



## The current state of biodiversity studies in Nigeria

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### Abstract

Biodiversity is fast declining, especially in African countries like Nigeria, with the lack of data. This study was conducted to quantify biodiversity studies in Nigeria available on the Web of Science database. Data were collected from the Web of Science core collection from 1970-2020 with “Biodiversity” as the search term. Of the 141 781 global research on biodiversity, 155 (0.1%) were conducted in Nigeria. Ecology and Environmental Science Journal were the top leading Web of Science subject category, both with 34 published articles, followed by Biodiversity Conservation (21) and Plant Science (19). Bergi *et al.* (2007) is the most cited article with forty-nine (49) citations. The University of Ibadan and Luiselli L. were the affiliated authors with the highest number of published articles on biodiversity in Nigeria. Overall, there is an increasing trend of biodiversity research in Nigeria over the years. However, in comparison to the global research in biodiversity and considering the rate of biodiversity loss both locally and globally, there is a need for more biodiversity research in Nigeria. Wildlife managers and conservationists should pay more attention to biodiversity research in Nigeria.

**Keywords:** Biodiversity, conservation, literature review

### Introduction

Biodiversity refers to “the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems” (UNCED 1992). Biodiversity is fast



declining due to habitat loss and degradation caused by the rise in the human population and corresponding need to utilize more natural resources. In the rainforest of West Africa, deforestation in Upper Guinea has caused a dramatic decrease in species richness, and change in species composition (Blankespoor 1991, Kofron & Chapman 1995). In Liberia, Kofron and Chapman (1995), found that seventy percent of the rainforest bird species were absent in a deforested site. In eastern Usambara Mountain of Tanzania, Newmark (1991) found interior bird species to be negatively affected by forest fragmentation.

Nigeria is endowed with rich biodiversity, which includes faunal and floral species. However, human pressure threats coupled with increasing population growth and demand for natural resources result in many plants and animals being threatened with extinction. Thus, the effects of anthropogenic activities on biodiversity are well documented in Nigeria. For example, the Afi Mountain Wildlife Sanctuary that harbor the last remaining population of Cross River Gorilla *Gorilla gorilla diehli* is threatened by logging, poaching, and agriculture (Manu *et al.* 2010). The Kagoro-Nindam forest reserve in the north-central that supports rare butterfly and bird species such as Red-capped Robin-Chat (*Cossypha natalensis*) and Yellow-throated Cuckoo (*Chrysococcyx flavigularis*) is also faced with the exploitation of timber and firewood collection apart from agriculture (Wilkinson & Beecroft 1988, Elgood 1994; Borrow & Demey 2014, Abalaka & Manu 2007).

Considering the global rise in the human population coupled with the current rate of biodiversity loss, lack of knowledge on the available data on biodiversity may threaten biodiversity conservation in Nigeria. Although, Marhiagbe *et al.* (2020) provided a review of Nigeria's biodiversity conservation status, but did not quantify the number of published articles in biodiversity. Knowledge of such is of paramount importance, especially in African countries like Nigeria with a paucity of biodiversity data. Unfortunately, this information remains unknown in Nigeria. Therefore, this study was aimed at quantifying biodiversity studies available on the Web of Science Core collection between 1970-2020. Having this information will help Wildlife managers and conservationists strengthen their research scope and capacity in areas of biodiversity.

## Material and methods

Studies of Biodiversity were searched from the Web of Science Core Collection using the search term “Biodiversity” from 1970 to 2020. The trend of publication assessed articles referring to biodiversity. The search results were then refined using the keyword “Nigeria” to assess biodiversity studies conducted in Nigeria. The results were then analyzed with the Web of Science Analytic tool's help and sorted out by country to filter out those biodiversity studies where Nigeria was mentioned but conducted outside Nigeria. The results were then sorted by (1) Web of Science Subject Category and (2) Number of Times an article is cited (3) Newest article (4) Affiliation with the highest number of published articles (5) Author with the highest number of articles. The data were then imported to Microsoft office excel.

