

A REVIEW OF LENGTH DATA FOR ATLANTIC SWORDFISH CAUGHT BY THE JAPANESE LONGLINERS

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SUMMARY

Information on length measurement data for swordfish caught by Japanese longliners was reviewed. The overall coverage of length data is about 5% in recent years. The coverage rate is relatively higher in the north Atlantic than in the south. Mean eye-fork length decreased gradually in the major fishing grounds.

RESUME

L'information sur la taille des espadons capturés par les palangriers japonais a été révisée. La couverture globale des données de taille est d'environ 5% au cours des dernières années. La proportion de couverture est relativement plus élevée dans l'Atlantique Nord que dans l'Atlantique Sud. La longueur orbitaire a diminué progressivement dans les principales zones de pêche.

RESUMEN

Se revisó la información sobre datos de medición de talla de pez espada capturado por los palangreros japoneses. La cobertura global de los datos de talla es del 5% en los últimos años. La proporción de la cobertura es relativamente mayor en el Atlántico norte que en el sur. La talla media del ojo a la horquilla decreció gradualmente en los principales caladeros.

Introduction

The length (eye-fork length) data of swordfish is one of the essential database for the stock assessment in addition to the catch and effort data. Most of the measurements of length are carried out taking fraction of the total catch by the fishermen on the deck. The coverage of measurement is variable among the species, years, and areas. In this document the historical change on the coverage of length data for swordfish is reviewed and the availability of length data is discussed along with other relevant information.

Materials

Lengths of first 30 tunas are measured by fishermen on the deck at every operation, irrespective of species. These data are submitted to National Research Institute of Far Seas Fisheries. The data for swordfish are compiled and aggregated by species, year, month, 5' x 10' block, and 5 cm interval. The data have been compiled in the magnetic disk since 1975, though there are some data which are not yet compiled for older years. Based on this database, the Task II size data are re-compiled using the time-area strata recommended by ICCAT.

Task II catch and effort data have been constructed based on the logbook report. The coverage of logbook report has been more than 90% and Task II data are raised to 100%. Total swordfish catch in number by year and area are calculated by the Task II database.

Results

1. Coverage ratio of swordfish length data.

Fig. 1 shows historical changes on the number of fish measured, total swordfish catch in number,

and coverage ratio in the total Atlantic. The number of fish measured ranged from about 1,000 to 7,000 individuals per year and the coverage ranged from 3 to 16%. The coverage was higher than 10% in the late 1970s, but decreased rapidly to around 6% in the early 1980s. Then the coverage ratio has fluctuated at around 5%. In the recent two years, the coverage ratio decreased to around 3%.

The catch at size data are usually constructed by ICCAT sampling area. The Japanese swordfish catch is concentrated in south-eastern Atlantic (Area 6) and some catch is from north-western Atlantic (Areas 1 and 2) shown in Fig. 2. The differences in the coverage ratio among the Areas are shown in Fig. 3. The coverage ratio has highly fluctuated in these areas except for Area 6, from which the major catch of swordfish is made. In the north Atlantic (Areas 1-3), the main fishing area for swordfish is areas 2 and 3. In these Areas the high coverage ratios were observed in the mid 1980s, but decreased in the 1990s, especially in Area 3. In the south Atlantic, the coverage ratio has been stable at around 5% since 1980 in Area 6 where is the major fishing ground for swordfish. In Area 5 the coverage ratio is relatively lower than that in Area 6. In general, the coverage ratio in the north Atlantic is relatively higher than that in the south.

2. Historical change of mean length.

Mean length (eye-folk length in cm) is calculated by area and year. These mean lengths were calculated from catch at size which was not substituted from another stratum. Fig. 4 shows historical change of mean length by areas. In Area 2 gradual decrease of mean length is observed through the years analyzed. In Area 3 decrease trend was also observed in the late 1970s and became stable in the later years. In Area 6 a continuous decrease trend was observed. In all of the Areas where the length data obtained in 1993, the mean length increased from 1992 to 1993.

Catch at size has been created on the basis of these length data. Fig. 4 shows that there are many strata where the length data are lacking, except for the main fishing grounds (Areas 2 and 6).

