



Wildlife Conservation in Nigeria: A perception of Professionals and Practitioners

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ABSTRACT

Like most parts of the world, the decline in diversity, abundance, and distribution of wildlife species is of grave concern to conservation professionals and practitioners in Nigeria. In March 2021, the IUCN released a report on the decline in African Elephant populations; this development and similar ones have spurred more concerns about the remaining elephant and other mammal populations in Nigeria. This study investigated current perceptions of factors and challenges to biodiversity conservation in Nigeria. Social media surveys and professional and organizational mailing lists were used to sample opinions and collect data about the conservation approach in Nigeria. Respondents constitute scientists, enthusiasts, wildlife managers, government officials, and Non-Governmental Organizations. Findings from the study suggest that 88.7% of respondents perceive high human incursions into Protected Areas. There was credence to the emergence of poaching, bushmeat market, human-wildlife conflicts, and human and/or wildlife death from human-wildlife conflicts. This supports the high decline of 77.1% in the populations of carnivores, herbivores, and other large mammals in Protected Areas nationwide. Respondents reported a lack of satisfaction with current wildlife conservation efforts in Nigeria. The study reveals the need for more collective and concerted efforts towards biodiversity conservation in Nigeria. Effective communication, conservation education, and capacity building can serve as measures to strengthen biodiversity conservation in Nigeria.

Keywords: Biodiversity conservation, Protected areas, Nigeria, Perception

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INTRODUCTION

Globally, the decline in abundance and distribution of biodiversity is of grave concern to conservationists (Isbell *et al.*, 2022). Species and habitats are undergoing significant deterioration and drastic changes, mainly due to anthropogenic activities (Brooks *et al.*, 2016; Chapman *et al.*, 2022). The Intergovernmental Panel on Climate Change (IPCC)

6th assessment report highlighted that all biodiversity hotspots are impacted, to differing degrees, by human activities with very high confidence. The impacts from climate change are compounded by other anthropogenic impacts, including habitat loss and fragmentation, hunting, fishing, and its bycatch, overexploitation, water abstraction, nutrient enrichment, pollution, introduction of invasive species, pests, and diseases, all of which reduce climate resilience (IPCC, 2021; Chapman *et al.*, 2022). The findings from this report confirms/strengthens an earlier report on five major threats to biodiversity including land and sea use change; pollution;

species overexploitation; climate change; and invasive species and disease (WWF, 2020).

Biodiversity threats are an escalating problem in Africa which hosts a significant number of the globe's most valuable biodiversity: and charismatic megafauna (Cormier-Salem *et al.*, 2018; O'Connell *et al.*, 2019; Chapman *et al.*, 2022). For example, Cross River Gorilla *Gorilla gorilla diehli*, the Savanna Elephant *Loxodonta africana* and Forest Elephant *Loxodonta Africana cyclotis*, Lion *Panthera leo*. The region also holds a high diversity of birds some of which are endemic to the region e.g., the Ibadan Malimbe *Malimbus Ibadanensis*, Jos Plateau Indigobird *Vidua maryae*, Rock Firefinch *Lagonosticta sanguinodorsalis*, as well as several endemic plants, reptiles and amphibians, and ecological processes. Nigeria and some parts of West Africa have undergone significant declines in the diversity, abundance, and distribution of species (Polidoro *et al.*, 2010; Aderoluet *et al.*, 2013; Izzah & Seiyaboh, 2018). Effective conservation of biological diversity is crucial for human survival and the maintenance of ecosystem processes as well as meeting the needs cultural perceptions and traditional ideologies of many stakeholders. Despite a long history of several conservation efforts and education in the region, biodiversity continues to decline (Usman & Adefalu, 2010). This suggests an urgent need to review our conservation history to gain an understanding of what went wrong or where we missed the goals.

Since the maintenance of biological diversity is fundamental to life support systems - sustain and meet human needs - successful conservation outcomes are therefore essential. However, the peculiar and prevailing social, political, and economic realities, which have stifled commensurate development compared to the human resource base, make the realization of appropriate conservation outcomes difficult to attain.

