

# Wild Fauna Conservation in Nigeria

Mobolaji A. Idowu<sup>1</sup> & Olajumoke A. Morenikeji<sup>1</sup>

<sup>1</sup> Ecology and Environmental Biology Unit, Department of Zoology, University of Ibadan, Nigeria

Correspondence: Olajumoke A. Morenikeji, Ecology and Environmental Biology Unit, Department of Zoology, University of Ibadan, Nigeria. Tel: 234-805-527-5915. E-mail: jumokemorenikeji@yahoo.co.uk

Received: May 11, 2015 Accepted: June 30, 2015 Online Published: September 20, 2015

doi:10.5539/enrr.v5n3p98

URL: <http://dx.doi.org/10.5539/enrr.v5n3p98>

## Abstract

This paper is on the trend and pattern of wild fauna conservation in Nigeria. The trend reveals the successes that have been achieved as well as the challenges that have emerged over the years. Large scale degradation of wild animal natural habitats coupled with continuous overhunting and poaching have resulted in more species becoming endangered in recent times in Nigeria according to recent surveys by WCS (Wildlife Conservation Society, Nigeria). The National Parks Service being the highest conservation agency in the country becomes the major fortress for conserving these endangered species, alongside collaborative efforts from non-governmental conservation agencies like NCF (Nigerian Conservation Foundation) and others. This review paper became necessary to re-emphasise the need for more awareness on the risks involved if the unabated exploitation of our wild fauna resources continues.

The paper concludes by offering suggestions on how the conservation agenda can continue in the country through existing Parks and Zoos development, through ecotourism with more media awareness, basic wildlife education in schools, improved research and a better enforcement of existing wild animals' protection laws.

**Keywords:** wild fauna, conservation, parks and zoos, ecotourism, Nigeria

## 1. Introduction

Traditionally, wildlife is used to refer to non-domesticated vertebrate species, i.e. animals that are out of the direct control of man, existing in the wild. These wild animals exist in all ecosystems including deserts, forests, plains and grasslands (Ijeomah, Augustine, & Ogbara, 2012).

Environmentally conscious activists in recent times have protested against the exploitation of wild animals for human benefit or entertainment (Ijeomah et al., 2012). The modern man especially is known for his high appetite for exploiting wild populations in the environment. Anthropology has also shown that the stone-age people depended on wildlife- both plants and animals for their food. This thus, implies that these early human hunters may have hunted some species to extinction (Diamond, 1989). In a more similar fashion, the rate of disappearance of entire species of plants and animals across the planet has been so high in the last few centuries (Ijeomah et al., 2012). Exploitation of wild animals does not always lead to extinction of the species in question, but the dramatic loss of entire species across the earth necessitates the review of destruction of wild animals and their habitats (Diamond, 1989).

Available literature has shown that today's human activities are an empirical evidence of humans ruining what nature has bestowed to their care for sustainability. Westing, Warwick and Renner (2001) reported that man more than ever before is encroaching extensively upon what remains relatively of wild nature all over the world. Forests are being exploited and cleared, and converted into croplands with intensified use.

As various human activities exert pressures on the global environment, biological diversity declines as habitats are being transformed (Whitmore & Sayer, 1992). In Nigeria for example, twenty one of the known bird species are facing serious threat of extinction or loss of habitat (Olatunbosun, 2013). The situation is worrisome as two of these species-Anambra Waxbill and the Ibadan Malimbe exist only in Nigeria and nowhere else in the world (Olatunbosun, 2013).

So also, with the increase in human population and cattle population for meat in most countries, there is continuous pressure exerted on forest resources causing fragmentation and degradation of wild animal habitats (Ijeomah et al., 2012).

There has been an increasing interest in conservation in the past few decades, especially because of the decline of tropical forests and the loss of endangered species (Anadu, 1987). However, the percentage of the earth area that has been set aside as protected areas is scarcely up to nine percent, while continuous pressure from various development and commercial activities is threatening to further reduce these areas (Ijeomah et al., 2012).

Many nations therefore, have evolved government agencies dedicated to wild animal conservation, which help to implement policies designed to protect them. Protected areas are established under the guidance of the International Union of Conservation of Nature (IUCN) (Ogunjimi, Ojo, Onadeko, & Oguntoke, 2009). Numerous independent non-profit organizations also promote various wild animal conservation causes.

