

THE MEXICAN TUNA FISHERY

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ABSTRACT

A global overview of different types of gear for tuna fishing is given in terms of species importance. The development of the tuna fishery in the eastern Pacific since 1903 is summarized, with an analysis of two methods: bait boat and purse seine fishing. At present, purse seine fishing in the eastern Pacific extends from the U.S.-Mexican border to southern Chile.

More detail is given on the development of the bait boat and purse seine fishery since 1970. The Mexican purse seine and bait boat fleet reached its maximum in the period from 1978 to 1986. Accordingly, tuna production of this fleet has increased in the last eight years. Historical analysis of tuna production of the Mexican tuna purse seine fleet components is presented, and the efficiency of the Mexican tuna industry is analyzed. Internal consumption and exportation of Mexican tunas tend to equilibrate. Some critical aspects in the development of the fishery are pointed out, and future projections are presented.

RESUMEN

Se presenta una visión global de los distintos tipos de arte de pesca utilizados en la captura de atunes, y las especies de mayor importancia capturadas con cada una de ellas. Se hace un resumen histórico del desarrollo de la pesquería del atún en el Océano Pacífico Oriental a partir de 1903. Se describen fundamentalmente dos etapas: la de la pesca con carnada y la de la pesca con red de cerco, alcanzando esta última una distribución desde la frontera de México con Estados Unidos en el norte hasta el Sur de Chile. Con mayor detalle se describe el desarrollo de la pesquería mexicana de atún con particular énfasis a partir de 1970. La flota mexicana del atún, compuesta por barcos de carnada y de red de cerco, ha alcanzado un máximo entre 1978 y 1986. De igual forma, las capturas se han incrementado considerablemente en los últimos ocho años. Se analiza históricamente la producción de acuerdo a los sectores participantes en ella en relación a la flota. También se describe la situación actual de la industria atunera en términos de eficiencia. Se presenta un análisis del mercado tanto de consumo interno como de exportación,

los cuales tienden a equilibrarse. Finalmente, se discuten algunos puntos críticos en el desarrollo de esta pesquería, y se ofrecen proyecciones para el futuro.

GLOBAL OVERVIEW OF TUNA FISHERIES

Tunas are found in almost every ocean in the world, and they have been the focus of some of the more important fisheries in terms of volume and commercial value. Tunas inhabit temperate and tropical waters of the Atlantic, Pacific, and Indian oceans. They live in the mixed layer, from 10 to 150 m deep, depending on the ocean and the time of year.

Tunas have been exploited mainly by three different types of gear: "pole-line" in bait boats; purse seine; and long-line. These methods of fishing have, respectively, reached approximately 40%, 30%, and 30% of the total world tuna production. The pole-line method has been used mainly to catch yellowfin, bigeye, albacore, northern bluefin, and southern bluefin. In this method of fishing, saury, mackerel, squid, and small coastal pelagic fishes like sardines are used as bait. The purse seine method is the more recent and is one of the most important methods for catching tuna today. The long-line method differs from the other two in that, depending on the target species, the lines can be set from 55 to 150 m deep. Additionally, with this type of fishing, considerable quantities of billfish and sharks are taken.

The average production of tunas in the world oceans is 70% from the Pacific Ocean, 20% from the Atlantic, and 10% from the Indian Ocean. Additionally, big tunas and billfish support important sport fisheries around the world.

TUNA FISHERIES IN THE EASTERN PACIFIC OCEAN

This document will refer exclusively to the bait boat and purse seine tuna fisheries.

The tuna fishery in the eastern Pacific had its origin in the United States in 1903. Fishing started with bait boats, and the U.S. began canning albacore tuna in California. The product was well accepted in the internal U.S. market, and developed rapidly. In 1914, catches were above 18 million

