Cultural Practices and Sustainable Management of Wetlands in Nigeria

Emuobosa Akpo Orijemie[1,✉]

[1] Department of Archaeology and Anthropology, University of Ibadan, Nigeria
✉ Orijemie17@gmail.com

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1. Introduction

The goal of this paper is to provide historical data of Late Holocene human-environment interactions in the wetlands, specifically the mangrove swamp forests in the coastal region of Nigeria. The study locations are (i) Ahanve (6°25'55.020" N, 2°46'29.100" E) in Lagos State, (ii) Ikorigho (5°57'26.172" N, 4°55'51.492" E) in Ondo State, both are in south-western Nigeria, and (iii) the Okomu National Park (6°19'19" N 5°14'58" E) near Benin City, Edo State in southern Nigeria (Figure 1). Ahanve is a freshwater swamp while Ikorigho and Okomu are in the mangrove swamp forest.

Wetlands are naturally occurring distinct ecosystems that are flooded by water, either permanently or seasonally. They are characterized by unique vegetation types which grow in water bodies where oxygen-free conditions exist. The Ramsar Convention Secretariat (2007) defined wetlands as "areas of marsh, fen, peat-land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does exceed 6 m" (Adekola et al., 2012: 666). Besides, the Ramsar Convention suggests that wetlands "may incorporate riparian and coastal zones adjacent to the wetlands, and island bodies of marine water deeper than six metres at low tide lying within wetlands". Consequently, most peatlands, freshwater swamps and mangrove forests are wetlands. In Nigeria, wetlands cover an estimated area of ~28,000 km^2; this is approximately 3 % of the 923,768 km^2 land surface area of the country (Adekola et al., 2012). The significance of wetlands includes water storage, processing of carbon and other nutrients, stabilization of shorelines, and support of a diverse array of endemic plants and animals (Bergkamp and Orlando, 1999). And more importantly, because early and indeed modern humans settle near wetlands and water bodies, they could serve as potential sources of human settlement history, human-environment interactions and palaeoenvironmental data. Therefore, data on wetlands are important because of their conservation value, cultural significance and importance in climate change policy frameworks.

Despite their importance it has been indicated that wetland systems are most affected by climate change and anthropogenic impact (Moomaw et al., 2018; Davidson et al., 2005; Erwin, 2009). Therefore, such knowledge could be employed by conservation experts and policy-makers in the management of wetlands. Bergkamp and Orlando (1999: 4) expressed concern that ''there has been little attention given so far by policy-makers to the relationship between climate change and the conservation and wise use of wetlands… as projected changes in climate are likely to affect wetlands significantly, in their spatial extent, distribution and function''. Similar sentiments were also recently echoed by Howard et al. (2017).

In Nigeria, several wetlands exist. However, the most significant is the mangrove swamp forests which are in the coastal states in Southern Nigeria such as Edo, Delta, Cross River, Rivers, Akwa-Ibom, Ogun, Ondo and Lagos. Are there policies aimed at the conservation, restoration, and sustainable use of these ecosystems in the face of climate change in Nigeria? Currently, there are no Nigerian laws which directly govern and/or regulate activities within wetlands. There are some laws such as the Forest Ordinance of 1901 and 1916, the Wild Animals Preservation Act of 1916, the Oil Pipelines Act of 1965, and the Fed-

