

CATCH RATE AND SIZE FREQUENCY OF THE SHORTFIN MAKO (*ISURUS OXYRINCHUS*) CAUGHT AS BY-CATCH BY THE SWORDFISH LONGLINE FISHERY SOUTH OF THE MOROCCAN ATLANTIC COAST

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SUMMARY

Shortfin mako is a species caught mainly as by-catch by surface longliners targeting swordfish in the south of the Moroccan Atlantic coast. A series of catch and fishing effort were analyzed in order to derive the exploitation indicators for this species. The catch rates of this species remained relatively stable during the period 2010-2016. The catches are dominated by sizes ranging between 100 and 200 cm.

RÉSUMÉ

Le requin-taube bleu est une espèce capturée principalement en tant que prise accessoire par les palangriers de surface ciblant l'espadon au Sud de la côte atlantique marocaine. Une série de prise et d'effort de pêche a été analysée afin de calculer les indicateurs d'exploitation de cette espèce. Les taux de capture de cette espèce sont demeurés relativement stables entre 2010 et 2016. Les tailles oscillant entre 100 et 200 cm sont prédominantes dans les prises.

RESUMEN

El marrajo dientuso es una especie capturada principalmente como captura fortuita por parte de los palangreros de superficie que se dirigen al pez espada en el sur de la costa atlántica marroquí. Se analizó una serie de captura y esfuerzo pesquero con el fin de obtener los indicadores de explotación de esta especie. Las tasas de captura de esta especie permanecieron relativamente estables durante el periodo 2010-2016. En las capturas predominan las tallas entre 100 y 200 cm.

KEYWORDS

Size distribution, CPUE, Mean length, Mean weight, Longliners, Shortfin mako

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1. Introduction

Morocco occupies a particular geographical position. It has a double maritime façade: the Atlantic Ocean and the Mediterranean Sea, its coastline extends about 3,500km. The presence of the upwelling phenomenon offers the country a real potential for the production of fishery resources.

In Morocco, the shortfin mako is mainly caught as bycatch by swordfish longline fleet operating south of the Atlantic coast. The vessels have an average overall length of 24 m and an average GRT of 110 tx. These units use exclusively a surface longline as a fishing gear (LL-SWO) and primarily target swordfish.

With their efficient refrigeration system, these longliners are capable of carrying out trips up to 15 days with an average of 10 days. For one fishing day, a single fishing operation is carried out by deploying about 1,000 hooks.

The objective of this paper is to analyze the CPUE and the size structure of catches of the shortfin mako during the last years.

2. Catch per unit effort (CPUE)

The annual CPUE remained relatively stable trend between 2010 and 2016 (**Figure 1**).

The monthly evolution of the CPUE shows that the maximum is recorded between July and November (**Figure 2**).

3. Biological indicators

3.1. Size frequency distribution

In 2015, the sizes distribution of the shortfin mako was uni-modal at 190 cm. Generally, the sizes range between 60 and 290 cm with a dominance of sizes between 135 and 200 cm, which represents about 90% of catch in number.

In 2016, a decrease in the mean sizes of catches was observed. Indeed, the main mode was at 125 cm (190 cm in 2015) and the dominant sizes are between 100 and 180 cm (**Figure 3**).

The large individuals are observed during the months of December, January, February and March (**Figure 4**).

3.2. Mean size and mean weight:

The large mean size of the shortfin mako was observed between December and March, with a maximum of 202 cm in December 2015. The mean weight follows the same trend as the mean size (**Figure 5 and 6**).

References

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- Francis, M. P. and Duffy, C., 2005. Length at maturity in three pelagic sharks (*Lamna nasus*, *Isurus oxyrinchus* and *Prionace glauca*) from New Zealand. *Fishery Bulletin* 103, 489–500.

