

ASSESSMENT OF INCIDENTAL CATCH OF CETACEAN AND FISHING METHODS IN THREE COASTAL STATES IN NIGERIA

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ABSTRACT

A multistage sampling technique was employed for the study of cetacean from January to June 2016. The first stage used stratified random sampling to select major fishing communities. The survey was done in 3 coastal states namely; Lagos, Ondo, and Akwa Ibom. 19 communities were selected based on the target species of interest for the study. The second stage involved purposive 5 fishing communities based on information from interviewed fishermen. A total of 159 fishers were interviewed; Lagos state had the highest number of fishers while Akwa Ibom state had the least. Ondo state had the highest number of fishers with 47.8% while Akwa Ibom state had the least fishers of 10.3%. A total of 7650 active canoes were observed with plank canoe representing 95.8%, Ghana boat having 3.6%, and fiberglass having 0.5%. Their target species are sharks. The incidental catch was mainly dolphins with the gill net having the highest catch, 50%, using pelagic fishing methods, followed by the purse seine 30% while the tow net had the least incidental catch of dolphin by 20%. This survey provides information that may highlight the dangers of their fishing methods that could cause the mortality of some cetacean species.

Keywords: Incidental catches, Coastal State, gillnet, and cetacean

INTRODUCTION

Fish represent the most important dietary source of animal protein available, in terms of the number of people that depend on it in Nigeria (Oladimeji, 2017). The total fish demand for Nigeria based on the 2014 population estimate of 180 m is 3.32 m tonnes. In 2005, Nigeria imported 700.000 tonnes of fish and fisheries products for US\$ 400 million (Raji, 2006). Ten years later imports had risen to 1,900,000 tonnes reflecting both population growth and increasing demand for fish (Olaoye & Gbenga Ojebiyi, 2018). The policy thrust of the Federal Government is aimed at ensuring sustainable development of Nigerian fisheries for national food security through optimum resource utilization and conservation. Studies conducted show that large numbers of small cetaceans are affected by bycatch (Young and Iudicello, 2007). There is particularly a growing concern over the effects of such incidental captures on the conservation status of long-lived marine megafaunas such as marine mammals (Reeves *et al.*, 2003; Van waerebeek *et al.*, 2004), birds (Zydelis *et al.*, 2009), turtles (Eayrs, 2005) and sharks. Artisanal fishing in developing countries has a negative impact on cetaceans (Alfaro-Shigueto *et al.*, 2008; Peckham *et al.* 2007). More than 90-95% of cetaceans are negatively impacted by the artisanal fisheries globally (FAO, 2012). For bycatch to occur, fishing activity most times are going on, thousands of different modern fishing gears are set in the world ocean each day, hardly seen by the species, and extremely strong and efficient in catching target and non-target species like dolphin, sea birds, sea turtle including juveniles that will later

lead to death (<https://www.worldwildlife.org/threats/bycatch>). Cetacean bycatch is characterized globally by a deficiency of data on fisheries effort, abundance estimates, and bycatch mortality, and it is often not possible to assess the impact of bycatch-related mortality on cetacean populations. However, wherever studies are conducted, large numbers of small cetaceans are found to be affected by bycatch (Young and Iudicello, 2007).

MATERIALS AND METHODS

Study Area

The survey was done in three out of the 8 coastal states namely; Lagos, Ondo, and Akwa Ibom (Figure 1) with Landing points coordinates respectively, N 06° 20' 52" E 03° 30' 13" Ondo N 06° 05' 04" E 04° 44' 42" and. N 04° 32' 26" E 07° 59' 52".

Data Collection

A total of 19 communities were selected based on the access to the fishing ground, the intensity of fishing activities, target species of interest for the study (cetacean), and the presence of migrant fishermen. The second stage involved purposive sampling which involved 5 more fishing communities based on information obtained from interviewed on the catch interaction with cetacean; making a total of 24 fishing communities. The fishing methods were noted by identifying their fishing net, fishing vessel, and by interaction with the fishers to know their target catches.

Statistical Analysis

Descriptive statistics was done based on the information obtained from the questionnaires,

these were used to represent the percentage the number of fishers and active canoes in the three coastal states using a pie chart and bar chart



Figure 1: Map of the study areas.

