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MEXICAN PROGRESS REPORT TO THE 8th ISC¹

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International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean

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(Takamatsu, Japan)

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INTRODUCTION

Mexico has been present since the first meeting of the ISC and in 2004 Mexico joined this organization formally at its 4TH annual reunion in Honolulu, Hawaii, U.S.A. That year, it also attended for the first time the meeting of the Albacore Working Group, which was held in Nanaimo, B.C. During these two first meetings, it reported directly to ISC the information related with its fisheries activities with some of the North Pacific highly migratory species (HMS). Before of joining ISC, the Mexican fishery statistics were reported regionally by the Inter American Tropical Tuna Commission (IATTC) and also shared with other international fisheries management bodies to which Mexico is a fully cooperated Party.

As a new member of the ISC, Mexico was present again in 2005 at the 5TH annual, meeting hosted by the government of Japan in Tokyo. During this year its extended its participation to other ISC Working Groups such as the bluefin tuna, the swordfish and the striped marlins. Then its annual report included since then, the titles of the research projects developed with this resources in the Mexican ZEE. Again in the 6TH meeting celebrated in La Jolla, California, U.S.A. and the following 7TH in Busan, South Korea, it was honored to be present updating and expanding the information provided.

This national progress report describes now the recent trends of the Mexican tuna fishery for the yellowfin, bluefin and albacore tunas and also for the swordfish. In this new report, the fisheries statistics previously presented for these species are updated and new information is provided.

FISHERIES AND CATCHES

In Mexico, the National Institute of Aquaculture and Fisheries (Instituto Nacional de Acuicultura y Pesca, INAPESCA, Formerly INP), was created more that forty years ago to systematically conduct scientific work and fisheries research with the marine resources of Mexico. The INAPESCA is responsible for provide the scientific bases for the management advice to the fisheries authorities in México and poses along its coastal states, in both, Pacific and Gulf O Mexico, 14 regional fisheries centers (CRIPS) which are the centers and laboratories in charge with the recognition, data collecting, sampling and monitoring of the main fisheries and aquaculture activities on a regional scale. Since 1992, the INAPESCA incorporated to this effort, the work of the National Tuna-Dolphin Program (Programa Nacional de Aprovechamiento del Atún y Protección del Delfín, PNAAPD), which closely monitored and study the tuna fishery of its purse seine and longline national fleets. The data here reported is based on the combined efforts from these different and unified groups.

In this region the Mexican fleet concentrates mainly in the yellowfin (Thunnus albacares), which is the prime target tuna species. The Mexican tuna purse seine fishery is one of the largest in the (ETP) since the mid 1980's, although recently it has been displaced to second considering all catches of tunas. This tropical tuna represents for its large volumes the main component in the total catches. Other tuna species which are also caught, but contrastingly in lower proportions are: the skipjack, (Katsuwonus pelamis), the bigeye (Thunnus obesus), the black skipjack (Euthynnus lineatus) and more recently, in northerly zones of the Mexican EEZ, the bluefin (Thunnus orientalis) which is targeted and the albacore (Thunnus alalunga). This paper describes the recent trends of the Mexican tuna fishery for bluefin and albacore tuna and also for the swordfish (Xiphias gladius). It updates the statistics for those species in reports presented before.

Fishing operations of the Mexican purse seine fishery comprise a vast area in the EPO, (figure 1).

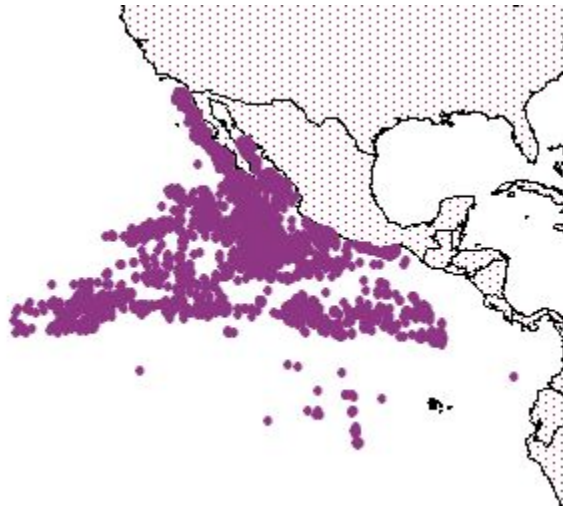


Figure 1. Fishing grounds of the Mexican purse seine fishery.

The recorded levels of tuna captures in the ETP zone by the Mexican fleet from 1980 till 2007 are shown in figure 2. This information has been reported on a yearly base to the regional fisheries bodies, such as the Inter American Tropical Tuna Commission (IATTC) and in the Northern Pacific region, to the International Scientific Committee (ISC).