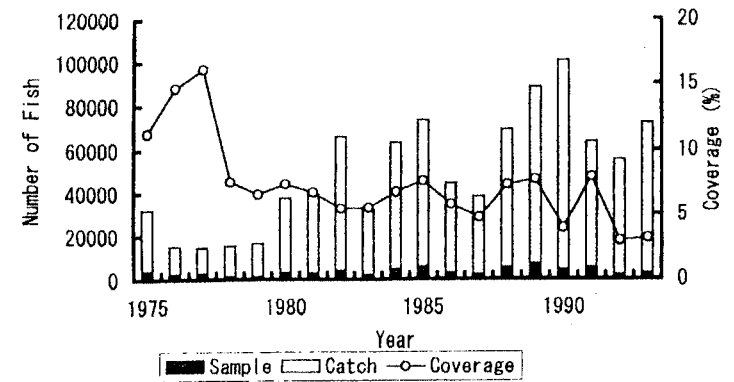


Fig. 1 Historical trend of the Japanese swordfish catch in number, sample of length measurement, and coverage ratio of length data in the total Atlantic.

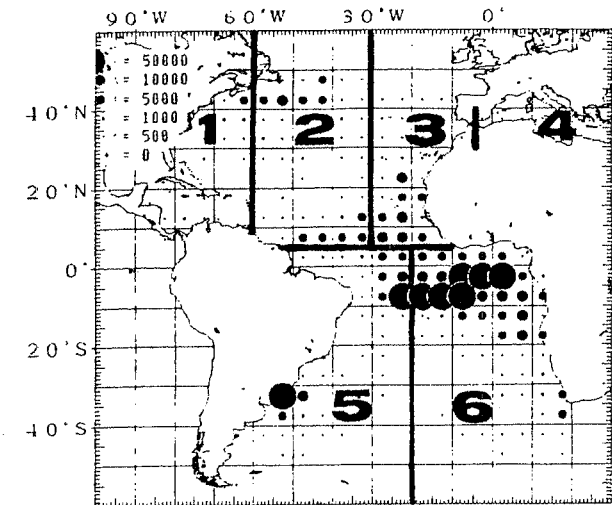


Fig. 2 Areas used in the present analysis and distribution of mean annual swordfish catch in number during 1986/90.

