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COMISIÓN INTERAMERICANA DEL ATÚN TROPICAL
QUARTERLY REPORT—INFORME TRIMESTRAL

July-September 2005
Julio-Septiembre 2005

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The

QUARTERLY REPORT

July-September 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

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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 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 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

Drs. Robin Allen and Martín A. Hall participated in the International Tuna Fishers Conference on Responsible Fisheries and the Third International Fishers' Forum on July 25-29, 2005, in Yokohama, Japan, where they both presented papers.

Messrs. Kurt M. Schaefer and Daniel W. Fuller participated in a workshop at the Pfleger Institute of Environmental Research (PIER) in Oceanside, California, on July 28, 2005. The workshop brought together scientists from the IATTC, the U.S. National Marine Fisheries Service, and various non-governmental organizations working with archival and pop-up satellite archival transmitting (PSAT) tags so that they could be instructed on the use of the PSAT software, developed through PIER, and to form a user group to conduct evaluations of this proprietary software. The software enables the matching of daily sea-surface temperatures (SSTs) recorded by archival tags with the most likely latitude with a matching SST, derived from remotely sensed data, to improve daily geolocation estimates for marine animals.

A workshop, convened by the IATTC staff to discuss different options for calculating minimum estimates of dolphin abundance, was held in La Jolla on August 2-5, 2005. Ultimately, these estimates could be used to update Stock Mortality Limits for dolphin stocks in the

eastern Pacific Ocean. The participants included Drs. Robin Allen, Cleridy E. Lennert-Cody, and Michael D. Scott, and Mr. Simon D. Hoyle, of the IATTC staff, several staff members of the U.S. National Marine Fisheries Service (NMFS), Dr. Michel Dreyfus, Programa Nacional de Aprovechamiento del Atún y de Protección de Delfines, Ensenada, Mexico, Ms. Nina Young, Director of Marine Wildlife Conservation, The Ocean Conservancy, Washington, D.C., USA, and two invited experts, Dr. Stephen T. Buckland, Professor of Statistics, University of St. Andrews, Scotland, and Dr. Jaume Forcada, British Antarctic Survey, Cambridge, England.

Dr. Robin Allen and Mr. Simon D. Hoyle participated in the inaugural meeting of the Scientific Committee of the Western and Central Pacific Fisheries Commission in Noumea, New Caledonia, on August 10-19, 2005.

Dr. Martin A. Hall and Mr. Simon D. Hoyle participated in a Pacific-Atlantic Sea Turtle Assessment meeting in La Jolla on August 22-24, 2005.

Dr. Michael G. Hinton participated in an intersessional joint meeting of the Marlin Working Group and the Swordfish Working Group of the International Scientific Committee (ISC) for Tuna and Tuna-like Species in the North Pacific Ocean, held in Shimizu, Japan, on August 29-September 2, 2005. The meeting focused on issues related to current understanding and availability of data for these species in general, with some specific attention to striped marlin, and also on future work plans for the participants and other interested scientists.

Dr. Mark N. Maunder participated in the 135th meeting of the American Fisheries Society (AFS) in Anchorage, Alaska, on September 11-15, 2005, where he gave a presentation, "Incites into Bayesian analysis: data based priors" (misspelling intentional) co-authored with Dr. P. Takis Besbeas, Institute of Mathematics, Statistics and Actuarial Science, University of Kent, England.

Prior to the meeting he taught a two-day course for the AFS continuing education program entitled "An introduction to ecological modeling and programming using AD Model Builder," which had been approved for the continuing education program of the AFS. He was assisted by Mr. Arni Magnusson, a graduate student at the University of Washington, and Mr. Rick Madsen of the Great Lakes Indian Fish and Wildlife Commission. Twenty-five people from several organizations participated in the course. Most of his expenses were reimbursed by the fees paid by the participants.

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 76 length-frequency samples and abstracted logbook information for 398 trips of commercial fishing vessels during the third quarter of 2005.

Also during the third quarter members of the field office staffs placed IATTC observers on 120 fishing trips by vessels that participate in the AIDCP On-Board Observer Program. In addition, 119 IATTC observers completed trips during the quarter, and were debriefed by field office personnel.

Surface fleet and surface catch and catch-per-unit-of-effort statistics

Statistical data for purse-seine and pole-and-line vessels are continuously being collected by personnel at the IATTC's field stations 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 2005 is about 212,200 cubic meters (m^3) (Table 1). The weekly average at-sea capacity for the fleet, for the weekly periods ending July 10 through October 2, was about 112,400 m^3 (range: 55,000 to 164,800 m^3). Data on the tuna fleet of the EPO are given in Table 2. The changes of flags and vessel names and additions to and deletions from the IATTC's fleet list during the third quarter of 2005 are given in Table 3.

Catch and catch-per-unit-of-effort statistics for the purse-seine and pole-and-line fisheries

Catch statistics

The estimated total retained catches of tunas in the EPO during the period of January 1-October 2, 2005, and the corresponding periods of 2000-2004, in metric tons, were:

Species	2005	2000-2004			Weekly average, 2005
		Average	Minimum	Maximum	
Yellowfin	224,800	290,000	218,900	332,700	5,800
Skipjack	212,300	152,600	114,200	192,900	5,400
Bigeye	31,600	39,500	24,300	70,400	<1,000

Summaries of the preliminary estimated retained catches, by flag of vessel, are shown in Table 4.

Catch-per-unit-of-effort statistics based on vessel logbook abstracts

The logbook data used in the analyses have been obtained with the cooperation of vessel owners and captains. The catch and effort measures used by the IATTC staff are based on fishing trips landing predominantly yellowfin, skipjack, bigeye, and bluefin tuna. The great majority of the purse-seine catches of yellowfin, skipjack, and bigeye are made by Class-6 vessels (vessels with well volumes greater than 425 m^3), and only data for Class-6 purse seiners are included herein for comparisons among years. There are now far fewer pole-and-line vessels than in previous years, so the data for these vessels are combined without regard to size classes. There are no adjustments included for other factors, such as type of set or vessel operating costs and mar-

ket prices, which might identify whether a vessel was directing its effort toward a specific species.

Preliminary estimates of the catches per day's fishing, by purse seiners, of yellowfin (Table 5), skipjack (Table 6), and bigeye (Table 7) in the EPO during the first two quarters of 2005 and the corresponding periods of 2000-2004, in metric tons, were:

Species	Region	2005	2000-2004		
			Average	Minimum	Maximum
Yellowfin	N of 5° N	10.8	17.1	11.4	23.4
	S of 5° N	5.2	6.9	4.8	10.0
Skipjack	N of 5° N	4.2	2.4	1.2	3.2
	S of 5° N	10.8	8.9	6.9	12.8
Bigeye	EPO	1.6	2.9	1.7	6.0

Preliminary estimates of the catches per day's fishing, by pole-and-line vessels, of yellowfin and skipjack (Table 6), in the EPO during the first two quarters of 2005 and the corresponding periods of 2000-2004, in metric tons, were:

Species	2005	2000-2004		
		Average	Minimum	Maximum
Yellowfin	4.5	1.5	0.3	4.0
Skipjack	0.6	1.3	0.2	2.9

Catch statistics for the longline fishery

The catches of bigeye by longline gear in the EPO during the first half and the third quarter of 2005 are shown in Table 8. 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 1).

Data for fish caught during the second quarters 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 second quarter of 2005, and the second shows data for the combined strata for the second quarter of each year of the 2000-2005 period. Samples from 234 wells were taken during the second quarter of 2005.

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 1). The last fishery includes all 13 sampling areas. Of the 234 wells sampled that contained fish caught during the second quarter of 2005, 171 contained yellowfin. The estimated size compositions of these fish are shown in Figure 2a. The majority of the yellowfin catch during the second 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.

The estimated size compositions of the yellowfin caught by all fisheries combined during the second quarters of 2000-2005 are shown in Figure 2b. The average weights of the yellowfin caught during the second quarter of 2005 were slightly greater than those of 2003 and 2004, but significantly less than those of 2000-2002.

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 1). The last two fisheries include all 13 sampling areas. Of the 234 wells sampled that contained fish caught during the second quarter of 2005, 195 contained skipjack. The estimated size compositions of these fish are shown in Figure 3a. Large amounts of skipjack were caught in the Southern unassociated fishery during the second quarter. Also, significant amounts of skipjack were taken in the floating-object fisheries in the Northern, Equatorial, Inshore, and Southern regions.

The estimated size compositions of the skipjack caught by all fisheries combined during the second quarters of 2000-2005 are shown in Figure 3b. The majority of the skipjack caught during the second quarter ranged between 45 and 65 cm. The average weights were slightly greater than those of the previous quarter during all six 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 1). The last three fisheries include all 13 sampling areas. Of the 234 wells sampled that contained fish caught during the second quarter of 2005, 51 contained bigeye. The estimated size compositions of these fish are shown in Figure 4a. The majority of the catch was taken in floating-object sets in all but the Inshore area, where only a small amount was taken. Negligible amounts of bigeye were caught in the unassociated and dolphin fisheries.

The estimated size compositions of the bigeye caught by all fisheries combined during the second quarters of 2000-2005 are shown in Figure 4b. The average weight of bigeye during the second quarter of 2005 was slightly less than during 2004, due to the presence of greater amounts of fish in the 50- to 80-cm length range.