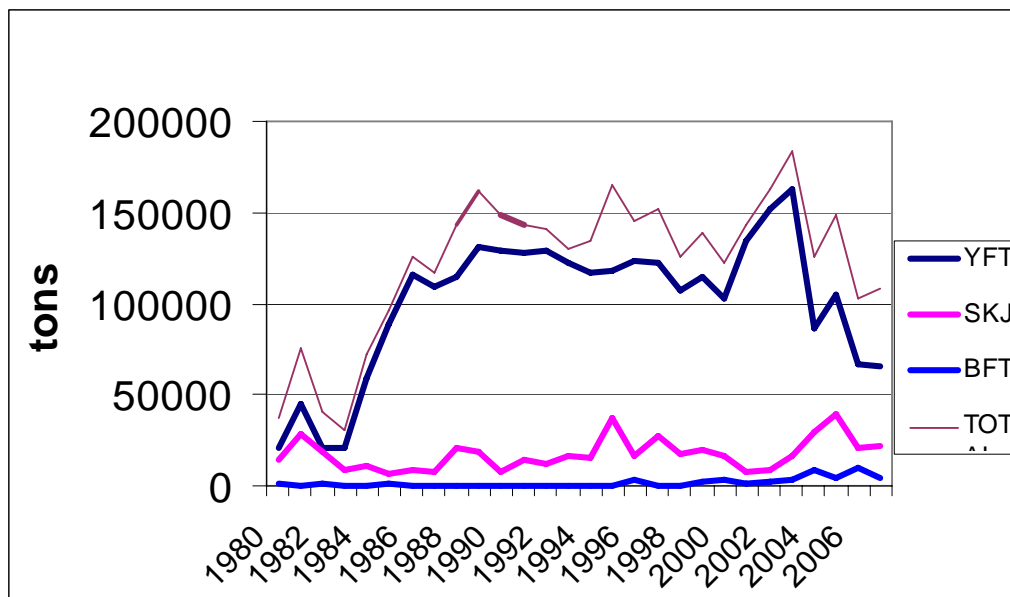


Figure 2. Mexican tuna catch of yellowfin tuna (YFT), skipjack (SKJ) and bluefin tuna (BFT), 1980-2007.

The total tuna landings of Mexico in 2003 were 183,199 mt. Value which represents the highest historic record for this fishery and more than a (10 %) increase from the attained level of the year before, in which a total catch of 164,

048 mt. was reported. Comparatively, the lowest recorded capture in this fishery during recent years was in the 2006 season, with only 97,015 mt., value which is closer to the 1980's development phase. During the last year catches of yellowfin tuna continue the same lower trend but a slight increase is expected for 2008. The fleet has compensated partially its catches with skipjack.

These high consistent reported catches are the result of the combination of the fishing experience and performance of the fleet as well as the effect of high recruitments in previous years and are not related with any significant increase in the fishing effort or a greater expansion of its carrying capacity during the corresponding years. Lower catches in 2006 and 2007 are probably related to a decrease in population levels of yellowfin tuna.

Being one of the largest fleets in the EPO in numbers, the Mexican tuna fleet is not diverse in terms of fishing gear, mobility, scale operation and species targeting. It consists only of two main fisheries. These includes: a greater component of purse_seiners which is the largest (over 363 metric tons carrying capacity) and a comparative small portion of bait_boats vessels.

The purse seine fleet is subdivided for management and conservation purposes in three different categories: Type I, those boats larger than 1000 metric tons, and representing 53% of the total fleet. Type II corresponds to medium to small size ships, more than 363 mt., but less than 1000 mt. with a 24 % of the total and finally, the Type III category, in which the small size vessels, less than 363 mt. are grouped and which represents 18%, during 2007.

The second tuna fishery identified is composed by bait boats, from which in the period reported in here, from 1992-2007, there has been from 2 to 12 active fishing ships. Of this category, in 2007, only 2 bait boats were reported active (3% of the fleet, Table 1). It can be seen that the whole fleet is quite stable in number, composition and carrying capacity.

Yellowfin tuna always has been the primary catch, in recent years it represents from 60% to 92% of total catch. Skipjack (second in volume) goes from 10% to 23% in the same period and other tuna species from less than 1% to 18%. The highest values correspond to recent years when the fleet has compensated lower yellowfin catches with other tunas , basically black skipjack but a slight increase is related also with bluefin tuna catches. (Table 2). This tabled information reflects the great importance of the yellowfin tuna in the Mexican catches and the secondary level of all the other tuna species in the total catches obtained by this fleet in the ETP.

Table 1. Total landings, size, composition and carrying capacity of the active Mexican tuna fleet from 1992-2007.

YEAR	No. of active tuna boats	No. of large PSeiners >1000 mt.	No. of m PSeiners >363 mt. <1000 mt.	No. of PSeiners ≤363 mt.	No. of active Bait Boats	Total Carrying Capacity of the Fleet (mt.)
1992	52	29	14	4	5	43,158
1993	47	23	12	6	6	37,553
1994	54	24	14	11	5	38,670
1995	55	22	15	12	6	38,255
1996	62	22	15	12	6	37,302
1997	63	27	14	12	10	42,836
1998	63	25	14	12	12	41,330
1999	66	25	15	14	12	41,690
2000	64	25	14	16	9	42,035
2001	64	24	12	18	10	41,427
2002	59	23	13	18	5	41,004
2003	62	24	15	19	4	43,601
2004	60	26	13	19	2	44,532
2005	61	27	14	17	3	46,674
2006	59	28	12	17	2	46,240
2007	54	29	13	10	2	45,650

Table 2. Total tuna landings and the proportions of the different tuna species in the Mexican fishery from 2000-2007

YEAR	TOTAL LANDINGS All tuna species (mt.)	Yellowfin (mt.) and (%)	Skipjack (MT.) and (%)	Others Species (mt.) and (%)
2000	119,962	100,261 (83.57%)	15,635 (13.03%)	3,434 (2.86%)
2001	147,960	136,390 (92.18%)	10,410 (7.04%)	661 (0.45%)
2002	164,048	151,833 (92.25%)	9,844 (6.0%)	1,884 (1.2%)
2003	183,199	159,521 (87.07%)	19,971 (10.9%)	2,739 (1.49%)
2004	128,914	88,732 (68.83%)	30,414 (23.59%)	972 (7.58%)
2005	152030	117364 (77.19%)	28566 (18.78%)	6101 (4.01%)
2006	97015	66732 (68.78%)	21121 (21.77%)	9162 (9.44%)
2007*	108,103	65,668 (60.74%)	22,056 (20.40%)	20,379 (18.85%)

1) Other species are: albacore (*T. alalunga*), bluefin (*T. orientalis*), bigeye (*T. obesus*) and the black skipjack (*Euthynnus lineatus*)., *2007 data is preliminary.