Nigeria in the past ten years experienced many challenges including insurgency, banditry, militancy, and instability which have resulted in massive degradation of Protected Areas (PAs). Sects like Boko Haram have succeeded in overrunning the Sambisa Game Reserve and the Chad Basin National Park converting the PAs to hideouts and bases for their operations. Also, bandits/cattle rustlers (in Kamuku National Park KNP), Niger - Delta militants (all across key biodiversity hotspots within some Niger Delta states), and the current kidnapers (in the central parts of the country) commonly use Forest Reserves and community-owned forests and other lower category PAs as their hideouts and centers of operations. The foregoing scenario has crippled to a large extent, effective biodiversity conservation in the country.

Additionally, the contemporary Social Media posts of different conservation attainments and the realities of wildlife conservation on the ground do not tally. Therefore, the need to evaluate the discrepancies has become paramount. Conservationists in Nigeria have perspectives on biodiversity conservation. The general belief of many conservationists is that PAs are condemned to failure unless local communities are engaged in conservation efforts (Raimi *et al.*, 2019; Dawson *et al.*, 2021). Congruent perceptions contribute to facilitating biodiversity conservation processes and help to achieve optimal outcomes.

The aim of the current study, therefore is to investigate the perception of professionals and practitioners on the current

factors, and challenges facing biodiversity conservation in Nigeria, under the following objectives: i) to analyze the perception of professionals on challenges of biodiversity conservation; ii) to evaluate the familiarity of respondents with wildlife poaching and market; iii) to evaluate respondents' perception on human-wildlife conflict and decline in wildlife in the last decade; and iv) to analyze the satisfaction of respondents with conservation efforts in Nigeria.

MATERIALS AND METHODS

Study area

The study adopted an online survey to sample conservation practitioners and professionals in Nigeria. The country lies within a longitude of 9.0820°N and latitude of 8.6753° E and occupies a land area of 923,623 square kilometers. Nigeria covers different ecological regions in terms of vegetation including the mangrove which is around the coastal areas in the southern part of the country, followed by the rainforest and montane forests to the east, and the dry savannas in the northern part of the country. Nigeria is unique and diverse in terms of its biological diversity which is represented in PAs owned and managed by the Federal, State, and Local Government Areas or private estates owned by individuals. In addition to the government management, other nongovernmental and non-profit organizations are also involved in the protection and conservation of biodiversity with the Nigeria Conservation Foundation at the forefront.

Study design

An online questionnaire survey was conducted using a dedicated platform (Survey Monkey app) with a link for the survey to Facebook and WhatsApp portals. A total of 154 respondents completed the online survey. Respondents include professionals involved in conservation activities in Nigeria. Specifically, the field staff of national parks and game reserves, academics and researchers, staff of state and federal ministries of forestry and environment that are in charge of protected areas, and operators of non-governmental and civil societies with a focus on biodiversity conservation. These respondents are members of professional bodies such as the Wildlife Conservation Society of Nigeria and, the Forestry Association of Nigeria, among others. The professionals have various social media platforms including Facebook, WhatsApp, LinkedIn, etc. as well as mailing lists where they initiate discussions and share current information on conservation. These platforms are effective in information dissemination and were explored for the administration of the survey questionnaire.

Primary data was collected through the administration of a semi-structured questionnaire. The questionnaire was designed using Google Form which is an online software that has been popularly and reliably used for data collection. Google Form was selected because it is free, adapted to different computer operating systems, reliable for data storage, and easy to download in different formats for analysis. For quick and easy responses to the questionnaire, the design followed easy and simple questions as recommended by Lefeveret *et al.* (2007). The questionnaire contains open and closed-ended questions set to address the aims and objectives of the study. The questionnaire was divided into sections to cover the following:

conservation focus of the professionals; the current status of PA compared to a decade ago; perception of participatory approaches to the management of protected areas; effectiveness of regulatory and enforcement stakeholders responsible for protected areas; and Strategic action in the management of protected areas, contemporary conservation of protected areas and its unique biodiversity. For these sections, a series of questions were asked with open and close-ended responses which were later coded, analyzed, and interpreted.

