INTER-AMERICAN TROPICAL TUNA COMMMISSION
COMISIÓN INTERAMERICANA DEL ATÚN TROPICAL
QUARTERLY REPORT—INFORME TRIMESTRAL

January-March 2005
Enero-Marzo 2005

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The

QUARTERLY REPORT

January-March 2005

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, and Spain in 2003. 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 progressively 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 Mortal-

ity 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 55th 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.

MEETINGS

IDCP meetings

The following IDCP meetings were held in La Jolla, California, in February 2005. Information on these meetings is available on the IATTC's web site.

Meeting	Number	Date
Permanent Working Group on Tuna Tracking	18	February 15
Working Group to Promote and Publicize the AIDCP Dolphin Safe Tuna Certification System	4	February 15
International Review Panel	38	February 16
Working Group on Vessel Assessments and Financing	3	February 17-18

Other meetings

Dr. Martin A. Hall and Mr. Erick D. Largacha participated in the 25th Annual Symposium on Sea Turtle Biology and Conservation in Savannah, Georgia, USA, on January 18-22, 2005, at which they made the following presentations:

Discusión de estandarización de toma de datos (Dr. Hall, January 18);

A strategy to reduce the mortality of sea turtles in the longline fishery of the eastern Pacific Ocean (Dr. Hall, January 20);

Interactions with artisanal fishing communities: the experience from Ecuador (Mr. Largacha, January 20);

Working with fishermen (Dr. Hall, January 20).

The first presentation was made at the XII Reunión de Especialistas Latinoamericanos en Tortugas Marinas, a special session on Latin America.

Dr. Richard B. Deriso participated in a meeting of the Scientific and Statistical Committee of the Western Pacific Fishery Management Council of the United States in Honolulu, Hawaii, on February 22-24, 2005. His travel expenses were paid the by the Western Pacific Fishery Management Council.

Dr. Robin Allen served as chairman of the second meeting of the steering committee of the FAO Fisheries Resource Monitoring System (FIRMS), which took place in Copenhagen, Denmark, on February 25-26, 2005. FIRMS is a partnership among international organizations and regional fishery bodies that are collaborating on reporting and sharing information on the status and trends of fishery resources. On February 28-March 4, 2005, he participated in the 21st meeting of the FAO Coordinating Working Party on Fishery Statistics, which also took place in Copenhagen. On March 7-12, 2005, he participated in the 26th meeting of the FAO Committee on Fisheries in Rome. During a break in that meeting he served as chairman of the fifth meeting of regional tuna bodies. On March 14-15, 2005, he participated in the fourth meeting of Regional Fisheries Bodies Secretariats, also in Rome.

Mr. Brian S. Hallman participated in the FAO Technical Consultation on International Guidelines for the Ecolabelling for Fish and Fishery Products from Marine Capture Fisheries, which took place in Rome on March 3-4, 2005.

Dr. Richard B. Deriso has been appointed to membership in a new U.S. National Academies committee, "Ecosystem Effects of Fishing: Phase II—Assessments of the Extent of Change and the Implications for Policy." The committee "will review and evaluate the current literature on the impacts of modern fisheries on the composition and productivity of marine ecosystems. The report will discuss the relevance of these findings for U.S. fishery management, identify areas for future tuna research and analysis, and characterize the stewardship implications for living marine resources." He attended the first meeting of that committee in Washington, D.C., USA, on March 25-27, 2005. His travel expenses were paid by the U.S. National Academies.

Dr. Robin Allen participated in the Fifth Meeting of the Interim Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean in Tokyo, Japan, on March 28-30, 2005.

AGREEMENT ON THE STATUS OF THE IATTC IN COSTA RICA

On January 25, 2005, Dr. Robin Allen and Sr. Roberto Tovar, Minister of Foreign Affairs of Costa Rica, signed an agreement between the IATTC and the government of Costa Rica establishing the status of the IATTC in Costa Rica as an international organization with appropriate immunities and privileges.

DATA COLLECTION

The IATTC has field offices at Las Playas and Manta, Ecuador; Ensenada and Mazatlan, Mexico; Panama, Republic of Panama; Mayaguez, Puerto Rico, USA; and Cumaná, Venezuela.

Personnel at these offices collected length-frequency samples from 187 wells and abstracted logbook information for 99 trips of commercial fishing vessels during the first quarter of 2005.

Also during the first quarter members of the field office staffs placed IATTC observers on 163 fishing trips by vessels that participate in the AIDCP On-Board Observer Program. In

addition, 142 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 vessels that are fishing, or are expected to fish, in the eastern Pacific Ocean (east of 150°W; EPO) during 2005 is about cubic meters (m^3) (Table 1). The weekly average at-sea capacity for the fleet, for the weekly periods ending January 1 through April 3, was about). The changes of flags and vessel names and additions to and deletions from the IATTC's fleet list during that period are given in Table 2.

Catch statistics

Catch statistics for the first quarter of 2005

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

Species	2005	2000-2004			Weekly average, 2005
		Average	Minimum	Maximum	
Yellowfin	98,400	112,100	91,000	129,000	7,600
Skipjack	84,400	58,600	46,900	87,300	6,500
Bigeye	9,700	12,200	6,500	20,500	700

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

Catch statistics for 2004

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 1975-2004 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 from 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. There were restrictions on purse-seine fishing for tunas for vessels of some countries from August 1 through September 11, 2004, and from November 20-December 31, 2004, 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, 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 2004, the 1989-2003 annual averages for yellowfin and skipjack, and the 1994-2003 annual average for bigeye are as follows:

Species	2004	Average	Minimum	Maximum
			1989-2003	
Yellowfin	270,261	275,965	212,034	413,239
Skipjack	197,392	137,688	63,946	275,505
			1994-2003	
Bigeye	66,944	56,794	34,900	94,083

The 2004 catch of yellowfin was slightly less than the average for 1989-2003. The 2004 skipjack catch was nearly 60 thousand metric tons (t) (43 percent) greater than the average for 1989-2003. The 2004 bigeye catch was about 10 thousand t (18 percent) greater than the average for 1994-2003.

The average annual distributions of the logged retained purse-seine catches of yellowfin, skipjack, and bigeye, by set type, in the EPO during the 1989-2003 period (1994-2003 for bigeye) are shown in Figures 1a, 2a, and 3a, and the preliminary estimates for 2004 are shown in Figures 1b, 2b, and 3b. The catches of yellowfin were significantly less in the northern areas off Mexico and Central America in 2004. The distribution of the skipjack catches in 2004 was similar to those of 1989-2003, although the catches in the nearshore areas off Mexico were greater, possibly due to changes in fishing strategy due to the poor yellowfin fishing. Bigeye are not often caught by surface gear north of about 7°N. The distribution of the catch of bigeye during 2004 was similar to those of 1994-2003, although some differences are evident. 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 10 thousand t in 2004, which is slightly greater than the 1989-2003 average of 9 thousand t (range: 4 to 29 thousand t).

The estimated retained catch of all species in the EPO in 2004 was about 544 thousand t, which is 17 percent greater than the average of 463 thousand t for 1989-2003, but 23 percent less than the previous record total catch of 714 thousand t, taken in 2003

Preliminary estimates of the retained catches in the EPO, 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 which 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 2004 were as follows:

Flag	Retained catches		Landings	
	Metric tons	Percentage	Metric tons	Percentage
Colombia	-	-	60,000	11
Ecuador	159,000	29	274,600	49
Spain	25,400	5	-	-
Mexico	125,000	23	139,000	25
Panama	62,500	12	-	-
Venezuela	71,000	13	25,000	4

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 2004 and the first quarter of 2005 are shown in Tables 6a and 6b, respectively. Equivalent data are not available for the other species of tunas, nor 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 1999-2004 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 2004, and the second shows the combined data for the fourth quarter of each year of the 1999-2004 period. Samples from 109 wells were taken during the fourth quarter of 2004. 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 109 wells sampled, 75 contained yellowfin. The estimated size compositions of these fish during the fourth quarter of 2004 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 schools associated with dolphins. The average size of these fish was less than during the first three quarters of 2004. There were small amounts of yellowfin taken by pole-and-line vessels and in floating-object sets in the Inshore (negligible) and Southern areas.

The estimated size compositions of the yellowfin caught by all fisheries combined during the fourth quarter of 1999-2004 are shown in Figure 5b. The average weights of the yellowfin caught during the fourth quarter were less than during any of the previous five years. As was the case during the third quarter, the mode between 80 and 100 cm represented the most prevalent size group, although a mode of smaller yellowfin between 40 and 50 cm appeared during the fourth quarter. This mode has been present during the fourth quarter of each 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 109 wells sampled, 89 contained skipjack. The estimated size compositions of these fish during the fourth quarter of 2004 are shown in Figure 6a. The catches of skipjack in the Equatorial floating-object fishery were greater than during the previous three quarters. Greater amounts of skipjack were also caught in the two Southern fisheries and in the dolphin fishery. Negligible amounts of skipjack were taken by pole-and-line vessels and in the Inshore floating-object fishery.

The estimated size compositions of the skipjack caught by all fisheries combined during the fourth quarter of 1999-2004 are shown in Figure 6b. The majority of the skipjack caught during the fourth quarter ranged between 35 and 50 cm, making the average weight less than during any of the previous five years.

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 109 wells sampled, 50 contained bigeye. The estimated size compositions of these fish during the fourth quarter of 2004 are shown in Figure 7a. Of the total catch of bigeye during 2004, the greatest amount was taken during the fourth quarter. The majority of the catch was taken in floating-object sets in all but the Inshore area, where only a negligible amount was taken. A negligible amount of bigeye was caught in the unassociated fishery and in dolphin sets. There were no recorded catches of bigeye 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 1999-2004 are shown in Figure 7b. The average weight of bigeye caught during the fourth quarter was greater than during the previous three quarters, probably due to the spike of fish greater than 140 cm in length.

The estimated retained catch of bigeye less than 60 cm in length during 2004 was 15,145 metric tons (t), or about 32 percent of the estimated total catch of bigeye by purse seiners. The corresponding amounts for 1999-2003 ranged from 3,453 to 23,090 t.

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 (the Programa Nacional de Observadores, which commenced operations during the first quarter of 2005), Ecuador, the European Union, Mexico, 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 2005 the observer programs of Colombia, Mexico, 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. The national program of the European Union sampled one trip of a Spanish-flag vessel in 2005, but has advised the IATTC that it will be inactive until further notice. In the meantime observers from the IATTC program will accompany Spanish vessels. 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 243 fishing trips aboard purse seiners covered by that program during the first quarter of 2005. Preliminary coverage data for these vessels during the quarter are shown in Table 7. In addition to those trips, the On-Board Observer Program is also placing observers aboard one vessel of less than 363 metric tons capacity during 2005, as required by AIDCP Resolution A-02-01, adopted at the eighth meeting of the Parties to the AIDCP on October 10, 2002. Three fishing trips by that vessel were sampled during the quarter.