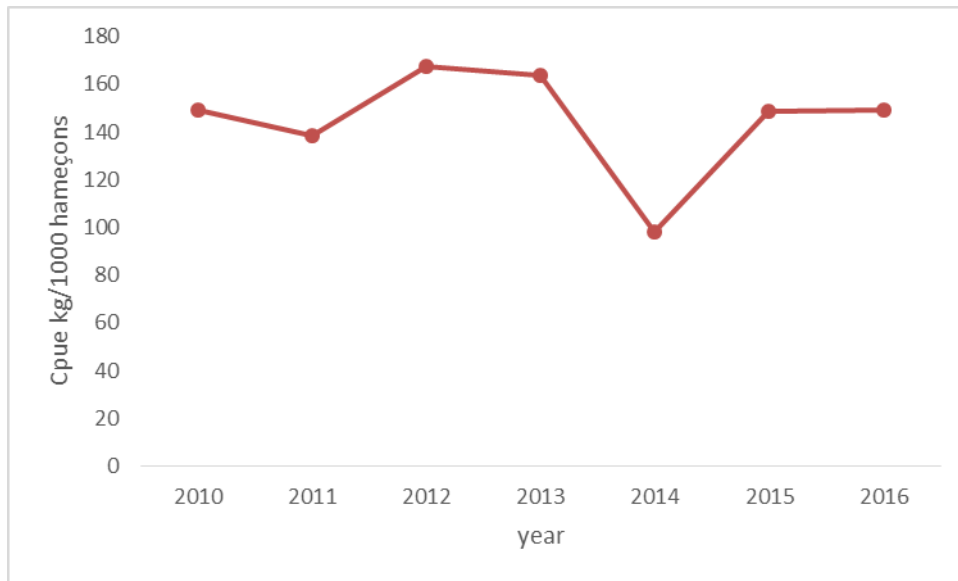


Figure 1. Annual evolution of CPUE (kg/1000 hooks) during 2010-2016 period.

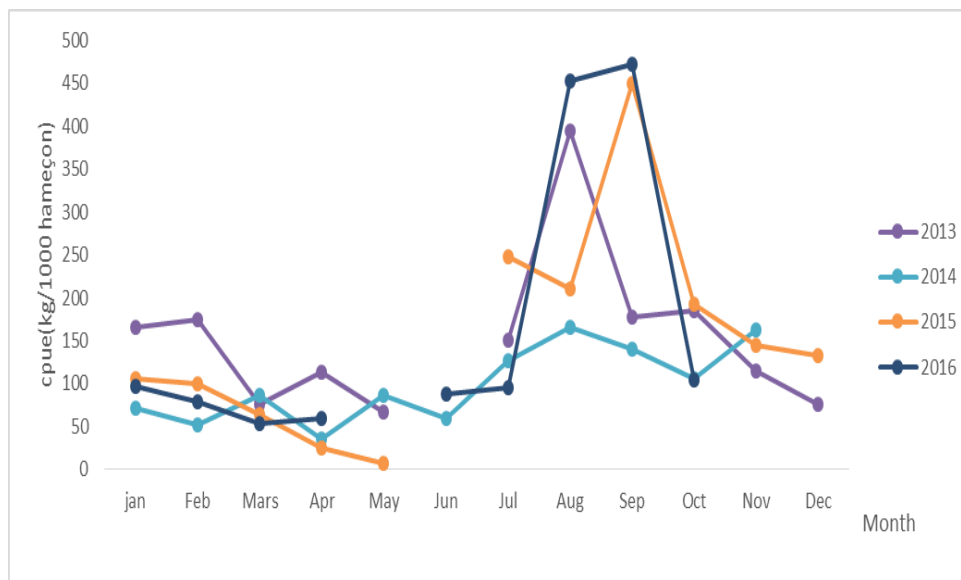


Figure 2. Monthly evolution of CPUE (kg/1000 hooks) during 2013-2016 period.