Bluefin tuna (*T. orientalis*)

All the fishing zones for bluefin tuna used by the Mexican fleet are located in the Northwest side of the Baja California peninsula, inside the ZEE of Mexico (figure 3), closer to the ranching locations. The fishing season usually runs five months, from May to September, which is the time in which the transpacific migration of this stock is closer to the Mexican Pacific coast, due to oceanographic factors. In 2006 the fishing season started earlier, in March. Sea conditions together with the presence of the specie permitted the development of this new fishery predominantly related to ranching activities in the Mexican Northwestern coastal area. Temperature is an important factor defining areas where BFT is to be found.

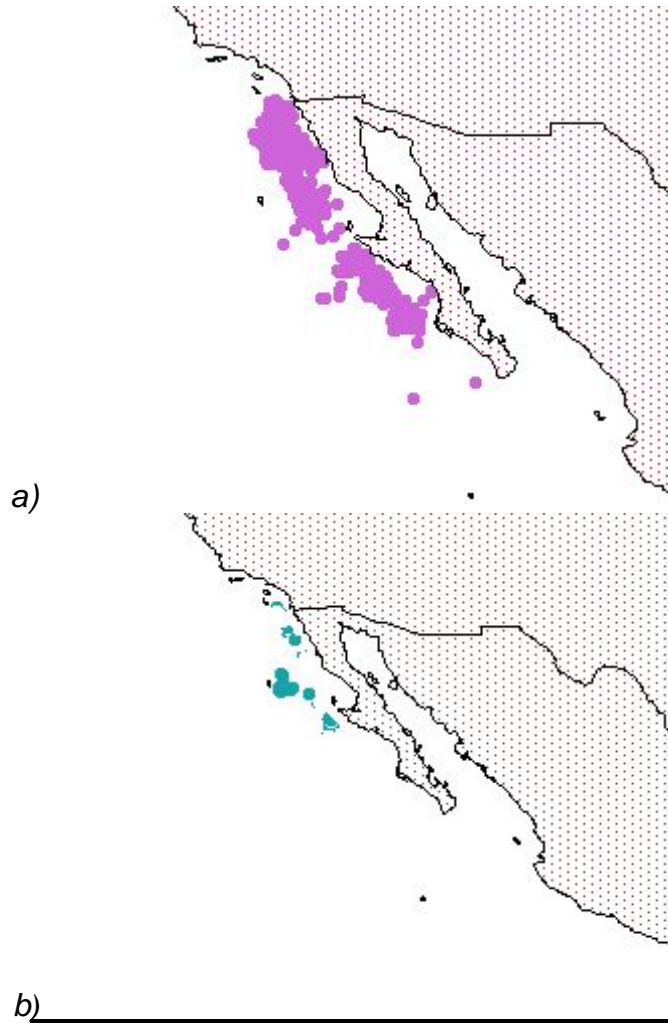


Figure 3. Fishing Zones for bluefin tuna in the Northwest region of Mexico, offshore the Baja California peninsula, a) 1992-2006 and b) during 2007

The time series of bluefin tuna captured by the Mexican tuna purse seine boats from 1995-2007 is presented respectively in Table 3 to see the period related to ranching activities that started in 1996 and fully developed since 1999. In figure 4 a larger time series since 1980 can be seen. This catch represents only a very small proportion of the total tuna caught by the Mexican fleet with an average catch of 3200 mt for the entire period. This represents a small proportion of the Mexican tuna catch, although very valuable. The 3,700 mt. reported in 1996 was the first historic highest record for this fishery and the first year bluefin tuna has been targeted by the fleet. Again, in 2004 and 2006 new records were established for this tuna specie in Mexico..In 2007 the catch returned closer to the average. The catch in the Eastern Pacific nevertheless is below the historic highs observed in the 1960's and 1970's. The information provided makes clear that fishing for bluefin has not being a foremost significant activity in Mexico for many years. It also shows that even in some fishing seasons there were no captures on this stock, or those were only of low levels. Therefore, it is clear that fishing bluefin in Mexico was considered only incidental. However, more recently,

in the years (1996-to present time) there has been a greater interest devoted to this species, mainly for the ranching activities developed in the Northwest region of Mexico.

Table 3. Bluefin tuna catch of Mexico, 1995-2007.

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007*
10	3700	367	1	2369	3025	863	1708	3211	8880	4488	9706	4005

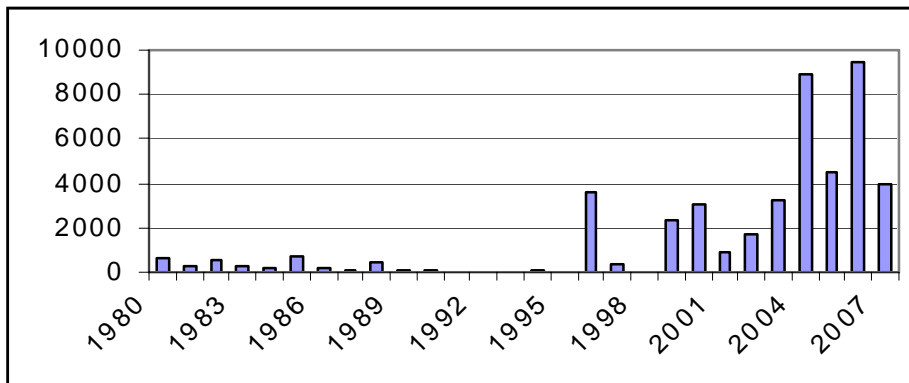


Figure 4. Bluefin tuna catch from 1980-2007, Mexican fleet, *2007 data is preliminary

The catches of bluefin for ranching are performed only with commercial purse seiners (normally searching for YFT). Some times, the holding nets with the bluefin tunas are transferred to tugboats, which then, make slowly the trip to the enclosures and fattening nets located in the Baja California peninsula.