In Nigeria, some governmental Agencies and non-governmental agencies like the Nigerian Conservation Foundation (NCF), the Federal Environmental Protection Agency (FEPA), the National Resources Council (NARECO) in collaboration with the United Nations Environmental Programme (UNEP) and the World Wide Fund (WWF) and several other agencies have embarked on programmes to protect and preserve the nation's biodiversity (Nathaniel & Nathaniel, 2001). Nonetheless, the nation's set goals of managing wild animals for tourism, maintenance of ecosystem balance, justifiable cropping of game meat and protection of our national heritage have been difficult to achieve, when we keep facing new and mounting economic problems, a rapidly growing population, and the consequent continuous destruction of wild habitat (Anadu, 1992).

### 1.1 Wild Fauna Resources in Nigeria

Nigeria is rich in wild fauna resources, and can therefore boast of a high biodiversity. There are 22,000 vertebrate and invertebrate species, about 20,000 insect, 1,000 bird, 1,000 fish, 247 mammal and 123 reptile species (Nigeria Fourth National Biodiversity Report (NFNBR), 2010). The diversity of Nigeria's wild animals can be attributed to the country's tropical location, size and its ecosystems (FAO, 2000). These varieties of ecosystems range from rainforests in the south to moist savannas in the central part of the country and dry arid savannas in the far north. There are also freshwater, brackish and marine ecosystems occurring, while features of montane vegetation have been found at high altitudes in the eastern borderlands (Falade & Adebajo, 2008). The country's rich fauna is also as a result of the diverse vegetation types of these ecosystems.

There are mammalian species such as the African Elephants (*Loxodonta africana*), African buffalo (*Syncerus caffer*) and hippopotamus (*Hippopotamus amphibius*) existing in the rainforest. Other large mammalian species found here are the large duikers (*Cephalopis niger*), Chimpanzee (*Pan troglodytes*), and red river-hog (*Potamochoerus porcus*). The savannah areas house species such as the hartebeest (*Alcephalus buselaphus*) and warthog (*Phacochoerus aethiopicus*) and most of the carnivores. Grass cutters (*Thryonomys swinderianus*), Giant rats (*Cricetomys spp.*) and tree squirrels (*Funisciurus spp.*) are among the vast variety of small mammals that exist in the savannahs as well as a range of primates (wcsnigeria.org, 2012). The lowland rain forest provides habitat also for about 200 species of birds (FAO, 2000). Four of the bird species; Anambra waxbill (*Estrilda poliopareia*), Ibadan malimbe, (*Malimbus ibadanensis*), Jos Plateau indigo-bird (*Vidua maryae*) and the Rock Fire-Finch (*Lagonosticta sanguinodorsalis*) are endemic to the country, making them globally important species for conservation (Nigeria National Biodiversity strategy and action plan (ng-NBSAP), 2007). A list of all the bird species in Nigeria and their conservation status can be found on the Avibase website (<http://avibase.bsc-eoc.org/checklist.jsp?region=ng&list=howardmoore>).

Wild bird species were found to be relatively abundant where there is dense tree vegetation according to a study on the Dagona-Waterfowl Sanctuary in Borno state, Nigeria (Lameed, 2011).

Nigeria is also noted as a global hotspot for some species of primate. A great diversity of this is found especially in the Gulf of Guinea forests of Cross River State. Some of these species are endemic to Nigeria, like the white-throated monkey (*Cercopithecus erythrogaster*), Sclater's guenon (*Cercopithecus sclateri*) and the Niger Delta red colobus (*Procolobus pennantii epieni*). All wild species endemic to Nigeria are presented in Table 1, and some of these species are shown in Figures 1 to 10.

Sedghi (2013) reported on the latest update of the IUCN Red List of threatened animal species across the regions of the world. IUCN collectively categorizes as threatened, species that are listed as critically endangered, endangered or vulnerable. Thus of the 71,576 animal species that were assessed, 21,286 were said to be threatened with extinction.

Figure 11 shows the proportion that each category constitutes of the total number of threatened species, while Table 2 shows the number of threatened species in each taxonomic group for Nigeria. Nevertheless, figures for the Reptiles, Fishes, Molluscs and other Invertebrate taxonomic groups are the number of species that have been assessed and known to be threatened within these species groups and not as the overall total number of threatened species for the group (Sedghi, 2013).

