Appendix – 12

GUIDELINES FOR SAFARI PARKS WHICH ARE WORKING EITHER AS ZOOS OR AS EXTENSION TO ZOOS

For the purposes of these guidelines, safaris are specialized zoos where the captive animals are housed in very large naturalistic enclosures and the visitors are allowed to enter the enclosure to view the animals in a mechanized vehicle or a pre-determined route from close quarters. These guidelines are not applicable to the self-sustaining safaris which need much larger area.

It is also clarified that the guidelines are only in respect to the size of the enclosures and the precautions to be adopted while conducting inside the enclosure. The housing, upkeep and health care of the animals shall be regulated as per provisions of Recognition of Zoo Rules, 1992.

AREA

The area of a Safari Park may be as large as possible. Minimum area of a safari for large carnivores and for ungulates should be 20 hectares and 30 hectares respectively. As the number of animals in the safari increases, the area should also be increased and it must be ensured that the biological requirements of the animals housed therein are fully met.

TOPOGRAPHY

Topography should be undulating. It should not have steep slopes. It should be well drained.

ANIMALS

Animals should be kept in viable and compatible groups. In case of large carnivores i.e. Lions a small viable pride and in case of Tigers a viable compatible group of two to four animals may be kept. Bears may be kept as compatible pairs or small groups. Unqulates like Cheetal, Sambar etc. could be kept in viable herds and groups. In case of primates (Rhesus, Bonnet Monkeys) a troop would be desirable. Care should be taken that the Safari Park is not overpopulated by any species in order to maintain the quality of its environment. In order to maintain hygiene and ensure ease of management, carnivores be fed in feeding areas and cubicles, preferably away from public scrutiny. Herbivores may be provided concentrates to maintain the vegetation and other values of the Safari Park.

Adequate number of drinking water points with running supply of potable water for animals would be provided in the safari. The water points should be naturalistic and merged with the overall environment of the enclosure.

It is preferable to bring in and hold carnivores during the night in the feeding cubicles for observation etc.

FLORA

The vegetation maintained in the Safari Park should be of an indigenous nature. The density could be regulated according to the needs of the species kept, and to provide naturalistic effect. It should provide shelter and withdrawal areas to the animals. It must be ensured that adequate tree cover is always maintained in the safaris.

FENCE/MOAT

The area should be surrounded by a suitable peripheral chainlink fence/wall. The chainlink or wall fence should be of a minimum height of 5 meter in case of large carnivores, and a 4 meter high non-scalable fence or wall for Bears (Sloth and Himalayan – Black Bear). In each case suitable bothway – overhang be provided at the top. For unqulates a 2.5 meter high chainlink fence preferably with overhangs be setup as a peripheral fence. Suitably designed moats could also be used according to feasibility. In all cases the fence/moat should be safe at all times so that animals or people are not able to cross them. A buffer zone (strip) of about 5 meter width be provided around the fenced area. Stray animals ad unauthorized persons should not be allowed to enter this buffer zone. Double gates of suitable dimensions be

provided at the point of entry. Safety gates may also be provided at a point nearly for service and emergency exists. Gates should be easily operable by one person at a time. Ticket booths and rest facilities may be provided at a short distance from the entrance in the buffer zone. Near the entrance a storeroom be provided for storing of equipment etc. required for management of the park as well as to meet emergencies.

WATCH AND WARD

For keeping an effective watch on the animals, visitors, as well as intruders, at least one watch tower of about 5 meter height be provided preferably near the entrance which should be manned as long as animals are inside the Safari Park. Near the entrance a kiosk for the gate operator may be provided. At least other manned watch tower of 5 meter height be set up at the remotest corners of the park.

VISITORS

Visitors may be provided entry into the park in special vehicles run by the Safari Park operators. No visitors should be allowed inside any Safari Park on foot at anytime. Visitors should not be allowed to get out of the vehicles even in case of failure of the vehicle, till they are asked to do so by the authorised staff.

Visitors should be informed of the safety measures to be adopted in case of any emergency. Visitors should be prohibited from extending any part of their body outside the windows. They should also be asked to maintain silence so as not to provoke the animals when they are in the vicinity of the vehicle. The door of the vehicle should not be opened by the visitors.

VEHICLE

All vehicles should be mechanized ones, preferably vans. They should be run by the Safari Park operators, who should ensure that they are in good condition at all times. The windows and doors of the vehicles should be suitably barred to provide security to visitors. The safari operator shall ensure that the door of the vehicle carrying the visitors is always kept securely locked so that no visitors can manipulate the locking system. The vehicle should have

provision for attachment to another vehicle for pulling it out in case of failure without anybody gears for being used in unmade terrain, if required. The vehicle must also have first aid equipment in it.

LAYOUT OF ROADS

A main road be laid out to cover most of the highlights of the park, but leaving out certain withdrawal areas for the animals. It should be wide enough to allow two vehicles to cross each other. The road should not have steep gradients or sharp curves. It should be kept in good condition at all times.

EQUIPMENT

The Safari Park should have equipment for restraint of animals including capture guns along with accessories, drugs etc. for use in emergencies and routine operations. It should have the usual equipment for feed of animals etc.

It should also have firearms with ammunition to meet rare emergent and inevitable situations that may arise. However, these should not be used except as a last resort in emergencies. Safari Park should also have routine equipment like spades, sichaxes, saws, ropes and hooks etc. for maintenance as well as use in emergencies. Wireless equipment should be provided to watchmen, vehicles etc.

VETERINARY CARE

The animals should be subject to routine veterinary care on a day to day basis and in accordance with the “Recognition of Zoo Rules’. For this purpose the Safari Park should have a treatment room on or near the premises.

The animals should be subject to veterinary check everyday. Prohylactic and sanitary measures should be carried our on a periodic basis as per a written schedule.

MAINTENANCE OF RECORDS

The Safari Park should maintain all records as envisaged in the ‘Recognition of Zoo Rules’ especially in case of endangered species.

EDUCATION

Signboards should be setup near the entrance. These should give information regarding the biological as well as ecological facts about the animals species housed. Besides this it would be useful if such information is presented in an appropriate manner during the drive inside the Safari Park to the visitors. Small pamphlets or handouts would also be given to the visitors, highlighting the Safari Park, the animals housed and their status and ecology in the wild.

OPERATION

The frequency of vehicles entering into the Safari Park be regulated so that the animals are not unduly stressed. The vehicles should not be taken near the animals to say within a distance of 5 meters. Vehicles should move in a one way direction in a preset programme.

