

Albacore: A Tuna Resource of the Pacific Ocean

Introduction

Albacore (*Thunnus alalunga*) are one of the main tuna resources exploited worldwide by industrial fisheries. Albacore fisheries are very active in the Pacific Ocean, especially in the North Pacific where albacore are caught both at the surface and in depths with longline gears. In the South Pacific, the major longline fisheries have shown that albacore resources do exist in this area, even if surface fisheries are negligible. A recent exploratory survey in the Central and Western South Pacific demonstrates that surface albacore are present around 40°S in these parts of the South Pacific Ocean. Other albacore fisheries take place in the North and South Atlantic oceans.

Albacore prefer waters with temperatures between 15° and 19°C whether at the surface in the temperate seas or deeper (up to 400 m). The absence of albacore at the equator supports the hypothesis of a separate stock in each hemisphere.

Juvenile and subadult albacore make up almost all albacore populations found at the surface; adults swim in deeper waters.

In both hemispheres, there is an apparent albacore migration from high latitudes, which can be considered as feeding grounds, towards lower latitudes where

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spawning occurs during the warmer months.

Fish caught are from 45 to 125 cm long and weigh 2 to 35 kg. Females at first maturity are around 85 cm in body length.

Albacore have white meat which fetches higher prices in the western canner market than in the Japanese sashimi market which prefers red oily tuna meat.

Albacore concentrate along thermal discontinuities called oceanic fronts and on the warmer side of these fronts. They are not found in large dense schools comparable to those of yellowfin and skipjack. Several fishing techniques take advantage of these characteristics.

Fishing Techniques

The three main fishing techniques for albacore are: (1) longline fishing; (2) live bait with pole and line and (3) trolling line. In the Pacific Ocean all these fishing methods are in use. Over the last few years the Japanese have developed a new technique—drift gillnetting. This tech-

nique was primarily designed to catch pomfret in the North Pacific but it was found quite efficient for catching juvenile albacore. There are other gears to catch albacore but not on an industrial basis.

Pacific Fisheries

The 170 million-km² Pacific Ocean encompasses 47% of the world's ocean area. It is populated with a variety of tuna species which represented 72% of all world tuna catches in 1980. Among the different tuna species caught, five species comprised 96% of the total catch (Fig. 1).

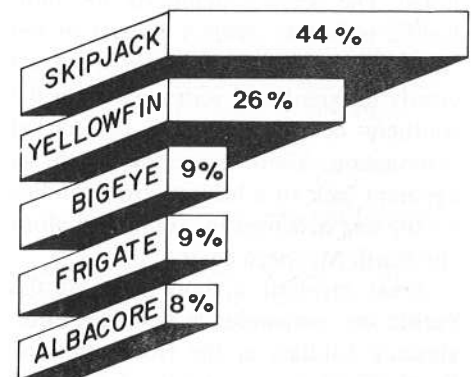


Fig. 1. Five species made up 96% of the total Pacific tuna catch of 1980. Total catch was 1,400,000 t (FAO Statistics).

In 1980, albacore catches in the Pacific Ocean represented 59% of the world albacore catches. Distribution of the albacore catches by fishing gear and within the North and South Pacific is given in Table 1. Albacore catch in the North is considerably larger than in the South and fishing gears have differing importance.

structure of the Pacific albacore fisheries is mainly related to the fishing nations and strategies involved.

In the North Pacific, the Japanese have caught on average from 1970 to 1977, 60% of the total albacore catch using live bait, and the Americans 23% using live bait or trolling lines. There are no similar

Longline fishing in the South Pacific was started by the Japanese in 1952 and their fishery expanded to reach a peak in 1963. Then they started to withdraw from the region and were replaced by Koreans and Taiwanese who today are catching the bulk of the South Pacific albacore production. The South Pacific Japanese longline fishery actually targets high price sashimi market tunas and marlins.

In the South Pacific, fishing nations that border the ocean have no tuna fishing traditions either for longlining, live-bait fishing or trolling and have not yet developed an important albacore fishery.

Along the Chilean coast, a surface fishery for albacore existed for some years but albacore were too far from the coast and the fishery closed. Along the coast of New Zealand, a small troll fishery for albacore operates during the summer months and caught on average 489 t from 1972 to 1977.

Along the Pacific coast of Australia there is no such fishery. The only important Australian tuna fishery is limited to the south coast and directed towards southern bluefin tuna.

The main albacore fisheries are listed in Table 1 and shown on Fig. 2.

Table 1. Average albacore catch in tonnes by gear in the Pacific Ocean from 1970 to 1977.

	North Pacific		South Pacific		All Pacific	
	Catch	%	Catch	%	Catch	%
Longline	13,696	14	37,214	99	50,910	38
Bait boat	59,391	63	0	0	59,391	45
Troll	19,594	21	426	1	20,020	15
Other surface and miscellaneous species	2,337	2	0	0	2,337	2
Total surface	81,322	86	426	1	81,748	62
All total	95,018	100	37,640	100	132,658	100
%	72		28		100	

In the North Pacific, 86% of the 95,018 t albacore catch is at the surface and Japanese fishermen are responsible for 75% of the total catch.

In the South Pacific, surface fishing is negligible and 99% of the catch is from longlines, mainly by Taiwanese and Korean fishermen (89% of the total catch).

