



## Common Fishing Practices in Yenagoa Floodwaters, Bayelsa State, Niger Delta

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### ABSTRACT

The study was conducted to investigate common fishing practices in Yenagoa floodwaters between October 11 and November 15, 2022. Data was collected by observation of fishing activities five times a week and face-to-face interviews with fishermen aimed at documenting the fishing practice, fishing gear, and fish landed. Results showed that most inhabitants of Yenagoa were involved in fishing, and three types of gear were the most common. Gears were used in the order Gill nets, traps, hooks, and line. The Cichlids were the most landed. It is pertinent to enlighten inhabitants of the implications of indiscriminate fishing activities during flood periods, as their fishing activities could lead to the depletion of fish stocks.

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## **INTRODUCTION**

Fishing is a major traditional activity of the people living in the Niger Delta, because most of the area is covered by water bodies with very little fraction of the land area left for other commercial purposes. Products from artisanal fisheries are used in different ways ranging from commercial purpose to local consumption and medicinal uses in the Niger Delta (Ngodigha et al. 2017). Though the uses are enormous, unmanaged fishing activities have resulted in over exploitation of fisheries resources.

Unsystematic act of harvesting fish from the water bodies with different gears of smaller mesh sizes contributes largely to the depletion of fisheries resources in water bodies in the Niger Delta (Ngodigha et al. 2015a). These gears have been modified and improved over the years with modern technology (Moses 1992) to increase landings.

There are different methods that describe operation of fishing gear. The methods are trapping, scooping, encircling, hooking, filtering and wounding. Different gear types are used to harvest fish that includes cast net, traps, hook and line, lift nets, entangling nets, gill nets and trawls. The gears used by Fishers depend on gear available to Fishers and species of fish. It can also depend on the habit and habitat of the fish (Bankole et al. 2003) as well as the season of the year and water body.

Floods are natural events that within a short period swiftly alter water and habitat quality in any given aquatic ecosystem. Fishers share a vital relationship with floodwaters, as it is a natural phenomenon that occurs regularly. Fishing hence becomes an important economic activity for the people living close to the flooded waters. This has led to the development of a diverse range of fishing gear and methods. The flood waters affects negatively the livelihoods of the inhabitants of rivers, creeks and estuaries as a result of migration of some fish species to other areas that are more suitable for them. This has a serious effect as it results in low productivity in the aquatic environment leading to reduction in fish catch, which at the end affects the living standard and livelihood of Fishers.

Changes in species composition are commonly observed during flooding which affects fish landings through movement and changes in fish migration (Gillson et al. 2012). Rapid freshwater inflow can carry organisms from upstream reaches into estuaries and creeks, up to several kilometres offshore (Williams et al. 2017). Organisms not flushed out of the swamps and creeks are eventually covered by layer of silt that can destroy populations of filter feeders.

Flood water levels are unpredictable in the Niger Delta and so have received less research attention than freshwater studies. They are more difficult to study, resulting in a scarcity of data on their ecological effects in the aquatic environment. Therefore, the aim of this study was to investigate fishing practices employed by inhabitants of Yenagoa, Bayelsa State, Niger Delta during the 2022 heavy floods.

## **THEORETICAL REVIEW**

Fishing is a major traditional activity of the people living in the Niger Delta, because most of the area is covered by water bodies with very little

fraction of the land area left for other commercial purposes. Products from artisanal fisheries are used in different ways ranging from commercial purpose to local consumption and medicinal uses in the Niger Delta (Ngodigha et al. 2017). Though the uses are enormous, unmanaged fishing activities have resulted in over exploitation of fisheries resources. Unsystematic act of harvesting fish from the water bodies with different gears of smaller mesh sizes contributes largely to the depletion of fisheries resources in water bodies in the Niger Delta (Ngodigha et al. 2015a). These gears have been modified and improved over the years with modern technology (Moses 1992) to increase landings.

## METHODOLOGY

**Study area:** Yenagoa the capital of Bayelsa State, Niger Delta Nigeria is located between Latitude 40 51' and 50 01' North and longitude 6012' and 60 27' East (Fig 1). The capital city is situated on low topography with wetlands and back swamps susceptible to flooding. The study was conducted in communities along the Epie creek, which includes Igbogene, Yenegwe, Akenfa, Agudama, Ede-Epie, Tombia and Opolo in Yenagoa Local Government Area of Bayelsa State. Study area is located between Latitude 50 1' 9.31" and 40 57' 2.85" N and Longitude 60 22' 34.44" to 60 20' 10.20"E with WQI of 53.47-57.55 (Ebuete et al. 2019). The creek is a tributary of Ekole River, which is also a tributary of Nun River that flows through Yenagoa downstream accommodating a high volume of water during flood periods.

