/ popular literature.

XXV Research Activities in Zoos

1. Every zoo shall make arrangement for recording in writing, the detailed observations about the biological behaviour, population dynamics and veterinary care of the animals exhibited, so that a detailed database could be developed. The database shall be exchanged with other zoos as well as with Central Zoo Authority.
2. Every zoo shall make arrangements for meticulous recording of the physical activity of the animals viz. infighting, inter group responses, feeding, mating and reproductive behaviour. Detailed record of the health of the young ones including congenital abnormalities and mortalities shall also be kept. The data so collected shall be shared with identified institutions for detailed analysis and evolving the strategies for increasing the longevity, maintaining the genetic and behavioural viability and enhancing the reproductive potential of endangered species housed in zoos.
3. The data regarding the healthcare and nutrition provided to the animals shall also be regularly monitored and collated for assessing the quality of life being provided to the zoo animals. Data regarding the quantity of feed consumed by the animals shall also be compiled. The aforesaid data shall be shared with National Referral Centre as per the direction of the Central Zoo Authority for improving the veterinary protocols and developing new feeding schedules.
4. The zoos shall also endeavour to compile the data regarding the efficacy of the drugs and vaccines administered to the animals and share it with the National Referral Centre and other eminent institutions working in the field to get their inputs regarding more effective drugs and vaccines.
5. The zoo shall continue to endeavour for identifying the efficacious and easily implementable methods for controlling the population of prolifically breeding species such as putting implants and hormone therapy and use of other suitable methods.
6. Each zoo shall endeavour to keep a detailed record of the effectiveness of the animal

enclosures in providing the animal's desired quality of life and the satisfaction provided to the visitors in getting unobstructed view of the animals. The observations made by visitors in this regard should also be compiled. The data so collected shall be analysed and made available to the Central Zoo Authority for upgrading the designs of the enclosures.

7. Every zoo shall also keep the record of the quantity of water, electricity and other sources of energy being utilized in upkeep and maintenance of the animals of various species. The data shall also be shared with the Central Zoo Authority to enable them to evolve a strategy for optimum utilization of resources.
8. All zoo personnel shall endeavor to publish their scientific observations on different aspects of zoo/ animal management in the relevant local/ national/ international journals and periodicals for dissemination and upgradation of existing knowledge on *ex-situ* conservation techniques.

Small Grant Fellowships - for initiating Research Activities at zoo Level

Due to lack of technical personnel in zoos and there has not been much progress towards basic and applied research in the field of *ex-situ* conservation and scientific management of animals. Though lot of scientific information is available with the zoos, yet this is not being utilized properly due to lack of proper analysis and inference. There are many issues which can be addressed locally at the zoo level, provided proper scientific/technical help are provided to the zoos, so that they can meet the desired objectives of complementing the *in-situ* conservation efforts as enshrined in the National Zoo Policy.

The Central Zoo Authority provides grant for local need based zoo research projects in the field of *ex-situ* conservation and scientific management of animals in Indian zoos. The zoos may appoint fresh post graduates of the field of wildlife science, veterinary science, zoology and botany to work in project mode on the identified areas of research.

The Ministry of Environment & Forests also gives fellowships for carrying out research on wildlife namely Salim Ali fellowship for carrying out studies on birds and Kailash Sankhala Award for carrying out studies on wild animals. The zoos should encourage their staff to take advantage of these schemes, and carry out research on *ex-situ* conservation of wildlife.

Detailed proforma for applying for Small Grant Fellowship is placed at **Annexure - VIII**

XXVI Submission of Inventory/ Records

Every zoo shall maintain an inventory register for all the animals in stock. Separate set of pages should be assigned to different animal species. Any change in number by acquisition, birth, death or disposal should immediately be made in the inventory register. Annual and quarterly inventory reports of the animals in the zoo as prescribed shall be submitted to the Central Zoo Authority in the formats given at **Annexure IX**.

**CENTRAL ZOO AUTHORITY
(Ministry of Environment & Forests)**

Zoo Master Plan

The Master Plan is a comprehensive document to guide systematic and planned development of an existing and new zoo for a reasonably long period of 10 to 20 years keeping its land, financial, personnel, physical and aesthetic resources and constraints in view, in order to provide holistic nature conservation education with wholesome recreation. This document helps in optimum utilisation of the zoo resources in a planned manner, without being affected by individual whims, peer or uninformed public opinion and serves as a document to guide annual budgeting and personnel planning.

The format

Part-I

Chapters

1. Introduction- (includes history, objectives, physical features like the topography of the area, geology, rock & soil, flora and fauna, climate, rainfall, season, approach, demography of the surrounding area, legal status of the land, sources of pollution, if any etc.)

(for an existing zoo, the introduction section may also include, the present ground situation, layout, description of different facilities, difficulties faced in the management in the past and achievements)

2. Appraisal of the present arrangement and constraints

- a) Animal section, veterinary section, store and feed supply section, sanitation section, maintenance section, security section, water supply section, disposal of solid waste & liquid waste-sewerage, visitors amenities, lawns and gardens-landscape section and any other section peculiar to the zoo.
- b) Collection plan
- c) General Zoo administration section
- d) Research
- e) Conservation breeding
- f) Education and awareness
- g) Any other activity peculiar/ unique to the zoo

Part-II

Chapters

1. Future objective including mission statement/theme
2. Future action plan
 - a) Proposed animal collection plan including population size and justification of keeping the endangered species.
 - b) Description of the layout plan of the zoo - (Annexe- layout map on scale:

Layout map should be drawn on a scale 1:1000 to 1:5000 depending on area of the zoo with contour interval to be between 1mt to 5mt, depending on the topography. Existing features like water bodies, precipices, forest patches, historical ruins, natural drainage, water channel, rock outcrops etc. should be depicted. North/south direction, visitor circulation and amenities, site for disposal of carcass, water and electricity supply lines, solid and liquid waste disposal , approach road to the zoo and paths, parking arrangement, gates and barriers, administrative buildings- [zoo office, ticket counter, veterinary hospital], housing colony, industries in the surrounding areas, rail, roads - sources of pollution (if any)]

For an existing zoo, other than the above features the layout map should also show existing animal enclosures (black colour), enclosures to be modified (green colour) and the enclosures that need to be redone after demolishing the old structure (red colour). Proposed new enclosures may be in blue colour.
 - c) Proposal to address the inadequacies and shortcoming identified in the appraisal report (as appraised in Part-I, 2 a). New activities if any, intended to be taken up.
 - d) Depending on the local condition of the zoo, other items may also be added – peculiar problems of the zoo-like off display conservation breeding centre and rescue centre. Items not relevant can be deleted.
3. Personnel planning:-

This will provide the proposed cadre strength to manage different works considering the activities indicated in the plan including phasing of their deployment, outsourcing etc.
4. Disaster management

Plan to address problems faced during the natural calamities (Fire control, flood, cyclone situations, law and order break down, feed supply etc.)
5. Contingency plan
 - (1) Animal rescued from wild.
 - (2) Escape of animals from enclosures.
 - (3) Monkey and dog menace.
 - (4) Arrangement of food in case of strike (non supply by contractor)
 - (5) Snake bite.
 - (6) Visitors getting injured/ visitors falling inside enclosure.

- (7) Fighting among animals
- (8) Epidemics
- (9) Breakdown of power supply
- 6. Capacity building
 - Plan to upgrade skills of zoo staff, interaction with other zoos - regional cooperation.
- 7. E-governance
- 8. Broad budget analysis for implementing the plan
 - a) Construction and development
 - b) Day to day maintenance
- 9. Annexures to the Master Plan
- I. Existing zoos requiring modernisation:-
 - Layout plan depicting the present setup (animal enclosures, administrative building, visitor amenities, roads etc). Older maps, if available to indicate stages of development.
 - Existing animal collection plan/ inventory
 - Free living species occurring in the zoo campus
 - Flora and fauna
 - Present staffing pattern and position
 - List of buildings other than animal enclosures
 - Notifications- creation of zoo society, acquisition of land etc., constitution of committees
- II. For new zoos- Site map, legal status of the land, proposed collection plan for animals (list of species)
 - Notification etc.
 - Proposed staffing pattern

MANAGEMENT PLAN

The management plan shall be a document which will detail out the activities to be taken up in the line indicated in the Master Plan of the zoo for a particular time frame (1 year to 5 years), prioritising of the works to be taken up in phases and financial year wise and provide realistic estimates of the proposed works indicating the sources of funding. This should also contain revenue to be collected and funding expected to be received from the government and other sources.

Strategy to be adopted for achieving the goals defined in the Master Plan (Part-II).

The management plan should also contain the procedure to be adopted and person responsible for carrying out different items of works with their financial and administrative powers.

In other words this will be a working document that will guide the managers of the zoo for the management plan period and facilitate the budgeting and focussed development. This will help any new incumbent to carry out development without dislocation.

**MINIMUM PRESCRIBED SIZE
FOR FEEDING / RETIRING CUBICLE
FOR IMPORTANT MAMMALIAN SPECIES
OF CAPTIVE ANIMALS**

Name of the Species	Size of the feeding cubicle/ night shelter for each animal (meters)			Name of the species	Size of the feeding cubicle/ night shelter for each animal (meters)		
	Length	Breadth	Height		Length	Breadth	Height
Tiger, Asiatic lion	2.75	1.80	3.00				
Common leopard, Clouded leopard & Snow leopard	2.00	1.80	2.5	Musk deer, Nilgiri tahr, Chinkara, Four horned antelope, Bharal, Goral, Wild sheep and Markhor	2.5	1.5	2.5
Small Cats	1.8	1.50	2.0	Mouse deer	1.5	1.0	1.5
Sloth bear, Himalayan black bear, Brown bear and Malayan sun bear	2.5	1.8	2.5				
Monkeys and Langurs	2.0	1.5	2.5				
Civets, Binturong, Otters, Retel, Hogbadger, Martens, Red panda, Wolf, Jackal and Wild dog	2.0	1.5	2.5				
Elephant	8.0	6.0	5.5	Slow loris and Slender loris	1.0	1.0	1.5
One-horned Indian Rhinoceros	5.0	3.0	2.5				
Wild buffalo, Yak, Indian gaur and Wild ass	3.0	2.0	2.5				
Brow antlered deer, Hangul & Swamp deer	3.0	2.0	2.5				

**MINIMUM PRESCRIBED SIZES
FOR OUTDOOR OPEN ENCLOSURES
FOR IMPORTANT MAMMALIAN SPECIES IN CAPTIVITY**

Animals/ Species	Minimum size of outdoor enclosure (per pair) (Square meters)	Minimum extra area per additional animal (Square meters)
Tiger and Lion	1000	200
Panther, Clouded leopard and Snow leopard	500	100
One-horned Indian Rhinoceros	2000	400
Brow antlered deer, Hangul, Swamp deer	1500	100
Wild buffalo, Indian bison and Wild ass	1500	200
Bharal, Goral, Wild sheep and Serow	500	100
Sloth bear, Himalayan black bear, Brown bear and Malayan sun bear	1000	100
Red panda, Jackal, Wolf and Wild dog	400	100
Monkeys and Langurs	500	100

**MINIMUM PRESCRIBED SIZES
FOR OUTDOOR ENCLOSURES FOR IMPORTANT
BIRDS IN CAPTIVITY**

Animals/ Species	Minimum size of Aviary (Square meters)	Minimum height of the aviary (meters)	Minimum size of the water body within the aviary (Square meters)
Birds of prey	300	8	10
Pheasant *	80	3	3
Water birds (mixed species enclosure)	300	8	60 (with a depth of 1.5m)
Flying birds (mixed species enclosure)	300	8	20
Flying birds (single species)	80	6	2

* In case of Peafowl the aviary size should be kept 160 sq. M.

**MINIMUM PRESCRIBED SIZES
FOR OUTDOOR OPEN ENCLOSURES FOR
IMPORTANT REPTILES AND AMPHIBIANS IN CAPTIVITY**

Animals/ Species	Minimum size of the enclosure (Square meters)	Minimum size of the water body within the enclosure (Square meters)
Crocodile/ Gharial	400	150 (with a depth of 2 meter s)
Python	80	6
Cobra, Rat snake, Vipers	40	4
Sand boas	40	4
Monitor lizards *	80	6
Chameleons and Small lizards	40	4
Tortoises	40	4
Turtles	80	40 (with a depth of 2 meters)
Amphibians	10	4 (with a depth of 0.5 meter)

* In case of Water monitor lizard the size of water body should be kept at 40 sq. meters with a depth of 1.5 meters.

NOTE

1. The dimensions have been given only in respect of the species, which are commonly displayed in zoos.
2. No dimensions for outdoor enclosure have been prescribed for Chinkara and Chowsingha because of the problem of infighting injuries. The enclosure for these species could be a group of small sized enclosures with fewer animals in each. Care should be taken to ensure that there should be no competing mating males in each small enclosure.
3. The designs of enclosures for endangered species, not covered by this Appendix, should be finalized only after approval of the Central Zoo Authority.

GUIDELINES ON USE OF INNOVATIVE EXHIBIT DESIGN AND BARRIERS FOR HOLDING AND DISPLAY OF ANIMALS AND BIRDS IN INDIA ZOOS

1. Animal Types, enclosure & barrier recommendations

Animal	Front barrier	Rear barrier	Remarks
Tiger, Asiatic Lion	V-shaped dry or wet moats, glass viewing. Depth of moat: 5m Horizontal width at the top: 8 m	Chain-link fences of 5 m high with 1.5 m overhang at 60° angle or high rock walls.	1. The hot wire barrier may be provided to prevent animals coming into the moat. 2. In case of want of space for a moat, all sides can be provided with chain-link mesh fence with toughened glass fixed at 2/3 places for unhindered viewing.
Leopard/Jaguar	1. Chain link mesh fence of 4 m high with inclined inward steel plate of one meter width on the top. The steel plate should be placed at an angle of 60°. 2. Wherever space is available 5 meters deep moat with overhang of hot wire.		For a unhindered vision, use of toughened glass of proper specifications at one or two points could be used in case of chain -link option.
Jackal, Wolf, Hyena, Wild dog	V-shaped (flat bottomed) dry moats on the visitor side. Depth of moat: 2.6 m Width of moat: 5 m	Chain-link fences of 2.5 m in height.	For a unhindered vision, use of toughened glass of proper specifications at one or two points could be used in case of chain -link option .
Bear/Civets/ Lesser cats	U-shaped / V-shaped dry moats on the visitor side.	U-shaped / V-shaped dry moats or high smooth walls, or chain-link fence of 4m high with inclined inward steel plate of one meter width on the top.	The steel plate should be placed at an angle of 60°.