The Double gate may be operated by one person, so that there is no misunderstanding or mistake. The vehicle driver, watchmen and gate keepers should have wireless connection with the Safari Park Curator at all times.

Appendix - 13

GUIDELINES FOR SETTING UP OF DEER PARKS

(Adopted in Sixth meeting of the Central Zoo Authority held on 8th Nov. 1993)

1. Area of the deer park should be atleast five hectares.

2. The deer park should be at a reasonable distance from the residential accommodations and roads, so that the animals are not provoked unnecessary.

3. The zoo/deer park should have a small treatment room.

4. The Zoo should have a post-mortem room.

5. Arrangement should be made with a Veterinarian to check the health of animals daily.

6. Arrangement for around the clock supply of potable water should be made in the animal enclosure.

7. The number of animals in the deer park should not be more than one animal for larger ungulates and three animals per acre for smaller ungulates.

8. To Safe-guard against inbreeding, periodic exchange of animals specially males, should be made with other zoos.

9. Fodder trees and shade trees should be planted in the zoo area.

10. Night shelter/kraals should be constructed for the deers.

Appendix – 14

(Article 9 of the convention on Biological Diversity Addopted at the Earth Summit of Rio-de Janerio in 1992)

EX-SITU CONSERVATION

In addition to *in-situ* conservation measures, in some cases the components of biological diversity can also be conserved *ex-situ,* outside their natural habitats.

Ex-situ conservation of the components of biological diversity- genetic resources, as well as wild and cultivated or domesticated species – draws on a diverse, growing body of techniques and facilities. Some of these includes:

a. gene banks such as seed banks, field banks and sperm and ova banks;
b. in-vitro plant tissue and microbial culture collections;
c. captive breeding of animals and artificial propagation of plants, with possible re-introduction into the wild; and
d. collection living organisms for zoos, aquaria and botanic gardens for research and public education and awareness.

Ex-situ conservation provides excellent opportunities for research on the components of biological diversity conserved. A variety of institutions, for example, seed banks, microbial resources centres, zoo, aquaria and botanic gardens, both at the international and national levels, are involved with research.

Some of these same institutions also play a central role in public education and awareness, primarily by bringing members of the general public into contact with plants and animals they may not normally come in contact with. For example, it is estimated that worldwide annual visits to zoos is over 600 million (World Zoo Organization and IUCN, 1993). While the figure may include repeated visits, it clearly demonstrates the great potential for *ex-situ* conservaion facilities to be at the forefront of educating the public on the biodiversity issue.

Article 9 is the Convention article dealing with *ex-situ* conservation. Its chapeau makes it very clear that *ex-situ* conservation measures should predominately complement *in-situ* approaches. In other words, conserving genetic and species diversity *in-situ* should be a Party's primary objective; *ex-situ* conservation measures should support *in-situ* measures.

The Convention thus rejects the argument made by some that the main approach of biodiversity conservation should be through *ex-situ* measures, such as establishing some form of global gene bank. Even if practicable, such a "technical fix" would suffer from a number of shortcomings including a lack of comprehensiveness, technical difficulties and great expense. Instead, a comprehensive, integrated approach is implied by this article and article 8 (*In-situ* Conservation), where the positive attributes of both *In-situ* and *ex-situ* conservation techniques are to be drawn on as appropriate.

The Global Biodiversity Strategy, the Botanic Gardens Conservation Strategy, the World Zoo Conservation Strategy, and other references cited in the bibliography, support the notion of an integrated approach. They also give Parties a clear rationale for *ex-situ* conservation, a general outline of what measures are needed and an explanation of the various techniques involved.

Therefore, the commentary which follows is general and these other documents should be consulted for further information. It should be kept in mind that, in addition to article 8, this article's implementation is related to other articles in the Conservation. Some of the most directly relevant are article 7 (Identification and Monitoring), article 12 (Research and Training) and article 16 (Access to and Transfer of Technology).

Each Contracting Party shall, as far as possible and as appropriate, and predominantly for the purpose of complementing *in-situ* measures :

(a) Adopt measures for the *ex-situ* conservation of components of biological diversity, preferably in the country of origin of such components;

Paragraph (a) requires each Contracting Party to adopt a set of unspecified measures to conserve the components of biological diversity *ex-situ.* This is to be accomplished bearing in mind that *ex-situ* measures are to primarily complement *in-situ* measures.

Ex-situ measures have been, perhaps, most extensively applied to conserve cultivated and domesticated species of plants and animals. *Ex-situ* conservation techniques, such as seed

banks, field gene banks and *in-vitro* storage, have been the primary conservation approach for agriculturally important plant varieties, such as farmer developed land-races and other crop cultivars.

According to the *Global Biodiversity Strategy,* however, there are many other groups which need to be conserved *ex-situ.* Some of these include:

a. wild relatives of cultivated plants and domesticated animals;
b. micro-organisms;
c. tree species;
d. medicinal plants;
e. plant crops of local and regional importance; and
f. ornamental plant species;

Paragraph (a) specifies that *ex-situ* conservation should preferably be in the country of origin (see the definition in article 2). This is significant since, historically, most *ex-situ* conservation has been far away from the country of origin. For *ex-situ* conservation of wild plants at least, evidence is growing that *ex-situ* conservation in seed banks may be more effective if accomplished on a relatively small scale, in particular, for the plants of an individual country or island, rather that in institutions located elsewhere.

But whether the components of biological diversity can be conserved *ex-situ* in the country of origin depends primarily on the availability of adequate facilities, trained personal and financial resources. Furthermore, there is little point in duplicating efforts elsewhere.

For these reasons, one implication of paragraph (a), is that each Party should set priorities for *ex-situ* conservation measures, primarily because some *ex-situ* techniques tend to be expensive. Some considerations might include:

1. identifying those species and genetic resources which require *ex-situ* measures (see article 7 Identification and Monitoring), in particular Annex – I)
2. evaluating the present capacity to undertake *ex-situ* conservation in *terms* of available financial resources, redundancies and gaps in infrastructure and the availability of trained personal (see paragraph (b) of this article and article 12 (Research and Training);

3. evaluating the effectiveness of existing measures to regulate or manage the collection of biological resources from natural habitats (see *paragraph* (d) of this article); and
4. identifying potential areas for cooperation with other Parties (see paragraph (c) of this article). Priority setting could be initiated in the context of completing a national biodiversity strategy.

