WILDLIFE AND ZOO MANAGEMENT

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Conservation and Management of Wild and Restrained Animals

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2.1 Introduction

The tourism industry uses animals in many different ways. As sources of food, animals provide not only sustenance, but also value in pleasure (as in food tourism). Animal workers perform a wide range of duties that help facilitate the needs of tourists in search of novel experiences in unique settings (e.g. carriers). Nature-based tourists pursue a tremendous number and variety of species as hunters, anglers and/or viewers (Fennell 2013).

One of the most popular forms of animal-human engagement for tourism purposes, that continues to generate growing interest among tourism scholars, is captive animal tourism found in zoos and aquaria. Zoos are 'public parks which display animals primarily for the purposes of recreation or education' (Jamieson 2006, as cited by Fennell 2013). While we normally think of zoos in the context of a city zoo, this category also includes game reserves, petting zoos, rural and roadside zoos, aquaria, animal theme parks and hundreds of specialised collections of reptiles, mammals, birds, insects or fish (Fennell 2012). Zoological gardens have long served as places of relaxation and entertainment. They provide opportunities for people to satisfy their natural curiosities in seeing different species of animals strange to the beholders at close range.

Zoo animals have always been an exciting source of amusement to the visitors due to their various displays especially when they get excited. The activities of these animals bring visitors into contact with nature—producing relaxing effect upon the over-strained personality of inhabitants of the urban areas.

Globally, there are approximately 12,000 captive institutions that hold an estimated 6,000 different species with only a fraction

of these recognised by WAZA (World Association of Zoos and Aquariums) for maintaining best practices according to international standards (Mullan and Marvin 1999). The International Species Information System (2011) reports that in 800 zoos and aquaria, in 80 countries, there are approximately 2.6 million animals held in captivity (Fennell 2013). Zoos continue to have great success as attractions. Over 700 million people visit WAZA-accredited zoos each year and some of the largest zoos. For instance Mexico City, receives upwards of 12 million visitors per year (WAZA 2012, as cited by Fennell 2013). Apart from the economic and enjoyment benefits of zoos, the keeping of animals is controversial. Bad press surrounding welfare concerns and the removal of animals from the wild are persistent challenges to zoos (Turley 1999).

The zoo's traditional primary objective of entertainment has evolved over the years to include research, education and conservation, as driven by changing social and cultural values, and these additions have been important in mitigating concerns (Davey 2007). Besides the tourism values of zoos, they play outstanding roles in wildlife conservation. They serve as reserves where species that are endangered in their natural habitat can be bred in captivity (and subsequently re-introduced into the wild) over generations with a view to preserving the species. In the present century, many threatened species of animals have undoubtedly been saved through breeding in captivity. Thus, zoos play an important role in wildlife conservation by preventing further unnatural extinction of species.

2.2 What is Conservation?

Conservation refers to the management, protection, and sustainable use of natural resources. It allows for maintenance of natural functions between and among different resources, protection of needed natural habitats as well as preventing extinctions, and maintaining biodiversity (Akosim et al. 2010). Conservation includes captive breeding, animal welfare, environmental enrichment, reintroduction and support for in-situ conservation (Catibog-Sinha 2008).

Wildlife conservation is the practice of protecting endangered plant and animal species and their habitats. Among the goals of

wildlife conservation are to ensure that nature will be around for future generations to enjoy and to recognise the importance of wildlife and wilderness lands to humans. In recognition of wildlife conservation goals, many nations have government agencies dedicated to wildlife conservation, which help to implement policies designed to protect wildlife. Numerous independent non-profit organisations also promote various wildlife conservation causes (Wikipedia 2014).

Wildlife conservation has become an increasingly important practice due to the negative effects of human activities on wildlife. Continuous effects of various negative activities lead to wildlife population being threatened, endangered before becoming extinct. Extinction of wildlife species amounts to irreplaceable loss of such organisms. An endangered species is defined as a population of a living being that is at the danger of becoming extinct because of several reasons. Either they are few in number or are threatened by the varying environmental or predation parameters.

Dwindling population of wildlife resources has provided huge economic argument in favour of conservation as well as the equal importance of the need to preserve our national heritage (of abundant genetic resources). Conservation will play significant roles in ensuring that the present generation does not pass unto future generations less than what it has inherited. When economic development provides human population with the means for a safe and comfortable livelihood, there will be more time to think about culture and recreation. African history and folklores are tied firmly to a background of wild animals. These animals are as much a part of our tradition of music, dancing and other forms of arts. Wild animals cannot be preserved adequately in museums and zoos but must be maintained as wild and free creatures.