Table 1. Endemic Wild fauna species in Nigeria

Mammals	Birds	Reptiles	Amphibians
Sclater's Guenom ( <i>Cercopithecus sclateri</i> )	Ibadan Malimbe ( <i>Malimbus ibadanensis</i> )	Dunger's file snake ( <i>Mehelya egbensis</i> )	Nigerian toad ( <i>Bufo perreti</i> )
Fox's Shaggy Rat ( <i>Dasymys foxi</i> )	Jos-Plateau Indigo bird ( <i>Vidua maryae</i> )	Wormsnake ( <i>Leptotyphlops sp</i> )	Danko puddle frog ( <i>Phrynobatrachus danko</i> )
Gotel Mountain soft furred mouse ( <i>Praomys obscurus</i> )	Rock firefinch ( <i>Lagonosticta sanguinodorsalis</i> )	Giant forest Gecko ( <i>Cnemaspis gigas</i> )	<i>Phrynobatrachus rainerguentheri</i>
Savanna swamp shrew ( <i>Crociodura longipes</i> )	Anambra waxbill ( <i>Estrilda poliopareia</i> )	Ondo forest Gecko ( <i>Cnemaspis petrodroma</i> )	
Forest Shrew ( <i>Sylvisorex ollula</i> )		West African worm lizard ( <i>Baikia africana</i> )	
Delta Red Colobus monkey ( <i>Procolobus epieni</i> )			

Source. <http://Intreasures.com/nigeria.html>, Accessed 15/01/2015

Figure 1. Dunger's File snake- *Mehelya egbensis*Figure 2. Fox's Shaggy Rat- *Dasymys foxi*Figure 3. Sclater's Guenom- *Cercopithecus sclateri*Figure 4. Ibadan Malimbe- *Malimbus ibadanensis*



Figure 5. Giant Forest Gecko- *Cnemaspis gigas*



Figure 6. Delta Red Colobus- *Procolobus epieni*



Figure 7. Worm Snake- *Leptotyphlops sp*



Figure 8. Nigerian Toad- *Bufo perreti*



Figure 9. Jos-Plateau Indigo Bird- *Vidua maryae*



Figure 10. Gotel Mountain soft-furred mouse- *Praomys obscurus*

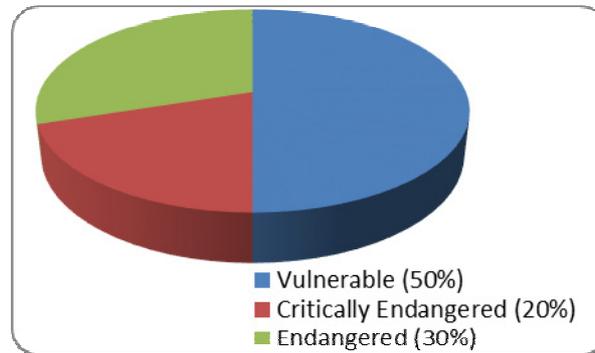


Figure 11. Threatened animal species- broken down by category

Source. IUCN (2013).

Table 2. Threatened species in Nigeria (Total by taxonomic group)

GROUP	TOTAL NUMBER
Mammals	26
Birds	19
Reptiles	8
Amphibians	13
Fishes	60
Molluscs	1
Other Invertebrates	14

Source. IUCN Red list (2013).

## 2. Conservation Efforts in Nigeria

Conservation is an effort to maintain and use natural resources wisely in an attempt to ensure that those resources will be available for future generations (Yarrow, 2009). Hence, wildlife conservation is an attempt to exploit wild populations reasonably so that they will be available for future use.

Recently, the public seem to be increasingly aware of the importance of preventing the continuous loss of wildlife and the preservation of our remaining biodiversity (Idowu, Halidu, & Odebiyi, 2011). However, this is a contestable statement with the current situation in the Delta region of the country, which can be said to represent on a small scale the many problems facing the African continent. A growing population, conflicts between different ethnic groups, national political instability, and unsustainable exploitation of natural resources are all factors that play significant roles in the problems the Niger/Delta region of the country is currently facing (WWF, 2015).

Studies in conservation biology have shown that the most productive approach, that a country may adopt, in the conservation of its wild fauna is to establish and maintain their *in situ*, viable populations in all the land and waterscapes represented in that country (ng-NBSAP, 2007). Therefore, Parks and other protected areas have come among the most important ways to conserve wild animals and their establishment has become a global business in recent decades (Abramovitz, 1991). Five categories of protected areas were described in Nigeria by Ezealor (2002); they include National Parks, Game Reserves, Forest Reserves, Biosphere Reserves and Strict Nature Reserves, and Special Ecosystems and habitats such as sacred grooves.

The first National Park in the country was created in 1975 through the joining of the former Borgu game reserve with the adjacent Zugurma game sector. The name Kainji Lake National Park was given to this new area, though the decree for its establishment was eventually promulgated in 1979. By 1991, five more National Parks were created by the Federal government, namely; Gashaka Gumti National park, Old Oyo National Park, Chad Basin National Park, Cross-River National Park and Yankari National Park. Okomu National Park and Kamuku National Park were created in 1999 bringing the number to eight. But in 2006, Yankari was handed over to the Bauchi state government, thus leaving the number of National parks currently at seven.