Data analysis

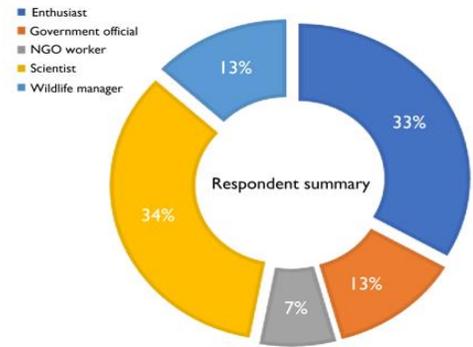
Analysis was carried out using the R Software version 3.4.3.1. (R Development CoreTeam, 2021). Chi-Square was applied to test the difference in respondents' level of familiarity (heard about it; have not heard it; somewhat familiar or very familiar) with wildlife poaching and the market. A test of respondents' opinions was carried out on human-wildlife conflict (HWC), human death from HWC, and wildlife death from HWC, as well as the decline in carnivores and herbivores in the last ten years, and incursion to PAs. A test of the respondent's level of satisfaction with the current conservation effort was also carried out.

RESULTS AND DISCUSSION

Perception of professionals and practitioners to biodiversity conservation challenges

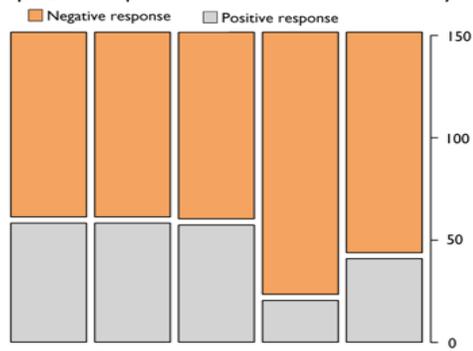
One hundred and fifty-four respondents participated in the survey: scientists (34%), enthusiasts (33%), wildlife managers (13%), government officials (13%), and NGO workers (7%) (Figure 1a). These groups represent the core of wildlife management professionals in Nigeria, their perceptions are reflections of conservation and administrative experiences, which could have culminated from interaction and practical exposure to the wildlife environment, policies, and administration.

Most of the respondents and experts' interaction with biodiversity was with game reserves (40.1%), national parks and forest reserves (38.8%), wildlife space (28.9%), and specific species (Figure 1b). Respondents' relationship to wildlife conservation and natural resources management showed significant differences ($X^2=49.19$, $df= 4$, $p<0.001$). Government negligence (66.7%), insecurity (59.9%), poaching (49.7%), poor administration (48.4%), lack of research and monitoring (45.1%), HWC (41.2%), herding (35.5%), incompetent administration (22.2%), were reported as the top challenges of protected areas in Nigeria in order of magnitude (Figure 1c). Respondent perceptions on challenges of biodiversity conservation in PAs were found to be statistically significant ($X^2= 24.24$, $df= 4$, $p<0.001$).



a)

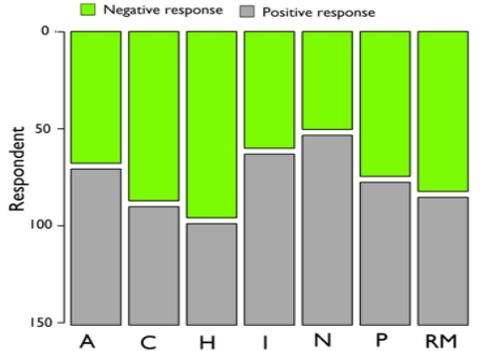
Experts and aspects of interaction with biodiversity



FR- Forest reserve; GR- Game reserve; NP- National park; SS-Species specific; and WS- Wildlife space

b)

Challenges of Protected Areas in Nigeria



A- Administration; C- Conflict; H- Herding; I- Insecurity; N- Negligence; P- Poaching; RM- Research and monitoring

c)

Figure 1. A summary of respondent in the survey (a); interaction with Biodiversity conservation centers (b); and challenges of biodiversity conservation in Nigeria (c)

Hence, there is evidence to suggest that the current perception of biodiversity conservation is associated with respondents' relationship with wildlife conservation and natural resources management and the biodiversity aspects the respondents interact with. Previous studies identified administrative, communities, corruption, and judicial issues (Ogunjinmi et al., 2017), grazing, hunting, logging, and fishing (Nchor & Ogogo, 2012), livestock grazing and wild animal hunting (Meduna et al., 2009; Ogunjinmi et al., 2012; Fada, 2015), poaching, over-

exploitation, lack of accurate data, bush burning (Aruofor, 2001) as the major problems of PA management in Nigeria.