The estimated retained catch of bigeye less than 60 cm in length during the first two quarters of 2005 was 3,837 metric tons (t), or about 27 percent of the estimated total catch of bigeye

by purse seiners during those two quarters. The corresponding amounts for the first two quarters of 2000-2004 ranged from 1,680 to 7,050 t, or 4 to 51 percent.

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, 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 eco-system. 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 has 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 the IATTC program will sample 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 185 fishing trips aboard purse seiners covered by that program during the third quarter of 2005. All fishing activity during two of those trips occurred west of 150°W. Preliminary coverage data for these vessels during the quarter are shown in Table 9. In addition to those trips, the On-Board Observer Program is also placing observers aboard a vessel that is less than 363 metric tons capacity during 2005, as required by AIDCP Resolution A-02-01. Two fishing trips by that vessel were sampled during the quarter.

Training

There were no IATTC observer training courses during the quarter.

RESEARCH

Early life history studies

Yellowfin broodstock

The yellowfin broodstock in Tank 1 (1,362,000 L) at the Achotines Laboratory spawned daily from July 1 through August 27, but not at all from August 28 through September 30. Spawning occurred between 9:15 p.m. and 9:45 p.m. The numbers of eggs collected after each spawning event ranged from about 2,000 to 1,480,000. The water temperatures in the tank ranged from 28.0° to 29.4°C during the quarter.

Four females (8-, 18-, 20-, and 66-kg) and one male (41-kg) died during the quarter from striking the wall of the tank. At the end of September there were three size groups of fish in Tank 1: one large fish (120 kg), nine 41- to 65-kg fish, and eighteen 13- to 30-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 September, nine fish from those groups remained in Tank 1 (six 41- to 65-kg fish and three 13- to 30-kg fish).

At the end of the quarter there were three yellowfin in Tank 2.

Experiments with yellowfin eggs and larvae

Several experiments were completed during the quarter to determine the upper lethal water temperature and oxygen requirements during yellowfin egg development, hatching, and post-hatching. These experiments, along with those conducted during 2004 (IATTC Quarterly Report for April-June 2004), are designed to examine the physical limitations for the distribution of eggs, yolk-sac, and first-feeding larvae in the ocean. The principal results of the experiments are summarized in the IATTC Quarterly Report for April-June 2005.

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.

A rearing trial of yellowfin larvae and juveniles was conducted during the quarter. In early July about 125,000 yolk-sac larvae were stocked in a 10,000-L tank. The larvae were fed a sequential diet of enriched rotifers, enriched *Artemia*, and yolk-sac yellowfin larvae. The juveniles were maintained on a diet of yellowfin larvae, minced bigscale anchovy (*Anchovia macrolepidota*), and artificial pellet feed. Several dozen fish survived to at least 6 weeks after hatching, at which time they had reached a size of approximately 7 cm standard length. One fish was still alive at the end of the quarter (13 weeks after hatching).

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 85,000-L tanks. The first consists of 12 individuals from the original broodstock caught in 1996. They had been spawning during the second quarter of 2005, and they continued to spawn intermittently during the third quarter.

The second group consists of 23 individuals from a group bred at the Laboratory from eggs obtained from spawning in 1998. These fish spawned intermittently during the third quarter.

Workshop on rearing pelagics

The IATTC and the University of Miami held their third workshop on "Physiology and Aquaculture of Pelagics, with Emphasis on Reproduction and Early Developmental Stages of Yellowfin Tuna" on July 11-22, 2005. The organizers were Dr. Daniel Margulies (IATTC), Mr. Vernon P. Scholey (IATTC), and Dr. Daniel Benetti, Director of the Aquaculture Program of the Rosenstiel School of Marine and Atmospheric Science, University of Miami, with the latter two serving as primary instructors. The participants were Dr. David Anderson of the Wrigley Institute for Environmental Studies of the University of Southern California at Avalon, California, Mr. Eduardo Velarde of Aquatec, Costa Rica, and Mr. Eric Stroud of Shark Defense, Oak Ridge, New Jersey. Six University of Miami graduate students, Mss. Wendy Banta, Brie Cokos, and Jessica Redman, and Messrs. Tom Barry, Jason Seuc, and Ian Zink, took the course for credit, and one graduate student, Mr. Patrick Rice, participated as a research assistant. The workshop included trials on the effects of probiotics on growth and survival of yellowfin larvae, simulated shipping of yellowfin yolk-sac larvae, and the reactions of young adult yellowfin tuna to chemical and magnetic shark repellents. (The repellents might be used to reduce the bycatches of sharks in longline fisheries.) Mr. Amado Cano of the Dirección General de Recursos Marinos y Costeros de Panamá and several members of the staff of the Achotines Laboratory also participated in portions of the workshop.

Workshop on fish nutrition

The Achotines Laboratory hosted a CYTED [Ciencias y Tecnología en Desarrollo] Nutrition Web meeting entitled "Reunión de Nutrición de Peces Marinos en Panamá" on July 4-6, 2005, with participants from universities and other institutions in Argentina, Brazil, Chile, El Salvador, Mexico, Panama, and Portugal. The meeting brought together Ibero-American experts on fish nutrition for discussion of the establishment of a new network on nutrition of marine fish to be presented to CYTED for approval.

Visitors at the Achotines Laboratory

Mr. Gabriel Aldana Flores, Director of the Centro Regional de Investigación Pesquera (Instituto Nacional de Pesca) in Manzanillo, Mexico, spent the period of August 2-5, 2005, at the Achotines Laboratory. Mr. Antonio Belmonte (accompanied by his wife), consultant to Grupo Fuentes (a Spanish tuna aquaculture company), and Messrs. Aurelio Ortega and D. Eladio Santaella Alvarez of the Instituto Español de Oceanografía in Madrid, Spain, visited the Achotines Laboratory from August 3 to 5, 2005. On August 3 and 4 these visitors participated in an intensive familiarization-presentation-discussion of tuna culture operations and research at the Achotines Laboratory.

Messrs. David Lin and Matthew Lurie and Ms. Lara Matsumoto, undergraduate students at the Department of Ecology and Evolutionary Biology, University of California at Los Angeles, spent the period from August 20 to September 19, 2005, at the Achotines Laboratory, where they conducted a study of nutrient enrichment of coastal waters near shrimp farms, using macroalgae as a bio-indicator.

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.

During the first and second quarters 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, off Ecuador during April, south of 25°S at about 140°W during May, and off Peru and south of 25°S at about 135°W during June. There were small areas of warm water off Central America and off northern Chile during March, off Colombia and Central America during April, and north of 20°N from the coast to 180° during May. In June the scattered areas of warm water that existed in May merged into a single warm-water area north of 20°N and west of 130°W. Also, there was a small area of warm water at about 30°S-115°W. The conditions continued to be nearly normal during the third quarter. There was an area of cool water off Ecuador and Peru during July. It

disappeared in August, but reappeared in September and extended to the west along the equator to about 100°W (Figure 5). A smaller cool-water area that was present off Cabo Corrientes, Mexico, during June (IATTC Quarterly Report for April-June 2005: Figure 5) moved northward to the area off the tip of Baja California in July, and persisted there throughout the quarter (Figure 5). The data in Table 10 are mixed. In the equatorial area the SSTs were below normal, with one exception, from April to September between 80°W and 90°W, but above normal west of there, with one exception, during those six months. 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 September 2005, "Current conditions and recent observed trends support a continuation of … neutral conditions for the next 3-6 months."

GEAR PROGRAM

During the third quarter IATTC staff participated in one dolphin safety-gear inspection and safety-panel alignment procedure aboard a Mexican-flag purse seiner.

INTER-AGENCY COOPERATION

National observer programs

Mr. Nickolas W. Vogel spent the period of July 10-16, 2005, in Bogotá, Colombia, where he worked with the staff of the new Colombian national observer program. The first purse seiner to carry an observer from the Colombian program began fishing in early January 2005. Colombia has adopted the same data base structures and data entry and editing routines used by the IATTC and the national observer programs of Ecuador, the European Union, and Venezuela. This permits easy exchange of complete data sets between the IATTC and those programs, with assurances that the data are of comparable quality, since they are edited using the same standards and the same error-checking computer programs. The first goal of the trip was the installation of data bases and computer programs used to enter, edit, and store the observer data, plus instructions on the use of the programs. The second goal was instruction in the basic procedures for processing data from the time an observer returns from a trip to the point at which the processed data are entered into the final data base. Mr. Vogel's travel expenses were paid by the Colombian national observer program.

Following the week in Bogotá, Mr. Vogel spent the period of July 17-23, 2005, in Manta, Ecuador, where he collaborated with representatives from Colombia, Ecuador, and Peru involved in longline observer programs. These observer programs were established to provide a method to document the effectiveness of new technologies developed to reduce the incidental take of sea turtles in this fishery. During the week the members of this group worked together to define the data collection needs of each country, and incorporated these requirements into standardized data entry forms and a data entry and editing program developed by the IATTC, using Microsoft Access. All the countries involved in this observer effort have agreed to use the same data collection forms and data base format so that the data can be easily shared among the participating countries. Mr. Vogel also gave introductory instruction in the use of Microsoft Access, including table design and structure and the use of queries to analyze data. His travel expenses for this portion of the trip were paid with funds provided by the sea turtle project of the IATTC.

