INTER-AMERICAN TROPICAL TUNA COMMMISSION
COMISIÓN INTERAMERICANA DEL ATÚN TROPICAL

QUARTERLY REPORT—INFORME TRIMESTRAL

January-March 2006 Enero-Marzo 2006

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The

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January-March 2006

of the

INTER-AMERICAN TROPICAL TUNA COMMISSION

is an informal account, published in English and Spanish, of the current status of the tuna fisheries in the eastern Pacific Ocean in relation to the interests of the Commission, and of the research and the associated activities of the Commission's scientific staff. The research results presented should be regarded, in most instances, as preliminary and in the nature of progress reports.

El

INFORME TRIMESTRAL

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de la

COMISIÓN INTERAMERICANA DEL ATÚN TROPICAL

es un relato informal, publicado en inglés y español, de la situación actual de la pesca atunera en el Océano Pacífico oriental con relación a los intereses de la Comisión, y de la investigación científica y demás actividades del personal científico de la Comisión. Gran parte de los resultados de investigación presentados en este informe son preliminares y deben ser considerados como informes del avance de la investigación.

Editor—Redactor:
William H. Bayliff

INTRODUCTION

The Inter-American Tropical Tuna Commission (IATTC) operates under the authority and direction of a convention originally entered into by Costa Rica and the United States. The convention, which came into force in 1950, is open to adherence by other governments whose nationals fish for tropical tunas and tuna-like species in the eastern Pacific Ocean (EPO). Under this provision Panama adhered in 1953, Ecuador in 1961, Mexico in 1964, Canada in 1968, Japan in 1970, France and Nicaragua in 1973, Vanuatu in 1990, Venezuela in 1992, El Salvador in 1997, Guatemala in 2000, Peru in 2002, Spain in 2003, and the Republic of Korea in 2005. Canada withdrew from the IATTC in 1984.

The IATTC's responsibilities are met with two programs, the Tuna-Billfish Program and the Tuna-Dolphin Program.

The principal responsibilities of the Tuna-Billfish Program specified in the IATTC's convention were (1) to study the biology of the tunas and related species of the eastern Pacific Ocean to estimate the effects that fishing and natural factors have on their abundance and (2) to recommend appropriate conservation measures so that the stocks of fish could be maintained at levels that would afford maximum sustainable catches. It was subsequently given the responsibility for collecting information on compliance with Commission resolutions.

The IATTC's responsibilities were broadened in 1976 to address the problems arising from the incidental mortality in purse seines of dolphins that associate with yellowfin tuna in the EPO. The Commission agreed that it "should strive to maintain a high level of tuna production and also to maintain [dolphin] stocks at or above levels that assure their survival in perpetuity, with every reasonable effort being made to avoid needless or careless killing of [dolphins]" (IATTC, 33rd meeting, minutes: page 9). The principal responsibilities of the IATTC's Tuna-Dolphin Program are (1) to monitor the abundance of dolphins and their mortality incidental to purse-seine fishing in the EPO, (2) to study the causes of mortality of dolphins during fishing operations and promote the use of fishing techniques and equipment that minimize these mortalities, (3) to study the effects of different modes of fishing on the various fish and other animals of the pelagic ecosystem, and (4) to provide a secretariat for the International Dolphin Conservation Program, described below.

On June 17, 1992, the Agreement for the Conservation of Dolphins ("the 1992 La Jolla Agreement"), which created the International Dolphin Conservation Program (IDCP), was adopted. The main objective of the Agreement was to reduce the mortality of dolphins in the purse-seine fishery without harming the tuna resources of the region and the fisheries that depend on them. This agreement introduced such novel and effective measures as Dolphin Mortality Limits (DMLs) for individual vessels and the International Review Panel to monitor the performance and compliance of the fishing fleet. On May 21, 1998, the Agreement on the International Dolphin Conservation Program (AIDCP), which built on and formalized the provisions of the 1992 La Jolla Agreement, was signed, and it entered into force on February 15, 1999. In 2004 the Parties to this agreement consisted of Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, the United States, Vanuatu, and Venezuela, and Bolivia, Colombia, and the European Union were applying it provisionally. These were "committed to ensure the sustainability of tuna stocks in the eastern Pacific Ocean and to progres-

sively reduce the incidental mortalities of dolphins in the tuna fishery of the eastern Pacific Ocean to levels approaching zero; to avoid, reduce and minimize the incidental catch and the discard of juvenile tuna and the incidental catch of non-target species, taking into consideration the interrelationship among species in the ecosystem." This agreement established Stock Mortality Limits, which are similar to DMLs except that (1) they apply to all vessels combined, rather than to individual vessels, and (2) they apply to individual stocks of dolphins, rather than to all stocks of dolphins combined. The IATTC provides the Secretariat for the International Dolphin Conservation Program (IDCP) and its various working groups and panels and coordinates the On-Board Observer Program and the Tuna Tracking and Verification System (both described later in this report).

At its 70th meeting, on June 24-27, 2003, the Commission adopted the Resolution on the Adoption of the Convention for the Strengthening of the Inter-American Tropical Tuna Commission Established by the 1949 Convention between the United States of America and the Republic of Costa Rica ("the Antigua Convention"). This convention will replace the original one 15 months after it has been ratified by seven signatories that are Parties to the 1949 Convention. It was ratified by Mexico on January 14, 2005, and by El Salvador on March 10, 2005.

To carry out its responsibilities, the IATTC conducts a wide variety of investigations at sea, in ports where tunas are landed, and in its laboratories. The research is carried out by a permanent, internationally-recruited research and support staff appointed by the Director, who is directly responsible to the Commission.

The scientific program is now in its 56th year. The results of the IATTC staff's research are published in the IATTC's Bulletin and Stock Assessment Report series in English and Spanish, its two official languages, in its Special Report and Data Report series, and in books, outside scientific journals, and trade journals. Summaries of each year's activities are reported upon in the IATTC's Annual Reports and Fishery Status Reports, also in the two languages.

FIELD OFFICES

The IATTC's field office in Ensenada, Mexico, has been closed, due to recent declines in tuna-processing activity there. Messrs. Eric E. Pedersen and Alberto Morales Yáñez have both resigned. Mr. José M. Lutt Manríquez will be in charge of the IATTC's new field office in Manzanillo, Mexico, which has become an important port for tuna vessels registered in Mexico.

The Ensenada field office was established in mid-1975, and Mr. William W. Hatton was stationed there from its inception until June 17, 1983. Mr. Edward H. Everett was there for about a year during 1983-1984, but there are no records of his sojourn there, as he was officially assigned to the La Jolla office. Mr. Eric E. Pedersen was hired on June 18, 1984, and remained there until the office was closed on March 6, 2006. Other employees who have been stationed in Ensenada are Messrs. Cutberto Hernández M. (October 1, 1985-March 31, 1987), Ernesto Altamirano Nieto (July 1, 1986-June 30, 1988), Enrique Ureña Portales (March 16, 1987-December 18, 1990), Adrian Celaya Ortega (November 6, 1987-February 16, 1990), José Raúl Gómez (June 16, 1988-November 30, 1988), Alberto Morales Yáñez (December 21, 1988-March 6, 2006), Manuel R. Inclan (December 1, 1990-November 30, 1994), and José M. Lutt Manríquez (September 1, 1992-March 6, 2006).

Messrs. Pedersen and Morales were both excellent employees, and everyone regrets their resignations. Mr. Pedersen will be affiliated with a company that is raising bluefin tuna in pens, so the staff hopes to keep in contact with him in the future.

Mr. Andris Purmalis, who had been an IATTC employee since June 1980, retired on March 31, 2006. In July 1980, after a 1-month period of orientation in La Jolla, he was transferred to the Panama field office, and in October of that year he was placed in charge of that office. Mr. Purmalis has been an excellent employee, and everyone wishes him a long and happy retirement.

Mr. Osvaldo A. Silva, a graduate of the Instituto de Altos Estudios de la Técnica en la Industria y Economía Pesquera, Astrakhan, USSR, was hired to replace Mr. Purmalis on March 15, 2006. Mr. Silva was Mr. Purmalis' assistant from October 1984 to May 1991, at which time he was transferred to Manta, Ecuador. He was in charge of the Manta field office until May 1997, when he resigned to accept employment in private industry.

MEETINGS

Dr. Mark N. Maunder participated in a meeting of the U.S. Western Pacific Fishery Management Council (WPFMC) in Portland, Oregon, on January 12-16, 2006. His travel expenses were paid by the WPFMC.

Dr. Cleridy E. Lennert-Cody and Mr. Simon D. Hoyle participated in the Workshop on Prediction for Marine Resources 2006, at the Institute of Statistical Mathematics and Graduate University for Advanced Studies, Tokyo, Japan, on January 12-13, 2006. They each presented a paper, entitled, respectively:

Species associations in purse-seine catch-bycatch in the eastern Pacific Ocean;

Population dynamics modeling for protected species.

Mr. Simon D. Hoyle participated in the fourth meeting of the Pacific Bluefin Tuna Working Group of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) on January 16-20, 2006, in Shimizu, Japan, where he presented the following papers:

Habitat-based index and standardized index of catch per unit effort derived from captain's logbooks and observer records for purse-seine vessels fishing between 1960 and 2005;

Sampling the catch of bluefin tuna (*Thunnus thynnus*) for length composition.

Dr. Michael G. Hinton participated in the fifth meeting of the Statistics Working Group of the ISC on January 23-24, 2006, in Shimizu, Japan.

Dr. Richard B. Deriso participated in a meeting of the Scientific and Statistical Committee of the WPFMC in Honolulu, Hawaii, on February 28-March 2, 2006. His travel expenses were paid by the WPFMC.

Dr. Robin Allen participated in the fifth Round of Consultations of States Parties to the United Nations Fish Stocks Agreement in New York City on March 20-24, 2006.

Drs. Robin Allen, Richard B. Deriso, Martín A. Hall, Michael G. Hinton, and Cleridy E. Lennert-Cody and Mr. Simon D. Hoyle participated in all or parts of the sixth meeting of the ISC in La Jolla on March 23-27, 2006, and/or one of the two preliminary meetings that were held in La Jolla on March 21-22, 2006.

DATA COLLECTION

The IATTC had field offices at Las Playas and Manta, Ecuador; Ensenada and Mazatlan, Mexico; Panama, Republic of Panama; Mayaguez, Puerto Rico, USA; and Cumaná, Venezuela, during the first quarter of 2006.

Personnel at these offices collected length-frequency samples from 64 wells and abstracted logbook information for 207 trips of commercial fishing vessels during the first quarter of 2006.

Also during the first quarter members of the field office staffs placed IATTC observers on 144 fishing trips by vessels that participate in the AIDCP On-Board Observer Program. In addition, 135 IATTC observers completed trips during the quarter, and were debriefed by field office personnel.

Surface fleet and surface catch statistics

Statistical data are continuously being collected by personnel at the IATTC's field offices and processed at its headquarters in La Jolla. As a result, estimates of fisheries statistics with varying degrees of accuracy and precision are available, the most accurate and precise being those made after all available information has been entered into the data base, processed, and verified. The estimates for the current quarter are the most preliminary, while those made six months to a year after monitoring of the fishery are much more accurate and precise. While it may require a year or more to obtain some final information, much of the catch information is processed and available within two to three months of the return of a vessel from a fishing trip.

Fleet statistics

The estimated total carrying capacity of the purse-seine and pole-and-line vessels that are fishing, or are expected to fish, in the eastern Pacific Ocean (east of 150°W; EPO) during 2006 is about 220,000 cubic meters (m^3) (Table 1). The weekly average at-sea capacity for the fleet, for the weekly periods ending January 1 through April 2, was about 163,000 m^3. The additions to the IATTC's fleet list during that period are given in Table 2; there were no deletions from the fleet list or changes of flags or vessel names during the period.

Catch statistics

Catch statistics for the first quarter of 2006

The estimated total retained catches of tunas in the EPO during the report period, in metric tons (t), were:

Species	2006	2001-2005			Weekly average, 2006
		Average	Minimum	Maximum	
Yellowfin	62,000	113,600	97,100	129,000	4,800
Skipjack	61,400	58,000	46,900	84,500	4,700
Bigeye	15,100	10,100	6,500	14,600	1,200

Summaries of the preliminary estimated retained catches, by flag of vessel, are shown in Table 3.

Catch statistics for 2005

Estimates of the annual retained and discarded catches of the various species of tunas and other fishes by purse seiners and pole-and line vessels fishing at least part of the year in the EPO for yellowfin, skipjack, bigeye, or bluefin during 1976-2005 are shown in Table 4. The retained catch data for skipjack and bluefin are essentially complete except for insignificant catches made by the longline, recreational (for skipjack), and artisanal fisheries. The catch data for yellowfin and bigeye do not include catches by longline vessels, as the data for these fisheries are received much later than those for the surface fisheries. About 5 to 10 percent of the total catch of yellowfin is taken by longlines. Until recently, the great majority of the catch of bigeye had been harvested by the longline fishery.