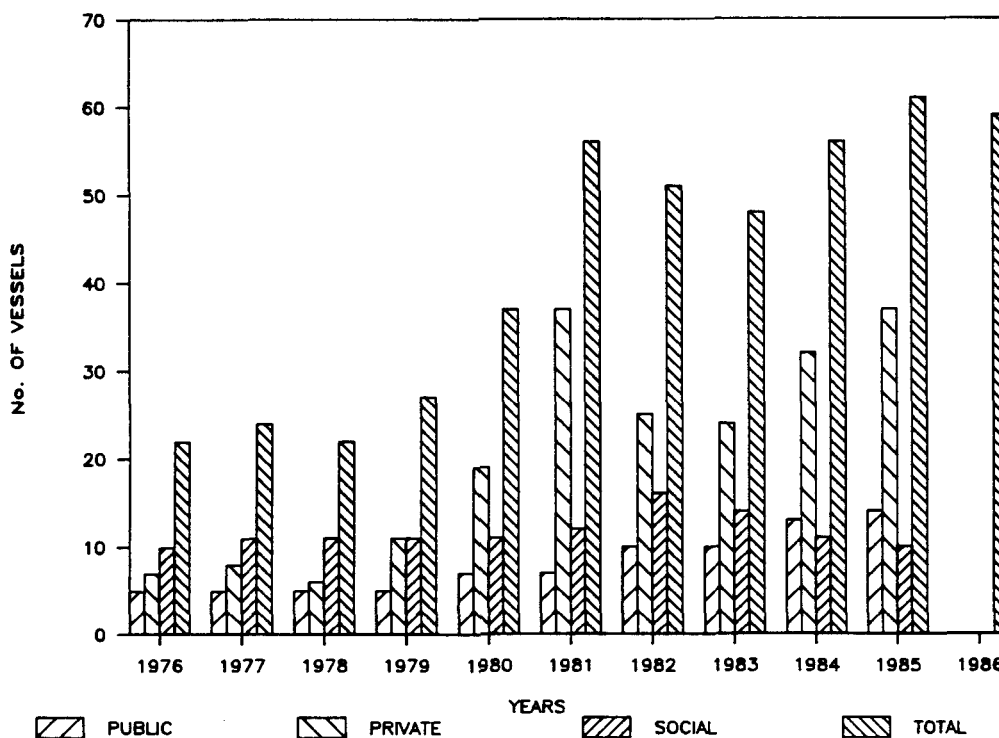


Figure 1. Historical development of the Mexican purse seine tuna fleet by three components: public, private, and social.

pounds. However, because of the nature of the albacore fishery, annual production varied, and in 1916 the catch was low. Producers thus decided to start canning small amounts of yellowfin and skipjack tuna from California. After the First World War, demand for canned tuna increased considerably in the U.S., and it was not possible to meet the demand with albacore alone. As an alternative, the U.S. industry processed large amounts of yellowfin and skipjack. In 1918, these two species accounted for 77% of the total tuna canned in the U.S.

In order to increase its tuna production, the U.S. tuna fleet began to explore southern waters of the Californias to find yellowfin and skipjack. In 1922, small boats, together with large refrigerated boats, made fishing trips during the spring months to Cabo San Lucas, searching for yellowfin tuna. In fall these boats explored near Bahía Tortugas, Baja California. As a result of these operations, fishing was very productive, and in 1923 catches from these areas exceeded those obtained in U.S. waters. In 1929, the U.S. tuna industry expanded its fleet with larger boats, and the California fleet unloaded 64 million pounds. This fleet discovered new tuna banks in Rocas Alijos, Revillagigedo Islands, and Tres Mariás Islands, where fishing was possible year-round.

In the 1930s the U.S. fleet made exploratory trips to Clipperton and Cocos islands in Central

America, the Galápagos Islands off northern South America, and along the coasts of Guatemala, El Salvador, and Panama. In 1934, the southern region of Panama and the Galápagos Islands were heavily exploited. During the 1950s, tuna fishing by bait boats continued to increase, reaching its maximum at the end of that decade.

Since the 1960s, as a consequence of the development of new gear (purse seine), storage capacity, and the length of trips of the international purse seine fleet, the fishery has expanded from the U.S.-Mexico border to 30°S, off Chile, and to 140°W-150°W at the equator.

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There are records of the Mexican tuna fishery since 1937. From 1937 to 1965, catches fluctuated between 340 and 3,528 metric tons (MT); the most abundant catches occurred in 1950 and 1960. This fishery developed in the states of Baja California Norte and Baja California Sur. In 1970, the Mexican tuna fleet had 15 vessels, which caught 11,328 MT. This production level was sustained through 1972. In 1973 the fleet was increased to 19 tuna vessels, which caught 17,495 MT; in 1974 there were 23 vessels producing 21,615 MT of tuna.