An important policy issue, generally applicable to gene banks, which needs to be addressed by most if not all Parties, is the question of access to genetic resources conserved *ex-situ* and the sharing of benefits derived from their subsequent use (see the discussion of article 15). This is intimately related to the issue of who owns accessions stored off-site, whether in international gene banks whose collections are held in-trust for the benefit of the global community, national gene banks committed to improving local agriculture or even private gene banks stocked with accessions of a particular species. This is particularly a problem for genetic resources not acquired in accordance with the Convention (see the discussion of article 15 (3) and Resolution 3 of the Nairobi Final Act in appendix). As a result, each Party will need to carefully examine the issue at the international, national and private sector levels.

(b) Establish and maintain facilities for *ex-situ* conservation of and research on plants, animals and micro-organisms, preferably in the country of origin of genetic resources.

This paragraph requires Parties to provide or maintain facilities for *ex-situ* conservation. While paragraph (a) is directed to the components of biological diversity, the focus of paragraph (b) is on *ex-situ* conservation facilities for genetic resources.

The phrasing in this paragraph, the previous paragraph and the beginning of the article implies that every party should have its own *ex-situ* conservation facilities. However, this may not be a realistic goal for small countries, where facilities shared with neighbouring countries may be more appropriate by allowing the partners to share costs and expertise. Depending on the joint facility's mission, supplemental legal arrangements might need to be devised to work out in advance questions of access to genetic resources and the

sharing of benefits arising from their subsequent use (see the discussion of article 15).

Most of the emphasis on *ex-situ* facilities has been on seed banks acting as repositories for the genetic resources of major plant food crops. The main institutions in this area are the International Agriculture Research Centres (IARC), run under the aegis of the Consultative Group on International Agricultural Research (CGIAR), and the growing number of national seed banks.

For crops such as cocoa, whose seeds cannot be stored in seed banks, field gene banks are an alternative to seed banks. Field gene banks contain living collections of plants managed for breeding. They are, however, vulnerable to disease epidemics and are expensive to maintain. Another possible alternative is *in-vitro* tissue culture collections, where plant cells are typically grown under controlled conditions. With the proper conditions whole plants can be grown from the cells (IPGRI 1993).

For wild plant species, the main institutions are botanic garden. The main institutions for *ex-situ* of conservation of wild animal species are zoos and aquaria. Some important plant and animal collections of great value to biodiversity conservation are also in private hands, and Parties need to ensure that these are operated under standards of protection and management that at least meet international standards. For micro-organisms, the main institutions are the 23 Microbiological Resources Centres (MIRCEN) located throughout the world.

Ex-situ conservation facilities are ideal places for researchers to study plants, animals and micro-organisms in controlled conditions. Paragraph (b) recognizes this and implies that the *ex-situ* facilities which a Party establishes or maintains should also facilities research on the accessions that they hold. Research could have at least two objectives. First, the research undertaken at a facility should include that necessary for *ex-situ* conservation itself. This is needed for plants, animals and micro-organisms. For example, the *Global Biodiversity Strategy* notes that, for plant genetic resources, improvements are needed in collecting, storage and regeneration techniques, germplasm evaluation, documentation and information systems. All of these areas are ripe for applied research.

Second, information on genetic resources stored *ex-situ* can add value to the collection, at a time when biotechnology increasingly needs new genetic material and organisms. For example, research on the accessions of a seed bank could more accurately characterize them. The information might be valuable to a potential commercial use who may be willing to pay for an accession and the information generated for it. Therefore, the information could be marketed to users as part of the service to provide an accession. Commercial payment for accessions could then be used to support the facility and expand, as well as characterize, other accessions.

(c) Adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions:

Paragraph (c) complements article 8 (I) (rehabilitate and restore degraded ecosystems and promote the recovery of threatened species). Paragraph (c) acknowledges that one reason to establish ex-situ facilities is to facilitate the recovery of threatened species. It reinforces the view that effective recovery of many threatened species needs an integrated approach, involving both in-situ and ex-situ conservation techniques.

The paragraph actually goes beyond article 8(f) by introducing a further element, reintroduction. It implies that the ultimate purpose of some *ex-situ* conservation measures for wild, as opposed to domesticated and cultivated, species is to reintroduce them into the wild.

For wild animal species, the particular value of *ex-situ* approaches- essentially captive breeding – is to bulk up endangered species' populations. When a population is very low, it is vital to increase it as fast as possible to minimize genetic erosion (see the discussion of article 8(f)). Captive breeding can achieve this. It is also vital to reintroduce the animals back into the wild as soon as possible, particularly for behavioural reasons and to ensure that they are exposed to the forces of evaluation.

Captive breeding has already saved some animals from extinction, notably the Arbian Oryx, which has been reintroduced from captive-bred populations, and

has the potential to contribute to the survival of many more. Also, some animals, like the Prewalski Horse, are only known in captivity, without captive breeding, this species would be extinct.

The situation is somewhat different for wild plant species. Like captive breeding for animals, artificial propagation is important for bulking up populations of endangered species for reintroduction, and it can usually be done more quickly. Using techniques such as seed propagation and tissue culture, one individual plant specimen can give rise to thousands of individuals in a short period of time. Also, the behavioural difficulties characteristic of reintroduced animals do not occur in plants. It is, however, necessary to ensure that the genetic constituency of the plants has not been modified from propagation.

With large animals in captive breeding, the reintroduction should be in the short-term; with many plants, whose seeds can be stored in seed banks for much as a hundred years without loss of viability, it is practical to see *ex-situ* measures also as a long-term insurance policy, used not only for species in need of immediate recovery, but for a wider range of species which could conceivably suffer depredations and loss in future years.

Of course, the success of recovery, rehabilitation and reintroduction programmes is dependent on many variables. Species recovery and management plans are important prerequisites of article 8(f). Equally important is removing, or at least minimizing, the pressures which led to the species' decline in the first place, whether from such impacts as loss of habitat, hunting pressure or pollution. Legislation may be required in this regard (see the discussion of article 8(l)). In addition, the possibility for *ex-situ* conservation measures should not be used as an excuse for converting a threatened species' natural habitat to some other use.

Legislation may be required to protect reintroduced species from new pressures or threats (see the discussion of article 8(k)).

Conversely, steps may need to be taken to ensure that reintroduced species do not existing populations or other species and ecosystems. In this regard, plant and animal quarantine regulations should ensure that reintroduced species do not spread disease. Finally, the success of a particular

reintroduction is very dependent on the support of local people (see the discussion of article 10(d)).

(d) Regulate and manage collection of biological resources from natural habitats for *ex-situ* conservation purposes so as not to threaten ecosystems and *in-situ* populations of species, except where special temporary *ex-situ* measures are required under subparagraph (c) above; and

This paragraph essentially means that collecting samples of species and genetic resources for *ex-situ* conservation should not endanger those species and genetic resources, nor should other species and genetic resources be harmed, nor the ecosystem concerned damaged. This is a well-established conservation principle and guidelines have been prepared for collection of plants and animals both at the international level and within professional societies.