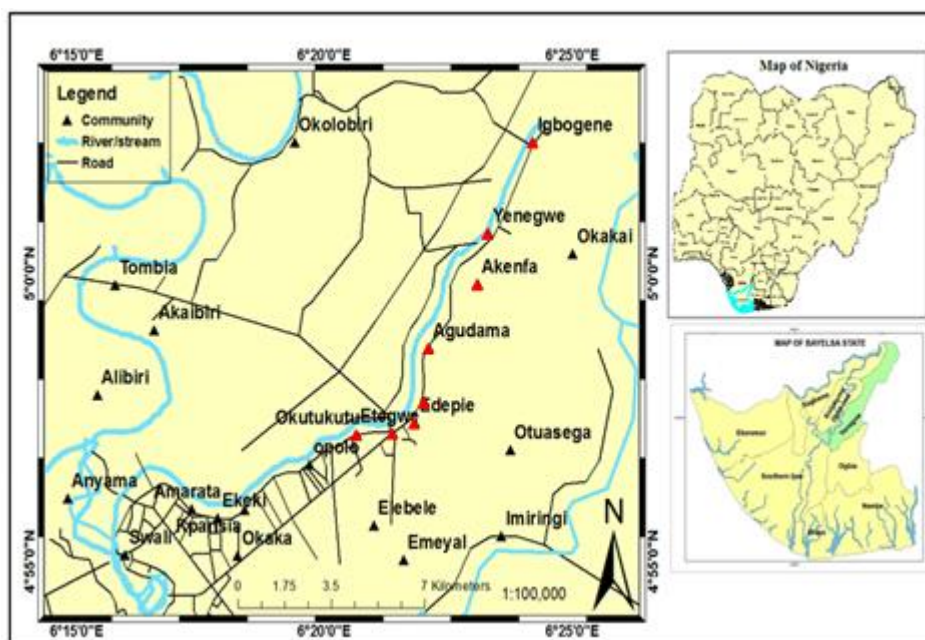


Figure 1. Map of Study Area

**Data collection:** Data was collected between 11th of October and 15th of November 2022 through observation of fishing activities 5 times a week and face-face interview of 200 individuals engaged in fishing activities during the

flood period with the aim of documenting the fishing practice, fishing gear and species of fish landed. Fishers were asked effectiveness of fish gear and their answers were assigned into categories. A five-point Likert scale rating scale was used to assess fish caught. Fish landings were described as 5= Very good, 4= Good, 3= Same, 2= Bad and 1= very bad. Fish samples were collected and identified using identification keys.

## RESULTS

In habitants of Yenagoa metropolis were engaged in fishing activities during the flood period. Fishing activities were carried out in the creek and the immediate environment of fishers at water level of between 0.3-2m high at Fishers homes and environs.

Three types of gears were identified as been used by the fishers in the different communities. These gears were Gill net, Hook and Line and Traps. The order of use was Gill nets >traps >Hook and line.

The gill nets were bottom gill nets and surface gill nets with mesh size of 40mm, 50mm and 60mm. Metals were attached as sinkers to the net while rubber bathroom slippers were used as floaters to identify the position of the net. The nets were set between 5.30 and 6.30pm and hauled from 6.am to avoid stealing of the catch.

Fishing traps were used during receding of the floodwaters in November. The gear was positioned as a barrier that attracts fish voluntarily or involuntarily into it and escape of the fish is blocked by a non-return valve. Traps were set at dusk from 5.30pm and hauled at dawn from 6.am. Bigger fishes were retained in the trap while smaller size fishes were easily filtered out into the floodwaters. The fish traps were left in the floodwater for more than 24 hours so that the catch will increase. Hook and line used was the rod and line. The gear was also set at dusk and hauled at dawn same time as the gill net. Fishers removed their catch earlier to avoid stealing.

As shown in Table 1, about 37.5 % of fishers acknowledged that landings from the gill net was very good, 28% said landings were good, while 14.5% believed landings were okay, 13.5 and 6.5% reported bad and very bad respectively. Landings from traps were described as very bad by 16% of fishers, bad by 17% of respondents, Okay by 11.5%, good by 24.5% of participants and very good by 31% of fishers involve in the fishery. Hook and line fishery was reported very bad by 35.5% of Fishers, bad by 33.5% of respondents, okay by 21%, good by 4.5% and very good by 5.5%.

Table 1. Fishers Assessment of Effectiveness of Fishing Gear

| S/N | Gear          | 1  | 2  | 3  | 4  | 5  | Score | Point | Rank |
|-----|---------------|----|----|----|----|----|-------|-------|------|
| 1   | Gill net      | 13 | 27 | 29 | 56 | 75 | 753   | 3.765 | xxx  |
| 2   | Trap          | 32 | 34 | 23 | 49 | 62 | 675   | 3.375 | xx   |
| 3   | Hook and line | 71 | 67 | 42 | 9  | 11 | 422   | 2.110 | x    |

2.01 – 3.00 (x) = bad; 3.01 – 4.00 (xx) = okay; 4.00 – 4.99 (xxx) = good.