There were no restrictions on fishing for tunas in the EPO during 1980-1997. However, there were restrictions on fishing for yellowfin in the Commission's Yellowfin Regulatory Area (CYRA) (IATTC Annual Report for 2001: Figure 1) from November 26 through December 31, 1998, from October 14 through December 31, 1999, from December 1 through 31, 2000, and from October 27 through December 31, 2001. Purse-seine fishing for tunas was prohibited in the EPO from December 1 through December 31, 2002, and in a portion of the EPO from December 1 through December 31, 2003. In 2004 and 2005 there were restrictions on purse-seine fishing for tunas for vessels of some countries from August 1 through September 11, and from November 20 through December 31 for vessels of other countries. In addition, fishing for tunas associated with fish-aggregating devices (FADs) was prohibited in the EPO from November 9 through December 31, 1999, and from September 15 through December 15, 2000. Furthermore, regulations placed on purse-seine vessels directing their effort at tunas associated with dolphins have probably affected the way these vessels operate, especially since the late 1980s. There was a major El Niño event, which began in mid-1982 and persisted until late 1983. The catch rates in the EPO were low before and during this El Niño episode, which caused a shift of fishing effort from the eastern to the western Pacific, and the fishing effort remained relatively low during 1984-1986. During 1997-1998 another major El Niño event occurred in the EPO, but the effects of this on the vulnerability of the fish to capture were apparently less severe.

The retained catches, in metric tons, based on the current species composition program, described in the IATTC Annual Report for 2000 and in IATTC Stock Assessment Report 4, of yellowfin, skipjack, and bigeye in the EPO during 2005, the 1990-2004 annual averages for yellowfin and skipjack, and the 1994-2004 annual average for bigeye are as follows:

Species	2005	Average	Minimum	Maximum
			1990-2004	
Yellowfin	271,778	275,269	212,034	413,339
Skipjack	262,505	144,398	63,946	275,680
			1994-2004	
Bigeye	70,294	57,762	34,900	94,115

The 2005 catch of yellowfin was about 1 percent less than the average for 1990-2004. The 2005 skipjack catch was about 118 thousand t (83 percent) greater than the average for 1990-2004. The 2005 bigeye catch was about 13 thousand t (22 percent) greater than the average for 1994-2004.

The average annual distributions of the logged retained purse-seine catches of yellowfin, skipjack, and bigeye, by set type, in the EPO during the 1990-2004 period (1994-2004 for bigeye) are shown in Figures 1a, 2a, and 3a, and the preliminary estimates for 2005 are shown in Figures 1b, 2b, and 3b. In comparison to 1990-2004, the catches of yellowfin were relatively low off Mexico and Central American in 2005, as had been the case in 2004 relative to 1989-2003. The catches of yellowfin between 10°S and 20° S were greater than the average for 1990-2004, which was due to the fact that the catches in that area during the first half of 2005 greatly exceeded those of that period of most of the previous years. The distribution of the skipjack catches in 2005 was similar to those of 1990-2004, although, as was the case in 2004, the catches in the inshore areas off Mexico were greater, possibly due to changes in fishing strategy due to poor yellowfin fishing. Bigeye are not often caught by surface gear north of about 7°N. The distribution of the catches of bigeye during 2005 was similar to those of 1994-2004, although some differences are evident, particulary in the inshore areas, where the catches and effort have declined in recent years. With the development of the fishery for tunas associated with floating objects since 1993, the relative importance of the inshore areas has decreased, while that of the offshore areas has increased.

While yellowfin, skipjack, and bigeye comprise most of the catches of fish made by tuna vessels in the EPO, bluefin, albacore, bonito, black skipjack, and other species contribute to the overall harvest in this area. The total retained catch of these other species in the EPO was about 6 thousand t in 2005, which is equal to the 1990-2004 average (range: 2 to 17 thousand t).

The estimated retained catch of all species in the EPO in 2005 was about 608 thousand t, which is 29 percent greater than the average of 470 thousand t for 1990-2004, but 15 percent less than the previous record total catch of 715 thousand t, taken in 2003.

Preliminary estimates of the retained catches in the EPO in 2005, by flag, and the landings of EPO-caught fish, by country, are given in Table 5. The landings are fish unloaded during a calendar year, regardless of the year of catch. The country of landing is that in which the fish were unloaded from the fishing vessel or, in the case of transshipments, the country that received the transshipped fish.

Preliminary estimates of the most significant (equal to or greater than about 5 percent of the total) retained catches and landings, of all species combined, during 2005 were as follows:

Flag	Retained catches		Landings	
	Metric tons	Percentage	Metric tons	Percentage
Colombia	-	-	41,100	7
Ecuador	207,400	34	314,400	52
Mexico	151,300	25	147,800	24
Panama	72,300	12	-	-
Venezuela	55,100	9	-	-

It is important to note that when final information is available the landings currently assigned to the various countries may change due to exports from storage facilities to processors in other nations.

Catch statistics for the longline fishery

The catches of bigeye by longline gear in the EPO during 2005 and the first quarter of 2006 are shown in Tables 6a and 6b, respectively. Equivalent data are not available for the other species of tunas, or for billfishes.

Size compositions of the surface catches of tunas

Length-frequency samples are the basic source of data used for estimating the size and age compositions of the various species of fish in the landings. This information is necessary to obtain age-structured estimates of the population for various purposes, including the integrated modeling that the staff has employed during the last several years. The results of such studies have been described in several IATTC Bulletins, in all of its Annual Reports since that for 1954, and in its Stock Assessment Reports.

Length-frequency samples of yellowfin, skipjack, bigeye, Pacific bluefin, and, occasionally, black skipjack from the catches of purse-seine, pole-and-line, and recreational vessels in the EPO are collected by IATTC personnel at ports of landing in Ecuador, Mexico, Panama, the USA, and Venezuela. The catches of yellowfin and skipjack were first sampled in 1954, bluefin in 1973, and bigeye in 1975. Sampling has continued to the present.

The methods for sampling the catches of tunas are described in the IATTC Annual Report for 2000 and in IATTC Stock Assessment Report 4. Briefly, the fish in a well of a purse-seine or pole-and-line vessel are selected for sampling only if all the fish in the well were caught during the same calendar month, in the same type of set (floating-object, unassociated school, or dolphin), and in the same sampling area. These data are then categorized by fishery (Figure 4).

Data for fish caught during the fourth quarter of 2000-2005 are presented in this report. Two sets of length-frequency histograms are presented for each species; the first shows the data by stratum (gear type, set type, and area) for the fourth quarter of 2005, and the second shows the combined data for the fourth quarter of each year of the 2000-2005 period. Samples from 167 wells were taken during the fourth quarter of 2005. No samples were taken from the negligible catches of yellowfin and skipjack taken by pole-and-line vessels during the fourth quarter. The estimates of the size distributions of these catches were obtained by using length-frequency data from fish caught in unassociated schools by purse seiners.

There are ten surface fisheries for yellowfin defined for stock assessments: four associated with floating objects, two unassociated school, three associated with dolphins, and one pole-and-line (Figure 4). The last fishery includes all 13 sampling areas. Of the 167 wells sampled, 142 contained yellowfin. The estimated size compositions of these fish during the fourth quarter of 2005 are shown in Figure 5a. As was the case for the third quarter, the majority of the yellowfin catch during the fourth quarter was taken by sets on unassociated schools and on schools associated with dolphins. There were small amounts of yellowfin taken in floating-object sets, with most of these fish being about 40 cm in length. The average size of the yellowfin taken during the fourth quarter was slightly greater than during the third quarter of 2005, mostly due to the larger yellowfin that were caught in the Northern and Inshore dolphin fishing areas. Negligible amounts of yellowfin were taken by pole-and-line vessels.

The estimated size compositions of the yellowfin caught by all fisheries combined during the fourth quarter of 2000-2005 are shown in Figure 5b. The average weights of the yellowfin caught during the fourth quarter of 2005 were greater than those of the fish caught during 2004, but considerably less than those of the fish caught during 2000-2003. A mode of yellowfin between 40 and 50 cm in length appeared during the fourth quarter. This mode has been present during the fourth quarter of every year since 2000.

There are eight fisheries for skipjack defined for stock assessments: four associated with floating objects, two unassociated school, one associated with dolphins, and one pole-and-line (Figure 4). The last two fisheries include all 13 sampling areas. Of the 167 wells sampled, 121 contained skipjack. The estimated size compositions of these fish during the fourth quarter of 2005 are shown in Figure 6a. The catches of skipjack continued to be good in the floating-object fishery in the Equatorial region, and increased in the Southern unassociated and floating-object fisheries. Small amounts of skipjack were taken by pole-and-line vessels and in the Inshore floating-object and dolphin fisheries.

The estimated size compositions of the skipjack caught by all fisheries combined during the fourth quarter of 2000-2005 are shown in Figure 6b. The majority of the skipjack caught during the fourth quarter ranged between about 40 and 70 cm. The average weight of the fish caught during 2005 was slightly greater than that of the fish caught during 2004, but less than those of the fish caught during 2000-2003.

There are seven surface fisheries for bigeye defined for stock assessments: four associated with floating objects, one unassociated school, one associated with dolphins, and one pole-and-line (Figure 4). The last three fisheries include all 13 sampling areas. Of the 167 wells sampled, 70 contained bigeye. The estimated size compositions of these fish during the fourth quarter of 2005 are shown in Figure 7a. During the fourth quarter the bigeye catches remained high in the Northern floating-object fishery and increased in both the Equatorial and Southern floating-object fisheries. Negligible amounts of bigeye were caught in the Inshore floating-object fishery and the unassociated fishery. There were no recorded catches of bigeye in dolphin sets or by pole-and-line vessels during the fourth quarter.

The estimated size compositions of the bigeye caught by all fisheries combined during the fourth quarter of 2000-2005 are shown in Figure 7b. The average weight of bigeye caught during the fourth quarter was greater than those of the second and third quarters of 2005, but less

than that of the first quarter of that year. It was greater than that of the fourth quarter catch of 2002, but less than those of the fourth quarter catches of 2000-2001 and 2003-2004.

Observer program

Coverage

The Agreement on the International Dolphin Conservation Program (AIDCP) requires 100-percent coverage by observers on trips by purse seiners with carrying capacities greater than 363 metric tons that fish for tunas in the eastern Pacific Ocean (EPO). This mandate is carried out by the AIDCP On-Board Observer Program, made up of the IATTC's international observer program and the observer programs of Colombia, Ecuador, the European Union (which resumed operations during this quarter), Mexico, Panama (which initiated its national observer program, the *Programa Nacional de Observadores de Panamá* during this quarter), and Venezuela. The observers are biologists trained to collect a variety of data on the mortalities of dolphins associated with the fishery, sightings of dolphin herds, catches of tunas and bycatches of fish and other animals, oceanographic and meteorological data, and other information used by the IATTC staff to assess the conditions of the various stocks of dolphins, study the causes of dolphin mortality, and assess the effect of the fishery on tunas and other components of the ecosystem. The observers also collect data relevant to compliance with the provisions of the AIDCP, and data required for the tuna-tracking system established under the AIDCP, which tracks the "dolphin-safe" status of tuna caught in each set from the time it is captured until it is unloaded (and, after that, until it is canned and labeled).

In 2006 the observer programs of Colombia, the European Union, Mexico, Panama, and Venezuela are to sample half, and that of Ecuador approximately one-third, of the trips by vessels of their respective fleets, while IATTC observers are to sample the remainder of those trips. Except as described in the next paragraph, the IATTC is to cover all trips by vessels registered in other nations that are required to carry observers.

At the fifth meeting of the Parties to the AIDCP in June 2001, observers from the international observer program of the South Pacific Forum Fisheries Agency (FFA) were approved to collect pertinent information for the On-Board Observer Program, pursuant to Annex II (9) of the AIDCP in cases for which the Director determines that the use of an observer from the AIDCP On-Board Observer Program is not practical.

Observers from the On-Board Observer Program departed on 208 fishing trips aboard purse seiners covered by that program during the first quarter of 2006. Preliminary coverage data for these vessels during the quarter are shown in Table 7.

Training

There were no IATTC observer training courses during the quarter.

RESEARCH

Tuna and wahoo tagging

On February 7, 2006, Messrs. Kurt M. Schaefer and Daniel W. Fuller, in collaboration with Dr. Tomonari Akamatsu, National Research Institute of Fisheries Engineering, Fisheries Research Agency of Japan, and Dr. James Finneran, Biosciences Division, Space and Naval Warfare Systems Center, San Diego, California, USA, conducted an experiment utilizing an acoustic event logger implanted in the peritoneal cavity of a thawed 24-kg yellowfin tuna and a live 200-kg, 39-year-old female bottlenose dolphin that had been trained to echo-locate on command. The objective was to determine whether the implanted event logger is capable of recording the sonar pulses of dolphins, and what the expected detection range would be. The tuna was suspended in the water, with a hydrophone adjacent to it to confirm the sonar pulses. This type of recorder, utilized in conjunction with a geolocating archival tag, has the potential for validating some of the spatial and temporal characteristics of the associations between yellowfin tuna and dolphins in the eastern Pacific Ocean (EPO).