Table 3. The status of WCS priority species in Nigeria

Species	Conservation status in Nigeria
Cross River Gorilla- <i>Gorilla gorilla diehli</i>	Critically endangered, approximately 100 remaining at 3 sites in Cross River.
Forest Elephant- <i>Loxodonta cyclotis</i>	Endangered, small population found in Oban and Okwango division of Cross River National Park
Savanna Elephant- <i>Loxodonta africana</i>	Endangered, last remaining population may be in Yankari game reserve, where approximately 450 are left.
Nigeria-Cameroon Chimpanzee <i>Pan troglodytes ellioti</i>	Critically endangered, with 1500-3000 left in Nigeria and approximately 3500-9000 in Nigeria and Cameroon, the endemic areas.
African Lion <i>Panthera leo</i>	Presently critically endangered in Nigeria, with about 50 left in the wild at Yankari and Kainji-lake National Park.
Niger Delta red colobus monkey <i>Procolobus epieni</i>	Critically endangered, found in the marshy forests of central Niger-Delta.
Preuss's red colobus monkey- <i>Procolobus preussi</i>	Threatened locally with extinction, and found around the Oban hills of Cross River national park.
Grey-headed Picathartes (Rockfowl) <i>Picathartes oreas</i>	A threatened species found in Cross-River state, Cameroon, Gabon and Equatorial-Guinea. About 10,000 of its total population is left, while 200 maybe left in Nigeria from a recent survey
Preuss's guenon <i>Allochrocebus preussi preussi</i>	Threatened, found in the Obudu plateau and Okwango areas of Cross-River state and South-west Cameroon.
Drill <i>Mandrillus leucophaeus leucophaeus</i>	Endangered, and found in the rainforests of Cross-river state and the nearby forests of Cameroon.
Leopard <i>Panthera pardus</i>	Endangered, though there is very little information. The few left may be found at Gashaka-Gumti national park.
African Wild Dog <i>Lycaon pictus</i>	Endangered, hunted out at Gashaka Gumti recently, but may still be found at Kainji-lake national park.

Source. WCS (2012).

We are presently at a point in Nigeria where the history of conservation has to be re-written. Anadu (1987), in his paper titled, "Progress in the Conservation of Nigeria's Wildlife", reviewed the history of conservation in Nigeria from colonial times and explained the reasons for the lack of effective conservation measures up till the early 80's. The NCF (Nigerian Conservation Foundation), since its establishment in 1980 has achieved some laudable strides in sustaining the ethics of conservation and wise use of natural resources in the country. The Lekki Conservation Centre is one of NCF's foremost conservation projects in the country. The site has helped to preserve wildlife found in southwest coastal environment of Nigeria from sprawling urban development, while serving as biodiversity conservation and environmental education centre. There have been school conservation clubs formed following the impact of students/teachers visit to the Centre (NCF, 2015). NCF's first volunteer based bird conservation group- Lekki Bird Club (LBC) was established in 2009, and this is just one of such that NCF plans to set up in major urban settlements across the country. The club currently embarks on bird-watching trips, talks/lectures as well as publications in form of newsletters and trip reports to reach a wider audience. Future plans for the bird club includes training, capacity building opportunities and coordinated field projects for members. Also in 2009, as a result of NCF's partnership with Ondo state government, there was a blueprint for the development of a wildlife Park in former Ifon forest Reserve. This has brought about a joint commitment by both the state and NCF to biodiversity conservation activities and ecotourism development in Ifon forest Reserve. Other conservation based projects of the NCF includes the Omo-Oluwa-Shasha forest conservation project in Ogun state, and the Finima nature Park in Rivers state.

In Cross River state, NCF and some other NGOs are in partnership with Pandrillus foundation to protect the Afi Mountain Wildlife Sanctuary. The area has been listed as an Important Bird Area for Nigeria and hosts one of the largest migratory swallow roosts in Africa, as well as “the Big Three” – Gorilla, Chimpanzee and Drill (Pandrillus, 2008). Pandrillus started protection work on this area since 1993 using local hunters for patrol to discourage shooting and trapping and an education program in the 17 villages surrounding the mountain.

