Governance and Social-Institutional Arrangement of Small-Scale Fisheries and Relationship with Non-Fishery Users in Badagry Creek, Lagos State, Nigeria

Shehu L. Akintola & Kafayat A. Fakoya

Fisheries Department, Lagos State University, Nigeria, shehu.akintola@lasu.edu.ng & shehu.akintola2@gmail.com

Abstract

This is the first study of its kind in Nigeria on the subject of fisheries governance and inter-sectoral relationship among Common Pool Resource (CPR) users in Badagry Creek, Lagos State. The case study of this regional water body, Badagry Creek, presents an interesting scenario which holds both histrocial and contemporary relevance. Governance arrangement is shaped largely by the historical, cultural and social value system of the main ethnic groups although also augmented by the values of immigrants from the coast of West Africa. Intra-sectoral fishing conflicts are resolved through the traditional governance system, and to a lesser extent, the modern day governance mechanism. In terms of inter-sectoral issues, fishers' relationships with practioners of both transportation and eco-tourism sectors are quite healthy and positive with a win-win outlook. However, relationship with artisanal sand miners is contentious as fishers consider their activities as inimical to their fish landings. Recommendations are made for scaled up scientific and social studies, especially involving spatial studies, which will inform an evolution of a management plan for the creek. To deepen resolution of inter-sectoral conflicts, especially with sand miners, this paper in conclusion suggests a need for a shift towards co-management regime.

1. Introduction

The Badagry Creek as an estuarine system provides a gateway between the freshwater and marine systems. It has in abundance a wide range of fish species which use the creek as temporary or permanent abode. Also, it is blessed with arrays of network tributaries which has historically ensured migration and movement of the greater proportion of fishers from the coast of West Africa, therefore resulting in the constellation of fishers in the creek.

The social setting is ordered by family blood initially among fishing communities but there has been a transition to more cooperation-based interactions among the subgroups of fishers to the extent that fishing interests now dominate. In this study, three eras of governance covering pre-colonial, colonial and post-colonial times are reported. Fishers affirmed that a win-win relationship exists between fishing communities and other non-fishers although the relationship with artisanal sand miners is not characterized as one.

In: A.M. Song, S.D. Bower, P. Onyango, S.J. Cooke, R. Chuenpagdee (Eds.), *Inter-Sectoral Governance of Inland Fisheries* (pp. xx-xx). TBTI Publication Series, St John's, NL, Canada.

This is the first effort at providing an outlook into the fisheries of the creek in terms of an envolvement of a fisheries governance system and supporting social institutions as well as inter sectoral relationships between fishers and non-fishers. It provides a template with which to understand fisheries governance challenges being faced by the fishers.

2. Background Description

The toponymical extraction of Badagry Creek in relation to Badagry suggests that the water body was named in recognition of the importance to the historical, religious, social and economic development of the town. There are significant historical, anthropological and archaeological evidence to suggest that Badagry has been populated at least from the Late Stone Age or 1736. This creek linking Porto Novo (Republic of Benin) to Lagos (Nigeria) and its pirogue traffic has long facilitated the transport of human (notorious for slave trade) and agricultural goods, such as rice and cooking oil. The Portuguese colonial master preferred the Badagry Port in the decongestion of the Whydah Port in Dahomey in the movement of slaves.

2.1. The fisheries

Badagry Creek (Figure 1) lies within longitude 2°42'E and 3°42'E and stretches between Latitude 6°22'N and 6°42'N, sharing boundary with the Republic of Benin. The portion situated in Lagos State, Nigeria, is endowed with a lagoon system, deltaic distributaries, floodplains and mangrove swamps. Also, it is directly connected with Nigeria's 960 km-long coastline bordering the Atlantic Ocean in the Gulf of Guinea, a maritime area of 46 500 km^2 with a depth of up to 50 m and an Exclusive Economic Zone of 210 900 km^2.