After Mexico declared its Exclusive Economic Zone, the Mexican tuna fleet expanded rapidly, taking an average of 35,000 to 40,000 MT of tuna from 1975 to 1981. In 1981, Mexico had 55 tuna

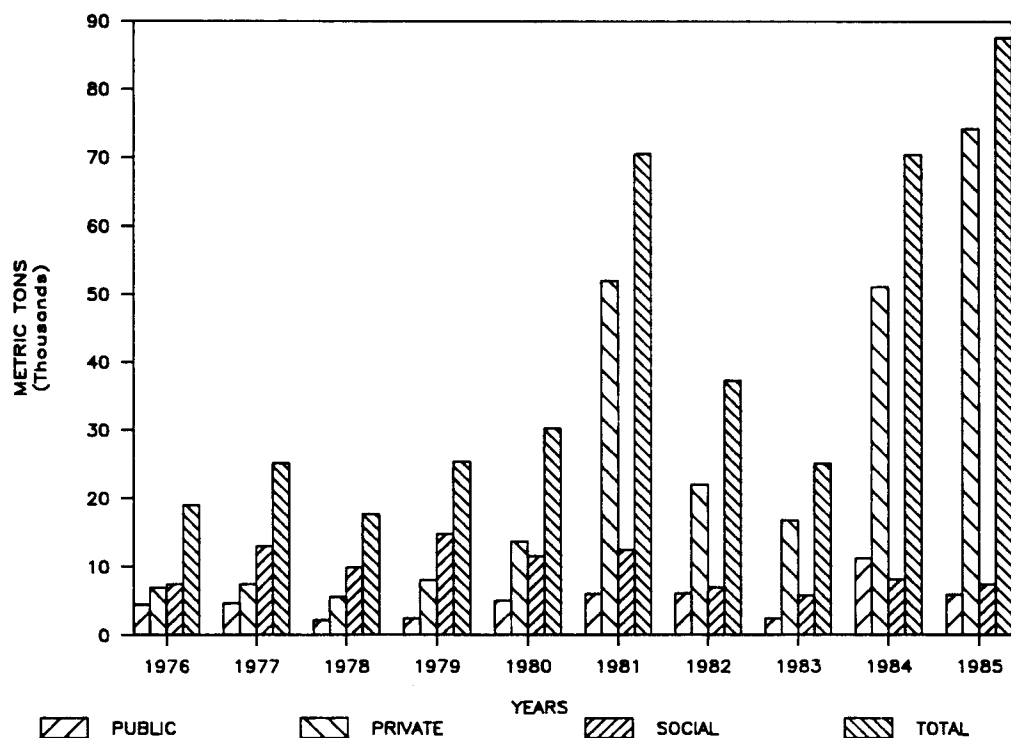


Figure 2. Production of tuna by the purse seine and bait boat fleets of Mexico in metric tons, 1976-85.

vessels and 37,000 MT of carrying capacity. In accordance with the Mexican tuna fleet expansion program, Mexico continued increasing its fleet, and in 1985 there were 61 vessels, with a total carrying capacity of 46,200 MT. In 1986 the fleet decreased to a total of 59 vessels and 49,000 MT of carrying capacity.

Figure 1 shows the historical development of the Mexican tuna fleet and its structure in three components: social, private, and government. Fishing organizations (cooperatives) financed by the federal government are referred to as the social component. The public component comprises fishing companies (Productos Pesqueros Mexicanos) whose industry and fleet are federal government property. This component is also referred to as "government." The private component comprises companies or associations using 100% Mexican capital, or joint ventures using Mexican and foreign capital in accordance with Mexican law. The main increase in the fleet occurred in the period from 1979 to 1985: carrying capacity increased from 14,000 MT in 1979 to 46,000 MT in 1985.

Figure 2 illustrates the development in terms of production. In 1976 Mexico produced around 20,000 MT, and in 1981, about 70,000 MT. However, in 1982 and 1983 there was a considerable decrease. In 1984 and 1985, a new increase in production was observed, reaching about 88,000 MT

in 1985. In 1986, Mexico continued increasing its production, and by October had caught more than 80,000 MT. It was estimated that the catch would reach more than 100,000 MT by the end of 1986.