Oceanographic conditions seem to be quite similar in fishing areas of the North and South Pacific. Assessment of the primary production does not support the hypothesis that the South Pacific catch should be poorer than that of the North Pacific. However two differences can be noted. The ocean structure of the South Pacific is not as distinct as that of the North Pacific, perhaps because of the less clearly differentiated water masses in the southern ocean or because of lack of information. There is, in the South, an apparent lack of a habitat corresponding to the one occupied by young fish along the North American coast.

Areas involved in both parts of the Pacific are comparable in size. Therefore, albacore habitats in the North and the South Pacific are probably of the same importance.

Apart from a possible effect of the oceanographic conditions, the present

fisheries in the South. The Japanese do not go to the South to fish with live bait because it is too far from their base in Japan and there are no bait resources available. This is true also for the Americans.

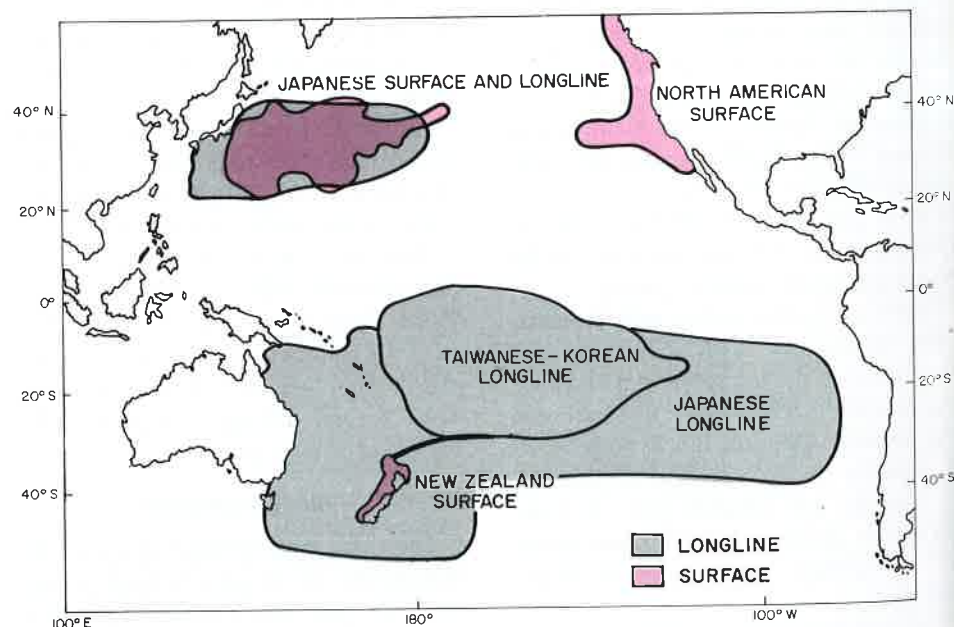


Fig. 2. Major historical Pacific albacore fishery areas. (Source: T.J. Foreman, 1980, Synopsis of biological data on the albacore tuna, *Thunnus alalunga* (Bonnatere 1788) in the Pacific Ocean. Inter-Am. Trop. Tuna Comm. Spec. Rep. 2: 17-70).

North Pacific Resources

The Japanese catches cover 95% of the bait-boat catches and almost all longline catches. The American fishery is mainly a troll fishery (94% of troll catches and 5% of bait-boat catches).

Since the early 1960s, total North Pacific albacore catches fluctuated annually, but showed a general increasing trend until 1976 with a peak of 124,000 t after which catches decreased because the Japanese pole-and-line (live-bait) fishing effort decreased. In 1981, the total catch was estimated to be between 70,000 and 76,000 t. The maximum sustainable yield (MSY) from the North Pacific is estimated to be 100,000 to 120,000 t.

With the present level of exploitation the stock is considered as healthy. However, there is some concern regarding the impact on the stock of a rapid development of the Japanese drift gillnet fishery which captures a lot of juvenile albacore. In 1981, albacore catches from this fishery were estimated to be between 15,000 and 20,000 t.

South Pacific Resources

Almost all the albacore catch in the South Pacific is from longlining for adult fish (Fig. 2). The juvenile population is virtually untouched.

Analysis of the South Pacific longline albacore fishery demonstrates that catches reached the maximum sustainable yield many years ago. This MSY was estimated to be 33,000 to 35,000 t. Therefore, any fishing effort increase will result in a lower abundance index. In fact

this index has been declining since the early 1960s.

Any further attempt to develop South Pacific albacore fisheries should be directed towards juvenile fish present at the surface. As in the North Pacific, this fishery could take place during the summer season at latitudes where the 15°-19°C waters reach the surface. This area is centered around 38°S.

An exploratory fishing cruise for albacore was conducted in the Central South Pacific Ocean by ORSTOM scientists in February 1982 using trolling lines. The area surveyed extended from 38° to 42°S and 157°W to 180°. Juvenile

and subadult albacore were caught in hydrographic structures similar to those described in other albacore surface fisheries.

The albacore were dispersed and no important concentration was recorded. Unfortunately the survey was too short and needs to be repeated to ascertain the occurrence of a surface albacore resource that could be exploited by fishing vessels, such as bait boats with bait from New Zealand, Australia or Chile or trolling boats from these three countries, from foreign distant nations or from South Pacific island countries. ●

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