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THE MANAGEMENT AND CONSERVATION OF INLAND FISHERIES RESOURCES IN NIGERIA: A CONCERNED REVIEW

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Abstract

Nigeria is endowed with extensive inland water bodies that are very rich in fish and shellfish species, many of which are of commercial importance. These diverse fish resources with immense potential plays a contributing role to the food security and improving livelihoods of local fisher folks, but in recent years, there has been serious concern about the poor status of the inland aquatic resources management and conservation. Over-exploitation has been recognized as a major threat to sustainability of these inland fisheries resources in Nigeria and has brought about changes in species composition, decline yield and stock composition, resulting to threatened ecosystem (inland/wetland) with depletion due to ineffectiveness and weak regulations. This review elucidates and analyzes the causes, signs and types of over-exploitation in the inland fisheries resources with regards to inadequate management and conservation practices in Nigeria. It also highlights current management measures, reasons for management failure and some of the procedures that could be adopted for sustainable management of inland fisheries resources via economic sustainable preservation and conservation. For a fishery to recover totally, is to observe a: closed fishing season, restocking and habitat stewardship.

Keywords: *Closed Fishing Season, Overfishing, Illegal Fishing, Inland Fisheries Resources, Aquatic Biodiversity*

1.1 INTRODUCTION

Nigeria has a wide variety of inland water bodies which are rich in many and diverse finfish and shellfish species. There are several significant riverine ecosystems, which with about two thirds of the country lies in the watershed of the Niger River, and other major river systems which include, the Benue River, Cross River, Anambra River, Imo River, Kwa Iboe River, Ogun River, River Nun and Oshun River and innumerable small rivers (Olopade *et al*., 2017). The most prominent amidst the networks in Nigeria is the Niger/Benue system, whereas Lake Chad and Kanji are the most important with regards to fish production (Eyo and Ahmed, 2005). These water bodies have been exploited by artisanal fishers operating in rivers, streams, estuaries, wetlands, brackish water, natural and man-made lakes for variety of benefits, including food security, livelihoods and employment. In Nigeria, the inland captured aquatic resources are small scale and have been the most neglected by the Government notwithstanding the major and the significant contribution of the sub-sector. The inland fisheries give about 82% of domestic fish product (FDF. 1994).

Over-exploitation of the finite resources has drastic reduction in inland rivers and lake production from 213,996 metric tons to 181,268 and 194,226 metric tons in year 2000 (Eyo and Ahmed, 2005). The status of the inland Fisheries resources in Nigeria is largely as result of a failure of the process of fisheries Governance which significant threats to the management of resources. There are many definitions of management and conservation given over the years by individuals or groups (Oliver *et al*., 2014). A few of them are

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given here: The use of the natural resources for the greatest good of the greatest number of people for the longest time (Pincot, 2011).

Management and conservation of human use of the biosphere so that it may yield sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of the future generations (International Union for the Conservation of Nature and Natural Resources, 1980; Etim, 2010). Besides sustainable used, conservation includes protection, maintenance, rehabilitation, restoration and enhancement of populations and ecosystems, (World Conservation Union, United Nations Environmental programmed and Worldwide Fund for Nature, 1991; Etim, 2010). Christie and Dunn (2011) researched on developing the concept of sustainable fisheries in Canada reported that fish stocking are in declining trend due to over-exploitation in most quota, precautionary measures are not taking, the world would likely approach the limit to fish yield. The researcher suggested that a new strategy is needed to integrate aquatic economic system management into the large context of environment sustainable development which would need a span jurisdiction economy planning.

Nigeria is watered from North to South and East to West by a network of rivers. River Niger and River Benue that form a big " Y" right across the middle of Nigeria originate from outside the country (Ajai, 2012). The rivers of Nigeria may be divided into four main groups: (the Niger-Benue system, the rivers west of the lower Niger, the rivers east of the lower Niger and those flowing into Lake Chad). All other rivers flow across the territory to empty into Lake Chad in the North-East corner or the Atlantic Ocean in the South. The major rivers make up about 11.5 percent and lakes and reservoirs about 1 percent of the total area of Nigeria (Ajai, 2012). The total water bodies, including deltas, estuaries, etc., make up about 15.9 percent of the total area of the country. The fresh water components are within extensive river systems, lakes, flood plains and reservoirs scattered over the entire land surface area of over 4,212,500 ha. The brackish water sector consists of estuaries, beach ridges, intertidal mangrove swamps, intersecting rivers and winding saline creeks covering a total area of 1,751,509 ha mostly unexploited (Ita, 1993).

