

OGORODE, ISRAEL OMOGHENE, VINCENT-AKPU, IJEOMA FAVOUR

Department of Animal and Environmental Biology, University of Port Harcourt,
Rivers State, Nigeria.
E-mail: israelogorode@gmail.com

SACRED LAKES AS CONSERVATION SITES FOR CROCODILES. CASE STUDY OF ESIRIBI SACRED LAKE IN NIGER DELTA, NIGERIA

SUMMARY

The Biseni Clan is located in Central Bayelsa State, Nigeria. It is a small tribe represented by Southeast Ijaw speaking people. The Biseni people occupy the upper regions of the Niger Delta River. They perceive their lands and particularly their lakes as sacred and are home to the crocodiles. This study examined the perception of residents around Esiribi Sacred Lake to investigate the effectiveness of sacred lake in biodiversity conservation with respect to crocodiles. A structured questionnaire was used to obtain information from the people of Biseni on the presence and type of crocodile found in Esiribi Lake. Focus group discussions were carried out with the community members while Key Informant Interviews (KII) were conducted with the Lake Priest and some of the elders conversant with history of the lake. A total of 175 adults residents, comprising of 96 males and 74 females having formal education were interviewed. The people of Biseni regard the crocodiles in Esiribi Lake as sacred animals and live in harmony with them. The number of crocodiles in the lake seems to have increased over the years as a result of the sacredness the people accord to the species. The two most common species are the West African dwarf crocodile (*Osteolaemus tetraspis*) and Nile crocodile (*Crocodylus niloticus*). Fishing is only allowed in the lake biennially. We conclude that communal governance should be strengthened for the continued protection of crocodiles and other species in and around the lake as well as a reduction in human activities that could threaten the species conservation.

Keywords

Biseni: Crocodile conservation, Esiribi Sacred Lake, Key Informant Interview (KII), Sacred Natural Sites (SNS)

INTRODUCTION

Today, the major threats to crocodilians (and to most wildlife) are the destruction of habitat, over exploitation and climate change. These processes are continuously taking place due to human activities. The bush meat trade in Africa is having a detrimental effect on crocodiles, because they are hunted for their skins, eggs and food and cannot be stopped (COLIN, 2011). This has occurred for millennia, sometimes governed by complex cultural systems and values. At the same time, wetlands are being converted to agricultural farmland, for commercial food production, leaving the crocodiles to the mercy of hunters and harsh climatic conditions. Thus the need to conserve these animals. In many developing countries, the institutional and legal frameworks needed to regulate wildlife conservation, management and use are in embryonic stage (ICFA,2016).

Environmental protection and conservation of resources is a major challenge in developing nations like Nigeria because the intensity and severity of environmental pollution and other anthropogenic factors are on the increase affecting both living and non-living components of the ecosystem (ANWADIKE,2020). Historically, most human activities have been governed by cultural systems and values especially in Africa and other indigenous group all over the world. This we can observe in the use of Sacred Natural Sites (SNS) which are natural areas of special spiritual significance to people and communities. They are recognized as sacred by indigenous and traditional peoples, as well as natural areas recognized by institutionalized religions or faiths as places for worship and remembrance. Access to these sites is usually restricted by taboos and management codes to particular activities and members of a community. However, their contribution to conservation has been largely overlooked and undervalued by state and conservation agencies, policies and laws.

As a result of spiritual beliefs, many communities throughout the world have given a special status to natural sites such as mountains, rivers, lakes, caves, forest groves, coastal waters and entire islands. Many of these have been set aside as sacred places. The reasons for their sacredness are diverse. They may be perceived as abodes of deities and ancestral spirits; as sources of healing water and plants; places of contact with the spiritual, or communication with the 'more-than-human reality'; and sites of revelation and transformation. They are sometimes temple sites, the burial grounds of ancestors, places of pilgrimage, or sites associated with special events. Particular plant

and animal species may also be considered sacred by some communities. While many of the sacred natural sites have historical significance, they are not static in time or space; new sites can be created in response to changing circumstances and environments (DENKAR, 2020)

Niger Delta is known for its unique ecosystem and cultural system; it is part of an important tropical zone, home to the nationally threatened crocodile (*Osteolaemus tetraspis*) and other common ones (ANWANA, *et al.*, 2010). Niger delta has sacred lakes such as Adigbe and Esiribi sacred lakes where these crocodiles are found. Sacred lakes are water body which group of people considered to be holy and the water is used for rites and rituals and other religious purposes. These lakes are believed to have mythological links to their origin and are preserved for their religious sanctity and sacredness by the local people (www.vendatu.com).

