

## **A GENERAL OVERVIEW OF THE ACTIVITY OF THE SPANISH SURFACE LONGLINE FLEET TARGETING SWORDFISH (*Xiphias gladius*) IN THE INDIAN OCEAN DURING THE YEAR 2002**

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### **ABSTRACT**

*This paper presents data on catch, nominal effort and nominal catch rates in 5x5 degree formats of the activity of the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) carried out in 2002 in waters of the SW Indian Ocean (FAO51). The total nominal catch of swordfish was 3502 tons round weight. For descriptive purposes, graphs and plots are presented showing annual catches, annual nominal effort, and nominal CPUEs by year and quarter in a 5x5 degree square format. The information presented also updates previous papers.*

**Key words:** swordfish, nominal CPUE, longline, Spanish fleet.

### **INTRODUCTION**

The basic data for the scientific monitoring of this fleet in this ocean since the beginning of the fishing activity in the Indian Ocean have been collected by the RIM (Information and Sampling Network) of the Spanish Oceanography Institute (IEO). At the same time, the observer program on board commercial vessels was extended from other areas to also cover the Indian for compiling more complete information *in situ* on the activities of these periods-areas where fishing takes place and for getting biological information of the individuals swordfish caught. Most of the basic scientific information comes from fishery logbooks designed by the IEO specifically for scientific purposes. This logbooks, prepared for long distance surface longliners, are voluntarily filled in by the fleet.

Descriptive information is an important tool for the correct interpretation of several parameters used as indicators of these fisheries and in resource assessment as well as for biological interpretation for the data. This paper includes plots and descriptions of the activity of the Spanish fleet in the year 2002 and updates de information provided in earlier documents.

### **MATERIAL AND METHODS**

The created data bases from the year 2002 have been plotted and reflect the activity of the Spanish surface longline fleet catching swordfish in areas of the Indian ocean. These data bases include information by 5x5 degree squares about catches, nominal effort (thousands of hooks), nominal CPUEs in number of fish and weight (kg round weight) per thousand hooks, representing the complete activity of this fleet for scientific purposes and generally reported to the IOTC.

The nominal CPUE in weight by semester (S) is also included (S1: January-June; S2: July-December). The nominal CPUE in number by size category (CAT) was plotted defining three size categories.

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Size CAT 1: sizes LJ-FL  $\leq$  120 cm., Size CAT 2: sizes 125 cm $\leq$  LJ-FL $\leq$ 160 cm., Size CAT 3: sizes  $>$  160 cm LJ-FL.

Additional information on methodological bases can be found in previous papers (GARCÍA-CORTÉS & MEJUTO 2000, GARCÍA-CORTÉS *et al.* 2003).

## RESULTS AND DISCUSSION

A total number of 16 Spanish longline vessels carried out fishing activity in the Indian Ocean during year 2002. Figure 1 shows plots of landings in number of fishes and in kg of round weight, as well as nominal effort in thousands of hooks set by the fleet during the year 2002, in 5x5 degree format. Although the activity of this fleet in previous years was restricted to areas western of 80° E, an expansion eastward reaching the 95° E during the year 2002, obtaining high yields.

During the year 2002 a total number of swordfish landed were 60990 individuals, the total round weight in tons were 3502 and the total individuals size-sampled were 28126 that means a sampling rate of about 46% of the catch in number.

Figure 2 shows plots of nominal CPUEs in number and round weight respectively, obtained for the “American” longline style gear during 2002. The overall nominal CPUEs was about 17 individuals and 1010 kg round weight, in number and weight, respectively. This yield in weight is relatively high and it is the highest yield observed by the Spanish fleet, in comparison with other oceans and years.

Figure 3 represents the nominal CPUE in weight by thousands hooks by semester (S). The highest nominal catch rates continues being observed in longitudes above 60° E in any half of the year.

The catch rates (CPUE) in number of fishes per size category are shown in figure 4 for the year 2002. The values obtained by area for the three defined size categories show very low values for CAT1 and higher values for CAT2 and CAT3. The CAT3 CPUE seems to be increased toward eastern areas, which explain the high weight CPUE also observed. These differences between catch rates obtained for the different size categories could indicate that the thermal conditions of the surface sea layers in the Spanish fleet fishing areas are not very adequate for small fish (LJFL $<$ 125) availability.