Primates	U-shaped / V-shaped dry moats, shallow wet moats , glass viewing. Moat width for langur: 7 m Moat depth for langur: 5 m Moat width for macaque: 6 m Moat depth for macaque: 4 m or chain-link mesh of 5 m high with inclined steel plate of 1m width.		a. In case of moated enclosures, the inner side of the enclosure should be provided with overhang with 2 strands of hot wire attached below the slanting portion. b. The moated enclosure should have clearance of tree of at least 9 m from the inner side of fence/moat.
Deer and antelopes	Chain-link fences 2.5 m all around the paddock, V-shaped (flat bottomed) dry moats of 2.5 m depth having width of 6m.	V-shaped (flat bottomed) dry moats or chain-link fences	a. The visitors view should be restricted. b. Slope should be <u>grass sodded (turfed)</u> or stone pitched depending on the site condition.
Gaur, Wild Boar, Rhinoceros, Asian Elephant	V-shaped dry moats, or low walls (clay banks), cattle grids (for gaur) or 5 meters away a sunken B.G. Rail Barrier with 1 to 1.5m high or hot wire fence made in depression, created by excavating earth for camouflaging it from viewer.		
Pheasant	Covered type enclosure of wire mesh of 3 meter high, 10-12 m depth, 6-7 m width		a. The double galvanized mesh of 12mm x 12mm x 4g should be placed 0.5m below the earthen surface to prevent rodents. b. The plinth should have 7 cm (over hang) to prevent rodents/snakes approaching the chain-link mesh from the viewer side or either side.
Walk through aviary	i. The area for the walk through aviary should not be less than 2 hectares with at		a. Adequate vegetation should be provided

2. Other guidelines

- (i) There should be increasing use of other barriers like hot wire (power fence), glass fronted viewing, rails etc.
- (ii) Use of stainless steel instead of mild steel, particularly on posts and chain-link mesh should be encouraged due to its longevity, avoidance of rust and lighter weight.
- (iii) Environmental enrichment like perches, dens, ledges, nesting boxes, feeding logs, wooden logs, wooden platforms, wallows, pools, logs, vegetation, bunchy earth should be provided in the exhibits.
- (iv) Nocturnal animal houses should provide adequate space, with open air kraal and sufficient number of animals to be rotated and arrangement for proper regulation of lighting.
- (v) Reptile houses particularly in the cooler regions, should be covered and glass fronted with assured heating arrangement in winter i.e. back up power supply.
- (vi) In case of zoos with less than 10 hectares area, creation of moated enclosures should be avoided.
- (vii) Different alternative materials in designing barriers at animal enclosures like stainless steel mesh and posts, anodized aluminum frame, piano wire, hot wire (power fence), glass, vegetation, rail, invisible cattle grid type barrier may be used.

Remarks: No particular barrier can be specified for all situations. Different materials can be used either completely or in combination depending on the species, space availability, topography, climate and existing display type of the zoo. There should be scope for innovation by the zoo management.

Zoological Park

Keeper's Diary

Name of the Zoo Keeper _____

Section / beat _____

Day & Date : _____ / _____ / _____

S.No.	Enclosure	Species/individual Sex	Observation

Signature of the Keeper

Signature of the Animal Supervisor

_____ Zoological Park

Daily Report

Day & Date _____ / _____

S. No.	Section/ Beat and enclosure	Species/ individual	Observations	Action taken/ required

In-charge-Animal Section

Biologist

Veterinary Officer

Director

Zoological Park**ANIMAL HISTORY CARD**

Vernacular (local) name & Common Name :	Scientific name of the species :
House name and ID number of the animal :	Sex: M/F:
Distinguishing mark:	Type of marking Transponder / Ear tag / Ring/ Others:
National Studbook number of the animal	International Studbook number of the animal
Sire : (Name and National Studbook number)	Dam : (Name and National Studbook number)
Date of Birth (dd:mm:yyyy)	When and from where acquired
Physical health check-up details	Genetic health check-up details
Date of death or other mode of disposal (dd:mm:yyyy)	Remarks

Date	Details of the observations	Signature

ANIMAL TREATMENT CARD

1. Card No. :
2. Common Name & Individual Name (if any) :
3. Scientific Name :
4. Animal ID :
5. National Studbook No. (if any) :
6. Sex: Date of Birth/Age
7. Date & Time of Illness :
8. Date & Time of Treatment :
9. History of Illness :
10. Physical details :
 Body weight : Respiration:
 Temperature : Mucous membrane:
 Pulse : Secretion, if any:
11. Physical Analysis:
 Gait : Defecation :
 Urination : Feeding habit :
12. Tests Conducted
 Urine : Skin scrapings :
 Faecal : Blood :
 Biopsy : X ray :
13. Other examination (if any)
14. Remarks

Veterinary Officer

Date	Details of observations and treatment given	Signature of Veterinary Officer

POST-MORTEM REPORT

No. _____ Date : _____

Kind of animal	Scientific name	Sex	Personal name Animal ID/or National Studbook number (if any)	Age	Size	Weight
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Time, date and place of death

Time and date of post-mortem

Examination

Short history of illness, if any.

A. General description:

B. Organ-wise description of lesions _____

1. Head and neck	(a) Skull and brain (b) Cervical vertebrae
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2. Thorax	(a) Lungs (b) Heart (c) Ribs
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3. Abdomen	(a) Liver (b) Stomach (c) Intestines (d) Kidney (e) Spleen
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4. Pelvic girdle	(a) Uterus and Ovaries (b) Bladder (c) Genital passage
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5. Limbs	(a) Fore limbs (b) Hind limbs
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6. Any other special features:

Biological tests done (if any)

- i) Blood
- ii) Urine
- iii) Discharges
- iv) Biopsy

7. Opinion (cause of death)

8. Instruction for disposal

Place:

Signature

Name

DATE:

Designation

(Seal)

GUIDELINES FOR EXCHANGE OR TRANSFER OF ANIMALS BETWEEN ZOOS

Preamble:

Initially the zoos were functioning as centres for exhibition of wild animals for satisfying the curiosity of the visitors. Over a period of time, their role has changed from mere exhibition centres to centres of conservation. The new role has put upon the zoos a responsibility of providing the animals in their stock better housing and upkeep which can ensure that there are no premature deaths and the animals live a quality life of adequate longevity. Such measures are crucial for developing self-sustaining genetically healthy populations of endangered species in zoos and provide viable groups of compatible animals of breeding age. This objective can be achieved only through expeditious transfer/exchange of animals from one zoo to another. Keeping single animals or unpaired animals merely for the sake of increasing the number of species on display is counter productive. The zoo operators and zoo managers have to respond to the need for conservation of various species of wild animals and contribute to it by way of donating and loaning or giving in exchange of some other species, the single/unpaired and surplus animals of endangered species for the conservation programmes identified by the Central Zoo Authority.

Central Zoo Authority will take every care that all the zoos are benefited from the exchange programme.

To achieve this goal, following guidelines are being issued:

Guidelines:

1. The exchange proposals submitted by zoos will be decided primarily on the basis of the housing and upkeep facilities available at the recipient zoo and viability of the species population group at the donating zoo.
2. Single animals, unpaired animals and animals in non-viable groups will be transferred to zoos with appropriate housing and upkeep facilities. Preference has to be given to the zoos in the normal habitat range of the species concerned.
3. While approving exchange programme the past track record of the zoo with regard to success in breeding and infant healthcare and upkeep shall be given proper weightage.
4. Animals of wild origin shall be treated as precious commodity. Such animals shall not be permitted to stagnate at rescue centres/mini zoos.
5. All animals of endangered species shall be marked or implanted with a microchip and detailed history cards and studbook for such animals shall be maintained. When approving the exchange proposal due safeguard shall be taken to prevent breeding of the animal from the same lineage.
6. Random removal of animals from a breeding group/ herd will not be permitted. Preferably only sub-adults shall be removed and allowed for exchange or transfer.
7. Exchange of animals to zoos outside India, shall be permitted only if it is in over all interest of the conservation of species concerned and also helpful in enriching the population of indigenous species in the country.
8. Import of exotic animals in non viable numbers shall be avoided. Such imports will be permitted

only as part of planned breeding of species identified by Central Zoo Authority.

9. Prior to entering into an exchange with a foreign zoo, the antecedents of the foreign zoo and the nature of housing and healthcare facility available in the zoo shall be verified.
10. The donating zoo must provide all the details of the animal such as date of birth/ estimated age, feed chart, healthcare measures adopted etc. along with the animal while making transaction with the recipient zoo.

Note: The Member Secretary may issue approval of Central Zoo Authority for exchange proposal involving the wild animal species/ individuals not part of the approved Coordinated Conservation Breeding Programme, if satisfying the guidelines. All the exchange proposals of wild animal species/ individuals between Indian zoos forming part of approved Coordinated Conservation Breeding Programme will be placed in the Technical Committee for approval. All the exchange proposals between Indian and foreign zoos will be decided by the Central Zoo Authority as per recommendations made by the Technical Committee. In urgent cases and where the meeting of the Technical Committee or/ and Central Zoo Authority is not likely to be held immediately, the Member Secretary may issue the approval of Central Zoo Authority for such exchange proposals which satisfy the guidelines with the approval of the Chairman, Technical Committee and/or Chairman, Central Zoo Authority respectively as the case may be. However, ex-post-facto approval will be taken from Technical Committee and/or the Central Zoo Authority (as the case may be) for all such proposals in the next meeting.

PROFORMA FOR EXCHANGE OF ANIMALS BETWEEN ZOOS

Details about species to be given

Details about species to be acquired

<p>A. General Name of the species Number of individuals in stock and sex ratio Number of individuals to be given and sex ratio</p>	<p>A. General Name of the species Number of individuals already in stock and sex ratio Number of individuals to be acquired and sex ratio</p>
<p>B. Animal Details 1. Age/ Date of birth 2. Specify whether wild origin/captive bred and generation(F1,F2) 3. Breeding record (whether sired/ given birth) 4. Studbook number (national/international) 5. Whether marked, then specify (Transponder no./ring/tag etc)</p>	<p>B. Animal Details 1. Age/ Date of birth 2. Specify whether wild origin/captive bred and generation(F1,F2) 3. Breeding record (whether sired/ given birth) 4. Studbook number (national/international) 5. Whether marked, then specify (Transponder no./ring/tag etc)</p>
<p>C. Purpose 1. Breeding 2. Over crowding/surplus 3. Single or unpaired 4. Other s</p>	<p>C. Purpose 1. Breeding/introduce new blood 2. Pairing / Provide mate 3. Forming social group/viable population 4. Other s</p>
<p>D. Nature of housing 1. Open air/ Closed (specify area in sq.m) 2. Feeding cells/ kraal (specify dimension in m) and number of cells/kraals</p>	<p>D. Nature of housing 1. Open air/ Closed (specify area in sq.m) 2. Feeding cells/ kraal (specify dimension in m) and number of cells/kraals</p>
<p>E. History of the zoo In: 1. Upkeep 2. Breeding 3. Infant care 4. Mortality</p>	<p>E. History of the zoo In: 1. Upkeep 2. Breeding 3. Infant care 4. Mortality</p>

Guidelines for transport of captive wild animals

1. Animals in good health only should be transported. Sub-adult animals should be preferred for transportation.
2. Pregnant or females which have recently given birth should be avoided for transport.
3. Infants and too young, incapable of feeding themselves should also not be transported unless prior arrangements have been made for taking all due care for the same.
4. The antlered animals in velvet should not be transported.
5. The animal should be separated from the herd, if needed, sufficiently in advance before transport and complete health check up should be done before transport for assessing its health conditions.
6. The related papers like animal history cards, treatment cards, health certificate should accompany animal while transportation.
7. Necessary arrangements for quarantine at the recipient station should be arranged in advance.
8. The dimensions of the transportation containers for mammalian species should be such that the animal is not be able to turn around or to summer sault.
9. The transport container should preferably be of suitable local material. For many animals, the preferred material will be timber but such materials as bamboo, hardboard and metal may often be suitable for the construction of transportation cage. For transport by air, fiber glass transportation cages can also be preferred as these are light in weight.
10. The floor of the container should be made removable with liquid proof trays under the slatted floor. The slatted construction should be so designed and constructed that the spacing between the slates in such that there is no danger of the animals feet becoming trapped.
11. It is important that all transportation containers should have inner surfaces which are completely free of any projecting nails, screws, ends of mesh or any other sharp material, which could cause injury to the animal. There should not be any sharp edges. Moreover, if any wood preservative or paint is used on the container, it should not be toxic or a skin irritant. It should also be padded with rubber pads to save the animals from injury.
12. The transportation container should have adequate air circulation at all times. There should be additional ventilation by means of holes of suitable size in all walls of the container.
13. Suitable lifting handles or grippers bars should be provided and when the containers will be heavily loaded, the hooks for crane slings and facilities for handling by fork-lift should also be fitted.
14. On long journeys, the animals should be provided suitable bedding materials such as straw or hessian pad.
15. Arrangements for feeding and watering as per the requirement of the species and duration of the journey should be provided.
16. The animals which might have been sedated before their transportation should be transported only under the supervision of a qualified veterinarian only and details of sedation should

accompany the animal. Partial sedation in some of the species and individuals when recommended may also be resorted to during transportation.

17. The handling of animals during the transportation should be avoided to the possible extent. The animals should be disturbed as little as possible during the transportation.
18. The transportation of animals should be avoided during extreme weather conditions like dry hot summer and very cold winter.
19. The journey should preferably be performed during day time. The time between 11:00 A.M. to 4:00 P.M. may be avoided during hot summers and nights during winter.
20. While transportation from one climatic zone to another, it is important that the animals are not suddenly moved to contrasting climate to which they are not accustomed. If this is not avoidable, the desired controlled environment should be made available, so that they are exposed to change climatic conditions slowly.
21. The transportation cage should be secured fully to avoid any possible movement or sliding during transport. It is very important to ensure that the transportation cages are kept horizontal throughout the journey.
22. The animal should be accompanied by a qualified Veterinarian and required number of keepers having experience and training in handling individual animals.
23. Every care should be taken to avoid unnecessary discomfort, behavioural stress or physical harm to the animals while crating and transporting.
24. While transporting the animals, due screening of the staff involved in transportation of animal should be made and it must be ensured that they do not infected of any such diseases that can infect the animal.
25. The accompanying Veterinarian should carry all necessary drugs, medicines, first aid kit, restraining equipments and drugs, which may be required during emergency. In the unlikely event of animal sustaining injury during transportation or falling sick, there should be arrangement in the cage for handling the animal for treatment.
26. Arrangement for carrying water sprayers, buckets, additional ropes etc. should also be made and tools for temporary repair of the cages may also be carried during transportation.
27. It is preferred to cage only one animal in a single container, except in birds or mother with babies.
28. For longer distances, the possibility of air lifting should be explored. Lighter transport cages like fiber glass should be preferred for air journeys. The transportation cages should not be placed in closed wagon during transportation by rail.
29. The animals avoid feeding while transportation. It is advisable to properly feed the animals along with required supplement before crating and transportation.
30. There are various guidelines by IATA or CITES for transportation of animals by air. These should be kept in mind while transporting animals by air.
31. The senior most personnel accompanying the animal should carry sufficient money and should have authority to spend the same to meet any unforeseen emergency during transportation.
32. Certificate from the concerned zoo consigning the transportation should accompany the animal

and it should be mentioned that no taxes etc. should be paid and vehicle should not be detained. This will ensure smooth transportation without any hindrance, particularly in inter state check gates.

33. During transportation, if there is any emergent need for any assistance from any nearby zoo, the concerned zoo should provide all possible assistance. In case of transportation, it will be ideal to keep the way hide zoo informed in advance about such movement.

