
Effectiveness of Different Fishing Gears in Catching *Crocodylus Cataphractus* in Agulu Lake

By

R. C. AKPANITEAKU, Ph.D.

*Biological Science Department
Paul University
P.M.B. 6074, Awka
Anambra State*

Abstract

*Fishing gear selection of African crocodile (*Crocodylus cataphractus*) from Agulu Lake was studied for a period of six months. Fishing efforts included active and passive, and the gears were operated from unmotorized dugout canoe. They were bamboo trap, cast net, long line with hooks, rod and line, set gill net and single-hook set line. The population of crocodile (72.1%) encountered by set gill net was significantly higher than in other fishing gears. Bamboo trap and long line with hooks had the least encounter (2.3%). More crocodiles were caught by passive gears (76.7%) than the active ones (23.3%). The inability of active gears to catch more of the reptile indicate that the baits (fish) were easily snatched. However, fishing gears for exploiting inland lakes that are infested with the reptile have been revealed. Size of fishing gears was not considered in the present research and this could be the basis for further investigation.*

Agulu lake is located 11.5km south west of Awka, capital of Anambra State of Nigeria. The lake lies on longitude 6.7' north and latitude 7.2' east. Many *Crocodylus cataphractus* have been observed in the lake (Akpaniteaku, 1995; Nwuba, 2000; Akpaniteaku and Aguigwo, 2003 and Akpaniteaku and Nwuba 2008). Abundance of fish fauna in the lake has been studied (Nwuba, 2000). Akpaniteaku and Aguigwo (2003) also studied the distribution and abundance of various fish species in the water. According to Chaudhary (1983), proper and modern fishing gears such as gillnets, cast nets drag nets and hook and lines should be used by fishermen for smooth and efficient fishing operations. The assessment of catch and ability of fishing gears to catch various fish species in the lake were carried out by Akpaniteaku and Nwuba (2008).

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The lake is recognized in the state as a sanctuary for *Crocodylus cataphractus*. The need to develop the lake in order to improve fishing activities has been reported (Akpaniteaku and Nwuba, 2008). However, there is urgent need to investigate the potentials of fishing gears, and also monitor the effect of crocodiles on the fishing operations. This study therefore aims at determining the occurrence and encounter of the animal, with various fishing gears that are operated in the lake.

Materials and Methods

Sampling units during the research used six fishing gears: Bamboo trap, cast net, long line with hooks, rod and line, set gill net and single-hook set line. They comprised three active and three passive gears. The passive gears were set over night, while the active ones were operated in the day. Small tilapiine fish were used in baiting the set hooks. The other gears were freely used according to their methods of operation. Observation of specimens caught by passive gears was made during the operation. Samples for analyses were collected for the period of six months. The specimens were only observed, counted and thrown back into the water according to Akpaniteaku and Nwuba (2008).

Data generated during the sampling were arranged according to the type of gears used. They were grouped later according to the operation of the gears and subjected to chi-square analysis at 5% significant limit.

Results and Discussion

Small crocodiles were mainly found on the gears. The big and stronger ones either tore and or made away with the gears. Set gill nets encountered the highest number of the reptiles -72.1% of the total catch (Fig. 1). This was followed by cast net -9.4%. Bamboo trap and long line with hooks had the least encounter -2.3%. The traditional belief system and fishing activities of the people (Nri and Agulu) living around the lake, played significant socio-economic roles on the management and exploitation of the aquatic resources (Akpaniteaku and Nwuba, 2008). This is almost in agreement with observation of Ahmed (1997) in Bangladesh, where inland open water fishery resources have played significant roles in the economy, culture, tradition and food habits of the people.

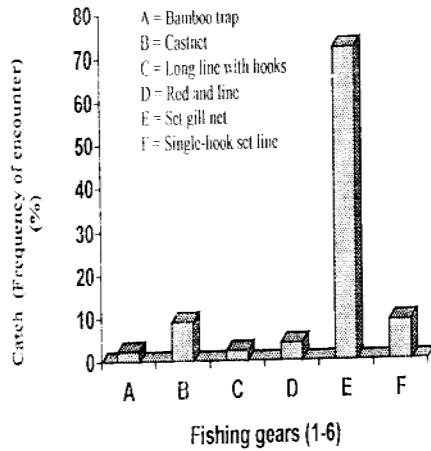
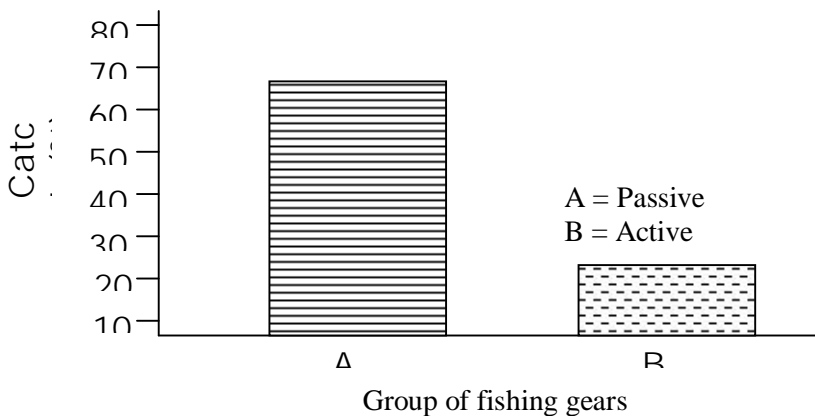


Fig. 1: Frequency of crocodile encounter by various fishing gears at Agulu lake.

Fishing activities and local – food processing spots around Agulu lake seem to influence abundance and distribution of the reptiles.

Selectivity of active and passive gears is presented in fig. 2. Passive gears caught more of the organism (76.7%) than the active ones (23.3%). Highest fish catch recorded with set gill net at certain period of the year Akpaniteaku and Aguigwo, 2003) corresponded with effectiveness of the passive gears in the present research. Fishing periods are different in different years as observed by Chaudhary (1983) in Bakolori reservoir. It is therefore difficult to compare catch per unit effort of a particular month to the corresponding month of the following year in the present research.



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Fig 2. Selectivity of Active and Passive Fishing Gears at Agulu Lake

The lower percentage catch of crocodile by other gears than the set gill net in the present research (Fig. 1) is in agreement with the catch of various fish species by other gears than the set gill net (Akpaniteaku and Nwuba, 2008). This might indicate however, that the baitfish could be easily snatched from those gears. In line with the description of fishing methods, types of gear encountered and their impacts on fishery resources by Kibria and Ahmed (2005), the type of gear to be used in exploiting fishery resources of water bodies that are infested with crocodiles, has probably been revealed in the present research. Kibria and Ahmed (2005) reported that fish of both small and large size were vulnerable to certain gears, but catch depended mostly on the mesh size. Unfortunately, in the present work, due to the diverse nature of gears, size was not considered and could be investigated in subsequent research.

Passive gears encountered more crocodile during the sampling, probably due to the entangling effect of the set gill nets. The gear might not be a better tool, as the bigger ones could easily destroy the netting.

Conclusion

Using the appropriate gears could facilitate fishing activities in the lake. Prospective fishermen around the lake and similar water bodies in the country are now better equipped for sustainable exploitation of the reptilia resources. Inland water resources managers are therefore expected to utilize various conservation potentials that have been exposed to ensure sustainable capture operations in such aquatic ecosystem, with diverse fauna as the Agulu Lake.

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