Finally, Mr. Vogel spent the period of July 24-25, 2005, in Guayaquil, Ecuador, where he worked with the staff of the Ecuadorian national observer program to update its data bases and computer programs to accommodate changes to data collection forms that have been put into effect during the last year. Specific form modifications include changes to the Marine Fauna Record and the Flotsam Information Record, implementation of a new Shark Record, and expansion of the available species codes used by observers. His expenses for this portion of the trip were paid by the Ecuadorian national observer program.

Other inter-agency cooperation

Dr. Mark N. Maunder, with the assistance of Mr. Simon D. Hoyle of the IATTC and Mr. Kevin R. Piner of the U.S. National Marine Fisheries Service (NMFS) in La Jolla, conducted a course, "Introduction to Modern Statistical Fisheries Stock Assessment," in La Jolla on July 26-29, 2005. The course was attended by Drs. Michael G. Hinton and Cleridy E. Lennert-Cody of the IATTC staff, staff members of the NMFS offices in La Jolla and Santa Cruz, California, the California Department of Fish and Game, and Hubbs-Sea World Research Institute, and students from the University of California at San Diego and the University of California at Santa Cruz.

Dr. Mihoko Minami, Associate Professor, Department of Mathematical Analysis and Statistical Inference, Institute of Statistical Mathematics, Tokyo, Japan, spent the period of August 2-23, 2005, at the IATTC headquarters in La Jolla, where she and Dr. Cleridy E. Lennert-Cody worked on the estimation of trends in catch rates of silky sharks in the EPO purse-seine fishery.

Dr. Mark N. Maunder taught a course entitled Curso Regional sobre Evaluación de Poblaciones de Peces con Aplicación de Estadísticas Modernas at the Instituto del Mar del Perú in Callao on August 15-19, 2005. His travel expenses were paid by the Comisión Permanente del Pacífico Sur.

VISITING SCIENTISTS

Ms. Feng-Chen Chang, an employee of the Overseas Fisheries Development Council of the Republic of China and a Ph.D. candidate at National Taiwan University, spent the period of July 6-September 28, 2005, at the IATTC headquarters in La Jolla. She was working with IATTC staff members on data for the fisheries of Chinese Taipei, on developing a better understanding of management of large data systems, and on projects related to her Ph.D. research in this area.

Dr. Xiaojie Dai of the College of Marine Sciences and Technology, Shanghai Fisheries University, Shanghai, Peoples Republic of China, completed a 4-month stay in La Jolla on September 23, 2005. He was working chiefly with Dr. William H. Bayliff and Ms. Jenny M. Suter on the Chinese longline fishery for tunas and billfishes in the eastern Pacific Ocean.

ADMINISTRATION

Dr. Pablo R. Arenas began a one-year leave of absence on August 1, 2005. He will be spending the period in Cancun, Mexico, where he will be attending to family matters. He will return to La Jolla on August 1, 2006.

Ms. Martha Arias, a graduate of the Instituto Tecnológico y de Estudios Superiores de Monterrey (Mexico) was hired on August 1, 2005, as secretary for the Tuna-Dolphin Program. She replaces Ms. Ivette Escobar, who resigned on June 17, 2005.

Ms. Maria Santiago, who had been helping Dr. Robert J. Olson take and preserve tissue samples for stable isotope analyses since June 10, 2005, resigned to return to her regular employment on August 3, 2005. Ms. Julie-Ann Kondor, a graduate of the University of New Hampshire, was hired to replace Ms. Santiago on September 15, 2005.

PUBLICATIONS

Allen, Robin. 2005. Dollars without sense: a response to Volpe. Bioscience, 55 (8): 644.

Hampton, John, and Mark Maunder. 2005. Comparison of Pacific-wide, western and central Pacific, and eastern Pacific assessments of bigeye tuna. First Meeting of the Scientific Committee of the Western and Central Pacific Fisheries Commission, WCPFC–SC1 SA WP–2−SUP, 19 pp. (http://www.spc.int/oceanfish/Html/WCPFC/SC1/pdf/SC1-SA_WP_2_SUP.pdf)

Langley, Adam, Keith Bigelow, Mark Maunder, and Naozumi Miyabe. 2005. Longline CPUE indices for bigeye and yellowfin in the Pacific Ocean using GLM and statistical habitat standardisation methods. First Meeting of the Scientific Committee of the Western and Central Pacific Fisheries Commission, WCPFC–SC1 SA WP–8, 40 pp. (http://www.spc.int/oceanfish/Html/WCPFC/SC1/pdf/SC1_SA_WP_8.pdf)

Román, Marlon H., Nickolas W. Vogel, Robert J. Olson, and Cleridy E. Lennert-Cody. 2005. A novel approach for improving shark bycatch species identifications by observers at sea. PFRP [Pelagic Fisheries Research Program, Joint Institute for Marine and Atmospheric Research, University of Hawaii at Manoa], 10 (3): 4-5.

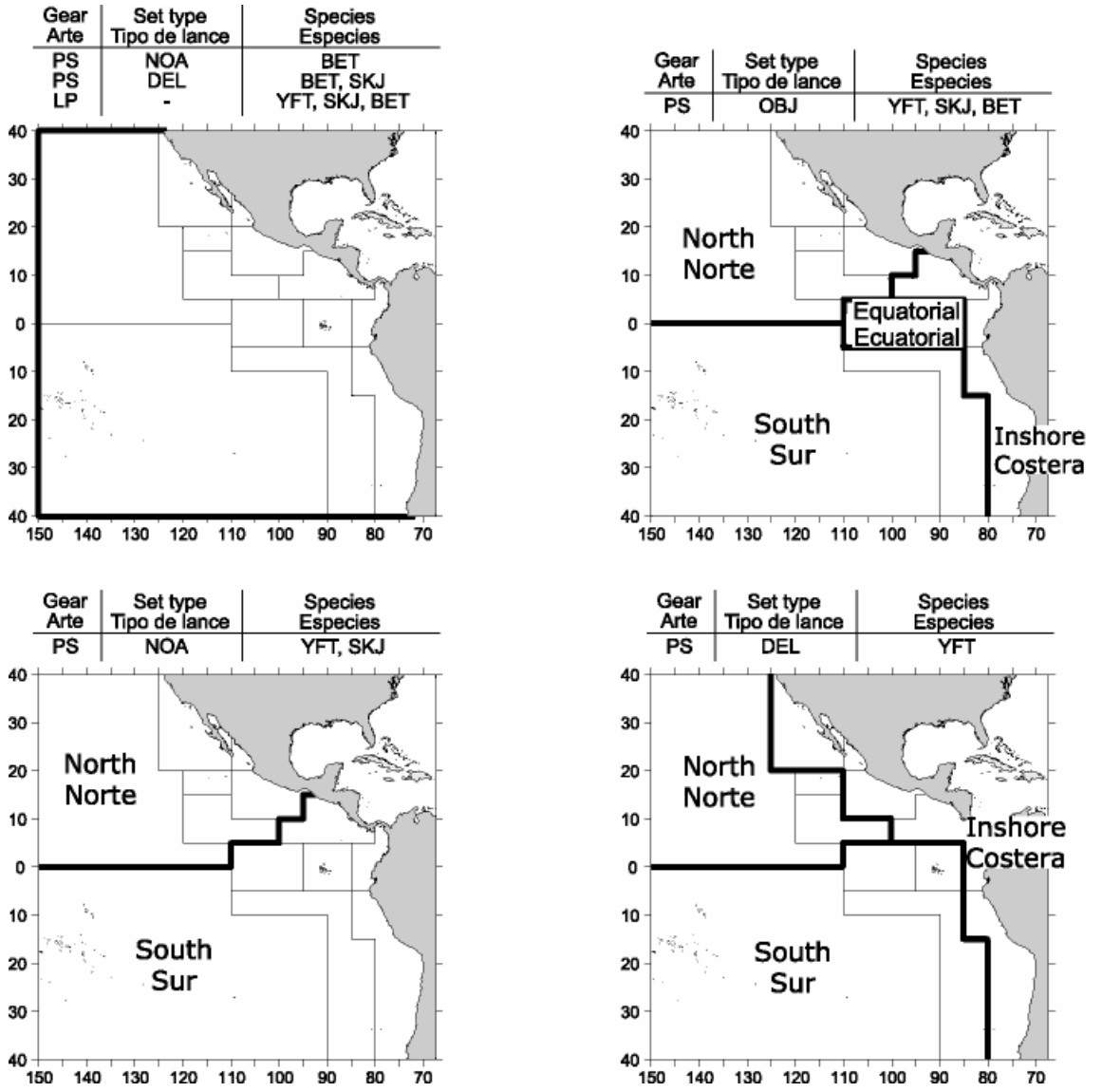

FIGURE 1. Spatial extents of the fisheries defined by the IATTC staff for stock assessment of yellowfin, skipjack, and bigeye in the EPO. The thin lines indicate the boundaries of the 13 length-frequency sampling areas, and the bold lines the boundaries of the fisheries. Gear: PS = purse seine, LP = pole and line; Set type: NOA = unassociated, DEL = dolphin, OBJ = floating object; Species: YFT = yellowfin, SKJ = skipjack, BET = bigeye.

FIGURA 1. 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.