At the beginning of the development of the fishery, from 1976 to 1979, the social component of the Mexican tuna fleet contributed a major proportion of the catch. However, since 1981 the principal contribution of the catch has come from the private component of this fleet, which caught 50,000 MT, or 73% of the total production, in 1981.

Figure 3 shows the historical development of the fleet in terms of carrying capacity. The private sector expanded the most. Social and public components remain stable and low relative to the private sector. The fishing effort of the purse seine fleet has increased considerably in recent years; however, the bait boat fleet has stabilized (Figure 4). As illustrated in Figure 5, from 1983 to the present, the Mexican purse seine tuna fleet has increased its yield per trip and, consequently, its carrying capacity (Figure 6). In 1986, this trend seems to continue. The bait boat tuna fleet has tended to stabilize, but in low proportion to the purse seine component. The main Mexican tuna ports are Ensenada, Mazatlán, La Paz, Puerto Lopez Mateos, Isla de Cedros, Bahía de Tortugas, and La Reforma. Exporting ports are Ensenada and Mazatlán.

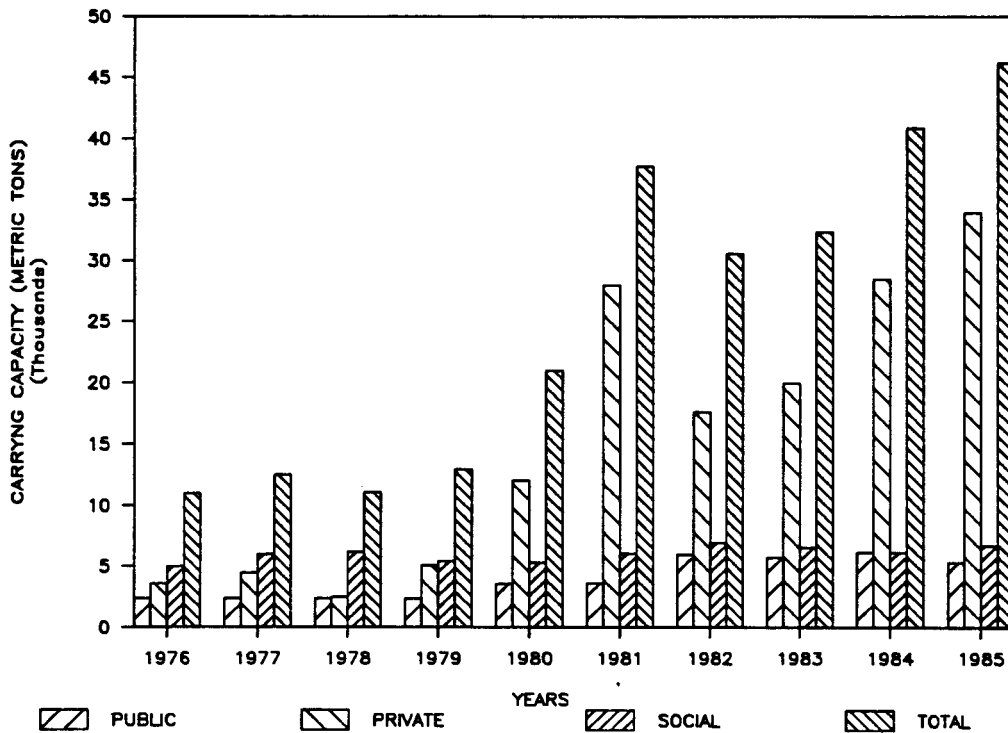


Figure 3. Development of the Mexican purse seine and bait boat tuna fleets in terms of carrying capacity.

FISHING AREAS OF THE MEXICAN TUNA FLEET IN 1985 AND 1986

The Mexican tuna fleet in 1985 covered the entire distribution of the eastern Pacific tuna fishery, according to the following seasonal pattern. In spring the fleet operated around the tip of the Baja California Peninsula and central Mexico as far as 140° west longitude and 5°-15° north latitude; in autumn the fleet concentrated in central Mexico and the mouth of the Gulf of California; in winter it spread out around the Mexican coast and Central

America to the north of Peru. In 1986 the pattern of operation of the Mexican fleet was very similar to that of 1985; however, winter operations were extended far offshore of central Mexico.