Messrs. Schaefer and Fuller spent the period of February 15-March 4, 2006, aboard the San Diego-based 28-m, long-range sport-fishing vessel *Royal Star* on a fishing trip to the Revillagigedo Islands Marine Reserve, off Mexico, where they tagged yellowfin tuna and wahoo. This tagging project is a collaborative effort between the IATTC, the National Institute of Fisheries of Mexico, and the owners of the *Royal Star*. The permit obtained from the government of Mexico for the project provides a unique opportunity to conduct a scientific evaluation of the movements and behavior of yellowfin tuna and wahoo within the Marine Reserve and in areas to which they might move, through no-retention tag-and-release fishing trips aboard the *Royal Star* in 2006 and 2007. The cruise was successful, as 309 wahoo and 330 yellowfin were tagged with plastic dart tags, and 38 archival tags (Lotek LTD 2310) were implanted into the peritoneal cavities of yellowfin ranging in length from 79 to 141 cm, with an average length of 109 cm.

Messrs. Schaefer and Fuller left for a tagging cruise in the equatorial EPO on March 15, 2006. They were expected to return on about May 10, 2006.

Early life history studies

Yellowfin broodstock

The yellowfin broodstock in Tank 1 (1,362,000 L) at the Achotines Laboratory spawned daily during the quarter. Spawning occurred between 4:00 p.m. and 9:15 p.m. The numbers of eggs collected after each spawning event ranged from about 25,000 to 716,000. The water temperatures in the tank ranged from 23.5° to 28.0°C during the quarter.

One 31-kg female and one 58-kg male died during the quarter from striking the wall of the tank. At the end of March there were three size groups of fish in Tank 1: 1 large fish (121 kg), 6 60- to 78-kg fish, and 16 23- to 44-kg fish.

From January 2003 through December 2004 archival tags had been implanted into yellowfin tuna (IATTC Quarterly Reports for January-March 2003, April-June 2004, and October-December 2004), and at the end of March seven fish from those groups remained in Tank 1.

Rearing of yellowfin eggs, larvae, and juveniles

During the quarter the following parameters were recorded for most spawning events: times of spawning, egg diameter, duration of egg stage, hatching rate, lengths of hatched larvae, and duration of yolk-sac stage. The weights of the eggs, yolk-sac larvae, and first-feeding larvae, and the lengths and selected morphometrics of these, were measured periodically.

Studies of snappers

The work on spotted rose snappers (*Lutjanus guttatus*) is carried out by the Dirección General de Recursos Marinos y Costeros (DGRMC) de Panamá.

Two separate broodstocks of snappers are being kept in two 85,000-L tanks. The first consists of 15 individuals from the original broodstock caught in 1996. They continued to spawn during January through March, but less frequently and with fewer eggs than during the previous quarter.

The second group consists of 20 individuals from a group bred at the Laboratory from eggs obtained from spawning in 1998. These fish spawned during January, but not during February or March.

During March 2006 juvenile snappers resulting from eggs hatched on October 4 and 5, 2005, were transferred to las Islas Perlas in the Gulf of Panama for cage-culture trials, as part of the DGRMC culture program.

Visitors at the Achotines Laboratory

Dr. Rachel Collin, Director of the Smithsonian Tropical Research Institute Bocas Research Station, and her assistant, Ms. Miryam Venegas, spent the period of March 1-4, 2006, at the Achotines Laboratory, where they surveyed the bay and adjacent coastline for the presence and abundance of the mollusc *Bostrycapulus urraca*.

Oceanography and meteorology

Surface winds blow almost constantly over northern South America, which causes upwelling of cool, nutrient-rich subsurface water along the equator east of 160ºW, in the coastal regions off South America, and in offshore areas off Mexico and Central America. El Niño events are characterized by weaker-than-normal easterly surface winds, which cause above-normal sea-surface temperatures (SSTs) and sea levels and deeper-than-normal thermoclines over much of the tropical eastern Pacific Ocean (EPO). In addition, the Southern Oscillation Indices (SOIs) are negative during El Niño episodes. (The SOI is the difference between the anomalies of sea-level atmospheric pressure at Tahiti, French Polynesia, and Darwin, Australia. It is a measure of the strength of the easterly surface winds, especially in the tropical Pacific in the Southern Hemisphere.) Anti-El Niño events, which are the opposite of El Niño events, are

characterized by stronger-than-normal easterly surface winds, below-normal SSTs and sea levels, shallower-than-normal thermoclines, and positive SOIs. Two additional indices, the NOI* (Progress Ocean., 53 (2-4): 115-139) and the SOI*, have recently been devised. The NOI* is the difference between the anomalies of sea-level atmospheric pressure at the North Pacific High (35°N-130°W) and Darwin, Australia, and the SOI* is the difference between the anomalies of sea-level atmospheric pressure at the South Pacific High (30°S-95°W) and Darwin. Ordinarily, the NOI* and SOI* values are both negative during El Niño events and positive during anti-El Niño events.

During 2005 the SSTs were nearly normal, although there were small areas of cool water, mostly near the coast, and small areas of warm water, mostly offshore, during nearly every month. During all three months of the first quarter of 2006 there was a narrow band of cool water that extended along the equator from as far east as about 90°W (in March; Figure 8) to as far west as about 180° (in February). In addition, there were large areas of warm water, mostly south of 20°S, in all three months. The data in Table 8 are mixed. The SST anomalies in Area 1 went from -1.2° in October and November to 0.3° in February and March, those in Area 2 were negative throughout the 6-month period, and those in Areas 3 and 4 went from positive values in October to negative values in January, February, and March. The depths of the thermocline were less than normal along the equator at 80°W and 110°W during January through March. The sea levels were above normal at Baltra, Ecuador, in the Galapagos Islands, but below normal at Callao, Peru. No patterns are evident in the data for the SOIs, SOI*s, and NOI*s. According to the Climate Diagnostics Bulletin of the U.S. National Weather Service for March 2006, "[Anti-El Niño] conditions are expected to continue during the next 1-3 months."

GEAR PROGRAM

During the first quarter IATTC staff members participated in three dolphin safety-gear inspection and safety-panel alignment procedures, all aboard Mexican-flag purse seiners.

COLLECTION OF AT-SEA AND SUPPLEMENTAL RETAINED CATCH DATA FOR SMALL PURSE SEINERS

The U.S. National Oceanic and Atmospheric Administration has awarded the IATTC a contract to place observers, on a voluntary basis, on sufficient numbers of trips of Class-5 purse seiners based in ports on the Pacific Coast of Latin America to obtain data on "catch, bycatch, interaction with protected species, and gear" for 1,000 days at sea per year and to "sample 100 percent of the in-port unloadings of Class 4-5 purse seine vessels." If that is not possible, observers can be placed on sufficient numbers of trips of Class-3 and/or -4 vessels to bring the total numbers of days at sea observed to 1,000.

No observers were placed on vessels during the quarter. The numbers of trips completed (30 by Class-4 vessels and 23 by Class-5 vessels) and the numbers of samples taken were as follows:

Month	Trips completed	Samples taken	Fish sampled		
			Yellowfin	Skipjack	Bigeye
January	15	13			
February	19	19			
March	21	21			
Total	55	53	22,128	2,239	50

PUBLICATIONS

IATTC. 2005. Tunas and billfishes in the eastern Pacific Ocean in 2004. Inter-Amer. Trop. Tuna Comm., Fish. Status Rep., 3: 119 pp.

IATTC. 2006. Status of the tuna and billfish stocks in 2004. Inter-Amer. Trop. Tuna Comm., Stock Assess. Rep., 6: 206 pp.

IATTC. 2006. IATTC Annual Report for 2004: 96 pp.

IATTC. 2006. Technical workshop on calculating N_{min} for the dolphin stocks of the eastern Pacific Ocean. Inter-Amer. Trop. Tuna Comm., Spec. Rep., 14: 35 pp.

Magnuson, John J., Dorinda G. Dallmeyer, Richard B. Deriso, James H. Cowan, Jr., Larry B. Crowder, Robert T. Paine, Ana M. Parma, Andrew A. Rosenburg, and James W. Wilen. 2006. Dynamic Changes in Marine Ecosystems: Fishing, Food Webs, and Future Options. The National Academies Press, Washington, D.C.: x, 130 pp.

Schaefer, Kurt, and Daniel Fuller. 2006. Behavior of bigeye and skipjack tunas within large multi-species aggregations associated with floating objects. PFRP [Pelagic Fisheries Research Program, Joint Institute for Marine and Atmospheric Research, University of Hawaii at Manoa], 11 (1): 1-2, 8.

ADMINISTRATION

Ms. Keri Grim, who had worked as administrative assistant in the La Jolla office since December 6, 2004, resigned on February 13, 2006. She will be missed, but everyone wishes her well in her future endeavors.

The resignations of Messrs. Alberto Morales Yáñez and Eric E. Pedersen, the retirement of Mr. Andris Purmalis, and the hiring of Mr. Osvaldo A. Silva, are described in the section entitled **FIELD OFFICES**.

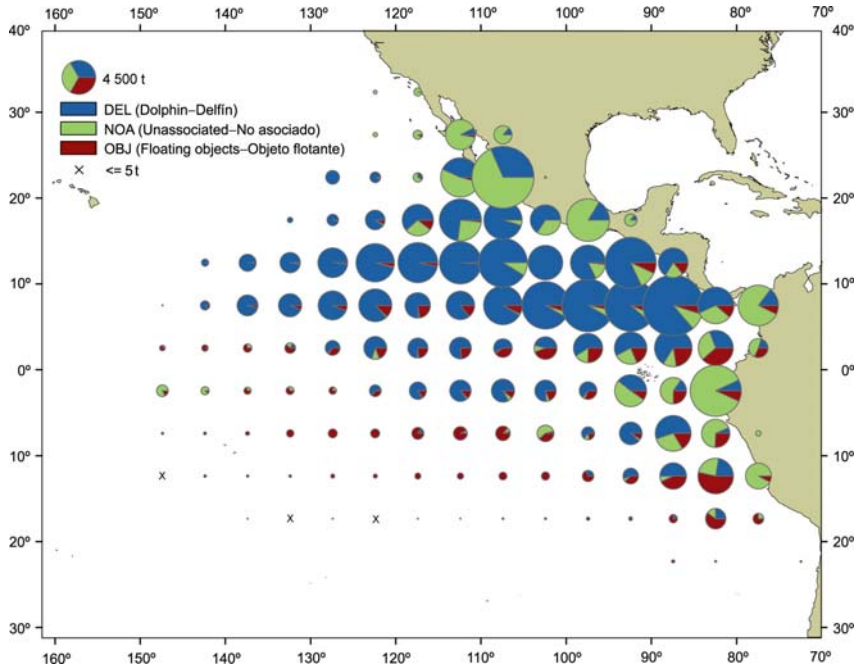

FIGURE 1a. Average annual distributions of the purse-seine catches of yellowfin, by set type, 1990-2004. The sizes of the circles are proportional to the amounts of yellowfin caught in those 5° by 5° areas.
FIGURA 1a. Distribución media anual de las capturas cerqueras de aleta amarilla, por tipo de lance, 1990-2004. El tamaño de cada círculo es proporcional a la cantidad de aleta amarilla capturado en la cuadrícula de 5° x 5° correspondiente.

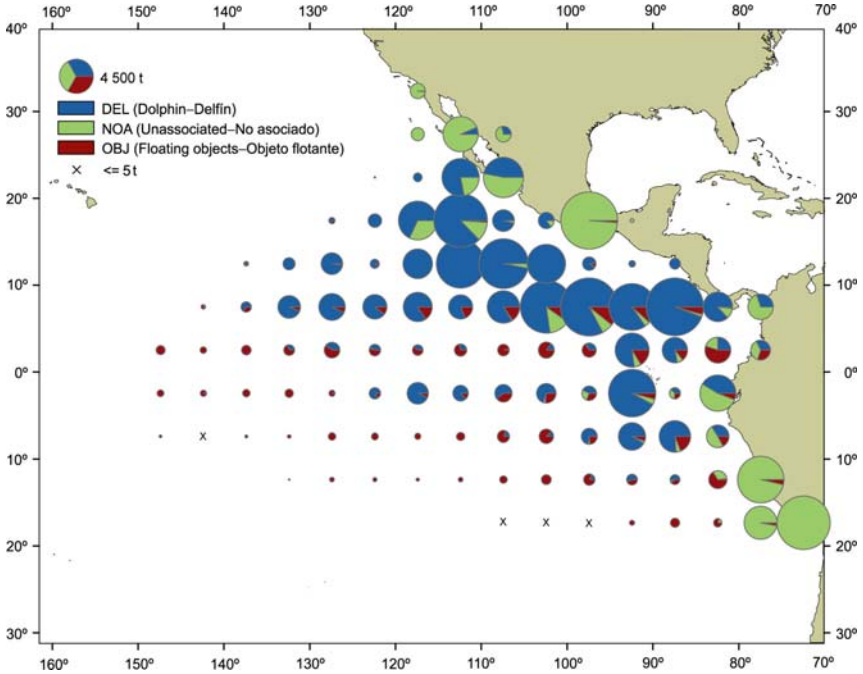

FIGURE 1b. Average annual distributions of the purse-seine catches of yellowfin, by set type, 2005. The sizes of the circles are proportional to the amounts of yellowfin caught in those 5° by 5° areas.
FIGURA 1b. Distribución media anual de las capturas cerqueras de aleta amarilla, por tipo de lance, 2005. El tamaño de cada círculo es proporcional a la cantidad de aleta amarilla capturado en la cuadrícula de 5° x 5° correspondiente.

