

SIZE FREQUENCY DISTRIBUTION OF BILLFISH CAUGHT BY KENYAN LONGLINERS IN THE KENYAN EEZ.**Collins K. Ndoro¹, Stephen W. Ndegwa²**¹ Kenya Fisheries Service, P.O Box 90423-80100, Mombasa Kenya.² Kenya Fisheries Service, P.O Box 48511- 00100 Nairobi, Kenya**Abstract**

Scientific Fisheries observers' data on billfish catches from Kenyan Longliners caught in the Kenyan EEZ from April to October, 2018 was analyzed for their size frequency distribution. The catch composed of five billfish species which included *Xiphias gladius* (Swordfish), *Istiophorus platypterus* (Indo-Pacific sailfish) *Tetrapturus audax* (Striped marlin), *Makaira nigricans* (Blue Marlin) and *Makaira indica*, with a sample size of 3608, 37, 16, 4 and 3 individuals respectively giving a total of 3668 individuals. The Total length (TL) was measured for *Istiophorus platypterus* (Sailfish) while Lower Jaw Fork Length (LJFL) was measured for *Xiphias gladius* (Swordfish) *Tetrapturus audax* (striped marlin), *Makaira indica* (Black marlin) and *Makaira nigricans* (Blue marlin). Ten (10) cm length class intervals were used to group the length measurements for the five species. For the species *X.gladius*, the lengths ranged between 80 and 260 cm and the modal class was 130-139 cm class interval. For *Istiophorus platypterus* (Sail fish) the largest frequency was for the class 210-219 cm class interval. The species *Tetrapturus audax* (Striped marlin) lengths ranged from between 150 and 203 cm with 190-199 cm being the modal class. *Makaira nigricans* (Blue marlin) recorded only four individuals measuring 140, 194, 200 and 240 cm while *Makaira indica* (Black marlin) had three individuals which measured 193, 203 and 208 cm. *Istiophorus platypterus* recorded lowest total length (TL) of 115 cm and highest total length (TL) of 298 cm while *Xiphias gladius* recorded the lowest, Lower Jaw Fork length (LJFL) length of 80 cm and highest length of 260 cm.

1.0 INTRODUCTION

Billfish data was recorded from two Kenyan flagged longliners namely FV Shangy Jyi and FV Seamar II which fished in the Kenyan EEZ for the period between April and October 2018. The data was collected by Fisheries observer onboard the vessels. These vessels normally target Tuna and Tuna like fish species, however billfish is a major commercial component of the bycatch. This paper provides information on the length frequency distribution of the Billfish species recorded by the scientific Fisheries observers.

2.0 MATERIAL AND METHODS

Scientific Fisheries Observers were deployed aboard two Kenyan flagged longliners; FV Shangy Jyi and FV Seamar II for a period of between thirty (30) to sixty (60) days. The vessels fished within the Kenyan EEZ (Figure 1) for the period between April and October, 2018. The observers recorded billfish species data using forms developed by the South West Indian Ocean Fisheries Project (SWIOFP). The Total length (TL) was measured for *Istiophorus platypterus* (Sailfish) while Lower Jaw Total Length (LJFL) was measured for *Xiphias gladius* (Swordfish) *Tetrapturus audax* (striped marlin), *Makaira indica* (Black marlin) and *Makaira nigricans* (Blue marlin). Other parameters such as weight was also collected alongside the lengths measurements and thereafter transferred to computers in excel sheets. Microsoft office Excel was used to analyze the data.