Wildlife is a natural resource of an overwhelming degree of usefulness especially in a richly endowed country like ours. Nigeria is rich in biodiversity, with an array of fauna and flora. This includes about 20,000 species of insects, almost 1,000 species of birds, 247 species of mammals, 123 species of reptiles, about 1,000 species of fish and about 7,895 species of plants (Federal Government of Nigeria 2001). However, the value of Nigeria's wildlife has rarely been realised due to lack of awareness,

inadequate funding and illegal human activities among other problems. Management and conservation of natural resources, especially renewable ones that replenish themselves under optimum conditions, require attention in organised system that will ensure their sustainability (Ejidike and Ajayi 2013). Wildlife domestication remains a significant factor in the conservation of endangered species of wildlife in that it reduces pressures on wild stock.

2.3 History of Conservation in Nigeria

Over the years, Nigeria has shown increasing concern for the preservation of her indigenous wildlife. The number of game reserves has grown steadily and international cooperation agreements for the protection of wildlife have been signed. A decree to regulate the traffic in endangered species was promulgated in 1985 and each of the then nineteen states in the federation has either amended or repealed the 1916 wild Animals Preservation Ordinance. Establishments of the Nigeria Conservation Foundation in 1982 marked the beginning of organised private involvement in the promotion of conservation ethics in the country. Nevertheless, the nation's goals of managing wildlife for tourism, sustaining cropping of game meat and preserving of a national heritage remain hard pressed (Anadu 1987).

At present, Nigeria has about 31 games reserves, 5 sanctuaries and 7 national parks. The game reserves and sanctuaries, owned and managed by state governments have specific objectives to protect endangered species, promote sustainable harvest, and promote conservation education and tourism. The National Parks and Strict Nature Reserves, developed and managed by the Federal Government under the exclusive legislative list, are to enhance the protection of endangered species, promote scientific research, encourage educational knowledge and promote ecotourism. Sadly, the prevailing reality is that with the exception of the National Parks, most other protected areas exist only in the statute books. The game reserves and game sanctuaries lack any protection (NOUN 2014).

Poorly managed logging and increasing needs for agricultural land are fragmenting Nigeria's remaining forests, and population

increase is putting intense pressure on the land resources. Protected areas are becoming more isolated, with few resources or qualified staff in place to encourage sustainable management in some areas; the bush meat trade is a pressing threat, as demand increases to supply commercial markets. A general lack of good governance and awareness of conservation issues in communities surrounding protected areas also present major obstacles. Apart from these, encroachment by the people as well as illegal farms around the forest are some other challenges facing our wildlife management. Also, frequent damage by dry season forest fires affects the habitat of the wildlife. These and other problems facing wildlife conservation and management have been increasing in magnitude (Alarape and Sotolu 2009; NOUN 2014).

No doubt wild animals are important food items, if cropped without limitation the population decreases continuously and leads to complete elimination of some species of animals. Thus, there is a need to put (conservation) measures in place to avoid over-exploitation. There is also an urgent need to address cases of poor land use planning, haphazard land exploitation and development, conflict in protected land use, over-hunting of game resources by subsistence and commercial hunters and improper funding of wildlife conservation at local, state and federal levels—which have contributed immensely to failure of wildlife conservation programmes in Nigeria.

2.4 Benefits of Conservation

Conservation practices on natural resources are positive, embracing preservation, maintenance, sustainable utilisation, restoration and enhancement of the resources (IUCN 1980 as cited by Ejidike and Ajayi 2013). Conservation of the resources of a nation's environment plays essential role in national development. Countries worldwide have designated some areas as protected areas resulting in many benefits. These include the central role they play in socio-economic development of local inhabitants in surrounding rural areas. They contribute to the better lifestyle and standard of living of people. In national parks, game reserves and other protected areas, unique natural resources (flora and fauna),

sceneries and landscape areas are protected, managed and regulated for human benefit from one generation to another. These protected areas are harbouring outstanding natural resources and scenic areas of national or international interest/importance for scientific, educational and recreational uses (Ejidike and Ajayi 2013).

Benefits of wildlife conservation can be grouped into economic, aesthetic, recreational, and ecological benefits. Economic benefits of wildlife centre on animals being used for food, outdoor recreational activities and zoological garden visits. Conservation of wildlife also allows for ecotourism. Ecotourism is a potential source of revenue in many countries. Wildlife conservation has good effect on other natural resources in maintaining ecological balance in an ecosystem. Another important benefit of wildlife conservation is biodiversity conservation whose benefits are stated below.