RESULTS

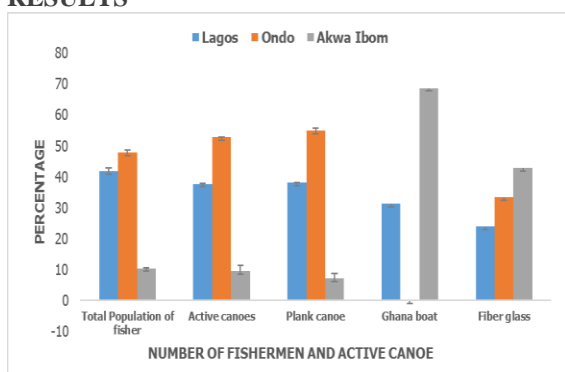


Figure 2: Number of fishers and active canoes in the study areas.

From Figure 2 Ondo state has the highest of fishers (47.8%) followed by Lagos state (41.8%) while Akwa Ibom has the least (10.3%). The total number of active canoes observed was 9638. The proportion of plank canoes was 95.8%, that of Ghana boats was 3.6% %, and Fiberglass 0.5%. Fiberglass is predominantly used in Ondo and Akwa Ibom states.

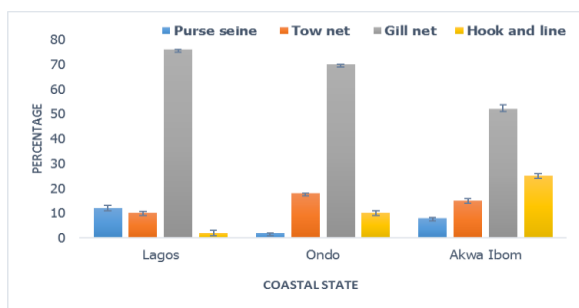


Figure 3: Percentage of different gears used by fishermen

The total estimated active gears were 19,176, gillnets were the most commonly used gears in the 3 coastal states, having about 78%, followed by tow net 12%, purse seine 5.5% and least was 4.5% hook and line.

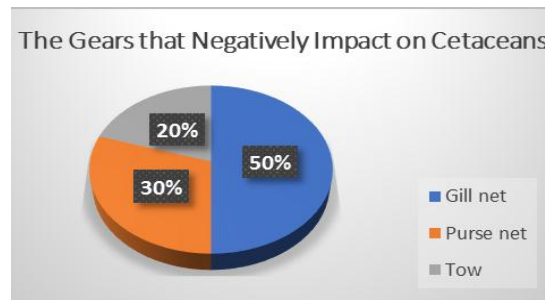


Figure 4: Showing the gears that negatively impact on cetacean

Different gears that caught cetacean, the gill net had the highest incidental catch at 50%, followed by the purse seine; 30% while the tow net had the least incidental catch of cetaceans at 20% (Figure 4)

DISCUSSION

About 90-95% of small-scale fishing globally have significant negative impacts on cetaceans, (FAO 2012, Peckham *et al.*, 2007). The fishing methods observed in this study like gilling, pursing, towing they all constitute threats to cetacean species, each gear has a different level of impact on this species. From this study, gillnet has more negative impacts on cetacean compared to purse seine and tow gears. It was also observed from the three coastal states, the fishers do not understand the importance of this species in our waters.

CONCLUSION

This study shows that the gill net has about 50% incidental catch, it has more negative impact compared to purse seine 30% and tow nets 20%. This study also provides information that may highlight the dangers inherent in fishing methods that could eventually lead to the mortality of some cetacean species. Further studies will however be required to assist in the conservation of this cetacean species

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<https://www.worldwildlife.org/threats/bycatch>

Table 1: Showing the number of fishers and active canoes in the 3 coastal states

State	Total Population of fisher	Active canoes	Plank canoe	Ghana boat	Fiberglass
Lagos	10,500 (41.8%)	3010 (37.7)	2,909(38.1)	91(31.3)	10 (23.8)
Ondo	12,000(47.8%)	4,214 (52.8)	4,200(54.9)	0(0.0)	14 (33.3)
Akwa Ibom	2600(10.3%)	759 (9.5)	541 (7.1)	200 (68.7)	18 (42.9)
Total	25100	7983	7650	291	42

Table 2: Number of Different Gears Used By 3 Different Communities

State	Purse seine	Tow net	Gillnet	Hook and line
Lagos	12	10	76	2
Ondo	2	18	70	10
Akwa Ibom	8	15	52	25
TOTAL	22	43	198	37

Table 3: Number of Cetacea Caught by Different Gears Annually

	Purse seine	Tow net	Gillnet	Hook and line
Cetacean	180	120	300	0