## ACKNOWLEDGEMENTS

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## LITERATURE CITED

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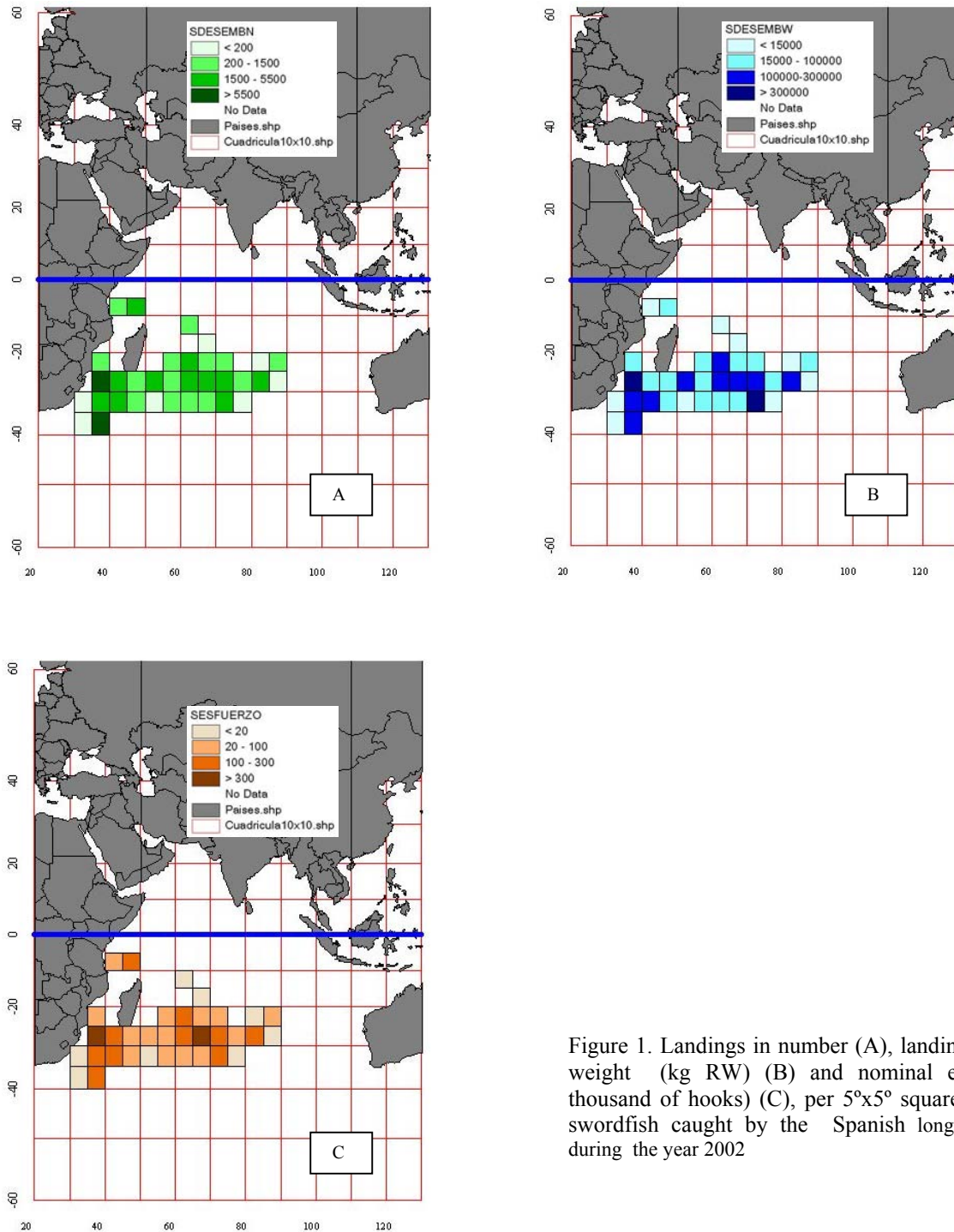


Figure 1. Landings in number (A), landings in weight (kg RW) (B) and nominal effort (in thousand of hooks) (C), per 5°x5° square, for the swordfish caught by the Spanish longline fleet, during the year 2002