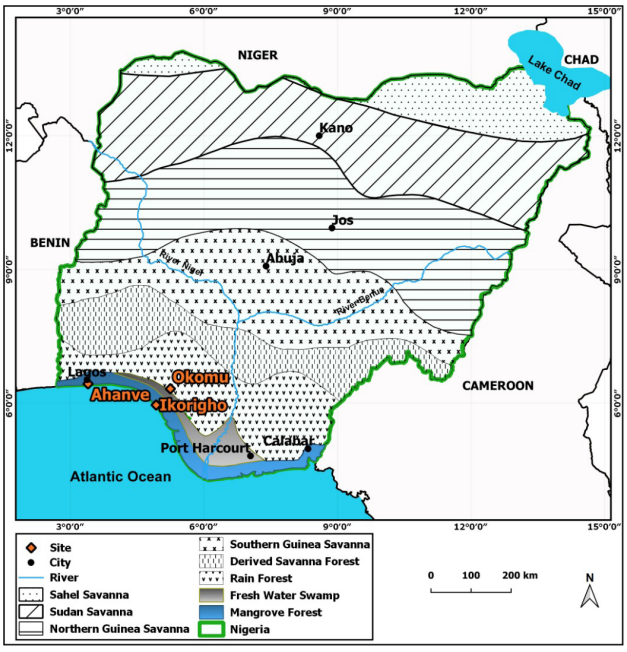

Figure 1: Map of Nigeria and the localities where sediment cores were retrieved.

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eral Environmental Protection Agency (FEPA) Act of 1988, which have indirectly benefitted wetlands (Adekola et al., 2012). However, these laws have been ineffective in addressing threats to wetlands because of (i) their unspecific relations to wetlands, (ii) the lack of political will, and (iii) the culpability of the Nigerian Federal Government, whose main source of revenue, crude oil, is exploited within wetland ecosystems. Consequently, Adekola et al., (2012: 675) advocated for a National Wetland Policy which will ''tackle wetland degradation and its attendant social, ecological and economic implications''. Also, such a policy should be targeted towards addressing the potential anthropogenic and environmental challenges which arise from the destruction of wetlands. Furthermore, in formulating any wetland policy, there is a need to understand the palaeoenvironmental history and human-landscape interactions within wetlands from the past to the present. Such information about the palaeoecology of wetlands is important because of the major impact that humans can have on wetlands (Howard et al., 2017:42).

in this paper it is argued that, based on palaeoenvironmental data, anthropogenic activities particularly cultural practices, can contribute to the conservation or destruction of wetlands.

2. Environmental and anthropogenic history of Wetlands in Nigeria

This paper obtained data from palynology, sedimentology and historical sources (archaeology and oral tradition). Three localities with wetland vegetation, namely Ahanve (Lagos State), Ikorigho (Ondo State) and Okomu National Park (Edo State) (Figure 1) were drilled for sediment cores with lengths of 1.5 m (Lake 90 in Okomu National Park), 8 m in Ikorigho and 11 m in Ahanve. Ahanve is a freshwater swamp and Ikorigho a mangrove swamp forest, while Okomu is a National Park which consists of mangroves, freshwater, riverine forests and rainforests. The two major pantropical Late Holocene climatic upheavals which occurred from ca. 4,500 to 2,000 BP (ca. 2,500 to 0 BCE) and ca. 1,300 to 1,100 BP (ca. AD 600 to700) were registered in at least two of the three sediment cores. The Late Holocene Dry Phase of ca. 4500 to 2000 BP (ca. 2500 to 0 BCE) led to the decline and the subsequent complete disappearance of the mangroves from Ahanve at 3109 ± 26 BP (cal. 1440 to 1310 BCE, KIA-17574). The Ikorigho mangroves which were hitherto fairly abundant decreased at 1190 ± 30 BP (cal. 1240 to 1200 BP, Beta-296135), but they subsequently recovered and remained abundant in Ikorigho until today although they are currently being degraded by anthropogenic activities. In the sediment core of Lake 90 of the Okomu National Park, the mangrove swamp forest exhibited a pattern similar to that recorded at Ikorigho, which is approximately 45 km to its West. Hence, why did the mangrove swamp forest in Ahanve disappear in response to the Late Holocene environmental conditions compared to those in Ikorigho and Okomu?