## Results

Of the 141, 781 global research on biodiversity available on the Web of Science core collections, 155 (0.1%) were conducted in Nigeria. Forty-nine of these articles are open access. Ecology and



Environmental Science Journal are the top leading journals in biodiversity research, both with 34 published articles, follow by Biodiversity and Conservation (21) and Plant Science (19). Bergi *et al.* (2007) is the most cited article with forty-nine (49) citations. The number of times an article is cited for the five most cited articles in biodiversity research in Nigeria is shown in Table 1. The five most recently published articles in Biodiversity are Imarhiagbe *et al.* (November 2020), Jimoh *et al.* (July, 2020), Etemire and Sobere, (July, 2020), Kadiri *et al.*, (June, 2020) and Dada and Hahn, (June, 2020). In terms of affiliation, the University of Ibadan had the highest number of published articles with a total of twenty (20) publications, follow by Obafemi Awolowo University (17) and Federal University of Technology Akure, the University of Nigeria and the University of Agriculture Akure with a total number of Ten (10) publications each whereas others had less than ten (10) publications. Amongst the authors, Luiselli L. appeared to be topping the list with six (6) publications on biodiversity. Akani GC. had five (5) and Eniang EA. with a total of four publications. Figure 1 shows the twenty (20) top leading affiliations and authors as well as the total number of publications across months and years in biodiversity studies in Nigeria.

**Table 1:** Five most cited article for biodiversity research in Nigeria

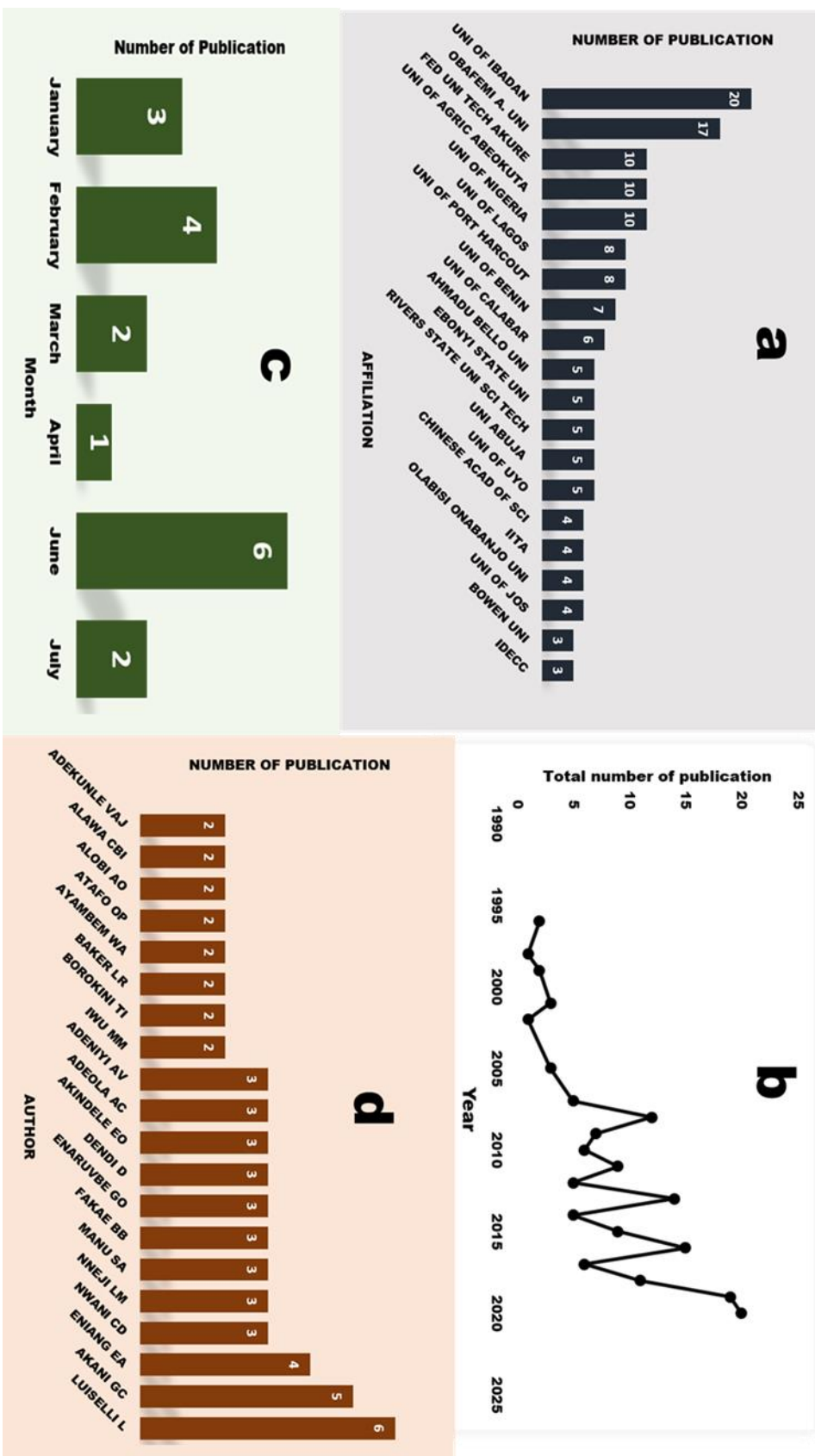
Article	No of citation
Bergl R. A., Oates J. F., Fotso, R. 2007. Distribution and protected area coverage of endemic taxa in West Africa's Biafran forests and highlands. <i>Biological Conservation</i> 134(2): 195-208. doi: 10.1016/j.biocon.2006.08.013	49
Oke D. O., Odebiyi K. A. 2007. Traditional cocoa-based agroforestry and forest species conservation in Ondo State, Nigeria. <i>Agriculture Ecosystems &amp; Environment</i> , 122(3): 305-311. doi: 10.1016/j.agee.2007.01.022	39
Soewu D. A. 2008. Wild animals in ethnozoological practices among the Yorubas of southwestern Nigeria and the implications for biodiversity conservation. <i>African Journal of Agricultural Research</i> , 3(6): 421-427.	34
Nwani C. D, Becker S., Braid H. E., Ude E. F., Okogwu O. I., Hanner R. 2011. DNA barcoding discriminates freshwater fishes from southeastern Nigeria and provides river system-level phylogeographic resolution within some species. <i>Mitochondrial DNA</i> , 22: 43-51. doi: 10.3109/19401736.2010.536537	27
Zhang, W., Kato, E., Bhandary, P., Nkonya, E., Ibrahim, H. I., Agbonlahor, M., . . . Cox, C. (2016). Awareness and perceptions of ecosystem services in relation to land use types: Evidence from rural communities in Nigeria. <i>Ecosystem Services</i> 22: 150-160. doi: 10.1016/j.ecoser.2016.10.011	22

