CONSERVATION METHODS OF ENDANGERED SPECIES

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ABSTRACT

An endangered species is a population of organisms, which are at high risk of becoming extinct either due to loss of habitat, high death rate or changes in environmental and predation parameters. An organism is termed an endangered species if its population has become small such that free mating and reproduction becomes difficult. Environmental degradation, climate change and changes in prey-predation ratio are some of the factors driving many species to extinction today. Without adequate protection, a preservation or conservation measure, an endangered species finally goes into extinction, that is, permanent disappearance from the earth surface. Such species are never seen alive again in this world except in form of fossil (remains) only. In this paper, we examined in-situ and ex-situ conservation as well as some measures that can be employed in saving some endangered species from extinction. The paper also recommends adequate documentation and publicity of the species for conservation and preservation.

Key words: Endangered species, Extinct, Environmental degradation, Climate change, in-situ,

ex-situ.

INTRODUCTION

According to the International Union for the Conservation of Nature (IUCN), an endangered species is an organism or a population of organism that faces a high risk of becoming extinct due to loss of its habitat, high death rate or changes in environmental and prey-predator parameters. The death rate of such organism far outweighs its birth rate over a period of time resulting to a decline in its population. Some common examples of endangered animal species include African Elephant, Tiger, Lion and Cheetah. In Nigeria, of the 4,600 plant species, 707 are said to be endangered, while some hundreds of both plants and animal species have since gone into extinction due to loss of habitat occasioned by environmental degradation and climate change (ANFP, 2006). To save endangered species from extinction, adequate preservation and conservation of such species and their habitat is necessary. Two main methods of conserving biodiversity as reported by (IUCN , 2009)

are considered, this include: ex-situ and in-situ conservation.

EX-SITU CONSERVATION

This is the process of protecting or preserving an endangered species of either plants or animal outside of its natural habitat either by removing whole or part of that population from the threatened habitat and placing it in a new environment which may be a wild area or within human control environment. In ex-situ conservation, species whose life is threatened in a particular habitat is removed and placed in a well-protected habitat and taken care of by man.

Corker (2002) listed the oldest and best known methods of ex-situ conservation to include Zoos, Botanical Gardens, and Aquaria. Other modern methods of ex-situ conservation where reproductive parts of an endangered species are stored for future reproduction or propagation include Seed bank, Gene bank, Germplasm bank, and In-vitro Storages (IUCN, 2010).

Zoos

A zoo is a place where wild animals are kept either for tourism, scientific studies/ research, preservation or breeding purposes.

Zoo and botanical garden are the most conventional methods of ex-situ conservation where endangered species are bred for possible reintroduction into the wild. Animals whose life is threatened in the wild is captured and kept in a zoo to ensure its continuous existence. Alao (2008), reported that about 18 endangered species of animal are known to be represented by only captive members since those in the wild have since died off. Animals such as Arabian Oryx, peer David Deer, Northern white Rhinoceros, etc at various points in time were extinct in the wild before their reintroduction into the natural world from captive breeding.

BOTANICAL GARDEN

These are areas set aside for propagation and preservation of plant species to ensure their continuous existence. An endangered plant species is harvested in the wild and grown in the garden under human care to prevent it from becoming extinct. Barbara (2004), reported that about 354,000 plant species are grown in 1,500 botanical gardens around the world. The Royal Botanical Garden of England (Kew Garden) alone is said to house about 25,000 plant species out of which 2,700 are said to be endangered.

In Nigeria, conservation of endangered plant species through botanical gardens is not receiving the desired attention. Rather some of the existing gardens are continually being destroyed to pave way for development of other projects. For instance, in 1896, the then famous Lagos Botanical Garden and Onitsha Botanical Garden were at various times in the 1950s cleared for the development of communication lines (Njoku, 2000).

AQUARIA

Aquaria are facilities used for captive breeding of fish and other aquatic animals. In the past, aquaria were only used for display (decoration) of environment. However, due to growing threat to freshwater species they are now being used for captive breeding programs. The World Conservation Union (IUCN) is said to be working on captive breeding programs for conservation of fishes in the Lake Victoria in Africa, the desert fishes of North America and Appalachian stream fishes where aquaria are being designed to depict the natural habitats for conservation of these fishes.

SEEDBANK

The term seed bank refers to a cryogenic laboratory facility in which seeds of certain plant species are preserved for a long time without losing their fertility. It can also refer to a special kind of arboretum where seeds are harvested and the crop is rotated (Gleen *et al*, 2006).

IN-VITRO STORAGE

Is a storage facility in form of glass tube or vessel containing nitrogen liquid which keeps the temperature in the vessel at about -150 degrees Celsius. Hence cuttings, stems or other reproductive parts of plant stored in these strict conditions remain viable for a long time without losing their fertility. Seeds or reproductive parts of endangered plant species stored in seed Bank or in in-vitro tubes can survive for a long time up to hundreds of years making the propagation of such plant species in future possible.

GENE BANK

These are cryogenic facilities used for the storage of living sperm, eggs or embryos for future reproduction. The eggs or sperms of endangered animal species are preserved through this method. Inter-governmental panel on Climate change (IPCC,2007), reported that the zoological society of San-Diego has established a frozen zoo for the storage of eggs and sperms where more than 355 species of animals including mammals,

reptiles and birds are said to have their reproductive cells stored. Storage of animal reproductive cells in gene bank for future reproduction is applicable even in humans. In 2004 a woman from the United States of America was reported to have given birth to a baby boy through artificial insemination of sperm obtained from her late husband who died since 1973, the man's sperm was collected while he was alive, frozen and stored in a Cryogenic (Gene Bank) facility for 30 years before it was finally removed, de-frozen and used to fertilize his widow (BBC News.com/science).