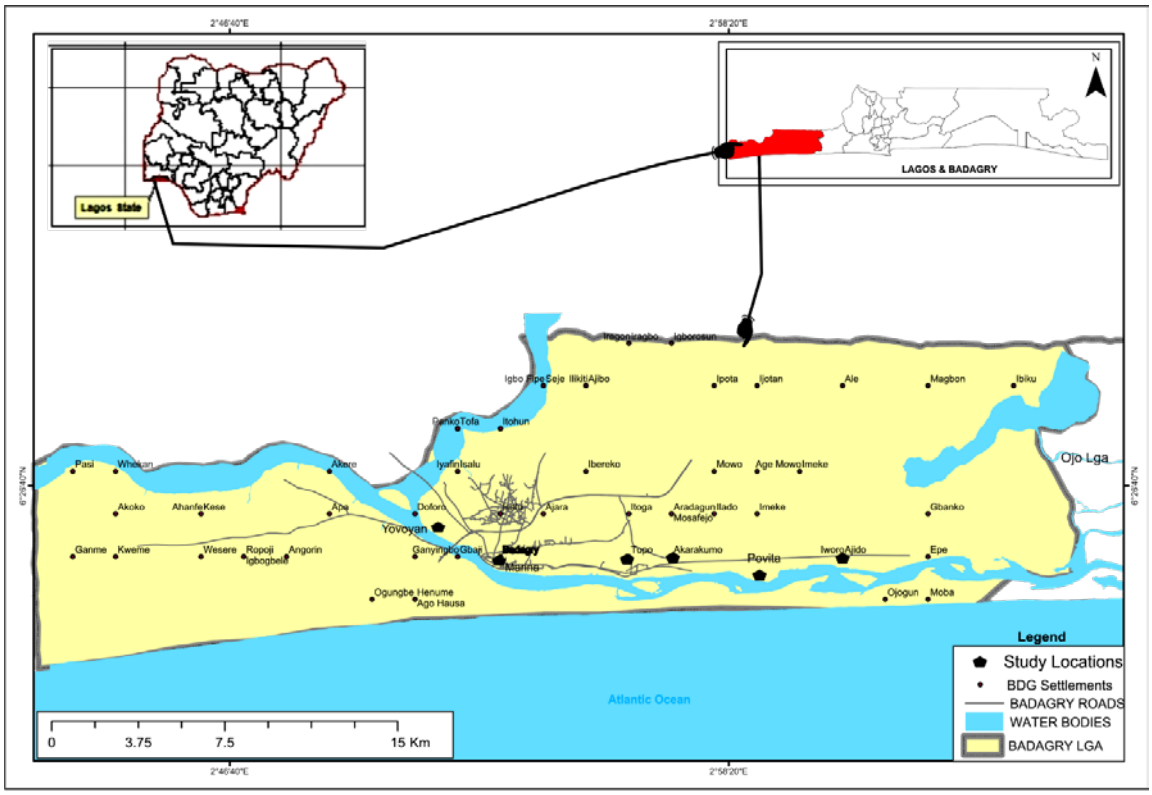

Figure 1. Location of Studied Fishing Communities Along Badagry Creek, Nigeria

Species diversity and distribution in the Badagry Creek is shown in Table 1. The list contains 76 species across 47 families/orders of fin and shell fishes based on the works of several authors which include Elegbede and Fashina-Bombata (2013), Agboola et al. (2008), Akintola et al. (2009), Soyinka et al. (2010) and Solarin & Kusemiju (1991).

There are two main fishing divisions in the Badagry Creek: marine fishermen that settled at Yovoyan and Moba, and artisanal fishers fishing in the main channel of the creek. A variety of fishing crafts including Ghanaian dugout canoes with planked free boards, smaller local dugout canoes, and local planked canoes are used along with outboard engines with 5 to 55 HP. The gears typically used are gill nets which could be surface or bottom, drifting and/or encircling, and traps.