## Discussion

This study reveals the total number of biodiversity studies conducted in Nigeria, available on the Web of Science core collection within three decades. The results show that 155 (0.1%) out of 141, 781 global research on biodiversity studies were conducted in Nigeria. Environmental Science Journal, Bergi *et al.* (2007), University of Ibadan, and Luiselli L. were the top leading journals, most cited article, affiliation, and author with the highest of several published articles Nigerian biodiversity studies, respectively.



Unfortunately, many of the high-quality research conducted in Nigeria are published in the traditional (hard copy), local, non-online and non-index journals that may remain unknown or uncited. Therefore, this study is limited to articles on Nigerian biodiversity studies available only on the Web of Science core collection and does not provide the exact number of total published articles rather an index.



**Figure 1:** (a) and (d) shows the twenty top leading affiliations and authors in biodiversity studies in Nigeria, (b) The total number of published articles in biodiversity studies in Nigeria within three decades (c) The number of published articles in biodiversity studies in Nigeria across the months in the year 2020



There could be more researches and publications on biodiversity conducted in Nigerian that are available on other research data bases such as Scopus, Google Scholar, PubMed, Science Direct etc. but not included on the Web of Science probably due to low quality or impact research that do not meet the web of Science rating and indexing.

Looking at the percentage (0.1% of the global research on biodiversity) of the research on biodiversity conducted in Nigeria, it is evident that Nigeria is lagging behind. There is a need for more biodiversity research in Nigeria. Wildlife managers and conservationists should pay attention to biodiversity research in Nigeria. Funding for biodiversity and other related research areas should be made available and accessible. Nigerian academics, researchers, and research institutes should shun the habit of publishing in low impact, non-index, and local journals. The focus should be on high-quality research that will be publishable in a high-quality peer-reviewed journal. Nigeria Universities and research institutes should encourage post-doctorate research to equip them with quality research skills further to conduct quality research. Nigerian universities and research institutes should time to time, organized training for their staff on how to publish in a peer-reviewed journal. Likewise, the Nigerian government should equip and increase funding in public universities and research institutes to meet the global research standard.

## Conclusion

Only 155 (0.1%) of published articles on biodiversity studies conducted in Nigeria were available on the Web of Science database. Ecology and Environmental Science Journal are the top leading Web of Science subject category, followed by Biodiversity Conservation and Plant Science. Bergi et al., (2007) is the most cited article, whereas the University of Ibadan and Luiselli L. were the affiliations and authors with the highest the number of published articles on biodiversity in Nigeria, respectively. Overall, there is an increasing trend of biodiversity research in Nigeria over the years. However, in comparison to the global research in biodiversity and considering the rate of biodiversity loss both locally and globally, there is a need for more biodiversity research in Nigeria. Wildlife managers and conservationists should pay more attention to biodiversity research in Nigeria.

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