Ranching Activities

This new tuna fishery component or modality has been the trigger of higher proportional catches of bluefin. In 2005, the catch came down to 4545 from a high pick in 2004, increasing again in 2006 with very low catches this year, again making evident that oceanographic conditions and the eastern distribution of the specie are limiting factors for the Mexican bluefin fishery. Most of the catch is utilized for fattening. In 2005, 2006 an estimated 80% of the catch was transported to the ranching companies and the other 20% went to the Mexican market. In 2007 probably almost all BFT was directed to ranching. This activity represents an economic incentive for the Mexican tuna fishery and has a regional economic impact especially in northwestern Mexico.

The ranching activities are limited in several ways. They depend on the fishing vessels already in the fishery, by the amount of area they have devoted for aquaculture purposes, by law defining in many cases the amount the companies can growth each year, oceanographic conditions and EEZ's.

The Mexican yearly progress reports to ISC (Dreyfus and Ulloa, 2004; Dreyfus, Fleisher, Robles and Ulloa, 2005; Fleisher, Dreyfus, Robles and Ulloa, 2006, and Dreyfus, Fleischer, Klett, Ulloa and Robles, 2007) synthesize the history the fishery and ranching activities for bluefin.

Management

All major fisheries are required by law to have developed a Management Plan that pinpoints major characteristics of the fishery, problematic, possible solutions, research needed, data that has to be submitted to the government by the participants in the fishery and management objectives and procedures. In the case of the Bluefin tuna fishery, INAPESCA recently finished a document that has been passed to CONAPESCA for review and discussion in order to adjust and approve this plan in order to be operational.

Albacora (*T. alalunga*)

The related Mexican information for this fishery has been reported constantly to ISC and IATTC. Catches are limited to a small area in northern Mexico (figure 5), data from 2000-2007 period. Table 4 shows the total catch reported for Mexico.



Figure 5. Albacore fishing ground for the Mexican purse seine fishery.

Table 4. Mexican albacore tuna catches from 1980-2007. *2007 data is preliminary

YEAR	MEXICAN CATCH
1980	0
1981	10
1982	0
1983	0
1984	179
1985	54
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	2
1995	4
1996	0
1997	0
1998	8
1999	0
2000	70
2001	0
2002	28
2003	28
2004	104
2005	0
2006	109
2007*	40

Swordfish (Xiphias gladius)

The development of the swordfish fishery in Mexico has two different historical periods. One started in 1964, using long liners, the second began in 1986, with some gillnets. The fleet nowadays operates seasonally, principally in the Autumn and Winter along the western coast of the Baja California peninsula, between the 21° 30' N and 32° 20' N. They fish from September-October to February. Captures decline after that period and is very scarce in the hot summer months of July and August. The greater fishing effort is concentrated in two areas in the western coast of the Baja California peninsula, between the latitudes 21° 30'N and 32° 20'N. One is south of Punta Eugenia to the 23°N and the other fishing zone, from the 30° parallel, to the northern limit of the Mexican ZEE (Sosa et. al.

1992; Castro, et. al. 1995). The operational zone is restricted to an area outside the 50 miles protected region for the sport fisheries operations from the entire Mexican pacific coast line (Fig. 6).

The commercial swordfish fishery it has been regulated in Mexican waters by an administrative regulation (NOM-017-PESC-1994) which mandates that logbooks should be submitted by the fleet to the fishery agency in Mexico, (CONAPESCA). Besides this, it has been closely monitored from 1998 till 2000 by special trained observers of the Programa Nacional de Aprovechamiento del Atún y Protección a los Delfines, (Mexican Tuna-Dolphin Program-PNAAPD). They worked during those years aboard the long liners and the gillnet ships, which operated outside the 50 miles protected zone decreed for the sport fisheries operations. In 2007 and in the current 2008, an observer program was directed to the long line shark fisheries and the observers aboard has been taken information on incidental captures of sword fishes during those operations.