Esiribi Sacred Lake came into existence as a result of this belief system and this is supported by conservation models in Biodiversity Management as reported in (BROWN, 1992; MORALES-GOMEZ, 1993; DECHER, 1997; HULME and MURPHREE, 1999). These authors noted that cultural factors including cosmology, belief, attitudes and values are influential in the way people use and relate to its natural systems.

The Biseni people occupy the upper regions of the River Niger delta, while the Osiamia people inhabit the lower reach of the marsh forest zone where Adigbe sacred lake is situated. Both groups perceive their lands and particularly their lakes as sacred and are home to the crocodiles. (ANWANA, *et al.*, 2010). Lake Esiribi is situated where the Biseni people believe and worship the Crocodile; and wherever these Crocodiles are found, the habitat is consecrated as sacred such that regular activities like fishing and hunting is regulated to a particular season (usually once in two years).

In the cosmology of both communities (Adigbe and Biseni) two realms of reality exist: the visible world (Kiri) and the invisible world, or the land of spirits (Teme). The custodians of the sacred lakes ensure that the traditional rules and customs are fulfilled so that the two realms of reality can exist in harmony together. Thus the aim of this research is to investigate the effectiveness of sacred lake in biodiversity conservation.

MATERIAL AND METHODS

Study Area

The Biseni is situated in central Bayelsa State, Nigeria with coordinates at 5° 17.310'N; 6° 31.099'E (Fig. 1). It is a small tribe (Buseni) bordered by the Gbaran to the North(N) and by the Zarama and Okordia clans to the northeast. (ALAGOA, 2005). The villages (made up of four villages: Akpede,

Eggebiri, Tuburu and Tein) belonging to the Biseni people have ownership rights to the Lake Esiribi (Fig. 2).

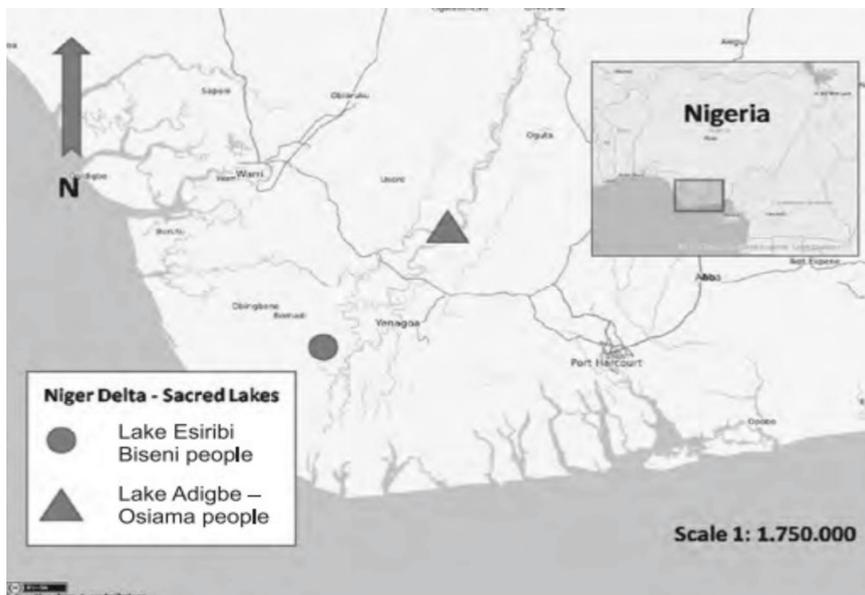


Fig. 1 – Coordinate map of Esiribi Sacred Lake (Source: Bas Verschuuren with Open Street Map).



Fig. 2 – Esiribi Sacred Lake.

Sampling Method

The study used a mixed methods approach design wherein qualitative approach was used to elicit socio-demographic data from the study population. These were validated with the quantitative approach using structured questionnaire administered to 175 adults in household survey.

Oral Interview with focus group discussion was carried out with the community members

(Fig. 3). Key Informant Interview (KII) were conducted with Lake Priest and some of the elders conversant with history of the lake. The interviews were recorded in writing. A 10 item structured questionnaires were administer to 175 households in the villages which include male and female.