Guidelines for marking of Animals and Birds:

1. Ringing of Birds:

Birds should be ringed in left leg in females and right leg in males. Chicks should be ringed only after establishing parental care bond between mother and chick.

2. Ear tagging:

Animals should be tagged in left ear in females and right ear in males. In young animals with thin ears the tag should be affixed to the thickest cartilage portion of the ears, such as the lower half, near the base. In large and adult ungulates it may be necessary to attach the tag to a thinner section of the ear. For ungulates of any age, care should be taken not to puncture any large blood vessels. In general, external tags are not recommended for reptiles and amphibians, with the exception of turtles. Tags are also to be avoided for long slender animals such as snakes and lizards.

3. Implantation of Radio Transponders (Microchips):

In mammals, radio transponders should be implanted at the base of the left ear. Implant site must be cleaned with alcohol before radio chipping but do not shave skin. The implanter needle is placed at an approximately 45° angle to the skin and then positioned almost parallel to the skin surface and transponder is injected under the skin. The needle should be carefully withdrawn and fingers pressure applied to the implantation site for approximately 30 seconds. The implantation site then should be scanned by the reader to verify both successful implantation and transponder's unique code. Transponders should also be checked as well before implanting into animals. Occasionally the needle will leave a wound; if it does, it is recommend to seal the wound with an adhesive skin bond.

Information on location of radio transponders (microchips) in the animals should be filled up in the Individual animal history card.

**Central Zoo Authority
(Ministry of Environment & Forests)**

APPLICATION FOR SMALL GRANT FELLOWSHIP

Please read instructions on last page of this document

Form must be filled in English

Internal Project Number (To be filled in by CZA):.....

1. GENERAL INFORMATION

Date of application:

Name of the Zoo / organization:.....

Contact person/ project leader:.....

2. CLASSIFICATION OF PROPOSAL

Improvement of the zoo	Scientific Management	Ex-situ Conservation	Welfare of the animals	Any other, please specify
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3. DATE OF INITIATION OF THE PROJECT

4. DURATION OF THE PROJECT:

5. LOCATION OF THE PROJECT.

Region /State :

Closest main city :

6. STAFF INVOLVED IN PROJECT (please include Curriculum Vitae of the individuals):

1. Name(+ title) + Zoo/Organization.....

Period to be spent on the project from: to: (day/month/year/) for hours/week

Role / Function in the project:

2. Name (+title) + Zoo/Organization

Period to be spent on the project from: to: (day/month/year/) for hours/week

Role / Function in the project:

3. Name (+title) + Zoo/Organization:

Period to be spent on the project from: to: (day/month/year/) for hours/week

Role / Function in the project:

7. PROJECT PROPOSAL

7a. Background and history of the project (max. 300 words)

7b. Main problem or question (max 200 words)

7c. Aims and objectives of the project (max 200 words)

7d. Methodology and/or proposed activities (max 300)

8. COLLABORATION (IF ANY): Please specify with which institutions/organisations will collaboration take place and type of the collaboration & support should also be indicated.

	NAME	LOCATION
--	------	----------

NGO's

Ministries

Universities

Research institutes / or any other

Type of the collaboration and support.....

8a. **Support from host zoo: (Please specify what support the host zoo will be providing, it could be in the form of laboratory, equipment, space or personnel).**

9. BASIC TIME SCHEDULE

10. OUTPUT

10a. **Describe which output can be expected from this project (reports, (scientific) publications, management plans, educational tools, etc. etc.) and how they will be disseminated.**

10b. **Describe the (practical) relevance of this project for ex-situ conservation and scientific management of animals in general**

10c. **Describe how results/output will be evaluated (timelines and benchmarks)**

11. **FEASIBILITY (How well is the execution of the project guaranteed? Possible risks such as logistics, permits, other finances and how are these risks dealt with).**

12. **FINANCIAL ASPECTS (please include budget overview (in Rs.) in an appendix)**

12a. **Other financial sources applied for and/or guaranteed**

- In case of Forest Dept./Corporation/Trust: please also mention the details
- Indicate if source is applied for or already guaranteed

2. **Name Department / Institute: Self**

Address:

Amount applied for or guaranteed:
Rs.

3. Name Department / Institute:

Address:

Amount applied for or guaranteed:
Rs.

13. DECLARATION

The information submitted in this application is true, to the best of my knowledge. Should any significant developments arise after this application is made, I shall notify the Member Secretary, Central Zoo Authority. .

SIGNATURE

Director/Curator/
Officer-In-charge of the
Zoo

Research Project Leader

Chief Wildlife Warden/

Municipal Commissioner/
(Supervisor of the Research)
Owner/Zoo Operator

Signature:

Signature:

Signature:

Date:

Date:

Date:

Seal

Include with the proposal:

- Curriculum vitae of the applicant and individuals involved in the project
- Background information about the zoo involved (max. 1 page)
- Budget overview

Brief Instructions:

EXPLANATION TO THE INDIVIDUAL QUESTIONS OF THE FORM 'SMALL GRANT FELLOWSHIP PROPOSAL'

Question 1: Name of the project leader and address.

Question 2: Please indicate the duration of the entire proposed project.

Question 3: Please write down the /region, state, department in which the project will be or is carried out.

Question 4: Please write down the names of the persons involved in the project. If necessary continue

on extra sheet. Background information on the involved organizations can be added in an appendix.

Question 5: Give a brief background, main question and aims and objectives of the project. Please confine yourself to the maximum number of words.

Question 6: Please, mention the collaborating organizations, if any, participating in this project and state the role and responsibilities of the collaborator.

Question 7: Provide a basic time schedule for the activities of the project.

Question 8: Please give significant outputs which can be expected from this project. Describe the (practical) relevance of this project in ex-situ conservation and scientific management of animals in zoos.

Also indicate how the project will be evaluated so it can be decided if the objectives have been met.

Question 9: Please specify how well the execution of the project is guaranteed? Possible risks such as logistics, permits, other finances and how are these risks dealt with.

Question 10: Please give a detailed budget and a breakup of the financial assistance sought from Central Zoo Authority (include an budget overview in an appendix), the financial sources that are already guaranteed, and other institutions/programmes that have been requested for co-financing the proposed project. Send written proof of contributions already guaranteed.

Question 11: This form must be signed by the Head of the institution and the project leader of the project and forwarded through the Chief Wildlife Warden/Municipal Commissioner/Head of the organization.

You may send your completed project proposal by email to cza@nic.in. A hard copy of the original with signatures & seals and any relevant paper copies (i.e. written proof other financial sources) should be sent by registered mail to Member Secretary, Central Zoo Authority, Annexe No. VI, Bikaner House, Shahjahan Road, New Delhi – 110011.

Proforma for Quarterly / Annual Inventory Report

Part - IA

Inventory Report for the Quarter / Year :

Endangered Species*

S.No	Animal Name	Scientific Name	Opening Stock as on			Births			Acquisitions			Disposals			Deaths			Closing Stock as on					
			M	F	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T		
Bird																							
1.																							
2.																							
&																							
Total Birds																							
Mammal																							
1.																							
2.																							
&..																							
Total Mammal																							
Reptile																							
Amphibians																							
1.																							
2.																							
&..																							
Total Reptile Amphibians																							
Invertebrate																							
1.																							
2.																							
&&																							
Total Invertebrate																							
Total Animals																							

*Animals under Sch-I and Sch-II of Wild Life (Protection) Act, 1992
Curator (Animals)

Director

Proforma for Death Report

Part - II

Endangered Species

Death Report for the Quarter / Year :

S. No.	Animal Name (with individual identification mark, if any)	Scientific Name	Sex	Date of Death	Reason of Death

*Animals under Sch.-I and Sch-II of Wild Life (Protection) Act, 1992

Veterinary Officer

Director

Proforma for Annual Inventory Report

Part - IB

Inventory Report for the Year :

Other than endangered Species

S.No	Animal Name	Scientific Name	Opening Stock as on 1-4-				Births			Acquisitions			Disposals			Deaths			Closing Stock as on 31-03-			
			M	F	U	T	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	T
Bird																						
1.																						
2.																						
&																						
Total Birds																						
Mammal																						
1.																						
2.																						
&																						
Total Mammal																						
Reptile Amphibians																						
1.																						
2.																						
&																						
Total Reptile Amphibians																						
Invertebrate																						
1.																						
2.																						
&																						
Total Invertebrate																						
Total Animals																						

Curator (Animals)

Director

List of Recognized Zoos (196 Nos)

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
1.	ANDAMAN & NICOBAR ISLANDS	BIOLOGICAL PARK, CHIDYATAPU	SMALL ZOO	PORT BLAIR
2.	ANDHRA PRADESH	DEER PARK-SATYAM TECHNOLOGY CENTRE	MINI ZOO	RANGA REDDY
3.	ANDHRA PRADESH	DEER PARK, CHITTOOR RESERVE FOREST	MINI ZOO	CHITTOOR (EAST) DIVISION
4.	ANDHRA PRADESH	DEER PARK, KANDALERU	MINI ZOO	KANDALERU
5.	ANDHRA PRADESH	DEER PARK, KESORAM CEMENT	MINI ZOO	BASANT NAGAR
6.	ANDHRA PRADESH	DEER PARK, NFCL GREEN BELT	MINI ZOO	KAKINADA
7.	ANDHRA PRADESH	DEER PARK, TIRUMALA HILLS	MINI ZOO	CHITTOOR
8.	ANDHRA PRADESH	G.V.K.INDUSTIRES DEER PARK	MINI ZOO	HYDERABAD
9.	ANDHRA PRADESH	HIMAYAT SAGAR MINI ZOO	MINI ZOO	RANGA REDDY
10.	ANDHRA PRADESH	INDIRA GANDHI ZOOLOGICAL PARK	LARGE ZOO	VISAKHAPATNAM
11.	ANDHRA PRADESH	KARIMNAGAR DEER PARK	MINI ZOO	KARIMNAGAR
12.	ANDHRA PRADESH	KINNERASARI DEER PARK	MINI ZOO	KINNERSARI
13.	ANDHRA PRADESH	NEHRU ZOOLOGICAL PARK	LARGE ZOO	HYDERABAD
14.	ANDHRA PRADESH	PILLALAMARRI DEER PARK	MINI ZOO	PILLALAMARRI COMPLEX, MAHABUB NAGAR
15.	ANDHRA PRADESH	SANGHI DEER PARK	MINI ZOO	SANGHI NAGAR
16.	ANDHRA PRADESH	SRI VENKATESWARA ZOOLOGICAL PARK	LARGE ZOO	TIRUPATI
17.	ANDHRA PRADESH	VANAVIGYAN KENDRA, HUNTER ROAD, HANAMKONDA,	MINI ZOO	WARANGAL

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
18.	ANDHRA PRADESH	DEER PARK, JAWAHAR LAKE TOURIST COMPLEX	MINI ZOO	SHAMIRPET
19.	ANDHRA PRADESH	KARUNA SOCIETY FOR ANIMALS AND NATURE- RESCUE CENTRE	RESCUE CENTER	DIST. ANANTAPUR
20.	ANDHRA PRADESH	VISAKHA SOCIETY FOR PREVENTION OF CURELTY OF ANIMALS- RESCUE CENTRE	RESCUE CENTER	VISAKHAPATNAM
21.	ARUNACHAL PRADESH	CENTRE FOR BEAR REHABILITATION AND CONSERVATION	RESCUE CENTER	PAKKE
22.	ARUNACHAL PRADESH	MIAO MINI ZOO	MINI ZOO	MIAO
23.	ARUNACHAL PRADESH	MINI ZOO, ROING	MINI ZOO	ROING
24.	ARUNACHAL PRADESH	BIOLOGICAL PARK, ITANAGAR	SMALL ZOO	ITANAGAR
25.	ASSAM	ASSAM STATE ZOO CUMBOTANICAL GARDEN	LARGE ZOO	GUWAHATI
26.	ASSAM	MOONLIGHT CIRCUS	CIRCUS	KHELMATI
27.	ASSAM	RHINO CIRCUS	CIRCUS	LAKHIMPUR
28.	ASSAM	CENTRE FOR WILDLIFE REHABILITATION AND CONSERVATION	RESCUE CENTER	GOLAGHAT
29.	ASSAM	BIJNI DEER PARK	MINI ZOO	BONGAIGAON
30.	BIHAR	SANJAY GANDHI BIOLOGICAL PARK	LARGE ZOO	PATNA
31.	CHHATTISGARH	KANAN PANDARI ZOO	SMALL ZOO	BILASPUR
32.	CHHATTISGARH	MAITRI BAAGH ZOO	SMALL ZOO	BHILAI
33.	CHHATTISGARH	NANDAN VAN ZOO	MINI ZOO	RAIPUR
34.	DADRA & NAGAR HAVELI	LION SAFARI-VASONA	MINI ZOO	VASONA
35.	DELHI	A.N.JHA DEER PARK, HAUZ KHAZ	MINI ZOO	HAUZ KHAS (NEW DELHI)
36.	DELHI	NATIONAL ZOOLOGICAL PARK	LARGE ZOO	DELHI

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
37.	GOA	BONDLA ZOO	SMALL ZOO	USGAO
38.	GUJARAT	GREAT GOLDEN CIRCUS	CIRCUS	AHMEDABAD
39.	GUJARAT	INDRODA NATURE PARK	MEDIUM ZOO	GANDHI NAGAR
40.	GUJARAT	KAMLA NEHRU ZOOLOGICAL GARDEN	LARGE ZOO	AHMEDABAD
41.	GUJARAT	SAKKARBAUG ZOO	LARGE ZOO	JUNAGARH
42.	GUJARAT	SAYAJI BAUG ZOO	MEDIUM ZOO	VADODARA
43.	GUJARAT	SIR PETER SCOTT NATURE PARK	MINI ZOO	JAMNAGAR
44.	GUJARAT	SUNDERVAN NATURE	MINI ZOO	JODHPUR TEKRA (AHMEDABAD)
45.	GUJARAT	DR. SHYAMA PRASAD MUKHARJEE ZOOLOGICAL GARDEN	SMALL ZOO	SURAT
46.	GUJARAT	RAJKOT ZOO	MINI ZOO	RAJKOT
47.	HARYANA	DEER PARK, HISSAR	MINI ZOO	HISSAR
48.	HARYANA	HANUMAN VATIKA - RESCUE CENTRE	RESCUE CENTER	GURGOAN
49.	HARYANA	MINI ZOO, BHIWANI	MINI ZOO	BHIWANI
50.	HARYANA	MINI ZOO, PIPLI	MINI ZOO	PIPLI
51.	HARYANA	ROHTAK ZOO	SMALL ZOO	ROHTAK
52.	HARYANA	WILDLIFE RESCUE CENTRE	RESCUE CENTRE	GURGOAN
53.	HARYANA	VULTURE CONSERVATION BREEDING CENTER	RESCUE CENTER	PINZORE
54.	HARYANA	DEER PARK, MEHAM	RESCUE CENTER	NEAR G.T.ROAD, MEHAM
55.	HIMACHAL PRADESH	DHAULADHAR NATURE PARK	MINI ZOO	GOPALPUR
56.	HIMACHAL PRADESH	RESCUE AND REHABILITATION HOME	RESCUE CENTER	TUTIKANDI