Table 1. Fish species observed in Badagry Creek, since 1991 to 2013

S/no	Common names	Order/family	Scientific name
1	Tilapia	Cichlidae	*Oreochromis niloticus, Hemichromis fasciatus, Tilapia zilli, Sarotherodon melanotheron, Tilapia guineensis, Tilapia mariae, Tilapia melanopteura*
2	Bagrid catfish	Bagridae	*Chrysichtys nigrodigitatu, C. auratus, C. walkeri, Clarotes laticeps*
3	Sole fish	Cynoglossidae	*Cynoglossus senegalensis*
4	Jacks	Carangidae	*Caranx sp., C. carangus, C. hippos, Chloroscombrus latus,Chloroscombrus chrysurus*
5	Aba	Osteoglossiforms	*Gymnarchus niloticus*
6	Croaker	Scianidae	*Pseudotolithus typus, P. elongatus*
7	African pike	Hepsetidae	*Hepsetidae odoe*
8	Grunt	Pomadasyidae	*Brachydeuterus auritus, Pomadasys jubelini, P. peroteti*
9	Snapper	Lutjanidae	*Lutjanus goreensis, Aspilus fuscus*
10	Gobiid fish	Gobiidae	*Bathygobious soporator, Gobioides sagitta*
11	Crab	Gecarcinidae	*Calinectes spp*
12	Barracuda	Sphyraenidae	*Sphyraena barracuda, Sphyraena afra*
13	Mullet	Muglidae	*Mugil cephalus*
14	Clupeid fish	Clupidae	*Ethmalosa fimbriata*
15	Sardinella	Clupidae	*Sardinella maderensi, Pellonula leonensis,*
16	Shrimps	Penaidae	*Penaeus monodon, Penaeus notialis*
17	Prawn	*Palaemonidae*	*Macrobachium macrobachion, M. vollenhorenii, M. fellicinium*
18	Marine catfish	Arridae	*Arius gigas*
19	Thread fin	Polydactylidae	*Polydactylus quadrifilis, Pantanemus quinquarius*

20	Moon/finger fish	Monodactylidae	*Monodactylus sebae*
21	Catfish	Clariidae	*Clarias gariepinus*
22	Tenpounders	Elopidae	*Elops lacerta*
23	Moonies	Monodactylidae	*Monodactylus sebae, Psettias sebae*
24	Snoutfishes	Mormyridae	*Marcusenius senegalensi, Hyperopisus bebe*
25	Mullet	Muglidae	*Liza falcipinnis, Mugil cephalus*
26	Snake eels	Ophichthidae	*Ophichthus rufus*
27	Bonytongues	Osteoglossidae	*Heterotis niloticus*
28	Threadfins	Polynemidae	*Galeoides decadactylus*
29	Spotted flounder	Citharidae	*Citharus linguatula*
30	Pupfishes	Cyprinodontidae	*Parachanna obscura*
31	hook-tip moths	Drepanidae	*Drepane africana*
32	Sleepers	Eleotridae	*Batanga lebreotonis, Eleotris vittata*
33	Bichirs	Polypteridae	*Polypterus senegalus*
34	Perch	Distichodontidae	*Distichodus engycephalus*
35	Monkfish	Uranoscopdidae	*Uranoscopus polii*
36	Lefteye flounders	Bothidae	*Monolene microstoma*
37	Porgies	Sparidae	*Boops boops*
38	Needlefishes	Belonidae	*Tylosurus crocodilus*
39	West African Ilisha	Pristigastridae	*Ilisha africana*
40	Grunts	Haemulidae	*Pomadasys jubelini, P. incisus*
41	Butter catfishes	Schilbeidae	*Schilbe intermedius*
42	Suckermouths	Mochokidae	*Mochokus niloticus*
43	Patriot crab	Gecarcinidae	*Cardisoma armatum*
44	Gladiator swimcrab	Decapoda	*Callinectes pallidus*
45	Lutefishes	Citharinidae	*Citharinus sp.*
46	Flagfin Mojara	Gerridae	*Gerres melanopterus*
47	Giant African threadfin	Polynemidae	*Polydactylus quadrifilis*

