



*10<sup>th</sup> Meeting of the  
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for Tuna and Tuna-Like Species in the North Pacific Ocean  
Victoria, BC Canada  
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**Mexican Progress Report to the 10<sup>th</sup>  
International Scientific Committee for Tuna and Tuna-like  
Species in the North Pacific Ocean<sup>1</sup>**

Michel Dreyfus, Luis A. Fleischer, Alexander K. Traulsen,  
Pedro A. Ulloa Ramirez and Humberto Robles Ruiz

July 2010

<sup>1</sup>Prepared for the Tenth Meeting of the International Scientific committee on Tuna and Tuna-like Species in the North Pacific Ocean (ISC), 21-26 July, 2010, Victoria, B.C., Canada. Document should not be cited without permission of the authors.

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

## **MEXICAN PROGRESS REPORT TO THE 10th ISC** (Victoria, Canada)

Michel Dreyfus  
Instituto Nacional de la Pesca (INP)  
Centro Regional de Investigaciones Pesqueras de Ensenada  
[dreyfus@cicese.mx](mailto:dreyfus@cicese.mx)

Luis A. Fleischer  
Instituto Nacional de la Pesca (INP)  
Centro Regional de Investigaciones Pesqueras de la Paz, B.C.S.  
(CRIP- La PAZ)  
[lfleischer21@yahoo.com](mailto:lfleischer21@yahoo.com)

Alexander Klett Traulsen  
Instituto Nacional de la Pesca (INP)  
Centro Regional de Investigaciones Pesqueras de la Paz, B.C.S.  
(CRIP- La PAZ)  
[aklettt@yahoo.com](mailto:aklettt@yahoo.com)

Pedro A. Ulloa Ramírez  
Instituto Nacional de la Pesca (INP)  
Centro Regional de Investigaciones Pesqueras de Bahía Banderas, Nayarit  
(CRIP-BADEBA)  
[cripbadeba@prodigy.net.mx](mailto:cripbadeba@prodigy.net.mx)

and

Humberto Robles Ruiz  
Instituto Nacional de la Pesca (INP)  
Centro Regional de Investigaciones Pesqueras de Ensenada  
[hrobles@cicese.mx](mailto:hrobles@cicese.mx)

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## INTRODUCTION

Mexico has been participating since the first meeting of the ISC and in 2004 Mexico joined this organization formally at its 4<sup>TH</sup> annual reunion in Honolulu, Hawaii, U.S.A. During those years Mexico has been reporting fishery statistics to ISC. Before joining the ISC and until the present, Mexican fishery statistics have been provided regionally to the Inter American Tropical Tuna Commission (IATTC) and also shared with other international fisheries management bodies to which Mexico is a fully cooperating Party.

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

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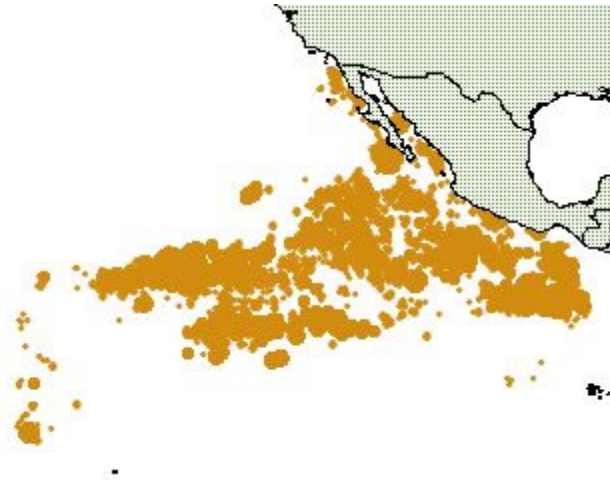


Figure 1. Fishing grounds of the Mexican purse seine fishery. 2009

The recorded levels of tuna captures in the ETP zone by the Mexican fleet from 1980 till 2009 are shown in figure 2.