Familiarity of respondents with wildlife poaching and market

Familiarity with bush meat hunting from PAs in the past 10 years (Figure 2) shows that 45.4% of the respondents were familiar, 27.6% somewhat familiar, and 23.7% had heard of, but were not familiar with bush meat hunting. Respondents' perception of familiarity with bush meat hunting from protected areas showed a significant difference ($X^2=9.9605$, $df = 2$, $p<0.007$). In addition, 45.1% and 36.6% were very familiar and somewhat familiar with the emergence of bush meat markets in the past 10 years (Figure 2). Respondent's

perception of familiarity with the emergence of the bush meat market showed a significant difference ($X^2= 17.216$, $df= 2$, $P<0.001$).

Contrary to expectation, the findings on familiarity with bush meat hunting and bush meat trade revealed moderate familiarity among conservation professionals and experts. In a practical sense, bush meat hunting and trade are seen as some of the most fundamental factors driving poaching and illegal utilization of wild animals in Nigeria and thus their prominence in addressing the decline in wildlife populations. In an attempt to sustain a livelihood, rural and urban poor engage in bush meat hunting and trade because of their low investment and adequate returns.

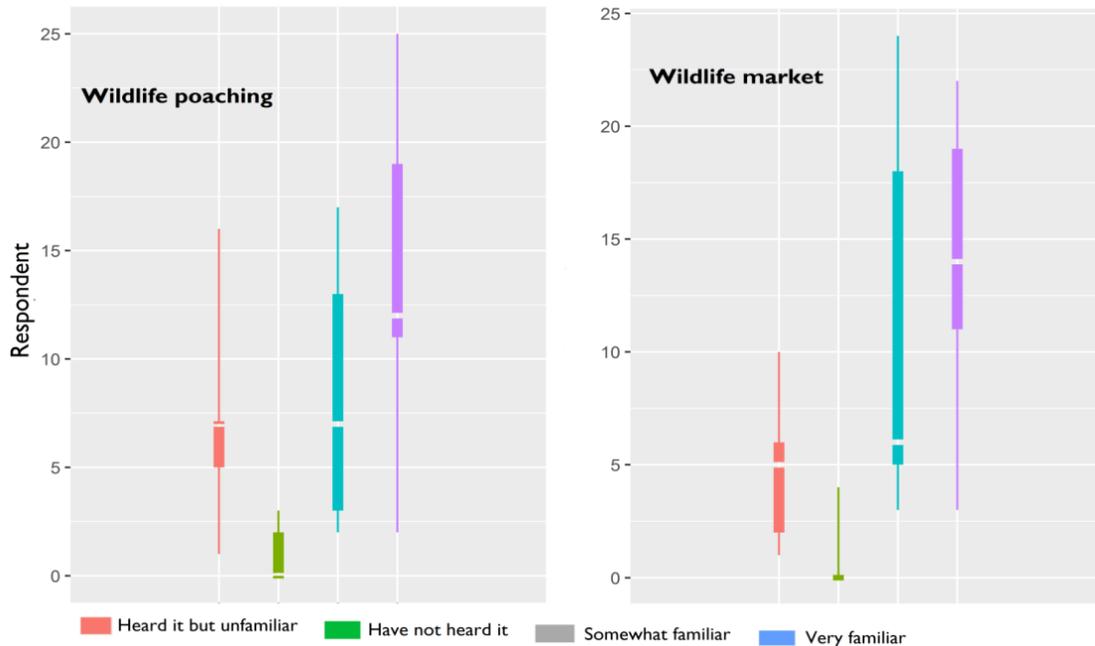
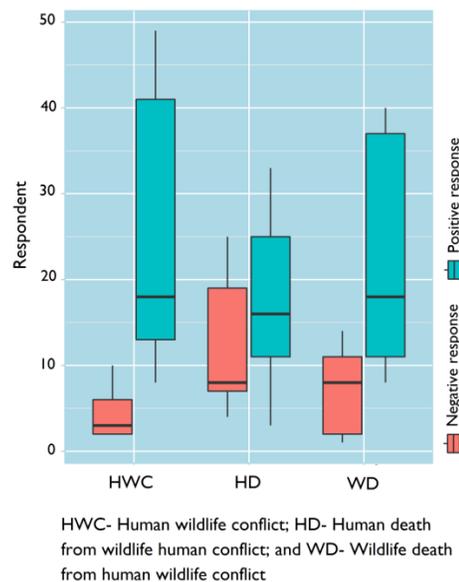