For example, in late 1993 the FAO Conference adopted an international code of conduct for plant germplasm collecting and transfer (FAO, 1993b). The code of conduct is now part of FAO's Global System for the Conservation and Utilization of Plant Genetic Resources (see box 13). Among other things, the code emphasizes that collectors, providers, curators and users of plant germplasm have a shared responsibility to minimize the adverse effects of collecting in the evolution of agricultural plant biodiversity and the environment.

The problem that paragraph (d) addresses is more acute with animals than for wild plants, since many plants can be propagated from seed or cuttings, and so usually the samples taken do not significantly reduce wild populations. With cultivated plants, such as crop varieties, the samples are taken from farm fields and gardens. In this case, the goal of paragraph (d) should be to minimize the risk of genetic erosion, the loss of genetic diversity.

Requiring a permit to collect all species under a Party's jurisdiction could be a first step onwards implementing this paragraph. A possible legislative route for this could be through existing legislation which regulates the taking of species. Licenses for collecting threatened species could be handled through the

legislation required under article 8(k). In addition, any genetic resources access legislation should also include provisions reflecting the intent of this paragraph (see the discussion of article 15 (Access to Genetic Resources)). The permit-issuing authority, which could be an administrative agency of the Party, would be required to ensure that conditions of this paragraph, and any other conditions deemed necessary, are adhered to.

Timely recognition of declining animal populations that may need captive breeding or plants which need propagation is needed. For example, the IUCN Policy Statement on Captive Breeding makes the important point that the vulnerability of small animal populations has been consistently underestimated and the removal of individuals for captive breeding has tended to be left to the last moment, when the removal of the animals concerned reduced the wild population proportionately far more than it would have done earlier. This implies, however, that regulation and management in all cases require accurate information on the population and ecosystems concerned so the degree to which proposed collecting threatens them can be determined by the relevant State administrative agency.

(e) Cooperate in providing financial and other support for *ex-situ* **conservation outlined in subparagraphs (a) to (d) above and in the establishment and maintenance of** *ex-situ* **conservation facilities in developing countries.**

Like article 8(m), this paragraph is about financial and other types of cooperation. In fact, the two paragraphs are very similarly worded and the general commentary for article 8(m) on funding can be referred to for more information.

Three points are salient for paragraph (e). First, as with article 8(m), the phrase “financial and other support” means that cooperation could be in cash or in-kind. And, since the implementation of article 9 requires Parties to implement or draw on other articles of the Convention, support could extend to research and training (article 12), public education and awareness (article 13) or sharing of technical knowledge (articles 17 and 18).

Second, the scope of cooperation extends to the establishment and maintenance of *ex-situ* conservation facilities in developing countries. In almost all areas of *ex-situ* conservation, adequate facilities are lacking, but particularly in developing countries. For example, there is an uneven distribution of botanic gardens and zoos around the world. The current distribution is inversely proportional to the level of global biodiversity: northern countries as a group, with less diversity, tend to have many more botanic gardens and zoos than southern countries, although their biodiversity is far greater (WRI, IUCN and UNEP, 1992).

The situation may be somewhat better for crop related plant genetic resources because, since 1975, the international Plant Genetic Resources Institute (formerly the International Board for Plant Genetic Resources) has provided technical assistance to national plant genetic resources programmes. According to IPGRI, this has resulted in the establishment of *ex-situ* conservation facilities for the international and national storage of germplasm for particular crops, in over 100 countries (IPGRI, 1993).

Finally, the mission of *ex-situ* facilities, such as gene bank, is a long-term commitment to the conservation of biodiversity. Unfortunately, they are very susceptible to natural disasters, civil unrest and war, power failures and inadequate financial resources. In many cases, developing countries have had to rely on outside financial support from donors to fund their facilities (IPGRI, 1993). Problems develop when funding is only for a short period of time.

Through cooperation, Parties should seek to develop innovative ways to provide continuous funding for gene banks. The *Global Biodiversity Strategy* suggests that trust funds or endowments could be established for important collections. These could help cover recurrent expenses for trained personnel, collection management or acquisition. Also, just as with *in-situ* conservation, development assistance budgets for projects which unavoidably adversely effect or destroy biodiversity should allocate sufficient funds for *ex-situ* conservation measures of the species or genetic resources which lie in the path of development.

Appendix – 15

IUCN TECHNICAL GUIDELINES ON THE MANAGEMENT OF EX SITU POPULATIONS FOR CONSERVATION

PREAMBLE

IUCN affirms that a goal of conservation is the maintenance of existing genetic diversity and viable populations of all taxa in the wild in order to maintain biological interactions, ecological processes and functions. Conservation managers and decision-makers should adopt a realistic and integrated approach to conservation implementation. The threats to biodiversity in situ continue to expand, and taxa have to survive in increasingly human-modified environments. Threats, which include habitat loss, climate change, unsustainable use, and invasive and pathogenic organisms, can be difficult to control. The reality of the current situation is that it will not be possible to ensure the survival of an increasing number of threatened taxa without effectively using a diverse range of complementary conservation approaches and techniques including, for some taxa, increasing the role and practical use of *ex-situ* techniques.

If the decision to bring a taxon under *ex-situ* management is left until extinction is imminent, it is frequently too late to effectively implement, thus risking permanent loss of the taxon. Moreover, *ex situ* conservation should be considered as a tool to ensure the survival of the wild population. *Ex situ* management should be considered only as an alternative to the imperative of *in situ* management in exceptional circumstances, effective integration between in situ and ex situ approaches should be sought wherever possible.

The decision to implement an *ex situ* conservation programme as part of a formalised conservation management or recovery plan and the specific design of and prescription for such and *ex-situ* programme will depend on the Taxon's circumstances and conservation needs. A taxon-specific conservation plan may involve a range of *ex-situ* objectives, including short-medium and long-term maintenance of *ex situ* stocks. This term utilise a variety of techniques including reproduction propagation, germplasm banking, applied research, reinforcement of existing populations and reintroduction into the wild or controlled environments. The objectives and overall purpose should be clearly stated and agreed among organisations participating in the programme, and other relevant stakeholders including

landowners and users of the taxon involved. In order to maximise their full potential in conservation, ex-situ facilities and their co-operative networks should adopt the guidelines defined by the Convention on Biological Diversity (CBD), the International Agenda for Botanic Gardens in Conservation, Center for Plant Conservation and the World Zoo Conservation Strategy, along with other guidelines, strategies, and relevant legislative requirements at national and regional levels. IUCN recognizes the considerable set of resources committed worldwide to *ex situ facilities.* The effective utilisation of these resources represents an essential component of conservation strategies at all levels.