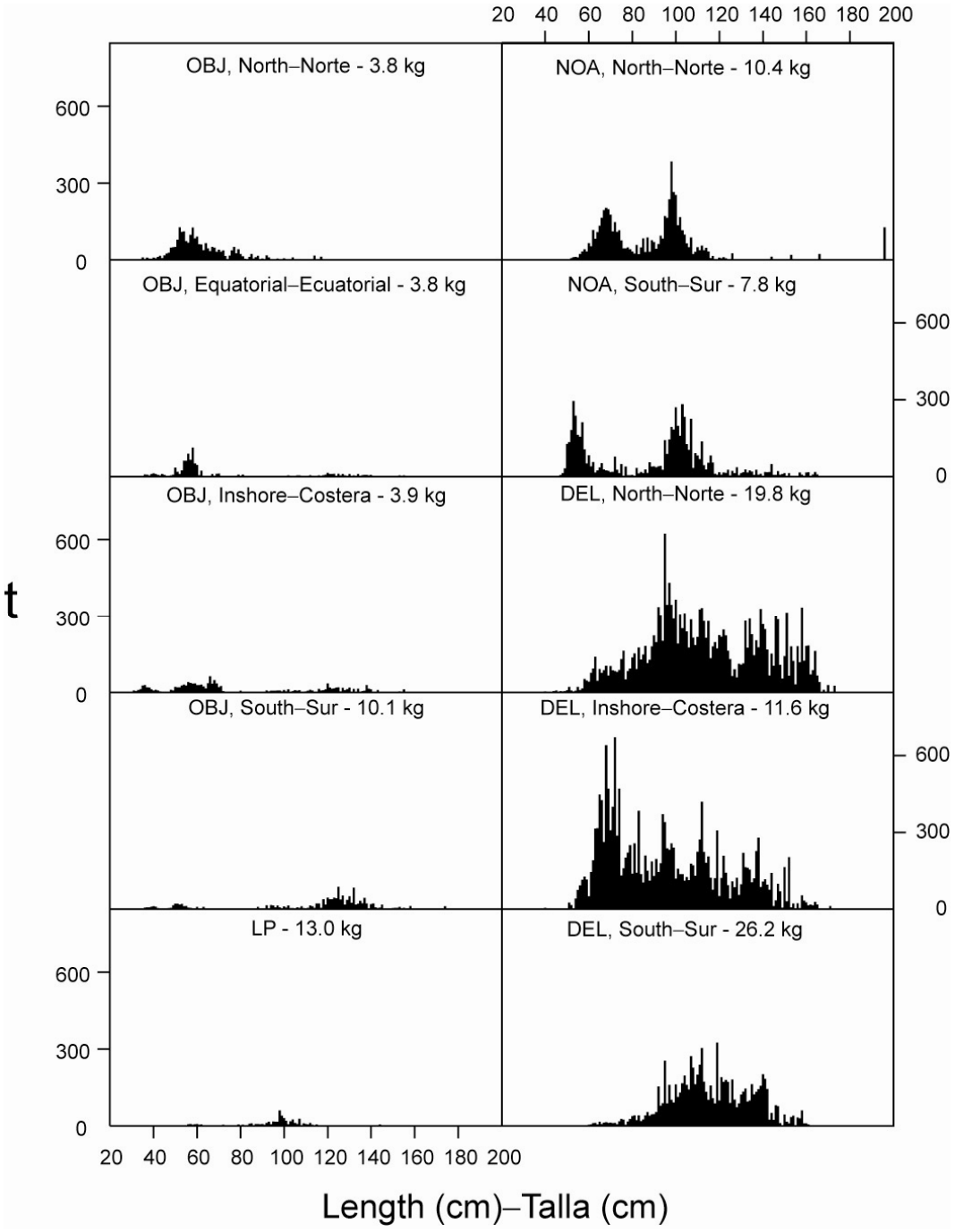

FIGURE 2a. Estimated size compositions of the yellowfin caught in each fishery of the EPO during the second quarter of 2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons; OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 2a. Composición por tallas estimada del aleta amarilla capturado en cada pesquería del OPO durante el segundo trimestre de 2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas; OBJ = objeto flotante; LP = caña; NOA = no asociado; DEL = delfín.

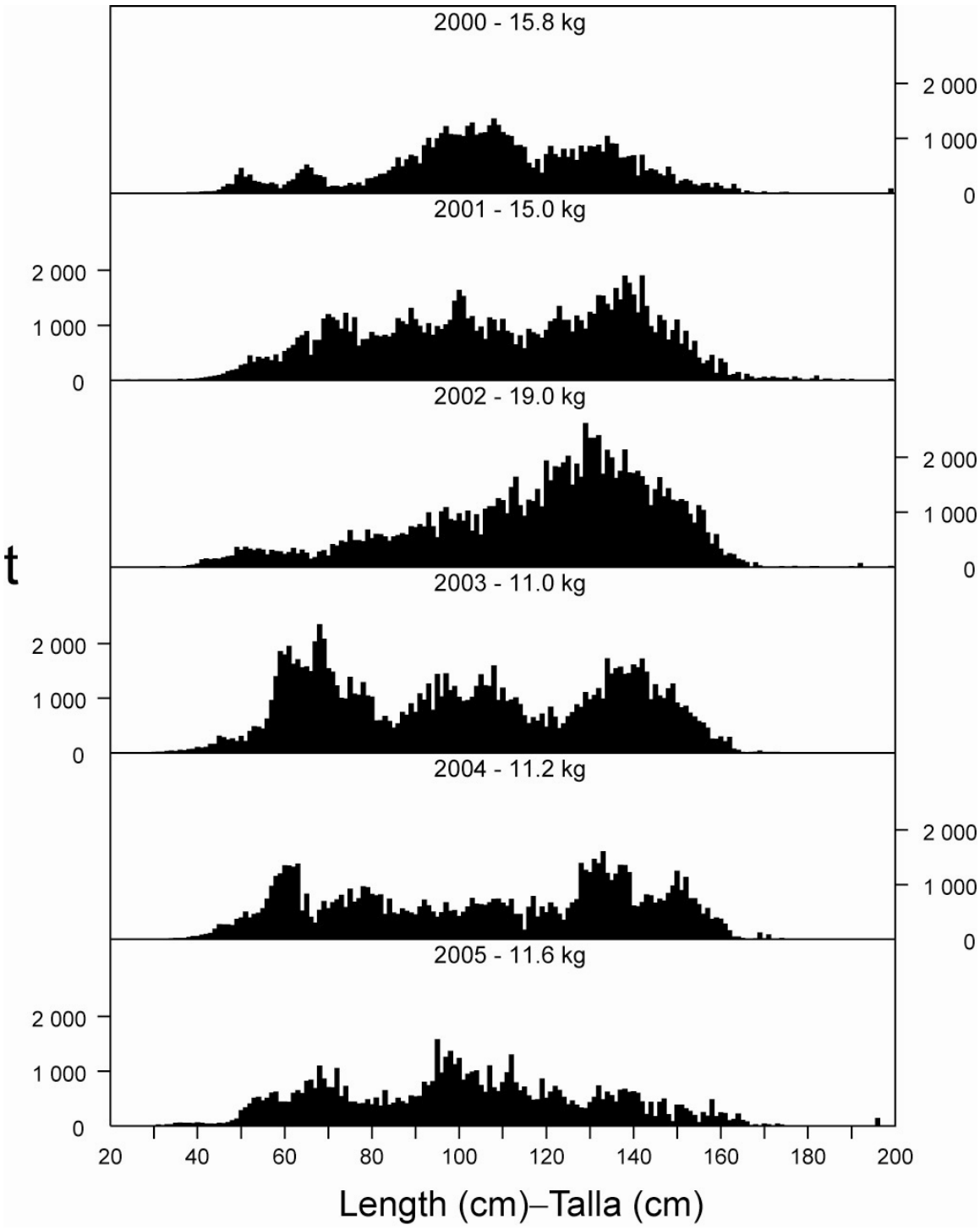

FIGURE 2b. Estimated size compositions of the yellowfin caught in the EPO during the second quarter of 2000-2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 2b. Composición por tallas estimada del aleta amarilla capturado en el OPO en el segundo trimestre durante 2000-2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