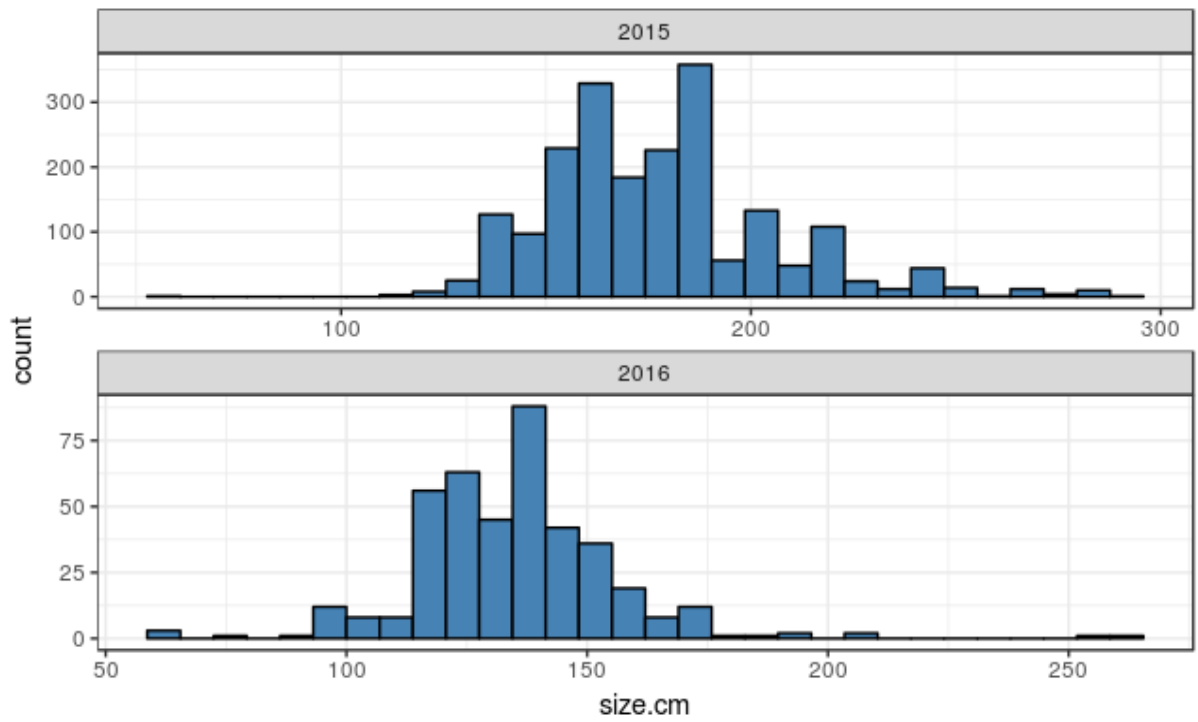


Figure 3. Annual distribution of the size frequencies of the shortfin mako caught by Moroccan swordfish LL fleet in 2015 and 2016.