Training

There were no IATTC observer training courses during the quarter. However, Mr. Ernesto Altamirano of the IATTC staff participated in the Colombian national observer program's first training session, held for 16 trainees in Bogota, Colombia, from February 22 to March 11, 2005.

RESEARCH

Tuna tagging

Two IATTC employees left San Diego on March 1, 2005, for a tagging cruise aboard the chartered pole-and-line vessel *Her Grace* in the equatorial waters of the EPO. Due to the increased cost of fuel, the duration of the cruise was to be only 67 days, instead of 90 days, as was the case for the cruises of 2000 and 2002-2004. After getting a full load of bait in Panama, the tagging vessel proceeded to the fishing grounds west of the Galapagos Islands.

Early life history studies

Yellowfin broodstock

The yellowfin broodstock in Tank 1 (1,362,000 L) at the Achotines Laboratory spawned intermittently from January 1 through January 15 and daily from January 16 through February 2. Spawning did not occur thereafter until March 2, and daily spawning resumed on March 15. Spawning occurred between 4:35 p.m. and 9:00 p.m.. The numbers of eggs collected after each spawning event ranged from about 1,000 to 689,000. The water temperatures in the tank ranged from 22.9° to 27.8°C during the quarter and from 24.7° to 27.8°C on the days during which spawning occurred.

Four 6- to 11- kg females and three 14- to 52- kg males died during the quarter. Six died from striking the wall of the tank and one became entangled in the egg collection net. At the end of March there were three size groups of fish in Tank 1: one large fish (108 kg), 15 27- to 51-kg fish, and 13 7- to 17-kg fish.

From January 2003 through December 2004 archival tags had been implanted in yellowfin tuna (IATTC Quarterly Reports for January-March 2003, April-June 2004, and October-December 2004), and at the end of March 11 fish from those groups remained in Tank 1.

Additional yellowfin tuna were captured during March, bringing the population in Tank 2 to 17 fish.

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 de Panamá.

Two separate broodstocks of snappers are being kept in two 85-m^3 tanks. The first consists of 16 individuals from the original broodstock caught in 1996. Their reproductive activity began again during the second week of June 2004, and they continued to spawn during the first

half of the fourth quarter with high frequency and intensity (number of eggs). Intermittent spawning continued thereafter and during the first quarter 2005, but less frequently.

The second group consists of 26 individuals from a group bred at the Laboratory from eggs obtained from spawning in 1998. These fish, which in 2003 spawned until November, continued to spawn frequently during the first half of the fourth quarter, but less frequently thereafter.

Scientific cooperation agreement

On January 26, 2005, Dr. Robin Allen signed a Scientific Cooperation Agreement on behalf of the IATTC with the following Panamanian government agencies: the Autoridad Marítima de Panamá (AMP), the Ministerio de Desarrollo Agropecuario (MIDA), and the Instituto de Investigaciones Científicas Avanzadas y Servicios de Alta Tecnología (INDICASAT). The agreement will allow AMP and MIDA staff biologists and Panamanian university students access to facilities at the laboratory for mariculture-related broodstock research, with funding to cover the costs of such access provided by INDICASAT. Panamanian coastal marine fish species would probably be the principal targets of such research.

Electrical power for the Achotines Laboratory

On February 15, 2005, after 20 years of self-sufficiency, using generators, the Achotines Laboratory was connected to the national electrical grid. The generators will be retained for emergency use.

Visitors at the Achotines Laboratory

On January 13, 2005, the Panamanian Minister of Tourism, Mr. Reuben Blades, visited the Achotines Laboratory. He was accompanied by the governor of Los Santos Province, Mr. Hector Cárdenas, and several functionaries of the Instituto Panameño de Turismo.

On February 19, 2005, Lic. Rubén Arosemena, the General Administrator of La Autoridad Marítima de Panama (AMP), visited the Achotines Laboratory. He was accompanied by several other functionaries of the AMP and the Dirección General de Recursos Marinos y Costeros (DGRMC), including the Sub-Director of the DGRMC. They were hosting a group from World Mariculture, a Florida-based company that is visiting sites potentially suitable for mariculture in various parts of Panama.

The work of Dr. Alexandra Amat, a Smithsonian Tropical Research Institute (STRI) post-doctoral fellow, was described in the IATTC Quarterly Report for July-September 2004. She returned to the Achotines Laboratory during February and March during the dry season to set up a repetition of her previous experiment conducted during the rainy season. Dr. Amat was accompanied by two STRI interns in February, Ms. Sonya Hollander and Ms. Alexis Weintraub.

On March 9 and 10, 2005, the Ministerio de Desarrollo Agropecuario (MIDA) of Panama held a seminar at the Achotines Laboratory. The seminar, which was an overview of marine fish culture and food production for larval marine fish, was coordinated by the MIDA National Director of Aquaculture, Dr. Richard Pretto Malca. The principal presenter was Prof. Jesse Chappell, an extension fisheries specialist at Auburn University, Auburn, Alabama, USA. There were 15 attendees from MIDA aquaculture stations, private industry, and the Achotines Laboratory staff.

Oceanography and meteorology

Easterly 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.

Figure 7 of the IATTC Quarterly Report for October-December 2004 and the data in Table 9 of that report indicate that a weak El Niño event was in effect during the fourth quarter of 2004, although the NOI* for November was unusually high. During the first quarter of 2005 the SSTs were nearly normal, although there were small areas of cool water near the equator east of 95°W during February and March and small areas of warm water off Central America and off northern Chile during March (Figure 8). Also, there was a large area of warm water west of 165°W during January, but this was considerably smaller during February and March. The data in Table 8 are mixed. During February and March the SSTs along the Equator between 80° and 90°W were well below normal and the thermocline at 0°-80°W was very shallow. The SOI, NOI*, and SOI* were all well below normal during February, but nearly normal during January and March. According to the Climate Diagnostics Bulletin of the U.S. National Weather Service for March 2005, "A transition from weak warm-episode (El Niño) conditions to … neutral conditions will continue during the next three months, and … neutral conditions will likely prevail during the northern summer."

OFCF-IATTC sea turtle project

The IATTC is discussing an agreement with the Overseas Fishery Cooperation Federation (OFCF) of Japan and the Subsecretaría de Recursos Pesqueros of Ecuador to mitigate the impact of the longline fishery on sea turtles. Mr. Hidenobu Eguchi, Mr. Tsuyoshi Shuto, and Dr. Takahisa Mitsuhashi, all of the OFCF, Dr. Hideki Nakano, National Research Institute of Far Seas Fisheries, and Ms. Kumiko Cho, interpreter, met with Drs. Robin Allen and Martín A. Hall, and Mr. Erick D. Largacha, in La Jolla, and then, accompanied by Mr. Largacha, spent the period of January 24-28, 2005, in Ecuador, where they met with Ecuadorian officials and visited several fishing communities. The three OFCF officials then traveled to La Jolla, where they met with Dr. Allen on January 31, 2005.

GEAR PROGRAM

During the first quarter IATTC staff members participated in nine dolphin safety-gear inspection and safety-panel alignment procedures, seven aboard Mexican-flag purse seiners one aboard a Nicaraguan-flag purse seiner, and one aboard a Panamanian-flag purse seiner.

INTER-AGENCY COOPERATION

Dr. Mark N. Maunder spent the period of January 22-29, 2005, at the headquarters of the Secretariat of the Pacific Community (SPC), where he collaborated with staff members of the SPC and the National Research Institute of Far Seas Fisheries of Japan on a Pacific-wide assessment of bigeye tuna. After that, on February 2-3, 2005, he conducted a two-day workshop on ecological modeling, using AD Model Builder, at Waikato University in Hamilton, New Zealand.

Dr. Cleridy E. Lennert-Cody gave lectures on generalized linear models at Scripps Institution of Oceanography, La Jolla, on February 2 and 4, 2005, to students taking a computationally-intensive statistics class at that institution.

Dr. Robert J. Olson worked in February 2005 with Mr. Ethan Hue and Ms. Nicole Scalese, both students at the University of California at San Diego (UCSD), on data and samples for a study of the trophic structure of the pelagic food webs in the equatorial eastern, central, and western Pacific Ocean, using stable carbon and nitrogen isotopes and diet analyses. The students, who volunteered to work without pay, were recruited through the UCSD Career Services Center.

VISITING SCIENTIST

Dr. Peter Nelson, who had been performing gear research, as a postdoctoral study, with IATTC staff members since March 2003, left the IATTC on March 25, 2005, to accept employment with the Sea Grant program at Humboldt State University, Arcata, California.

PUBLICATIONS

Lennert-Cody, Cleridy E., and Michael D. Scott. 2005. Spotted dolphin evasive response in relation to fishing effort. Mar. Mammal Sci., 21 (1): 13-28.

Schaefer, K. M., and D. W. Fuller. 2005. Behavior of bigeye (*Thunnus obesus*) and skipjack (*Katsuwonus pelamis*) tunas within aggregations associated with floating objects in the equatorial eastern Pacific. Mar. Biol., 146 (4): 781-792.

ADMINISTRATION

Ms. Amy French was employed as a temporary worker at the IATTC headquarters on January 24, 2005. She helped the staff catch up with keypunching logbook and length-frequency data and various other projects. She had done similar work for the IATTC from January 14 through May 27, 2003.