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
57.	HIMACHAL PRADESH	HIMALAYAN NATURE PARK	SMALL ZOO	KUFRI
58.	HIMACHAL PRADESH	SARAHAN PHESTRY	MINI ZOO	SARAHAN
59.	HIMACHAL PRADESH	RENUKE MINI ZOO	MINI ZOO	SIRMUR
60.	HIMACHAL PRADESH	REWALSAR MINI ZOO	MINI ZOO	MANDI
61.	HIMACHAL PRADESH	NEHRU PHESTRY	RESCUE CENTER	MANALI
62.	JAMMU & KASHMIR	KASHMIR ZOO	SMALL ZOO	SRINAGAR
63.	JAMMU & KASHMIR	JAMMU ZOO	SMALL ZOO	RAMNAGAR (JAMMU)
64.	JHARKHAND	BHAGWAN BIRSA BIOLOGICAL PARK	MEDIUM ZOO	RANCHI
65.	JHARKHAND	BIRSA MRIG VIHAR	MINI ZOO	KALIMATI
66.	JHARKHAND	JAWAHARLAL NEHRU BIOLOGICAL PARK	SMALL ZOO	BOKARO
67.	JHARKHAND	TATA STEEL ZOOLOGICAL PARK	SMALL ZOO	JAMSHEDPUR
68.	JHARKHAND	MUGGER BREEDING CENTRE (MUTA ZOO)	MINI ZOO	MUTA
69.	KARNATAKA	DEER PARK, N.M.D.C.LTD.	MINI ZOO	DONIMALAI
70.	KARNATAKA	KAIWARA TAPOWANA CHINTAMANI TALLUK	MINI ZOO	KOLAR
71.	KARNATAKA	MINI ZOO A. M. GUDI BALVANA	MINI ZOO	CHITRADURGA
72.	KARNATAKA	MINI ZOO AT GENDEKATTE	MINI ZOO	HASSAN
73.	KARNATAKA	MINI ZOO CUM CHILDREN PARK	MINI ZOO	GULBARGA
74.	KARNATAKA	NAMADACHILUME DEER PARK	MINI ZOO	TUMKUR
75.	KARNATAKA	NATIONAL PARK, BANNERGHATTA ZOOLOGICAL GARDEN	LARGE ZOO	BANGALORE
76.	KARNATAKA	SRI CHAMARAJENDRA ZOOLOGICAL GARDENS	LARGE ZOO	MYSORE

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
77.	KARNATAKA	TUNGABHADRA DAM MINI ZOO	MINI ZOO	BELLARY
78.	KARNATAKA	WILDLIFE RESCUE & REHABILITATION CENTRE	RESCUE CENTRE	BANGALORE
79.	KARNATAKA	DR. K.SHIVARMA KARANTH PILILKULA BIOLOGICAL PARK	LARGE ZOO	MANGALORE
80.	KARNATAKA	TIGER & LION SAFARI	SMALL ZOO	SHIMOGA
81.	KARNATAKA	INDIRA PRIYADARSHINI SANGRAHALAYA, ANAGODU	MINI ZOO	DAVANGERE TALUK
82.	KARNATAKA	DEER PARK AT SHRI KSHETRA SOGAL, SOUDATTI	MINI ZOO	BELGAUN
83.	KARNATAKA	KITTUR RANI CANNAMMA NISARG DHAMA MINI ZOO	MINI ZOO	BELGAUM
84.	KARNATAKA	PEOPLE FOR ANIMALS- RESCUE CENTRE	RESCUE CENTRE	BANGALORE
85.	KARNATAKA	CHILDREN PARK & ZOO (GADAG ZOO)	SMALL ZOO	GADAG
86.	KARNATAKA	BELLARY CHILDRENS PARK-CUM-ZOO (BELLARY ZOO)	SMALL ZOO	BELLARY
87.	KERALA	AMAR CIRCUS	CIRCUS	CALICUT
88.	KERALA	GEMINI CIRCUS	CIRCUS	VARAM
89.	KERALA	GREAT BOMBAY CIRCUS	CIRCUS	TILlicherry
90.	KERALA	GREAT RAYMAN CIRCUS	CIRCUS	COCHIN
91.	KERALA	HILL PALACE ZOO, ERNAKULAM	MINI ZOO	ERNAKULAM
92.	KERALA	JAMUNA CIRCUS	CIRCUS	RAIGARH
93.	KERALA	RAJ KAMAL CIRCUS	CIRCUS	DHARMADAM
94.	KERALA	SNAKE PARK, MALAMPUZHA	MINI ZOO	MALAMPUZHA

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
95.	KERALA	STATE MUSEUM & ZOO	MEDIUM ZOO	THRISSUR
96.	KERALA	THIRUVANANTHA-PURAM ZOO	LARGE ZOO	THIRUVANANTHA-PURAM
97.	KERALA	JUMBO CIRCUS	CIRCUS	VARAM
98.	KERALA	KODANADU ZOO	MINI ZOO	KODANADU
99.	KERALA	LION SAFARI PARK AT NAYYAR DAM (NAYYAR MINI ZOO)	MINI ZOO	THIRUVANANTHA-PURAM
100.	KERALA	SRI LOK NAYAK JAYA PRAKASH NARAYAN SMRITY VAN DEER PARK	MINI ZOO	WALAYAR
101.	KERALA	PARASSINIKKADAVU REPTILE PARK	MINI ZOO	KANUR
102.	MADHYA PRADESH	GANDHI ZOOLOGICAL PARK	MEDIUM ZOO	GWALIOR
103.	MADHYA PRADESH	KAMLA NEHRU PRANI SANGHRAHALAYA ZOO	SMALL ZOO	INDORE
104.	MADHYA PRADESH	VAN VIHAR NATIONAL PARK ZOO	LARGE ZOO	BHOPAL
105.	MAHARASHTRA	AURANGABAD MUNICIPAL ZOO	SMALL ZOO	AURANGABAD
106.	MAHARASHTRA	LEOPARD RESCUE CENTRE	RESCUE CENTRE	MANIKDOH
107.	MAHARASHTRA	MAHARAJA SHAHAJI CHHATRAPATI ZOO	MINI ZOO	KOLHAPUR
108.	MAHARASHTRA	MAHARAJBAG ZOO	MINI ZOO	NAGPUR
109.	MAHARASHTRA	RAMBO CIRCUS	CIRCUS	PUNE
110.	MAHARASHTRA	SNAKE PARK, SHIKSHAN MANDAL	MINI ZOO	KOLHAPUR
111.	MAHARASHTRA	THE GREAT ROYAL CIRCUS	CIRCUS	NAMADIC
112.	MAHARASHTRA	VEERMATA JIJABAI BHOSALE UDYAN & ZOO	MEDIUM ZOO	MUMBAI

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
113.	MAHARASHTRA	RAJIV GANDHI ZOO-LOGICAL PARK AND WILDLIFE RESEARCH CENTER	MEDIUM ZOO	PUNE
114.	MAHARASHTRA	NISARGAKAVI BAHINABAI CHOUDHARY PRANISANGAHALAYA	SMALL ZOO	CHINCHIWAD, PUNE
115.	MAHARASHTRA	MAHATMA GANDHI RASHTRIYA UDYAN ZOO	SMALL ZOO	SOLAPUR
116.	MAHARASHTRA	AMTES ANIMAL ARK	RESCUE CENTRE	WARDHA
117.	MAHARASHTRA	SANJAY GANDHI NATIONAL PARK AND ZOO	MINI ZOO	BORIVALI
118.	MANIPUR	MANIPUR ZOOLOGICAL GARDEN	MEDIUM ZOO	IMPHAL
119.	MEGHALAYA	NEHRU PARK ZOO, DANAKGRE, TURA	MINI ZOO	AKHONGINI TURA
120.	MEGHALAYA	LADY HYDARI PARK ANIMAL LAND (MEGHALAYA ZOO)	SMALL ZOO	SHILLONG
121.	MIZORAM	DEER PARK, THENZAWL	MINI ZOO	THENZAWL
122.	MIZORAM	AIZAWL ZOO (MIZORAM ZOO)	SMALL ZOO	AIZWAL
123.	NAGALAND	NAGALAND ZOOLOGICAL PARK, RANGAPAHAR	MINI ZOO	DIMAPUR
124.	ORISSA	DEER PARK, UNIT BERHAMPUR	MINI ZOO	BERHAMPUR
125.	ORISSA	DEER PARK, PAPADAHANDI	MINI ZOO	NAWARANGPUR
126.	ORISSA	GHARIAL RESEARCH & CONSERVATION UNIT	MINI ZOO	TIKARPARA
127.	ORISSA	H.A.L. DEER PARK, KORAPUT	MINI ZOO	SUNABEDA
128.	ORISSA	HARISHANKAR DEER PARK	MINI ZOO	BALANGIR
129.	ORISSA	KAPILASH ZOO	MINI ZOO	DHENKANAL

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
130.	ORISSA	MUNICIPALITY DEER PARK	MINI ZOO	CUTTACK
131.	ORISSA	NANDANKANAN BIOLOGICAL PARK	LARGE ZOO	BHUBANESHWAR
132.	ORISSA	TAPTAPANI DEER PARK	MINI ZOO	PARLAKHEMUNDI
133.	ORISSA	WILD ANIMAL CONSERVATION CENTER	SMALL ZOO	MOTHIJHARAN SAMBALPUR
134.	ORISSA	INDIRA GANDHI PARK ZOO	SMALL ZOO	ROURKELA
135.	ORISSA	KUANRIA DEER PARK, NAYAGARH FOREST DIVISION	MINI ZOO	NAYAGARH
136.	PUNJAB	DEER PARK, BIR TALAB	MINI ZOO	BHATINDA
137.	PUNJAB	DEER PARK, NEELON	MINI ZOO	LUDHIANA
138.	PUNJAB	LUDHIANA ZOO	SMALL ZOO	LUDHIANA
139.	PUNJAB	MAHENDRA CHAUDHURY ZOOLOGICAL PARK	LARGE ZOO	CHHATBIR, CHANDIGARH
140.	PUNJAB	DEER PARK, BIR MOTI BAGH (PATIALA ZOO)	SMALL ZOO	PATIALA
141.	RAJASTHAN	BIKANER ZOO	SMALL ZOO	BIKANER
142.	RAJASTHAN	DEER PARK, SHRI GOVERDHAN TRUST	MINI ZOO	UDAIPUR
143.	RAJASTHAN	JAIPUR ZOO	LARGE ZOO	JAIPUR
144.	RAJASTHAN	JODHPUR ZOO	SMALL ZOO	JODHPUR
145.	RAJASTHAN	KOTA ZOO	MINI ZOO	KOTA
146.	RAJASTHAN	PANCHWATI DEER PARK	MINI ZOO	PILANI
147.	RAJASTHAN	SAFARI PARK, HARIDASJI-KI-MAGRI	MINI ZOO	UDAIPUR
148.	RAJASTHAN	UDAIPUR ZOO	SMALL ZOO	UDAIPUR
149.	SIKKIM	HIMALAYAN ZOOLOGICAL PARK, BULBULEY	MINI ZOO	GANGTOK
150.	TAMIL NADU	AMIRDHI ZOO	SMALL ZOO	VELLORE

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
151.	TAMIL NADU	ARIGNAR ANNA ZOO-LOGICAL PARK	LARGE ZOO	VANDALUR, CHENNAI
152.	TAMIL NADU	CHENNAI SNAKE PARK TRUST	MEDIUM ZOO	GUINDY, CHENNAI
153.	TAMIL NADU	CHILDRENS CORNER	MEDIUM ZOO	GUINDY, CHENNAI
154.	TAMIL NADU	KURUMBAPATTI ZOO-LOGICAL PARK	MINI ZOO	SALEM
155.	TAMIL NADU	MADRAS CROCODILE BANK TRUST/CENTRE FOR HERPETOLOGY	LARGE ZOO	MAHABALIPURAM
156.	TAMIL NADU	SHIVGANGA GARDEN MINI ZOO	MINI ZOO	THANJAVUR
157.	TAMIL NADU	V.O.C. PARK MINI ZOO	SMALL ZOO	COIMBATORE
158.	TAMIL NADU	TIRUCHIRAPALLI ZOO, TIRUCHIRAPALLI	MINI ZOO	TIRUCHIRAPALLI
159.	TRIPURA	SEPAHIJALA ZOOLOGICAL PARK	LARGE ZOO	SEPAHIJALA, AGARTALA
160.	UTTAR PRADESH	APOLLO CIRCUS	CIRCUS	VARANASI
161.	UTTAR PRADESH	GREAT APOLLO CIRCUS	CIRCUS	HAMIRPUR
162.	UTTAR PRADESH	KANPUR ZOOLOGICAL PARK	LARGE ZOO	KANPUR
163.	UTTAR PRADESH	LUCKNOW ZOOLOGICAL PARK	LARGE ZOO	LUCKNOW
164.	UTTAR PRADESH	NAWABGANJ DEER PARK	MINI ZOO	UNNAO
165.	UTTAR PRADESH	RAJMAHAL CIRCUS	CIRCUS	HAMIRPUR
166.	UTTAR PRADESH	SARNATH DEER PARK	MINI ZOO	VARANASI
167.	UTTAR PRADESH	VAN PRANI UDYAN, I.V.R.I.	MINI ZOO	IZATNAGAR, BAREILLY
168.	UTTAR PRADESH	VINOD VAN MINI ZOO, RAMGARH (GORAKHPUR ZOOLOGICAL PARK)	MINI ZOO	GORAKHPUR
169.	UTTAR PRADESH	DEER PARK, IFFCO TOWNSHIP, ANDA	MINI ZOO	BAREILLY

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
170.	UTTAR PRADESH	AGRA BEAR RESCUE FACILITY	RESCUE CENTRE	AGRA
171.	UTTARAKHAND	PT. GOVIND BALLABH PANT HIGH ALTITUDE ZOO	SMALL ZOO	NAINITAL
172.	UTTARAKHAND	MALSI DEER PARK (DEHRA DUN BIOLOGICAL PARK)	MINI ZOO	DEHRADUN
173.	UTTARAKHAND	DEER PARK, NARAIN TEWARI DEWAL (ALMORA ZOO)	MINI ZOO	ALMORA
174.	WEST BENGAL	ADINA DEER PARK	MINI ZOO	MALDA
175.	WEST BENGAL	AJANTA CIRCUS	CIRCUS	KOLKATA
176.	WEST BENGAL	ALIPORE ZOOLOGICAL GARDEN	LARGE ZOO	KOLKATA
177.	WEST BENGAL	ASIAD CIRCUS	CIRCUS	KOLKATA
178.	WEST BENGAL	CALCUTTA SNAKE PARK	MEDIUM ZOO	BADU, KOLKATA
179.	WEST BENGAL	EMPIRE CIRCUS	CIRCUS	KOLKATA
180.	WEST BENGAL	FAMOUS CIRCUS	CIRCUS	KOLKATA
181.	WEST BENGAL	GAR CHUMUK (ULUGHATA) DEER PARK	MINI ZOO	HOWRAH
182.	WEST BENGAL	KOHINOOR CIRCUS	CIRCUS	KOLKATA
183.	WEST BENGAL	KUMARI KANGSABUTI DEER PARK, BONPAKURIA	MINI ZOO	BONPAKURIA, BANKURA
184.	WEST BENGAL	MARBLE PALACE ZOO	SMALL ZOO	KOLKATA
185.	WEST BENGAL	NATRAJ CIRCUS	CIRCUS	KOLKATA
186.	WEST BENGAL	OLYMPIC CIRCUS	CIRCUS	KOLKATA
187.	WEST BENGAL	PADMAJA NAIDU HIMALAYAN ZOOLOGICAL PARK	SMALL ZOO	DARJEELING
188.	WEST BENGAL	PUGMARKS - PFA SANITIKETAN RESCUE CENTRE	RESCUE CENTRE	KOLKATA

S. NO.	STATE NAME	ESTABLISHMENT NAME	TYPE NAME	CITY NAME
189.	WEST BENGAL	WEST BENGAL SNAKE PARK & LABORATORY, BADU	MINI ZOO	BADU, KOLKATA
190.	WEST BENGAL	WESTON CIRCUS	CIRCUS	ELLIOT
191.	WEST BENGAL	KUNJANAGAR ECO-PARK	MINI ZOO	JALPAIGURI
192.	WEST BENGAL	SOUTH KHAIRBARI LEOPARD SAFARI AND REHABILITATION CENTRE	MINI ZOO	MADARIHAT
193.	WEST BENGAL	PURULIA MINI ZOO, SURULIA	MINI ZOO	PURULIA
194.	WEST BENGAL	RAMNABAGAN MINI ZOO	MINI ZOO	BURDWAN
195.	WEST BENGAL	RASIKBEEL MINI ZOO	MINI ZOO	COCHBIHAR
196.	WEST BENGAL	JHARGRAM ZOO	SMALL ZOO	JHARGRAM

**MEMORANDUM OF UNDERSTANDING
BETWEEN**

**CENTRAL ZOO AUTHORITY
BIKANER HOUSE, SHAHJAHAN ROAD,
NEW DELHI 110 011**

AND

**WILDLIFE INSTITUTE OF INDIA
CHANDRABANI
DEHRADUN 248 001
UTTARAKHAND**

The Central Zoo Authority, New Delhi hereinafter referred to as the 'CZA' and the Wildlife Institute of India, Dehradun hereinafter referred to as the 'WII' have agreed to enter into an understanding.