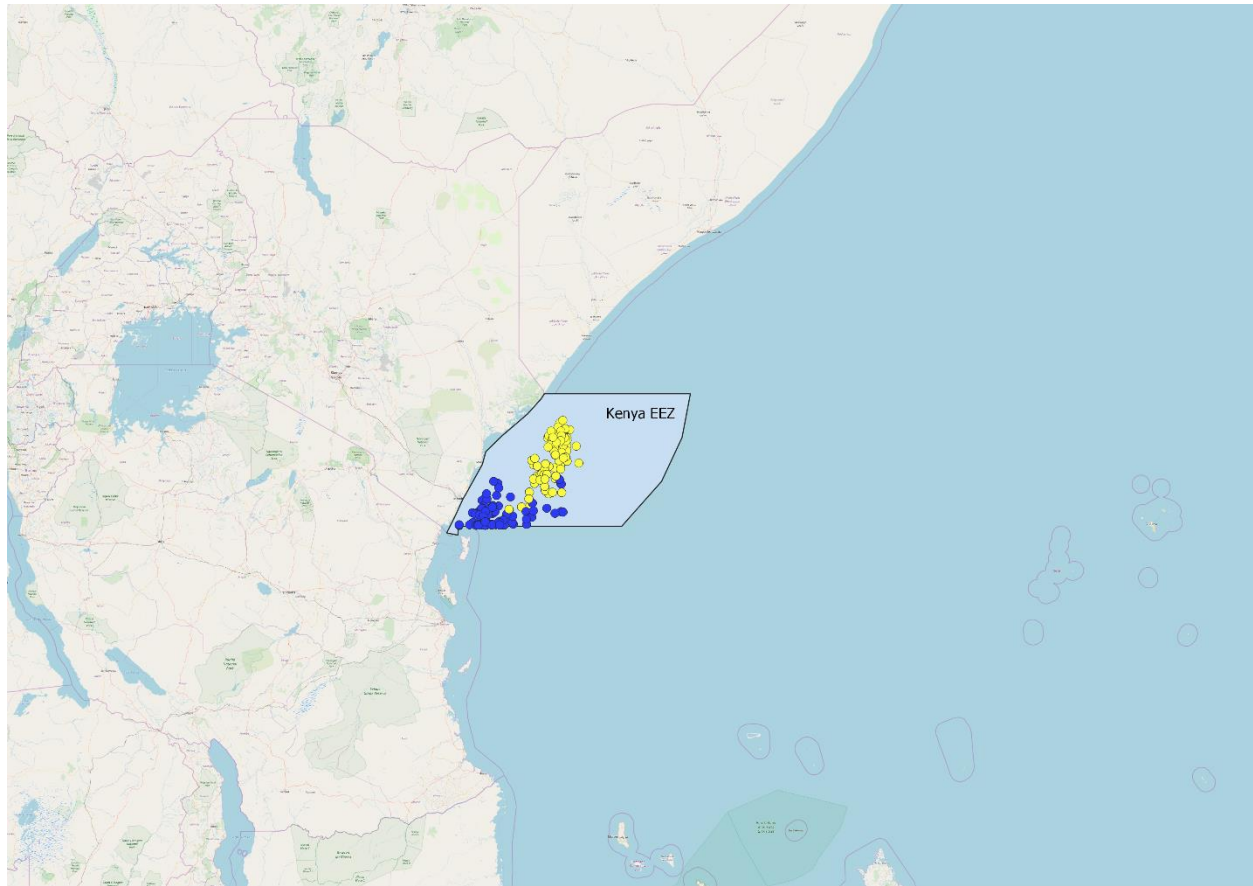


Figure 1. A map showing the fishing points in the Kenya EEZ covered by FV Shangy Jyi and FV Seamar II in 2018.

3.0 RESULTS

3.1 Species composition

A total of 3608 individuals caught during the study period were sampled for their lengths. The catch consisted of five billfish species which included *Xiphias gladius* (Swordfish), *Istiophorus platypterus* (Indo-Pacific sailfish) *Tetrapturus audax* (Striped marlin), *Makaira nigricans* (Blue Marlin) and *Makaira indica*. The species *X.gladius*, recorded 3608 individuals representing 98.4 % of the total number of individuals sampled while *Istiophorus platypterus* (Sail fish) recorded 37 individuals representing 1 % of the individuals sampled. The species *Tetrapturus audax* (Striped marlin) recorded 16 individuals (0.4 %) while *Makaira nigricans* (Blue marlin) and *Makaira indica* (Black marlin) had 4 (0.1%) and 3 (0.1%) respectively.