VISION

To maintain present biodiversity levels through all available and effective means including, where appropriate, *ex situ* propagation, translocation and other *ex situ* methodologies.

GOAL

Those responsible for managing *ex situ* plant and animal populations and facilities will use all resources and means at their disposal to maximise the conservation and utilitarian values of these populations, including:

a. Increasing public and political awareness and understanding of important conservation issues and the significance of extinction.
b. Co-ordinated genetic and demographic population management threatened taxa.
c. Re-introduction and support wild populations;
d. Habitat restoration and management;
e. Long-term gene and biomaterial banking;
f. Institutional strengthening and professional capacity building;
g. Appropriate benefit sharing;
h. Research on biological and ecological questions relevant to *in situ* conservation; and
i. Fundraising to support all of the above.

Ex-situ agencies and institutions must follow national and international obligations with regard to access and benefit sharing (as outlined in the CBD) and other legally binding instruments such as CITES, to ensure full collaboration with all range State Priority should be given to the

ex situ management of threatened taxa (according to the latest IUCN Red list Categories) and threatened populations of economic or social/cultural importance.

Ex-situ programme are often best situated close to within the eco-geographic range of target Taxa and where possible within the range State. Nevertheless a role for international and extra regional support for *ex situ* conservation is also recognised. The option of locating the ex situ programme outside the taxa's natural range should be considered if the taxa is threatened by natural catastrophes, political and social disruptions, or if further germplasm, banking, propagation, research, isolation or reintroduction facilities are required and cannot be feasibly established. In all cases, *ex situ* populations should be managed in ways that minimize the loss of capacity for expression of natural behaviours and loss of ability to later again thrive in natural habitats.

TECHNICAL GUIDELINES

The basis for responsible ex situ population management in support of conservation is founded on benefits for both threatened taxa and associated habitats.

The primary objective of maintaining *ex-situ* populations is to help support the conservation of a threatened taxon, its genetic diversity, and its habitat, Ex situ programme should give added value to other complementary programmes for conservation.

Although there will be taxa-specific exceptions due to unique life histories, the decision to initiate *ex situ* programmes should be based on one or more of the appropriate IUCN Red List Criteria, including:

a. When the taxa/population is prone to effects of human activities or stochastic events or
b. When the taxa/population is likely to become Critically Endangered, Extinct in the Wild, or Extinct in a very short time. Additional criteria may need to be considered in some cases where taxa or populations of cultural importance, and significant economic or scientific importance, are threatened. All Critically Endangered and Extinct in the Wild taxa should be subject to ex situ management to ensure recovery of wild populations.

Ex situ conservation should be initiated only when an understanding of the target taxon's biology and ex situ management and storage needs are at a level where there is a reasonable probability that successful enhancement of species conservation can be achieved; or where the development of such protocols could be achieved within the time frame of the taxon's required conservation management, ideally before the taxa becomes threatened in the wild. Ex situ institutions are strongly urged to develop ex situ protocols prior to any forthcoming ex situ management. Consideration must be given to institutional viability before embarking on a long term ex situ project.

For these threatened taxa for which husbandry and/or cultivation protocols do not exist, surrogates of closely related taxa can serve important functions, for example in research and the development of protocols, conservation biology research, staff training, public education and fundraising.

While some *ex situ* populations may have been established prior to the ratification of the CBD, all ex situ and in situ populations should be managed in an integrated, multidisciplinary manner, and where possible, in accordance with the principles and provisions of the CBD.

Extreme and desperate situations, where taxa/populations are in imminent risk of extinction, must be dealt with on an emergency basis. This action must be implemented with the full consent and support of the range State.

All *ex situ* populations must be managed so as to reduce risk of loss through natural catastrophe, disease or political upheaval. Safeguards include effective quarantine procedures, disease and pathogen monitoring, and duplication of stored germplasm samples in different locations and provision of emergency power supplies to support collection needs (e.g. climate control for long term germplasm repositories).

All *ex situ* populations should be managed so as to reduce the risk of invasive escape from propagation, display and research facilities. Taxa should be assessed as to their invasive potential and appropriate controls taken to avoid escape and subsequent naturalisation.

The management of *ex situ* populations must minimise any deleterious effects of *ex situ* management, such as loss of genetic diversity, artificial selection, pathogen transfer and hybridisation, in the interest of maintaining the genetic integrity and viability of rich materials. Particular attentions should be paid to initial sampling techniques, which should be designed to capture as wild genetic variability as practicle. Ex situ practitioners should adhere to, and

further develop, any taxon-or region-specific record keeping and genetic management guidelines produced by *ex situ* management agencies.

Those responsible for managing ex situ populations and facilities should seek both to increase public awareness, concern and support for biodiversity and to support the implementation of conservation management, through education, fundraising and professional capacity building programmes, and by supporting direct action in situ.

Where appropriate, data and the results of research derived from ex situ collections and ex situ methodologies should be made freely available to ongoing in-country management programmes concerned with supporting conservation of in situ populations, their habitats, and the ecosystems and landscapes in which they occur.

NB. Ex situ conservation is defined here, as in the CBD, as “the conservation of components of biological diversity outside their natural habitats”. Ex situ collections include whole plant or animal collections, zoological parks and botanic gardens, wildlife research facilities, and germplasm collections of wild and domesticated taxa (zygotes, gametes and somatic tissue).

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IUCN GUIDELINES FOR RE-INTRODUCIONS

(Approved by 41st meeting of Council, May 1995)

INTRODUCTION

These policy guidelines have been drafted by the Re-introduction Specialist Group of the IUCN's Species Survival Commissions, in response to the increasing occurrence of re-introduction projects worldwide, and consequently, to the growing need for specific policy guidelines to help ensure that the re-introduction achieve their intended conservation benefit, and do not cause adverse side-effects of greater impact. Although IUCN developed a Position Statement on the Translocation of living Organisms in 1987, more detailed guidelines were felt to be essential in providing more comprehensive coverage of the various factors involved in re-introduction exercises.

These Guidelines are intended to act as a guide for procedures useful to reintroduction programmes and do not represent an inflexible code of conduct. Many of the points are more relevant to re-introduction using captive-bred individuals than to translocations of Wild Species. Others are especially relevant to globally endangered species with limited numbers of founders. Each re-introduction proposal should be rigorously reviewed on its individual merits. It should be noted that re-introduction is always a very lengthy, complex and expensive process.