In recent years there has been a growing concern that the aquatic resources in most water bodies in Nigeria have been increasingly over exploited leading to reduction in socio-economic benefits for local communities and the regional economy in general. It has been estimated that most of the world' s major inland fisheries are now at their maximum level of exploitation (FAO. 2011). However, it is on record that in March, 2005 president Obasanjo in his official visit to Delta State was asked why the present government is hesitating in signing into law a bill that would pave way for the dredging of river Niger in the region in order to allow for confluence of rivers so as to increase fish spawning? His answer was, there are more it takes to attaining full production in fisheries production than only dredging rivers. Meanwhile, combinations of factors were thought to be responsible. Firstly, environmental changes caused by drought and dam construction have resulted on lower fish production. Secondly, an intensification of fishing effort has brought about increased communalization, the introduction of modern gear restriction which is used in capturing fish. It was discovered that catches from in-land fisheries are in declined state due to deteriorating quality of aquatic environment and poor conservation (Garcia, 2012). Similarly, Nigeria and Biosphere (an association responsible for the studying of interrelationship between man and living organisms) in 1990 organized an educative seminar on Nigerian water bodies which in broad sense includes flood plain, lakes, reservoir and swamp (Neiland *et al*., 2012). Despite all these protective efforts, capture fisheries remains highly vulnerable to over-exploitation and degradation. It follows therefore that if fisheries enhancements are to be successful, the problems of over-exploitations and degradation must be addressed in parallel from the onset (Charles, 2010).

The justification for comprehensive inland resource management and conservation legislation has been advanced by the Federal Department of Fisheries based on the need to harmonize the administration, management, protection and improvement of the fisheries resources in inland waters including rivers, reservoirs, lakes and their associated wetlands. Although, it could be argued that these waters are within State boundaries and should therefore be subject to State Legislation, the waters usually traverse more than one State. Apart from the fact that fish do not respect State boundaries, migratory fish often enter channels which pass through more than one State. Consequently, action or lack of action by one State can have a profound effect on the fisheries resources and fishing in another State. In addition, migrant fishermen often cross State boundaries using unlawful methods to capture fish, and the dumping of poisonous products or industrial wastes in one State, which does not give priority to fisheries, can lead to mass destruction of valuable fishery resources downstream in another State where fishing may be of high priority (Fawole and Tijani, 2014).

1.2 Aim of the review

The aim is to review the management and conservation of inland fisheries resources in Nigeria.

1.3 Objectives of this review is to:

i. Review the management of inland fisheries resources in Nigeria.
ii. Review the conservation of inland fisheries resources in Nigeria.

2.1 MANAGEMENT AND CONSERVATION OF INLAND CAPTURE FISHERIES IN NIGERIA

As far as fisheries management and conservation is concerned in Nigeria, the system is divided into two: (Government institutions and Traditional institutions).

Traditional management systems entail the regulation of fisheries activities and resources by traditional authorities or communities using common beliefs or norms, prescriptions,

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religious practices, behaviours, taboos, magic, languages and such systems are still operational in spite of the population growth, changes in legal systems, urbanization, commercialization and technological change. In general, there are no customary restrictions to access water from large sources but customary law disapproves of the abuse of these rights. For examples fishing in rivers and streams is generally unrestricted but there may be a right to tribute by the local head fisherman or traditional leader, usually by strangers and in some cases tax is levied on fishing activities and freight traffic (Ramazzoti, 2008), but if flood waters completely cover a person' s land, the rights over the land belong to him (Ezeomah, 1985). Most traditional fishing methods and management patterns are still applicable at the present time. Property rights are the bases for Traditional management systems (Hall, 1999). These systems are usually well enforced, as they tend to be self-policed by fishermen. Traditional systems management focuses on resolving gear use or allocation problems. Access control is enforced by fishermen and by local moral and political authority. Supernatural sanctions are probably the most effective punishment for poachers. However, there are a number of obstacles that might face the encouragement to use them. Among these obstacles are the social change, poverty and educational levels of the fishers. And therefore, these resource users are losing control of traditional authority for management and less effective. The management of water and fisheries resources in Nigeria is undertaken by all levels of government: Federal, State and Local Governments which often lead to legislative overlaps and conflicts. The federal government is involved in fisheries management through the activities of the Federal Department of Fisheries. Federal involvement in inland fisheries management varies considerably with most inland waters in Nigeria is managed by the individual states within which the waters are located. When inland waters border more than one state, the states involved usually collaborate to determine how the water will be managed but each state normally has its own regulations (Garcia, 2012).

