THE ATLANTIC ALBACORE FISHERY

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The albacore, Thunnus alalunga, is one of the world's most sought-after tunas. It is also one of the most valuable: in 1969, exvessel prices for albacore landed on the west coast of the United States were around $450 a short ton; yellowfin tuna brought about $330, and premium skipjack tuna $280. More than half of all albacore landed in the world is consumed in the United States. However, U.S. production does not meet the demand. The deficit is filled with imports of over 100,000 tons annually (fig. 1).

Albacore rarely form compact surface schools, so purse seines, which have become the primary gear used by U.S. fishermen for yellowfin and skipjack tunas, are not suitable for catching albacore. They are caught on the surface primarily with live bait and by trolling; larger fish living well beneath the surface are taken by longlines.

Japanese Began in 1956

In 1956, the Japanese began exploratory longline fishing in the Atlantic Ocean. They set approximately 131,000 hooks and caught over 1,000 albacore. From this inauspicious start they rapidly expanded their fishing effort until, in 1964, Japanese vessels fished over most of the North and South Atlantic Oceans between 40° N. and 40° S. They set almost 100 million hooks, and caught over 2 million albacore.

Before 1964, the Japanese fished primarily for yellowfin tuna but, in that year, reacting to rapidly declining catch rates, they shifted their fishing to good albacore areas. In recent years, declining catch rates for both species have forced the Japanese to cut back their effort in the Atlantic. In 1967, for example, they set slightly over 30 million hooks compared to almost 100 million in 1964 (from approximately 160 vessels). However, this decrease in effort probably has been counterbalanced by a rapid increase in longline fishing by China (Taiwan), Cuba, Panama, South Korea, and Venezuela. Recent estimates place the number of vessels operating in the Atlantic from those countries at 100 to 150, but their catching efficiency is probably below that of the Japanese.

Bay of Biscay Albacore

The only other fishery for albacore in the Atlantic is the surface fishery in the Bay of Biscay; the French and Spanish land about 40,000 tons annually. This fishery begins in May or June and extends through October, or occasionally into November; best fishing is in July and August. Fishing is with trolling lines or live bait. Trolling boats are 30 to 75 feet long and are manned by crews of 6 to 12 men. Each boat fishes 9 to 10 lines and trolls at about 6 knots. Three to 4 tons a day are considered an excellent catch.

Albacore caught in the Bay of Biscay are small compared to those captured by longlines. A 15- to 20-pound albacore is classified as large in the surface fishery; 45 pounds is the average size of albacore taken by longliners in the Atlantic. The few albacore caught in equatorial waters are normally very large, often averaging 65 pounds.

Picture of Albacore Abundance

Detailed statistics on catch and effort of the Japanese longline fleet are available from publications of the Fisheries Agency of Japan and the Nankai Regional Fisheries Research Laboratory. Analyses of these data have produced a clear picture of the distribution and relative apparent abundance of albacore in the Atlantic Ocean.

The average number of albacore caught per 100 hooks set was calculated for each 5° square of latitude and longitude in the Atlantic by totaling the number of albacore caught in a given square in a given month, multiplying by 100, and dividing by the number of hooks fished in that square during the same period. This number was used to indicate concentrations.