3.2 Size distribution

The species *X. gladius*, minimum and maximum lengths ranged between 80 and 260 cm and the modal class was 130-139 cm class interval (Figure 2). The range for *Istiophorus platypterus* (Sail fish) was between 115 and 298 cm and the largest frequency was for the class 210-219 cm class interval (Figure 3). The species *Tetrapturus audax* (Striped marlin) lengths ranged from between 150 and 203 cm with 190-199 cm being the modal class (Figure 4). *Makaira nigricans* (Blue marlin) had only four individuals measuring 140, 194, 200 and 240 cm while *Makaira indica* (Black marlin) had three individuals which measured 193, 203 and 208 cm. *Istiophorus platypterus* recorded lowest total length (TL) of 115 cm and highest total length (TL) of 298 cm while *Xiphias gladius* recorded the lowest Lower Jaw Fork length (LJFL) length of 80 cm and a highest LJFL of 260 cm.

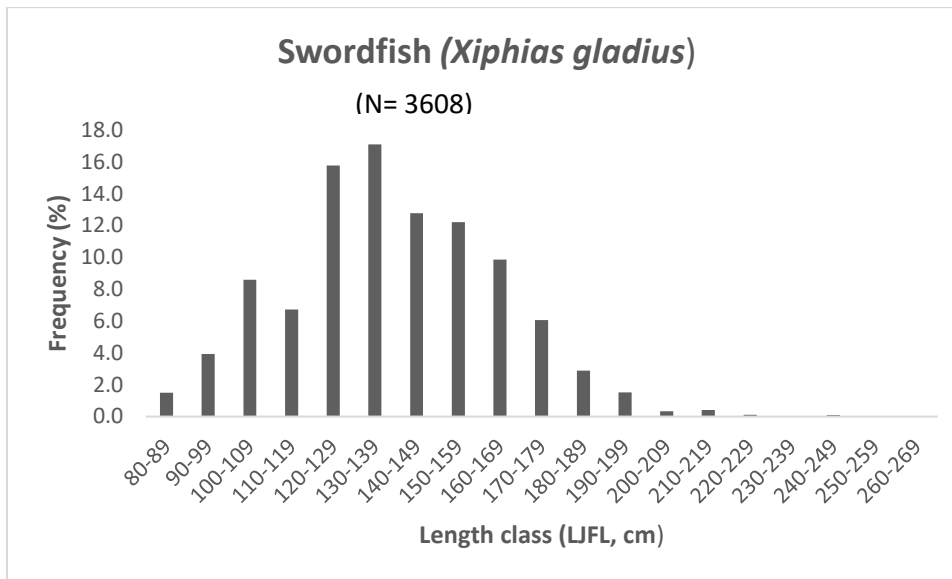


Figure 2. Lower jaw fork length (LJFL) frequency distributions by 10 cm length intervals for Swordfish caught by the Kenyan Longliners in Kenyan EEZ.