Fig. 3 – A Section of Some Elders sitting by the Hut at Bank ready for Oral interview.

Statistical Analysis

Data from the household surveys data were collated, cross-checked for completeness and entered into Microsoft Excel 2010 on Windows spreadsheet. The data sets were then analyzed in the SPSS Statistical Software package version 20. Frequencies and basic descriptive statistics were calculated, Audio recordings of participants' submissions during the FGDs were transcribed, coded and analyzed using thematic content analysis based on the study objectives.

Quality control

The semi-structured and structured questionnaires were written and submitted to social science experts for content validity. Content validity is the extent to which the items in the instrument represent the content of the attribute being measured (AMIN, 2004)in ensuring reliability (accuracy and consistency), the instruments were pretested on a different population before taken to the field.

RESULTS

Respondents' demographic characteristics

A total of 175 adult residents from the communities, with ages ranging between 20 to 40 years and above participated in the study. They comprised of 96 (56.5%) males and 74 (43.5%) females. The occupation of the participants ranged widely from farming, fishing, teaching and local government workers to artisans (apprentices/trainees in skills), trading, and studying. Most of the

respondents (46.2%) had primary school education, while (34.6%) have secondary education while (19.2%) have tertiary education as shown (Tab. 1).

Tab. 1 – Respondents’ demographic characteristics.

Variable	Number of Respondents (175)	Percentages (100%)
AGE (> 40 years)		
<20 years	40	25%
20-40 years	70	43.8%
>40 years	50	31.3%
GENDER (n= 170)		
Male	96	56.5%
Female	74	43.5%
EDUCATION (n =130)		
Primary	60	46.2%
Secondary	45	34.6%
Tertiary	25	19.2%
OCCUPATION (173)		
Farmers	35	20.2%
Fishermen	60	34.7%
Traders	25	14.5%
Civil Servants	20	11.6%
Artisans	18	10.4%
Others	15	8.8%

Perception on the presence of crocodiles in the lake

Tab. 2 indicates that 145 (85.3%) of respondents have sighted crocodile as while 25(14.7%) have not. 133(83.1%) responded that the crocodile are safe from danger in the area. while 27 (16.9%) response prove otherwise. Disturbance from crocodile is considered low but 68 (44.4%) of them confirm that there is no disturbance while 85 (55.6%) responded said the opposite.

Tab. 2 – Presence of crocodiles in the lake.

S/N	Descriptions	YES(%)	NO(%)`
1	Have you sighted crocodiles in this area?(n = 170)	145 (85.3%)	25(14.7%)
2	Are crocodiles in this area safe from danger? (160)	133(83.1%)	27 (16.9%)
3	Do you have any disturbances from the presence of crocodiles around? (153)	68 (44.4%)	85 (55.6%)

Perception on the number of Crocodiles and reason why they are abundant in Esiribi Lake

The number of crocodile sighted in Esiribi Lake by respondents is presented on Fig. 4, 60 (34.3%) of the respondent have seen less than 10 crocodiles daily, while 75 (43.9%) have seen less than 15 crocodiles then 40 (22.9%) have seen less than 50 crocodile.