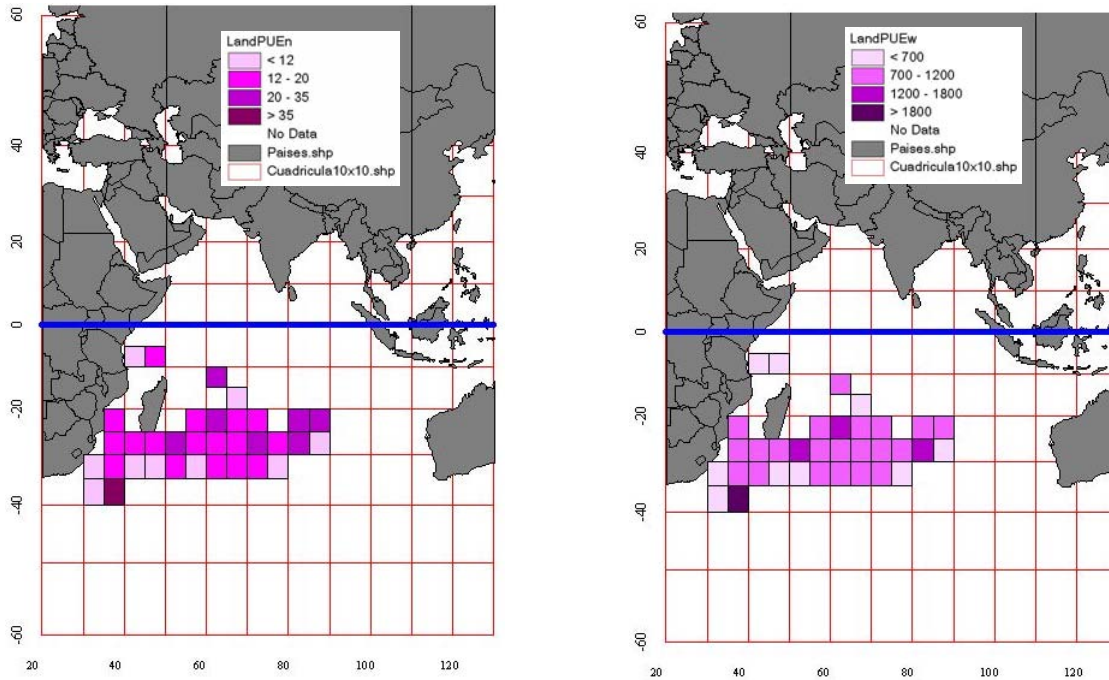


Figure 2. Nominal CPUE in number (A) and in kg round weight (B) of swordfish of the Spanish longline fleet, during the year 2002.

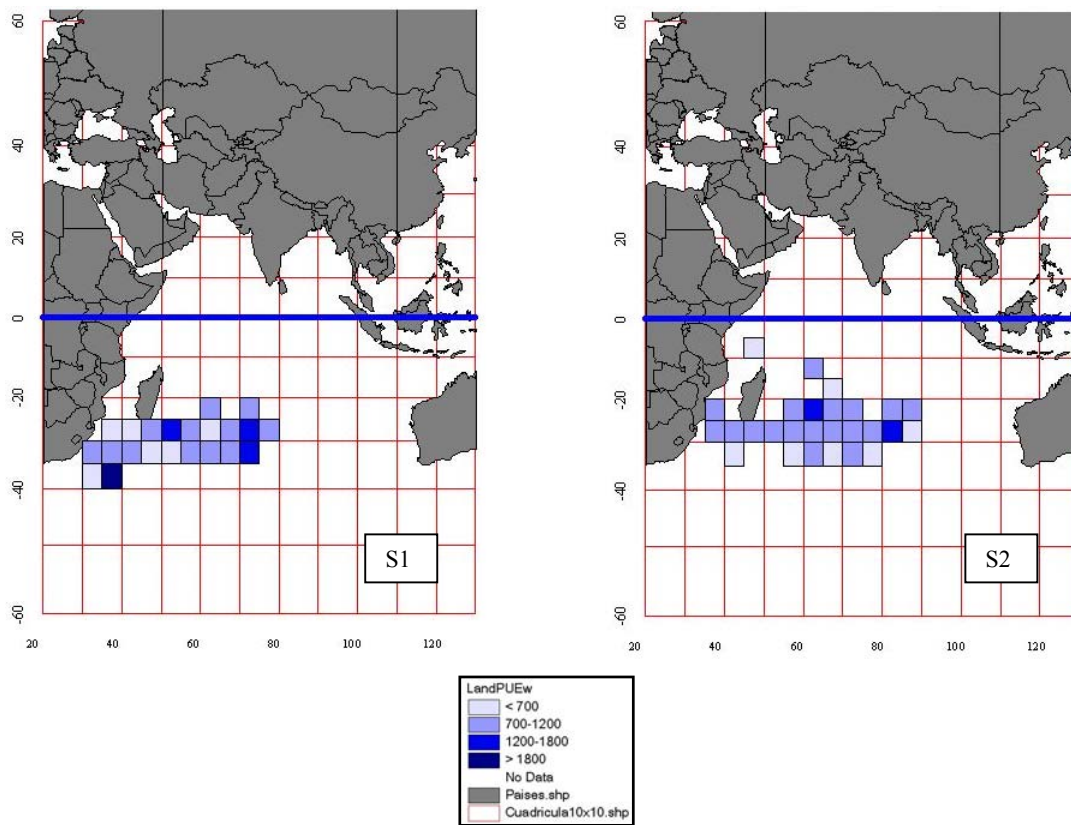


Figure 3. Nominal CPUE in number of swordfish landed by thousands of hooks set by the Spanish surface longline fleet by semester (S) of 2002 in the Indian Ocean.