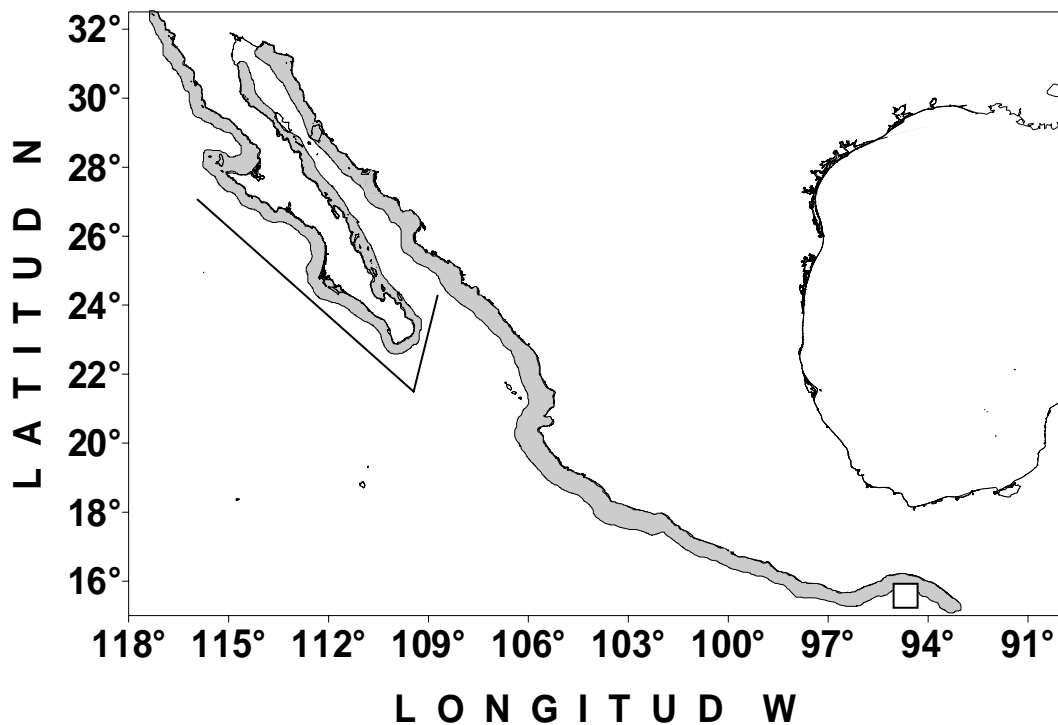


Figure 6. Commercial fisheries restricted to an area outside the 50 miles in the entire Mexican pacific coast line.

In 1992 the swordfish fleet was integrated by 27 boats. From those, only 24 were active fishing boats. In 1995, the fleet reduced its size to 22 fishing ships, number which did not changed for many years. More recently, in 2006, 29 boats fished in the Mexican Pacific catching different species during the year, including in some months the swordfish. The growth in numbers of the ships is explained because

some of them have also permits for different species, (multiple fisheries), pending on the availability of the fish species by seasons. Therefore, not all cached swordfish. In 2007 17 boats were only actively reported in the fishery, 13 were long liners and 4 with gillnets. Its size ranged from 15.9 to 24 mts, (Table 5). Their operative distributions by gear type are presented respectively in Figs 7 and 8.

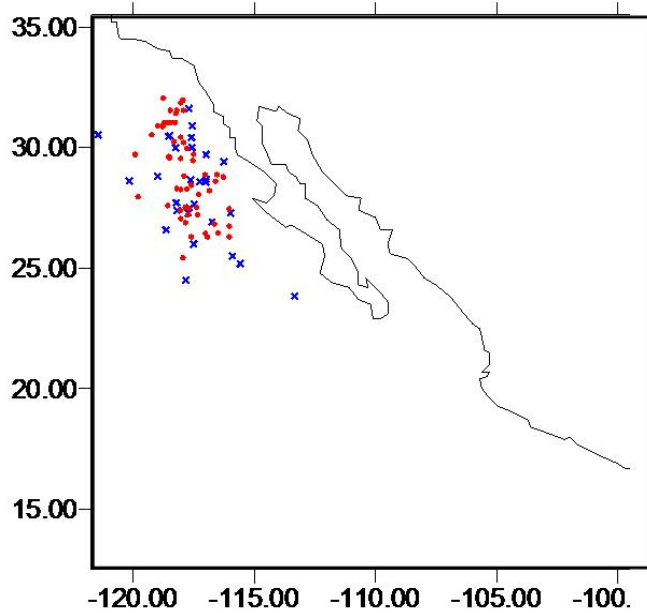


Figure 7. Geographic distribution of the long liners fishing trips during 2006-2007. (Notes: red is 2006 and blue is 2007)

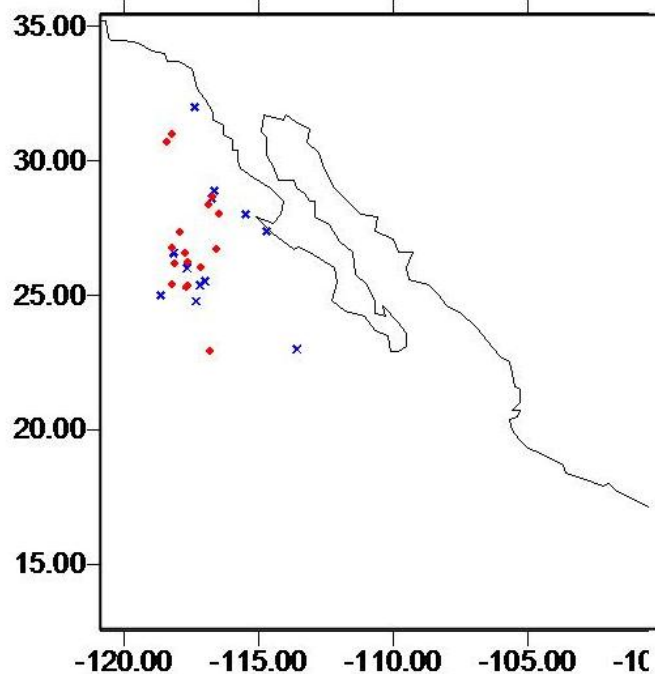


Figure 8. Geographic distribution of the gillnets fishing trips during 2006-2007. (Notes: red is 2006 and blue is 2007)

TABLE 5. LIST AND CHARACTERISTICS OF THE CURRENT MEXICAN SWORD FISH FISHING BOATS BASED IN ENSENADA, BAJA CALIFORNIA

SHIP	SIZE (MTS)	GEAR
CONQUISTADOR II	17.9	LONG LINER
CHRIS	24	LONG LINER
EL VETERANO	24	LONG LINER
EL VENCEDOR	20	LONG LINER
PUNTA ABREOJOS II	22	LONG LINER
THOR	20	LONG LINER
FANTASMA DEL MAR	17.8	LONG LINER
YUMANO	22	LONG LINER
PROGRESO I	22.6	LONG LINER
GUERRERO DEL MAR	22.9	LONG LINER
EL MORO	17.9	LONG LINER
PUNTA ABREOJOS III	18.2	LONG LINER
ILEANA	21.9	LONG LINER
CORINA DEL MAR	15.9	GILLNET
ISLA DE TODOS	15.9	GILLNET
SAN JACINTO	20.5	GILLNET
VICTORIA EUGENIA	17.8	GILLNET

Swordfish Catches (Category I Data):

The main ports used by this fishery are: Ensenada in the northern part of the peninsula, Other alternative ports used for the landings are: San Carlos in the

southern region of the peninsula and Mazatlán, across the Gulf of California, on the mainland Mexico, although the captures in these southern regions are less significant. Captures of the sword fish in the recreational fishery is not to significant at the present time with an average of 41 fish per year.