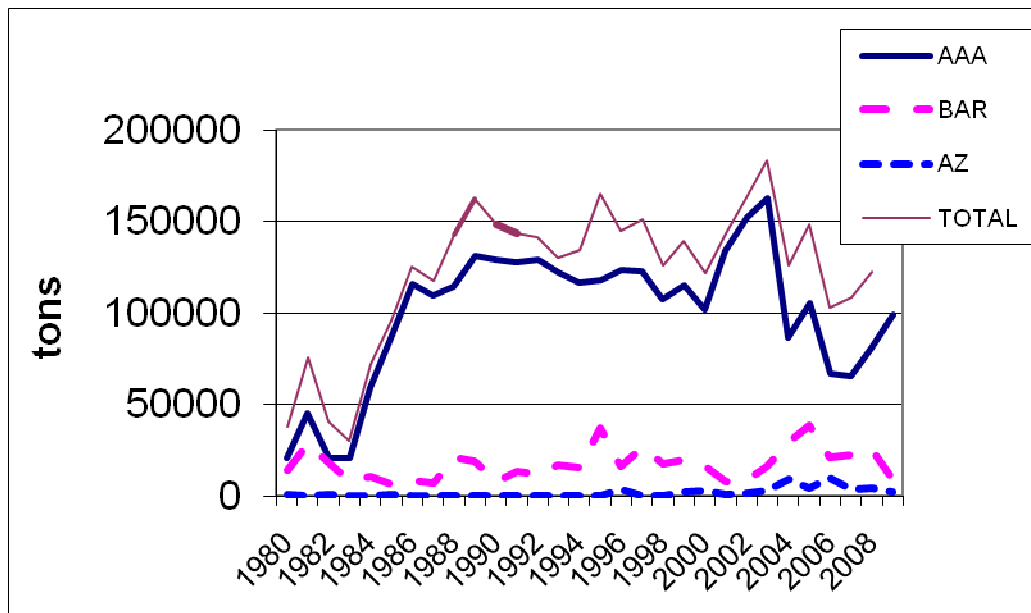


Figure 2. Mexican tuna catch of yellowfin tuna (YFT), skipjack (SKJ) and bluefin tuna (BFT), 1980-2009.

The total tuna landings of Mexico in 2003 were 183199 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 164048 mt. was reported. Comparatively, the lowest recorded capture in this fishery during recent years was in the 2006 season, with only 102472 mt., value

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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 was observed in 2008 and a return to normal catches of yellowfin was seen in 2009. 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 (lower recruitment) and excessive catches of juvenile tunas in coastal areas in the EPO.

The purse seine fleet is subdivided in purse seine vessels, most of them with observers on board all tuna fishing trips and a small quantity of pole and line vessels (Table 1). The whole fleet is quite stable in number, composition and carrying capacity since the 1990's.

Yellowfin tuna always has been the primary catch, and skipjack is always second in volume. Other tuna species have high values because 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 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 2007 and 2009**

<b>YEAR</b>	<b>No. of active tuna boats</b>	<b>No. of m PSeiners &gt; 400 m3</b>	<b>No. of PSeiners &lt; 400 m3</b>	<b>No. of active Bait Boats</b>
<b>2007</b>	<b>55</b>	<b>42</b>	<b>11</b>	<b>2</b>
<b>2008</b>	<b>49</b>	<b>39</b>	<b>8</b>	<b>2</b>
<b>2009</b>	<b>46</b>	<b>38</b>	<b>6</b>	<b>2</b>

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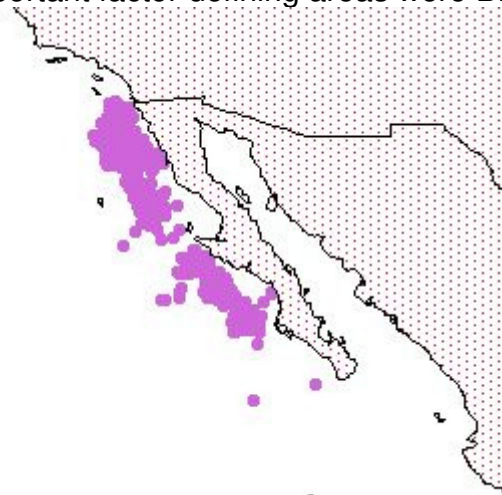
**Table 2. Total tuna landings and the proportions of the different tuna species in the Mexican fishery from 2005-2009**

YEAR	TOTAL LANDINGS All tuna species (mt.)	Yellowfin (mt)	Skipjack (MT.)	Others Species (mt.)
2005	152364	113279	32985	6100
2006	102472	68644	18655	15173
2007	108351	65834	21970	20547
2008	122568	85517	21931	15111
2009	123750	99157	9310	15243

1) Other species are: albacore (*T. alalunga*), bluefin (*T. orientalis*), bigeye (*T. obesus*) and the black skipjack (*Euthynnus lineatus*). \*2009 data is preliminary.