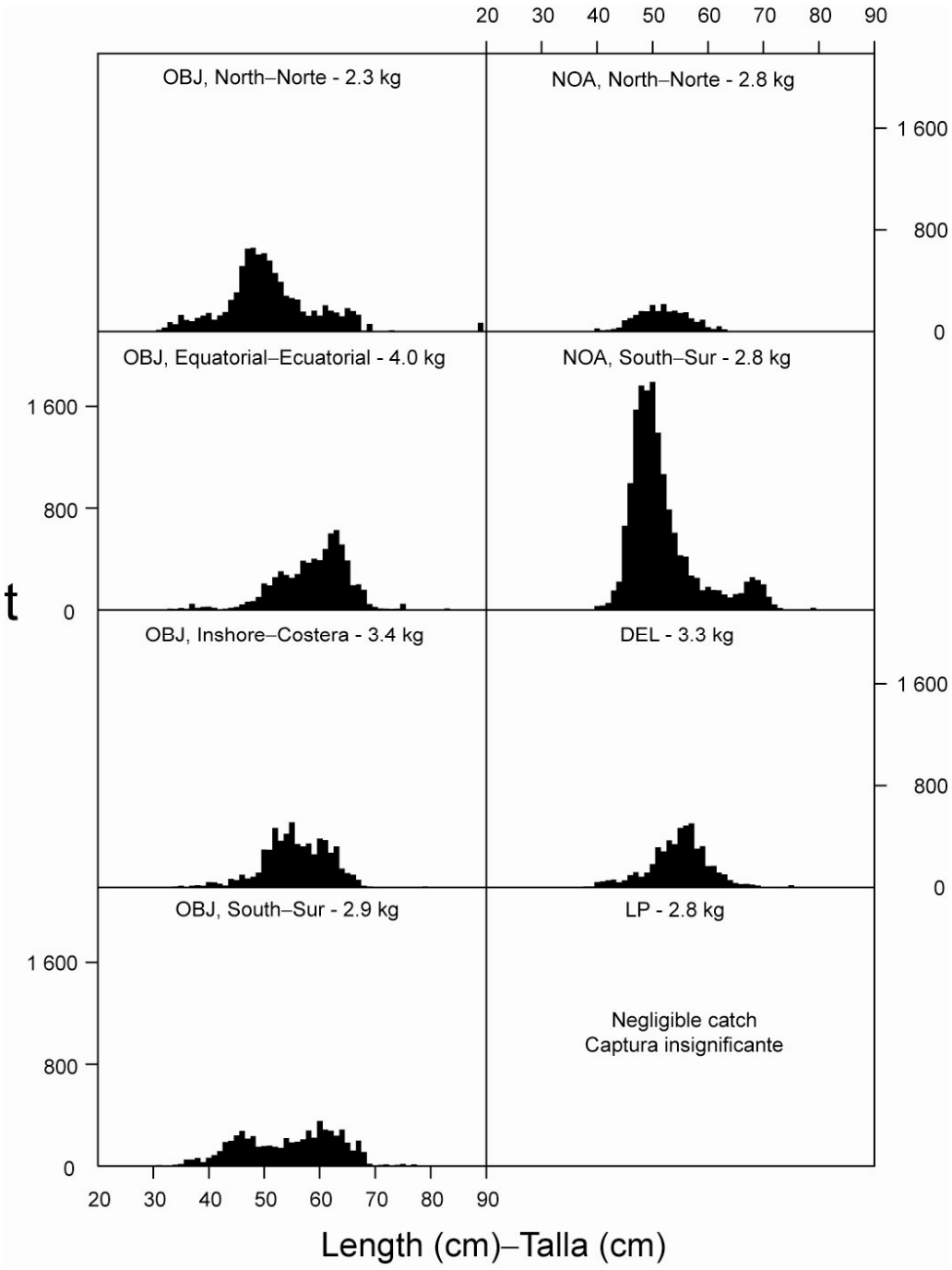

FIGURE 3a. Estimated size compositions of the skipjack caught in each fishery of the EPO during the second quarter of 2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons; OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 3a. Composición por tallas estimada del barrilete capturado en cada pesquería del OPO durante el segundo trimestre de 2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas; OBJ = objeto flotante; LP = caña; NOA = no asociado; DEL = delfín.

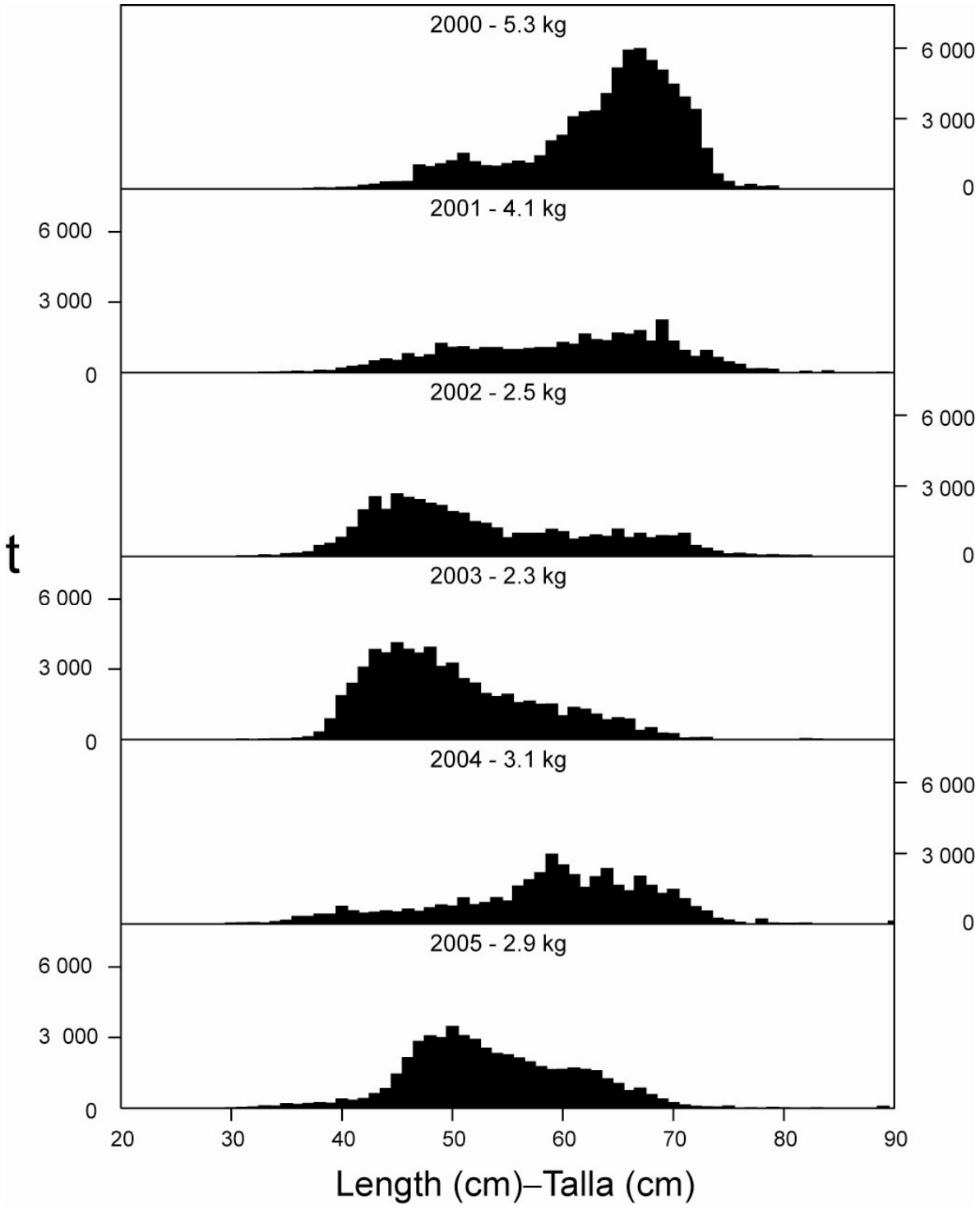

FIGURE 3b. Estimated size compositions of the skipjack caught in the EPO during the second quarter of 2000-2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 3b. Composición por tallas estimada del barrilete capturado en el OPO en el segundo trimestre durante 2000-2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