2.1.1 Role of State and Federal Government in Inland Fisheries Resources Management and Conservation

The need for the promulgation and enforcement of inland fisheries laws and regulations, by State and Federal Government has been highlighted as the first major step towards the effective conservation of inland fisheries in Nigeria. Some state such as Sokoto, Niger, kwara, Benue, Plateau, Lagos, Delta and Edo, Ondo and Oyo State have promulgated their fisheries Edicts, Some of the aspects of these Edicts yet to be effectively implemented (Etim. 2010).

2.1.2 Registration and Licensing of Fisher Folks

Registration and licensing of fisher folks, which has been successfully applied as a powerful tool in the management of inland fisheries in developed countries, and most developing countries, is generally frowned on in Nigeria because of the possibility of rendering some fishermen redundant and jobless. It has been observed, however, that most artisanal fishermen operating in Nigeria inland waters do so at subsistence level, rather than commercially, on account of drastic overfishing in most of the water bodies. Fishing in such water bodies is regarded as per-time occupation while farming takes over as a full-time occupation. Part-time fishermen could willingly give up fishing without any loss of income if compelled to pay licensing and registration fees. Such voluntary withdrawal could result in significant improvements in the overall productivity of the water bodies. There is a need therefore to initiate the licensing and registration of fishermen in all the water bodies in Nigeria to increase fish production and gainful employment for full-time fishermen is to be achieved (FAO. 2010).

2.1.3 Closed Season and Area

Specific study may be necessary in order to determine the particular area or season to be closed to fishing before regulations are framed. In almost all cases, areas to be closed to fishing are usually the spawning ground of most fish species e.g. shallow floodplain areas of lakes, reservoirs and rivers. Decaying organic matter is the major food of all juvenile fishes and most of adults. This organic matter also enriches the nutrient in the water giving rise to the production of more food organisms; In addition to providing food, the flooded swamps or bush also provide cover for young fish during their early development, thus protecting them from open predation by carnivores. Such areas are specific to each lake and should be carefully identified before enforcing regulations. The same areas should be closed to fishing during the peak of breeding season which often corresponds with the period of the high flood (Dunn, 2011).

2.1.4 Gear Size Regulation

In order to guard against undue increase in fishing effort, gear size regulations [or quota regulations] must be enforced along with mesh size. The major factors to be considered in gear size regulation, given the stipulated number of boats or fishermen to be allowed to fish a water body and the specified minimum mesh size to be used, are the potential fish yield of the water body, and the observed yield at the time the quota regulation is to be enforced. The potential fish yield can easily be extrapolated (Fawole and Tijani, 2014).

2.1.4.1 Mesh Size Regulation

A detailed analysis of mesh size selection of some commercially important species in Kainji Lake, (Ita, 2011) revealed that only 7 out of 30 species of fish in the lake could be captured with a 5cm mesh net after they most have attained sexual maturity. The remaining 23 species would still be immature at the time of capture in a 5 cm net. By increasing the mesh size from 5 to 7.5cm about 14 out of 30 commercially important species would be allowed to reproduce at least once before they captured. The investigation revealed that the tilapias, which comprised about 49% of the total standing crop of commercially important species in the lake, often attained sexual maturity long before they grow to the size held by a 7.5cm mesh net. It was recommended therefore, that a minimum mesh size of 7.5cm be enforced for the Kainji Lake fishery. This mesh size has also been recommended as the standard minimum mesh size for all inland water bodies in Nigeria in view of the fact that

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the distribution of fish species in most of the inland water bodies in the country follows the pattern of the Niger-Benue River systems and their tributaries. Similarly, a majority of the reservoirs so far surveyed in the country have tilapia as the dominant species (Ita, 2014).