Whereas the WII has submitted a proposal to CZA seeking financial assistance for "Studies on housing and enclosure enrichment for some species in selected Indian zoos".

Whereas the CZA is ready and willing to extend financial support for the approved items of work as shown in Article 1 on the terms and conditions given below:

ARTICLE 1

- (a) The CZA has agreed to provide financial assistance to WII for conducting studies on housing and enclosure enrichment for following given species in captive condition, of which most species are part of ongoing conservation breeding programme of the Central Zoo Authority.

S. No.	Name of the Species
1	Indian elephant (<i>Elephas maximus</i>)
2	Asiatic lion (<i>Panthera leo</i>)
3	Bengal tiger (<i>Panthera tigris</i>)
4	Snow leopard (<i>Panthera uncia</i>)
5	Indian Leopard (<i>Panthera pardus fusca</i>)
6	Grey wolf (<i>Canis lupus</i>)
7	Wild dog (<i>Cuon alpinus</i>)
8	Sloth bear (<i>Melursus ursinus</i>)
9	Himalayan black bear (<i>Ursus thibetanus</i>)
10	Red panda (<i>Ailurus fulgens</i>)

S. No.	Name of the Species
11	Binturong (<i>Arctictis binturong</i>)
12	Malabar giant squirrel (<i>Ratufa indica</i>)
13	Lion tailed monkey (<i>Macaca silenus</i>)
14	Pig-tailed monkey (<i>Macaca nemestrina</i>)
15	Stump tailed monkey (<i>Macaca arctoides</i>)
16	Rhesus macaque (<i>Macaca mulatta</i>)
17	Common langur (<i>Semnopithecus entellus</i>)
18	Phayre's leaf monkey (<i>Trachypithecus phayrei</i>)
19	Nilgiri langur (<i>Semnopithecus johnii</i>)
20	Golden langur (<i>Trachypithecus geei</i>)
21	Hoolock gibbon (<i>Hoolock leuconedys</i>)
22	One-horned rhinoceros (<i>Rhinoceros unicornis</i>)
23	Gaur (<i>Bos gaurus</i>)
24	Wild ass (<i>Equus hemionus khur</i>)
25	Swamp deer (<i>Cervus duvauceli</i>)
26	Thamin deer (<i>Cervus eldii</i>)
27	Sambar (<i>Cervus unicolour</i>)
28	Spotted deer (<i>Axix axix</i>)
29	Mouse deer (<i>Tragulus meminna</i>)
30	Himalayan monal (<i>Lophophorus impejanus</i>)
31	Cheer pheasant (<i>Catreus wallichii</i>)
32	Hume's pheasant (<i>Syrmaticus humiae humaie</i>)
33	Blyth's tragopan (<i>Tragopan blythii</i>)
34	Western tragopan (<i>Tragopan melanocephalus</i>)
35	Grey jungle fowl (<i>Gallus sonnerati</i>)
36	Vultures (White backed Vulture, long billed vulture, slender billed vulture)
37	Nicobar pigeon (<i>Caloenas nicobarica</i>)
38	King cobra (<i>Ophiophagus Hannah</i>)
39	Crocodilians species
40	Painted roof turtle (<i>Kachuga kachuga</i>)

- (i) The WII shall conduct the study on the aforesaid species at the zoos selected as coordinating, participating for the species and other major zoos holding animals in captivity.
- (ii) The WII shall conduct literature survey for the selected species pertaining to housing and their enclosure enrichment. The same should have got compiled and a hard copy of the same should be made available to CZA.
- (iii) Available housing and enrichment practices for aforesaid species in India and abroad should be evaluated by the WII for its effectiveness and ensure that suggested enrichment should not danger the life of animals.
- (iv) The WII will prepare a critical note for each species providing detailed notes on appropriate housing for each species, habits, behaviour, including social, feeding, reproductive and other requirement in wild and how the same shall be met in captivity by suggesting appropriate methods including those of species of plants, trees, shrubs required to be planted by the zoos, enrichment artifacts and their details, water bodies, substrate, wooden logs and other off-exhibit (for feeding & retiring cells) artifacts including desired dimension for housing the species in captivity keeping in view of the physiological, psychological and behavioural, requirement and welfare of the animals.
- (v) The WII shall provide details with respect to the type of enrichment suggested and artifacts to be used, their photographs, and illustration/drawing or line sketches describing their placement within the enclosure for each identified species.
- (vi) The WII shall also suggest the ways by which the natural behaviours shall be stimulated in the species defined above. The same should also help the zoos to reduce the abnormal or stereotyped behaviours, if any.
- (vii) While carrying out the study, the WII should engage expert biologists and zoo directors for their inputs in the field and those who have experience of working on similar studies on Indian wild animals from the beginning of the study.
- (viii) The WII shall provide appropriate and suitable acknowledgement of the participation and cooperation provided by the Central Zoo Authority, and other involved individuals and organizations.
- (ix) The proposed outcome of the study should be in formal printed report as well as in softcopy. The WII shall provide 200 printed hard bound and soft copies of the report of each species on "Housing and enclosure enrichment".
- (x) The WII shall submit a draft copy of the findings of the study to CZA for its appraisal as and when they are ready and before the same is being printed as well as shall submit annual progress report to CZA during the financial year.
- (xi) The WII will engage the technical personnel's as mentioned in the proposal in consultation with the Central Zoo Authority to carry out the proposed study.

ARTICLE 2

The Central Zoo Authority has agreed to provide financial assistance of Rs. 38.72 lakhs to conduct above mentioned studies. Detailed of the approved budget is given below-

S. No.	Head	Rs. (Lakhs)
1.	Equipment	4.45

Sl. No.	Head	Rs. (Lakhs)
2.	Development of enrichment material	3.50
3.	Books and periodicals	1.00
4.	Fellowship to the technical personnel's	20.77
5.	TA/DA accommodation of project personnel	6.00
6.	Stationary	1.50
7.	Miscellaneous and contingencies	1.50
	Total	38.72

ARTICLE 3

- (a) It will be sole responsibility of the WII to conduct studies for aforesaid 40 species.
- (b) This agreement shall become effective when signed by both the parties; and the WII agrees to commence its work performance immediately thereupon but not later than by 31st December, 2009.
- (c) The work shall be completed in 36 calendar months time (effective from the date of MoU signed).

ARTICLE 4

The terms of payment to WII shall be as follows:-

- (i) 50% of the total budget – to be released upon signing of the MoU.
- (ii) 30% of the total budget – will be released on submission of first progress report & subject to the appraisal by CZA.
- (iii) 20% of the total budget – will be released on submission of final reports (200 nos. for each species with soft copy) and subject to the appraisal by CZA.

ARTICLE 5

- (a) The money released by CZA shall not be diverted by WII for any other work.
- (b) The Accounts of the grant released by CZA have to be maintained properly as per the audit requirement and shall be agreed to inspection by the Central Zoo Authority. Duly audited copies of the accounts shall be submitted to Central Zoo Authority.
- (c) Utilization Certificate having unspent balance, if any, should be submitted to Central Zoo Authority annually after the close of financial year.
- (d) Record of the all asserts acquired out of the grant released herewith by Central Zoo Authority, should be made available for scrutiny of audit. Such assets should not be disposed off encumbered or utilized for other purposes without the prior approval of CZA.

ARTICLE 6:

The scientific output of the project will be intellectual property right of the CZA and WII. The CZA, without any limitation, has the rights to use, publish, sell or distribute privately or publicly any item or part there of the study.

ARTICLE 7:

Disputes, if any, arising between the parties in respect of any matter arising out of this MoU or the relationship between the parties or the performance of their respective obligations under this MoU shall be settled between the Director, Wildlife Institute of India and the Member Secretary, Central Zoo Authority, and binding on the parties.

ARTICLE 8:

Should there be any delay in performance of this contract or any part thereof, the WII shall notify the CZA in writing giving the reasons for delay. Such notification must reach the CZA before the date on which the final report is due to submission.


If the CZA feels, work is not progressing according to work plan. It shall be at liberty to withhold the financial assistance and withdraw the funds already granted. In such case, unspent amount as on the date of decision shall be immediately return to CZA.

B
29/07/09
**SIGNED ON BEHALF OF
CENTRAL ZOO AUTHORITY**

B.R. SHARMA

**NAME & DESIGNATION:
(With Stamp)**

DATED: 29/07/2009


**SIGNED ON BEHALF OF
WILDLIFE INSTITUTE OF
INDIA** Director
Wildlife Institute of India
Dehradun

**NAME & DESIGNATION:
(With Stamp)**

DATED: 21st July 2009.

List of the identified endangered wild animal species taken up for the planned coordinated Conservation Breeding giving details of the coordinating Zoos, participating Zoos and the number of animals of the species in captivity in India

Sl. No.	Name of the Species	Name of the coordinating Zoo	Names of the participating Zoos	Number of animals of the species in captivity
1.	Asiatic lion (<i>Panthera leo</i>)	Junagarh	Hyderabad, Bhopal, New Delhi, Rajkot	80
2.	Bengal tiger (<i>Panthera tigris</i>)	Bhopal	New Delhi, Hyderabad, Bhubaneswar, Chhatbir, Chennai	145
3.	Snow leopard (<i>Panthera uncia</i>)	Darjeeling	Leh, Kufri, Nainital, Gangtok	18
4.	Clouded leopard (<i>Panthera nebulosa</i>)	Sepahijala	Guwahati	14
5.	Asiatic cheetah (<i>Acinonyx jubatus venaticus</i>)	Junagarh	--	--
6.	Golden cat (<i>Catopuma temmincki</i>)	Guwahati		3
7.	Tibetan wolf (<i>Canis himalayensis</i>)	Darjeeling	Gangtok, Nainital, Kufri	21
8.	Grey wolf (<i>Canis lupus</i>)	Junagarh		
9.	Wild dog (<i>Cuon alpinus</i>)	Visakhapatnam	Chennai	30
10.	Brown bear (<i>Ursus arctos</i>)	Kufri	Leh	2
11.	Sun bear (<i>Helarctos malayanus</i>)	Aizawl	Guwahati	2
12.	Red panda (<i>Ailurus fulgens</i>)	Darjeeling	Gangtok, Yachuli	18
13.	Binturong (<i>Arctictis binturong</i>)	Sepahijala	Guwahati, Aizawl	13
14.	Smooth coated otter (<i>Lutrogale perspicillata</i>)	Ahmedabad		
15.	Malabar giant squirrel (<i>Ratufa indica</i>)	Pilikula	Chennai, Pune	
16.	Indian Pangolin (<i>Manis crassicaudata</i>)	Bhubaneswar	--	8
17.	Lion tailed monkey (<i>Macaca silenus</i>)	Chennai	Mysore, Trivandrum	60
18.	Pig-tailed monkey (<i>Macaca nemestrina</i>)	Sepahijala	Guwahati	18
19.	Stump tailed monkey (<i>Macaca radiata</i>)	Aizawl	Guwahati	51
20.	Phayre's leaf monkey (<i>Trachypithecus phayrei</i>)	Sepahijala	--	14
21.	Crab eating monkey (<i>Macaca fascicularis</i>)	Chidiyatapu (Port Blair)	--	12
22.	Nilgiri langur (<i>Semnopithecus johnii</i>)	Chennai	Mysore	27
23.	Golden langur (<i>Trachypithecus geei</i>)	Guwahati	Island near Guwahati	14