The historic record of the swordfish fishery of the Mexican fleet is presented in Figure 9. These indicate three different pick periods. The first in 1981 yielded 1,575t. This catches later declined till 1985. Later an increment was observed reaching 2,650t in 1990. After that, an other decline was observed again obtaining 428t. The next pick was in 1998 with 3,603t, which is the historic highest record. In 2003 a little increment was obtained with 671t. During 2004 and 2005 the captures have been around 300t for the Ensenada fleet and 347 in 2006 as a reflection of the increased number of fishing ships. In 2007 again a lower level was reported with only 250t. The variation is attributed to the changes in the two fishery methods described above and also a reflection of the fishing effort pending on the availability of the resource in the fishing areas and also the price in the markets and the fact that the fleet has permits for other resources.

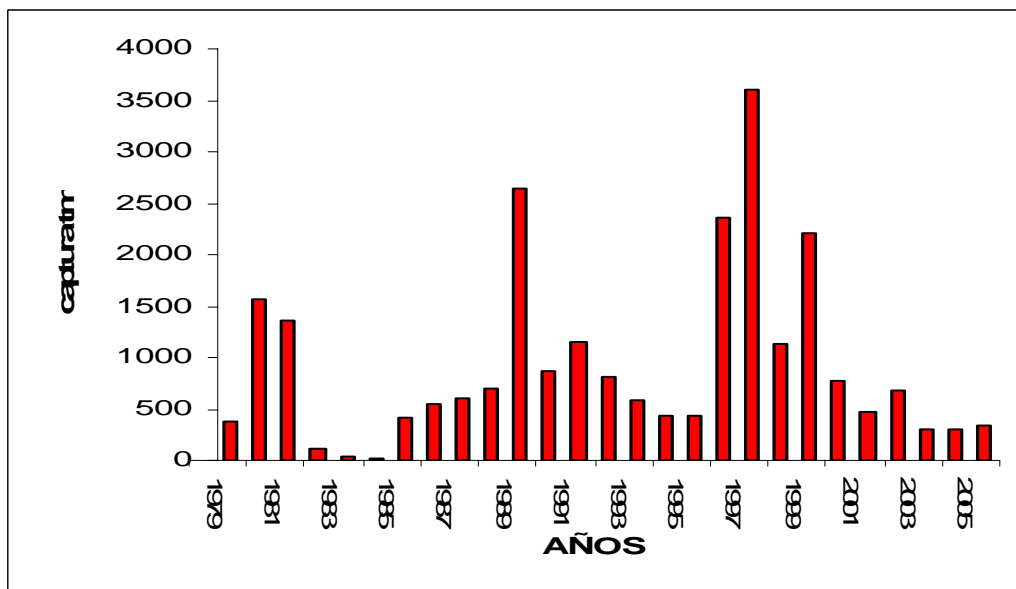


Figure 9. Catches of sword fish from 1979-2007 (Sources FAO, INAPESCA- CONAPESCA- PNAAPD-México).

CPUE

In the Eastern Tropical Pacific (ETP), the swordfish shows since 1965 a stable CPUE and it is estimated that it can sustain an annual yield of 2,800t (Bartoo and Coan, 1989; Joseph, 1981). Still there is no model which reflects the condition of the swordfish stock in the entire Pacific ocean. The Japanese data from the long liners indicates that the stock it is subjected to a low catch rate and that there are

still possibilities of increasing its harvest. Therefore, the data collection process for this exercise is a mandatory as identified by the SWOWG of ISC and México is contributing for this effort with the available information.

Long Liners Data

During the period 1998-2000, time in which the PNAAPD observers program operated aboard the long liner fleet, it was found that the biggest average rate of captures was obtained using 700 hooks by long liner. This number of hooks yielded 24 fishes/1000 hooks. However, the use of 800-900 hooks at that time predominant in the fleet, yielded only 17 or 12 fish/1,000 hokes respectively.