2.1.5 Effects of Chemical on Inland Fisheries Resources Production

2.1.5.1 Illegal Fishing on Inland Fisheries Resources

Ita (2014) studied on the impact of the use of explosives and poisonous substance in fishing. The researcher reported that poisoning is often practiced in shallow inlets of rivers and reservoirs where spawning usually occurs. They stressed that any application of poisonous substance in such area will inevitably lead to mass mortality of juvenile fish species that are mostly dominant age group in these vegetated inshore areas. They also discovered that during this practice most adult fish migrate into deeper waters to avoid the poisoned ecosystem, these are in view of the fact that the effect of the poison diminishes with increase in water volume but these adult fishes are then killed with explosive mechanism (dynamites). This mass destruction of juvenile fish species were recorded (Ita and Balogun, 2014); most of the fish species killed by this method are often only recovered on the second or third day after the application of the poison and are therefore not fit for human consumption but they are eaten by man. The researchers concluded that the stock of the explosives and the use of the poison will subsequently result to the rapture of the swim bladder of the fish species reducing the buoyancy of the fish in water. Ita and Bolagun (2014) observed the state of aquatic pollution of East African inland water; their investigations confirm that pesticides are being used increasingly in the countries' water bodies. It has caused unwanted fish kills and has been found in the tissues of fish species; sometime at very high concentrations which have given course for concern because they might be approaching values having long term and sub-lethal adverse effect on consumers. Few tests have been carried out to measure that toxicity of pesticides to African fish species and no long term test or regular monitoring programmes for concentration in fish species have yet been carried out. Some of these countries (but not all) have a system for screening pesticide for safety and for issuing advice of safe use including information on toxicity to fish species. The application of pesticides which caused fish kills has aroused concern about possible long-term and sub-lethal effects on fish species including the bioaccumulation of chemicals in edible fish tissue with resultant adverse effects on humans (WCU. 1991).

2.2 Nigeria Policies and Programme on Management and Conservation of Inland Fisheries Resources

Foreign observer frequently contents that fishing in Africa lakes, rivers and their associated wetlands are usually haphazard. This is not unconnected with the fact that there are no laws and regulations controlling the exploitation of the fisheries of most African inland waters. Even where such laws and regulations exist they are not often enforced (Akankali and Jamabo, 2011). In Nigeria, the conservation of inland water is regarded as the exclusive responsibility of the state to which such water bodies belong. Whereas there is a sea fisheries decrees act of 1971 as well as the relevant fishery regulation and the exclusive economic zone (EEZ) decree of 1978 which enable the federal government to control, regulate and protect the sea fisheries resources, there is at present no such uniform law for in-land fisheries legislation has been advance by the federal department of fisheries based on the need to harmonize the administration management, protection and improvement of the fisheries resources in in-land water including rivers, reservoirs, lake and their associated wetland (Imaobong and Mandu, 2013). Although, it could be argued that this water is within state boundaries and should therefore be subject to state legislation, the water usually traverses more than one state, that is, inter-boundary waters. Apart from the fact that fish do not respect state boundaries, migratory fish often enter channel which pass through more than one state (Onemole and Oriakhi, 2011). Consequently, action or lacks of action by one state usually have a profound effect on the fishery resources and fishing in another state. Although all these reason are more than justify the need for central federal legislations action on the promulgation of such laws and regulations has yet to materialize (Ita, 2012). In 1994 the author produced a model draft in inland fisheries laws and regulation which was widely circulated to all the state, later it was discussed and modified for adoption by delegates from the state at a meeting convened by the national institute for fresh water fisheries research (NIFFR. 2010).

2.3 Resource Monitoring, Control and Surveillance

One of the most neglected aspects of Fisheries in Nigeria is resource surveys of inland waters. There has not been any systematic survey of inland fisheries resources for the past fifteen years. The last nationwide survey of artisanal fisheries was conducted in 1976 with the assistance of Food Agriculture Organization (FAO). Since then further attempts to update the records have been frustrated by inadequate funding. Recently, the assistance of FAO has again been sought for a national fisheries statistics survey. The responsibility for updating the national fisheries statistics rests with the Federal Department of Fisheries (FDF) of the Ministry of Agriculture and Natural Resources. The FAO has recently sent a consultant to appraise the current status of statistics collection in the country (Neiland, 2012).

The consultant expressed the view that too few enumerators are engaged by the FDF in each State, and hence the quantity of data collected is low and not adequately representative of the variety of fishing environments (e.g. lakes, rivers, floodplains, etc.). He recommended that the FDF should liaise with the State' s Agricultural Development Projects (sponsored by the World Bank) who have engaged more field staff already involved in fisheries statistical data collection. This will ensure more accurate and continuous data collection after the major commissioned survey to be carried out with the assistance of the FAO. Some States Fisheries Departments also have enumerators in most of their Local Government areas, but they lack the necessary training for accurate statistical collection. The Nigerian Institute of Oceanography

