

DESCRIPTION OF THE BRAZILIAN SWORDFISH FISHERY IN SANTOS

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SUMMARY

The longliners based in Santos-SP catch swordfish all year round, mainly in the third quarter (winter), at the south and southeast of Brazil. It is generally the second most caught species and sometimes the first, with an annual average of 5,864 fishes and of 5 fishes per thousand hooks in the 1971 to 1985 period. The caught specimens ranged from 50 to 290 cm.

RESUME

Les palangriers basés à Santos-SP capturent des espadons tout au long de l'année, surtout au cours du dernier trimestre (hiver), au sud et au sud-est du Brésil. Il s'agit en général de la deuxième espèce la plus capturée et parfois la première, avec une moyenne annuelle de 5.864 poissons et 5 poissons par hameçons durant la période 1971-1985. Les spécimens capturés mesurent de 50 à 290 cm.

RESUMEN

Los palangreros con base en Santos-SP capturan pez espada a lo largo de todo el año, principalmente en el tercer trimestre (invierno), en el Sur y Suroeste de Brasil. Generalmente, constituye la segunda especie más capturada y, algunas veces, la primera, con un promedio anual de 5.864 ejemplares, y de 5 peces por mil anzuelos en el período 1971 a 1985. Los ejemplares capturados oscilaron entre 50 a 290 cm.

1. Country

In Brazil the swordfish is caught by Brazilian and leased longliners. This paper is going to describe only the activity of the Brazilian longliners based in Santos - São Paulo, nevertheless there are other Brazilian longliners based in Natal - Rio Grande do Norte (2 boats) and Rio Grande - Rio Grande do Sul (2 boats).

2. Fishing System

The fishing gear used is the longline, that is formed by about 300 baskets, each basket containing 5 hooks that are baited mainly with sardine and squid. The hooks reach depths ranging from 60 to 120 m.

3. Is the Swordfish the Main Goal of the Fishery?

Since 1971, the main aim of the Brazilian longliner fishery has been chiefly three species of tuna (yellowfin, bigeye and albacore), nevertheless the swordfish used to be sometimes the second or the first species in annual catch (in weight). These boats used to start setting the longline around midnight to 01:00 a. m. and to use sardine, as bait. However, from the middle of 1980 to the beginning of 1981, this fleet aimed its fishery toward the catch of swordfish, starting to set the long line around 9:00 p. m., and changing the bait to squid. So, in 1980 the proportion of swordfish was 46.4% and tunas was 21.4%. In 1981 they fished with squid and sardine, but when they tried to catch swordfish (setting the longline at 9:00 p. m.), it was usually preyed by the killer whale. It obliged the pilots to operate in the former schedule and/or to change the fishing area. So the swordfish again became the second most caught species (ARFELLI & AMORIM, 1985).

4. Historical Data of the Fishery

In Santos the fishery began in 1958 with 3 boats and fished till 1961. In 1965/66, also in Santos another company started with 2 boats. This fleet increased to 3 in 1971, and to 8 in 1984, and after decreased to 6 in 1985 and kept the same number through 1987.

5. Fishing Areas

The Brazilian longliners settled in Santos - SP operate at 20° - 33°S and 039° - 050°W. Aiming at more productivity, these longliners directed their fisheries to determined areas, according to the season of the year. So, from the beginning of May to the middle of October they fished to the South of parallel 25°S and during the rest of the year to the North of parallel 27°S (ARFELLI & AMORIM, 1981). However, since 1979, the fishing areas, according to season, have suffered some changes: the longliners basically followed the mentioned scheme, but sometimes fished in an area not very usual for the season (ARFELLI & AMORIM, 1985).

6. Fishing Seasons

The swordfish is caught all year round but the values of yield, CPUE and average weight were always higher in the third quarter of the year (winter), (AMORIM & ARFELLI, 1984).

7. Fleet

Since 1985 six longliners have been operating in the South and Southeast of Brazil, based in Santos. These boats range from 100 to 200 TRB. The equipments used in order to choose the fishing area are the echo-sounder and surface thermometer register, and for the fishing operations there are mainly the satellite navigator, radiogoniometer and radar.

8. Relations and Inter-relation with other Fisheries

It does not have.

9. Catches

The annual catch of swordfish in the period 1971-85 fluctuated noticeably with an increasing trend: from 1971 to 1973 the annual average was 2,400 fishes, increasing about 3 times in the period 1974-75, totaling an average catch of 6,100 specimens; it decreased to 4,200 specimens (annual average) in the period 1976-79, following an increase about 4 times in 1980, totalizing 15,810 specimens, decreasing to 7,081 in 1981 (ARFELLI & AMORIM, 1985), increasing to 9,919 in 1982 and decreasing to an annual average of 6,340 in the last 3 years. The species caught besides swordfish are: tunas, billfishes, sharks and others (dolphin, escolar, oilfish, opah etc.). The proportion in the fishery were as follow: tunas in the period 1971-79 represented 50% of the total catch and 29% in the following period (1980-85); sailfish represented around 5%; white marlin

2%; blue marlin 1%; the shark catches had a increasing trend in the period, varying from 11% to 51%; and 3% of others.