The BirdLife International is also working closely with the Ramsar convention in Nigeria to assist in wetland restoration and to safeguard ecosystem services. The organization, in a recent publication on the Hadejia-Nguru wetland of Nigeria, released bird facts that designate this location as an important bird area and a priority spot for protection (<http://www.birdlife.org>). The Spring Alive project of this organization, which was designed to promote children’s interest in nature and its conservation through the tracking of the arrival of spring birds, had its art contest in 2013 led by Nigerian participants (NCF, 2015)

The Nigerian government equally has continued to release national reports on the status of biodiversity in the country as well as strategies towards effective management, drawn and compiled with the help of lecturers in universities and other professionals from NGOs such as WCS (Wildlife Conservation Society) and NCF (Nigeria Conservation Foundation).

The WCS has in a recent survey presented a list of priority species for conservation in the country (Table 3).

### 3. Problems of Wild Fauna Conservation in Nigeria

The National Parks in Nigeria are among the few remaining places in the country where natural ecosystems for wild animals still exist (Osemeobo, 1991). Hence, Ogunjimi et al. (2009) noted that seeking to gain public support for conservation goals and activities of Nigeria National Parks is very important.

The problems confronting successful conservation of wild population in the country stem from two reasons; the continuous destruction and loss of wildlife habitat as a result of the ever increasing human population, and the rampant and unrestricted hunting and poaching.

#### 3.1 Destruction and Loss of Wild Habitats

The ever increasing population in Nigeria may mean that more people will encroach on the few remaining natural ecosystems for wild animals. These larger populations are concentrated in the forested areas of the south and the large urban centres of the far north (Nigeria First National Biodiversity Report (NFNBR), 2001). Coincidentally, it is in these same locations that the few remaining populations of most endangered species found in the country are left. For example, the Cross River Gorilla (*Gorilla gorilla diehli*) found in the southern forested areas of Cross River state and protected in the Cross River National park, and the Savannah Elephant (*Loxodonta africana*) found in Yankari game reserve of Bauchi state in the north. Figure 12 shows the location of all the National Parks on the country map. Ayeni (1985) had mentioned that the Fulani herders that move annually southward with their large droves of livestock have caused a lot of habitat degradation by lopping trees as fodders for their animals. The reality is that till date, this pattern has continued in the country, with the Fulani herdsmen encroaching often into protected areas and resisting violently any attempt to eject their animals from the protected areas.

Another activity that has often resulted in destruction of wild habitat is the dry season fires mostly set by cattle herdsmen and poachers. Afolayan (1977) also had reported that these early burns between January and November tended to suppress the growth of perennial grasses.

#### 3.2 Excessive Hunting and Poaching

Hunting is perceived as a vocation in certain parts of Nigeria, especially in the rural communities where it might be a traditional family occupation (Ajayi, 1979; Martin, 1983). The activity takes place both day and night throughout the year, and anything larger than 2 kg is considered fair game meat (NFNBR, 2001). Poaching, which is any form of illegal entry into a protected area also has become more common as people enter to gather fuel wood, fell trees, fish and hunt without permission. In a survey of African grey parrots *Psittacus erithacus* carried out at the Ikpan forest block of the Oban sector of Cross River National Park, an area contiguous with the Korup National Park of Cameroon, it was established that trade and trafficking of these birds occurs in this area, with an average catch of eight parrots per day per man (Edem, Clement & Mfonobong, 2008). This has drastically reduced the population of parrots in the area as confessed by one of the parrot trappers who was engaged in the survey.