Figure 2. The level of familiarity of respondents with wildlife poaching and market in Nigeria

Perception of human-wildlife conflict and decline in wildlife in the last decade

Concerning familiarity with HWC in PAs and their surrounding communities, most respondents (84.9%) were familiar, and 58.3% and 76.0% were aware of any deaths of humans and wildlife from human-wildlife conflicts, respectively. This finding thus revealed a high level of familiarity and severity of HWC in Nigeria's PAs and the attendant's human and wildlife casualty (Figure 3). The perception of respondent showed significant difference on familiarity with HWC ($X^2= 73.921$, $df= 1$, $p<0.001$), awareness of death of human from HWC ($X^2=4.1391$, $df= 1$, $p<0.04$), death of wildlife from HWC ($X^2= 40.56$, $df=1$, $p<0.001$).

In furtherance to the highlighted challenges, 88.7% of the respondents had confidence that the national parks, game reserves, forest reserves, and other PAs suffer high human incursions and 77.1% also had confidence that the numbers of large herbivores (e.g., elephants, buffaloes, hippopotamus) and wild cats (lions, leopards, and other big cats) in the wild are in serious decline in the past 10 years (Figure 4).



HWC- Human wildlife conflict; HD- Human death from wildlife human conflict; and WD- Wildlife death from human wildlife conflict

Figure 3. Perception of respondent on human-wildlife conflict in the last decade

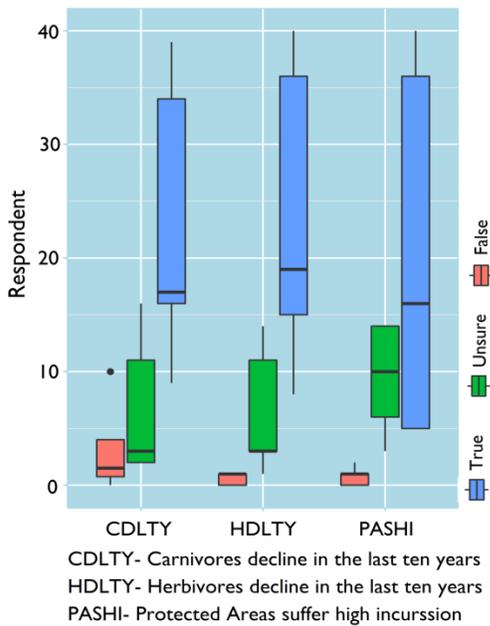


Figure 4. Perception of respondent on decline in wildlife in the last decade

These corroborate the 2020 global Living Planet Index which shows an average of 68% fall in monitored populations of mammals between 1970 and 2016 (WWF, 2020). The findings are also consistent with the views of Gray and Kalpers, (2005) and Lewis *et al.* (1990) that managing national parks in Africa often entails dealing with human pressures from areas surrounding the PA. The status of national parks and other PAs does not immune them from anthropogenic pressures and threats (Trainquilli *et al.*, 2014), and persistent anthropogenic pressures are the bane of effective conservation of forest and wildlife resources (Geldmann *et al.*, 2014).

Satisfaction of respondents with conservation efforts in Nigeria.

The foremost organizations responsible for overall wildlife conservation and natural resources management in Nigeria according to the respondents are the Ministry of Environment (78.1%), National Park Service (39.7%), Nigeria Conservation Foundation (21.9%), Wildlife Conservation Society (17.9%), and Wildlife Society of Nigeria (13.2%). We found a significant difference in respondent perception of the organization responsible for the overall wildlife conservation and natural resources ($X^2= 124.60$, $df= 4$, $p<0.001$).

The findings thus assert and reflect the prominent place of these organizations in wildlife and natural resources management in Nigeria. For example, the Ministry of Environment (Federal and State) and National Park Service are responsible for wildlife and natural resources policies and implementation and provide the direction for the overall management of wildlife and natural resources in Nigeria, with the National Park Service focused on management of wildlife in national parks.

Satisfaction with the current wildlife conservation efforts being made in Nigeria indicates that 62.7% of respondents were not satisfied while 35.3% were partially satisfied. We found a significant difference in respondent satisfaction with the current wildlife conservation effort in Nigeria ($X^2= 85.059$, $df= 2$, $p<0.001$) **Figure 5.** The findings thus imply that respondents differ based on the perceived roles of stakeholders in wildlife conservation and natural resources management.