24.	Capped langur (<i>Trachypithecus pileatus</i>)	Rangapahar	--	6
25.	Hoolock gibbon (<i>Hoolock leuconedys</i>),	Itanagar	Aizawl, Guwahati, Sepahijala	11 ✓
26.	Rhinoceros (<i>Rhinoceros unicornis</i>)	Guwahati	Patna, New Delhi, Kanpur	36 ✓
27.	Indian bison (<i>Bos gaurus</i>)	Mysore	Chennai, Bondla	37 ✓
28.	Wild buffalo (<i>Buballus bubalis</i>)			
29.	Wild ass (<i>Equus hemionus khur</i>)	Junagarh	--	11 ✓
30.	Himalayan tahr (<i>Hemitragus jemlahicus</i>)	Gangtok	Darjeeling, Kufri, Chopta	3
31.	Nilgiri tahr (<i>Nilgiritragus hylocrius</i>)	Ooty	--	1
32.	Markhor (<i>Capra falconeri</i>)	Pehalgaon	--	-
33.	Blue sheep (<i>Pseudois nayaur</i>)	Gangtok	Darjeeling	-
34.	Serow (<i>Nemorhaedus sumatraensis</i>)	Guwahati	Manipur	6
35.	Swamp deer (<i>Cervus duvauceli</i>)	Lucknow	Jaldapara WLS	115
36.	Swamp deer (<i>Hard surface-C.d. branderi</i>)	Bilaspur		
37.	Thamin deer (<i>Cervus eldi</i>)	Manipur	Guwahati, Kolkata, New Delhi	177
38.	Mouse deer (<i>Tragulus meminna</i>)	Hyderabad	Bhubaneswar	13 ✓
39.	Musk deer (<i>Moschus chrysogaster</i>)	Chopta	Gulmarg, Gangtok, Kufri	11 ✓
40.	Hangul (<i>Cervus elaphus hanglu</i>)	Shikargah	--	1
41.	Chiru (<i>Pantholops hodgsonii</i>)	Leh	--	2
42.	Chinkara (<i>Gazella bennettii</i>)	Meham	Junagarh, Gandhinagar, Chhatbir	
43.	Chosinga (<i>Tetracerus quadricornis</i>)	Junagarh	Tirupati, Ranchi	
44.	Pygmy hog (<i>Sus salvanius</i>)	Basistha	Guwahati	112
45.	Hispid hare (<i>Caprolagus hispidus</i>)	Basistha	Guwahati	
46.	Giant squirrel (<i>Ratufa indica</i>)	Ranchi		
47.	Gangetic Dolphin (<i>Platanista gangetica gangetica</i>)	Patna		
48.	Himalayan monal (<i>Lophop horus impejanus</i>)	Manali	Darjeeling, Gangtok	23 ✓
49.	Blood pheasant (<i>Ithaginis cruentus</i>)	Gangtok	Darjeeling	--
50.	Cheer pheasant (<i>Catreus wallichii</i>)	Chail	Almora	48 ✓
51.	Humes pheasant (<i>Syrmaticus humiae humaie</i>)	Aizawl	--	4
52.	Grey Peacock pheasant (<i>Polyplectron bicalcaratum</i>)	Guwahati	Kolkata, Darjeeling	60
53.	Sclaters (mishmi) monal (<i>Lophophorus sclateri sclateri</i>)	Yachuli	--	--
54.	Tibetan eared pheasant (<i>Crossoptilon harmani</i>)	Yachuli	--	--
55.	Temminck tragopan (<i>Tragopan temminckii</i>)	Yachuli	--	--
56.	Blyths tragopan (<i>Tragopan blythii</i>)	Kohima	--	12
57.	Western tragopan (<i>Tragopan melanocephalus</i>)	Sarahan	--	8
58.	Styr tragopan (<i>Tragopan satyra</i>)	Darjeeling	Gangtok	2
59.	Grey jungle fowl (<i>Gallus sonnerati</i>)	Tirupati	--	33

60.	Red jungle fowl (<i>Gallus gallus gallus</i>)	Morni	Chail, New De lhi, Aizawl	209
61.	Malabar grey hornbill (<i>Ocyeros griseus</i>)	Kodanadu (Kerala)	Hyderabad	
62.	Malabar pied hornbill (<i>Anthracoseros coronatus</i>)	Kodanadu (Kerala)	Hyderabad	
63.	Vultures (White backed Vulture, Himalayan Griffon Vulture, etc.)	Pinjore	Hyderabad, Bhopal, Junagarh, Bhubaneswar, Rajabhatkhawa, Guwahati	93
64.	Falcons (Eagles, Hobbies, Kestral, Harrier, accipiter, etc.)	Chhatbir	Jaipur	3
65.	Bustards (Great Indian bustard, Lesser florican, Bengal florican, Hubara bustard)	--	--	1
66.	Nicobar pigeon (<i>Caloenas nicobarica</i>)	Chidiyatapu, Port Blair	Ahmedabad, Kolkata	42
67.	King cobra (<i>Ophiophagus Hannah</i>)	Pilikula	Bangalore, Mammalapuram	35
68.	Water monitor (<i>Varanus salvator</i>)	Chidiyatapu, Port Blair	Mammalapuram	40
69.	Painted roof turtle (<i>Kachuga kachuga</i>)	Kukrail	Mammalapuram	2
70.	Himalayan salamander (<i>Tyletotriton verrucosus</i>)	Darjeeling	--	9

List of recognized zoos identified for creation of off-display life time care facilities as Rescue Centres

S. No.	Name of the Zoo	Species for which identified as rescue and rehabilitation centre
1.	Indira Gandhi Zoological Park, Visakhapatnam, Andhra Pradesh	Lions, Tigers, Leopards and Sloth bears
2.	Sri Venkateswara Zoological Park, Tirupati, Andhra Pradesh	Lions, Tigers, Leopards and Sloth bears
3.	Vishakha Society for Prevention of Cruelty to Animals Rescue Centre, Marikavalasa (Visakhapatnam), Andhra Pradesh	Life time care facility for Monkeys
4.	Centre for Bear Rehabilitation and Conservation (CBRC) Pakke, Arunachal Pradesh	Lifetime care housing for Himalayan black bear
5.	Biological Park, Itanagar, Arunachal Pradesh	Off-display Rescue Centre for Himalayan black bears
6.	Assam State Zoo, Guwahati	Off-display Rescue Centre for Leopards and Himalayan black bears
7.	Centre for Wildlife Rehabilitation and Conservation (CWRC), Borjuri, Assam	Life time care facility for Leopards (6 Nos.) And Himalayan black bear (6 Nos.)
8.	Sanjay Gandhi Biological Park, Patna, Vihar	Off-display Rescue and rehabilitation for Leopards and Sloth bears.
9.	Nandan Van Zoo, Raipur	Off-display Rescue Centre for Leopard and Sloth bears
10.	Sakkarbaug Zoo, Junagarh, Gujarat	Rescue Centre for Leopards (50 Nos.)
11.	Shree Sayajibaug Zoo, Vadodara, Gujarat	Off-display rescue centre for Primates (20 Nos.) and other inform animals at Ajwa
12.	Mini Zoo, Pipli, Haryana	Lifetime care Rescue Centre for Leopards (upto 10 Nos.)
13.	Hanuman Vatika Rescue Centre, Sultanpur (Distt. Gurgaon), Haryana	Lifetime care facility (off display) for Monkeys/ Langur (upto 80 Nos.)
14.	Wildlife Rescue Centre, Gopalpur Khera (Distt. Gurgaon), Haryana	Off-display lifetime care facility for Monkeys (upto 20 Nos.) only
15.	Dhauladhar Nature Park, Gopalpur, Himachal Pradesh	Off-display Rescue Centre for Leopards (20 Nos.) and Himalayan black bears (10 Nos.)
16.	Renuka Mini Zoo, Renukaji, Himachal Pradesh	Off-display Rescue Centre for Rhesus monkeys (upto 20 Nos.)

S. No.	Name of the Zoo	Species for which identified as rescue and rehabilitation centre
17.	Rescue and Rehabilitation Home, Tutikandi, Himachal Pradesh	Lifetime care facility for Leopards (upto 20 Nos.)
18.	Bhagwan Birsa Munda Biological Park, Ranchi, Jharkhand	Off-display rescue centres for Leopards, Sloth bears, Elephants, Macaques at Barwe as satellite facility of BBBP, Ranchi.
19.	Jammu Zoo, Manda, Jammu, Jammu and Kashmir	Off-display rescue centres for Leopard and Himalayan black bear
20.	Kashmir Zoo, Srinagar, Jammu and Kashmir	Off display Rescue Centre and display enclosures for Leopards, Himalayan black bear and Pheasant At Dachigam
21.	Bannerghatta Biological Park, Bangalore, Karnataka	Rescue and rehabilitation centre for Lions, Tigers, Leopards, Sloth bears etc.
22.	People For Animals Rescue Centre, Bangalore (Karnataka)	Life time care facility for 10 Macaques only
23.	Wildlife Rescue and Rehabilitation Centre, Bangalore, Karnataka	Rescue and Rehabilitation of the Urban Wildlife
24.	Kaprikkad Zoo, Kaprikkad, Kerala	Rescue & rehabilitation centre for Leopard and Sloth bear
25.	Van Vihar Zoo, Bhopal, Madhya Pradesh	Rescue and rehabilitation of Tiger/ Leopard/Sloth bear.
26.	Sanjay Gandhi National Park & Zoo, Borivali, Mumbai, Maharashtra	Off display Rescue & Rehabilitation for Leopards, Sloth bears & other wild animals from Mumbai.
27.	Leopard Rescue Centre, Manikdoh, Junnar	Life time care facility for Leopards (40 nos.) Only.
28.	Amte's Animal Ark at Hemalksa, Distt. Gadchiroli, Maharashtra	Life time care facility for Leopards (6 Nos.) Only. The other animals should be kept for transit period only.
29.	Nandankanan Biological Park, Bhubaneswar	Rescue and rehabilitation of Leopard, Sloth bear & Monkey.
30.	Mahendra Choudhury Zoological Park, Chhatbir, Chandigarh, Punjab	Off-display Rescue Centre for Leopards and infirm animals
31.	Patiala Zoo, Patiala, Punjab	Off-display Rhesus monkey Rescue Centre (upto 20 Nos.)
32.	Jaipur Zoo, Jaipur, Rajasthan	Off-display Rescue Centre for Tiger/ Lion/ Leopard/ Sloth bear/ Monkey at Nahargarh
33.	Arignar Anna Zoological Park, Vandalur, Chennai, Tamil Nadu	Off display rescue centres for Tiger/ Lions/ Leopard/Sloth Bear/Monkeys.
34.	Gorakhpur Zoological Park, Gorakhpur, Uttar Pradesh	Rehabilitation of wild animals from the derecognized zoos in the State of Uttar Pradesh.

S. No.	Name of the Zoo	Species for which identified as rescue and rehabilitation centre
35.	Lucknow Zoo, Lucknow, Uttar Pradesh	Off-display Rescue Centre for Leopards (10 Nos.) & Monkeys (20 Nos.) at Kukrail
36.	Agra Bear Rescue Centre Facility, Keetham, Agra, Uttar Pradesh	Rescue & rehabilitation of Sloth bear
37.	Van Prani Udyan, IVRI, Izatnagar, Bareilly, Uttar Pradesh	Appropriate (display and off-display) enclosures for identified representative common wild animal species
38.	Kanpur Zoo, Kanpur, Uttar Pradesh	Off-display lifetime care facility for Monkeys (20 Nos.)
39.	Almora Zoo, Almora, Uttarakhand	Off-display Rescue Centre for Leopards (20 Nos.) & Himalayan black bears (10 Nos.).
40.	Dehradun Zoological Park, Malsi (Dehradun), Uttarakhand	Off-display Rescue Centre for Leopards (15 Nos.) (at Kotawali) and Himalayan black bear (10 Nos.) and Elephants
41.	Jhargram Zoo, Jhargram (West Bengal)	Off display rescue centre for Monkeys.
42.	Purulia Mini Zoo, Surulia (Purulia), West Bengal	Rescue centre for Sloth Bears
43.	South Khairabari Leopard Safari and Rehabilitation Centre, South Khairabari (Jalpaiguri) West Bengal	Rescue and rehabilitation of Leopards
44.	Ramnabagan Mini Zoo, Burdwan (West Bengal)	Off display rescue centre for leopards.
45.	Pugmark – PFA Rescue Centre, Shantiniketan (Birbhum), West Bengal	Life time care facility for small mammals and birds including Rhesus Monkey (2no.) Only.

MEMORANDUM OF UNDERSTANDING

BETWEEN

**CENTRAL ZOO AUTHORITY
ANNEXE VI, BIKANER HOUSE,
SHAHJAHAN ROAD,
NEW DELHI – 110 011**

&

**INDIAN VETERINARY RESEARCH INSTITUTE
IZATNAGAR, BAREILLY – 243 122
(UTTAR PRADESH)**

Whereas the Central Zoo Authority, a statutory body under Ministry of Environment & Forests, Government of India having its office at Bikaner House, Shahjahan Road, New Delhi herein after referred as 'CZA' working with the objectives of overseeing the management of zoos and provide them necessary technical inputs to come up to the desired level of management, is willing to establish National Referral Centre for Wildlife Healthcare at Indian Veterinary Research Institute, Izatnagar, Bareilly.

Whereas the Indian Veterinary Research Institute with its head office at Izatnagar, Bareilly - 243 122 herein after referred as 'IVRI' has agreed to take up the work and has submitted a proposal for National Referral Centre (NRC) for Wildlife Healthcare.

Whereas, the Central Zoo Authority is willing to extend financial support for the above said work.

MEMORANDUM OF UNDERSTANDING

ARTICLE 1 :

- (a) The IVRI will provide all its specialised services and diagnostic facilities to all the recognised zoos/rescue centres of the country pertaining to diagnosis and therapeutic measures for infectious and non-infectious disease and healthcare among the wild animals as and when required by the recognized zoos/rescue centres and/ or whenever requested by the Central Zoo Authority.
- (b) The IVRI will organize short term training programmes for Zoos veterinary personnels working in Indian Zoos, on the dates as suggested by CZA. The training programme will cover the topics/ subject as well as faculty as suggested by CZA from time to time.
- (c) The IVRI will conduct studies on captive animal health, animal nutrition and related issues or problems being faced by the zoos in this regards. Such studies will be identified by the Central Zoo Authority in consultation with zoo operators & managers and will be assigned to the IVRI.
- (d) The Central Zoo Authority will provide recurring expenditure only for one year period from the date of creation of NRC or signing upon of this MOU whichever is earlier. During the period of one year the IVRI shall create all necessary data bank on zoos including the contact details and their

address, list and intensity of problems being faced by zoos on animal healthcare and other related issues.

- (e) After the period of one year no regular recurring expenditures shall be paid by the Central Zoo Authority, the same should be borne/ paid by the users/requesting parties only.
- (f) The amounts sanctioned by Central Zoo Authority for non-recurring purposes as per the details provided in Article 3 should not be diverted from the purpose it has been assigned/sanctioned without the prior approval of the Central Zoo Authority.
- (g) The expenditures to be incurred on the studies/ research and training etc. requested by the Central Zoo Authority will be borne by the Authority on case to case basis.
- (h) On signing of this MOU, the IVRI should come up with the standard rates to be charged for providing all specialised facilities and services and the same should be made available to the Central Zoo Authority and all recognized zoos of the country. The rates may be recurred by IVRI from time to time with intimation to the user agencies.
- (i) The asset/ infrastructure made by the IVRI, Bareilly from the grant total of Rs. 21.85 lakhs by the CZA for the establishment of Regional Centre under the National Zoo Animal Healthcare Programme of CZA should also be merged with the activity of the NRC.

ARTICLE 2 :

- (a) The money released by CZA shall not be diverted by IVRI for any other work.
- (b) The Accounts of the grant released by CZA have to be maintained properly as per the audit requirement and shall be agreed to inspection by the Central Zoo Authority. Duly audited copies of the accounts shall be submitted to Central Zoo Authority.
- (c) Utilisation Certificate having unspent balance, if any, should be submitted to Central Zoo Authority annually after the close of financial year.
- (d) Record of the all assets acquired out of the grant released herewith by Central Zoo Authority, should be made available for scrutiny of audit. Such assets should not be disposed off encumbered or utilized for other purposes without the prior approval of CZA.