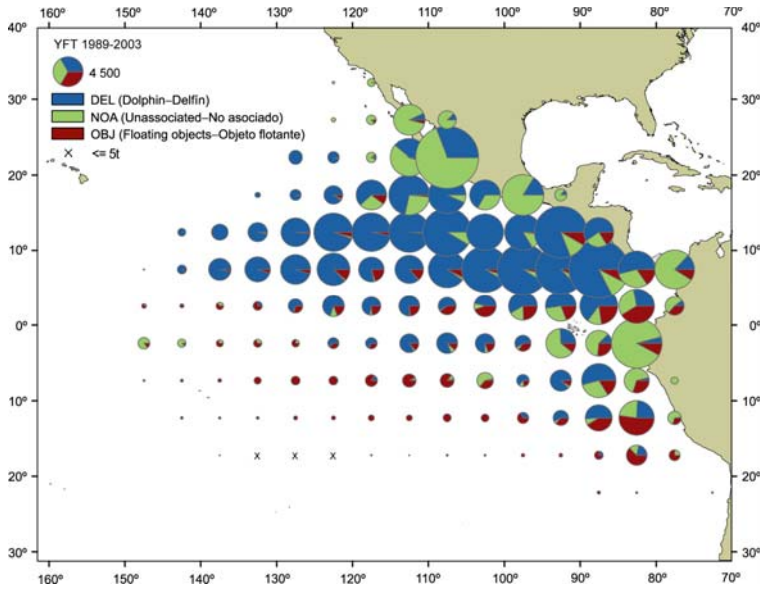

FIGURE 1a. Average annual distribution of the logged retained purse-seine catches of yellowfin in the eastern Pacific Ocean during 1988-2003. The sizes of the circles are proportional to the amounts of yellowfin caught in those 5° by 5° areas.
FIGURA 1a. Distribución anual media de las capturas cerqueras retenidas registradas de aleta amarilla en el Océano Pacífico oriental durante 1988-2003. El tamaño de cada círculo es proporcional a la cantidad de aleta amarilla capturado en la zona de 5° x 5° correspondiente.

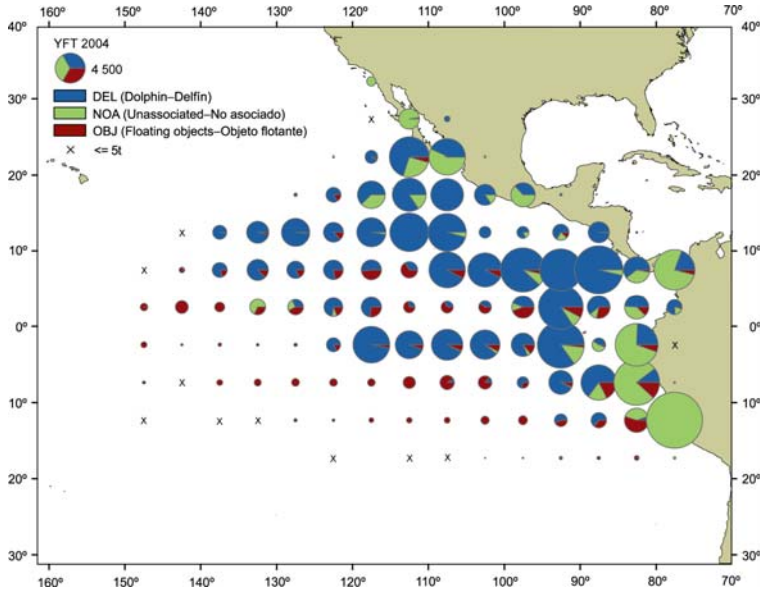

FIGURE 1b. Distribution of the logged retained purse-seine catches of yellowfin in the eastern Pacific Ocean during 2004. The sizes of the circles are proportional to the amounts of yellowfin caught in those 5° by 5° areas.
FIGURA 1b. Distribución de las capturas cerqueras retenidas registradas de aleta amarilla en el Océano Pacífico oriental durante 2004. El tamaño de cada círculo es proporcional a la cantidad de aleta amarilla capturado en la zona de 5° x 5° correspondiente.

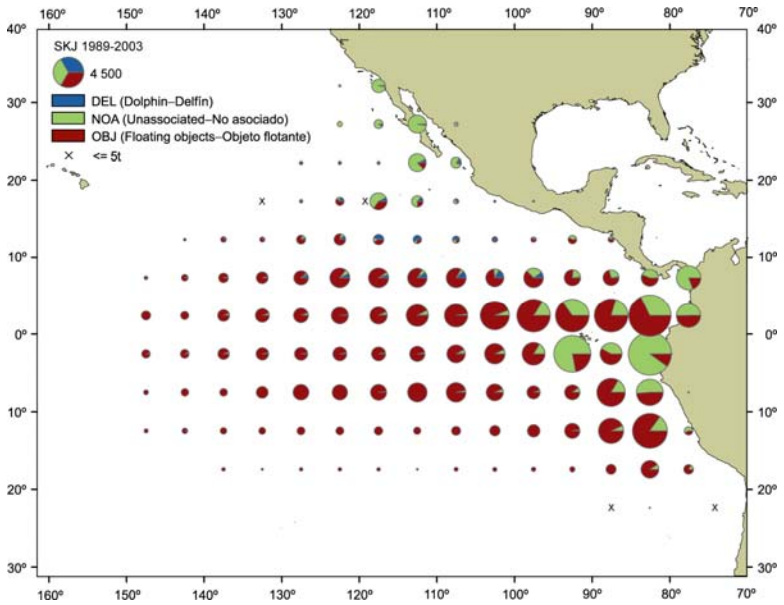

FIGURE 2a. Average annual distribution of the logged retained purse-seine catches of skipjack in the eastern Pacific Ocean during 1988-2003. The sizes of the circles are proportional to the amounts of skipjack caught in those 5° by 5° areas.
FIGURA 2a. Distribución anual media de las capturas cerqueras retenidas registradas de barrilete en el Océano Pacífico oriental durante 1988-2003. El tamaño de cada círculo es proporcional a la cantidad de barrilete capturado en la zona de 5° x 5° correspondiente.

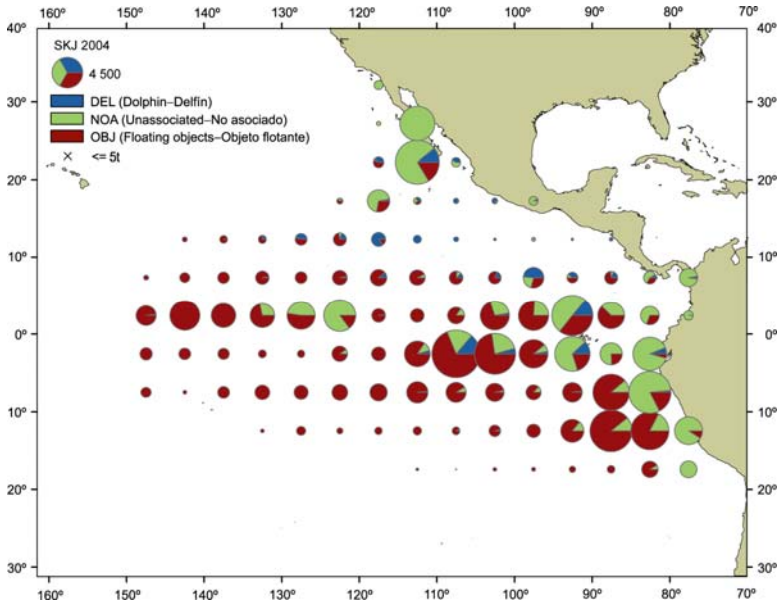

FIGURE 2b. Distribution of the logged retained purse-seine catches of skipjack in the eastern Pacific Ocean during 2004. The sizes of the circles are proportional to the amounts of skipjack caught in those 5° by 5° areas.
FIGURA 2b. Distribución de las capturas cerqueras retenidas registradas de barrilete en el Océano Pacífico oriental durante 2004. El tamaño de cada círculo es proporcional a la cantidad de barrilete capturado en la zona de 5° x 5° correspondiente.

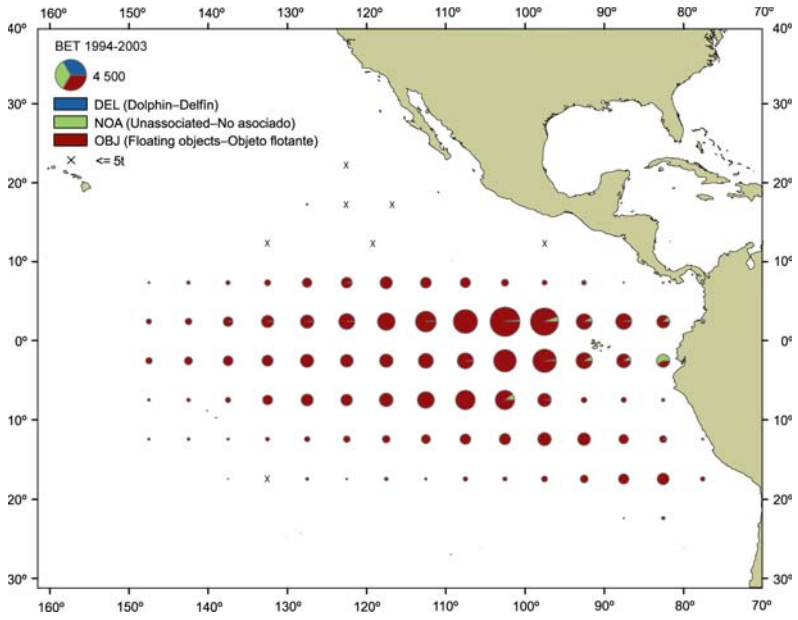

FIGURE 3a. Average annual distribution of the logged retained purse-seine catches of bigeye in the eastern Pacific Ocean during 1994-2003. The sizes of the circles are proportional to the amounts of bigeye caught in those 5° by 5° areas.
FIGURA 3a. Distribución anual promedia de las capturas cerqueras retenidas registradas de patudo en el Océano Pacífico oriental durante 1994-2003. El tamaño de cada círculo es proporcional a la cantidad de patudo capturado en la zona de 5° x 5° correspondiente.

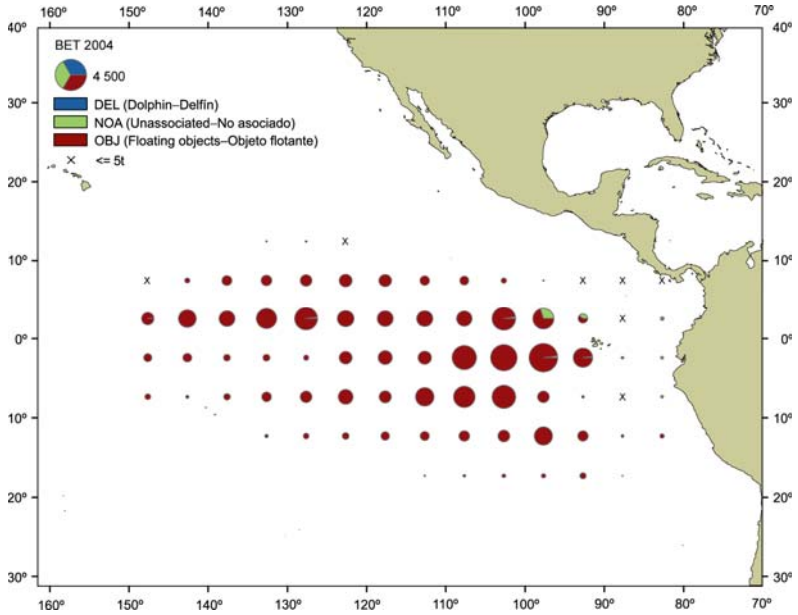

FIGURE 3b. Distribution of the logged retained purse-seine catches of bigeye in the eastern Pacific Ocean during 2004. The sizes of the circles are proportional to the amounts of bigeye caught in those 5° by 5° areas.
FIGURA 3b. Distribución de las capturas cerqueras retenidas registradas de patudo en el Océano Pacífico oriental durante 2004. El tamaño de cada círculo es proporcional a la cantidad de patudo capturado en la zona de 5° x 5° correspondiente.