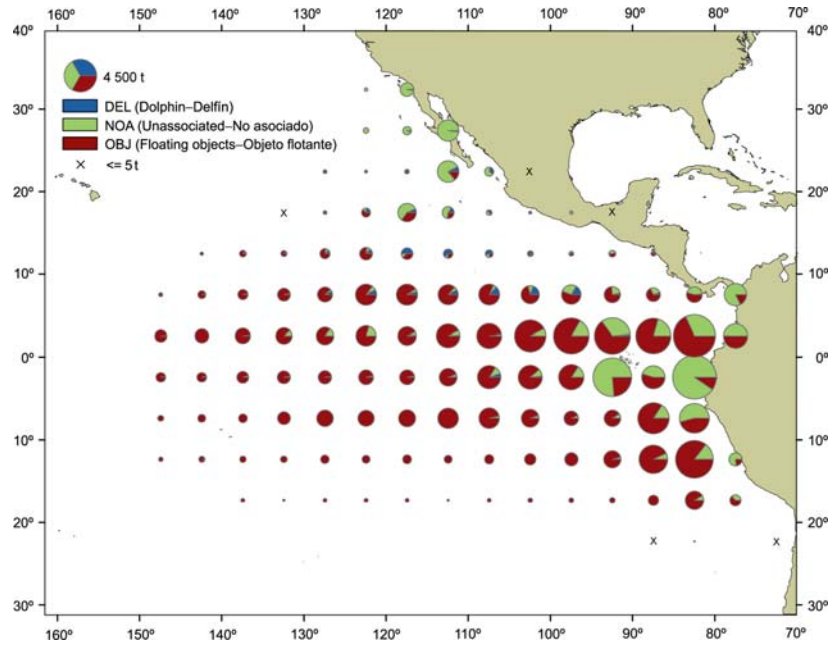

FIGURE 2a. Average annual distributions of the purse-seine catches of skipjack, by set type, 1990-2004. The sizes of the circles are proportional to the amounts of skipjack caught in those 5° by 5° areas.
FIGURA 2a. Distribución media anual de las capturas cerqueras de barrilete, por tipo de lance, 1990-2004. El tamaño de cada círculo es proporcional a la cantidad de barrilete capturado en la cuadrícula de 5° x 5° correspondiente.

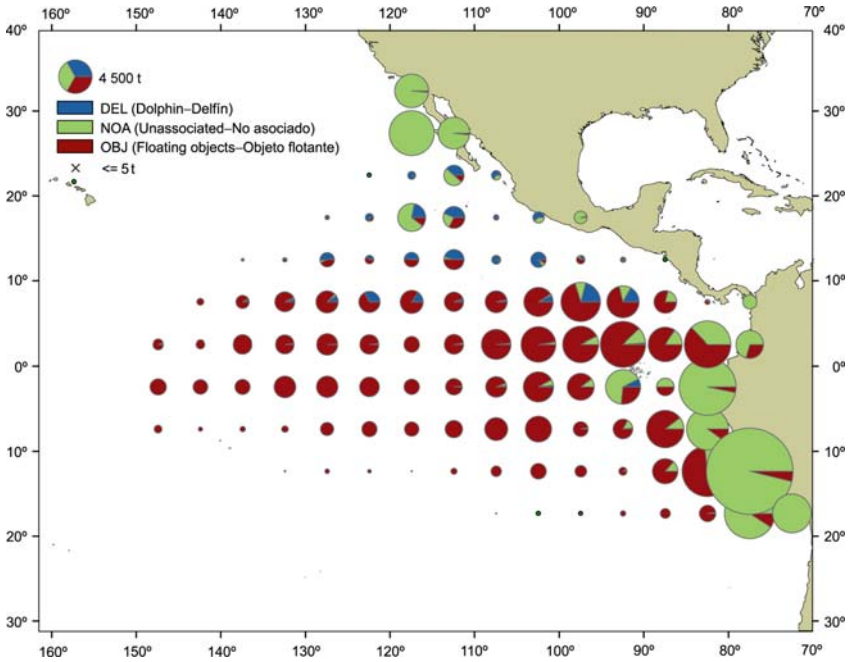

FIGURE 2b. Average annual distributions of the purse-seine catches of skipjack, by set type, 2005. The sizes of the circles are proportional to the amounts of skipjack caught in those 5° by 5° areas.
FIGURA 2b. Distribución media anual de las capturas cerqueras de barrilete, por tipo de lance, 2005. El tamaño de cada círculo es proporcional a la cantidad de barrilete capturado en la cuadrícula de 5° x 5° correspondiente.

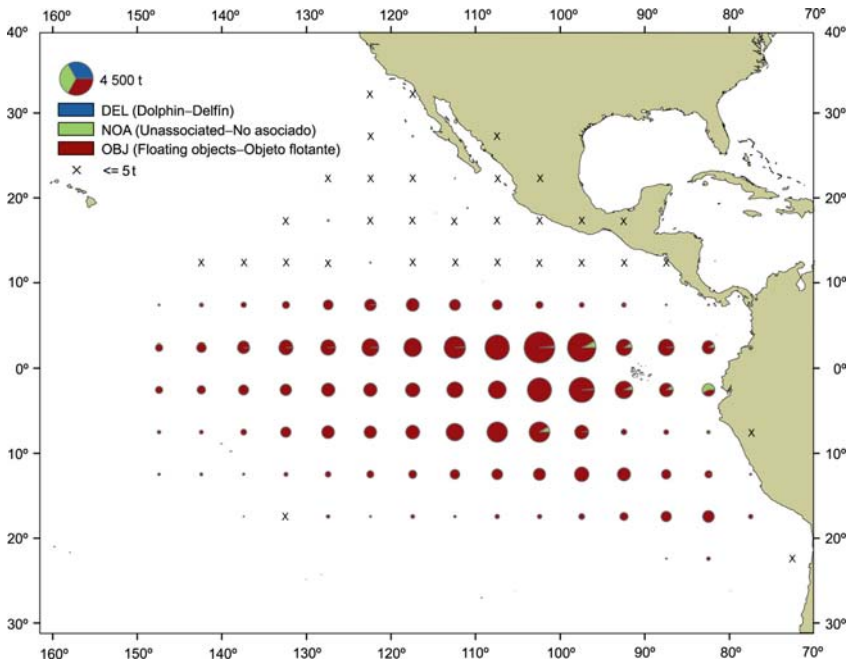

FIGURE 3a. Average annual distributions of the purse-seine catches of bigeye, by set type, 1994-2004. The sizes of the circles are proportional to the amounts of bigeye caught in those 5° by 5° areas.
FIGURA 3a. Distribución media anual de las capturas cerqueras de patudo, por tipo de lance, 1994-2004. El tamaño de cada círculo es proporcional a la cantidad de patudo capturado en la cuadrícula de 5° x 5° correspondiente.

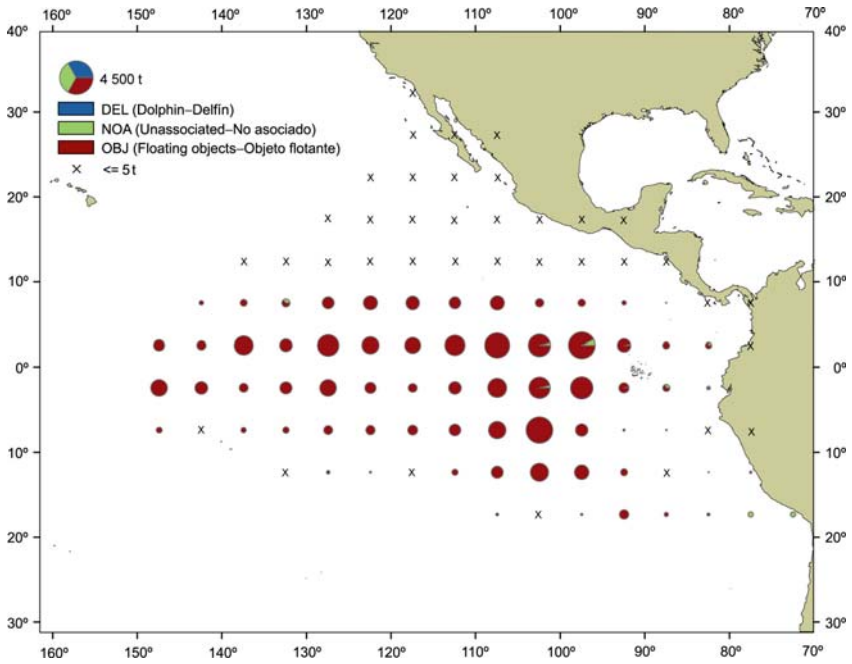

FIGURE 3b. Average annual distributions of the purse-seine catches of bigeye, by set type, 2005. The sizes of the circles are proportional to the amounts of bigeye caught in those 5° by 5° areas.
FIGURA 3b. Distribución media anual de las capturas cerqueras de patudo, por tipo de lance, 2005. El tamaño de cada círculo es proporcional a la cantidad de patudo capturado en la cuadrícula de 5° x 5° correspondiente.

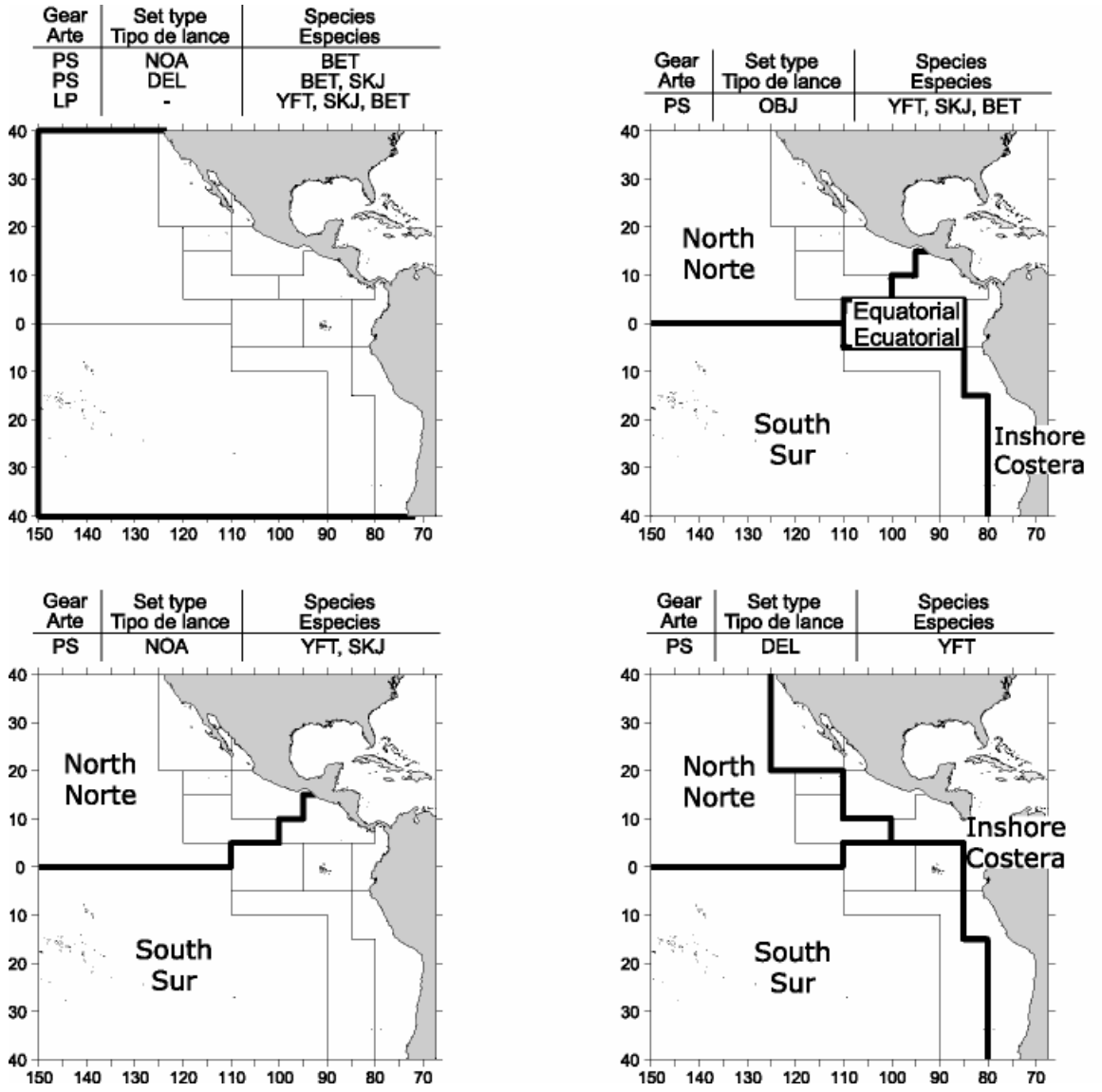

FIGURE 4. Spatial extents of the fisheries defined by the IATTC staff for stock assessment of yellowfin, skipjack, and bigeye in the EPO. The thin lines indicate the boundaries of the 13 length-frequency sampling areas, and the bold lines the boundaries of the fisheries. Gear: PS = purse seine, LP = pole and line; Set type: NOA = unassociated, DEL = dolphin, OBJ = floating object; Species: YFT = yellowfin, SKJ = skipjack, BET = bigeye.