2.2. Social context

The number of full time fishers is on the decline as there are many part-time fishers combining fishing work with alternate livelihoods: fishing/farming, fishing/transportation and fishing/trading in meeting financial requirements for investment, food consumption, education, health and other family needs. The most preferred fish species for consumption by fishers is

the Tilapia sp. in view of its abundance. Fresh fish are mostly preferred while fish smoking is used to preserve fishes.

Traditional history of the various subgroups Ogu (Egun), Ilaje, Awori, Ijaw (Nigerian fishers), and Agoyin and Ajase (Fishers from Togo, Ghana and Benin Republic) are well situtated within the context of migration of the coastal inhabitants. Both the local and immigrant fishers are found to spread along the bank of the creek forming territory comprising several villages and hamlets such as Apa, Wesere, Kweme, Gbaji, Gberefu, Topo, Igbogbele, Ajara Vetho, Ajara Gamathen, Ajara Topa, Alathagun, Muwo Iworo, Erekiti, Ajido, Marina, Idale, Povita, Akarakumo, Ajido, and Yovoyon. Typically, the Ogu (Egun, speaking Yoruba and Ogun languages) is the dominant ethnic group and lays claim to the creek.

The fishers exhibit strong social network behaviour within and across the various subgroups. Knowledge and information are shared and regarded as important individual or social assets but not communicated with an intruder or a new entrant. Social capital remains a strong factor and is based on family linkages which are spawned by intermarriages across the various ethnic subgroups. Bridges across subgroupings dilute the potency of class. Increasingly social relationship is moving from being defined by blood ties to ethnic folk and now to a socio-economic community of fishers (with fishing as the primary factor for association). In other words, the basis for socialisation is more gradually being defined on the basis of interest: fishing activities. However, fishers may sharply be divided against themselves at the point of fishing rights.

2.3. Governance and institutional arrangements

The various fishing subgroups still hold strong spiritual ties to their kinship across the West Coast of Africa (Ghana, Togo, Republic of Benin and others) from where they all migrated to their present point of assemblage in Nigeria. Spirituality is based on strong orientation towards supernaturalistic or pantheistic with dominance of the Zangbeto adherence. Although there is a constellation of religious groups like Islam and Christianity- the modernist religions, the fishers demonstrate unbroken ties with their gods. It is from this background that fisheries governance and institution may be gleaned from three eons of precolonial, colonial and post-colonial.

Precolonial fishing policies were from the gods/idols such as Te Agbanlina, Ajahuto and Agasuvi. These were hunters famous for their possession of supernatural power and myth. They were all said to be the descendants of the King of Dahomey (Republic of Benin) who positioned them across the spatial length of the Gulf of Guinea (which Badagry Creek is part of) to protect his territory. The gods also issued policy based on the need to mark an occasion dedicated to a particular day for fishing festivals and sacrifices- another means to exercise control of fishing efforts. Usually, religious ritual is a means of communicating ideas and policy statements in the context of religious practices and adherence. Shultz and Robert (2009) stated that a ritual must fit into four categories. These four categories are that it must be a repetitive social practice, it must be set off from the routines of day to day life, it must follow some sort of ritual schema, and it must be encoded in myth. Ritual often has its roots in myth and religion, tying itself to ancient practices between the divine and humans.

The British colonial master introduced registration of fishing crafts through the use of registered plate number. Issues relating to fisher's registration, conflicts over fishing grounds, and tax payments by fishers were all handled by local High Chiefs. The High Chiefs used blood ties and marriage links in their judgement of whose fish catch or value worth will be used for

tax payment or exclusion, or who could or could not fish. The race to fish was moderated by the local chiefs through the use of fishing festivals and commemoration of the gods (such as Ajahuto and Agasuvi).