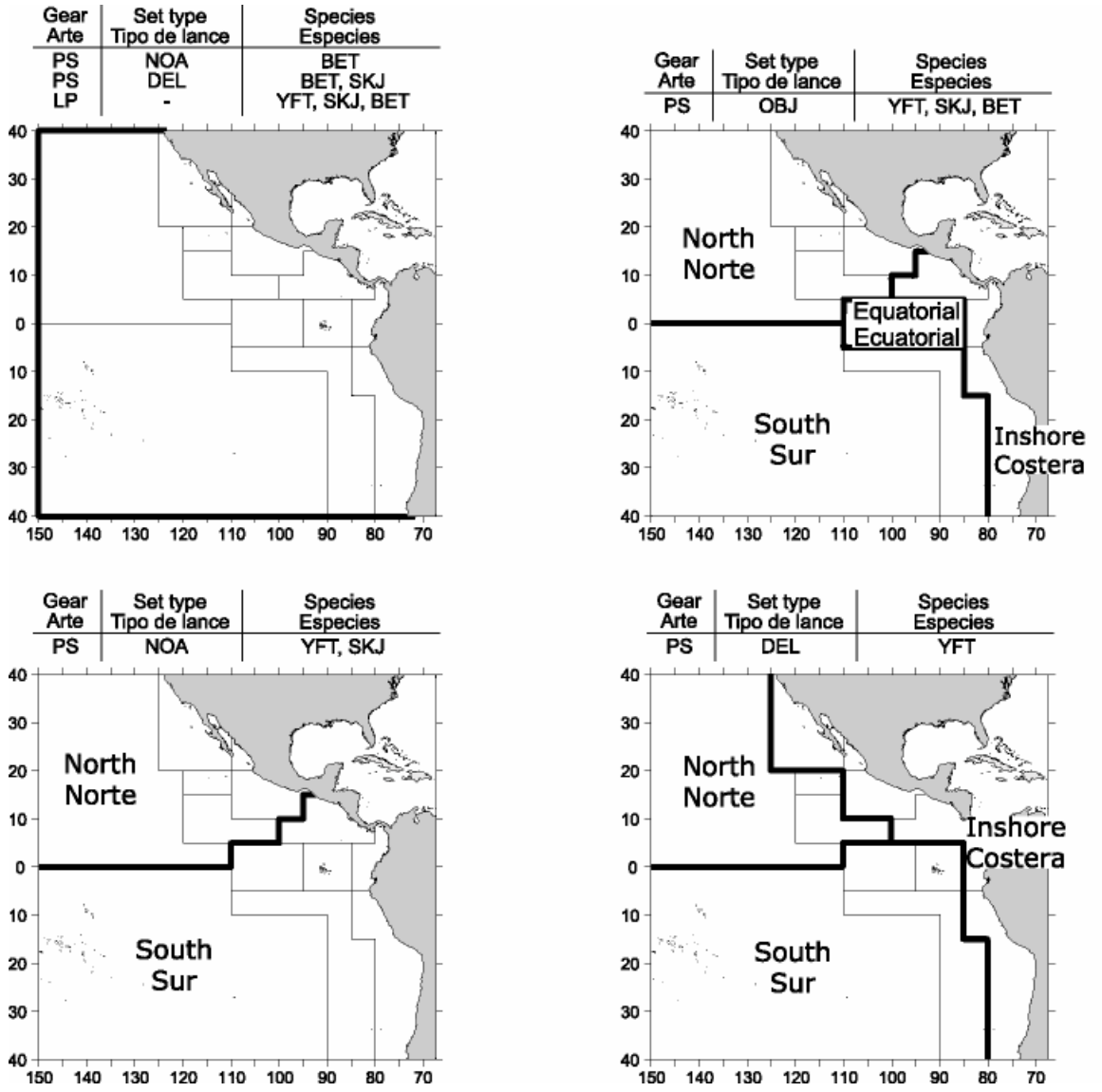

FIGURE 4. Spatial extents of the fisheries defined by the IATTC staff for stock assessment of yellowfin, skipjack, and bigeye in the EPO. The thin lines indicate the boundaries of the 13 length-frequency sampling areas, and the bold lines the boundaries of the fisheries. Gear – PS = purse seine, LP =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

FIGURA 4. Extensión especial de las pesquerías definidas por el personal de la CIAT para la evaluación de los stocks 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 = cerquero, LP = caño; Tipo de arte – NOA = no asociada, DEL = delfín; OBJ = objeto flotante; Especies – YFT = aleta amarilla, SKJ = barrilete, BET = patudo.

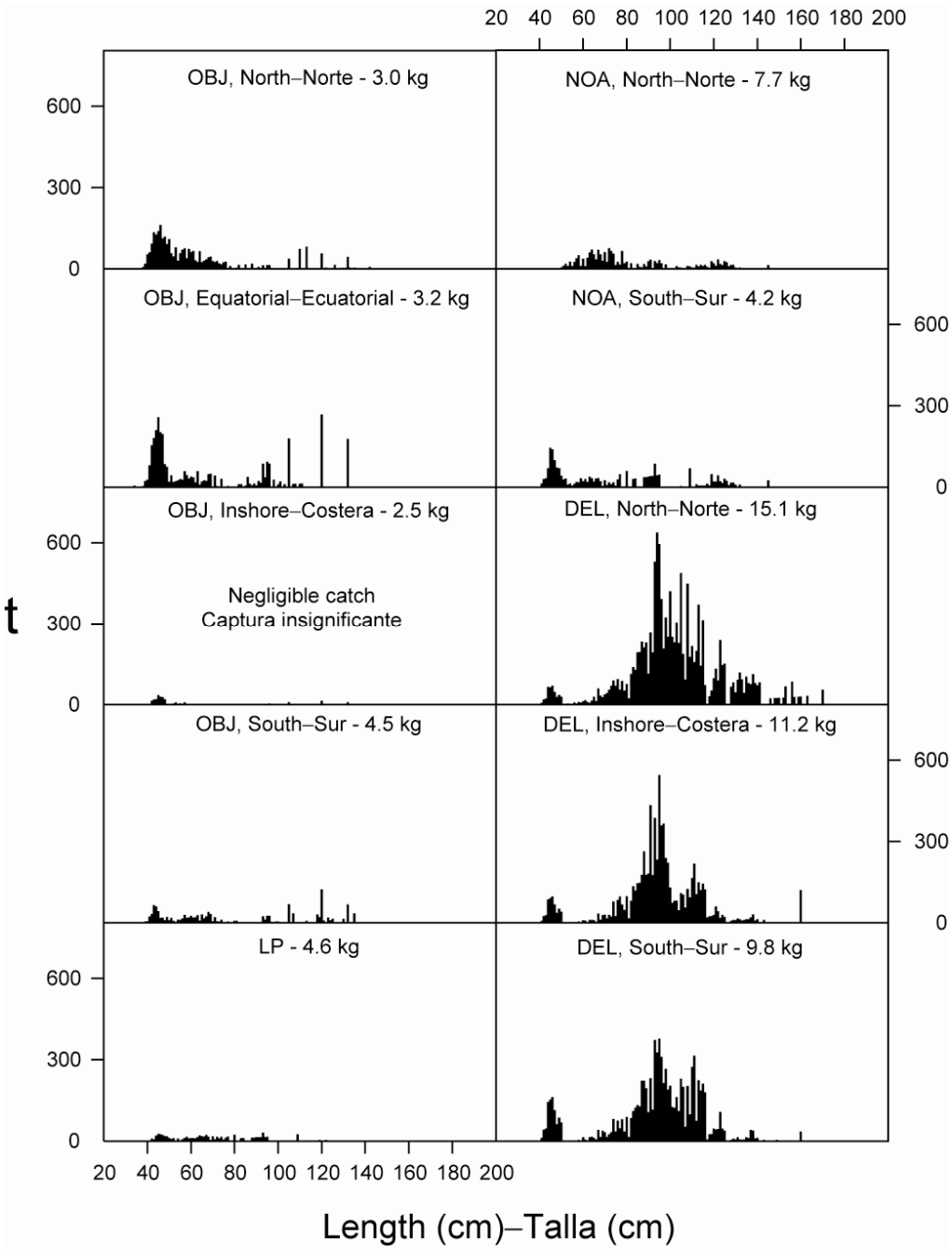

FIGURE 5a. Estimated size compositions of the yellowfin caught in each fishery of the EPO during the fourth quarter of 2004. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons; OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 5a. Composición por tallas estimada para el aleta amarilla capturado en cada pesquería del OPO durante el cuarto trimestre de 2004. 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.