TUNA INDUSTRY OF MEXICO

In 1985, 70% of the Mexican catch was sold as canned tuna. The national production of canned tuna reached about 3 million cases of 48 cans each. Most of this was packed in oil or water. The public sector produced 58%, the private sector 42%. In 1985 the internal market consumed about two-

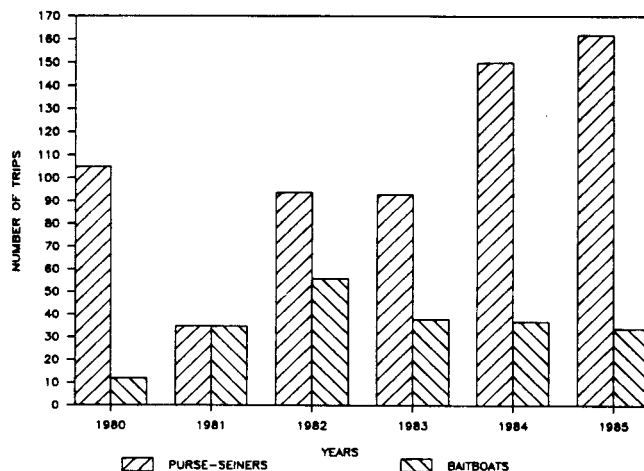


Figure 4. Total number of trips by type of fishing (purse seine and bait boat) shows a considerable increase in the purse seine fleet and stabilization of the bait boat fleet.

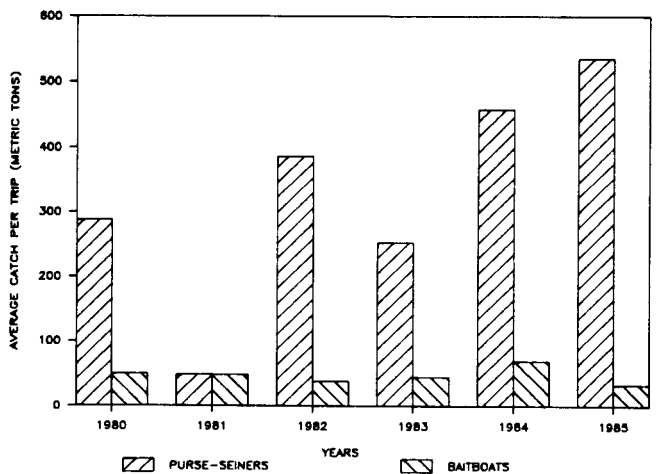


Figure 5. Catch and effort of the Mexican purse seine and bait boat fleets, 1980-85.

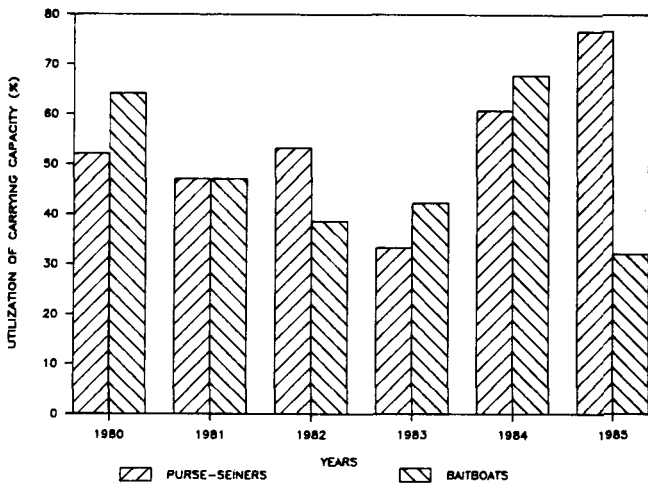


Figure 6. Yields in terms of carrying capacity of the Mexican purse seine and bait boat fleets, 1980-85.