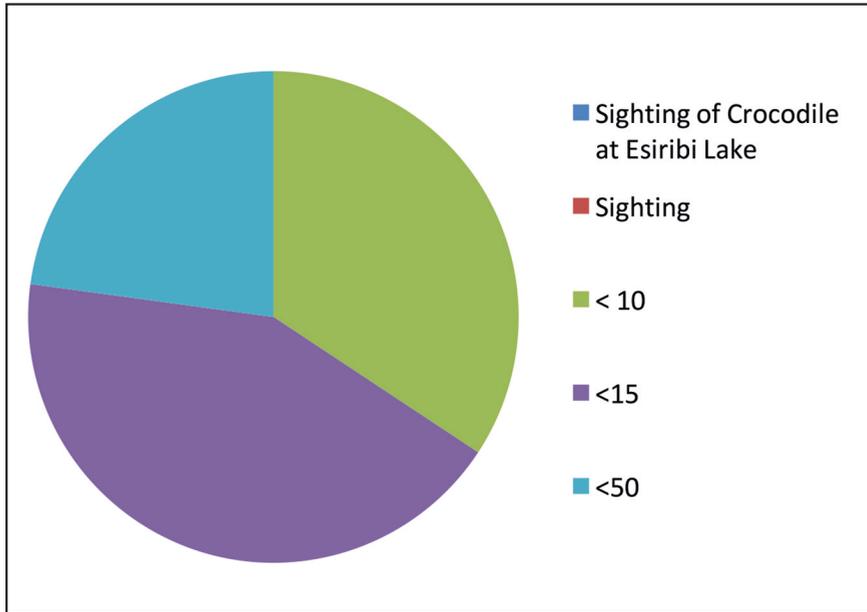


Fig. 4 – The number of crocodile sighted daily in Esiribi Lake in a season.

Most of the people of Biseni 93 (56.4%) offer sacrifice to the crocodiles in Esiribi Lakewhile 72 (43.6%) of the people worship them. The respondents gave reason why crocodile were available in the community; 70 (40%) said they are sacred animals, while 55 (31.4%) say they worship them and only 50 (28.6%) of the respondents do not kill them.

Characteristics of crocodile in Esiribi Lake

Different colour of crocodile are present in the lake, 70 (46.7%) of the respondent have seen all types, while 50 (33.3%) have seen black and white crocodiles, and 30 (20%) have seen black, red and white crocodiles. as indicated in Tab. 3. The species of crocodiles seen in the lake by the respondents were 65 (40.1%) for dwarf and long mouth crocodile, 65 (40.1%) for Dwarf and Nile crocodile and 32 (19.8%) for Dwarf, Long mouth and Nile crocodiles. They say the sizes of crocodiles were 58 (34.3%) for big and small ones, 84 (49.7%) for medium and big ones and all sizes were seen by 27 (16.0%). The length of years spent by crocodiles in the lake that were <50 years was noted by 106(61.6%) and > 50 years (Nil) (Tab. 3)

Tab. 3 – Characteristics of crocodile in Esiribi Lake.

Variables for Crocodiles	Number of Respondents (175)	Percentages (100%)
Relationship with Crocodile (n= 165)		
Sacrifice to it as gods	93	56.4%
Worship them	72	43.6%
Reason for Availability of Crocodile. (n = 175)		
They are Sacred Animal	70	40%
We Worship them	55	31.4%
We do not kill them,	50	28.6%
Type/Colour of Crocodile present (n= 150)		
All types	70	46.7%
Black and White Ones	50	33.3%
Black, red and white ones	30	20%
Species of Crocodile Present (n = 162)		
Dwarf and Long Mouth Crocodile	65	40.1%
Dwarf and Nile Crocodile	65	40.1%
Dwarf, Long Mouth and Nile Crocodile	32	19.8%
Size of Crocodiles Present (n=169)		
Blg and Small Ones	58	34.3%
Medium and Big ones	84	49.7%
All Options	27	16.0%
Length of years spent by Crocodiles. (n =172)		
< 50 years	106	61.6%
>50 years (Nil)		

Findings from the interviews

Esiribi Lake is a home of comfort for crocodiles as there are no disturbances as to killing them rather, they are held in high esteem as sacred animals, worshipping and making sacrifice for their burials peradventure anyone died by mishap. The Biseni people live in harmony with the crocodiles. The number of species present are not certain as the people could not clearly differentiate or classify them except by their colors. The possibility that crocodiles are abundantly present in Esiribi Lake cannot be denied as we saw the hatched eggs (Fig. 5) and basking space as indicated in the open mud shown in Fig. 6.



Fig. 5 – Hatched eggs of crocodiles.



Fig. 6 – Crocodiles basking in the mud.

DISCUSSION

According to (ANWANA, *et al.*, 2010), the Biseni and Osiami people in the Niger delta live together in harmony with local crocodiles. These species, for example, the nationally threatened crocodile (*Osteolaemus tetraspis*), are revered and thus protected. The belief that the crocodile is the peoples' brother implies its protection within the *aweýe* (forbidden) lake. If killed accidentally, it is given full obsequies akin to human funeral rites and when killed intentionally the culprit is made to provide another live crocodile for the dead one. This also allow for multiple use of protected areas and the need for community participation in the management and conservation of biodiversity as stated by (ALCOM, 1993; MCNEELY, 1995; WORLD BANK; 1996; WESTERN, 2000; CURTIN *et al.*, 2002).