Open access remained the order at the emergence of self-rule following the independence. The King, De Wheno Aholu Menu-Toyi 1 upon becoming the king abolished tax payment by fishers, stopped the registration of crafts and reduced influence of blood ties and marriage as a means of barrier to entry. This was his attempt to abolish the memory of colonial period and foster free enterprise in the creek. Unfortunately, this singular pronouncement shifted the creek into an open access system; a regime at the heart of fisheries unsustainability. Conflicts over fishing rights, fish theft, incursion to fishing area, setting and utilising unauthorised nets are dealt with by using social institution of family, council of elders (patricentricity), government institutions (judiciary and enforcement agent- police) and spirituality-Zangbeto. Zangbeto as a traditional vigilante institution has survived and maintained its relevance in Badagry as a traditional military – cum-police outfit that defended the people and maintained law and order in the communities and ran parallel to the State's policing.

In the last three decades the State Government has used a management system based on the principle of the use of reward and punshment. The fishers operating in the Badagry were offered largesse/ assistance in terms of grants, loans and subsidies, instalmental payment for fishing input (nets,outboard engines and facilities for serving engines) from proceeds of catches, and construction of fishing infrastructures such as a jetty at Ajido, among others. Fishers are encouraged to form cooperative societies so as to benefit from the government largesse. There are fisher groups formed on the basis of types of fishing gears, fishing grounds, and mode of fishing. Since the 1990s there is a shift away from the top-down mode of hierarchical governance style. But the first order of governance (in which case, rules of engagment is largely at the level of the national government) has prevailed, as the successive state government still battles with nitty-gritty of governance activity in relations to fisheries. Decrees, laws and edicts have been promulgated by states and federal governments regarding management of inland fisheries: Inland Fisheries Decree 1992 (No. 108 of 1992), Coastal and Inland Shipping (Cabotage) Act (No. 5 of 2003), Sea Fisheries (Fishing) Regulations, 1972 (L.N. No. 99 of 1971), Sea Fisheries Decree 1992 (No. 71 of 1992) and National Inland Waterways Act 1997 (No. 13 of 1997).

2.4. Impacts of sand mining, transportation and tourism on fishing activities in Badagry Creek

In this period of Anthropocene where human activities impact on Common Pool Resources (CPR), the fishers in the Badagry Creek have to cope with the challenges of eking their living alongside other economic pursuits namely: sand mining, transportation and tourism.

2.4.1. Sand mining

Sand mining and dredging is a common operation in coastal communities globally, Badagry Creek inclusive. Piles of mined or dredged sand from activities of sand miners using the local equipment and dredging companies can be seen lining the banks of the creek and its tributaries, most notably at Ajido, Akarakumo, Topo, and Marina among others (Photo 1). Although accounts of impact of sand mining or dredging appear to be mixed, fishers operating in the Badagry Creek have claimed that activities of sand miners as a result of equipment used

especially at night impact negatively on their fishing productivity. The sound generated from the miners' tools result in fishes moving further offshore.

The miners are also known to destroy fishers' nets and other gears; alleged to mine around and in the fishing grounds and spawning areas. The miners are said to be powerful as they have the support of some unscrupulous state and local governments officials many of which illegally direct and share proceeds of illegal sand mining activities. In the view of the fishers, sand mining activities are sponsored by the well connected individuals and the fishers often lose out in the power play. The evidence for this scenario may be gleaned from the fact that the artisanal miners often boast of their influences in high places. In many cases where there had been conflicts and which are reported to the law enforcement agencies, the miners are left off the hook and fishers are left to lick their wounds as there are no compensations. Anecdotally, the power of the artisan miner is real and they are always eager to rub it in the faces of the fishers. The possibilities of a win-win situation is ruled out with the sand miners and dredgers and fishers. Fishers consider activities of sand miners and water hyacinth as virtually the same menace.