### Bluefin tuna

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.



a)

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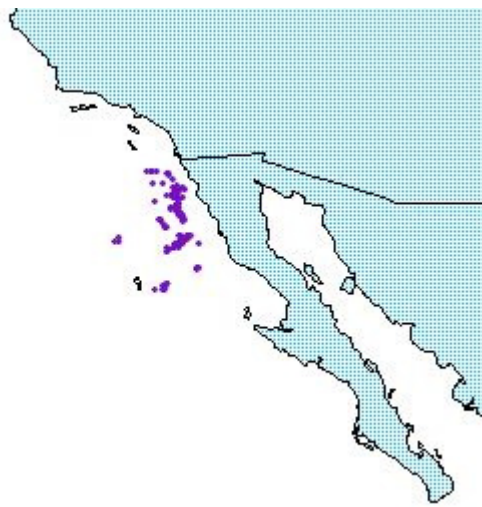


Figure 3. Fishing Zones for bluefin tuna in the Northwest region of Mexico, offshore the Baja California peninsula, a) 1992-2006 and b) during 2009

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. This catch represents only a very small proportion of the total tuna caught by the Mexican fleet with an average catch of 3337 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. In 2009 due to the international economic crisis many companies did not operate and catches were below average. In 2010, the same will happen, also related to El Niño conditions. 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, 1995-2009. (\*preliminary)**

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009*
10	3700	367	1	2369	3025	863	1708	3211	8880	4542	9806	4147	4407	3019

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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.

### **Effort**

There were 16, 13 and only 6 purse seiners involved in bluefin tuna catch from 2007 to 2009 respectively.

### **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 4542 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, 2008 and 2009 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.

### **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 finished and submitted a document for review and discussion in order to adjust and approve this plan in order to be operational. This was based on INAPESCA own analysis and the ISC plenary advice.

### **Albacore (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 4). Table 4 shows the total catch reported for Mexico from 1980 to 2009.

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Figure 4. Albacore fishing ground for the Mexican purse seine fishery.

**Table 4. Mexican albacore tuna catches from 1980-2007. \*2008 data is preliminary**

<b>YEAR</b>	<b>MEXICAN CATCH</b>
1980	31
1981	8
1982	0
1983	0
1984	113
1985	49
1986	3
1987	7
1988	15
1989	2
1990	2
1991	2
1992	10
1993	11
1994	6
1995	5
1996	21
1997	53
1998	8
1999	57
2000	103
2001	23
2002	28
2003	28
2004	104
2005	0

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<b>2006</b>	<b>109</b>
<b>2007</b>	<b>40</b>
<b>2008</b>	<b>10</b>
<b>2009*</b>	<b>17</b>

Besides this, the Sport Fishing Association of California also cooperated gently with information of their annual catches of albacore by their commercial passenger fishing fleet operating under permits in Mexican north Pacific zones. This represents a valuable piece of new information which is provided in this report for the first time. Their records however are reported as the number of fish caught by year and not by weight (figure 5). This catch is not monitored by Mexico, since they depart and return to a US port.

