ACTIVITY OF THE SPANISH SURFACE LONGLINE FLEET CATCHING SWORDFISH (*XIPHIAS GLADIUS*) IN THE YEAR 1997

J. Mejuto, B. García, J.M. de la Serna

SUMMARY

This paper presents some descriptive plots of the activity of the Spanish longline fleet in 1997. As in previous papers, plots of catches, nominal effort and nominal catch rates, by 5°x5° degree squares are provided.

RÉSUMÉ

Le présent travail fournit quelques descriptions des activités de la flottille palangrière espagnole pendant l’année 1997. Comme dans les travaux antérieurs, on fournit la mise en graphique des captures, de l’effort nominal et du taux nominal de capture par carré de 5°x5°.

RESUMEN

Este documento presenta una simple descripción gráfica de la actividad de la flota española de palangre de superficie en 1997. Como se hizo en documentos presentados en años anteriores, se ofrecen gráficos de capturas, esfuerzo nominal y tasas de captura nominales, por cuadrículas de 5x5 grados.

---

1 Instituto Español de Oceanografía, Spain.
INTRODUCTION

A large number of documents have reported that the activity of various fleets targeting swordfish in the Atlantic began as a relatively coastal fishery (Becket, 1974; Caddy, 1976; Hoey & Nelson, 1988). Later this activity underwent a progressive geographical expansion, reaching distant zones both in the North and South Atlantic (Hoey et al., 1988; Mejuto & Garcés, 1988; Rey et al., 1988).

Although data on the description of the fisheries has become less sought out in many working groups, experience shows that this descriptive information is still an important tool for the correct interpretation of several parameters commonly used as indicators of these fisheries.

The purpose of this paper is simply to supplement the information provided in earlier documents (Mejuto et al., 1992; Mejuto et al., 1993; Mejuto et al., 1997) by including plots and descriptions of the activity of the Spanish fleet in 1997.

MATERIAL AND METHODS.

The data bases from 1997 reflect the activity of the Spanish surface longline fleet targeting the swordfish in the Atlantic, Mediterranean Sea and Pacific. These data bases include detailed information by 5x5 degree squares of the total activity of the Spanish fleet, including nominal effort (thousands of hooks), number of fish sampled, catch in number and weight (kg round weight), catch by size class (LJ-FL from 50 to 350 cm.), etc. In order to carry out the analyses by size categories, three size groups were established as follows:

Size group 1: sizes LJ-FL <= 125 cm.,Size group 2: sizes 120 <= LJ-FL <= 165 cm.,Size group 5: sizes 170 <= LJ-FL.

Additional information about methodological bases can be obtained in previous papers.

RESULTS.

A total number of 230614 fishes were sampled in the Atlantic Ocean and Mediterranean Sea and 13891 fishes in the Pacific, during 1997. Figure 1 shows plots of landings in number (1a), landings in weight (1b) and nominal effort (1c). Data from the Indian Ocean were not included in this paper.

The activity of the fleet known as traditional in the Atlantic is still being carried out almost exclusively in the Atlantic North of 15° North latitude. This fleet has changed its fishing strategy in recent years targeting multi-species. The long distance fleet developed the main activity on the Southern Atlantic stock and other oceans.

Figure 2 shows data on nominal catch rates (nominal CPUE's) in number of fishes (2a) and in weight (2b). This figure suggest that there is continuity in the distribution of the swordfish from 50° N to at least 5° S. We did, however, detect a substantial quantitative difference in the CPUE values obtained on either side of the parallel 5° N.

Figure 3 exhibits data on nominal catch rates for each group of a specific sizes considered. Group 1 shows a continuous distribution from 50° N to 5° S. The medium size (Group 2) and the large size individuals (Group 5) also have a continuous distribution between these latitudes, although considerable quantitative differences may be observed on either side of parallel 5° N. When these CPUE data are analyzed by quarter (Fig. 4 and 5), similar conclusions may be obtained, at least in quarters 2, 3 and 4.

The CPUE of Group 1 shows a relatively homogeneous distribution from 50° N to 5° S in most of the quarters (Fig. 6). This homogeneity, however, is less evident in group 2 (Fig. 7) and clearly non existent in group 5 (Fig. 8), which shows a N-S gradient. The lowest CPUE values in group 5 were found in the North Atlantic and the highest in the South Atlantic.

Therefore, based on the data from the Spanish fleet, we may generalize that there is continuity in the availability of the swordfish at least from 50° N to 5° S. However, some of the CPUE data point to important quantitative differences on either side of parallel 5° N, owing especially to the CPUE differences in groups 2 and 5 (medium and large-sized fish).
These differences in CPUE suggest that there would be a restricted or slow moving interchange between these fishes N and S of 5ºN latitude, at least for some of the age classes. If the opposite were true, we would expect to find more homogeneous CPUE distributions due to compensatory phenomena. These differences in CPUE had already been evident from the start of the fishing activity of the Spanish fleet targeting the so-called Southern stock (Mejuto et al., 1997; Mejuto et al., 1998).

The CPUE values of group 5 by quarter (Fig. 8) suggest that individuals larger than 165 cm (potential spawners) might be found during any quarter of the year outside the areas known as potentially favorable to reproductive processes (García & Mejuto, 1988; Arocha & Lee, 1996; Mejuto & García, 1997; Mejuto et al., 1998). This would point to the existence of a complex migratory behavior for reproduction (SCRS/98/111).

We must bear in mind that the available data pertain to only one fleet whose activity in some areas is non-existent or highly limited, thus this continuity could be even greater (Farber, 1988). In this sense, these available data bases from the ICCAT combined with those from other fleets could offer an overall view which could be of great interest.

ACKNOWLEDGEMENTS.

We would like thank Manuel Quintans, Enrique Alot, Isabel Gonzalez, Manuel Marín, Jose A. Castro, Enrique Majuelos, Jose L. Gonzalez, among others, for their untiring collaboration and their great efforts in compiling the basic information and updating the data bases used in this paper.

LITERATURE CITED.


Figure 1. Landing in number (a), landings in weight (kg round weight) (b), nominal fishing effort, in thousands of hooks (c), of the Spanish surface longline fleet, for the year 1997.
Figure 2. Nominal catch rates (CPUE) in number of fish (a) and weight (kg round weight) (b), in thousand of books, of the Spanish surface longline fleet, for the year 1997.
Figure 3. Nominal catch rates (CPUE) in number of fish in thousands of hooks of the Spanish surface longline fleet, for year 1997. Size Group 1: LJ-FL <=125 cm. Size Group 2: 130<=LJ-FL<=165 cm. Size Group 5: 170<= LJ-FL.
Figure 4. Nominal catch rates (CPUE) in number of fish in thousands of hooks of the Spanish surface longline fleet for the year 1997, by quarters.
Figure 5. Nominal catch rates (CPUE) in weight (kg round weight), for the year 1997 and by quarters.
Figure 6. Nominal catch rates (CPUE) for size group 1: LJ-FL <= 125 cm by quarters for the year 1997.
Figure 7. Nominal catch rates (CPUE) for size group 2:LJ-FL 130-170 cm by quarters for the year 1997.

437
Figure 8. Nominal catch rates (CPUE) for size group 5: LJ-FL >170 cm by quarters for the year 1997.