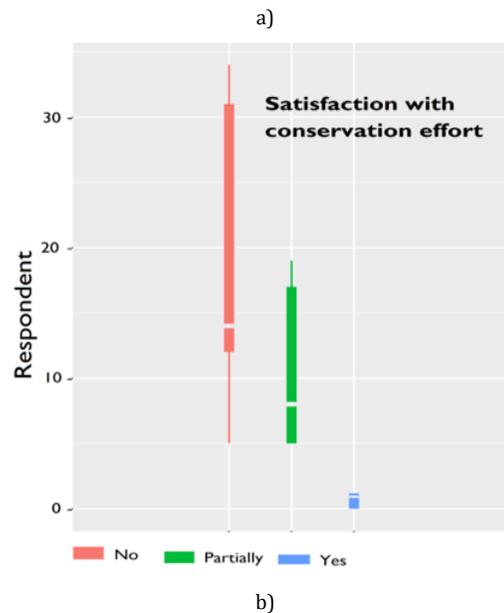
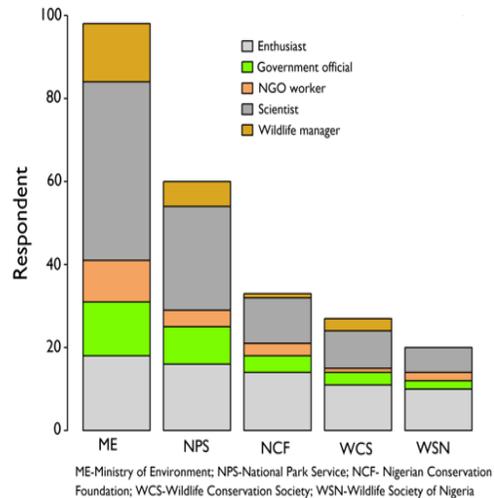


Figure 5. Perception of respondent satisfaction with conservation efforts in Nigeria.

The level of satisfaction could reflect the observed overall condition of wildlife and natural resources conservation and management which has assumed a downward spiral as reflected in the declining state of populations of vital wildlife and other natural resources in protected and non-protected areas. In managing PAs in Nigeria, the aspects requiring the most improvement according to the professionals and experts are funding (80.3%), surveys, inventorying, monitoring and

evaluation (73.7%), research (73.0%), partnerships and collaboration (69.7%), and the need for a council for wildlife conservation (38.8%). This agrees with Bruner *et al.* (2001), Wright *et al.* (2007), and Yu *et al.* (2010). According to them, reserve-management authorities are often grossly underfunded in tropical developing countries. Globally, protected area financing needs to improve at both site and system levels (Bovarnick, 2007).

The depth of respondents' knowledge in conservation efforts ($X^2= 35.29$, $df= 2$, $p<0.01$) and level or extent of participation in conservation ($X^2= 42.182$, $df= 3$, $p<0.001$) were also significantly different. However, active participation in conservation efforts by the respondents was not significantly different ($X^2= 0.52941$, $df= 1$, $p<0.4669$).

In analyzing the perception of conservation professionals on current PA activities, we found out that the top challenges of PAs in Nigeria ($X^2=21.075$, $df= 6$, $p<0.002$), i.e. the national parks, game reserves, forest reserves (protected areas) suffer high incursions and the number of herbivores in the wild is in serious decline in the past 10 years ($X^2=140.27$, $df= 2$, $p<0.001$), and the number of lions, leopard, and other big cats in the wild is in serious decline in the past 10 years ($X^2= 129.29$, $df= 2$, $p<0.001$) differ significantly by respondents. Respondents' professional experience in relation to different PAs and species could account for the differences.

CONCLUSION

This study suggests high human incursions into Protected Areas with increased levels of poaching, bushmeat market, human-wildlife conflicts, and human and/or wildlife death from human-wildlife conflicts. This leads to a high decline in the populations of carnivores, herbivores, and other large mammals in Protected Areas nationwide. There was a lack of satisfaction with current wildlife conservation efforts in Nigeria. We recommend the need for more collective and concerted efforts towards biodiversity conservation in Nigeria through effective communication, conservation education capacity building, research, and funding can serve as measures to strengthen biodiversity conservation in Nigeria.

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