Re-introduction or translocations of species for short-term, sporting or commercial purposes-where there is not intention to establish a viable population are a different issue and beyond the scope of these guidelines. These include fishing and hunting activities.

This document has been written to encompass the full range of plant and animal taxa and is therefore general. It will be regularly revised. Handbooks for re-introduction individual groups of animals and plants will be developed in future.

CONTEXT

The increasing number of re-introductions and translocations led to the establishment of the IUCN Species Survival Commission's Re-introduction Specialist Group. A Priority of the Group has been to update IUCN's 1987 Position Statement on the Translocation of Living Organisms, in consultation with IUCN's other Commissions.

It is important that the Guidelines are implemented in the context of IUCN's broader policies pertainable management of natural resources. The philosophy for environmental conservation bodies is stated in key documents such s "Caring for the Earth" and the "Global Biodiversity Strategy", which cover the broad themes of the need for approaches with community involvement and participation in sustainable natural resource conservation, an overall enhanced quality of human life and the need to conserve and where necessary, restore ecosystems with regard to the latter, the re-introduction of a species is one specific instance of restoration of a species where in general, only this species is missing. Full restoration of any array of plant and animal species has rarely been tried to date.

Restoration of single species of plants and animals is becoming more frequent around the world. Some succeed, many fail. As this form of ecological management is increasingly common, it is a priority for the Species Survival Commission's Re-introduction Specialist Group to develop guidelines so that re-introduction are both justifiable and likely to succeed , and that the conservation world can learn from each initiative, whether successful or not. It is hoped that these Guidelines, based on extensive review of case histories and wide consultation across a range of disciplines will introduce more higher into the concepts, design, feasibility and implementation of re-introduction despite the wide diversity of species and conditions involved.

Thus the priority has been develop guidelines that are of direct, practical assistance carrying out re-introductions. The primary audience of these Guidelines is therefore, the practitioners (usually managers or scientists), rather then decision-makers in governments, Guidelines directed towards the latter group would inevitably have to go into greater depth on legal and policy issues.

1. Definition of Terms

(a) **"Re-introduction"**: an attempt to establish a species[2] in an area which was once part of its historical range, but from which it has been extirpated or become extinct[3] (Re-establishment" is a synonym, but implies that the re-introduction has been successful).

(b) **"Translocation"**: deliberate and mediated movement of wild individuals to an existing population of conspecifies.

(c) **"Re-enforcement/Supplementation"**: addition of individuals to an existing population.

(d) **"Conservation/Benign Introductions"**: an attempt to establish a species, for the purpose of conservation, outside its recorded distribution but within an appropriate habitat and eco-geographical area. This is a feasible conservation tool only when there is no remaining area left within a species historic range.

2. Aims and Objectives of Re-introduction

(a) **Aims**: The principal aim of any re-introduction should be to establish a viable, free-ranging population in the wild, of a species, subspecies or race, which has become globally or locally extict, or extirpated, in the wild. It should be re-introduced within the species former natural habitat and range and should require minimal long-term management.

(b) **Objectives**: The objective of a re-introduction may include to enhance the long-term survival of a species; to re-establish a key stone species (in the ecological or cultural) in an ecosystem; to maintain and/or restore natural biodiversity; to provide long-term economic benefits to the local and/or national economy; to promote conservation awareness or a combination of these.

3. Multidisciplinary Approach

A re-introduction requires a multidisciplinary approach involving a team of person drawn from a variety of backgrounds. As well as government personnel, they may include persons from governmental natural resource management agencies, non-governmental organizations, zoos (and private animal breeders) and/or botanic gardens, with a full range of suitable expertise. Team leaders should be responsible for co-ordination between the various bodies and provision should be made for publicity and public education about the project.

4. Pre-Project Activities

4a. Biological

(i) Feasibility study and background research

An assessment should be made of the taxonomic status of individuals to be re-introduced. They should preferably be of the same subspecies or race as those which were extirpated, unless adequate numbers are not available. An investigation of historical information about the loss and fate of individuals from the re-introduction area, as well as molecular genetic studies, should be undertaken in case of doubt as to individuals' taxonomic status. A study of genetic variation within and between populations of this and related taxa can also be helpful. Special care is needed when the population has long extinct.

Detailed studies should be made of the status and biology of wild populations (if they exist) to determine the species' critical needs. For animals, this would include descriptions of habitat preferences, intraspecific variations, social behaviour, group composition, home range size, shelter and food requirements, foraging and feeding behaviour, predators and diseases. For migratory species, studies should include the potential migratory areas. For plants, it would include biotic and abiotic habitat requirements, dispersal mechanisms, reproductive biology, symbiotic relationship (e.g. with mycorrhizae, pollinators), insect pests and diseases. Overall, a firm knowledge of the natural history of the species in question is crucial to the entire re-introduction scheme.

The species, if any, that has filled the void created by the loss of the species concerned, should be determined; an understanding of the effect the re-introduced species will have on the ecosystem is important for ascertaining the success of the re-introduced population.

The built-up to the released population should be modelled under various sets of conditions, in order to specify the optimal number and composition of individuals to be released per year and the numbers of years necessary to promote establishment of a viable population.

A population and Habitat Viability Analysis will aid in identifying significant environment and population variables and assessing their potential interactions, which would guide long-term population management.

(ii) Previous re-introductions

Through research into previous re-introduction of the same similar species and wide-ranging contacts with persons having relevant expertise should be conducted prior to and while developing the re-introduction protocol.

(iii) Choice of release site and type

The site should be within the historic range of the species. For an initial re-enforcement there should be few remnant wild individuals. For a re-introduction, there should be no remnant population to prevent disease spread, social disruption and introduction, of alien gens. In some circumstances, a re-introduction or re-enforcement may have to be made into an area which is fenced or otherwise delimited, but is should be within the species former natural habitat and range.

A conservation/benign introduction should be undertaken only as a last resort when no opportunities for re-introduction into the original site or range exist and only when a significant contribution to the conservation of the species will result.

The re-introduction area should have assured long-term protection (whether formal or otherwise).

(iv) Evaluation of re-introduction site

Availability of suitable habitat: Re-introductions should only take place where the habitat and landscape requirements of the species are satisfied, and likely to be sustained for the foreseeable future. The possibility of natural habitat change since extirpation must be considered. Likewise, a change in the legal/political or cultural environment since the species extirpation needs to be ascertained and evaluated as a possible constraint. The area should of the re-introduced population and support a viable (self-sustaining) population in the long run.