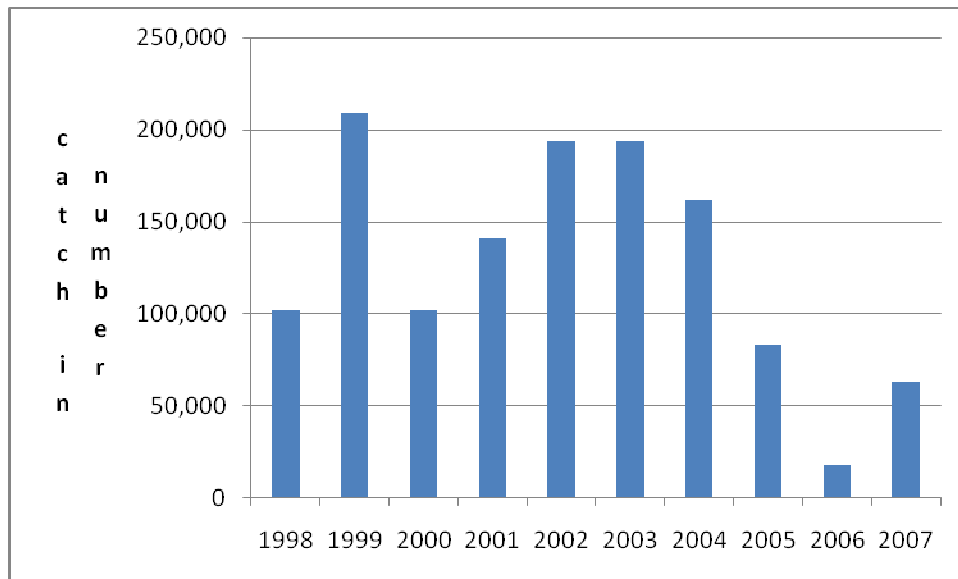


Figure 5. Albacore catch (number of fish) by the US sport fishery in Mexico

**Bycatch**

Billfishes bycatch from the purse seine fishery is estimated and presented in table 5 for 2007 and 2008.

Table 5. Estimated billfish bycatch in the purse seine fishery in number fo organisms, 2007-2008.

Specie	2007	2008
Blue Marlin	66	40
Black Marlin	168	194

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Stripped Marlin	76	104
Short picked marlin	10	8
Marlin	34	62
Swordfish	8	8
Sail fish	510	276

### **Swordfish (Xiphius 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 (Figure 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.

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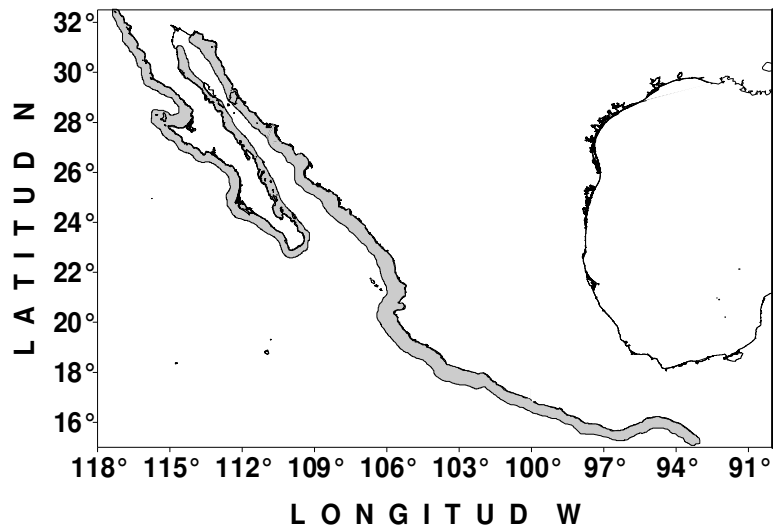


Figure 6. Sport fisheries restricted to an area outside the 50 miles in the entire Mexican pacific coast line.

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 6). Their operative distributions by gear type are presented respectively in figures 7 and 8.

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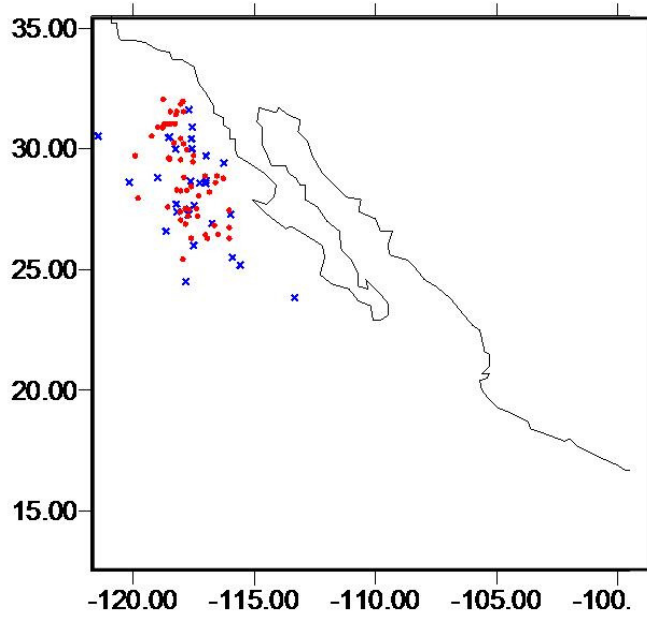