A plant or animal may become extinct today but if the seed, sperms or eggs of such species are stored in seed or Gene Bank such species can be brought back into existence through reproduction or propagation of the stored reproductive parts.

IN-SITU CONSERVATION

This involves the conservation and preservation of species in their natural habitat in places where the species naturally occurs. Under this method the entire ecosystem is protected and maintained so that all the constituent species, both known and unknown are conserved. The main

methods of in-situ conservations as stated by Barbara (2004) include:

- Strict nature reserve (SNR)
- Games Reserve
- National Park

Strict Nature Reserves

These are plant communities reserved in perpetuity in their natural state for economic, educational, scientific, cultural and aesthetic values. SNR are established in remote areas and given adequate protection.

Games Reserves

Game reserves are areas set aside for the propagation, protection, conservation and management of flora and fauna with fauna species been of main interest. In Nigeria there are several gazetted Games' reserves spread across the country. However research by Udoh (1999) has shown that most of these reserves have been degraded while quite a number have totally been de-reserved. Game reserves are statutorily owned and managed by state or local governments.

National Parks

These are areas exclusively set aside for the propagation, protection, conservation and management of flora and fauna as well as

the protection of site, landscape or geological formation of a particular place for scientific or aesthetic values for the benefit of the general public. National parks are owned by the Federal Government.

In Nigeria, there used to be eight National parks spread across the different ecological zones of the country, but now the number has reduced to seven due to the takeover of the Yankari National Park by the Bauchi state government which has made it to lose the status of a national park. The act establishing parks stipulates that it must be owned and managed by the Federal government. According to the Nigeria National Park Service Brochure (NPS) 2010, the remaining seven national parks in Nigeria include:

  i. Kainji Lake National Park-New Bussa Niger State
 ii. Chad Basin National Park located in Borno and Yobe State.
iii. Cross River National Park-Cross River State
 iv. Old Oyo National Park- Oyo State
  v. Gashaka Gumti National park – cut across Adamawa and Taraba State
 vi. Okomu National Park – Edo State

vii. Kamuku National Park –Kaduna State.

The above listed parks were operated as either games or forest reserves until 1991 when the General Ibrahim Badamasi Babangida led Military Government promulgated Decree 36 of 1991, upgrading the first five to the status of a Park. In 1999, Okomu and Kamuku were added to the list after Degree 36 of 1991 was replaced with Degree 46 of 1999 (Now Act 46 of 1999) on May 26th 1999 (NPS 2010).

Some of the objectives of establishing national parks in Nigeria include:

- Conservation of selective representative samples of wildlife communities in Nigeria
- Protection of endangered vertebrate species.
- Protection of crucial wetland and water catchments areas.
- Promotion and provision of education about wildlife and nature conservation etc.

CULTURAL CONSERVATION
Before the advent of modern conservation methods in Nigeria, some cultural beliefs had helped a lot in conservation of some

wild plants and animal species. Not all animals were either killed or eaten by some tribes. For instance, it was forbidden for a Bini man to kill or eat Buffalo, Bushbuck, Leopard, Chimpanzee, Tortoise and black Snake. The tortoise was used for curing of some deadly or terminal illness and as such was believed to be capable of bringing back such disease to the family if eaten. The Buffalo on the other hand was believed to be a harbinger of ill luck. Therefore, anyone who kills or eats it is doomed to ill luck and penury. Similarly, it was a taboo for an Urhobo man or an Itsekiri man to kill or eat Crocodile, monitor Lizard or Bushbucks. The Yorubas despised the Vulture bird.

The Tiv people of North Central Nigeria do not kill the green snake locally called "kyarem". According to them it was the "kyarem" that helped their forefathers to cross a river on their way from Congo to Nigeria by lying across the river hence enabling the people to cross over as bridge. Based on this belief, the green snake was highly protected by the Tivs.

Cultural beliefs had also helped in conservation of some plants species. Some culture forbids the cutting down of certain tree species. For example, an Iroko tree, *Calorophone excelsa* , was never cut by the Binis. It was believed to protect the Bini Kingdom against witches and wizard. Also Mbakwe (1986), observed that trees like *Parkia biglobosa,prosopis africana, Elaes guinensis, Irvingia gabonensis* etc, were highly protected in many parts of the country particularly in northern Nigeria due to cultural beliefs and traditions.

CONCLUSION AND RECOMMENDANTIONS

As several plants and animals species continued to go extinct due to loss of habitat, occasioned by environmental degradation and climate change, there is every need for adequate protection and conservation of both the endangered species in their natural habitat to be encouraged. In-situ conservation which involves the protection of species in their natural habitat should be encouraged. In-situ conservation in most cases is carried out by removing the endangered species in question and placing it under human controlled environment which in most cases is more costly, and the species faces the challenges of survival after reintroduction in the wild.

To prevent endangered species from going into extinctions, the following measures should be taken.

1. Some cultural practices which favour conservation of natural resources should be encouraged.

2. Government should develop and encourage the use of alternative resources of energy to discourage most Nigerians from using fuel wood as a source of energy which has caused the depletion of forest resources over the years, (forests serve as habitat to many species).

3. Adequate protection of the existing forest reserves and national parks should be carried out to check activities of illegal timber dealers and poachers.

4. Adequate documentation and publicity of the endangered species should be carried out so that the general public can also help in their protection and conservation.

5. Massive aforestation program by both government and private individuals to check the effect of climate change and environmental degradation which is responsible for loss of biodiversity should be encouraged.

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