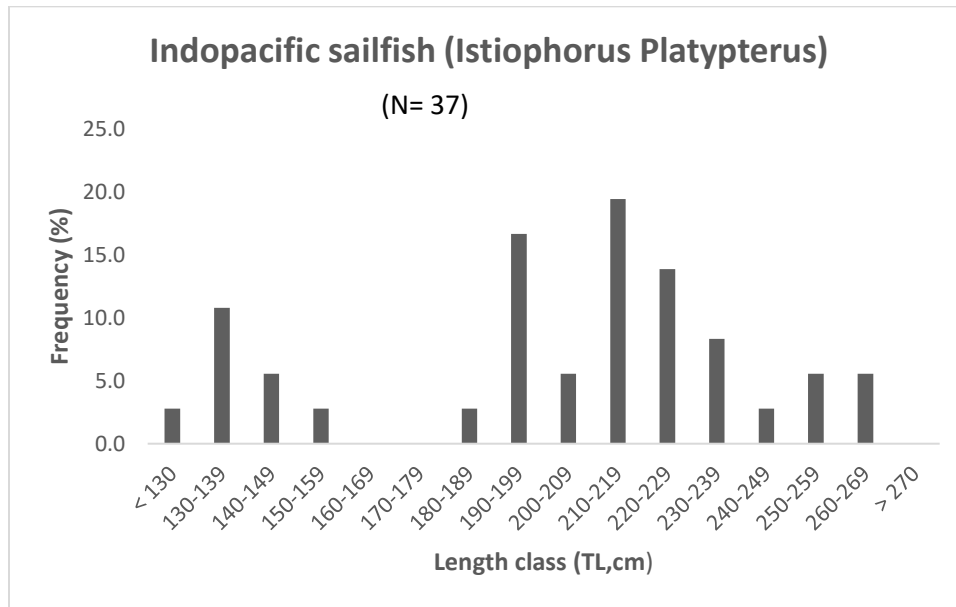


Figure 3. Total Length (TL) frequency distributions by 10 cm length intervals for Indopacific sailfish caught by the Kenyan Long liners in Kenyan EEZ.

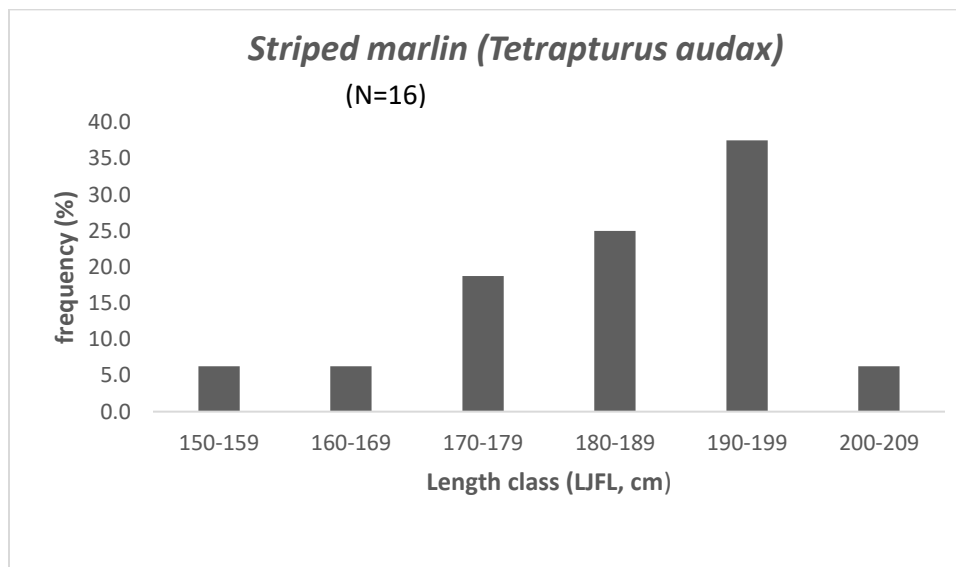


Figure 4. Length (lower jaw fork length) frequency distributions by 10 cm intervals for Striped marlin caught by the Kenyan Long liners in Kenyan EEZ.

4.0 DISCUSSIONS/CONCLUSION

Based on the analyzed fisheries observers data, the study shows dominance by swordfish (*Xiphias gladius*) in the Kenyan EEZ at 98.4 % of all individuals sampled with very few individuals of blue and black marlin caught by the vessels. The Lower Jaw forklength (LJFL) for *Xiphias gladius* (Swordfish) *Makaira nigricans* (Blue marlin) and *Makaira indica* (Black marlin) generally ranged from 80 to 260 cm while the Total length (TL) for *Istiophorus platypterus* (Indopacific sailfish) generally ranges from 115 cm to 298 cm.

5.0 ACKNOWLEDGEMENTS

We sincerely thank the operators of FV Shangy Jyi and FV Seamar II for their cooperation accorded to the Fisheries observers while onboard and also thank the observers who were deployed to carry out data collection aboard the vessels for the entire study period.