The swordfish is dressed just after the catch: gutted, gilled, and bill and fins cutted off, and preserved on ice.

10. Description of the Fishing System

The longline (Figure 1) is setted around midnight till 5 o'clock a.m. and is rolled back from 9 a.m. to around 5 p.m. Only one operation is realized daily, and about 14 operations occur per trip. The trips may reach 20 days, but 18 days are more common. The boats realize an average of 13 trips per year.

11. Fishing Effort

The considered effort is the number of hooks.

The annual fishing effort has shown an increasing trend in the 1971-85 period, ranging from 432 thousand (1972) to 2,200 thousand hooks (1984) (AMORIM & ARFELLI, 1987).

12. CPUE

From 1971 to 1973 the average CPUE was almost 5 fishes per thousand hooks, increasing to 8 in 1974-75, and decreasing to 4 in the period of 1978-79; in 1980, due to the mentioned changes in fisheries, the CPUE increased to 13.3, decreasing again to 5.9 in 1981 (ARFELLI & AMORIM, 1985). In 1982 the CPUE was 6.3, decreasing to an average of 3.3 in the following period (1983-85) (Figure 2).

13. Length and Maturity of the Caught Fishes

In the whole period the caught specimens ranged from 50 to 290 cm, being more common fishes of 85 to 185 cm (EFL).

14. Brief Description of the Commercialization System

Swordfish is commercialized fresh, mainly in the São Paulo State. Small quantity were exported fresh or frozen. The average price of swordfish at the Fishing Terminal is 2.70 dollars USA.

15. Unloading System

The longliners unload the fishes directly at the Fishing Terminal of Santos (seldom at the Fishing Terminal of Rio Grande).

The dressed fish are unloaded, washed, weighted and sold in the terminal

or transported to the CEASA (a big market of vegetable and animal products) in São Paulo - SP.

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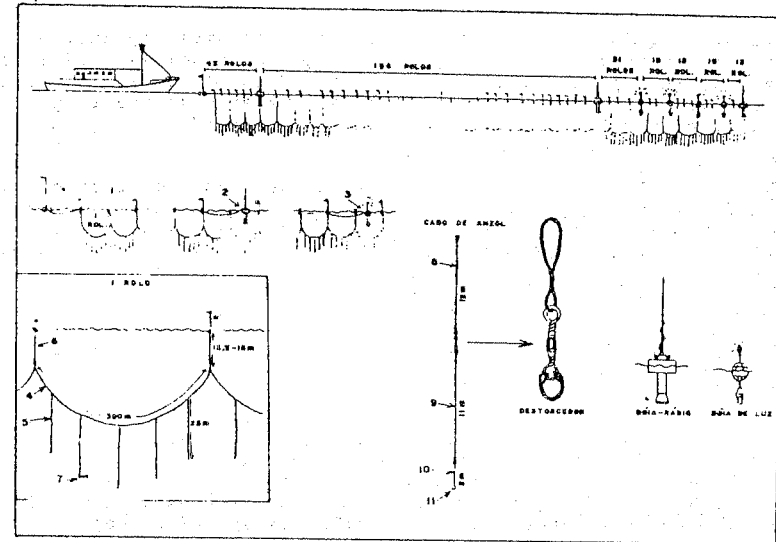


Figure 1 - Longline used by the Brazilian boats: 1-big flag, 2-float-radio, 3-float-light, 4-main line, 5-branch line, 6-float line, 7-bait, 8- "burã", 9- "sekiyama", 10-galvanized wire, and 11-tuna hook (from AMORIM & ARFELLI, 1984).

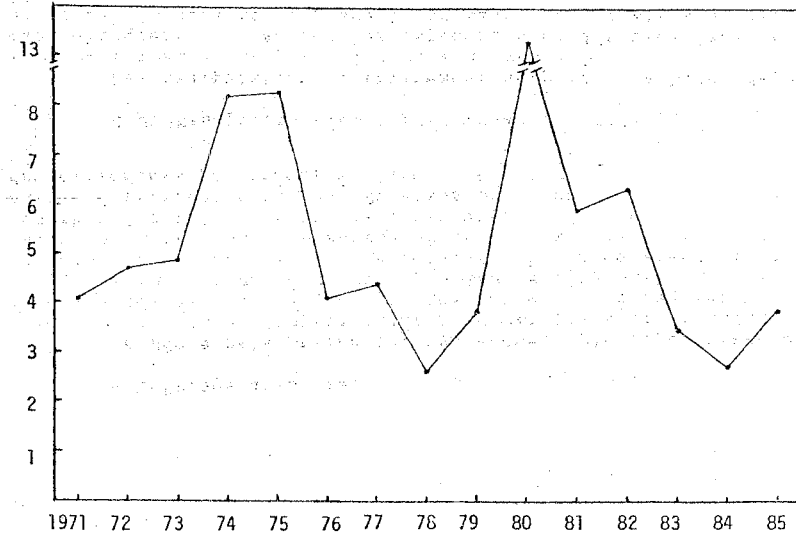


Figure 2 - Annual catch per unit of effort of swordfish (per 1,000 hooks).