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and Marine Research (NIOMR) is currently being funded by the World Bank to conduct surveys and studies of the fisheries resources of the inshore coastal waters. The Institute is to establish a Resource Survey and Monitoring Unit (RSMU) which will conduct surveys and monitoring of the coastal and brackish water fishery resources on a continuing basis (Qunn, 2011). The FDF is also funded by the World Bank to establish a Monitoring Control and Surveillance Unit within the 200 nautical miles of the EEZ, conduct a census of fishing vessels and collect primary fishery statistics on the artisanal fisheries of the coastal region. No such assistance has been extended to inland waters. There is therefore, a need to extend similar operations to all inland waters, preferably with the collaboration of the National Institute for Freshwater Fisheries Research whose experience in frame surveys (FS) and catch assessment surveys (CAS) of inland fisheries is still outstanding. In view of the fact that the States are required to promulgate and enforce their edicts, each State is expected to set up a surveillance unit to enforce different aspects of the Edict such as licensing and mesh and gear size regulations (FAO. 2010).

3.1 CONCLUSION

The inland aquatic resources (Fish) of Nigeria have great potentials for growth and productivity. The potentials can only be actualized if they are managed and conserved sustainably. Effort must be made by the Government and the public at large to protect these resources for sustainability. It has been proposed that each State should set up a separate Inspectorate Unit of Fishery Guards for the enforcement of the edict through a Resource Monitoring, Control and Surveillance System. Inspectorate Zones are to be set up under the control of an Area Fisheries Guard and an Assistant Guard per unit number of fishermen in each zone or Local Government Area. These are to be supervised by Area/Block Fisheries Supervisors who would report offences directly to the Zonal Fisheries Officers. Unlike the Forestry Department with Forest Guards, there are unfortunately no Fisheries Guards currently in the Nigerian Fisheries System. This category of staff is urgently needed in the Resource Surveillance and Monitoring Unit for effective implementation of the State Edicts. Often, in States that have promulgated their Fisheries Edicts, field extension staff are used to enforce them, collect licensing fees as well as fisheries statistics records. The need for the promulgation and enforcement of inland fisheries laws and regulations, by State and Federal Government has been stressed as the first major step towards the effective management; conservation and preservation of endanger fish species of inland fisheries in Nigeria.

3.2 RECOMMENDATIONS

Based on the problems and challenges facing the management and conservation of inland aquatic resources in Nigeria, the government should establish a co-management policy to ensure better cooperation with the stakeholders toward achieving sustainable growth and management of inland aquatic resources. Research should be promoted so as to ensure the gathering of accurate data for management and conservation purposes. The inland water resources should be protected from pollution; preference should be given to sustainability over fisheries sustainable economic yield to improve fisheries biodiversity.

REFERENCES

1. Akankali, J.A. and Jamabo, N.A. (2011). A Review of Some Factors Militating Against Sustainable Artisanal Fisheries Development in Niger Delta, Nigeria. *Asian Journal of Agricultural Sciences* 3(5): 369-377.
2. Alfred, D. Y. and Fagbenro, O.A. (2012). Perception of tilapia farmers on information sources in the coastal region of Ondo State, Nigeria. In: WM Contreras Sanchez, K Fitzsimmons (Eds.): *Proceedings of the Seventh International Symposium on Tilapia in Aquaculture.* Veracruz, Mexico, 2(5**):** 6-8.
3. Awoyemi, T.T. and Ajiboye A.J. (2011). Analysis of profitability of fish farming among women in Osun State, Nigeria. *Journal of Economics and Sustainable Development*, 2(4): 1-8.
4. Charles, A.T. (2010). Fisheries Socio- Economic in the Development World Canada: Halifax Publication Limited. Pp 145-148.
5. Christie, W.J. (2014). Developing the Concept of Sustainable Fish, Picton Ontario P.99-109.
6. Dunn, I.G. (2011). Development of in Land Fisheries under Constraints from Other Uses of Land and Water Resource: Food and Agriculture Organization. (FAO) Guideline for Planners Fisheries Circular Number 826. P 53.
7. Dunn, E. (2011). Fisheries and the Development of Sustainability Indicator, United Kingdom Royal Society for the Protection of Birds Pp.1319.
8. Enin, U.I. (2012). What concerns Nigerian fishers with climate change? In: Etim, L. and Oribhabor, B. (editors). Current issues in sustainable Tropical Agriculture. Faculty of Agriculture, University of Uyo, Uyo.1 (1): 1 – 13.
9. Etim, L. (2010). The tragedy of the commons: alleviating the tragedy by managing the commons in Nigerian waters. The Inaugural Lecture of the University of Uyo held at University of Uyo Press, Nigeria. Pp 60.
10. Eyo, and Amed, M. (2005). Fish farming awareness and participation in agricultural extension agent' s activities .*International Journal of Agricultural Economics and Rural Development*. 6(1): 75-78.
11. FAO, (2010). Report of the Consultation of Sustainable Development in the Agriculture, Forestry and Fisheries Sectors. Pp 180-200.
12. FAO, NACA. (2011). Myanmar Aquaculture and inland fisheries. RAP Publication. Pp 65.
13. Fawole and Tijani (2014). Fish farming awareness and participation in agricultural extension agent' s activities .*International Journal of Agricultural Economics and Rural Development*. 6(1): 75-78.