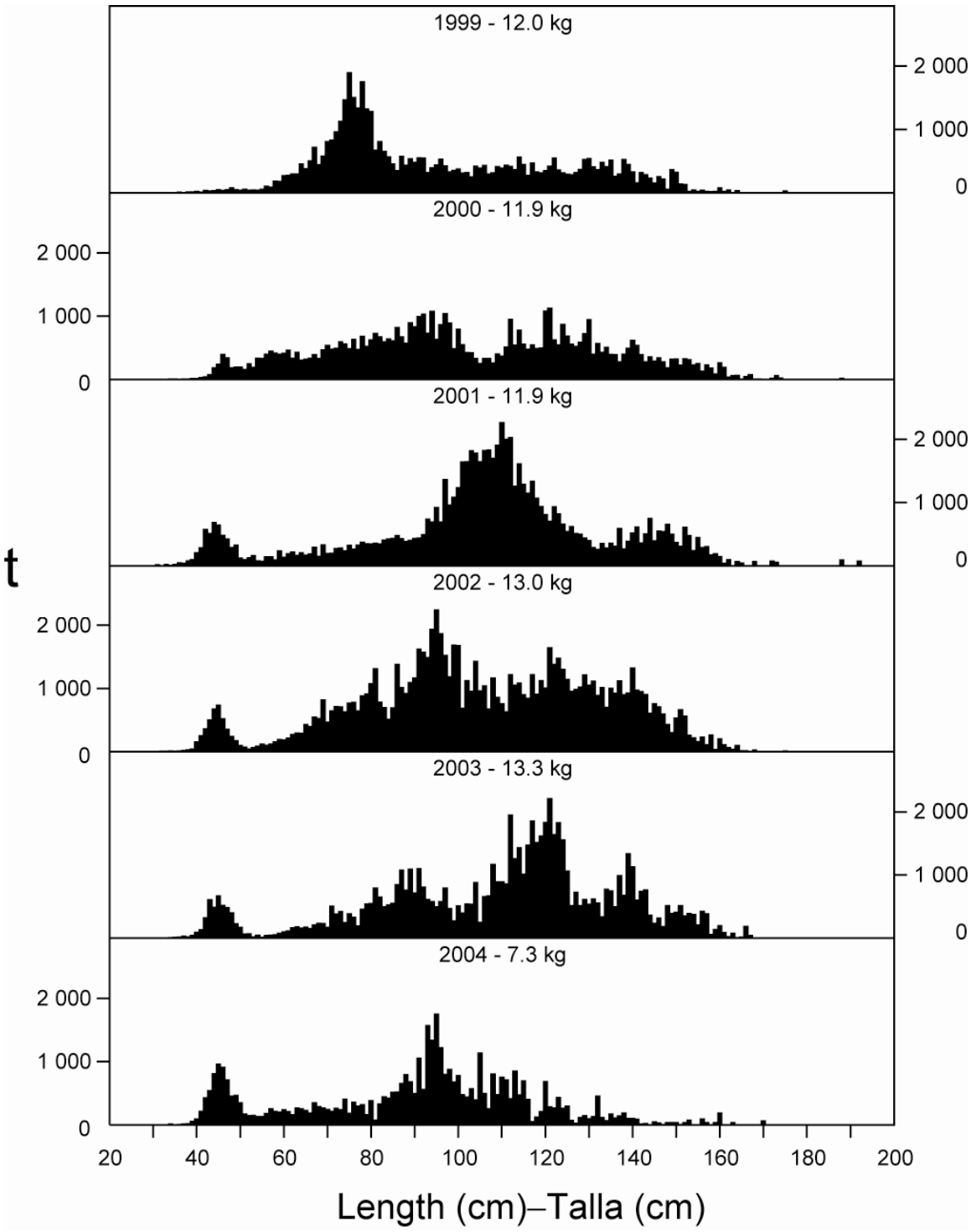

FIGURE 5b. Estimated size compositions of the yellowfin caught in the EPO during the fourth quarter of 1999-2004. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 5b. Composición por tallas estimada para el aleta amarilla capturado en el OPO en el cuarto trimestre de 1999-2004. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

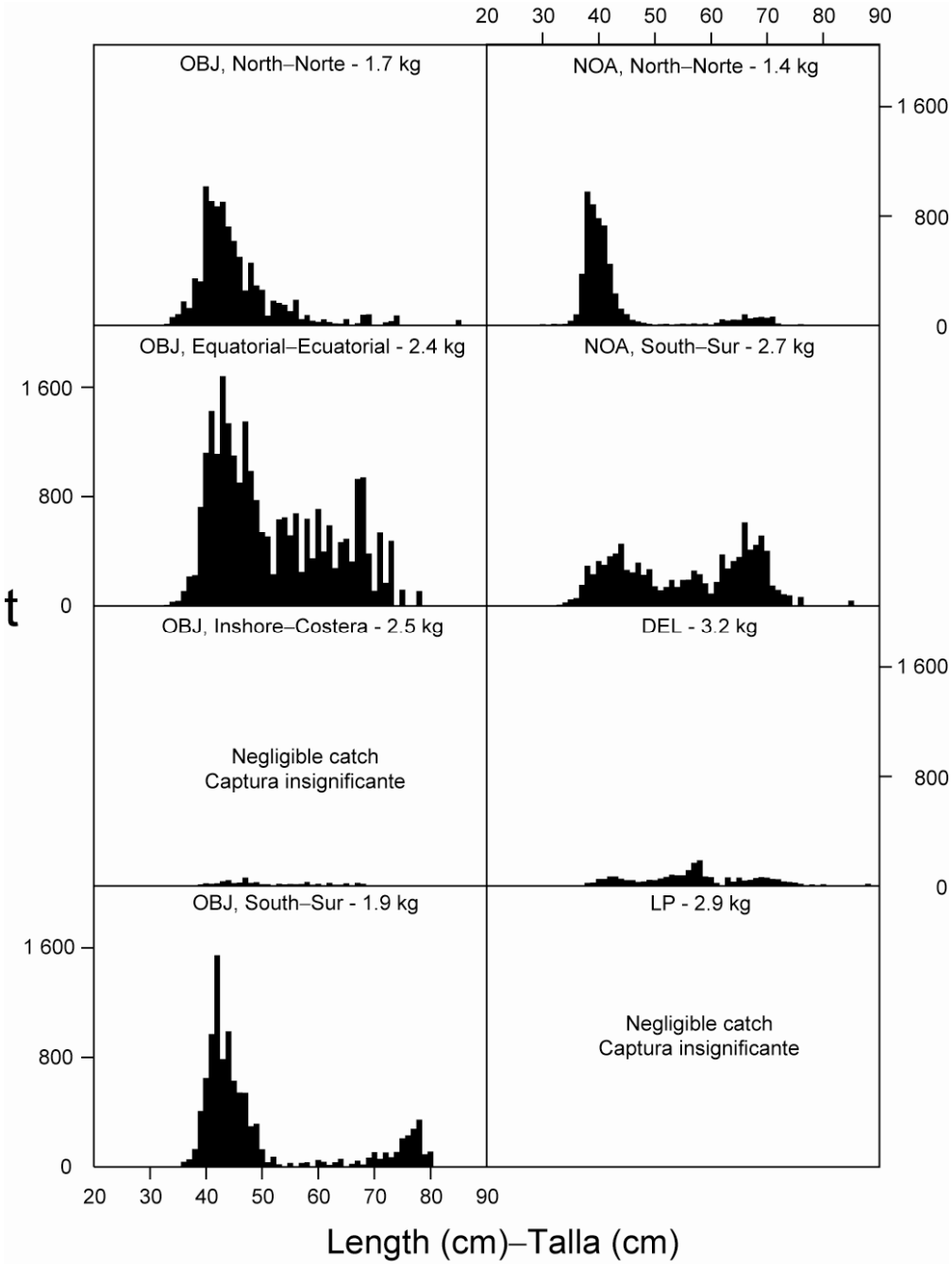

FIGURE 6a. Estimated size compositions of the skipjack caught in each fishery of the EPO during the fourth quarter of 2004. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons; OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 6a. Composición por tallas estimada para el barrilete capturado en cada pesquería del OPO durante el cuarto trimestre de 2004. 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.

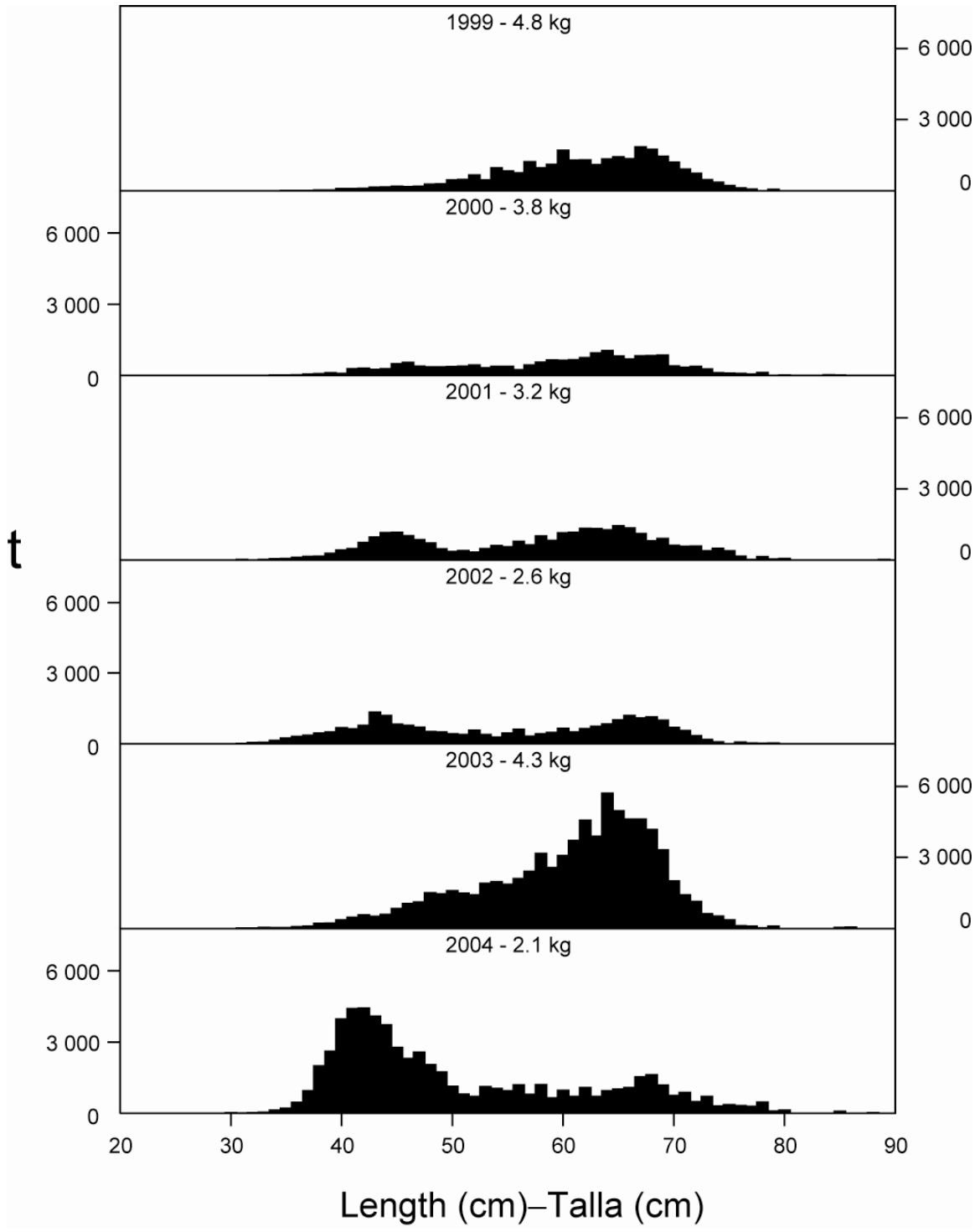

FIGURE 6b. Estimated size compositions of the skipjack caught in the EPO during the fourth quarter of 1999-2004. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 6b. Composición por tallas estimada para el barrilete capturado en el OPO en el cuarto trimestre de 1999-2004. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