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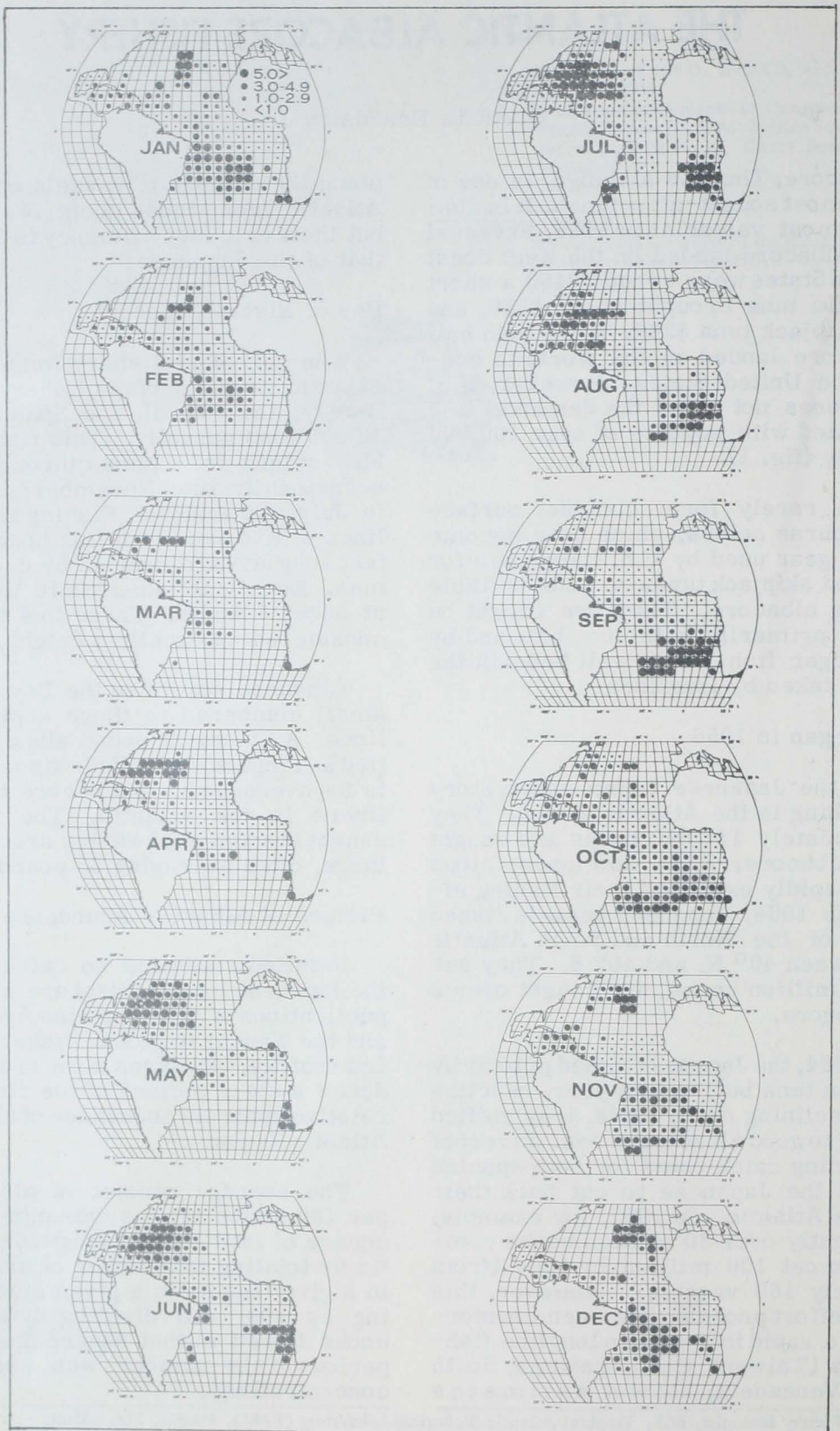

Fig. 1 - Distribution of average monthly catch rates (number of albacore per 100 hooks) for albacore from Japanese Atlantic longline fishery, 1956-1967.