Biodiversity Conservation

(1) Biodiversity at all levels: As food species become more numerous, so do the ones dependent on them at all levels, from the deep to the shallows and from simple to complex organisms.
(2) Genetic diversity: Saving genetic diversity to ensure future stability.
(3) An endangered species: The most acute form of conservation is to attempt to save a species on its own.
(4) A unique spot: Without being able to say why, people are able to recognise unique spots. Because of their uniqueness alone, these deserve to be saved. Saving is easy if people agree.
(5) A sample habitat: By saving a habitat, a large number of interrelating species is saved as well. It requires a certain amount of knowledge to do so.
(6) Genetic refuge: The diversity of species embodies undiscovered genetic qualities such as medical compounds, biocides and more.

Educationally, people from all walks of life can visit the reserve to observe wildlife and to become inspired by the conservation concept. Whereas elsewhere, the environment has deteriorated, one can at least find natural life inside protected areas. Conservation also plays important roles socially through the preservation of tradition and history of people and their community quality of life. Every ethnic group has a different culture. Within a culture, specific rights and beliefs are held dearly and may be tied to an area or a species. Spiritual values, arising from beliefs and superstitions, are tied to land, plant, or animal species. Some places are hotspots of biodiversity, a treasure to enjoy. Many of these are unique and irreplaceable. A reserve is able to protect such treasures for future generations, provided that there are no other threats.

Wildlife conservation areas have proved to be one of the world's greatest attractions for tourists. National parks, game reserves, zoos and museums provide ample opportunity for conservation, recreation and education of both young and old. If tourism is developed, Nigeria as a country with potential resources can earn hundreds of millions in Naira from game viewing and tourism like Kenya and Tanzania. Already, the Kainji Lake National Park and Yankari Game Reserve record up to 10,000 visitors representing over 50 nationalities annually (Ejidike and Ajayi 2013).

Summarily, major significance of wildlife resource conservation includes:

(1) Preservation of wildlife species.
(2) To encourage and promote wildlife conservation for education and research.
(3) Maintenance of population of useful species.
(4) To promote ecological diversity and stability through preservation of gene pool and maintenance of continuity in gene pool.
(5) Protection of fauna and flora resources from over exploitation.
(6) Research and education.
(7) Medicine and other economic products.
(8) Conservation for tourism and national development.

(9) Tourism in conservation area create job.
(10) Shooting of documentary film on wild animal.
(11) Products of wild animal.

2.5 In-situ and Ex-situ Conservation

Conservation can broadly be divided into two types: in-situ and ex-situ conservation. In-situ conservation refers to the protection of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural environment. Also, it entails conservation of natural processes and interaction as well as the elements of biodiversity (BIOMAPS 2005). Among the benefits of in-situ conservation is that it maintains recovering populations in the surrounding where they have developed their distinctive properties.

It also helps ensure the ongoing processes of evolution and adaptation within their environments. In such natural reserves, the population size must be sufficient to enable the necessary genetic diversity survive within the population, so that it has a good chance of continuing to adapt and evolve over time. This reserve size can be calculated for target species by examining the population density in naturally occurring situations. The reserves must then be protected from intrusion or destruction by man, and against other catastrophes.

In-situ conservation is not always possible as habitats may become degraded and there may be competition for land. If a habitat is degraded or disappears, a species may also become threatened which means species need to be removed from the area to save them. Habitat destruction comes in many forms from clear felling of forests to simple changes in farming practices that change the overall surrounding habitat. As a last resort, ex-situ conservation may be used on some or all of the population, when in-situ conservation is too difficult, or impossible (Wikipedia 2014).

Ex-situ conservation refers to the protection and maintenance of components of biological diversity outside their natural habitats. Zoos, botanical gardens and seed banks are examples of ex-situ conservation (BIOMAPS 2005). Ex-situ conservation comprises

some of the oldest and best known conservation methods; it also involves newer, sometimes controversial laboratory methods. Although, it is extremely difficult to mimic the natural environment, given the large number of variables defining the natural habitat (microclimate, soils, symbiotic species, absence of severe predation, etc.), ex-situ conservation remains important for the purpose of conservation (Wikipedia 2014).