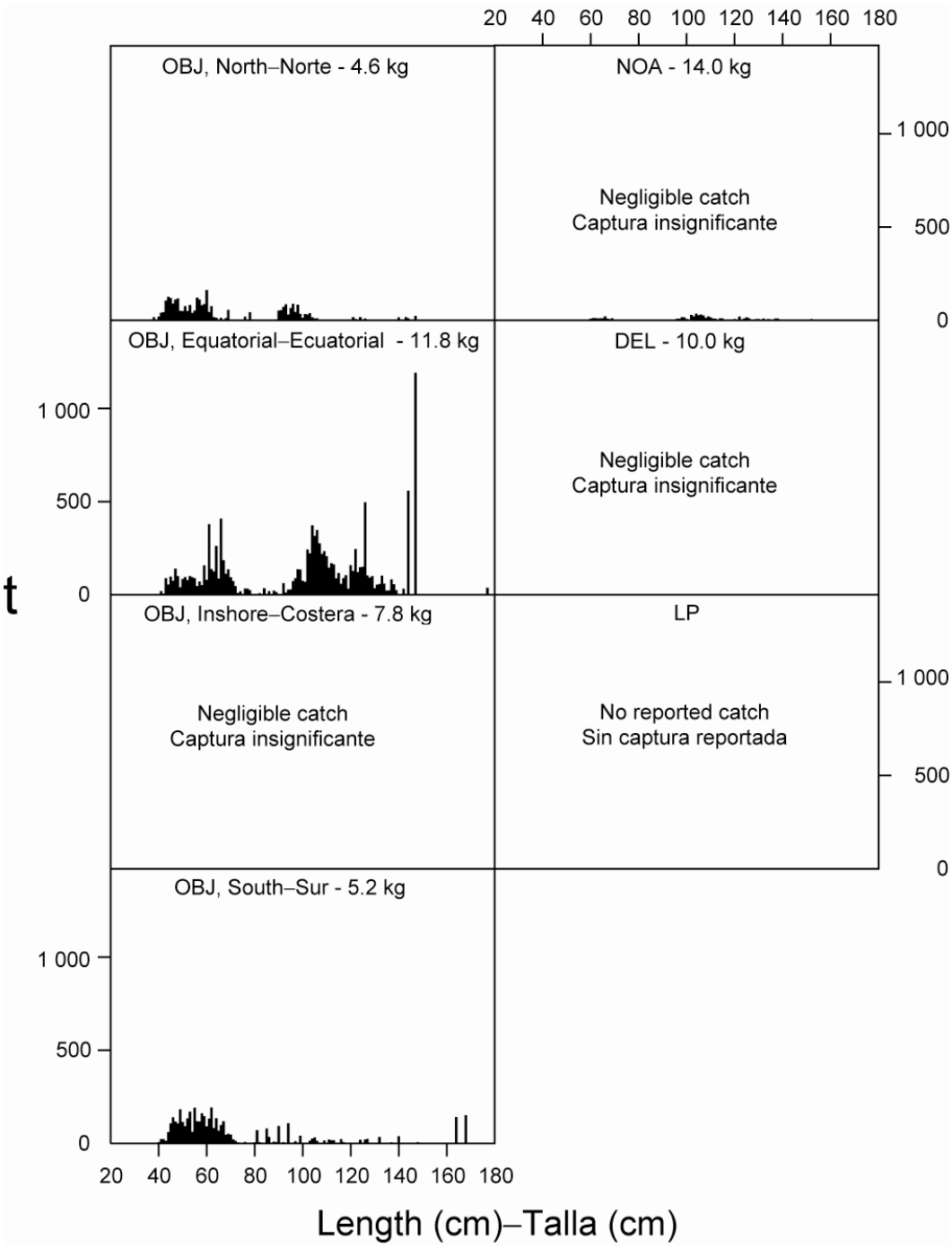

FIGURE 7a. Estimated size compositions of the bigeye caught in each fishery of the EPO during the fourth quarter of 2004. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons; OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 7a. Composición por tallas estimada para el patudo capturado en cada pesquería del OPO durante el cuarto trimestre de 2004. 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.

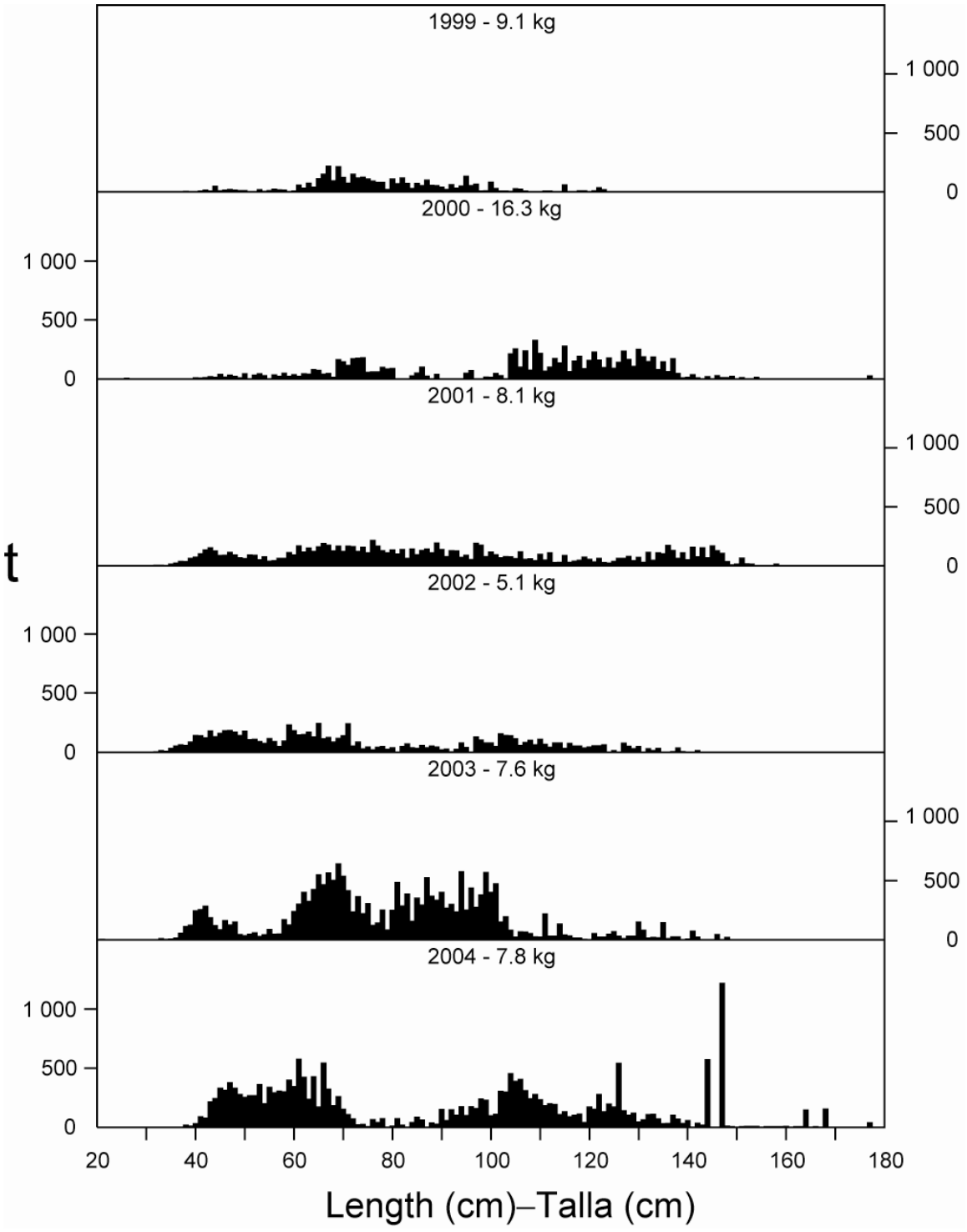

FIGURE 7b. Estimated size compositions of the bigeye caught in the EPO during the fourth quarter of 1999-2004. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 7b. Composición por tallas estimada para el patudo capturado en el OPO en el cuarto trimestre de 1999-2004. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