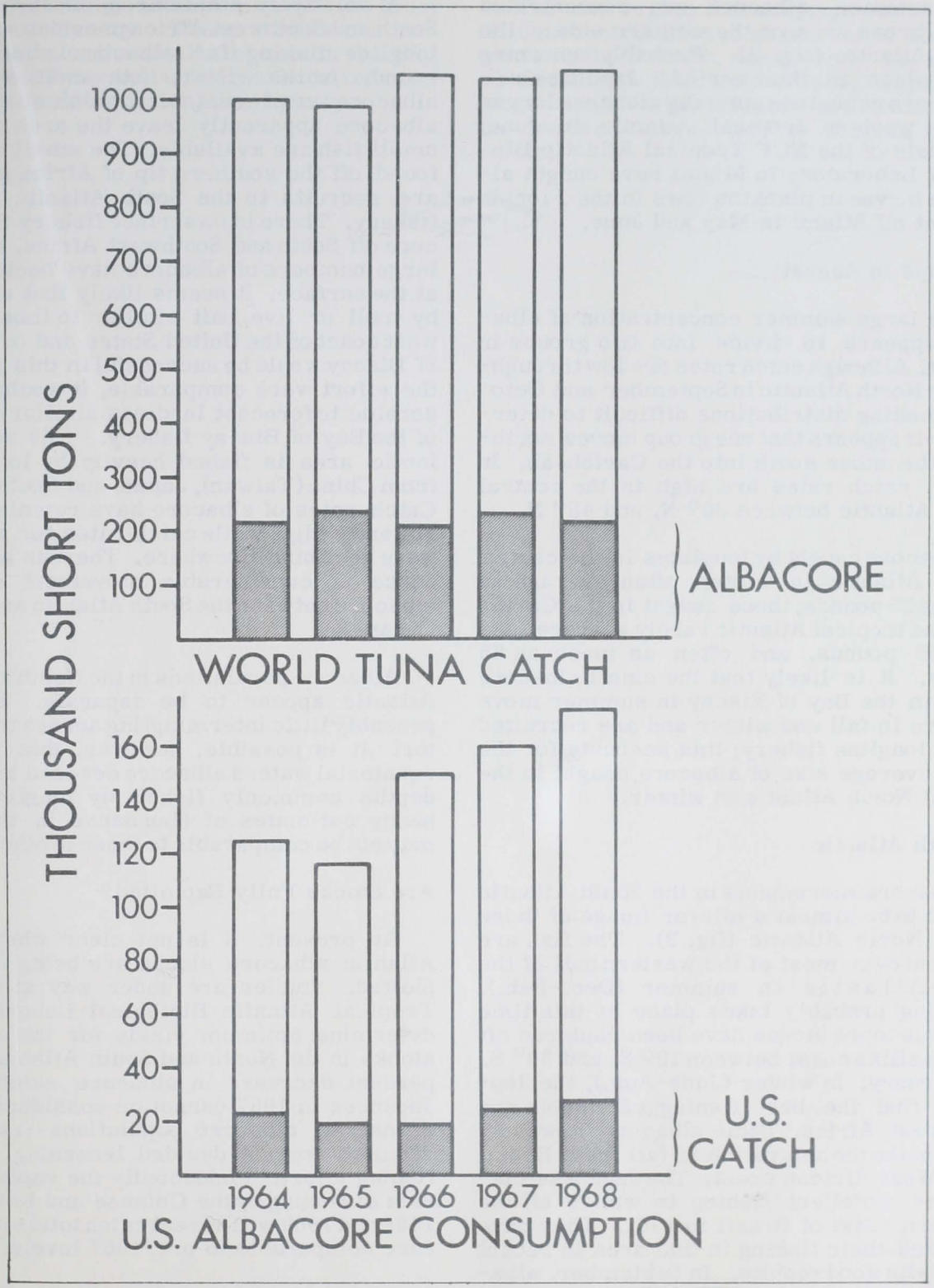

Fig. 2 - World tuna catch and U.S. albacore catch and consumption 1964 through 1968.

In summer, albacore are concentrated over a broad area on the western side of the North Atlantic (fig. 2). Probably spawning takes place in this period. Japanese researchers reported capturing albacore larvae in the western tropical Atlantic in June; scientists of the BCF Tropical Atlantic Biological Laboratory in Miami have caught albacore larvae in plankton tows in the Florida Current off Miami in May and June.

2 Groups in August

The large summer concentration of albacore appears to divide into two groups in August. Although catch rates are low throughout the North Atlantic in September and October--making distributions difficult to determine--it appears that one group moves northeast, the other south into the Caribbean. In winter, catch rates are high in the central North Atlantic between 30° N. and 45° N.

Albacore caught by longlines in the central North Atlantic in winter often average as little as 25 pounds; those caught in the Caribbean and tropical Atlantic rarely average less than 45 pounds, and often as much as 65 pounds. It is likely that the small albacore found in the Bay of Biscay in summer move offshore in fall and winter and are recruited to the longline fishery; this accounts for the small average size of albacore caught in the central North Atlantic in winter.

In South Atlantic

Albacore movements in the South Atlantic appear to be almost a mirror image of those in the North Atlantic (fig. 2). The fish are abundant over most of the western half of the South Atlantic in summer (Dec.-Feb.). Spawning probably takes place at this time since albacore larvae have been captured off the Brazilian coast between 10° S. and 30° S. in February. In winter (June-Aug.), the Japanese find the best fishing off Angola and Southwest Africa. Some albacore, however, do not make the migration in fall from Brazil to the West African coast. The Japanese discovered excellent fishing in winter off the southern coast of Brazil in 1961. They have expanded their fishing in that area in recent years with good results. In September, albacore move west and slightly south in a migration back to their summer grounds in the western South Atlantic.

A relatively small area off the coast of South and Southwest Africa provides excellent longline fishing for albacore almost year round. In the winter, both small and large albacore are present, but in summer the large albacore apparently leave the area and only small fish are available. The small albacore found off the southern tip of Africa probably are recruits to the South Atlantic longline fishery. There is no surface fishery for albacore off South and Southwest Africa, although large numbers of albacore have been sighted at the surface. It seems likely that a fishery by troll or live bait similar to those on the west coast of the United States and in the Bay of Biscay would be successful in this area. If the effort were comparable, it would be reasonable to forecast landings similar to those of the Bay of Biscay fishery. This South Atlantic area is fished heavily by longliners from China (Taiwan), Japan, and South Korea. Catch rates of albacore have remained consistently high, while catch rates for albacore were declining elsewhere. There is also evidence of considerable movement of small albacore between the South Atlantic and Indian Oceans.

Albacore populations in the North and South Atlantic appear to be separate. There is probably little intermingling across the equator. It is possible, however, that in warm equatorial waters albacore descend below the depths commonly fished by longline gear; hence estimates of abundance in this area may not be comparable to those in other areas.

Are Stocks Fully Exploited?

At present, it is not clear whether the Atlantic albacore stocks are being fully exploited. Studies are under way at the BCF Tropical Atlantic Biological Laboratory to determine optimum yields for the albacore stocks in the North and South Atlantic. A 50 percent decrease in albacore catch by the Japanese in 1967 cannot be considered a decrease in albacore populations--rather, it resulted from a decided lessening of their fishing effort. Undoubtedly the rapid expansion of fishing by the Chinese and Koreans in 1968 and 1969 will reveal catch totals for albacore comparable to pre-1967 levels.

French biologists are presently collecting and analyzing data from the Bay of Biscay fishery to determine migrational patterns, the

effects of fishing, and optimum yields from the surface fishery. These studies are important because the small albacore in the Bay of Biscay fishery undoubtedly are the recruits to the North Atlantic longline fishery.

The one region that might produce a significant contribution to an increased albacore catch in the Atlantic seems to be the waters off South and Southwest Africa. Apparently large numbers of albacore are available on the surface there, but no surface fishery exists.