Conservation is best implemented through a field of various complex and combined actions. However, the techniques of in-situ and ex-situ conservation, both essential for the protection of species, reveal some weak points. In-situ conservation, which is efficient when the number of individuals is sufficiently high, encounters a major limitation when there are problems with habitat fragmentation and subsequent reduction of the population size; thus, it is insufficient when there is very limited number of individuals since, in that case, we face genetic erosion. On the contrary, in the framework of ex-situ conservation, where there is a lack of interaction between the individual and the environment, only a part of the genetic variability of a taxon is preserved. Hence, in order to have the greatest probability of success, the two techniques should be applied in a synergistic way (BIOMAPS 2005).

2.6 Management of Animals in Captivity

According to Kirkwood (1996), the word 'captivity' is used to describe a wide range of circumstances, from the close confinement of some pet or laboratory animals to the semi free-ranging state of parks and reserves. Hence, captive management can be defined as any situation where wildlife is (`potentially) prevented from escape, and thereby kept under regular and frequent management operations such as feeding, animal health maintenance etc. in order to maintain its adequate health and welfare. Captive management relates to holding and managing of wildlife kept in enclosed areas, such as a zoo display or a cage.

According to Brambell (1972), behavioural principles to consider for the captive management of animals are space, environment, food, social structure, breeding requirements, animal-

man relationship and the effect of caging on animal behaviour. Good management should provide conditions that constitute factors beneficial to the species in the wild, and remove factors that have an adverse effect. It is not possible to give an animal the exact replica of its natural environment but animals have the ability to adapt to a wide range of conditions. The goal of a zoo-keeper is to provide the animal with an environment similar to its natural environment in which it can survive and reproduce. To do this, it is necessary to understand how a species occupies space in a natural state. To ensure adequate feeding, the animal must have an adequate and nutritious diet to maintain a healthy and thriving condition; the food must be of correct bulkiness for the digestive system, and should be presented in such a way that the animal spends as much time eating it as it would in the wild.

Similarly, it is important to understand the social structure and breeding requirements if the animal is to reproduce in captivity. It is an enormous task to reconstruct a whole new world especially when an animal is moved from its own environment into captivity. In response to the change of environment, the animal may settle down in its new environment (this is often seen in the undeveloped, still adaptable young wild animal) or the animal may never settle down, even if kept in captivity for a long time. When an animal is held in captivity, there are both primary and secondary effects of space restriction. The primary effect is the restriction of movement while, the secondary effects include lack of diversion and occupation, no food choice, impossibility of avoiding its own species at will, possible unsuitable differentiation of space and anti-social behaviour.

The IUCN policy statement on captive breeding (IUCN 1987) and the IUCN/ UNEP/WWF World Conservation Strategy (1991) stipulate the following as guiding principles for captive animal management:

(1) The highest priority for the conservation of biodiversity is in-situ conservation of species in their natural habitats.
(2) In cases where captive, ex-situ, management has been identified as a component of a threatened protected species recovery strategy, there should be 'close integration

between ex-situ and in-situ programmes, with captive management programmes designed to support programmes aimed at conserving the species in the wild'.

(3) Captive populations should be managed to ensure that they are genetically and demographically viable and do not require continuous addition of wild specimens.
(4) Captive breeding programmes for threatened species should be aimed at conservation of that species and should not involve commercial transactions.
(5) Animals of threatened species should not be held in captivity except where recommended and approved as an action in a species recovery plan and where a captive management plan has been approved to support the in-situ conservation of the species.
(6) Collection of animals from the wild for ex-situ programmes must not be allowed to threaten ecosystems or in-situ populations. The same principle applies to the release of captive animals back into the wild.

Animal welfare, physical health and environmental enrichment are vital factors necessary for adequate management of captive animals. The promotion of good welfare for zoo animals is a priority that must be taken very seriously. Zoos can meet the needs of the animals in their care by understanding what constitutes good welfare, and providing appropriate housing and husbandry. Physical health of an animal can be monitored by looking out for symptoms of illness or injury; a sick animal may appear unusually tired or may stop eating, an injured leg may not be walked on. Advances in veterinary science enable quick diagnosis and the provision of appropriate medication.

Preventative medicine is also integral to maintaining physical health. Good physical health is also dependent on the quality of food provided. Balanced ration can prevent disease, by boosting the immune system and by preventing nutritional deficiencies. Environmental enrichment aims to mentally and physically stimulate captive animals, primarily through changes made to the animals' environment; though it can take a variety of forms. Enrichment techniques can involve the use of scent, noise, novelty

and objects which require manipulation. An example is hiding food within an enclosure. This might appear odd, but it stimulates the animals' natural foraging behaviour; replicating how a wild animal would spend long periods actively searching for food. A lot of enrichment involves food. Research has shown that many animals prefer to 'work' for their food; this means that even when a dish of food is provided, they choose to gather their food from puzzle feeders or devices, which require some manual or mental dexterity (BIAZA 2014).