Figure 7. Geographic distribution of the long liners fishing trips during 2006-2007. (Notes: red is 2006 and blue is 2007)

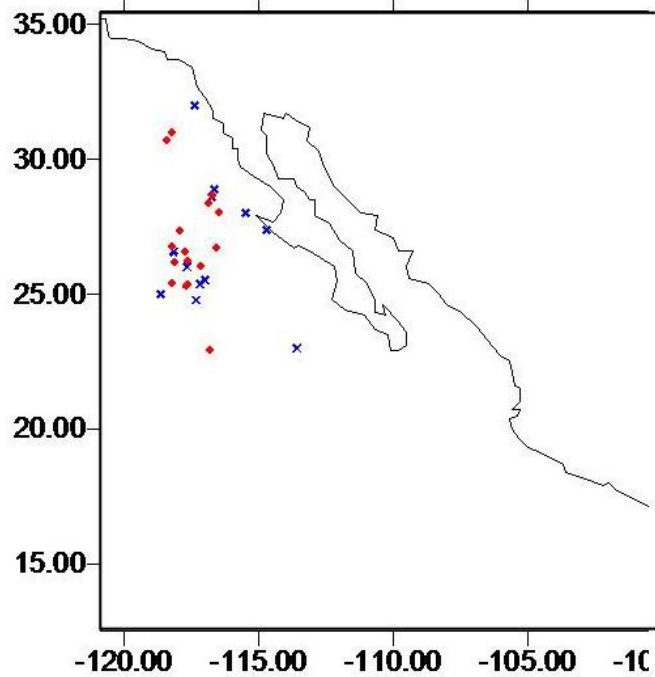


Figure 8. Geographic distribution of the gillnets fishing trips during 2006-2007. (Notes: red is 2006 and blue is 2007)

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**TABLE 6. LIST AND CHARACTERISTICS OF THE CURRENT MEXICAN SWORD FISH FISHING BOATS BASED IN ENSENADA, BAJA CALIFORNIA**

<b>SHIP</b>	<b>SIZE (MTS)</b>	<b>GEAR</b>
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.

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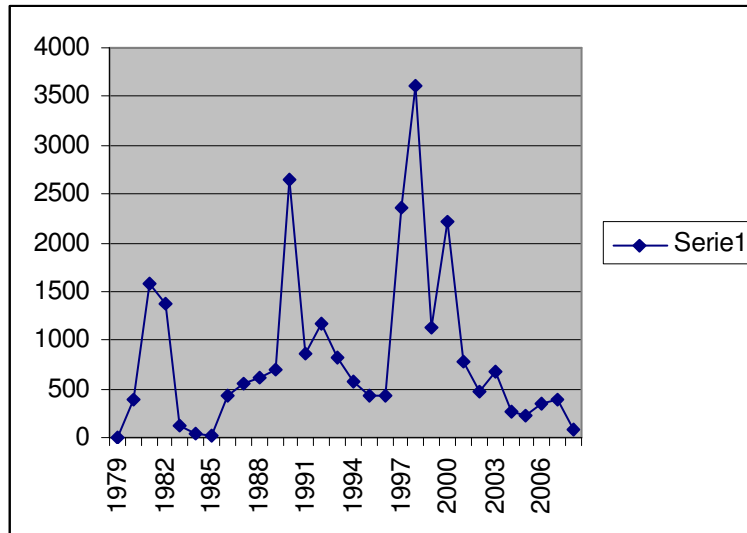


Figure 9. Sword fish historic catches in Mexican waters from 1979-2008.  
(Data FAO, CONAPESCA-Subdelegación de Pesca en Ensenada BC).