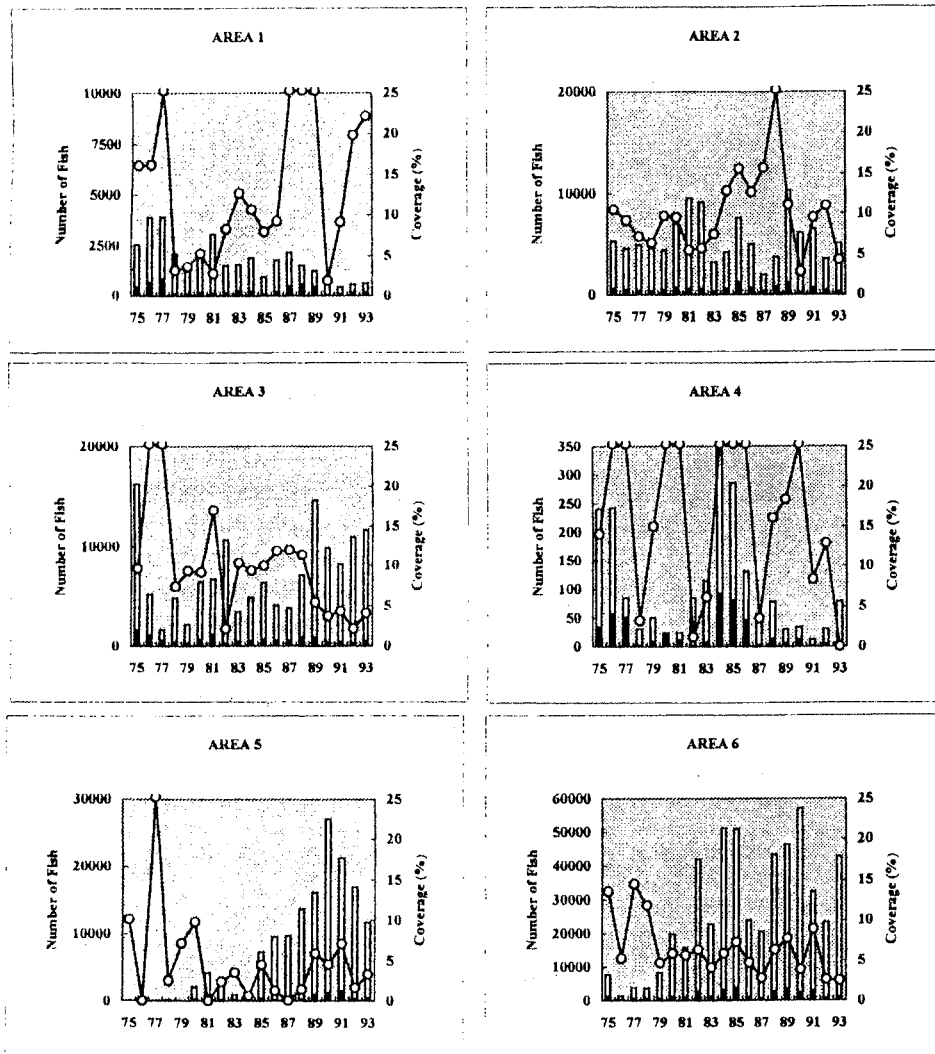


Fig. 3 Historical trend of the Japanese swordfish catch in number, sample of length measurement, and coverage ratio of length data by area.

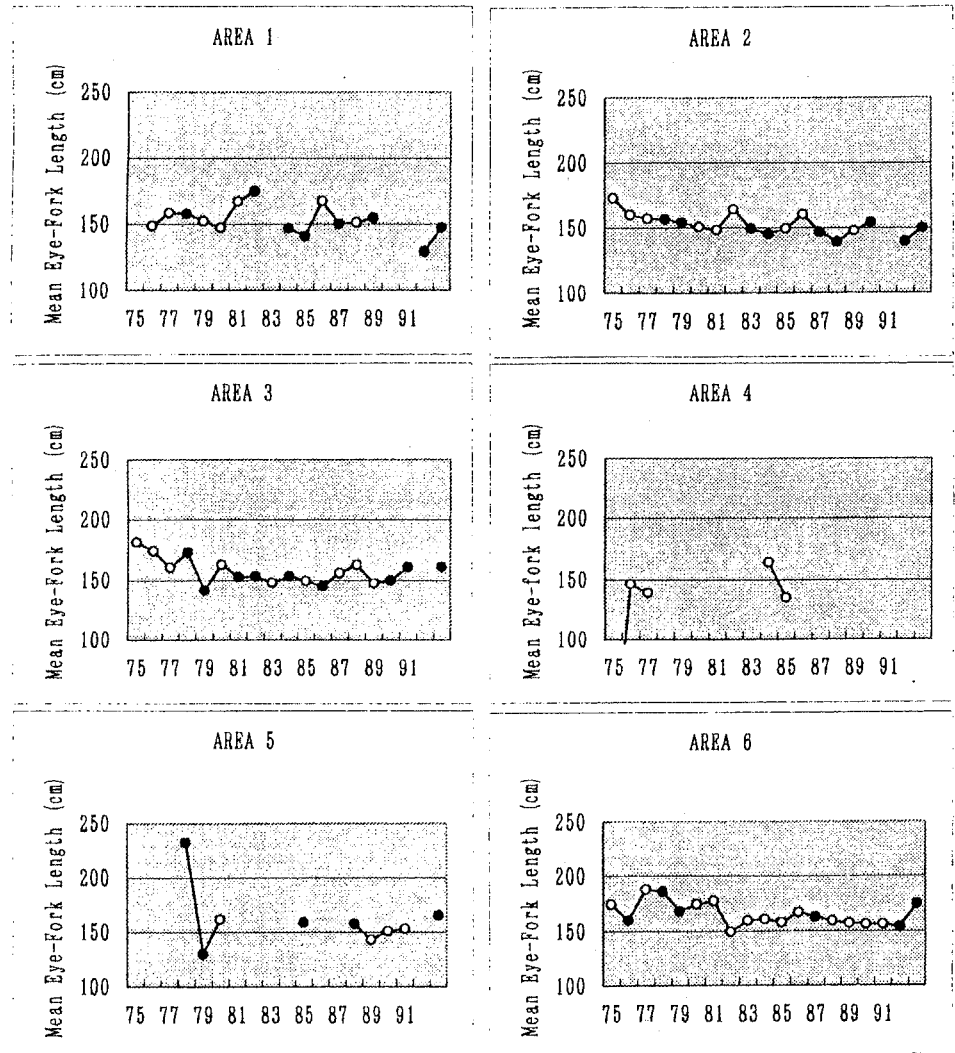


Fig. 4 Historical change of mean eye-fork length by area. Solid circles denote the years when there was no length data in two quarters or more. Open circles denote the years when there are length data in more than 2 quarters.