*Corresponding Author: **Flourizel IGBANI**

14. FDF. (1991). Education is adjudged as catalyst for ation in agriculture. Pp 101-105.
15. Folke, C. and Kaulsky N (2014). Aquaculture with its Environment, Prospect for Sustainability. 18 (1).234-243.
16. Garcia, S.M. (2012). The Precautionary Principle in Capture Fisheries Management, Department of Food and Agriculture Organization (FAO) Rome Italy. Pp 99-125.
17. Imaobong, E.E. and Mandu A.E. (2013). Development, Prospects and Challenges of Artisanal Fisheries in Akwa Ibom state, Nigeria. *International Journal of Environmental Science, Management and Engineering Research.* 2(3). 69-86.
18. Ita. E.O. and Bolagun, (2014). The Impact of Use of Explosive and Poisonous Substance in fishing practice, Edited by J.M Kapestadi and T. Peter CIFA. Pp 67-72.
19. Ita E.O. (2012). Approaches to the Evaluation and Management of the Fish Stocked in Kainji Lake Nigeria. Pp24-29.
20. Ita, E.O. (2012). Observation on the Present Status and Problems of in Land Fish Culture in Some Northern State. CIFA Technical Paper. Pp39-46.
21. Ita, EO. (2012). Fishery Synthesis Status of Africa Reservoir Fisheries Edited By J.M Kapestadi and Peter CIFA. Pp123-189.
22. Kleiber, D., Harris, L. M., and Vincent, A. C. (2014). Improving fisheries estimates by including women' s catch in the central Phillipines. *Canadian Journal of Fisheries and AquaticSciences*. 71(5): 656-664.
23. Neiland, A.E., Jonathan, W., Madakan, S.P. and Bernard, M.B. Ladu (2012b). Inland Fisheries of North East Nigeria including the Upper River Benue, Lake Chad and the Nguru-Gashua wetlands: Fisheries Management at Village Level' . Fisheries Research, 48 (3): 245-63.
24. Oke, J.T.O. (2014). Gross margin analysis of backyard farming in Osun-state, Nigeria.*International Journal of Agricultural Economics and Rural Development*, 6(1): 67-72.
25. Okoedo-Okojie, D. U. (2015). Determinants of constraints to information sources utilization among maize farmers in Edo State, Nigeria.*British Journal of Applied Science and Technology*, 9(2): 182-190.
26. Onemolease, E.A. and Oriakhi, H.O. (2011). Prospects and constraints of artisanal fishing in selected communities in Delta State, Nigeria. *Advances in Applied Science Research* .2 (6): 55-61.
27. Oruonye, E.D. (2014). The Challenges of Fishery Resource Management Practices in Mayo Ranewo Community in Ardo Kola Local Government Area (LGA), Taraba State Nigeria. *Global Journal of Science Frontier Research: D Agriculture and Veterinary*. 14(1) 145-178.
28. Olapade, E.R., Ita, E.O and Eyo, H.A. (2017). Fish farming awareness and participation in agricultural extension agent' s activities. *International Journal of Agricultural Economics and Rural Development*. 6(1): 75-78.
29. Philip, J.K., Udoh J.P. (2011). Information provision and dissemination patterns among migrant fisher folks in cross River estuary, Nigeria. In: Aina, L.O, editor. Information for all: Strategies for National Development. Anambra, Awka: Nigeria Library Association. Pp 45-51.
30. Pincot, W.R. (2011). Observation on the Present Status and Problems of in Land Fish Culture in Some Northern State. CIFA Technical Paper. Pp39-46.
31. Porter, *et al*. (2010). Education is adjudged as catalyst for ation in agriculture. Pp 101-105.
32. Salau, E.S., Lawee, A.Y., Bello, D. (2014). Adoption of improved fisheries technologies by fish farmers in southern agricultural zone of Nasarawa State, Nigeria. *Journal of Agricultural Extension and Rural Development*. 6(11): 339-346.

*Corresponding Author: **Flourizel IGBANI**