A respondent said that the crocodile is like our brother, and so cannot be hurt. The hierarchy of gods, spirits, spiritual and political leaders encapsulate the concept of religious beliefs which in turns regulate the use of land, water, plants and animals within a community ((MILLAR AND DITTOH, 2004), Customary laws proscribe certain acts and conduct which regulates all individuals from within and outside the community in the way they treat and use these forbidden things (also known as *Aweye* or *Tuon*) and in violating these laws, one is an anathema to the society (ANWANA, *et al.*, 2010),

It was reported by (ANWANA, *et al.*, 2010), that the West African Dwarf Crocodile (*Osteolaemus tetraspis*) and the Nile crocodile (*Crocodylus niloticus*) are not harvested from the Esiribi and Adigbelakes, as a result of their

emblematic representation in these communities. Although *Osteolemus tetrapis* is commonly found within the region, it is threatened and it is particularly hunted within the country for meat and for its skin (CSG, 1999; IUCN, 2007). Also, in Lake Esiribi the monitor lizard (*Varanus niloticus*) is given protection from hunters.

The presence of the Crocodiles in Esiribi Sacred Lake has no disturbances to the community. Based on the KI interview conducted, the Crocodile may eat up some of their fishes caught up in the nets but they do not in anyway-harm any individual. This was supported by (ANWANA, *et al.*, 2010), that in Esiribi, where crocodiles and monitor lizards are protected, if you kill them, you are to bury the animal as you would a human being'

Size and number of years that the Crocodile have been within the Esiribi Sacred Lake, can be observed on Fig. 6 which shows the mud where the Crocodile species bask and carry out other ecological activities. This confirms that they are medium or large species although there are no photographs to ascertain this claim. During the KI the interviewee stated that as the Crocodiles being spiritual creatures in this zone are sensitive to the presence of strangers so may not show up for them to be seen. Furthermore, the response of the sacred lake fishermen during the interview tend to be that they grew up to meet the traditional belief/ myths that way.

Fig. 5 shows hatched eggs of crocodile scattered in the forest floor confirming the presence of young/medium sized crocodiles in the lake. The scientific study of the egg shell in the laboratory may help to determine the age of crocodiles hatched from it.

Many sacred natural sites have been well protected over long time periods and have seen low levels of disturbance. Many are demonstrably high in biodiversity and represent a strong biodiversity conservation opportunity. This assertion was strongly supported by ANWANA, *et al.*, (2010), stating the strength of Biseni Community as a good example of conservation area which includes :the protection of threatened species in certain areas which act as sanctuaries for such species should be encouraged, communal governance should be strengthened to create opportunities for power and influence to other social or political groups, migrants' influx into the region in search of job opportunities in the oil companies should be well monitored and checked to avoid pollution and oil spillage as well as changes in religious orientation (conversion from traditional beliefs to dominant religions).should be with discretion such that the traditional belief system of protecting sacred animals is upheld. He also suggested that some current practices, such as using dynamite in fishing (this is in defiance of the set traditional norms) should be discouraged in the Biseni kingdom.

According to (MUSTAPHA, 2006)., the intervention of the state and federal government becomes very important as they help in the management of the

sacred lake in biodiversity conservation. Capacity building of active indigenous groups, such as the community development council and the council of chiefs within the region, will be important for knowledge sharing and monitoring of biodiversity. A strong recommendation is made for training of social groups with shared norms and values for wetland resource management and policy reforms and legal instruments which recognize and legitimize these indigenous conserved areas are important to the issue of sustainability (WESTERN, 2000; MGUMIA and OBA, 2003; OVIEDO *et al.*, 2005).

CONCLUSION

The evidence from this research is indicative of the people's holistic view of the ecosystem. Sustainable management of the freshwater ecosystem could be achieved by adapting the stewardship model practiced by the Biseni people particularly now that we are faced with the issue of climate change and biodiversity loss.

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CONFLICT OF INTEREST

The two authors to this work do hereby declare that there is no conflict of interest in any form both financial and otherwise. We certify that the manuscript contains its original contents and has not been published in any journal before.

ETHICAL STATEMENT

We ensure that due permission was taken from the Biseni Clan Elder's Council and Esiribi Lake Priest before proceeding to the lake for the research.

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