2.7 Visitor Management

Protected areas attract people, and when not properly managed can lead to deterioration of the area as well as its resources. Nowadays, visitor management is a significant tool, sometimes even one of the main jobs within the protected area management. Visitor management comprises many, very different tasks—on the one hand, activities to get knowledge about the guests and on the other hand services for visitors to satisfy their expectations. The aim of visitor management is not only to observe visitors and report about them, but the management has to deal with the visitor flow and activities so that negative impacts on nature and the wider environment are minimised. While the monitoring of vegetation and wildlife in protected areas has a long tradition, the systematic monitoring of recreational uses and visitor flow is rarely carried out.

However, it is widely expected of park managers to develop at least a visitor management plan—a step towards a comprehensive monitoring system. The knowledge about characteristics, behaviour and wishes of visitors is very important for protected areas. Comprehensive knowledge and accurate information on visitors of protected areas are essential not only for the planning and managing of visitor services and tourism infrastructure, but also for the sustainable protection of natural and cultural heritage (Parks and Benefits 2007).

Visitors can disturb the natural environment or other visitors. Visitor impacts are not always negative. But in case of a risk for the natural development, particularly the disturbance of sensitive species or habitats in protected areas, such influence has to be

observed and managed. Several guidelines must be established as tools and techniques to control and limit impacts of usage. The most common are listed below.

- Use of visitor monitoring instruments, such as visual monitoring and counting of tourism sights and objects, digital photo or video monitoring, electronic or mechanical registration of visitor numbers, counting of total number of visitors to a concrete territory, self-registration of visitors among others.
- Use of visitor guidance and information instrument, such as access points, visitor centres, observation facilities and resting places (environmental education + information + establishment of highlights), network of accessible hiking paths, cycle tracks, waterways, information boards, information material such as maps, brochures, route descriptions (print, media, and online), information and visitor navigation by offering GPS-based IT-solutions, public transport access to certain starting points, the existence or non-existence of parking places and access to certain starting points, guided tours offered by rangers of the protected area, limited licenses to tourism companies or to freelance-guides to offer organised guided tours, specific visitor guidance and visitor facilities for the disabled, etc.

  Housing of tourists is better constructed outside the park/game reserve so as to avoid urbanisation of the park and to reduce incidence of noise making which distracts animal feeding, mating and reproductive processes. On-park accommodation can also lead to heaping up of refuse from visitors' domestic activities, thereby leading to pollution. The presence of refuse can lead to continuous scavenging of wild animals on the refuse dump which can lead to tameness of wild animals and/or loss of animal instinct to prey.
- Failure to keep adequate visitor management principles could lead to adverse effects on the zoo/wildlife animals. These include starvation, resulting in animal distraction that prevents the predator from preying due to alertness of the prey to predator's tactics, trampling of food and feeding areas of grazing animals, loss of food-search instinct due to

feeding on refuse dump site of visitor, etc. Also, surveillance of visitor is highly important to prevent crime such as rape, loss of human life under the guise of game hunting, armed robbery, etc. Designing and erecting of sign post, and souvenir (which include the resource map) are necessary. Resource maps show location and direction of various resources contained in the protected area. It assists in providing direction for game viewing especially the animals in ranges. Introduction and use of activity charges is important in visitor management. Special charges for use of camcorders, cameras, etc. will not only control visitors' population but also generate economic returns for the park. The charge can be in form of time regulated tickets (morning, afternoon and evening) so as to accommodate greater number of visitors per unit time.

Fig. 2.1: Visitor management plan in protected areas. (Adapted from LUC 2013)

2.8 Local Community Participation

This is often defined as involvement of all segments of a community in wildlife conservation activities. It may be defined as a community support programme geared towards mobilising local capacity to become social actors in decision-making and observation of activities that are relevant to their livelihood. It is

the involvement of individuals or group of individuals who have direct interest in the use and management of a natural resource base. This could include the local community resource users, developers, extension workers, industries, indigenous and non-governmental organisations (NGOs). Functionally, it involves local population in the design, implementation and evaluation of projects. Local community participation is expected to lead to stewardship of the resources. Sustainable wildlife conservation must involve the widest possible participation of stakeholders. Stakeholders are therefore all individuals or group of individuals that are directly or indirectly affected by a conservation project or programme including all those that are negatively or positively affected. Community participation is a process of partnership right from the planning stage through decision-making, implementation, monitoring and evaluation of the resource base. In fact, it is common knowledge now that no conservation effort can be sustainable without the cooperation of the surrounding communities. Local participation can be classified into passive or active participation.