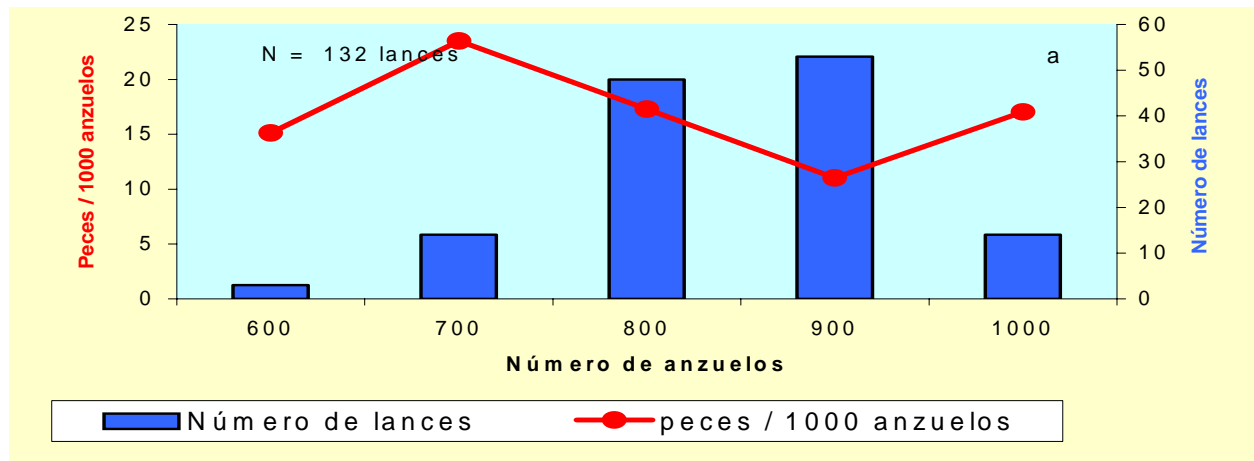


Figure.10. Number of sets, hooks and catches of sword fish/1000hookes (Data from 1998-2000 PNAAPD).

Data of 2006 and 2007, was collected in the main landing port of Ensenada described before. In 2006 there were 544 sets with yielded 150t of sword fish with a CPUE estimated of 341Kg/1000 hookes and an fishing effort of 480, 000 hookes.

Preliminary data till September 2007 indicated 318 sets, with a CPUE of 100kg/1000 hookes and an fishing effort of 280, 000 hookes. Here the data from Winter still is in process. Figure 11.

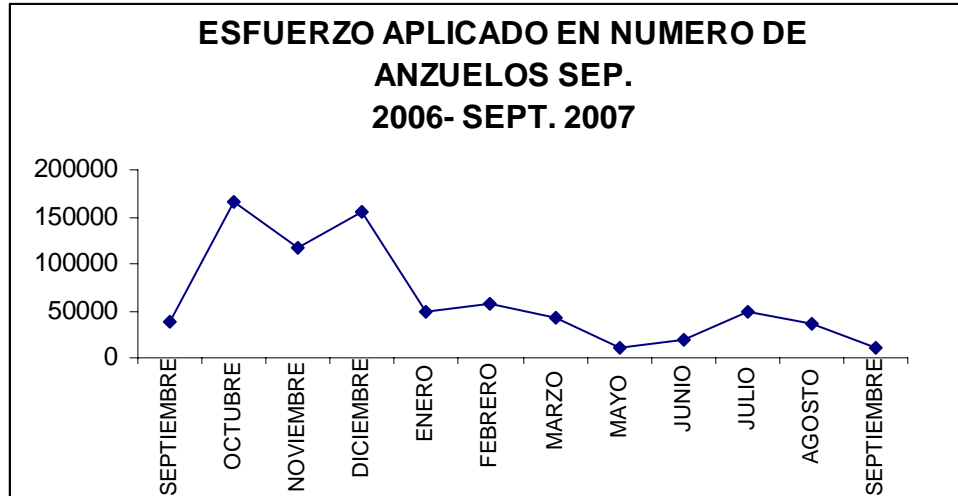


Figure 11. Fishing effort expressed as the number of hooks deployed in 2006 and 2007 by the Mexican long liner sword fish fleet

Gill Net Data

In 2006 and 2007 they were only four boats actively fishing sword fish with gill nets in Mexican waters. Their sizes ranged from 15.9 to 20.5 mts (Table 5). These boats produced respectively during 2006 195 sets, yielding a capture of 65t of sword fish. This represents 20% of the total captures of sword fish in Mexican waters that year. Comparatively in 2007, (data only from January till September) a total of 154 sets with 26t of sword fish.

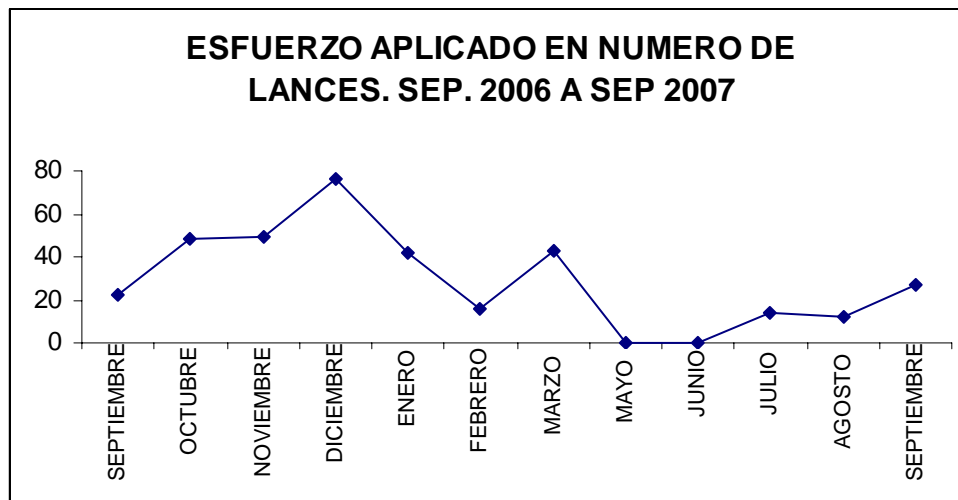


Figure 12. Effort as number of sets in the gill net sword fish fishery in Mexican waters during 2006 and part of 2007.