There is an ongoing Badagry Port & Free Zone project in which the sponsors are partnering with the Nigerian Government and business leaders to help plan Nigeria's economic future through the port and inland solutions necessary to create strong, sustainable growth. The project aims to address the expected infrastructure challenge by providing shipping lines and supply chain managers with the best productivity, location, flexibility and cost effectiveness to power the global supply chains of Nigeria's leading brands. The state-of-the-art multi-purpose facility will offer its customers superior hinterland connectivity and the deepest water in West Africa thus creating a sustainable competitive advantage for Nigeria going forward (www.badagry-port.com). The project sponsor also claimed that throughout the project's lifetime, it will support community based projects that can make a difference in a sustainable way without creating dependency – "Wherever we operate, we do our best to accommodate the different cultures, lifestyles, heritage and preferences of our neighbours" (www.badagry-port.com). Fishers are optimistic that at the completion of the Badagry Port & Free Zone project a better proportion of the estuarine will be open leading to an unhindered movement of the fishes inshore and offshore.

Photo 1. Water hyacinth, and mined sand being discharged at Ajido

2.4.2. Transport

Historically, it was the water way which provided all forms of commerce and trading activities to flourish across the West coast of Africa. In the eighteenth and nineteenth centuries, Badagry played a crucially important role as an Atlantic port. Fishing and transportation co-exist peacefully resembling a win-win scenario. The transporters using the canoe and the out board engine have no known conflict mutually ensuring peaceful coexistence with relationships that are fully enshrined in cooperation (Photo 2). In the course of the transporters carrying out their businesses, fishers claim that transporters operating in the night use their headlamps and other devices that lighten their pathways and in the process avoid tampering with nets and traps at the fishing grounds and outright collision with fishing crafts of the fishers. The transporters in some instances help convey information to the families of the fishers back home and also share food and other effects as the need arises. There are no extra efforts such as meetings, since it is an instinctual respect, and evidently there will not be one since they both compete for different spatial: vertical or/and horizontal portion of the creek.

Water transportation is an integral component of the development of Lagos State's inter-modal transport system. The physical environment of Lagos is well-suited to accommodate water transport as about 17% of Lagos is composed of lagoons and waterways. This vast system of inland waterways provides a rich and thus far relatively unexploited means for transporting cargo between port facilities in Lagos State. The State is evolving plan to use the waterways as means to decongest the notorious vehicular traffic.

Photo 2. Motorised boats used in ferrying passengers and good across the Badagry Creek

2.4.3. Eco tourism

The creek is an integral system for the tourism development. Aside from being historically well mentioned in the oral and written literatures on the Atlantic slave trade of the 18th century, on its own Badagry Creek is a delight. Driving from one end to another and watching beaches and banks will convince anybody that its preservation is an environmental asset. Getting to the Point of No Return, every tourist must be ferried to the two ends through the creek.

The Point of No Return is the gateway by which the slave bids goodbye to the land, his families, history and culture and starts the journey to a life of sorrow, pain, inhumanity to man and lowest debasement *Homo sapiens* would ever fall to. Badagry is a place where the history and the story of the slave trade is prominently associated with and where that dark story of human civilization is preserved. There is the famous first storey building in the country (Photo 3), the Mobee family museum: which warehouses the relics of the slave trade, the prison yard of slaves (Photo 4) and Points of No Return. Streams of tourist visit these sites. Fishers consider the relationship with eco-tourism an inter-sectoral boon which is positive for the fishing community. Tourist are exposed to tasting and buying fishes and fish products.

Photo 3. Front view of the famous first storey building in Nigeria.