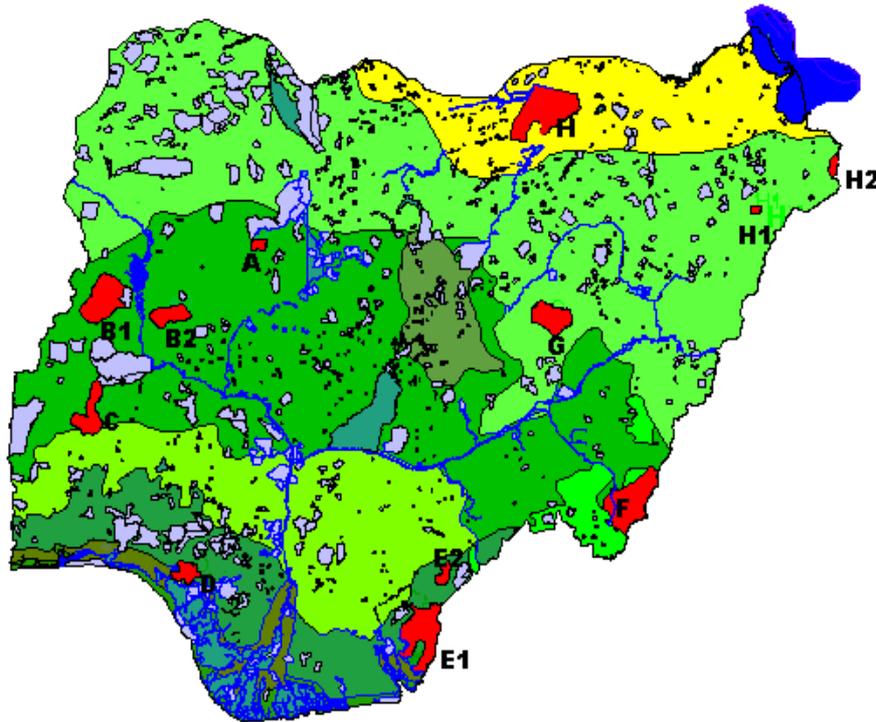


Figure 12. Nigeria National Parks shown in red

**Key to Map:** A- Kamuku; B1-Kainji- Borgu sector; B2- Zugerma sector; C-Old Oyo; D-Okomu; E1- Cross river-Oban division; E2- Okwango division; F-Gashaka Gumti; G- Yankari; H-Chad basin- Hadejia/nguru wetland sector; H1-Sambisa sector; H2-Chingurme/duguma sector.

Source: Nigeria First National biodiversity report, 2001.

The study by Ijeomah et al. (2012) on the Kainji lake National Park to analyze poaching activities in this area revealed that illegal entry into the Park in various forms continues despite efforts by Park rangers to curb poaching. The hunters, who are mostly from the local communities around the Park have developed various techniques of avoiding or escaping the rangers. Loopholes in existing game laws on the other hand had further encouraged overhunting.

#### 4. Suggestions for Further Effective Conservation Efforts

The prospects of ecotourism need to be better explored in Nigeria. Ecotourism as defined by the Ecotourism society in 1991 is a purposeful travel to natural areas to understand the cultural and natural history of that environment, while being careful to avoid any alteration of the integrity of the ecosystem there, and producing economic opportunities that make conservation of natural resources a benefit to local people ( Falade & Adebajo, 2008).

Ecotourism is seen by conservationists as a potential vehicle for raising funds for conservation and justifying economic reasons for conservation. Visitors to a protected area may out of empathy for the animals they have seen become advocates for conservation and support in various ways.

In a very recent study by Ogunjinmi, Onadeko, and Ogunjinmi (2013), it was noted that the Nigerian broadcast media had no specific programmes on nature conservation. Therefore, it was suggested that there should be synergy between Nigeria National Parks Service and major media establishments as this will increase public awareness, knowledge, appreciation of Parks' resources, and policy support for biodiversity conservation efforts. All this is deemed to have the tendency to catalyze actions at local and decision-making levels that could halt the destruction of Nigeria's biodiversity (Ogunjinmi et al., 2013).

Hence, Nigerian National parks should be well equipped to suit modern taste, while family vacations to such areas should be encouraged via the media, especially radio jingles in local dialects as most Nigerians are either not well informed, or do not see the essence of visiting a nature Park.

Zoological gardens in the country must be upgraded and well maintained to become safe conservation homes for some already endangered species and not just entertainment centres for humans. Concerned individuals and stakeholders in this area must all be involved. This is so because a lot of urban dwellers will most likely visit a zoo rather than a Park. Therefore, the zoos must be mandated to become members of functioning bodies such as World Association of Zoos and Aquaria (WAZA) and (PAAZAB), Pan African association of Zoos and Aquaria, with a focus on making zoos conservation centres. Some Universities in the country do have functioning zoological gardens; for instance the University of Ibadan zoo which has been undergoing a lot of restructuring and upgrading to meet up with global standards, and the quite recently upgraded University of Ilorin zoo. It is sad however that wildlife conservation studies and research in our Universities are still very poor.

Existing game laws in the country should be re-amended and better enforced to discourage hunting and poaching. Stipulated penalties should be meted out to offenders, while Park rangers must be trained and well equipped to cope with modern challenges of poaching.

Wildlife conservation studies should be introduced into our primary and secondary schools curriculum, while more research in this area should be encouraged at our Universities and other tertiary institutions, as there is a paucity of work done in this field.

## 5. Conclusion

Despite the numerous benefits man derives from wildlife resources, his reckless exploitation of the species remain unceasing and unabated. Human activities such as bush burning, damming of rivers, draining swamps, environmental pollution, hunting and poaching have continued to threaten wildlife existence in every environment. Consequently, many animals are faced with extinction and are classified either as threatened or endangered species. Conservation goals and objectives in the country's national policy ought to be given more attention as concerned NGOs continue to implore and support the government in integrating them.