Identification and elimination, or reduction to a sufficient level, of previous causes of decline: could include disease, over hunting, over collection, pollution, poisoning, competition with or predation by introduced species, habitat loss, adverse effects of earlier research or management programmes, competition with domestic livestock, which may be seasonal.

Where the release site has undergone substantial degradation caused by human activity, a habitat restoration programme should be initiated before the re-introduction is carried out.

(v) Availability of suitable release stock

a. It is desirable that source animals come from wild populations. If there is a choice of wild populations to supply founder stock for translocation, the source popul`ation should ideally be closely related genetically to the original native stock and show

similar ecological characteristics (morphology, physiology, behaviour, habitat preference) to the original sub-population.

b. Removal of individuals for re-introduction must not endanger the captive stock population or the or the wild source population. Stock must be guaranteed available on a regular and predicable basis, meeting specifications of the project protocol.
c. Individuals should only be removed from a wild population after the effect of translocation on the donor populations have been assessed, and after it is guaranteed that these effects will not be negative.
d. If captive or artificially propagated stock is to be used, it must be from a population which has been soundly managed both demographically and genetically, according to the principles of contemporary conservation biology.
e. Re-introductions should not be carried out merely because captive stocks exist, not ready as a means of disposing of surplus stock.
f. Prospective release stock including stock that is a gift between governments must be subjected to a through veterinary screening process before shipment from original source. Any animals found to be infected or which test positive for non-endemic or contagious pathogens with a potential impact on populations levels, must be removed from the consignment, and the uninfected, negative remainder must be placed in strict quarantine for a suitable period before retest. If clear after retesting the animals may be placed for shipment.
g. Since infection with serious disease can be acquired during shipment, especially if this is intercontinental, great care must be taken to minimise this risk.
h. Stock must meet all health regulations prescribed by the veterinary authorities of the recipient country and adequate provisions must be made for quarantine if necessary.

(vi) Release of captive stock

a) Most species of mammals and birds rely heavily on individual experience and learning as juveniles for their survival, they should be given the opportunity to acquire the necessary information to enable survival in the wild through training in their captive environment, a captive bred individual's probability for survival should approximate that of a wild counterpart.

b) Care should be taken to ensure that potentially dangerous captive bred animals (such as large carnivores or primates) are not so confident in the presence of humans that they might be a danger to local inhabitant and/or their livestock.

4b Socio-Economic and Legal Requirements

a. Re-introduction are generally long-term projects that require the commitment of long-term financial and political support.
b. Socio-economic studies should be made to assess impacts, costs and benefits of the re-introduction programme to local human population.
c. A through assessment of attitudes of local people to the proposed project is necessary to ensure long-term protection of the re-introduced population, especially if the cause of species decline was due to human factors (e.g. over-hunting, over-collection, loss or alteration of habitat). The programme should be fully understood, accepted and supported by local communities.
d. Where the security of the re-introduced population is at risk from human activities, measures should be taken to minimise these in the re-introduction area. If these measures are inadequate, the re-introduction should be abandoned or alternative release areas sought.
e. The policy of the country to re-introduction and to the species concerned should be assessed. This might include checking existing provincial, national and international legislation and regulation, and provision of new measures and required permits as necessary.
f. Re-introduction must take place with the full permission and involvement of all relevant government, agencies of the recipient or host country. This is particularly important in re-introductions in border areas, or involving more than one state or when a re-introduced population can expand into other states, provinces or territories.
g. If the species poses potential risk to life or property, these risks should be minimised and adequate provision made for compensation where necessary, where all other solutions fail, removal or destruction of the released individual should be considered in the case of migratory mobile species, provisions should be made for crossing of international/state boundaries.

5 Planning, preparation and Release Stages

1. Approval of relevant government agencies and land owners, and co-ordination with national and international conservation organizations.

2. Construction of a multidisciplinary team with access to expert technical advice for all phases of the programme.
3. Identification of short and long term success indicators and prediction of programme duration, in the context of agreed aims and objectives.
4. Securing adequate funding for all programme phases.
5. Design of pre and post release monitoring programme so that each re-introduction is a carefully designed experiment, with the capability to test methodology with scientifically collected data. Monitoring the health of individuals as well as the survival is important, intervention may be necessary if the situation proves unforeseeably favourable.
6. Appropriate health and genetic screening of release stock including stock that is gift between governments. Health screening of closely related species in the re-introduction area.
7. If release stock is wild caught care must be taken to ensure that (a) the stock is free from infectious or contagious pathogens and parasites before shipment and (b) the stock will not be exposed to vectors of disease agents within may be present at the release site (and absent at the source site) and to which it may have no acquired immunity.
8. If vaccination prior to release against local endemic or epidemic diseases of wild stock or domestic livestock at the release site is deemed appropriate this must be carried out during the “Preparation stage” so as to allow sufficient time for the development of the required immunity.
9. Appropriate veterinary or horticultural measures as required to ensure health of released stock throughout the programme. This is to include adequate quarantine arrangement, especially where founder stock travels far or crosses international boundaries to the release site.
10. Development of transport plan for delivery of stock to the country a site of re-introduction, with special emphasis on ways to minimise stress on the individuals during transport.
11. Determination of release strategic (acclimatization of release stock release area, behavioural training including hunting and feeding, ground composition, number, release pattern and techniques, timing).
12. Establishment of policies on interventions (see below).
13. Development of conservation education for long-term support professional training of individuals involved in the long-term programme public relations through the mass

media and a local community, involvement where possible of local people in the programme.

14. The welfare of animals for release is of paramount concern through all these stages.

6. Post-Release Activities

1. Post-release monitoring is required of all (or a sample of) individuals. This most vital aspect may be by direct (e.g. tagging, telemetry), or indirect (e.g. spoor, informants) methods as suitable.
2. Demographic, ecological and behavioural studies of released stock must be undertaken.
3. Study of processes of long-term adaptation by individuals and the population.
4. Collection and investigation of mortalities.
5. Interventions (e.g. supplemental feeding, veterinary aid, horticultural aid) when necessary.
6. Decisions for revision, rescheduling, or discontinuation of programme where necessary.
7. Habitat protection or restoration to continue where necessary.
8. Continuing public relations activities including education and mass media cover-age.
9. Evaluation of cost-effectiveness and success of re-introduction techniques.
10. Regular publication in scientific and popular literature.