3. Antiquity of Humans at the three wetland localities

3.1. Ahanve

A reconstruction of the vegetation history of Ahanve based on the palynological analysis of an 11 m core revealed that the rainforest and mangrove swamp forest vegetation was the most dominant vegetation from the Early to the Late Holocene (ca. 9000 to 4000 BP [ca. 7000 to 2000 BCE]) (Sowunmi, 2004). A marked reduction in the mangroves was noted from the Late Holocene until 3109 ± 26 BP (cal. 1440 to 1310 BCE, KIA-17574) when the mangrove swamp forest disappeared. The initial decrease in the mangroves was a result of natural climatic changes; but did humans played any role? The results of the archaeological excavations conducted at Ahanve indicated that there was continuity of human occupation in the area with two clear cultural phases, namely Phase I and Phase II (Orijemie, 2014). Phase I was pre-European, i.e. before the 15th century, while Phase II was post-15th century (cal. AD 1440 to 1640; Beta-296133) (Orijemie, 2013). These dates do not indicate that the present set of humans in Ahanve had any impact on the disappearance of the mangrove swamp forests. However, the antiquity of humans in the Badagry cultural area, where Ahanve is located, and the adjacent areas in the southern parts of the Republic of Bénin, a neighboring country to Nigeria, is between 2930 ± 130 BP and 2670 ± 90 BP to 2510 ± 120 BP (1060 to 540 BCE), respectively (Alabi, 1998). The associated artefacts include ground-stone axe and pottery, as well as charcoal particles and charred palm kernels (Oil palm, Elaeis guineensis). Alabi (1998) stated that the charred palm kernels and charcoal reflected slash-and-burn and clearing of the mangrove forest trees, while the ground-stone axe was presumably used to cut down the mangrove trees. Since the dates of human presence from the Ahanve area coincided with the disappearance of mangroves, it appears that the earliest humans may have contributed to the marked changes in the vegetation. Therefore, in situations where wetlands are negatively affected by natural environmental changes, cultural practices

such as uncontrolled deforestation could result in a devastating effect on wetlands. In extreme cases, it could lead to a complete disappearance of wetlands, such as the mangrove swamp forests, as noted during prehistoric times in Ahanve.

3.2. Ikorigho and Okomu National Park (ONP) near Benin City

Oral information gathered from Ikorigho (Ondo State) revealed that human occupation of the site is not more than 100 years old. Although this has not been tested archaeologically, the occurrence of plant pollen which are indicative of human disturbance at the topmost layer of the 8 m sediment core indicated that humans are a recent phenomenon in the area. The mangroves at Ikorigho were dominant until 1190 ± 30 BP (cal. 1240 to 1200 BP, Beta-296135), when they experienced a marked reduction. However, they recovered and have remained abundant afterwards. It is argued that the absence of humans or the existence of a small human population at Ikorigho ensured that the wetlands were not adversely affected, hence the almost immediate recovery of the mangrove swamp forest there.

In the Okomu National Park, the 1.5 m sediment core revealed an extensive mangrove swamp forest but significant decreases were noted at 1.4 m, 0.8 m and 0.4 m. The decrease at 1.4 m was natural as there were no pollen and spores associated with human impact; the converse was the case at 0.8 m and 0.4 m. There are currently no radiocarbon dates for the Okomu sediment core. However, the palynological sequence was correlated with that from archaeological excavations in the park. Human occupation of the Okomu National Park, based on charcoal samples recovered from archaeological trenches at depths of 20 cm and 20 to 28 cm was dated to 760 ± 50 BP (cal. 1177 to 1378 AD, Gif 10440), and 700 ± 60 BP (cal. AD 1230 to 1300, Gif 10441), respectively (White and Oates, 1999). Therefore, we could assume that the 13th to 14th centuries represent when humans had a significant impact on the wetlands in the Okomu National Park.