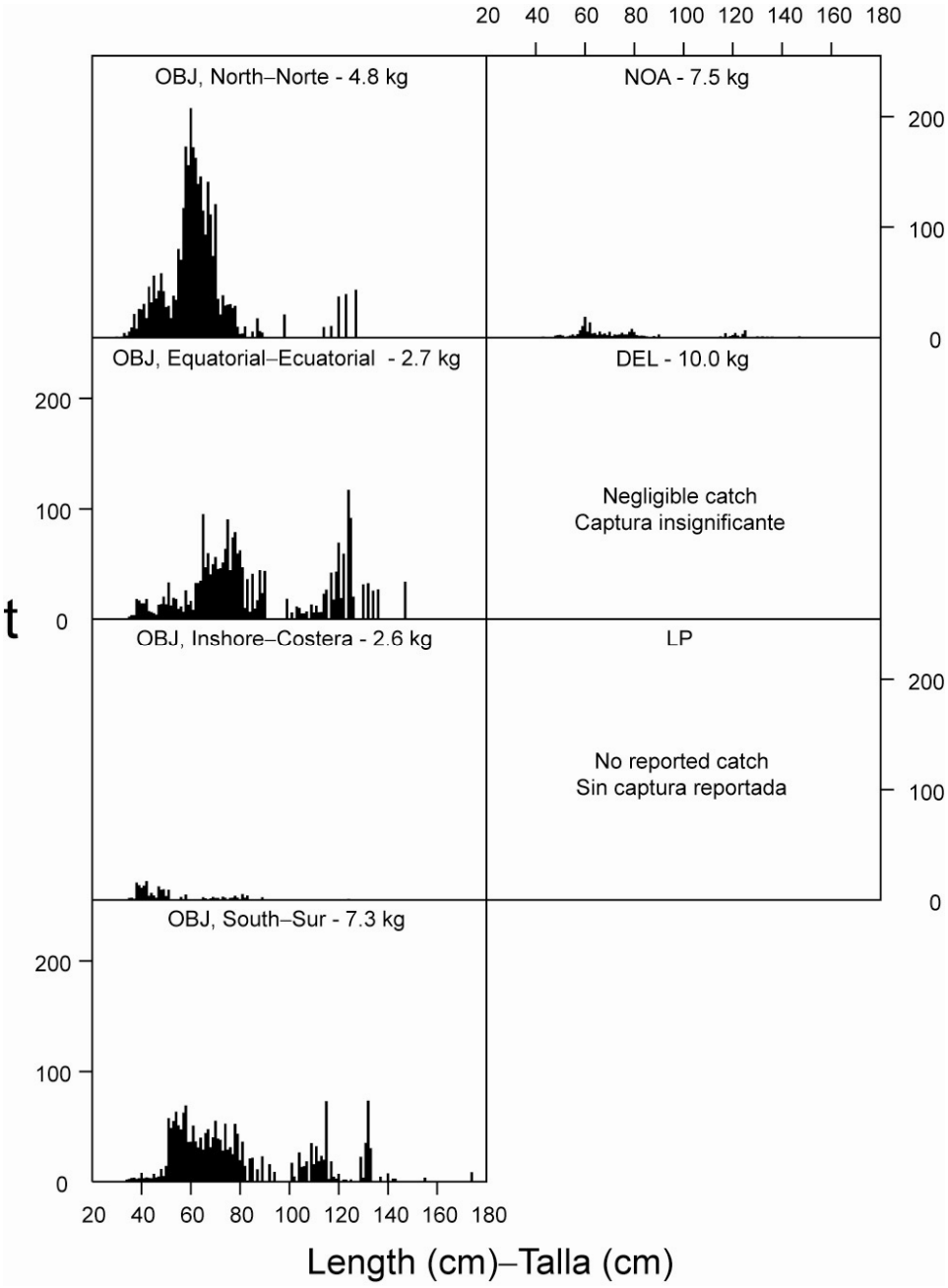

FIGURE 4a. Estimated size compositions of the bigeye caught in each fishery of the EPO during the second quarter of 2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons; OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 4a. Composición por tallas estimada del patudo capturado en cada pesquería del OPO durante el segundo trimestre de 2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas; OBJ = objeto flotante; LP = caña; NOA = no asociado; DEL = delfín.

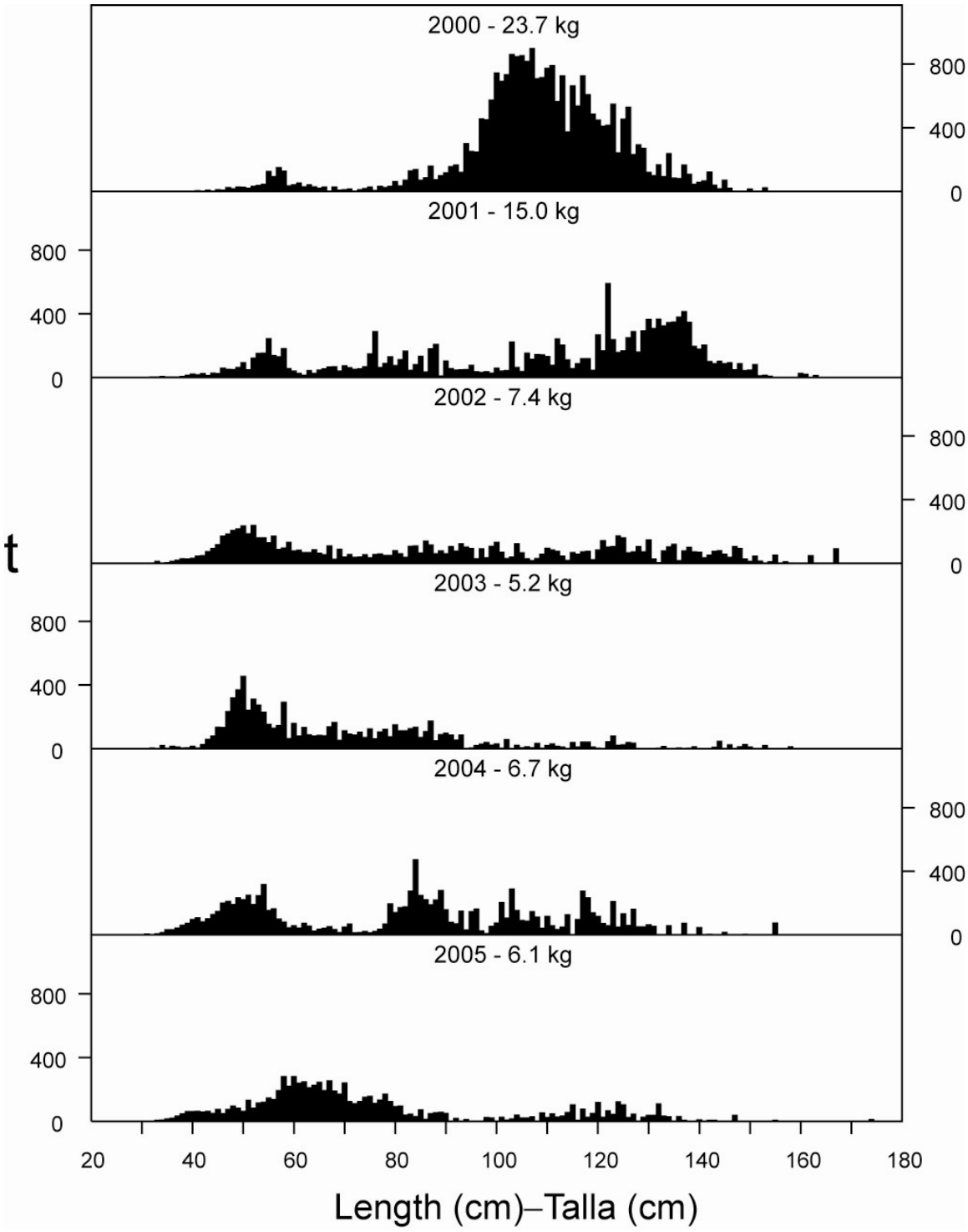

FIGURE 4b. Estimated size compositions of the bigeye caught in the EPO during the second quarter of 2000-2005. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.
FIGURA 4b. Composición por tallas estimada del patudo capturado en el OPO en el segundo trimestre durante 2000-2005. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