The efforts of the Lagos State Government, private bodies and indigines are yielding fruits. Resturants, lodges and other facilities which promote eco-tourism are increasingly being promoted by private and corporate bodies. Both local and international tourists could be seen at any point in time visiting different locations mentioned in this study. The Agbalata market established in 1940 (local market) is another important resort as visitors can get fresh fish and

fish products as well as other artifacts of interests which can always serve as memorabilias. There is every justification to believe that there is an up beat in the activities related to eco-tourism and this has continued to define the landscape and the rapid developments further evidenced across Badagry, which however over time may take away or lose its innocence. There is huge transformation in the outlook of Badagry. Simply put, the more the visitors, the more blessings to the livelihood across the value-chain of the fishers and the fishing communities.

Photo 4. Picture of tour guide and visitors at the Mobee slave relics museum in Badagry, Lagos, Nigeria

3. Discussion and Future Implications

In this paper, 76 species across 47 families were reported based on a review of literature. The difference in the number of species between later studies and ealier work may indicate evidence of decline in fish species diversity. There is a urgent need to conduct studies on spatial and temporal species distribution for the creek so as to generate time series analyses fundamentally required to provide bedrock for scientific information prior to developing a management plan for the creek. The apparent hierarchical governance regime in place has proven unsustainable, hence there appears a need to consider moving towards a co-management governance regime whereby all stakeholders: fishers, the State Government, academics, civil society and others work mutually to formulate rules and regulations and to ensure compliance.

Also, there is the need to conduct scientific and social study on the impact of sand mining on fishing activities. It is needed that the State Government prohibits sand miners from operating around areas fishers identified as fishing grounds and spawning areas. Information from this effort should form the basis for inter-sectoral governance scheme for the creek and should be used by the State in formulating policy guidelines for the operations of the artisanal miners. Transportation and eco-tourism have both positive impact on the fisheries of the creek so far. This relationship should be used in promoting sustainable development in actualising the master plan for the city of Badagry.

4. Conclusion

This study affirmed the status of the Badagry Creek as an abundantly rich estuarine system. It also highlighted its historical relevance to the people of the coastal community recalling the impact the creek played in the settlement and the economic and social makeup of the fishing communities. It reported a transition wherein strong family affiliation through the institution of intermarriages played a significance role in the fisheries governance structure to the present situation wherein the basis for association among fishers is fishing interests. We described the present relationship between the State and fishing communities as being less than amicable and lacking trust, and therefore recommended a shift towards a co-governance management arrangement. The fishing communities enjoy a win-win relationship with the transportation and eco-tourism sub-sectors. An antagonistic relationship, however, exists between fishers and sand miners in the creek.

References

Agboola, J.I, Anetekhai, M.A, Denloye, A.A.A (2008) Aspects of ecology and fishes of Badagry Creek (Nigeria). *Journal of Fisheries and Aquatic Science* 3(3), 184-194.

Akintola, S.L, Olusoji-Bello, O.A, Anetekhai, M.A, Clark, E.O, Ajibade, M.A, Kumolu-Johnson, C.A. (2009) Catch composition and seasonal distribution of genera *Penaeus* and *Macrobrachium* in Badagry Creek, Lagos, Nigeria. *African Journal of Ecology* 48, 828-830.

Elegbede, I.O., Fashina-Bombata, H.A (2013) Proximate and mineral compositions of common crab species [*Callinectes pallidus and Cardisoma armatum*] of Badagry Creek, Nigeria. *Poultry Fisheries Wildlife Science* 2(1), 1-5.

Solarin, B.B., Kusemiju, K. (1991) Day and Night Variations in Beach Seine Catches in Badagry Creeks, Nigeria. *Journal of West African Fisheries* 5, 241.248.

Soyinka, O.O, Kuton, M.P., Ayo-Olalusi, C.I. (2010) Seasonal distribution and richness of fish species in the Badagry Lagoon, south-west Nigeria. *Estonian Journal of Ecology* 59(2), 147-157.

Schultz, E.A., Robert, H.L. (2009) *Cultural Anthropology*, 7th edn. Oxford University Press, New York, pp. 489.