As man is the chief culprit in interference with the natural environment, the onus is equally on him for sustainable management and use of the resources nature has made available. As the World Wildlife Fund (WWF) states in their slogan for conservation - "we are building a future where humans live in harmony with nature." It is also imperative that Nigeria take more decisive action and rise up to the challenge of conserving its wild fauna resources if there will be a future where its children will live in harmony with nature.

## References

- Abramovitz, J.N. (1991). Investing in Biological Diversity. *U.S. Research and Conservation*
- Afi Mountain Wildlife Sanctuary. (2015). Retrieved January 15, 2015 from <http://www.pandrillus.org/projects/afi-mountain-wildlife-sanctuary/>
- Afolayan, T. A. (1977). *Savanna structure and productivity in relation to burning and grazing regimes in Kainji Lake National Park*. Ph.D. Thesis, University of Ibadan.
- Ajayi, S. S. (1979). The utilization of tropical forest wildlife: state of knowledge and research priorities. *8th World Forestry Congress, Jakarta, Indonesia*. FAOMISC/79/27, ROME, FAO.
- Anadu, P. A. (1987). Progress in the Conservation of Nigeria's wildlife. *Biol. Conserv.*, 41, 237-251. [http://dx.doi.org/10.1016/0006-3207\(87\)90088-7](http://dx.doi.org/10.1016/0006-3207(87)90088-7)
- Anadu, P. A. (1987). Wildlife Conservation in Nigeria- Problems and Strategies. *The Environmentalist*, 7(3), 211-220. <http://dx.doi.org/10.1017/BF02233594>
- Anadu, P. A. (1992). *A keynote address read at the national seminar on national Resources conservation policy, Nigeria*. pp 130.
- Ayeni, J. S. O. (1985). Strategies for quick and effective conservation and recovery of the diminishing wildlife resources of Nigeria. *Niger. Fld.*, 50, 37-40.
- Bird Club. (2014). In *Nigerian Conservation Foundation*. Retrieved October 16, 2014 from <http://www.ncfnigeria.org/component/content/category/90-programmes>
- BirdLife International. (2014). *Important Bird Areas factsheet: Hadejia-Nguru wetlands*. Retrieved September 15, 2014 from <http://www.birdlife.org>
- Diamond, J. M. (1989). Overview of recent extinctions. In D. Western, & M. Pearl (Eds.), *Conservation for the Twenty-first Century* (pp. 37-41). New York: Oxford University Press.