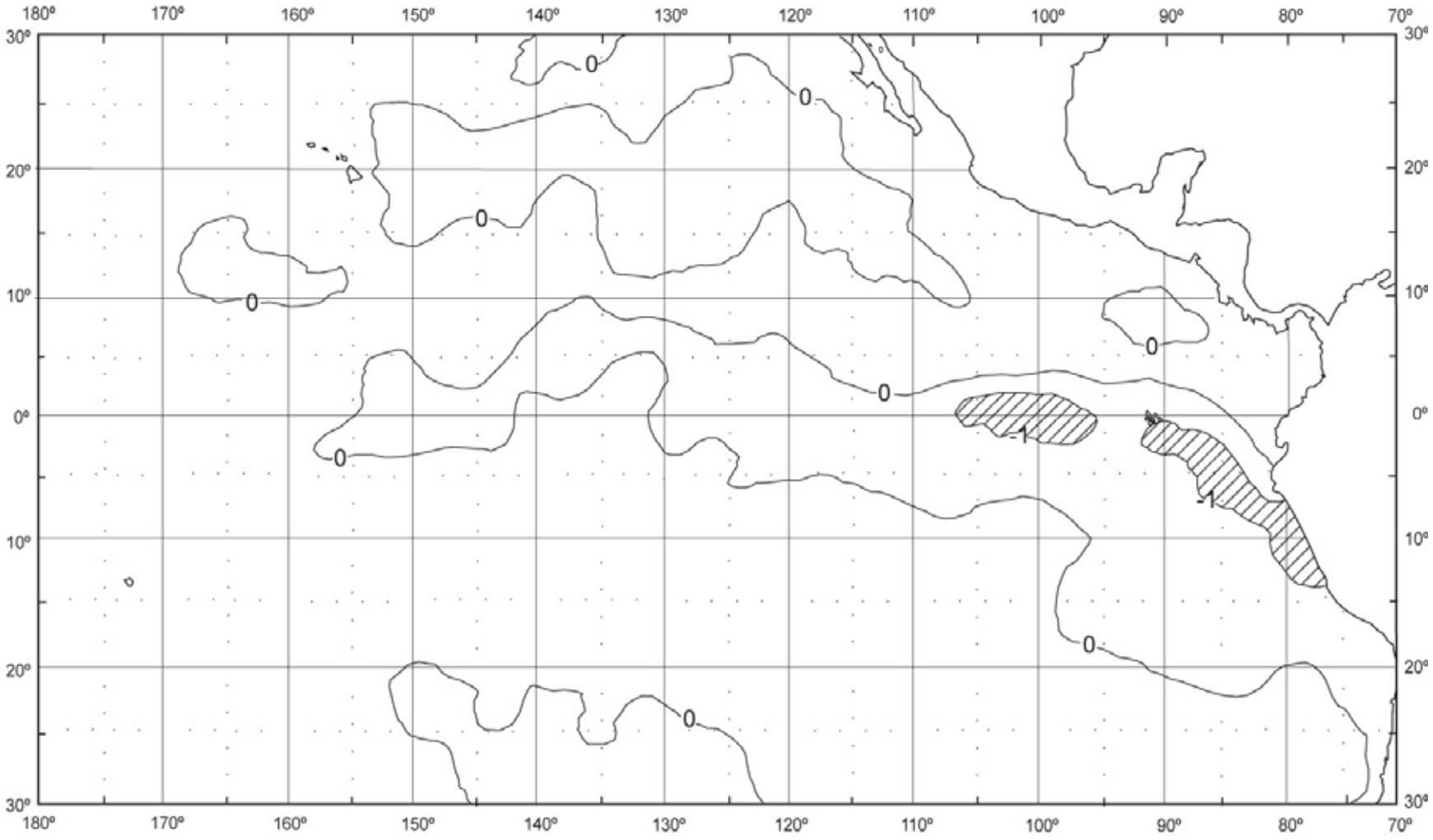

FIGURE 5. Sea-surface temperature (SST) anomalies (departures from long-term normals) for September 2005, based on data from fishing boats and other types of commercial vessels.
FIGURA 5. Anomalías (variaciones de los niveles normales a largo plazo) de la temperatura superficial del mar (TSM) en septiembre 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	-	5	9	13	10	42	79	54,503
España—Spain	PS	-	-	-	-	-	3	3	6,959
Guatemala	PS	-	-	-	-	-	2	2	3,415
Honduras	PS	-	-	-	-	-	3	3	2,810
México	PS	-	-	3	7	11	41	62	55,274
	LP	-	1	3	-	-	-	4	498
Nicaragua	PS	-	-	-	-	-	6	6	8,060
Panamá	PS	-	-	-	2	1	18	21	26,390
El Salvador	PS	-	-	-	-	-	3	3	5,238
USA—EE.UU.	PS	-	-	1	-	-	1	2	1,445
Venezuela	PS	-	-	-	-	-	25	25	32,055
Vanuatu	PS	-	-	-	-	-	2	2	2,163
Unknown— Desconocida	PS	-	-	-	1	-	1	2	2,027
All flags— Todas banderas	PS	-	5	13	24	23	156	221	
	LP	-	1	3	-	-	-	4	
	PS + LP	-	6	16	24	23	156	225	
					Capacity—Capacidad				
All flags— Todas banderas	PS	-	489	2,353	6,712	10,191	192,010	211,755	
	LP	-	101	397	-	-	-	498	
	PS + LP	-	590	2,750	6,712	10,191	192,010	212,253	

TABLE 2. Eastern Pacific Ocean surface fleet, by flag, vessel name, gear type (PS = purse seine; LP = pole-and-line), and cubic meters of fish-carrying capacity, as of October 2, 2005.
TABLA 2. La flota atunera de superficie del Océano Pacífico oriental, por bandera, nombre del barco, tipo de arte (PS = cerquero; LP = cañero), y metros cúbicos de capacidad de acarreo de pescado, hasta el 2 de octubre de 2005.

Flag and vessel name	Gear type	Capacity	Flag and vessel name	Gear type	Capacity
Bandera y nombre de buque	**Tipe de arte**	**Capacidad**	**Bandera y nombre de buque**	**Tipe de arte**	**Capacidad**
Colombia			**Ecuador (cont.)**		
Amanda S	PS	1,268	*Guayatuna Uno*	PS	1,880
American Eagle	PS	1,275	*Ile Aux Moines*	PS	750
Cabo De Hornos	PS	680	*Indico*	PS	267
El Dorado	PS	382	*Ingalapagos*	PS	285
El Rey	PS	1,168	*Intrepido*	PS	85
Enterprise	PS	1,272	*Isabel Victoria V*	PS	307
Gold Coast	PS	1,194	*Jacobita*	PS	374
Grenadier	PS	1,176	*Joselito*	PS	91
Marta Lucia R.	PS	1,600	*Julia D*	PS	1,419
Nazca	PS	1,414	*Killa*	PS	412
Patricia Lynn	PS	270	*Lizi*	PS	1,038
Sandra C	PS	1,175	*Ljbuica M.*	PS	275
Sea Gem	PS	1,274	*Lucia T*	PS	738
			Lucy	PS	245
Ecuador			*Malula*	PS	849
Alejandra	PS	464	*Mandy*	PS	786
Alessia	PS	399	*Manuel Ignacio F*	PS	644
Alize	PS	688	*Maria Fatima*	PS	338
Amalis	PS	217	*Maria Isabel*	PS	276
Balbina	PS	217	*Mariajosé*	PS	1,013
Betty C	PS	1,010	*Mariella*	PS	1,041
Betty Elizabeth	PS	290	*Medjugorje*	PS	843
Cap. Berny B.	PS	1,285	*Milagros A*	PS	1,550
Carmen D	PS	503	*Miry Ann D*	PS	497
Cesar V	PS	335	*Monte Cristi*	PS	1,232
Charo	PS	2,023	*Monteneme*	PS	908
Chasca	PS	249	*North Queen*	PS	257
Ciudad De Portoviejo	PS	591	*Patricia*	PS	962
Dominador	PS	162	*Ramoncho*	PS	96
Don Alvaro	PS	180	*Roberto A*	PS	323
Don Antonio	PS	197	*Rocio*	PS	1,366
Don Bartolo	PS	495	*Rodolfo X*	PS	662
Don Luis	PS	180	*Romeo*	PS	125
Don Mario	PS	552	*Rosa F*	PS	662
Doña Roge	PS	592	*Rossana L*	PS	809
Doña Tula	PS	603	*Samsun Ranger*	PS	1,033
Drennec	PS	1,915	*San Andres*	PS	1,862
Eillen Marie	PS	350	*San Mateo*	PS	1,033
Elizabeth Cinco	PS	1,265	*Saturno*	PS	106
Elizabeth F	PS	738	*Southern Queen*	PS	137
Emperador	PS	82	*Tarqui*	PS	459
Fernandito	PS	147	*Ugavi*	PS	1,870
Fiorella L	PS	390	*Ugavi Dos*	PS	1,864
Gabriela A	PS	323	*Via Simoun*	PS	1,324
Gloria A	PS	543	*Western Pacific I*	PS	274
Gloria C	PS	248	*Yelisava*	PS	855
Guayatuna Dos	PS	1,880	*Yolanda L*	PS	1,168

TABLE 2. (continued)
TABLE 2. (continuación)

Flag and vessel name	Gear type	Capacity	Flag and vessel name	Gear type	Capacity
Bandera y nombre de buque	**Tipe de arte**	**Capacidad**	**Bandera y nombre de buque**	**Tipe de arte**	**Capacidad**
España—Spain			**México (cont.)**		
Albacora Uno	PS	2,800	*El Dorado*	PS	1,773
Aurora B.	PS	2,079	*Ensenada*	PS	381
Rosita C	PS	2,080	*Estado 29*	PS	725
			Excalibur	PS	160
Guatemala			*Guaymas*	PS	359
J M Martinac	PS	1,475	*José Gerardo*	PS	351
Sant Yago Uno	PS	1,940	*Juan Pablo I*	PS	300
			Juan Pablo II	PS	250
Honduras			*Judith I*	PS	809
Blue Tuna	PS	1,012	*Lupe Del Mar*	PS	1,298
Eastern Pacific	PS	628	*Manolo*	PS	300
Esthercho	PS	1,170	*Maranatha*	LP	125
			Maria Antonieta	PS	1,118
México			*María Beatriz*	PS	829
Aguila Descalza	PS	493	*Maria Del Mar*	PS	1,242
Ariete	PS	490	*Maria Fernanda*	PS	1,232
Arkos I Chiapas	PS	1,348	*Maria Gabriela*	LP	112
Arkos II Chiapas	PS	1,348	*Maria Guadalupe*	PS	808
Atilano Castano	PS	1,297	*María Luisa*	PS	1,168
Atun I	PS	807	*Maria Rosana*	PS	1,142
Atun VI	PS	809	*Maria Veronica*	PS	1,232
Atun VIII	PS	751	*Mazatun*	PS	1,482
Azteca 1	PS	1,202	*Mazcu I*	PS	240
Azteca 10	PS	1,627	*Mazpesca*	PS	493
Azteca 11	PS	493	*Molly N*	LP	101
Azteca 12	PS	493	*Monica*	PS	1,311
Azteca 2	PS	1,274	*Nair*	PS	1,346
Azteca 3	PS	1,524	*Nair II*	PS	1,275
Azteca 4	PS	1,278	*Nair III*	PS	240
Azteca 5	PS	1,282	*San José*	PS	220
Azteca 6	PS	1,283	*San Miguel*	PS	294
Azteca 7	PS	1,383	*San Rafael*	PS	294
Azteca 8	PS	1,157	*Tamara*	PS	493
Azteca 9	PS	733	*Theresa Janene*	PS	1,275
Bonnie	PS	1,278	*Tizoc*	PS	180
Buenaventura I	PS	1,005	*Tutankamon*	PS	784
Buenaventura II	PS	1,005			
Cabo San Lucas	PS	1,478	**Nicaragua**		
Camila	PS	493	*Andrea F*	PS	1,275
Cartadedeces	PS	807	*Bold Adventuress*	PS	1,626
Chac Mool	PS	1,190	*Capt Vincent Gann*	PS	1,626
Delfin IX	LP	160	*Capt. Joe Jorge*	PS	1,198
Donna Cristina	PS	1,282	*Pendruc*	PS	1,251
Edgar Ivan	PS	260	*Raffaello*	PS	1,084

TABLE 2. (continued)
TABLE 2. (continuación)