ARTICLE 3 : Accounts and audit of the grant

Central Zoo Authority has agreed to provide financial assistance for the following items of works:-

S. No.	Particulars	Amount (Rs. in lakhs)
A.	Recurring expenditure (one/first year only)	
	Pay and allowances	
	RA (total 1 post) @ Rs. 11500/- pm (fixed) +HRA (total Rs. 13225/-)	1.60
	Office assistance on contractual basis @ Rs. 5000/- pm	0.60
	Traveling allowance	2.00
	Stationery, publication other misc. expenses	2.00

S. No.	Particulars	Amount (Rs. in lakhs)
B.	Non-recurring (one time grant) Equipments	
	Digital balance	1.00
	Inverted microscope	2.00
	Refrigerated centrifuge	5.00
	ELISA reader	3.00
	Still camera	1.00
	Table top centrifuge	0.30
	Deep freeze	0.50
	Kjelatech – N estimation assembly	5.00
	Refrigerator	0.25
	Deep freeze	0.60
	Top pan balance	0.25
	Water bath	0.25
	Muffle furnace	0.25
	CO2 incubator	1.00
	Ballistic Bomb calorimeter	1.00
	Sub-Total	27.6
	Institutional charges @ 10%	2.76
	Total	30.36
	(Rupees thirty lakhs and thirty six thousand only)	

ARTICLE 4 :

- (a) It will be the sole responsibility of the IVRI to provide specialised service & facilities of the IVRI to the recognised zoos/rescue centres of the country pertaining to diagnosis and therapeutic measures for infectious and non-infectious disease and healthcare among the wild animals as and when required by the recognized zoos/rescue centre and the Central Zoo Authority.
- (b) This agreement shall become effective when signed by both the parties but not later than 2nd October, 2007.
- (c) The expertise, services and consultancy to the Zoos/Rescue Centres on wild animals health care and management will be provided by IVRI on demand without any reasonable delay.
- (d) The IVRI should also submit project activities report every six months.

ARTICLE 5:

The terms of payment to IVRI shall be as follows:-

- (i) Salary for RA & Office Assistant will be released after signing of the MOU.
- (ii) Grant for purchasing of equipments will be released after signing of MoU.
- (iii) 50% grant for traveling, stationery, publication and other Misc. expenses will be released after signing of MoU.

ARTICLE 6 :

The scientific output of the project will be intellectual property right of the CZA and IVRI. The Central Zoo Authority without any limitation will have the rights to use, publish, sell or distribute privately or publicity any item or part thereof, of the outcome of the National Referral Centre Project.

ARTICLE 7:

Disputes, if any, arising between the parties in respect of any matter arising out of this MOU or the relationship between the parties or the performance of their respective obligations under this MOU shall be settled between the Director, IVRI and the Member Secretary, Central Zoo Authority, whose decision shall be final and binding on the parties.

ARTICLE 8:

Should there be any delay in performance of this contract or any part thereof, the IVRI shall notify the CZA in writing giving the reasons for delay. Such notification must reach the CZA before the date on which the final report is due to submission.

If the CZA feels, work is not progressing according to work plan. It shall be at liberty to withhold the financial assistance and withdraw the funds already granted. In such case, unspent amount as on the date of decision shall be immediately return to CZA.

20/08/07
**SIGNED ON BEHALF OF
 MEMBER SECRETARY
 CENTRAL ZOO AUTHORITY
 (with stamp)**

**Name & Designation
 Date of Signature Place**

DR. B. R. SHARMA,
 Member Secretary
 Central Zoo Authority

16/08/07
**SIGNED ON BEHALF OF
 DIRECTOR
 (with stamp)
 INDIAN VETERINARY RESEARCH INSTITUTE
 Director
 IVRI, Izatnagar-243 122 (U.P.)**
**Name & Designation
 Date of Signature Place**
 Dr S. P. S. Ahlawat
 Director
 16th Aug 2007
 Izatnagar

LIST OF CURRENT RATES OF NATIONAL REFERRAL CENTRE
FOR DIFFERENT SERVICES AND FACILITIES

Centre for Wildlife Conservation, Management
and Disease Surveillance

Indian Veterinary Research Institute
(Deemed University)
Izatnagar - 243 122 U.P.



Dr. D. Swarup, Ph.D., FST, FIAAVR
Principal Scientist & Incharge

F. No. 2-19/DI/2007-08/CWL/NRC(Pt.I)

Dated Sept. 12, 2008

To,

Dr. B.R. Shrama
Member Secretary
Central Zoo Authority
Bikaner House, Annexe VI
Shahjahan Road, New Delhi-110 011

BT



Subject : Rates for different diagnostic tests at National Referral Centre for Wildlife Healthcare at IVRI.

Sir,

Kindly refer to your letter No. 26-2/2007-CZA (Vol. II) (N) dated 30.6.08 and find enclosed the list of the charges for providing specialized health services and diagnostic facilities at NRC for Wildlife Healthcare as approved by the committee constituted with approval of Director, IVRI for this purpose.

Thanking you

Yours sincerely

(D.Swarup)

Copy to :

1. Director, IVRI for Kind information.

Phone-0091-0581-2300587(O), 2525541 (R), Fax-0091-0581-2303284 E-mail-dswarup@ivri.up.nic.in

Rates for different diagnostic tests and consultancy services

Sl. No.	Name of the Test	Per test (Rs)
1.	Viral Disease :	
	(a) Rabies	200.00
	(b) I.B.R.	
	(a) Serum	250.00
	(b) Semen	250.00
	(c) PCR based diagnosis	600.00
	(c) Bluetongue- Serological testing	60.00
	(d) Bovine Viral Diarrhea	
	(i) Serum	250.00
	(ii) Semen	600.00
	(e) Pox Diseases	125.00
	(f) F.M.D. 250.00	
	(g) PPR/RP	250.00
	(h) Canine Parvovirus	250.00
	(i) Swine Fever	250.00
	(j) Feline Panleukopenia virus	250.00
2.	Bacterial Diseases :	
	(A) Urine Culture	60.00
	(B) Urine culture and sensitivity	125.00
	(C) Faecal culture	60.00
	(D) Faecal culture and sensitivity	125.00
	(E) Blood culture	60.00
	(F) Blood culture and Sensitivity	125.00
	(g) Bacterial load in milk/semen	250.00
	(H) <i>Brucella</i> -	
	a) RBPT/STAT	60.00
	b) ELISA	125.00
	c) Milk Ring Test	60.00
	d) Culture of the sample	250.00
	e) PCR based diagnosis	600.00
	(I) <i>Leptosria</i> -	
	a) Culture	350.00
	b) Serodiagnosis	250.00
	(J) <i>Campylobacter species</i> -	
	a) Preputial washings	250.00
	b) Semen	250.00
	c) PCR based diagnosis	600.00
	(K) <i>Tuberculosis</i> -	
	a) Direct sputum exam	40.00
	b) Culture	250.00

Sl. No.	Name of the Test	Per test (Rs)
	c) PCR based diagnosis	600.00
	(L) <i>JD</i> :	
	a) Direct faecal examination	40.00
	b) Culture	250.00
	c) PCR based diagnosis	
	(M) <i>Salmonella</i> :	
	a) Culture	125.00
	b) Serology	125.00
	c) Typing of cultures	250.00
	d) Stained slide of bacterial culture	50.00
	(N) <i>Fungal infection</i> :	
	a) Culture	250.00
	b) Identification of culture	125.00
	O) <i>Clostridium spp</i> :	
	a) Culture	250.00
	b) Toxin Identification	400.00
	(P) <i>Listeria</i> -	
	a) Culture	250.00
	b) PCR	500.00
	(Q) <i>Q-fever</i>	
	a) Culture	250.00
	b) PCR	500.00
	(R) <i>Aeromonas</i> -	
	a) Culture and sensitivity	200.00
	(S) <i>Pasterurella</i> -	
	a) Culture and sensitivity	200.00
	b) Typing	250.00
3.	Parasitic diseases ;	
	A) Faecal examination for parasitic infections	40.00
	B) Blood smear examination for haemoparasites	60.00
	C) Skin scrapings for parasites	60.00
	D) <i>Trichomonas foetus</i> -	
	Preputial washings/Semen (culture examination)	250.00
	E) Identification of parasites	125.00
	F) Toxoplasmosis	250.00
	G) Nasal and Eye secretion examination	60.00
	H) Identification of parasites	250.00
	I) Serological tests for detection of antibodies (ELISA, Western blot, FAT)	350.00
4.	Pathological Examination	
	A) <i>Post-mortem examination</i>	
	a) Extra large animals-Elephant, Camel, Giraff, Bison, Rhino, Hippo, Crocodile	1200.00
	b) Large animals (Buffalo, Cow, Equine, Nilgai)	600.00

Sl. No.	Name of the Test	Per test (Rs)
	c) Medium size animals (Gorilla, Calves, Chimpanzee, Zibbon, Bear, Pig, Deer)	400.00
	d) Small animals Sheep, Goat, Kids, Dog, Cat, Snake etc.	125.00
	f) Birds	60.00
	B) Biopsy specimen	125.00
	C) Clinical pathological examination of blood urine etc. (each)	60.00
	D) Histopathological examination (per tissue)	125.00
	E) Blood/serum biochemical test (each)	60.00
5.	Toxicological Examination :	
	A) Mycotoxins -	
	i) Aflatoxin	350.00
	ii) Ochratoxin/any other toxin each	350.00
	B) Alkaloids/Nitrate/Nitrite/HCN /Urea/Heavy Metals/Rodenticides (each)	125.00
	C) AchE enzyme in blood / tissue	125.00
	D) Pesticide in feed and Tissue	
	i) for chlorinated hydrocarbons group (each)	350.00
	ii) Organophosphate & carbamates	350.00
	E) Water samples for fluoride, Nitrate, Nitrite, Arsenic etc. (each)	125.00
	F) Toxins Identification	250.00
6.	Feed & Fodder Analysis	
	Analysis charge for proximate principles in each animal feed or fodder samples.	600.00
	a) One constituent viz. Moisture/crude protein (CP)/ crude fat (EE)/Crude fiber(CF)/Total ash/Acid insoluble ash in each animal feed or fodder sample	600.00
	b) Microminerals (coper or cobalt or iodine or iron or manganese or zinc)	300.00
	True protein in feed or fodder	250.00
	In vitro digestibility (DM/OM)	1500.00
	Silage analysis (pH, Moisture, Lactic acid, NH ₃ -N)	500.00
	Analysis charge for each fiber fraction/constituents viz. Neutral detergent fiber (NDF)/Acid detergent fiber (ADF) /Acid detergent insoluble nitrogen ADIN/Lignin in feed or fodder samples.	200.00
7.	Hormonal examinations	
	Estradiol	-
	Progesterone*	-
	Testosterone*	-
	Triiodothyronine T-3*	-
	Thyroxine T-4*	-
8.	Biochemical Examinations	
	Immunophenotyping Single Mab)*	-

Sl. No.	Name of the Test	Per test (Rs)
	CD4, CD8 counting*	
	Cell cycle analysis*	-
	Instrument use (per hour)	-
9.	Miscellaneous Examinations	
	P.C.R. based diagnosis	600.00
	Water for Microbiological exam. (per sample)	125.00
	Food for Microbiological examination (per sample)	350.00
	C.S.F/(Synovial/Peritoneal) fluid examination (each)	250.00
10.	Veterinary Consultancy/surgical interventions	
	i) Visit or IVRI Team for Disease investigation and Veterinary consultancy (Per Visit)	5000.00
	ii) Surgical Intervention	
	**Minor Surgery	1000
	**Major Surgery	3000

* Subject jto the availability of Kit/reagent

** Consultancy charges @ Rs. 5000.00 will be levied sepearately and the concerned zoo has to provide journey expenses, and O.T./Anesthesia/Medicine/ and other facilities deemed necessary for undertaking surgery.

MEMORANDUM OF UNDERSTANDING

BETWEEN

**CENTRAL ZOO AUTHORITY
BIKANER HOUSE,
SHAHJAHAN ROAD,
NEW DELHI**

&

**DIRECTOR
CENTRE FOR CELLULAR & MOLECULAR BIOLOGY – LABORATORY
FOR CONSERVATION OF ENDANGERED SPECIES (LaCONES),
HYDERABAD**

Whereas the Central Zoo Authority, a statutory body under Ministry of Environment & Forests having its office at Bikaner House, Shahjahan Road, New Delhi herein after referred as 'CZA' working with the objectives of overseeing the management of zoos and provide them necessary technical & other inputs to come up to the desired level of management, is willing to take up research activities on use of biotechnological interventions for conservation of endangered species of animals.

Whereas the Director, Centre for Cellular & Molecular Biology, Hyderabad having its head office at Uppal Road, Hyderabad – 500 007 and herein after referred as 'CCMB-LaCONES' has agreed to take up research activities on use of biotechnological interventions for conservation of endangered species of animals at Laboratory for Conservation of Endangered Species (LaCONES), Hyderabad.

Whereas the Central Zoo Authority is willing to extend financial support for the above said work.

MEMORANDUM OF UNDERSTANDING

ARTICLE 1:

The CCMB-LaCONES to take up research activities on use of biotechnological interventions for conservation of endangered species of animals by way of carrying out:-

I. DNA fingerprinting, Cryobanking and AR

a. Genetic variation

The LaCONES shall collect samples of wild animals, birds, reptiles and amphibians for finding out the heterozygosity level in phased manner and result of the same should be informed to the concerned authorities and CZA.

b. Cryobanking of cells, tissues and genes of wild animals, birds, reptiles and amphibians. The specific task under this objective would be:-

- (i) To establish a frozen/ genome bank, where appropriate samples (semen, tissues, genes, cells or any other body parts) of wild animals, birds, reptiles and amphibians species of Indian origin (ex-situ & in-situ) from different zones and from isolated populations (if required/existing).

- (ii) For Cryobanking of cells, tissues, genes, semen, it is suggested that efforts should be made to collect appropriate samples of every species listed in the various Schedules of Wild Life (Protection) Act, 1972 including collecting samples from different regions of their origin in order to analyse if there is genetic variation. This baseline data can also be used as referral material in future.
- (iii) To establish fibroblast cultures of all wild animals, birds, reptiles and amphibians for which tissues are available due to natural or death due to ailment in Zoos & rescue centres as well as from wild.

C. Development of Assisted Reproductive Technologies for the conservation of wild animals, birds, reptiles and amphibians (ex-situ & in-situ). The specific task under this objective would be:-

To develop the technologies for assisted reproduction for the conservation of the endangered species which shall include the semen analysis, semen storage, embryo transfer technology, artificial insemination, cloning and assisted reproduction (including fecal steroid monitoring and standardization of ultrasonography). The LaCONES should first standardize the techniques on common Indian wild animal species and the same shall address their counterpart endangered species for transfer of technology.

II. The CCMB-LaCONES shall also take inputs from Wildlife Institute of India, Dehradun and other stake holders (involving recognised Zoos & Rescue Centres) experts NGO's and NGL's and Retd. Zoo/ Forest Officials.

III. The proposed study to take up research activities on use of biotechnological interventions for conservation of endangered species of animals in the country may be supported by various kinds of documentation/ monographs.

IV. The CCMB-LaCONES shall submit the findings of the study every quarter to the CZA for its perusal.

V. The CCMB-LaCONES shall provide appropriate and suitable acknowledgement of the participation and cooperation provided by the Central Zoo Authority, and other involved individuals and organisations.

VI. The CCMB-LaCONES shall provide 100 printed copies of the reports on completion of the research activities taken on use of biotechnological interventions for conservation of endangered species of animals in the country.