- Edem, A. E., Clement, E. A., & Mfonobong, E. E. (2008). A Survey of African Grey Parrots (*Psittacus Erithacus*) Trade and Trafficking in Ekonganaku Area of Ikpan Forest Block, Nigeria. *Ethiopian Journal of Environmental Studies and Management*, 1(2), 68-73.
- Efforts in Developing countries*. Washington, D. C: World Resources Institute.
- Ezealor. (2002). *Critical Sites for Biodiversity Conservation in Nigeria*. Nigerian Conservation Foundation, Lagos, Nigeria. 110pp.
- Falade, G. O., & Adebajo, A. (2008). *Ecotourism: A course Guide*. National Open University of Nigeria. Retrieved from April 18, 2013 from [http://www.nou.edu.ng/NOUN\\_OCL/pdf/.../ESM%20221-MAIN%20BODY.p](http://www.nou.edu.ng/NOUN_OCL/pdf/.../ESM%20221-MAIN%20BODY.p)
- FAO. (2000). Forestry Outlook Study for Africa (FOSA). Retrieved from April 27, 2013 from <http://www.fao.org/docrep/004/ab592e/AB592E02.htm> 27/04/2013
- Idowu, O. S., Halidu, S. K., & Odebiyi, A. R. (2011). Evaluation of the Effect of Legislation on Wildlife Conservation: A Case Study of Kainji Lake National Park, Kainji, Niger State, Nigeria. *International Journal of Environmental Sciences*, 1(7), 1609-1615.
- Ijeomah, H. M., Augustine, U. O., & Damilola, O. (2012). Analysis of Poaching Activities in Kainji Lake National Park of Nigeria. *Environment and Natural Resources Research*, 3(1). <http://dx.doi.org/10.5539/enrr.v3n1p51>
- Lameed, G. A. (2011). Species Diversity and Abundance of wild birds in Dagona-Waterfowl Sanctuary, Borno State, Nigeria. *Journal of Environmental Science and Technology*, 5(10), 855-866.
- Lekki Conservation Centre. (2014). In *Nigerian Conservation Foundation*. Retrieved November 8, 2014 from <http://www.ncfnigeria.org/projects/lekki-conservation-centre>
- Living National Treasures. (2015). Nigeria. Retrieved January 15, 2015 from <http://lntreasures.com/nigeria.html>
- Martin, G. H. G. (1983). Bushmeat in Nigeria as a natural resource with environmental implications. *Environ. Conserv.*, (10), 125-132. <http://dx.doi.org/10.1017/S0376892900012212>
- Nathaniel, I. T., & Nathaniel, A. (2001). The effects of poverty in conservation of biodiversity: the Nigeria experience. *Science in Africa; Merck Article*.
- Nigeria Bird Checklist. (2015). In *Avibase, the world bird database*. Retrieved January 15, 2015 from <http://avibase.bsc-eoc.org/checklist.jsp?region=ng&list=howardmoore>
- Nigeria First National Biodiversity Report. (2001). Retrieved April 27, 2013 from <http://www.cbd.int/doc/world/ng/ng-nr-01-en.doc>
- Nigeria Fourth National Biodiversity Report. (2010). Retrieved February 4, 2014 from <http://www.cbd.int/doc/world/ng/ng-nr-04-en.pdf>
- Nigeria National Biodiversity Strategy and Action Plan (NBSAP). (2007). Retrieved December 16, 2013 from [www.cbd.int/doc/world/ng/ng-nbsap-01-en.pdf](http://www.cbd.int/doc/world/ng/ng-nbsap-01-en.pdf)
- Ogunjinmi, A. A., Ojo, L. O., Onadeko, S. A., & Oguntoke, O. (2009). An appraisal of environmental interpretive policies and strategies of Nigeria national parks. *Tropical Agricultural Research & Extension*, 12(1).
- Ogunjinmi, A. A., Onadeko, S. A., & Ogunjinmi, K. O. (2013). Media coverage of nature conservation and protection in Nigeria National parks. *Int. Journal of Bio. & Cons.*, 5(10), 687-695. <http://dx.doi.org/10.5897/IJBC2013.0598>
- Olatunbosun, A. (2013). Wildlife Conservation and Game management Laws: theoretical issues and empirical evidences in Nigeria. Retrieved June 11, 2013 from <http://www.iucnael.org/en/documents/701-olatumbosun-wildlife...and.../file>
- Osemeobo, G. J. (1978). A Management Plan for the Zugurma Sector of the Kainji Lake National Park, Nigeria. Federal Department of Forestry, Lagos, Nigeria.
- Sedghi, A. (2013). Red list 2013: threatened species across the regions of the world. Retrieved September 17, 2014 from <http://www.theguardian.com/news/datablog/2013/nov/26/iucn-red-list-threatened-species-by-country-statistics>
- Threatened Species. (2013). Animal Info & Endangered Animals. Retrieved April 18, 2013 from <http://www.animalinfo.org/country/nigeria.htm>
- Usman, B. A., & Adefalu, L. L. (2010). Nigerian forestry, wildlife and protected areas: Status report. *Biodiversity*, 11(3-4), 54-62. <http://dx.doi.org/10.1080/14888386.2010.9712664>

- Western Africa: Southern Nigeria, extending into Benin. (2015). In *worldwildlife*. Retrieved January 12, 2015 from <http://www.worldwildlife.org/ecoregions/at0123>
- Western Africa: Southern Nigeria. (2015). In *worldwildlife*. Retrieved January 12, 2015 from <http://www.worldwildlife.org/ecoregions/at0122>
- Westing, A. H., Fox, W., & Renner, M. (2001). Environmental degradation as both consequence and cause of armed conflict. Working paper prepared for Nobel Peace Laureate Forum participants by PREPCOM subcommittee on Environmental Degradation, June.
- Whitmore, T. C., & Sayer, J. A. (Eds.). (1992). *Tropical deforestation and species extinction* (No. GTZ-705). London: Chapman & Hall.
- Wildlife Conservation Society (WCS), Nigeria Strategy. (2012). Retrieved December 6, 2013 from <http://wcsnigeria.org/DesktopModules/Bring2mind/.../Download.aspx?>
- Yarrow, G. (2009). Wildlife and Wildlife management. Fact sheet 36; Clemson Extension. Retrieved March 17, 2015 from [https://www.clemson.edu/.../wildlife/.../fs36\\_wildlife\\_and\\_wildlife\\_mana](https://www.clemson.edu/.../wildlife/.../fs36_wildlife_and_wildlife_mana)

### Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/3.0/>).