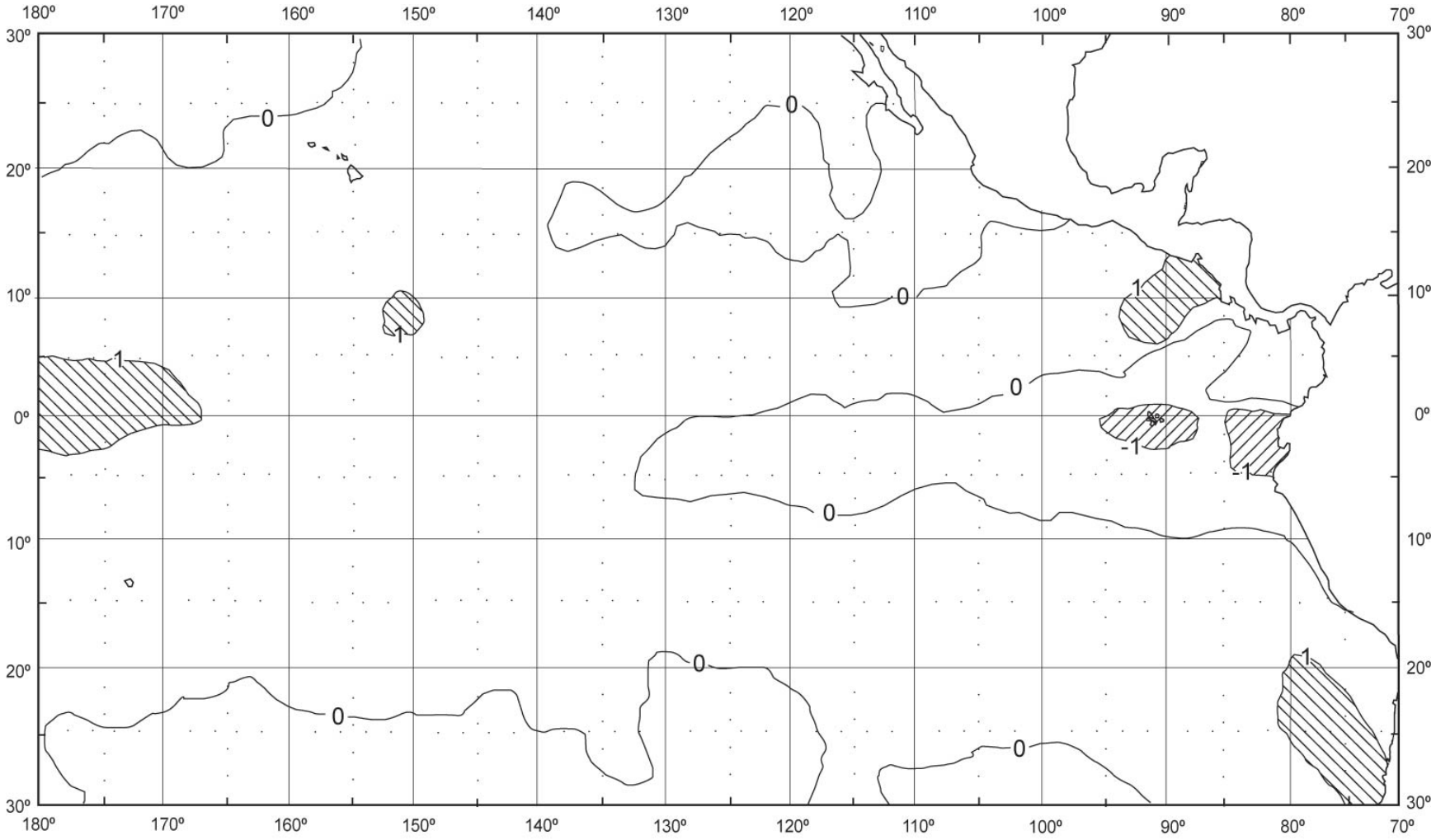

FIGURE 8. Sea-surface temperature (SST) anomalies (departures from long-term normals) for March 2005, based on data from fishing boats and other types of commercial vessels.
FIGURA 8. Anomalías (variaciones de los niveles normales a largo plazo) de la temperatura superficial del mar (TSM) en marzo de 2005, 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 2005 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 2005, 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				
Colombia	PS	-	-	-	1	1	11	13	14,148
Ecuador	PS	-	4	7	13	10	41	75	53,446
España—Spain	PS	-	-	-	-	-	3	3	6,959
Guatemala	PS	-	-	-	-	-	2	2	3,415
Honduras	PS	-	-	-	-	-	3	3	2,810
México	PS	-	-	2	7	11	40	60	54,216
	LP	-	1	2	-	-	-	3	338
Nicaragua	PS	-	-	-	-	-	5	5	6,785
Panamá	PS	-	-	-	2	1	15	18	21,654
El Salvador	PS	-	-	-	-	-	3	3	5,238
USA—EE.UU.	PS	-	-	1	-	-	1	2	1,445
Venezuela	PS	-	-	-	-	-	25	25	32,564
Vanuatu	PS	-	-	-	-	-	2	2	2,163
Unknown— Desconocida	PS	-	-	2	1	-	1	4	2,387
All flags— Todas banderas	PS	-	4	12	24	23	152	215	
	LP	-	1	2	-	-	-	3	
	PS + LP	-	5	14	24	23	152	218	
					Capacity—Capacidad				
All flags— Todas banderas	PS	-	383	2,103	6,712	10,191	187,841	207,230	
	PL	-	101	237	-	-	-	338	
	PS + LP	-	484	2,340	6,712	10,191	187,841	207,568	

TABLE 2. Changes in the IATTC fleet list recorded during the first quarter of 2005. PS = purse seine; LP = pole-and-line.
TABLA 2. Cambios en la flota observada por la CIAT registrados durante el primer trimestre de 2005. 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 entry—1er ingreso					
				Now—Ahora	
Pendruc	Nicaragua	PS	1,251		
Tunapuy	El Salvador	PS	769		
Re-entries—Reingresos					
				Now—Ahora	
Emperador	Ecuador	PS	82		
Jacobita	Ecuador	PS	374		
Killa	Ecuador	PS	412		
Maria Fatima	Ecuador	PS	338		
Bold Adventuress	U.S.A.	PS	1,593	Nicaragua	
Changes of name or flag—Cambios de nombre o pabellon					
				Now—Ahora	
Amanda	Bolivia	PS	1,268	Colombia	
Cabo De Hornos	Bolivia	PS	680	Colombia	
Gold Coast	Bolivia	PS	1,194	Colombia	
Nazca	Bolivia	PS	1,414	Colombia	
Sea Gem	Bolivia	PS	1,274	Colombia	
Doña Luz	Ecuador	PS	786		*Mandy*
Albacora Catorce	Panama	PS	1,880	Ecuador	
Albacora Doce	Panama	PS	1,880	Ecuador	
Danielle. D	Panama	PS	1,022	Venezuela	
Cape Elizabeth	U.S.A.	PS	1,773	Mexico	*El Dorado*
Esmeralda C	Vanuatu	PS	1,358	Panama	
Vessels removed from fleet—Buques retirados de la flota					
Albacora Quince	España	PS	1,900		
Connie Jean	U.S.A.	PS	605		

TABLE 3. Preliminary estimates of the retained catches of tunas in the EPO from January 1 through April 3, 2005, 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 3 de abril 2005, 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	18,341	42,539	3,824	-	-	-	-	-	64,704	33.6
México	40,192	5,638	-	-	-	-	85	94	46,009	23.9
Panamá	8,070	10,827	1,833	-	-	-	-	-	20,730	10.8
Venezuela	14,139	8,998	28	-	-	-	16	2	23,183	12.0
Other—Otros[2]	17,667	16,445	3,976	-	-	-	-	-	38,088	19.7
Total	98,409	84,447	9,661	-	-	-	101	96	192,714	

[1] Includes other tunas, mackerels, sharks, and miscellaneous fishes
[1] Incluye otros túnidos, caballas, tiburones, y peces diversos
[2] Includes Bolivia, Colombia, El Salvador, Guatemala, Honduras, Nicaragua, 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, Honduras, Nicaragua, 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 2003 and 2004 data 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 2003 y 2004 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**
1975	188,659	0	188,659	134,206	0	134,206	6,610	0	6,610	13,867	0	13,867
1976	218,386	0	218,386	136,214	0	136,214	17,289	0	17,289	21,895	0	21,895
1977	186,763	0	186,763	92,127	0	92,127	11,164	0	11,164	10,282	0	10,282
1978	162,687	0	162,687	178,341	0	178,341	18,539	0	18,539	7,191	0	7,191
1979	175,438	0	175,438	140,040	0	140,040	12,097	0	12,097	12,227	0	12,227
1980	144,522	0	144,522	136,138	0	136,138	21,939	0	21,939	8,626	0	8,626
1981	169,712	0	169,712	125,071	0	125,071	14,922	0	14,922	3,208	0	3,208
1982	116,292	0	116,292	104,258	0	104,258	6,981	0	6,981	6,974	0	6,974
1983	87,935	0	87,935	61,238	0	61,238	4,614	0	4,614	4,350	0	4,350
1984	138,776	0	138,776	62,743	0	62,743	8,862	0	8,862	4,443	0	4,443
1985	212,529	0	212,529	51,775	0	51,775	6,058	0	6,058	4,486	0	4,486
1986	263,049	0	263,049	67,556	0	67,556	2,685	0	2,685	8,366	0	8,366
1987	267,114	0	267,114	66,252	0	66,252	1,177	0	1,177	10,530	0	10,530
1988	281,016	0	281,016	91,438	0	91,438	1,540	0	1,540	13,476	0	13,476
1989	282,140	0	282,140	97,876	0	97,876	2,031	0	2,031	14,958	0	14,958
1990	265,926	0	265,926	75,194	0	75,194	5,920	0	5,920	2,719	0	2,719
1991	234,113	0	234,113	63,946	0	63,946	4,901	0	4,901	1,396	0	1,396
1992	231,910	0	231,910	86,239	0	86,239	7,179	0	7,179	2,540	0	2,540
1993	224,444	4,722	229,166	87,601	10,588	98,189	9,657	645	10,302	9,420	0	9,420
1994	212,034	4,757	216,791	73,367	10,360	83,727	34,900	2,280	37,180	9,034	0	9,034
1995	216,702	5,275	221,977	132,298	16,378	148,676	45,319	3,251	48,570	1,285	0	1,285
1996	242,367	6,314	248,681	106,531	24,837	131,368	61,312	5,689	67,001	9,332	0	9,332
1997	249,296	5,516	254,812	156,716	31,558	188,274	64,270	5,482	69,752	3,949	3	3,949
1998	259,043	4,718	263,761	142,315	22,856	165,171	44,128	2,853	46,981	3,491	0	3,491
1999	283,703	6,638	290,341	263,608	26,851	290,459	51,158	5,176	56,334	3,189	54	3,189
2000	257,374	6,796	264,170	205,476	26,256	231,732	94,083	5,600	99,683	3,735	0	3,735
2001	386,187	7,486	393,673	144,518	11,964	156,482	61,259	1,111	62,370	891	3	891
2002	413,239	3,707	416,946	154,129	11,461	165,590	57,412	807	58,219	1,708	6	1,708
2003	381,001	4,497	385,498	275,505	20,106	295,611	54,103	1,640	55,743	3,295	0	3,295
2004	270,261	2,853	273,114	197,392	16,420	213,812	66,944	1,612	68,556	8,548	19	8,548