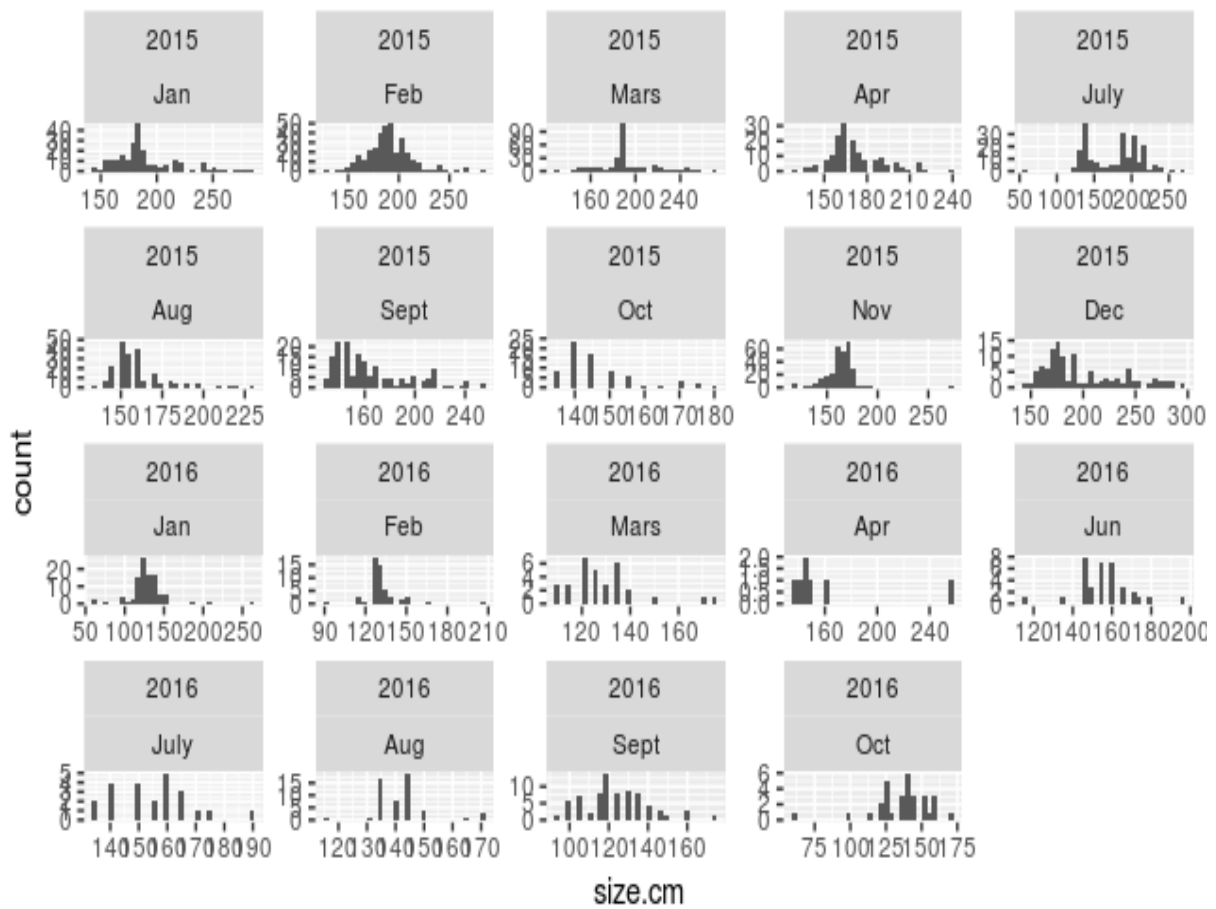


Figure 4. Monthly distribution of the size frequencies of the shortfin mako exploited in southern Morocco in 2015 and 2016.

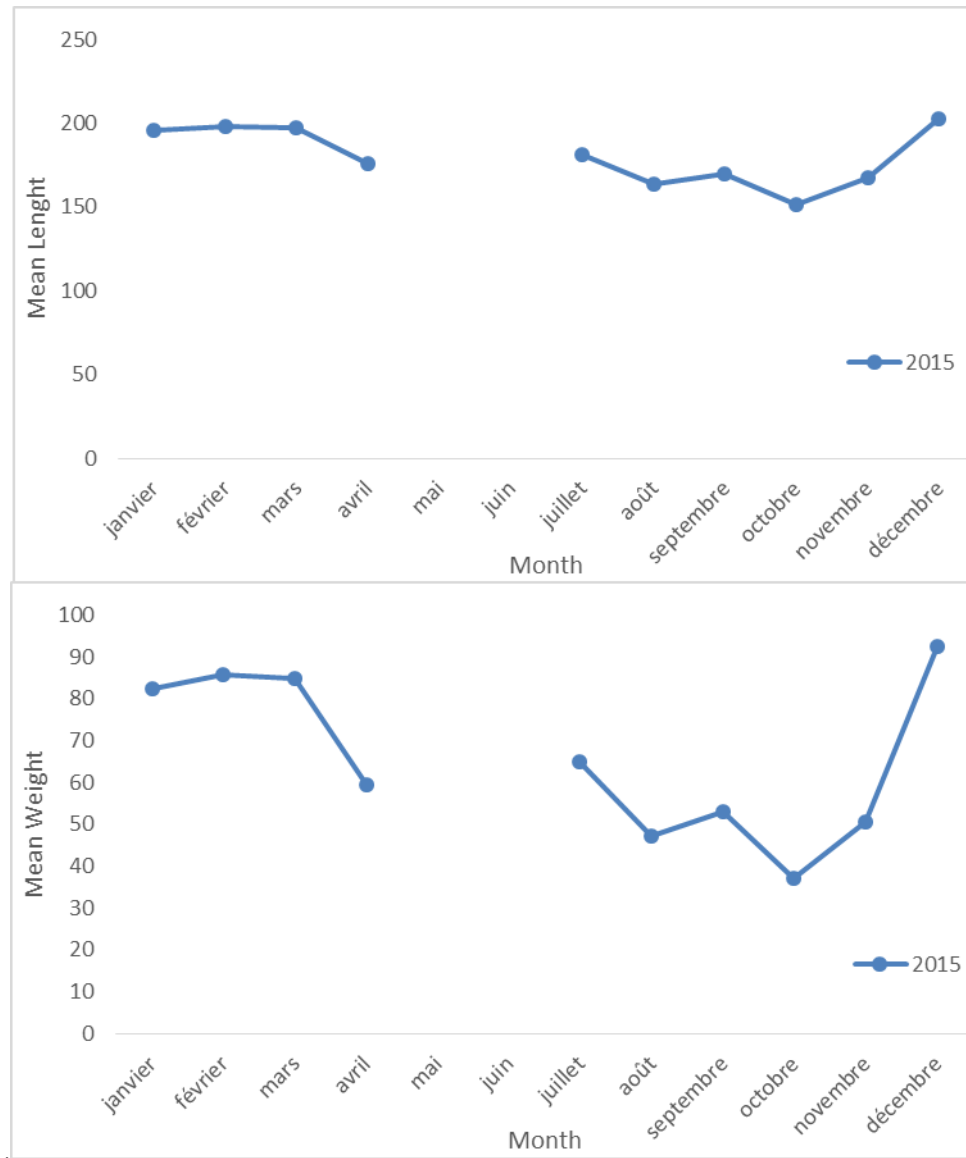


Figure 5. The Monthly evolution of the mean size and weight of the shortfin mako in 2015.