FIGURA 4. Extensión espacial de las pesquerías definidas por el personal de la CIAT para la evaluación de las poblaciones de atún aleta amarilla, barrilete, patudo, y aleta azul en el OPO. Las líneas delgadas indican los límites de las 13 zonas de muestreo de frecuencia de tallas, y las líneas gruesas los límites de las pesquerías. Artes: PS = red de cerco, LP = caña; Tipo de lance: NOA = no asociado, DEL = delfín; OBJ = objeto flotante; Especies: YFT = aleta amarilla, SKJ = barrilete, BET = patudo.

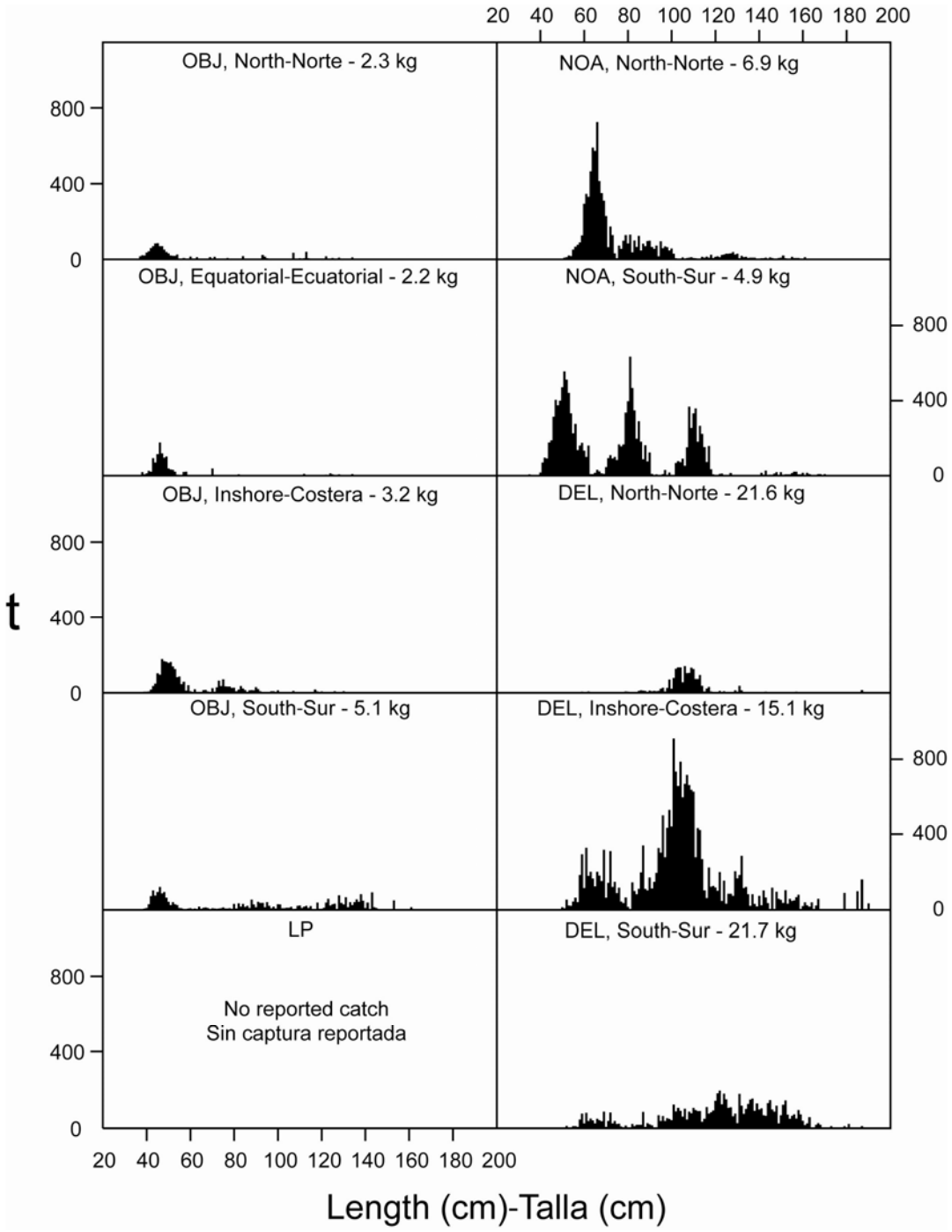

FIGURE 5a. Estimated size compositions of the yellowfin caught in each fishery of the EPO during the fourth quarter of 2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons; OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 5a. Composición por tallas estimada para el aleta amarilla capturado en cada pesquería del OPO durante el cuarto trimestre de 2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas; OBJ = objeto flotante; LP = caño; NOA = unassociated; DEL = delfín.

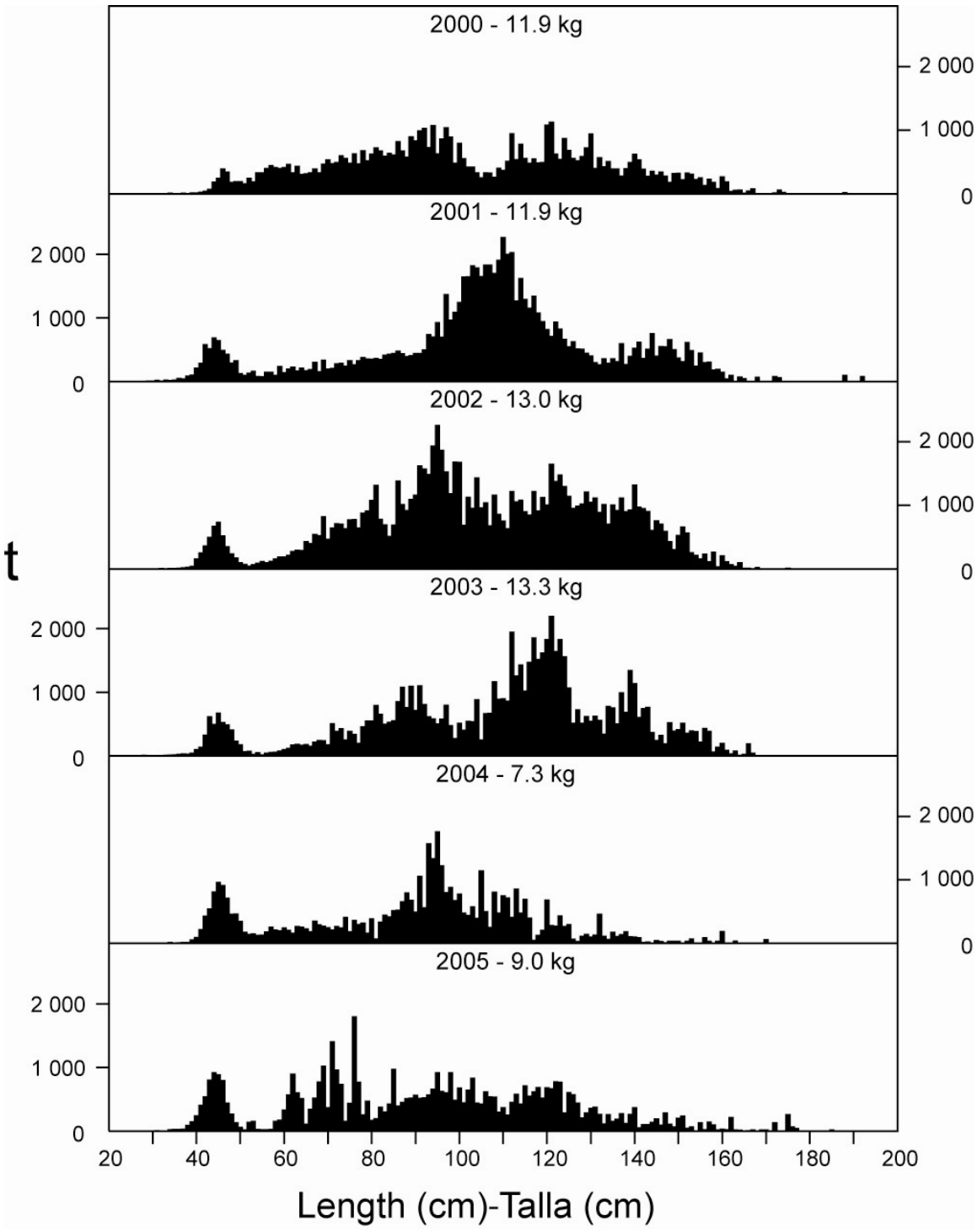

FIGURE 5b. Estimated size compositions of the yellowfin caught in the EPO during the fourth quarter of 2000-2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 5b. Composición por tallas estimada para el aleta amarilla capturado en el OPO en el cuarto trimestre de 2000-2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

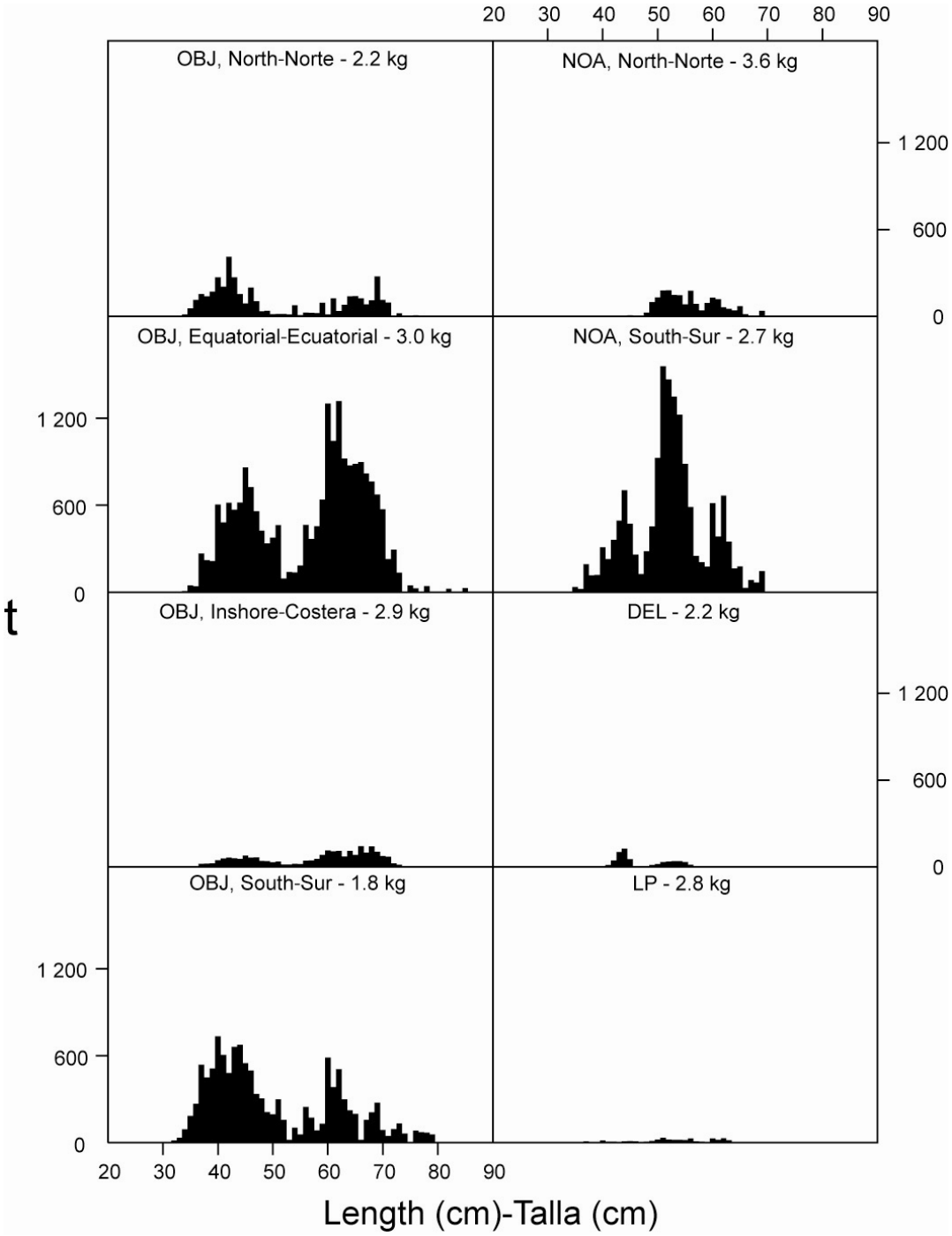

FIGURE 6a. Estimated size compositions of the skipjack caught in each fishery of the EPO during the fourth quarter of 2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons; OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 6a. Composición por tallas estimada para el barrilete capturado en cada pesquería del OPO durante el cuarto trimestre de 2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas; OBJ = objeto flotante; LP = caño; NOA = unassociated; DEL = delfín.