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. Comparatively, the use of 800-900 hooks yielded 17 or 12 fish/1,000 hooks. In 2006, they were 544 sets. The capture of sword fish reported for that year was of 347 t with CPUE of 727 kg/1000 hooks and an associated effort of 477, 000 hooks. In 2007, the captures were very similar with 383 t and a CPUE of 549kg/1000 hooks. The effort that year was calculated higher with 697,700 hooks. For 2008, we have available data only till the month of October and the complementary data will be presented in the next ISC meeting. The captures till October are much lower than the previous two years, with only 84 t and CPUE of 100 kg/1000 hooks. The associated effort was comparatively higher than previous years with 837, 280 hooks.

The INAPESCA reviewed the long line fishery data from the observers from the PNAAPD and found that among the captures in this fishery, that sharks and from them, the blue shark was the most important with (61%) of the reported captures. The swordfish represented only (19%) and the complementary (20%) was formed by other 10 other fish species, encompassing: dorado, yellow fin tuna and other sharks species. In other studies, Sosa et al., 1992, sharks were the dominant species caught, followed by the swordfish which has a comparative greater percentage in the long line fishery.

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### CPUE (Gillnet fishery)

Sosa et al., op.cit., report also preliminary information of the composition in the swordfish gillnet fishery from México. They mentioned that the catches were composed by 88% of sharks species, several other commercial species, like the sun fish and tunas and the swordfish was only the 12 % of the total. As reported before, only four boats are operating with gillnets in the Mexican sword fishery. They nets range from 1500/2000 m in length.

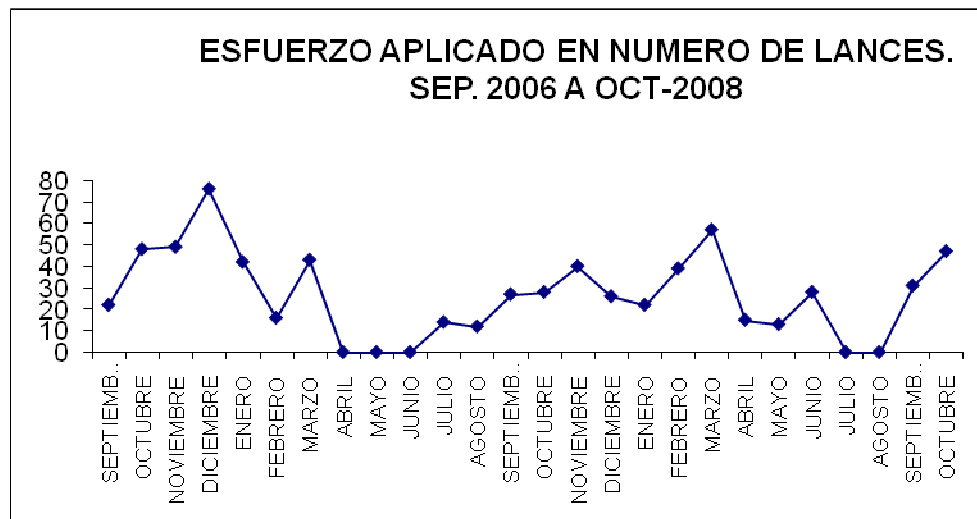


Figure 10. Effort as number of sets in the gill net sword fish fishery in Mexican waters from 2006 to 2008.

In 2006, they were 195 fishing sets which captured 65 t. In 2007, 248 sets were reported with identical yield of 65 t. In 2008 (till October), 252 sets were performed with a capture of 23 t, much lower than in previous years (figure 10). The total captures reported in the table 7 encompass both the gill net and the longliners.

These data indicates 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 another decline was observed again obtaining 428t. The next pick was in 1998 with 3,603t, which is the historic highest record for the entire series. The variation observed between the periods is attributed to the changes in the two fishery methods described above. For 2003 a little increment was obtained again with 671t. During 2004, 2005 and 2006 the captures have been around 300t for the Ensenada fleet. A similar value of 383 in 2007 was obtained and a very low in 2008 of only 84 till October of that year.