Fishers acknowledged good fish landings during the study period. Fish mostly caught were Protopterids, Bagrids, Clariids, Alestes, Heterotids, Gymnarchids, Distichodids, Cichlids of which the Cichlids were the most landed.

## DISCUSSION

Serious fishing activities engaged during the flood period indicates that the people were knowledgeable about the presences of different and abundant fish species in the floodwaters. The fact that fishers have experience of influx of fishes during flood period proofs that Local knowledge can aid in fisheries research as well as act as means of scientific research (Ngodigha et al 2015b) and could help in management actions (Ngodigha and Gbarabe, 2015). Despite the negative effects of flooding on the environment, inhabitants gets adapted to flooding with time and take advantage of the available opportunities to improve their

Livelihood by increasing fishing activities in the floodwater undermining the flood level that could drown them. Fishing activities involving most inhabitants were both in the creek and living environments of inhabitants of Yenagoa metropolis. Harvested fishes were mostly for consumption purposes due to the hardship faced by inhabitants during the flood period.

Gears identified as most frequently used were all passive gears that included Gill nets, Traps and Hook and Line in the order Gill nets >Traps >Hook and line. This report is in consonance with those of Kingdom and Kwan (2009) in their study of survey of fishing gear and methods in the lower Taylor Creek area. They reported that the commonest gear used were Traps 60%, Hook and Line 60% and gill net 47.8%. The difference in the findings was that Gill net was mostly used in this study implying the highest percent in Epie creek during the October - November floods, while Trap and Hook and Line recorded highest percent in Taylor Creek.

Gill net as recording the most common gear used for fishing in Yenagoa floodwaters agrees with those of Solarin et al (2003), Dienne and Olopade (2017) and Scott (1966) who reported gill net as the most common gear employed in river fishing in the Niger Delta. This is because they are used by artisanal fishers in fresh, brackish and coastal waters in Nigeria to catch different sizes and species of fish. Other reasons for the use of gill net could be related to its easy operation, effectiveness in harvesting of fish and relatively cheap in terms of cost because they are locally manufactured (Alagoa et al. 2018). As reported by Dienne and Olopade (2017) Gill net is suitable for small-scale fishing in different water bodies. They unintentionally harvest fish continuously if not hauled irrespective of age of the fish with a low by-catch rate.

Gears used by Fishers depended on the water type, operational area, water depth and availability of target fish. Table 1 shows Fishers response to preference for a particular fishing gear. Fishers prefer the gill net because the catch is good. This finding corroborates that of Ngodigha et al (2023) who reported that Gill net caught more fish species than other gears in their study of Raining Season Ecological Survey of Artisanal Fish Landings in Tungbo, Bayelsa State, Niger Delta. Large quantity of fish landings reported by respondents from the Gill net

(Table 1) could be due to the wide area covered by the net and downstream flow of floodwater having different species of fish. Hence, artisanal Fishers preference for gill net to Trap and Hook and Line. Other reasons for the high catch could be that freshwater flows are often positively correlated with fish catch and abundance as reported by Boucek and Rehage (2013) and recruitment success (Nodo et al. 2018). These findings support the large quantities of fish landings during the flood period.

The high fish landings reported by Fishers could be attributed to the heavy flood, which started from the first week in October and ended in November. This period happens to be the recruitment (Amiye and Sikoki 2004) and spawning period of fishes (Abowei et al, 2008). Recruitment is young fish moving from nursery grounds to exploited fishing area and becomes vulnerable to fishing. It can also occur as a result in change in habitat such as the Yenagoa heavy floodwaters. Fish usually migrate upstream to the creeks to spawn. The heavy water movement downstream brings out the fishes from their different spawning grounds in the creek and expose them to fishing gears set for fish harvesting where they were caught. The result from the study reported the Cichlids as the most landed fish. The assertion is in consonance with that of Ngodigha et al (2023) in Tungbo River where Cichlids were recorded as the most landed.

## **CONCLUSIONS AND RECOMMENDATIONS**

The 2022 flood brought fishes close to living environments of the people of Yenagoa city. Inhabitants seeing the fishes around their environment became excited and so got involved in indiscriminate fishing activities regardless of the implication on the fish stock. It is important that during heavy flood periods such as that of 2022 in Yenagoa, inhabitants should be educated on the implication of unselective fishing activities as it affects spawning activities and recruitment of fishes. Uncontrolled fishing activities can eventually leads to depletion of fish stock that can have a negative effect on the livelihood on the core Fishers.

## **FURTHER STUDY**

This research still has limitations, it is necessary to carry out further research related to the topic "Common Fishing Practices in Yenagoa Floodwaters " to improve and modify this research

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