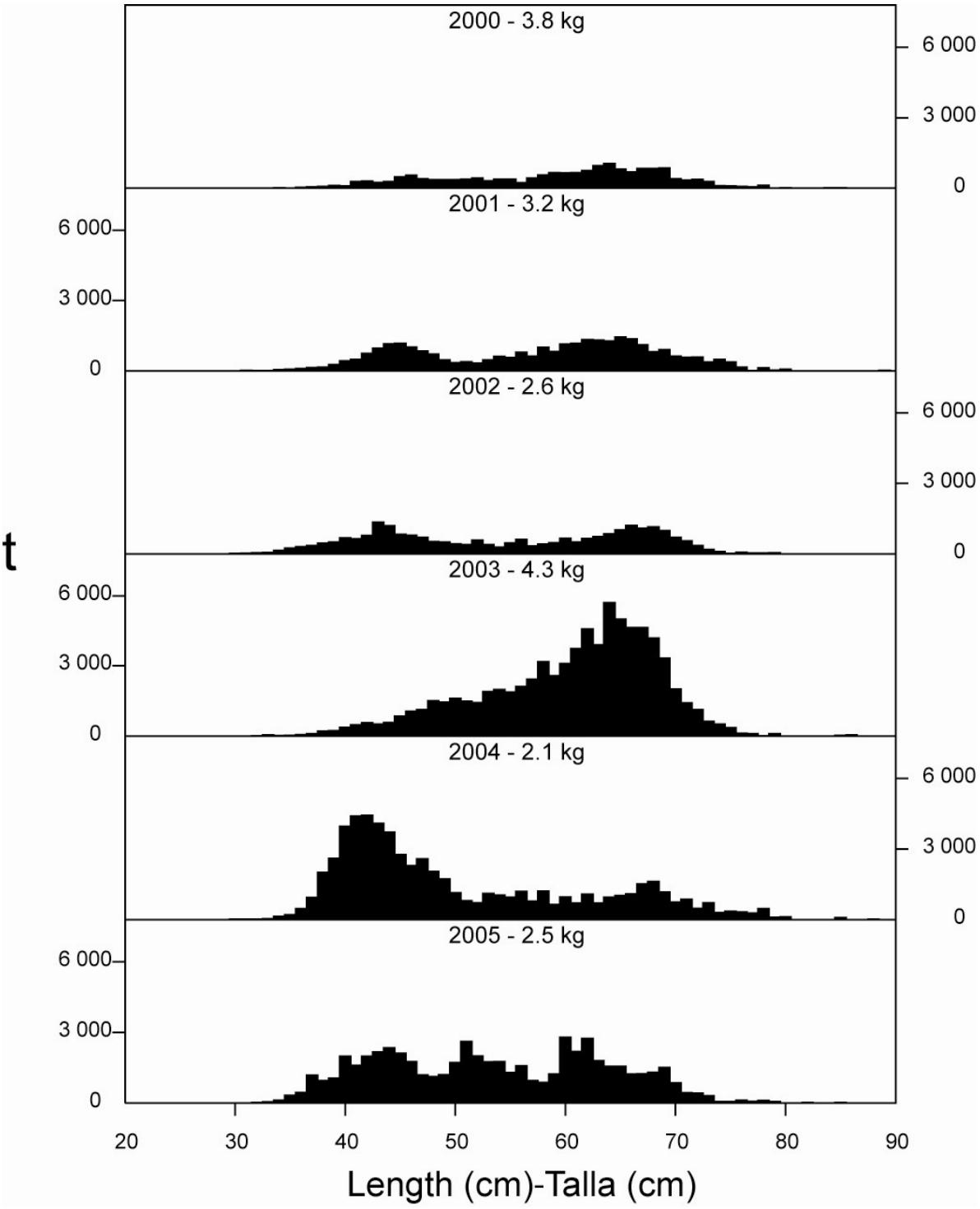

FIGURE 6b. Estimated size compositions of the skipjack caught in the EPO during the fourth quarter of 2000-2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 6b. Composición por tallas estimada para el barrilete capturado en el OPO en el cuarto trimestre de 2000-2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

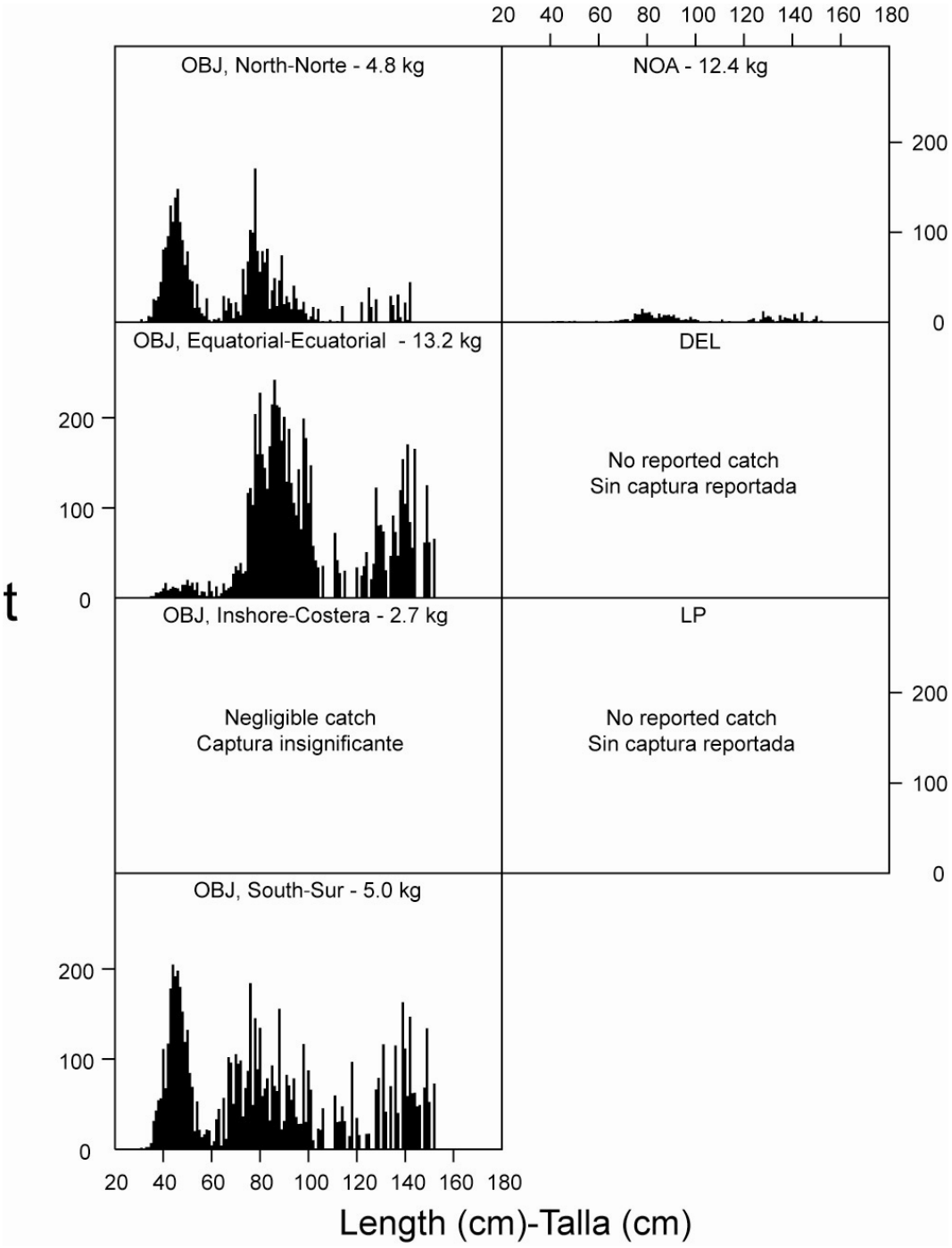

FIGURE 7a. Estimated size compositions of the bigeye caught in each fishery of the EPO during the fourth quarter of 2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons; OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 7a. Composición por tallas estimada para el patudo capturado en cada pesquería del OPO durante el cuarto trimestre de 2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas; OBJ = objeto flotante; LP = caño; NOA = unassociated; DEL = delfín.

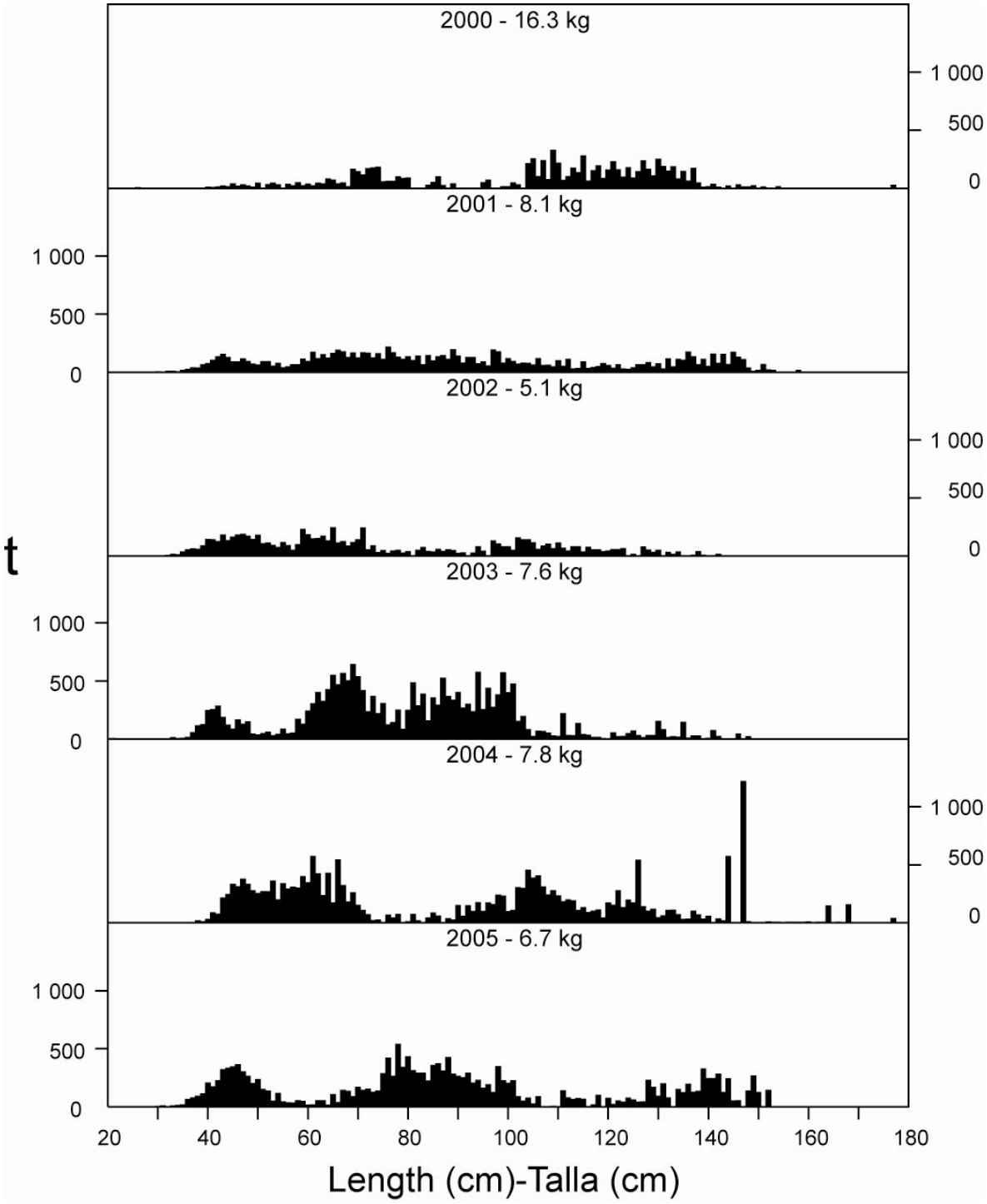

FIGURE 7b. Estimated size compositions of the bigeye caught in the EPO during the fourth quarter of 2000-2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 7b. Composición por tallas estimada para el patudo capturado en el OPO en el cuarto trimestre de 2000-2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