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### 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.

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).

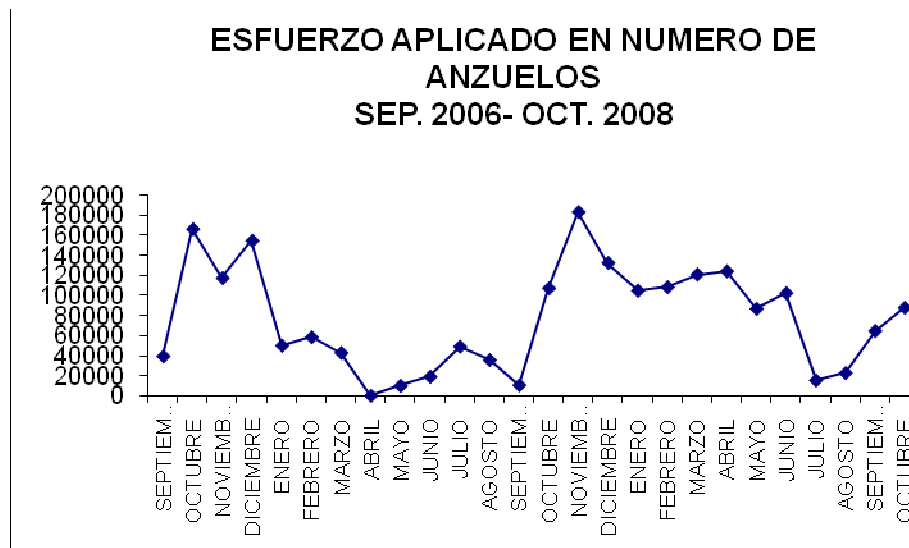


Figure 11. Fishing effort expressed as the number of hooks deployed from 2006 to 2008 by the Mexican long liner sword fish fleet

### 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

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species, encompassing the dolphin fish, yellow fin tuna and other sharks species. In both studies, the sharks were the dominant group of 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%. (figure 12)

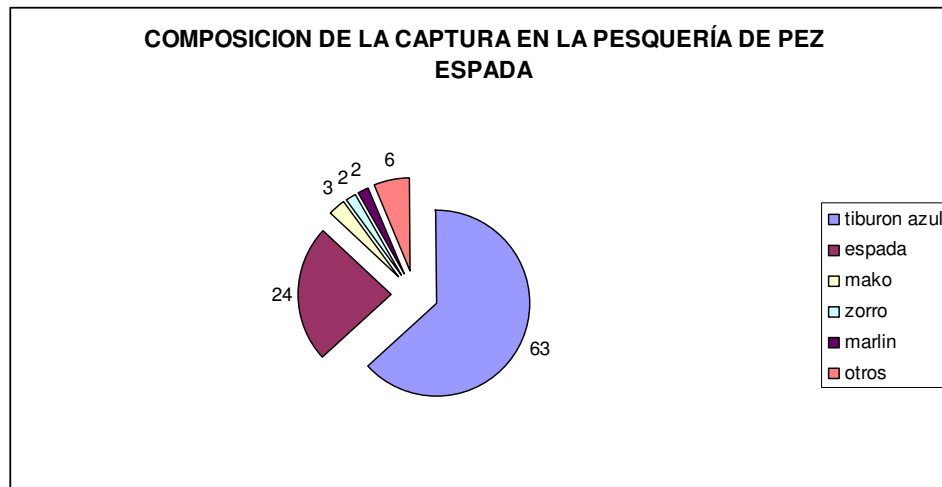


Figure 12. Catch composition of large pelagics in the Mexican swordfish fishery (Data from 2006, 2007)

**Table 7. Historic records of the Mexican swordfish fishery from 1979-2008. (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

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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	270.1
2005	234.5
2006	347.2
2007	383
2008***	84

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.

### **Purse seine and live bait ship fisheries:**

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

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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 (see [www.fidemar.org](http://www.fidemar.org)) that lists the abstracts every year, or from the INP-PNAAPD sources. The most recent meeting took place in November 2009 in Ensenada, Baja California, Mexico.

[Escribir texto]