Guidelines for Scientific Research in the Wildlife Protected Areas

1. Introduction

Scientific Research in the Wildlife Protected Areas is vital for a better understanding of ecosystems, their functions, ecology and status of various species and their habitats. Information generated by scientific research in Protected Areas would be useful to the managers for taking appropriate conservation and management actions. Since Protected Areas (PA) also serve as 'control sites' for comparing a large number of environmental parameters and ecological processes with those of human influenced ecosystems, organizations and individuals form India as well as abroad would like to undertake basic as well as applied research within Protected Areas.

As per the guidelines of the National Wildlife Action Plan (2002-2016), research projects having the objectives of measuring biological diversity, monitoring the status of indicator/flagship/threatened species of flora and their breeding biology, will be given priority in granting permission. In addition, applied research is also needed to help overcome specific management problems in PA's. Multi-disciplinary integrated research encompassing scientific and socio-economic aspects related to PA management also need to be encouraged.

Recognizing the significance of well conceived and problem oriented research in the PAs, adequate provisions for research work have been made in the Wildlife (Protection) Act, 1972, Section 28 (grant of permit) of the Act gives authority to the Chief Wildlife Warden (CWLW) to grant permission for research.

1. Wildlife Research

Wildlife Research is defined here as research conducted by qualified scientists, including social scientists, or by assistants/ students working under their supervision or Park Managers. Wildlife research may also be conducted by properly qualified wildlife enthusiasts and conservationists.

2. **Duration of research**

Based on the anticipated period of study specified in the proposals, wildlife research may be categorized as follows :

i Short-term research: Surveys or short studies involving field work up to one year in duration.

ii Medium term research: Studies requiring two to four years for completion.

iii Longer-term research: Studies exceeding four years for completion.

After taking into consideration the recommendation of the Committee constituted *vide Ministry of Environment & Forests (MoEF) notification No. 6-3/2003 WL I dated 24.10.2005 and also the recommendations of the Tiger Task Force, the following guidelines are hereby formulated to facilitate processing and grant of permission for carrying out research in PAs*.

3. **Processing of research proposals and grant of permission**

4.1 Under existing laws the Chief Wildlife Wardens are authorized to permit research in Protected Areas. In case of research that involves capture, handling and collection of biological samples from any species listed in Schedule-I of the Wildlife (Protection) Act, the award of permission would lie with the Director (Wildlife Preservation), Government of India (Additional Director General (Wildlife) and Director Wildlife & Preservation, MoEF). In all cases the proposal should be submitted to the Chief Wildlife Warden of the State with a copy of the same to the Additional Director General (Wildlife), MoEF, Govt. of India. In case of foreign nationals desirous of conducting research in Indian Protection Areas, permission from Ministry of External Affairs/Ministry of Home Affairs, and National Biodiversity Authority if required in Law should be obtained.

4.2 The proposal should contain synopsis, objectives, methodology, literature review, work plan, budget, source of funding, duration, expected outputs and terms of reference. The proposal will be evaluated by a ‘ Technical Committee’ consisting of atleast three members constituted under the chairmanship of the Chief Wildlife Warden of the State. Other members could be representative of the State Biodiversity Board (if constituted), experts in relevant disciplines of wildlife management, ecology, social science etc. If the state has not constituted

the State Biodiversity Board, suitable nomination from university/research institute or any other such organization involved in ecological/wildlife research may be made. The technical Committee should meet at least once in a quarter on fixed dates and consider proposals received at least 15 days prior to the date of meeting. The committee would also suggest the areas of research relevant to management decisions with respect to Protected Areas of the state. The technical committee may have additional 'Subject Specialists' as a 'Special Invitee'.

However a research project which has been approved by *Deptt. of Science and Technology, Ministry of Environment & Forests, Department of Biotechnology and other scientific Deptt. of the State/Central Government would not be required to be reviewed by the committee. Chief Wildlife Warden/Director, Wildlife Preservation may pass necessary orders in such cases to grant access.*

4.3 The research questions and methodologies used shall be decided by the researchers according to their own priorities/reliable interest, in the case of independently funded wildlife research projects. In case of manipulative or interventional studies, the methods used must be in accordance with standard practice. Research questions in case of Wildlife Research projects sponsored by the State Department of Wildlife shall be arrived at in consultation with the respective Park Managers. conclusions and recommendations should be discussed with the Park Managers to ensure the field applicability of the studies.

5. Time Frame for grant of permission

1. Proposal for short-term research (<6 months) shall be processed and the decision communicated by the Chief Wildlife Warden within a period of two months *if it involves one PA*.
2. If the short-term research involves several PAs and/or administrative forest divisions, the Chief Wildlife Warden *shall process and communicate decisions* within a period of three months.

c) Proposals for medium and long-term research (>6 months) shall be *processed and communicated* by the Chief Wildlife Warden within a period of three months. In case of proposals whose coverage is beyond a single

Protected Area site, a maximum of four months may be taken to process and communicate the decision.

d) In case a research proposal is rejected or any modifications suggested, either by the Chief Wildlife Warden or the director of Wildlife Preservation, Government of India and Additional Director General (WL) and Director, Wildlife Preservation, MoEF, the reasons for such rejection/suggestions must be clearly communicated to the researcher as per (5.1)-(5.3) above from the date of receipt of proposals.

6. General Provisions

a) It is well recognized that the products of any research in terms of its scientific results and publications must be authorized by the researcher/organization. None other than the individuals responsible for framing research proposals and actually conducting research should have the authorship of scientific papers from the findings. However, the final report and other scientific publications of the project (hard and soft copy) should be submitted within three months (for short-term research) or six months (for long-term projects) to the concerned Chief Wildlife Warden. For long-term projects, half yearly progress reports should be submitted to the park authorities by the researcher. The Chief Wildlife Warden shall take appropriate action on the researcher/organization for non-submission of final reports on time as per Term and Conditions stipulated in the letter granting permission for the project.

3. Wildlife Institute of India would act as the national nodal agency on wildlife research. It would be obligatory on the part of researcher/research organization to provide a soft and hard copy of his data/findings/thesis etc. to Wildlife Institute of India who in turn would make it available on their website for easy access.

4. A researcher will not be required to pay entry fee in the park. If researcher needs to use a vehicle for his research activities inside the park no entry fee for the vehicle will be charged. Other facilities when availed will be charged at the rate applicable to Government officials on duty.

5. Movements of the researcher and or his assistants in the PA shall be recorded in a log book to be maintained by him which will be submitted to the park management every month.

6. Movement at night shall be allowed only if it is part of the approved research project. A schedule for such movements shall be developed in consultation with the local authorities and shall be permitted accordingly by park authorities.

In case of any violation of the conditions of permission, Chief Wildlife Warden shall have the authority to revoke the permission.