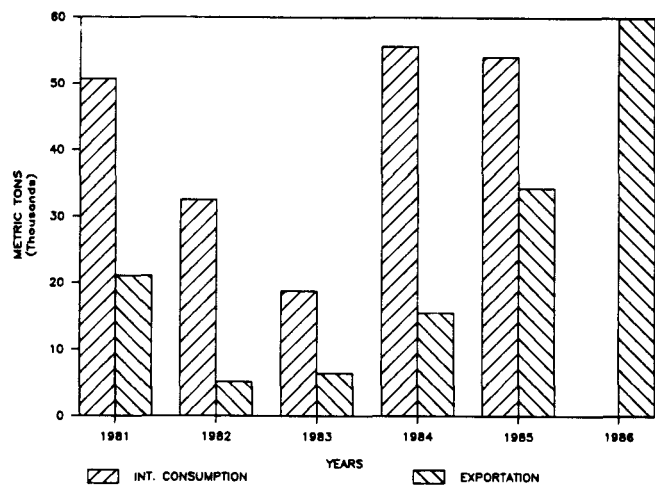


Figure 7. Mexican internal consumption and exportation of tuna, 1981-86.

thirds of the total production of tuna; about 1 million cases remained in storage at the beginning of 1986.

The efficiency of the Mexican tuna industry seems to be below 60% of its capacity if oriented exclusively to canned tuna. However, most of the canneries produce products such as sardine, shrimp, lobster, abalone, tomato sauce, beans, and many other canned vegetables. From January to October 1986, Mexico caught more than 80,000 MT of tuna. Up to June 1986, Mexico had canned about 33,000 MT, which is equivalent to 47% of the national production (1.7 million cases). If this production level continues, by the end of 1986 Mexican tuna production could reach approximately 3.3 million cases. To October 1986, the public sector produced 58.83% of the total, and the remaining 42.17% was produced by the private sector. Both sectors had efficiencies below 60%, but in 1985 other products were produced.

PROCESSING CAPACITY

The public sector of the tuna industry has 313 MT capacity for each 8-hour workday. This is equivalent to 51.65% of the national processing capacity. This sector can pack 87,460 MT in a year of 280 working days, but because of the variety of products, its production remains below the optimum. Another factor affecting efficiency is the social orientation of this industry. Some canneries have been located in isolated areas so as to develop new communities. Some of these canneries, however, reach yields above 70% of their capacity in terms of days worked.

The private sector has a tuna-processing capacity of 293 MT for each 8-hour workday, or 48.35%

of the national capacity. The optimum yield is around 82,000 MT for a year of 280 working days. The private sector is affected by the same circumstances as the public sector, and its production remains below the optimum.

COOLING STORAGE CAPACITY

The public sector has 12,400 tons of cooling storage capacity, equivalent to 70% of the national capacity. However, one 3,000-ton facility is under repair, so the present capacity is down to 9,400 tons. This capacity can be increased by contracting to use the cooling facilities of ANSA in Ensenada and Mazatlán. The Mazatlán ANSA facility has a 3,000-ton capacity.

The private sector has 5,300 tons of cooling storage capacity, equivalent to 30% of the national capacity. This can also be increased by contracting with private companies like COPEL in Mazatlán.

INTERNAL AND EXPORT MARKET

Mexico has developed an internal consumption market in the last 10 years. This market reached a maximum in 1986 on the order of 50,000-60,000 MT. However, in 1982 and 1983 there was a decrease, mainly due to a considerably reduced operation of the fleet in 1982, and to financial problems.

Mexico's external market increased 121% in 1985, from 15,470 MT in 1984 to 34,265 MT in 1985. An important factor in this increase was the reopening of the Canadian market. 1985 exports represented 30% of the national production. From January to September 1986, Mexico exported more than 40,000 MT of tuna, or more than 50% of its national production at that time. According

to these figures, Mexico could export about 30,000 MT more in 1986, therefore increasing its exports to 200% of that of 1985. Figure 7 shows the Mexican tuna consumption and export from 1981 to 1986.

COMMENTS

The carrying capacity is being better employed, and it can be improved with more efficient unload-

ing operations and a greater use of the unloading ports. There are many aspects that delay production of canned tuna in both private and public industry. These can be corrected by eliminating bottlenecks in the packing operations. It is recommended that the internal and export markets be brought into equilibrium through new strategies for marketing, industry, and fleet operation.