A successful collaborative approach to wildlife conservation must have the elements of compensation schemes, income generation project, substitution of traditional techniques and management practices, appreciation of local culture, and finally, environmental education programme. Examples of such community involvement programmes include, Support Zone Development Programme (SZDP) in Cross River National Park, Nigeria, Game Harvesting Project in Kedia, Botswana, Luangwa Integrated Rural Development Project (LIRDP) in Zambia, and Communal Area Management Programme for Indigenous Resources (CAMPFIRE) in Zimbabwe (Alarape and Sotolu 2009; NOUN 2014).

The level of awareness of the public about the importance of wildlife conservation is very low. This gives room for a situation where some people and even those in government do not see the reason why public fund should be allocated to it. This also reduces the support of local communities for conservation effort leading to conflicts between the management of protected areas and local inhabitants. However, recent incentives have been targeted at reducing such conflicts around national parks in the country (Alarape and Sotolu 2009; NOUN 2014).

2.9 Integrating Conservation and Development

Conservation cannot be conducted in isolation from humans, and for conservation to be successful and sustainable, there needs to be local community involvement. It is therefore necessary to integrate conservation into farming practices. In other words, livelihood and development priorities of local communities must be taken into account if the conservation measures are to be sustainable. Community-based natural resource management, a process through which grassroots institutions are involved in the decision-making and have rights to manage and control their environment, should be highly encouraged.

2.10 Control Hunting

Wild animals are important food items. If cropped without limitation there is no doubt that the population decreases continuously. This has led to the complete elimination of some species in the world. Thus, there is need to put a check on the hunting of wild animals. When restriction of hunting in protected areas lead to increased wildlife population densities above the available resources in the area (carrying capacity), what follows is destruction of vegetation as well as starvation and diseases. Such situations are usually kept in check by controlled hunting for meat as well as for recreation (sport hunting).

The limitation of hunting is usually very important to ensure survival of breeding stocks of animal species. It also prevents the populations of animals rising to a point detrimental to the environment and ultimately their very existence. Hunting may not be allowed all the year round. The period when hunting is permitted is called the open season while, close season refers to the interval when hunting license is not issued. A licensed hunter operates under certain guidelines which include the following:

(a) The species, sex and age of animal to be hunted.
(b) The area where hunting could be done.
(c) The time of the day when hunting could be carried out (generally night hunting with the use of headlamp is not allowed).
(d) The type of weapons allowed.

(e) The bag-limit (maximum number of animals that could be killed by an individual hunter).
(f) The use of fire is illegal.
(g) The use of traps (especially gin trap) is totally prohibited.

2.11 Park Protection and Law Enforcement

Park protection is a tool in wildlife management. To produce a sustained annual crop of wild animals for recreational and conservation use, there is need for protection, regulation and law enforcement. The work of protection should be handled by a team of well trained, knowledgeable and disciplined law enforcement staff or personnel such as game (park) guards, rangers, chief park ranger/warden, whose duties include the following: Patrol of the area to prevent encroachment, checking of licenses/permits, protection of the park from illegal hunting and poaching, ensuring pollution free environment, involvement in conservation education and prosecution of arrested offenders in law court (Alarape and Sotolu 2009; NOUN 2014).

2.12 Conclusion

Wildlife conservation implies rational and sustainable use of game animal populations. The major threats to wildlife in Nigeria include habitat destruction, poaching and over-exploitation of wild species. Also, poorly managed logging and increasing needs for agricultural land are fragmenting Nigeria's remaining forests. Consequently, several species of wildlife have become threatened, endangered and some even extinct. To preserve the remaining wildlife diversity, there is need for stricter measures on wildlife conservation using both in-situ and ex-situ methods. In situations where captive management should be employed, animals must be part of a managed population with the end goal of releasing-to-the-wild. Also, the animals should be part of a structured conservation and education programmes in raising the public's awareness of biodiversity and conservation issues. Community participation in the design, planning and management of protected areas is of huge importance for adequate protection of wildlife resources.

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