ARTICLE 2:

- (A) The money released by CZA shall not be diverted by CCMB-LaCONES for any other work.
- (b) The Accounts of the grant released by CZA have to be maintained properly as per the audit requirement and shall be agreed to inspection by the Central Zoo Authority. Duly audited copies of the accounts shall be submitted to Central Zoo Authority.
- (c) Utilisation Certificate having unspent balance, if any, should be submitted to Central Zoo Authority annually after the close of every financial year.
- (d) Record of the all assets acquired out of the grant released herewith by Central Zoo Authority, should be made available for scrutiny of audit. Such assets should not be disposed off encumbered or utilized for other purposes without the prior approval of CZA.

ARTICLE 3: Accounts and audit of the grant

The Central Zoo Authority has agreed to provide financial assistance for the following items of works:-

(Rs. in Lakhs)

S. No		Year 1 2007 2008	Year 2 2008 2009	Year 3 2009 2010	Year 4 2010 2011	Year 5 2011 2012	Total
A	Non -Recurring						
	Equipment	1.00	1.00	1.00	1.00	1.00	5.00
B	Recurring						
1.	Manpower	10.57	10.57	11.10	11.30	11.30	54.84
2.	Consumables and feed for animals	7.00	7.00	5.50	5.50	5.50	30.50
3.	Travel and Miscellaneous expenses	2.00	2.00	2.00	2.00	2.00	10.00
	Grand Total	20.57	20.57	19.60	19.80	19.80	100.34

ARTICLE 4:

- (a) It will be sole responsibility of the CCMB-LaCONES to carryout study on use of biotechnological interventions for conservation of endangered species of animals in the country as per the details laid underARTICLE 1.
- (b) This agreement shall become effective when signed by both the parties; and the CCMB-LaCONES agrees to commence its work performance immediately thereupon but not later than by 1stApril, 2007.
- (c) The work shall be completed in 60 calendar months time (effective from the date of MoU signed).

ARTICLE 5:

The terms of payment to CCMB-LaCONES shall be as follows:-

- (i) Rs. 20.57 lakhs to be released as a 1st Instalment upon signing of the MOU.
- (j) Remaining amount will be released in respective financial year as per the details given in ARTICLE – 3 and appraisal of the performance of the study by the CZA.

ARTICLE 6:

The scientific output of the project will be intellectual property right shared between CZA and CSIR. The CZA, without any limitation, has the rights to use, publish, sell or distribute privately or publicity any item or part thereof, the study on use of biotechnological interventions for conservation of endangered species of animals in the country.

ARTICLE 7:

Disputes, if any, arising between the parties in respect of any matter arising out of this MoU or the relationship between the parities or the performance of their respective obligations under this MoU shall

be settled between the Director, Centre for Cellular & Molecular Biology, Hyderabad and the Member Secretary, Central Zoo Authority, whose decision shall be final and binding on the parties.

ARTICLE 8:

Should there be any delay in performance of this contract or any part thereof, the CCMB-LaCONES shall notify the CZA in writing giving the reasons for delay. Such notification must reach the CZA before the date on which the final report is due to submission.

If the CZA feels, work is not progressing according to work plan. It shall be at liberty to withhold the financial assistance and withdraw the funds already granted. In such case, unspent amount as on the date of decision shall be immediately return to CZA.

01
26/03/07
**SIGNED ON BEHALF OF
CENTRAL ZOO AUTHORITY
(with stamp)**

L. Singh
**SIGNED ON BEHALF OF
DIRECTOR
CENTRE FOR CELLULAR & MOLECULAR
BIOLOGY, HYDERABAD
(with stamp)**

Dr. Lalji Singh
Director
Centre for Cellular and Molecular Biology
Uppal Road, Hyderabad - 500 007, India

**Name & Designation
Date of Signature
Place**

**Name & Designation
Date of Signature
Place**

List of the Central Zoo Authority publications:

1. Guidelines for Establishment & Scientific Management of Zoos in India, 2009.
2. Master Education Plan for Indian Zoos.
3. Captive breeding of Stump tailed macaque at Aizawl Zoological Park with reference to the type of habitat in the enclosure, 2008
4. Barrier Designs for Zoos, 2008.
5. A Manual of Transport Cages and Nest Boxes, 2008.
6. Color Atlas on Parasites of captive Wild Animals, 2007.
7. Master Planning of Zoos - Proceedings of Training Programme on Master planning of zoos for Directors and Managers of Zoos in India
8. Zoo Planning: Design and Landscape Architecture, 2007.
9. Techniques and Procedure for Post-Mortem of Elephants.
10. Management of Elephants in Captivity.
11. Musth in Asian Elephant.
12. Indian Wildlife Year Book, Volume - I, 2002.
13. Zoos in India- Legislation, Policy, Guidelines and strategy, 2005
14. Book on Zoos in India- Details of the recognized zoos, 2005
15. A Compendium of publication from Indian Zoos - Volume I and II.
16. Indian Zoo Year Book Vol - I/1996.
17. Indian Zoo Year Book Vol - II/1997.
18. Zoos - Instrument for conservation.
19. Handbook of the management of animals in captivity.
20. Indian Zoo Year Book Vol III
21. Indian Zoo Year Book Vol IV 2006
22. Indian Zoo Year Book, Vol-V, 2008.
23. Proceeding of International conference on "India's conservation breeding initiative", 2008.
24. Zoos in India – Legislation, Policy, Guidelines and Strategies, 2009

MEMORANDUM OF UNDERSTANDING

BETWEEN

**CENTRAL ZOO AUTHORITY
ANNEXE VI, BIKANER HOUSE,
SHAHJAHAN ROAD,
NEW DELHI – 110 011
INDIA**

&

**INTERNATIONAL SPECIES INFORMATION SYSTEM
2600 EAGAN, WOODS DRIVE, SUITE 50, EAGAN
MINNESOTA 55121-1170
U.S.A**

Whereas the Central Zoo Authority, a statutory body under Ministry of Environment & Forests, Government of India having its office at Bikaner House, Annexe VI, Shahjahan Road, New Delhi, India herein after referred as 'CZA' working with the objectives of overseeing the functioning of zoos and provide them necessary technical and other inputs to come up to the desired level of management, is willing to join International Species Information System as member and also willing to sponsor joining of major Indian Zoos and related organizations to ISIS as detailed below:

Whereas the International Species Information System with its head office at 2600 Eagan Woods Drive, Suite 50, Eagan, MN 55121-1170, U.S. A. herein after referred as 'ISIS' has agreed to provide ISIS membership and services to 57 Indian zoos ad 4 related organisations which includes providing animal records/management software tools e.g. Animal Records Keeping System (ARKS), Single Population Analysis & Records Keeping System (SPARKS), Zoological Information Management System (ZIMS) and training the to all the selected zoos and organizations for a period of five years beginning from 1st January 2009 and has submitted a proposal for providing the aforesaid services to the Central Zoo Authority.

Whereas, the Central Zoo Authority is willing to extend financial support for the above said work.

ARTICLE 1 :

- (a) The ISIS will provide membership and services to 57 Indian zoos (as per the list in Article 3) and 4 related organizations i.e. Central Zoo Authority at New Delhi, Wildlife Institute of India at , Dehradun, CZA's sponsored National Referral Centre at Indian Veterinary Research Institute, Bareilly and Laboratory for Conservation of Endangered Species at Hyderabad for the period of five years beginning from 1st January, 2009.
- (b) The services provided by the ISIS shall include:

- a. computerized animal records software system i.e.
 - i. Animal Record Keeping System (ARKS)
 - ii. Central Animal Global Database
 - iii. Single Population Animal Records System (SPARKS)
 - iv. Medical Animal Record Keeping System (MedARKS)
 - v. Zoological Information Management System (ZIMS) for all 57 zoos and 4 organizations.
 - b. central animal global ISIS database.
 - c. studbook software system that work with species-extracts of the data and existing studbooks.
 - d. the forthcoming all new ISIS/ ZIMS system as early as possible but not later than 31st December, 2010.
 - e. 6 numbers of training for all the selected zoos and institutions in animal records and using information for animal management on mutually agreed dates as per details provided to the Central Zoo Authority by ISIS (Article 3 may be referred) , respective zoos and organizations. The training programme should over all the topics/ subjects as may be required.
- (c) The ISIS should provide suitable solutions to the problems being faced by the zoos in accessing time to time software system.
 - (d) In case any of the listed zoos in Article 3 indicates its inability to join, the same shall be replaced with similar type of zoo with the consent of ISIS and CZA, if not the amount may be adjusted in the budget to be provided by CZA.
 - (e) The Member Secretary, Central Zoo Authority should be on the board of Trustee elected as board of trustee during the membership period to represent all Indian Zoos.
 - (f) The Central Zoo Authority will provide financial assistance of U. S. dollars 3,19,992 only with annual constant fee of U.S. dollars 63,998. During the period of five year the ISIS shall compile all the necessary membership modalities and imparting training to the zoos and institutions.
 - (g) After the period of five year no financial assistance shall be paid by the Central Zoo Authority, the same should be borne by the paid by the user/requested parties.
 - (h) The amounts sanctioned by Central Zoo Authority for the purposes as per the details provided in Article 3 should not be diverted from the purpose it has been assigned/sanctioned without the prior approval of the Central Zoo Authority.

ARTICLE 2 :

- (a) The money released by CZA shall not be diverted by ISIS for any other work.
- (b) The Accounts of the grant released by CZA have to be maintained properly as per the audit requirement and shall be agreed to inspection by the Central Zoo Authority. Duly audited copies of the accounts shall be submitted to Central Zoo Authority.
- (c) Utilisation Certificate having unspent balance, if any, should be submitted to Central Zoo Authority annually after the close of financial year.

Record of the all assests acquired out of the grant released herewith by Central Zoo Authority, should be made available for scrutiny of audit. Such assets should not be disposed off encumbered or utilized for other purposes without the prior approval of CZA.

ARTICLE 3 : Accounts and audit of the grant

Central Zoo Authority has agreed to provide financial assistance for the following items of works:-

	No. of Visitors (2006 07)	Budget (in Rupees) (2006 07)	\$ equivalent	ISIS Att Fee Option	ISIS Bdgt Fee Option	5 year Fee with intro offer	One time fee
Name of the Zoo							
Institutions							
1 Central Zoo Authority, New Delhi					265	1325	2500
2 Wildlife Institute of India, Dehradun					265	1325	2500
3 Indian Veterinary Research Institute, Bareilly					265	1325	2500
4 Laboratory for Conservation of Endangered Species Hyderabad					265	1325	2500
Name of Zoos							
5 Alipore Zoological Garden	1809580	61187564	1610199.1	10500	1610.2	6311.98	5000
6 National Zoological Park	1337000	53200000	1400000	10500	1400	5488	5000
7 Sri Chamarajendra Zoological Gardens	1999063	45000000	1184210.5	10500	1184.21	4642.11	5000
8 Nehru Zoological Park	1631518	40000000	1052631.6	10500	1052.63	4126.32	5000
9 Bannerghatta Zoological Garden	839717	36410000	958157.89	7000	958.158	3755.98	5000
10 Assam State Zoo Cum Botanical Garden	430462	34171156	899240.95	5250	899.241	3525.02	5000
11 Nandankanan Zoological Park	1507783	29010726	763440.16	10500	763.44	2992.69	5000
12 Sanjay Gandhi Biological Park	1230429	24983060	657448.95	10500	657.449	2577.2	5000
13 Indira Gandhi Zoological Park	388000	23428000	616526.32	5250	616.526	2416.78	5000
14 Padmaja Naidu Himalayan Zoological Park	287697	21277051	559922.39	5250	559.922	2194.9	5000
15 Veermata Jijabai Bhosale Udyan & Zoo	1709419	19495000	513026.32	10500	513.026	2019.55	5000
16 Kamla Nehru Zoological Garden	1770600	19381000	510026.32	10500	510.026	2009.29	5000

17	Lucknow Zoological Park	1042095	17700000	465789.47	10500	465.789	1858	2500
18	Thiruvananthapuram Zoo	1018627	17566000	462263.16	10500	462.263	1845.94	2500
19	Mahendra Chaudhury Zoological Park	383594	17070248	449217.05	5250	449.217	1801.32	2500
20	Arignar Anna Zoological Park,	1187904	15360000	404210.53	10500	404.211	1647.4	2500
21	Sakkarbaug Zoo	849992	15000000	394736.84	7000	394.737	1615.53	2500
22	Sri Venkateswara Zoological Park	217929	14638300	385218.42	3550	385.218	1589.35	2500
23	State Museum & Zoo	454545	12082780	317967.89	5250	317.968	1430.94	2500
24	Rajiv Gandhi Zoological Park & Wildlife research Centre	1325086	11419000	300500	10500	300.5	1396	2500
25	Sayaji Baug Zoo	730976	10500000	276315.79	7000	276.316	1347.63	2500
26	Kanpur Zoological Park	457129	10000000	263157.89	5250	265	1325	2500
27	Bhagwan Birsa Biological Park	235014	9782645	257438.03	3550	265	1325	2500
28	Sepahijala Zoological Park	153244	8316000	218842.11	3550	265	1325	2500
29	Van Vihar National Park	184513	8105962	213314.79	3550	265	1325	2500
30	Gandhi Zoological Park	204344	7600333	200008.76	3550	265	1325	2500
31	Sikkim Zoo, Gangtok	22892	7500000	197368.42	2100	265	1325	2500
32	Tata Steel Zoological Park	388201	7000000	184210.53	5250	265	1325	2500
33	Dr. Shyamaprasad Mukharjee Zoological Garden Sarthana	923600	6515000	171447.37	7000	265	1325	2500
34	Tiger & Lion Safari, Thyarekoppa	139037	6468000	170210.53	3550	265	1325	2500
35	Dr. Shivaram Karanth Piliikula Biological Park	500000	5000000	131578.95	7000	265	1325	2500
36	Aizawl zoo	34802	4894851	128811.87	2100	265	1325	2500
37	Centre for Herpetology	876970	4313950	113525	7000	265	1325	2500
38	Kanan Pandari Zoo	292018	4200000	110526.32	5250	265	1325	2500
39	Himalayan Nature Park (Kufri)	108931	4000000	105263.16	3550	265	1325	2500
40	Aurangabad Municipal Zoo Pt.Govind Ballabh Pant	515500	3993408	105089.68	7000	265	1325	2500
41	High Altitude Zoo	128880	3500000	92105.263	3550	265	1325	2500
42	Chennai Snake Park Trust	796925	3483915	91681.974	7000	265	1325	2500
43	Mini Zoo, Haddo (Wildlife Division-I)	74981	3420000	90000	2100	265	1325	2500
44	Vulture Conservation Breeding Centre, B 3, Forest Complex,		3400000	89473.684	2100	265	1325	2500
45	Kamala Nehru Prani Sanghralay Zoo	428246	3200000	84210.526	5250	265	1325	2500
46	Rajkot Municipal Corp. Zoo,	400000	3096000	81473.684	5250	265	1325	2500
47	Indira Gandhi Park Zoo & Deer Park	427950	2605805	68573.816	5250	265	1325	2500



केन्द्रीय चिड़ियाघर प्राधिकरण

Central Zoo Authority

(STATUTORY BODY UNDER THE MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)