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

Year	Albacore			Eastern Pacific bonito			Black skipjack			Other			Total		
	Retained	Discarded	Total	Retained	Discarded	Total	Retained	Discarded	Total	Retained	Discarded	Total	Retained	Discarded	Total
Año	Albacora			Bonito del Pacífico oriental			Barrilete negro			Otros			Total		
	Retenido	Descartado	Total	Retenido	Descartado	Total	Retenido	Descartado	Total	Retenido	Descartado	Total	Retenido	Descartado	Total
1975	3,332	0	3,332	16,839	0	16,839	511	0	511	276	0	276	364,300	0	364,300
1976	3,727	0	3,727	4,369	0	4,369	1,526	0	1,526	1,324	0	1,324	404,730	0	404,730
1977	1,975	0	1,975	11,275	0	11,275	1,457	0	1,457	1,950	0	1,950	316,993	0	316,993
1978	1,734	0	1,734	4,836	0	4,836	2,170	0	2,170	809	0	809	376,307	0	376,307
1979	327	0	327	1,804	0	1,804	1,366	0	1,366	1,249	0	1,249	344,548	0	344,548
1980	601	0	601	6,125	0	6,125	3,681	0	3,681	1,108	0	1,108	322,740	0	322,740
1981	707	0	707	5,717	0	5,717	1,910	0	1,910	1,008	0	1,008	322,255	0	322,255
1982	553	0	553	2,122	0	2,122	1,338	0	1,338	783	0	783	239,301	0	239,301
1983	456	0	456	3,829	0	3,829	1,222	0	1,222	1,711	0	1,711	165,355	0	165,355
1984	5,351	0	5,351	3,514	0	3,514	663	0	663	984	0	984	225,336	0	225,336
1985	919	0	919	3,604	0	3,604	289	0	289	537	0	537	280,197	0	280,197
1986	133	0	133	490	0	490	577	0	577	1,140	0	1,140	343,996	0	343,996
1987	321	0	321	3,326	0	3,326	562	0	562	1,629	0	1,629	350,911	0	350,911
1988	288	0	288	9,550	0	9,550	956	0	956	1,295	0	1,295	399,559	0	399,559
1989	22	0	22	12,096	0	12,096	803	0	803	1,007	0	1,007	410,933	0	410,933
1990	209	0	209	13,856	0	13,856	787	0	787	930	0	930	365,541	0	365,541
1991	834	0	834	1,289	0	1,289	421	0	421	648	0	648	307,548	0	307,548
1992	255	0	255	977	0	977	104	0	104	763	0	763	329,967	0	329,967
1993	1	0	1	600	12	612	104	4,116	4,220	315	5,187	5,502	332,142	25,270	357,412
1994	85	0	85	8,693	147	8,840	188	853	1,041	419	4,581	5,000	338,720	22,978	361,698
1995	465	0	465	8,010	55	8,065	202	1,448	1,650	153	4,846	4,999	404,434	31,253	435,687
1996	83	0	83	654	1	655	704	2,304	3,008	219	5,422	5,642	421,202	44,567	465,770
1997	60	0	60	1,105	4	1,109	101	2,512	2,613	148	8,722	8,870	475,645	53,797	529,442
1998	123	0	123	1,337	4	1,341	529	1,876	2,405	158	6,483	6,641	451,124	38,790	489,914
1999	274	0	274	1,719	0	1,719	171	3,424	3,595	226	7,515	7,741	604,048	49,658	653,706
2000	157	0	157	636	0	636	294	1,877	2,171	360	5,791	6,151	562,115	46,320	608,435
2001	21	0	21	17	0	17	2,258	1,162	3,420	354	6,519	6,873	595,505	28,245	623,750
2002	31	0	31	0	0	0	1,467	1,764	3,231	621	6,349	6,970	628,607	24,094	652,701
2003	34	0	34	0	0	0	439	1,332	1,771	104	4,964	5,068	714,481	32,539	747,020
2004	106	0	106	15	47	62	848	351	1,199	347	6,575	6,922	544,461	27,877	572,338

TABLE 5. Preliminary estimates of the retained catches and landings, in metric tons, of tunas and bonito caught by purse-seine, pole-and-line, and recreational vessels in the EPO in 2004, 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 y bonito capturado con buques cerqueros, cañeros y deportivos en el OPO en 2004, 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	Eastern Pacific bonito	Black skipjack	Miscel-laneous	Total	Percent of total
Bandera	**Aleta amarilla**	**Barrilete**	**Patudo**	**Aleta azul del Pacífico**	**Albacora**	**Bonito del Pacífico oriental**	**Barrilete negro**	**Misce-láneo**	**Total**	**Porcentaje de total**
Retained catches—Capturas retenidas										
Ecuador	40,542	87,643	30,852	-	-	7	62	82	159,188	29.2
España-Spain	3,913	14,901	6,577	-	-	-	-	-	25,391	4.7
México	89,239	26,861	98	8,548	106	8	418	57	125,335	23.0
Panamá	30,904	18,392	13,202	-	-	-	25	17	62,540	11.5
USA-EE.UU.	1,977	4,745	4,027	-	-	-	296	-	11,045	2.0
Venezuela	56,128	13,827	986	-	-	-	47	1	70,989	13.0
Vanuatu	1,760	7,205	5,137	-	-	-	-	-	14,102	2.6
Other-Otros[1]	45,798	23,818	6,065	-	-	-	-	190	75,871	13.9
otal	270,261	197,392	66,944	8,548	106	15	848	347	544,461	
Landings—Descargas										
Colombia	47,356	10,600	2,019	-	-	-	-	25	60,000	10.7
Costa Rica	15,710	3,819	1,798	-	-	-	41	3	21,371	3.8
Ecuador	75,833	139,535	59,045	-	-	7	86	75	274,582	48.7
México	95,360	33,061	1,471	8,548	107	7	417	57	139,028	24.7
Venezuela	22,127	2,601	-	-	-	-	45	-	24,773	4.4
Other-Otros[2]	28,699	12,215	2,209	53	-	-	259	187	43,622	7.7
Total	285,086	201,831	66,542	8,601	107	14	848	347	563,376	

[1] Includes, Bolivia, Colombia, El Salvador, Guatemala, Honduras, Nicaragua, and unidentified. This category is used to avoid revealing the operations of individual vessels or companies.

[1] Incluye, Bolivia, Colombia, El Salvador, Guatemala, Honduras, Nicaragua, y no identificados. Se usa esta categoría para no revelar información sobre las actividades de buques o empresas individuales.

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

[2] Incluye El Salvador, España, Estados Unidos, Guatemala, Panamá, Perú, y no identificados. 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 2004 by longline vessels over 24 meters in overall length.
TABLA 6a. Captures de atún patudo, en toneladas métricas, en el Océano Pacífico oriental durante 2004 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*	501	63	1,182	598	2,344
European Union—Unión Europea	4	0	0	0	4
Japan—Japón	5,704	4,043	4,328	4,434	18,509
Republic of Korea—República de Corea	2,802	3,042	2,111	2,773	10,729
Chinese Taipei—Taipei Chino	2,910	2,025	659	1,790	7,384
Vanuatu	350	81	0	0	431

*processed weight—peso procesado

TABLE 6b. Catches of bigeye tuna, in metric tons, in the eastern Pacific Ocean during the first quarter of 2005 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 2005 por buques palangreros de más de 24 metros en eslora total.

Flag	Month			Total
	1	2	3	
Bandera	**Mes**			**Total**
	1	**2**	**3**	
China*	129	150	122	401
European Union—Unión Europea	0	0	0	0
Japan—Japón	1,418	1,336	1,340	4,094
Republic of Korea—República de Corea	975	950	1,110	3,035
Chinese Taipei—Taipei Chino	272	336	616	1,224
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, and Venezuela, and the Forum Fisheries Agency (FFA) program during the first quarter of 2005.

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, el Unión Europea, y Venezuela, y el Forum Fisheries Agency (FFA) durante el primero trimestre de 2005.

Flag	Trips	Observed by program				Percent observed
		IATTC	National	FFA	Total	
Bandera	Viajes	Observado por programa				Porcentaje observado
		CIAT	Nacional	FFA	Total	
Colombia	18	17	1		18	100.0
Ecuador	115	76	38		115	100.0
España—Spain	6	5	1		6	100.0
Guatemala	2	2			2	100.0
Honduras	9	9			9	100.0
México	74	37	37		74	100.0
Nicaragua	5	5			5	100.0
Panamá	27	27			27	100.0
El Salvador	4	4			4	100.0
U.S.A—EE.UU.	2	2			2	100.0
Venezuela	29	14	15		29	100.0
Vanuatu	5	5			5	100.0
Total	296[1]	203	93	0	296[1]	100.0

[1] Includes 53 trips, 40 by vessels with observers from the IATTC program and 13 by vessels with observers from the national programs, that began in late 2004 and ended in 2005

[1] Incluye 53 viajes, 40 por observadores del programa del CIAT y 13 por observadores de los programas nacionales, iniciados a fines de 2004 y completados en 2005

TABLE 8. Oceanographic and meteorological data for the Pacific Ocean, October 2004-March 2005. The values in parentheses are anomalies.
TABLA 8. Datos oceanográficos y meteorológicos del Océano Pacífico, Octubre 2004-Marzo 2005. Los valores en paréntesis son anomalías.

Month—Mes	11	12	12	1	2	3
SST—TSM, 0°-10°S, 80°-90°W (°C)	20.9 (0.0)	22.0 (0.3)	22.9 (0.1)	24.4 (-0.1)	25.4 (-0.6)	25.6 (-0.9)
SST—TSM, 5°N-5°S, 90°-150°W (°C)	25.3 (0.4)	25.5 (0.5)	25.8 (0.7)	25.9 (0.3)	26.2 (-0.2)	27.0 (-0.1)
SST—TSM, 5°N-5°S, 120°-170°W (°C)	27.4 (0.8)	27.3 (0.8)	27.3 (0.9)	27.1 (0.6)	27.0 (0.3)	27.5 (0.4)
SST—TSM, 5°N-5°S, 150W°-160°E (°C)	29.6 (0.8)	29.6 (1.2)	29.4 (1.1)	29.2 (1.1)	28.8 (0.8)	28.9 (0.8)
Thermocline depth—Profundidad de la termoclina, 0°, 80°W (m)	45	45	40	20	15	15
Thermocline depth—Profundidad de la termoclina, 0°, 110°W (m)	100	80	110	80	60	60
Thermocline depth—Profundidad de la termoclina, 0°, 150°W (m)	160	180	170	170	160	160
Thermocline depth—Profundidad de la termoclina, 0°, 180°W (m)	180	180	180	140	170	160
Sea level—Nivel del mar, Baltra, Ecuador (cm)	190.9 (13.7)	185.8 (6.9)	190.8 (11.0)	189.3 (8.6)	183.4) (1.1)	195.5 (13.7)
Sea level—Nivel del mar, Callao, Perú (cm)	112.4 (6.8)	109.3 (2.4)	111.8 (3.2)	110.9 (-0.6)	108.7 (-5.4)	116.4 (1.7)
SOI—IOS	-0.3	-0.9	-1.1	0.3	-4.1	-0.2
SOI*—IOS*	2.92	-0.92	0.38	3.35	-3.55	1.27
NOI*—ION*	-2.11	4.44	0.04	-2.24	-5.40	0.00