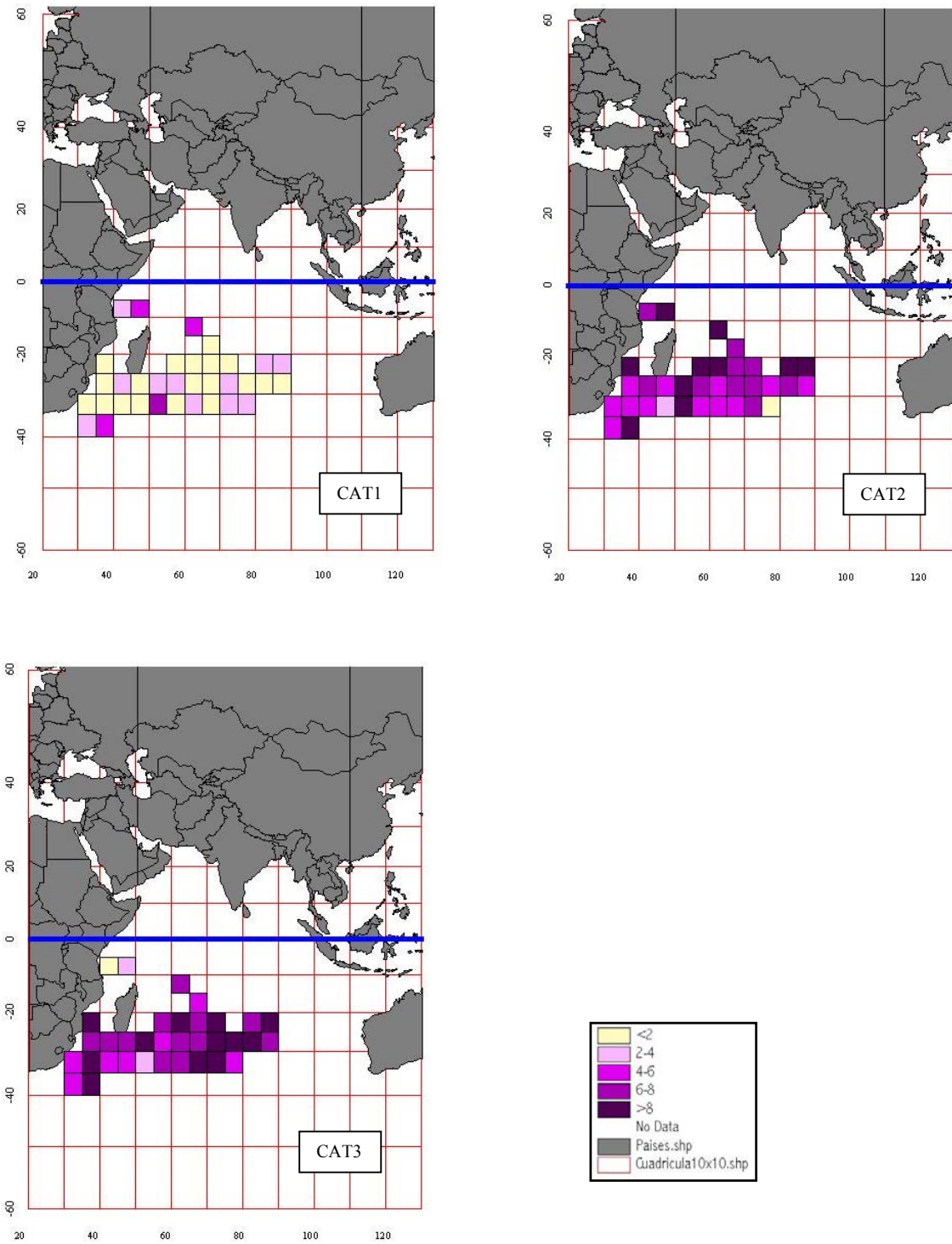


Figure 4. Nominal CPUE in number of swordfish by size class (cm, LJFL): CAT1 < 125 cm; CAT2: 125-160 cm; CAT3 > 160 cm; during 2002 in the Indian ocean.