4. Cultural practices (Totems) and conservation of Wetlands in Nigeria

Despite the human interventions noted in Ikorigho and Okomu, the mangrove swamp forests have remained there till date. Although it has been established that human occupation in Ikorigho and the Okomu NP is comparatively recent compared to Ahanve, it is the cultural practice associated with the wetlands that have contributed to their continued existence in those areas. In Ikorigho and Okomu NP, both located within the Niger Delta, where the mangrove swamp forest is abundant, it is known to play critical roles in the people's well-being. It has been estimated that ca. 60 % of the near 30 millions local populations in the Niger Delta area of southern Nigeria rely on the mangrove swamp forest for survival (James et al., 2013). The mangrove swamp forest is viewed and venerated as spiritual heritage. Several legends and myths tell of the mystic and sacred nature of the forest, and the local people relive such stories from generations to generations. In addition, several animals (and in some cases plants) which are natural to the mangrove wetlands are considered deities, in the form of totems, and usually no one is permitted to hunt them. Such a traditional strategy helps instil fear in the community and hence acts as a means of conserving ecosystems (James et al., 2013), in this case, wetlands.

In the Niger Delta region in southern Nigeria where the mangrove wetlands are extensive, several animals, some of which are endemic to the region, have been attributed ''some theistic powers and attributes, which are considered responsible for their collective survival'' (Ikeke and Alumona, 2016: 88). One such animal is the West African Manatee (Trichechus senegalensis) which thrives in brackish and freshwater of West-Central Africa. It is referred to as the Sea goddess (Maame (Maami) Water) in folklore and myths. Although Maame Water is sometimes hunted and accidentally trapped in fishnets, it is respected as a symbol of wealth and beauty. Besides, it gets angry when its habitat is encroached and often flips over canoes. Hence it is venerated and its habitats are protected.

In several parts of the Niger Delta, particularly among the Urhobos and Itsekiris, it is the practice that persons who experience a 'bad death' such as (i) those who commit suicide, (ii) those who die from injuries sustained from falling from a tree or palm tree, and (iii) women who die during pregnancy or childbirth, are buried within the mangrove swamp forest (Rim-Rukeh et al., 2013). Such a practice is carried out to cleanse the community of 'evil spirits'. Similarly, the Binis and Ijos (Ijaw) in the same region venerate and enact regulations and customary laws regarding the protection of several animals and plants; such animals include the Nile crocodile (Crocodylus niloticus), the African Elephant (Loxodonta africana) and the African Python (Python sebae), while the plants are Newbouldia laevis and Cola acuminata. These regulatory practices check biodiversity and livelihood loss and enhance the conservation of wetlands (An-

wana, 2008).

In contrast, however, in the metropolitan cities such as Lagos, where isolated patches of mangrove wetlands still exist, cultural practices which could allow for the conservation of wetlands are nearly absent. This is partly a result of the adoption of Christianity and Islam, the principles and beliefs of which are sometimes at conflict with several African traditional principles. As stated above, some of these African traditional principles account for the sustenance of wetlands elsewhere. Consequently, several wetlands in metropolitan cities (such as Lagos) are 'desecrated' and destroyed without any concrete restoration plans (Obiefuna et al., 2013).

5. Conclusions

This paper has shown that certain cultural practices contribute to the conservation of wetlands in Nigeria, and these must be sustained. Therefore, given the importance of wetlands to the sustenance of humans and livelihoods, this paper advocates the following: (i) the establishment of a wetland policy, (ii) community engagement, and (iii) launching of a wetlands protection awareness campaign in the context of the wetland policy. Firstly, there is a need for national legislation for the conservation of wetlands. Such a policy will not only provide education to the citizens, particularly those living in the catchment areas of wetlands but will also engage them to adopt and sustain the right attitude towards wetlands. Secondly, the policy should incorporate into it the cultural practices of the people, particularly those relevant to the conservation of wetlands. This can easily be achieved by engaging community leaders and stating their clearly defined roles; the leaders must also be convinced of their roles as collaborators and stakeholders in the protection of wetlands. Thirdly and most fundamentally, there should be a medium such as a wetlands protection awareness campaign, which will function in enlightening the people, for instance, about the needless conflict between religion and the conservation of wetlands.

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