Catch Composition

Sosa et al., 1992 reports preliminary information of the gillnet fishery from México. He mentions that the catches are composed by 88% of sharks species, several other commercial species, like the sun fish and tunas and being the swordfish only the 12 % of the total. The INAPESCA reviewed the long line fishery data from the observers from the PNAAPD and found that among the shark, the blue shark was the (61%) of the reported captures. The swordfish represented (19%) and the complementary (20%) was formed by other 10 fish species, encompassing the dolphin fish, yellow fin tuna and other sharks species. In both studies, the sharks were undoubtedly, the dominant species caught, followed by the swordfish which has a comparative greater percentage in the long line fishery

The data from 2006 and 2007 confirms the previous information showing that the sharks are still the main species captured by the long liners and the gill net fleet in Baja California. From those the blue shark with 63% still is again the more abundant, followed by the sword fish with 23 % of the captures and 3% of mako sharks. Other pelagic fish species combined yielded the other 11%. (Fig

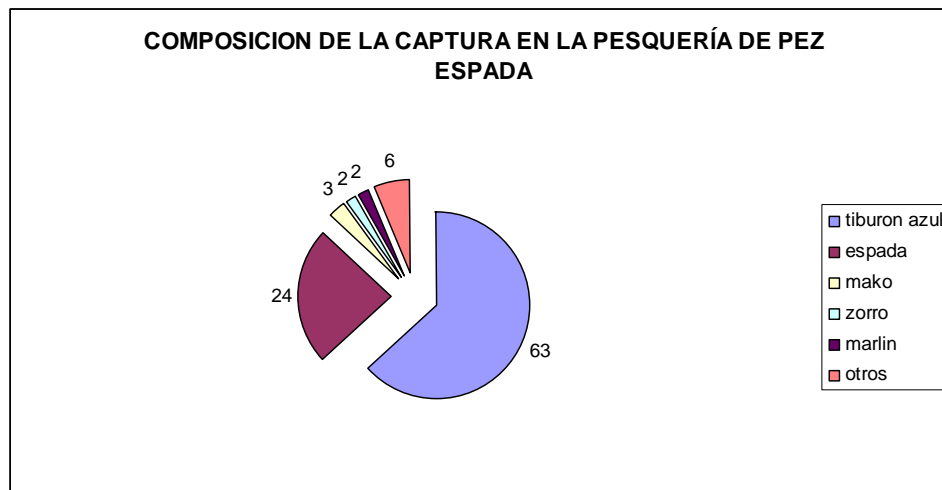


Figure 13. Catch composition of large pelagics in the Mexican swordfish fishery (Data from 2006, 2007)

Table 6. Historic records of the Mexican swordfish fishery from 1979-2007. (Data sources from FAO- INAPESCA-CONAPESCA-PNAAPD-México).

YEARS	FAO and CONAPESCA Metric Tones
1979	7
1980	380
1981*	1575
1982	1365
1983	120
1984	47
1985	18
1986	422
1987	550
1988	613
1989	690
1990*	2650
1991	861
1992	1160
1993	812
1994	581
1995	437
1996	439
1997	2365
1998**	3603
1999	1136
2000	2216
2001	780
2002	465
2003	671
2004	270
2005	235
2006	347
2007***	250

Notes:

*High picks

**High Historic record

*** Preliminary

FISHERIES MONITORING, DATA COLLECTING AND REPORTING

The National Institute of Aquaculture and Fisheries of Mexico (INAPESCA), formerly INP (Instituto Nacional de la Pesca, INP-Mexico) conducts systematic scientific work and has developed fisheries, aquaculture and technological

research for more than 40 years. Since 1992, it has also incorporated to this effort, the monitoring and research work of their National Tuna-Dolphin program, PNAAPD (Programa Nacional para el Aprovechamiento del Atún y Protección de los Delfines), to monitor and study the tuna fishery of their large commercial fleet.

Tuna purse seine and bait boat fishery:

Catch and effort data and the purse seine tuna fishery performance had been closely monitored with a 100% coverage by scientific observers aboard all the large commercial Mexican tuna ships. From this monitoring program, 50% are observers from the Mexican National Program (PNAAPD) and the remaining trips are covered by the IATTC international observers program. Pertinent data from the two observers programs has been available to the IATTC, ISC and other regional meetings. There is also a national administrative regulation (Norma Oficial Mexicana-EM-002-PESC-1999) which regulates in Mexico the tuna fisheries operations and Mexico complies with management measures that are taken in IATTC organization. Besides this, logbooks are submitted by the fleet to the Fishery agency in Mexico, CONAPESCA (Comisión Nacional de Pesca), Ministry of Agriculture, Live stock and Fisheries). Landings are obtained from each vessel with (100% coverage). Fish are measured for fork length by PNAAPD observers on board. The IATTC Secretariat in close coordination with the INP-PNAAD continues to compile the data and related effort, catch and statistics from all the Mexican tuna fleet operations and the PNAAPD covers those vessels which are not monitored by the IATTC.

Swordfish fishery

The swordfish fishery was also monitored since 1998 till 2000 by the observers of PNAAPD, aboard the long liners and the gillnet ships which operated outside the 50 miles defined zone. Also logbooks are submitted by the fleet to the Fishery agency in Mexico CONAPESCA This fishery is also regulated by a special Mexican administrative regulation (NOM-017-PESC-1994). Since 2007 and 2008 the long liners fleet directed to the Shark fishery in the Baja California region, has observers aboard to monitor those captures and to record the incidental captures of other large pelagic fish species.

RESEARCH

Since 1998 the INAPESCA and the PNAAPD have also organized an annual scientific meeting in Mexico to review the research activities developed by Mexican and other scientists. These studies are related with tunas, large pelagic and other oceanic species. Available information of those seven scientific

meetings could be obtained directly from the authors listed in the journal “El Vigia” of the PNAAPD that lists the abstracts every year, or from the INP-PNAAPD sources. The most recent meeting took place in November 2007 in Veracruz, Mexico.

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