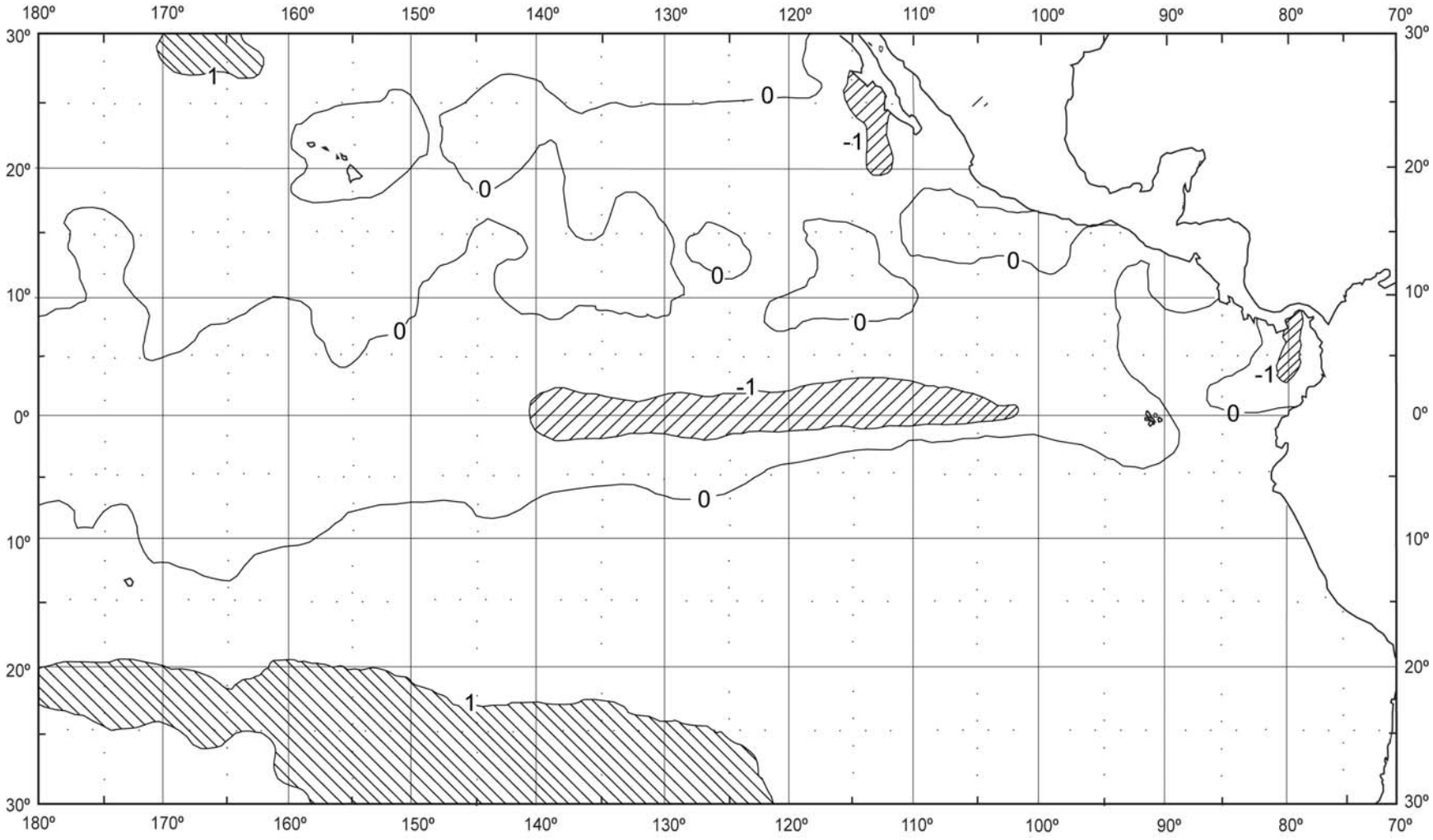

FIGURE 8. Sea-surface temperature (SST) anomalies (departures from long-term normals) for March 2006, based on data from fishing boats and other types of commercial vessels.
FIGURA 8. Anomalías (variaciones de los niveles normales a largo plazo) de la temperatura superficial del mar (TSM) en marzo de 2006, basadas en datos tomados por barcos pesqueros y otros buques comerciales.

TABLE 1. Preliminary estimates of the numbers and carrying capacities, in cubic meters, of purse seiners and pole-and-line vessels operating in the EPO in 2006 by flag, gear, and size class. Each vessel is included in the totals for each flag under which it fished during the year, but is included only once in the fleet total. Therefore the totals for the fleet may not equal the sums of the individual flag entries. PS = purse seine; LP = pole-and-line.

TABLA 1. Estimaciones preliminares del número de buques cerqueros y de cañero que pescan en el OPO en 2006, y de la capacidad de acarreo de los mismos, en metros cúbicos, por bandera, arte de pesca, y clase de arqueo. Se incluye cada buque en los totales de cada bandera bajo la cual pescó durante el año, pero solamente una vez en el total de la flota; por consiguiente, los totales de las flotas no son siempre iguales a las sumas de las banderas individuales. PS = cerquero; LP = cañero.

Flag Bandera	Gear Arte	Size class—Clase de arqueo							Capacity Capacidad
		1	2	3	4	5	6	Total	
					Number—Número				
Bolivia	PS	-	-	-	1	-	-	1	222
Colombia	PS	-	-	-	1	1	11	13	14,439
Ecuador	PS	-	4	11	13	10	42	80	55,020
España—Spain	PS	-	-	-	-	-	3	3	6,955
Guatemala	PS	-	-	-	-	-	1	1	1,475
Honduras	PS	-	-	-	-	-	3	3	2,810
México	PS	-	-	2	6	11	41	60	56,457
	LP	-	1	3	-	-	-	4	498
Nicaragua	PS	-	-	-	-	-	7	7	9,255
Panamá	PS	-	-	-	1	1	23	25	33,849
El Salvador	PS	-	-	-	-	-	5	5	8,184
USA—EE.UU.	PS	-	-	1	-	-	1	2	1,763
Venezuela	PS	-	-	-	-	-	20	20	26,776
Vanuatu	PS	-	-	-	-	-	2	2	2,163
All flags— Todas banderas	PS	-	4	14	22	23	159	222	
	LP	-	1	3	-	-	-	4	
	PS + LP	-	5	17	22	23	159	226	
					Capacity—Capacidad				
All flags— Todas banderas	PS	-	407	2,616	6,395	10,440	199,510	219,368	
	PL	-	101	397	-	-	-	498	
	PS + LP	-	508	3,013	6,395	10,440	199,510	219,866	

TABLE 2. Changes in the IATTC fleet list recorded during the first quarter of 2006. PS = purse seine; LP = pole-and-line.
TABLA 2. Cambios en la flota observada por la CIAT registrados durante el primer trimestre de 2006. PS = cerquero; LP = cañero.

Vessel name	Flag	Gear	Capacity (m^3)	Remarks
Nombre del buque	**Bandera**	**Arte**	**Capacidad (m^3)**	**Comentarios**
Vessels added to the fleet—Buques añadidos a la flota				
New entries—1er ingresos				
Monteleagre	El Salvador	PS	1,860	
Athena F	Venezuela	PS	2,926	
Re-entries—Reingresos				
Mar Cantabrico	Bolivia	PS	222	
Edu	Ecuador	PS	168	
Miriam	Ecuador	PS	176	
San Gabriel	México	PS	294	
Cape Finisterre	U.S.A.	PS	1,593	

TABLE 3. Preliminary estimates of the retained catches of tunas in the EPO from January 1 through April 2, 2006, by species and vessel flag, in metric tons.
TABLA 3. Estimaciones preliminares de las capturas retenidas de atunes en el OPO del 1 de enero al 2 de abril 2006, por especie y bandera del buque, en toneladas métricas**.**

Flag	Yellowfin	Skipjack	Bigeye	Pacific bluefin	Bonitos (*Sarda* spp.)	Albacore	Black skipjack	Other[1]	Total	Percentage of total
Bandera	**Aleta amarilla**	**Barrilete**	**Patudo**	**Aleta azul del Pacífi-co**	**Bonitos (*Sarda* spp.)**	**Albacora**	**Barrilete negro**	**Otras[1]**	**Total**	**Porcentaje del total**
Ecuador	11,031	32,596	8,165	-	-	-	27	35	51,854	37.2
Honduras	722	1,639	874	-	-	-	-	-	3,235	2.3
México	21,798	2,259	1	345	-	-	510	-	24,913	17.9
Nicaragua	2,897	337	260	-	-	-	-	-	3,494	2.5
Panamá	7,475	11,238	2,209	-	-	-	8	-	20,930	15.0
Venezuela	7,681	4,160	258	-	-	-	-	-	12,099	8.7
Other—Otros[2]	10,373	9,180	3,333	-	-	-	-	-	22,886	16.4
Total	61,977	61,409	15,100	345	-	-	545	35	139,411	

[1] Includes other tunas, sharks, and miscellaneous fishes
[1] Incluye otros túnidos, tiburones, y peces diversos
[2] Includes Bolivia, Colombia, El Salvador, Guatemala, Spain, United States, and Vanuatu; this category is used to avoid revealing the operations of individual vessels or companies.
[2] Incluye Bolivia, Colombia, El Salvador, España, Estados Unidos, Guatemala, y Vanuatú; se usa esta categoría para no revelar información sobre faenas de buques o empresas individuales.

TABLE 4. Estimated retained and discarded catches, in metric tons, by purse-seine and pole-and-line vessels of the EPO tuna fleet. "Other" includes other tunas, sharks, and miscellaneous fishes. The 2004 and 2005data are preliminary. Discard data were first collected by observers in 1993.

TABLA 4. Estimaciones de capturas retenidas y descartadas, en toneladas métricas, de buques cerqueros y caneros de la flota atunera del OPO. "Otros" incluye otros atunes, tiburones, y peces diversos. Los datos de 2004 y 2005 son preliminares. Los observadores toman datos sobre descartes desde 1993.

Year	Yellowfin			Skipjack			Bigeye			Pacific bluefin		
	Retained	Discarded	Total	Retained	Discarded	Total	Retained	Discarded	Total	Retained	Discarded	Total
Año	Aleta amarilla			Barrilete			Patudo			Aleta azul del Pacífico		
	Retenido	Descartado	Total	Retenido	Descartado	Total	Retenido	Descartado	Total	Retenido	Descartado	Total
1976	218,386	0	218,386	136,213	0	136,213	17,289	0	17,289	10,643	0	10,643
1977	186,763	0	186,763	92,127	0	92,127	11,164	0	11,164	5,459	0	5,459
1978	162,687	0	162,687	178,340	0	178,340	18,539	0	18,539	5,391	0	5,391
1979	175,438	0	175,438	140,041	0	140,041	12,097	0	12,097	6,107	0	6,107
1980	144,522	0	144,522	136,138	0	136,138	21,939	0	21,939	2,909	0	2,909
1981	169,712	0	169,712	125,071	0	125,071	14,922	0	14,922	1,086	0	1,086
1982	116,292	0	116,292	104,258	0	104,258	6,981	0	6,981	3,145	0	3,145
1983	87,935	0	87,935	61,238	0	61,238	4,614	0	4,614	836	0	836
1984	138,776	0	138,776	62,743	0	62,743	8,862	0	8,862	839	0	839
1985	212,529	0	212,529	51,776	0	51,776	6,058	0	6,058	3,996	0	3,996
1986	263,049	0	263,049	67,556	0	67,556	2,685	0	2,685	5,040	0	5,040
1987	267,114	0	267,114	66,252	0	66,252	1,177	0	1,177	980	0	980
1988	281,016	0	281,016	91,437	0	91,437	1,540	0	1,540	1,380	0	1,380
1989	282,140	0	282,140	97,876	0	97,876	2,031	0	2,031	1,107	0	1,107
1990	265,926	0	265,926	75,194	0	75,194	5,920	0	5,920	1,491	0	1,491
1991	234,113	0	234,113	63,946	0	63,946	4,901	0	4,901	419	0	419
1992	231,910	0	231,910	86,239	0	86,239	7,179	0	7,179	1,928	0	1,928
1993	224,444	4,722	229,166	87,601	10,588	98,189	9,657	645	10,302	580	0	580
1994	212,034	4,691	216,725	73,367	10,472	83,839	34,900	2,261	37,160	969	0	969
1995	216,702	5,275	221,977	132,298	16,378	148,676	45,319	3,251	48,570	630	0	630
1996	242,367	6,314	248,681	106,531	24,837	131,368	61,312	5,689	67,001	8,223	0	8,223
1997	249,296	5,516	254,812	156,716	31,558	188,274	64,270	5,482	69,752	2,610	3	2,613
1998	259,043	4,718	263,761	142,315	22,856	165,171	44,128	2,853	46,982	1,772	0	1,772
1999	283,703	6,638	290,341	263,609	26,851	290,460	51,158	5,176	56,334	2,558	54	2,612
2000	257,359	6,796	264,155	205,361	26,415	231,776	94,115	5,649	99,764	3,773	0	3,773
2001	385,939	7,808	393,747	144,507	13,233	157,740	61,404	1,294	62,698	892	3	895
2002	413,339	4,019	417,358	154,010	12,625	166,635	57,457	937	58,394	1,712	6	1,718
2003	381,052	5,338	386,390	275,680	23,302	298,982	54,137	2,260	56,397	3,236	0	3,236
2004	271,802	2,853	274,655	198,595	16,420	215,015	67,179	1,612	68,791	8,880	19	8,899
2005	270,223	3,142	273,365	261,307	18,909	280,216	70,294	1,899	72,193	4,743	14	4,757

TABLE 4. (continued)
TABLA 4. (continuación)

Year	Albacore			Bonitos (*Sarda* spp.)			Black skipjack			Other			Total		
	Retained	Discarded	Total	Retained	Discarded	Total	Retained	Discarded	Total	Retained	Discarded	Total	Retained	Discarded	Total
Año	Albacora			Bonitos (*Sarda* spp.)			Barrilete negro			Otros			Total		
	Retenido	Descartado	Total	Retenido	Descartado	Total	Retenido	Descartado	Total	Retenido	Descartado	Total	Retenido	Descartado	Total
1976	3,727	0	3,727	4,356	0	4,356	1,525	0	1,525	1,324	0	1,324	393,463	0	393,463
1977	1,975	0	1,975	11,275	0	11,275	1,456	0	1,456	1,949	0	1,949	312,169	0	312,169
1978	1,734	0	1,734	4,836	0	4,836	2,170	0	2,170	807	0	807	374,504	0	374,504
1979	327	0	327	1,804	0	1,804	1,366	0	1,366	1,248	0	1,248	338,427	0	338,427
1980	601	0	601	6,125	0	6,125	3,683	0	3,683	1,109	0	1,109	317,025	0	317,025
1981	707	0	707	5,717	0	5,717	1,910	0	1,910	1,008	0	1,008	320,134	0	320,134
1982	553	0	553	2,122	0	2,122	1,338	0	1,338	784	0	784	235,473	0	235,473
1983	456	0	456	3,829	0	3,829	1,222	0	1,222	1,712	0	1,712	161,842	0	161,842
1984	5,351	0	5,351	3,514	0	3,514	663	0	663	986	0	986	221,734	0	221,734
1985	919	0	919	3,604	0	3,604	289	0	289	537	0	537	279,708	0	279,708
1986	133	0	133	490	0	490	568	0	568	1,140	0	1,140	340,661	0	340,661
1987	321	0	321	3,317	0	3,317	571	0	571	1,627	0	1,627	341,358	0	341,358
1988	288	0	288	9,550	0	9,550	956	0	956	1,295	0	1,295	387,462	0	387,462
1989	22	0	22	12,096	0	12,096	803	0	803	1,007	0	1,007	397,081	0	397,081
1990	209	0	209	13,856	0	13,856	787	0	787	910	0	910	364,293	0	364,293
1991	834	0	834	1,289	0	1,289	421	0	421	648	0	648	306,571	0	306,571
1992	255	0	255	977	0	977	104	0	104	750	0	750	329,342	0	329,342
1993	1	0	1	600	12	612	104	4,116	4,220	314	8,700	9,014	323,301	28,782	352,083
1994	85	0	85	8,693	147	8,840	188	834	1,022	418	9,766	10,184	330,653	28,170	358,824
1995	465	0	465	8,010	55	8,065	202	1,448	1,650	153	8,748	8,901	403,779	35,154	438,933
1996	83	0	83	654	1	655	704	2,304	3,008	218	11,592	11,810	420,091	50,737	470,828
1997	60	0	60	1,105	4	1,109	101	2,512	2,613	149	15,707	15,856	474,307	60,782	535,089
1998	123	0	123	1,337	4	1,341	529	1,876	2,405	158	17,510	17,668	449,406	49,817	499,223
1999	273	0	273	1,719	0	1,719	171	3,424	3,595	226	20,721	20,947	603,416	62,865	666,282
2000	157	0	157	636	0	636	294	1,877	2,171	360	20,848	21,208	562,055	61,586	623,641
2001	159	0	159	18	0	18	2,260	1,253	3,513	354	27,934	28,288	595,533	51,526	647,059
2002	412	0	412	0	0	0	1,466	2,207	3,673	622	31,822	32,444	629,018	51,617	680,635
2003	92	0	92	1	0	1	439	1,606	2,045	104	28,370	28,474	714,741	60,876	775,617
2004	229	0	229	14	47	61	883	351	1,234	369	21,605	21,974	547,951	42,908	590,859
2005	18	0	18	313	18	331	1,446	1,909	3,355	541	15,671	16,212	608,885	41,562	650,447

TABLE 5. Preliminary estimates of the retained catches and landings, in metric tons, of tunas caught by purse-seine, pole-and-line, and recreational vessels in the EPO in 2005, by species and vessel flag (upper panel) and location where processed (lower panel). Miscelaneous = other species, including other tunas, sharks, and miscellaneous fishes.

TABLA 5. Estimaciones preliminares de las capturas retenidas y descargas de atún capturado con buques cerqueros, cañeros y deportivos en el OPO en 2005, por especie y bandera del buque (panel superior) y localidad donde fue procesado (panel inferior), en toneladas métricas. Misceláneo = otras especies, incluyendo otros túnidos, tiburones, y peces diversos.

Flag	Yellowfin	Skipjack	Bigeye	Pacific bluefin	Albacore	Bonitos (*Sarda* spp.)	Black skipjack	Miscel-laneous	Total	Percent of total
Bandera	**Aleta amarilla**	**Barrilete**	**Patudo**	**Aleta azul del Pacífico**	**Albacora**	**Bonitos (*Sarda* spp.)**	**Barrilete negro**	**Misce-láneo**	**Total**	**Porcentaje de total**
Retained catches—Capturas retenidas										
Ecuador	44,896	128,987	33,392	-	-	112	40	18	207,445	33.9
Honduras	2,073	6,107	3,601	-	-	-	-	-	11,781	1.9
México	117,364	28,566	2	4,542	-	1,192	273	92	152,031	24.9
Nicaragua	6,497	2,805	33	-	-	-	-	-	9,335	1.5
Panamá	27,810	31,762	12,724	-	-	8	-	8	72,312	11.8
El Salvador	6,439	5,955	985	-	-	73	-	60	13,512	2.2
Venezuela	38,941	15,948	172	-	-	41	-	2	55,104	9.0
Other—Otras[1]	27,050	41,197	19,385	296	1,787	20	-	-	89,735	14.8
Total	271,070	261,327	70,294	4,838	1,787	1,446	313	180	611,255	
Landings—Descargas										
Colombia	27,325	12,218	1,588	-	-	-	-	2	41,133	6.8
Costa Rica	14,926	5,894	775	-	-	-	-	-	21,595	3.5
Ecuador	69,788	186,074	58,365	-	-	140	40	24	314,431	51.7
México	112,981	28,438	304	4,513	-	1,193	273	92	147,794	24.3
Venezuela	15,702	3,302	-	-	-	-	-	-	19,004	3.1
Other—Otras[2]	33,931	22,356	5,879	296	1,787	114	-	60	64,423	10.6
Total	274,653	258,282	66,911	4,809	1,787	1,447	313	178	608,380	

[1]Includes Colombia, Guatemala, Spain, United States, Vanuatu, and unknown. This category is used to avoid revealing the operations of individual vessels or companies.

[1] Incluye Colombia, España, Estados Unidos, Guatemala, Vanuatú, y desconocido. Se usa esta categoría para no revelar información sobre las actividades de buques o empresas individuales.

[2] Includes El Salvador, Guatemala, Peru, Spain, United States, and unknown. This category is used to avoid revealing the operations of individual vessels or companies.

[2] Incluye El Salvador, España, Estados Unidos, Guatemala, Perú, y desconocido. Se usa esta categoría para no revelar información sobre las actividades de buques o empresas individuales.

TABLE 6a. Catches of bigeye tuna, in metric tons, in the eastern Pacific Ocean during 2005 by longline vessels over 24 meters in overall length.
TABLA 6a. Captures de atún patudo, en toneladas métricas, en el Océano Pacífico oriental durante 2005 por buques palangreros de más de 24 metros en eslora total.

Flag	Quarter				Total
	1	2	3	4	
Bandera	**Trimestre**				**Total**
	1	**2**	**3**	**4**	
China*	633	288	51	0	972
European Union—Unión Europea	0	0	0	0	0
Japan—Japón	4,094	3,482	4,653	3,509	15,738
Republic of Korea—República de Corea	3,035	3,253	2,540	2,753	11,581
Chinese Taipei—Taipei Chino	1,224	1,544	2,110	2,022	6,900
Vanuatu	337	214	97	92	740

*processed weight—peso procesado

TABLE 6b. Catches of bigeye tuna, in metric tons, in the eastern Pacific Ocean during the first quarter of 2006 by longline vessels over 24 meters in overall length.
TABLA 6b. Captures de atún patudo, en toneladas métricas, en el Océano Pacífico oriental durante el primer trimestre de 2006 por buques palangreros de más de 24 metros en eslora total.

Flag	Month			Total
	1	2	3	
Bandera	**Mes**			**Total**
	1	**2**	**3**	
China*	0	0	0	0
European Union—Unión Europea	0	0	0	0
Japan—Japón	1,311	1,262	1,042	3,615
Republic of Korea—República de Corea	803	668	577	2,048
Chinese Taipei—Taipei Chino	743	610	729	2,082
Vanuatu	0	0	0	0

*processed weight—peso procesado

TABLE 7. Preliminary data on the sampling coverage of trips by vessels with capacities greater than 363 metric tons by the IATTC program, the national programs of Colombia, Ecuador, the European Union, Mexico, Panama, and Venezuela, and the Forum Fisheries Agency (FFA) program during the first quarter of 2006.

TABLA 7. Datos preliminares de la cobertura de muestreo de viajes de buques con capacidad más que 363 toneladas métricas por el programa de la CIAT, los programas nacionales de Colombia, Ecuador, México, Panamá, el Unión Europea, y Venezuela, y el Forum Fisheries Agency (FFA) durante el primero trimestre de 2006.

Flag	Trips	Observed by program				Percent observed
		IATTC	National	FFA	Total	
Bandera	**Viajes**	**Observado por programa**				**Porcentaje observado**
		CIAT	**Nacional**	**FFA**	**Total**	
Colombia	21	10	11		21	100.0
Ecuador	101	65	36		101	100.0
España—Spain	7	5	2		7	100.0
Guatemala	3	3			3	100.0
Honduras	7	7			7	100.0
México	63	32	31		63	100.0
Nicaragua	9	9			9	100.0
Panamá	43	41	2		43	100.0
El Salvador	10	10			10	100.0
U.S.A—EE.UU.	1	1			1	100.0
Venezuela	29	14	15		29	100.0
Vanuatu	4	4			4	100.0
Total	298[1]	201	97	0	298[1]	100.0

[1] Includes 90 trips, 57 by vessels with observers from the IATTC program and 33 by vessels with observers from the national programs, that began in late 2005 and ended in 2006

[1] Incluye 90 viajes, 57 por observadores del programa del CIAT y 33 por observadores de los programas nacionales, iniciados a fines de 2005 y completados en 2006

TABLE 8. Oceanographic and meteorological data for the Pacific Ocean, October 2005-March 2006. The values in parentheses are anomalies. SST = sea-surface temperature; SOI = Southern Oscillation Index; NOI* = Northern Oscillation Index.
TABLA 8. Datos oceanográficos y meteorológicos del Océano Pacífico, Octubre 2005-Marzo 2006. Los valores en paréntesis son anomalías. TSM = temperatura superficie del mar; IOS = Índice de Oscilación del Sur; ION* = Índice de Oscilación del Norte.

Month—Mes	**10**	**11**	**12**	**1**	**2**	**3**
SST—TSM (°C)						
Area 1 (0°-10°S, 80°-90°W)	19.7 (-1.2)	20.5 (-1.2)	22.2 (-0.7)	24.2 (-0.3)	26.3 (0.3)	26.8 (0.3)
Area 2 (5°N-5°S, 90°-150°W	24.7 (-0.2)	24.3 (-0.7)	24.2 (-0.9)	24.9 (-0.7)	26.0 (-0.3)	26.5 (-0.6)
Area 3 (5°N-5°S, 120°-170°W)	26.8 (0.2)	26.4 (-0.1)	25.9 (-0.6)	25.7 (-0.9)	26.1 (-0.6)	26.5 (-0.6)
Area 4 (5°N-5°S, 150W°-160°E)	28.9 (0.5)	28.7 (0.3)	28.9 (0.5)	27.7 (-0.4)	27.4 (-0.6)	27.8 (-0.3)
Thermocline depth—Profundidad de la termoclina, 0°, 80°W (m)	50	50	45	30	30	20
Thermocline depth—Profundidad de la termoclina, 0°, 110°W (m)	40	40	40	50	30	40
Thermocline depth—Profundidad de la termoclina, 0°, 150°W (m)	140	130	130	140	140	140
Thermocline depth—Profundidad de la termoclina, 0°, 180°W (m)	170	170	180	170	180	180
Sea level—Nivel del mar, Baltra, Ecuador (cm)	187.8 (10.6)	189.4 (10.5)	182.4 (2.6)	185.5 (4.8)	196.0 (13.7)	190.2 (8.4)
Sea level—Nivel del mar, Callao, Perú (cm)	101.6 (-4.0)	109.0 (2.1)	98.6 (-10.0)	106.7 (-4.8)	107.5 (-6.6)	105.1 (-9.6)
SOI—IOS	1.1	-0.3	-0.2	1.8	-0.2	1.4
SOI*—IOS*	4.97	0.80	0.24	0.99	-1.22	1.06
NOI*—ION*	2.17	3.33	-1.89	4.12	2.26	-0.07