Flag and vessel name	Gear type	Capacity	Flag and vessel name	Gear type	Capacity
Bandera y nombre de buque	**Tipe de arte**	**Capacidad**	**Bandera y nombre de buque**	**Tipe de arte**	**Capacidad**
Panamá			**Venezuela**		
Cape Breton	PS	1,556	*Amazonas*	PS	1,115
Cape Ferrat	PS	1,561	*Calypso*	PS	1,168
Contadora I	PS	1,514	*Canaima*	PS	1,094
Delia	PS	995	*Carirubana*	PS	1,137
El Marquez	PS	486	*Carmela*	PS	1,241
Esmeralda C.	PS	1,358	*Caroni II*	PS	1,438
Geminis	PS	255	*Cayude*	PS	1,274
Julie L	PS	2,056	*Conquista*	PS	1,168
La Parrula	PS	889	*Cuyuni*	PS	1,573
Lautaro	PS	1,275	*Don Abel*	PS	1,226
Lucile F	PS	1,583	*Don Francesco*	PS	1,275
Maria Del Mar A	PS	1,784	*Falcon*	PS	1,137
Marinero I	PS	1,244	*Jane*	PS	1,250
Mary Lynn	PS	285	*Judibana*	PS	1,231
Milena A.	PS	996	*La Foca*	PS	1,287
Panama Tuna	PS	3,300	*La Rosa Mística*	PS	1,022
Sea King	PS	1,487	*Los Roques*	PS	1,262
Sea Royal	PS	1,488	*Napoleon*	PS	1,668
Sirenza I	PS	490	*Orinoco II*	PS	1,581
Sofia Lynn	PS	586	*Taurus I*	PS	1,191
Tiuna	PS	1,202	*Taurus Tuna*	PS	1,175
			Templario	PS	1,268
El Salvador			*Ventuari*	PS	1,542
Montelucia	PS	2,550			
Monterocio	PS	1,919	**Vanuatu**		
Tunapuy	PS	769	*Chiara*	PS	803
			Mirelur	PS	1,360
USA—EE.UU.					
Atlantis	PS	1,275	**Unknown—Desconocida**		
Donna B	PS	170	*Cape Hatteras*	PS	1,805
			Mar Cantabrico	PS	222

TABLE 3. Changes in the IATTC fleet list recorded during the third quarter of 2005. PS = purse seine; LP = pole-and-line.
TABLA 3. Cambios en la flota observada por la CIAT registrados durante el tercero 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					
Re-entries—Reingresos					
				Now—Ahora	
Saturno	Ecuador	PS	106		
Delfin IX	México	LP	160		
Andrea C	USA	PS	1,275	*Andrea F*	Panamá
Changes of name or flag—Cambios de nombre o pabellon					
				Now—Ahora	
Andrea F	Panamá	PS	1,275		Nicaragua
Marinero	Panamá	PS	1,244	*Marinero I*	

TABLE 4. Preliminary estimates of the retained catches of tunas in the EPO from January 1 through October 2, 2005, by species and vessel flag, in metric tons.
TABLA 4. Estimaciones preliminares de las capturas retenidas de atunes en el OPO del 1 de enero al 2 de octubre 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 Pacífico**	**Bonitos (*Sarda* spp.)**	**Albacora**	**Barrilete negro**	**Otras[1]**	**Total**	**Porcentaje del total**
Ecuador	33,901	107,412	13,664	-	44	-	35	79	155,135	32.7
México	94,080	35,555	13	4,488	164	-	207	112	134,619	28.4
Panamá	20,166	19,449	5,842	-	-	-	8	8	45,473	9.6
Venezuela	37,312	13,096	10	-	-	-	41	2	50,461	10.6
Other—Otros[2]	39,389	36,807	12,098	-	-	-	20	-	88,314	18.7
Total	224,848	212,319	31,627	4,488	208	-	311	201	474,002	

[1] Includes other tunas, mackerel, sharks, and miscellaneous fishes
[1] Incluye otros túnidos, caballas, tiburones, y peces diversos
[2] Includes 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 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 5. Logged catches and catches per day's fishing[1] (CPDF) of yellowfin in the EPO, in metric tons, during the period of January 1-June 30, based on fishing vessel logbook information.

TABLA 5. Captura registrada y captura por día de pesca[1] CPDP) de aleta amarilla en el OPO, en toneladas métricas, durante el período de 1 de enero-30 de junio, basado en información de los cuadernos de bitácora de buques pesqueros.

Area	Fishery statistic Estadística de pesca	Year-Año					
		2000	**2001**	**2002**	**2003**	**2004**	**2005[2]**
Purse seine—Red de cerco							
North of 5°N Al norte de 5°N	Catch—Captura CPDF—CPDP	47,200 12.8	44,200 18.0	53,000 23.4	72,000 19.7	40,600 11.4	32,800 10.8
South of 5°N Al sur de 5°N	Catch—Captura CPDF—CPDP	51,800 7.4	48,500 10.0	25,100 5.4	22,400 4.8	38,400 7.0	23,000 5.2
Total	Catch—Captura CPDF—CPDP	99,000 9.9	92,700 13.8	78,100 17.6	94,400 16.2	79,000 9.3	55,800 8.5
Annual total Total anual	Catch—Captura	157,600	148,900	149,400	162,600	116,700	
Pole and line—Cañero							
Total	Catch—Captura CPDF—CPDP	400 1.7	1,900 4.0	200 1.1	<100 0.3	<100 0.3	100 4.5
Annual total	Catch—Captura	2,200	3,300	800	500	1,800	

[1] Purse-seiners, Class-6 only. The catch values are rounded to the nearest 100, and the CPDF values to the nearest 0.1.

[1] Cerqueros de Clase 6. Se redondean los valores de captura al 100 más cercano, y los de CPDP al 0.1 más cercano.

[2] preliminary—preliminar

TABLE 6. Logged catches and catches per day's fishing[1] (CPDF) of skipjack in the EPO, in metric tons, during the period of January 1-June 30, based on fishing vessel logbook information.
TABLA 6. Captura registrada y captura por día de pesca[1] (CPDP) de barrilete en el OPO, en toneladas métricas, durante el período de 1 de enero-30 de junio, basado en información de los cuadernos de bitácora de buques pesqueros.

	Fishery statistic Estadística de pesca	Year-Año 2000	2001	2002	2003	2004	2005[2]
Purse seine—Red de cerco							
North of 5°N Al norte de 5°N	Catch—Captura CPDF—CPDP	11,500 3.1	5,900 2.4	2,600 1.2	11,600 3.2	8,100 2.3	12,900 4.2
South of 5°N Al sur de 5°N	Catch—Captura CPDF—CPDP	90,000 12.8	33,400 6.9	36,400 7.9	46,100 9.9	37,600 6.9	48,100 10.8
Total	Catch—Captura CPDF—CPDP	101,500 11.7	39,300 6.2	39,000 7.4	57,700 8.6	45,700 6.0	61,000 9.4
Annual total Total anual	Catch—Captura	129,200	71,300	67,900	115,500	84,400	
Pole and line—Cañero							
Total	Catch—Captura CPDF—CPDP	100 0.4	100 0.2	400 2.1	<100 1.0	400 2.9	<100 0.6
Annual total	Catch—Captura	100	300	500	500	500	

[1] Purse-seiners, Class-6 only. The catch values are rounded to the nearest 100, and the CPDF values to the nearest 0.1.
[1] Cerqueros de Clase 6. Se redondean los valores de captura al 100 más cercano, y los de CPDP al 0.1 más cercano.
[2] preliminary—preliminar

TABLE 7. Logged catches and catches per day's fishing[1] (CPDF) of bigeye in the EPO, in metric tons, during the period of January 1-June 30, based on purse-seine vessel logbook information.
TABLA 7. Captura registrada y captura por día de pesca[1] (CPDP) de patudo en el OPO, en toneladas métricas, durante el período de 1 de enero-30 de June, basado en información de los cuadernos de bitácora de buques cerqueros.

Fishery statistic—Estadística de pesca	Year—Año					
	2000	2001	2002	2003	2004	2005[2]
Catch—Captura	44,500	16,400	9,600	10,100	11,600	9,200
CPDF—CPDP	6.0	3.2	1.9	1.8	1.7	1.6
Total annual catch—Captura total anual	64,800	31,500	21,000	25,900	28,200	

[1] Class-6 vessels only. The catch values are rounded to the nearest 100, and the CPDF values to the nearest 0.1.
[1] Cerqueros de Clase 6. Se redondean los valores de captura al 100 más cercano, y los de CPDF al 0.1 más cercano.
[2] preliminary—preliminar

TABLE 8. Catches of bigeye tuna in the eastern Pacific Ocean during 2005 by longline vessels.
TABLA 8. Captures de atún patudo en el Océano Pacífico oriental durante 2005 por buques palangreros.

Flag	Quarter			Month			Third quarter	Total to date
	1	2	1 + 2	7	8	9		
Bandera	Trimestre			Mes			Tercer trimestre	Total al fecha
	1	2	1 + 2	7	8	9		
China	633	288	921	51	-	-	51	972
European Union—Unión Europea	-	-	-	-	-	-	-	-
Japan—Japón	4,094	3,482	7,576	1,553	1,753	1,322	4,628	12,204
Republic of Korea—República de Corea	3,035	3,253	6,288	764	791	985	2,540	8,828
Chinese Taipei—Taipei Chino	1,224	1,544	2,768	-	-	-	-	2,768
Vanuatu	-	-	-	-	-	-	-	-
Total	8,986	8,567	17,553	2,368	2,544	2,307	7,219	24,772

TABLE 9. Preliminary data on the sampling coverage of trips by vessels with capacities greater than 363 metric tons by the observer programs of the IATTC, Ecuador, the European Union, Mexico, Venezuela, and the Forum Fisheries Agency (FFA) during the third quarter of 2005. The numbers in parentheses indicate cumulative totals for the year.

TABLA 9. Datos preliminares de la cobertura de muestreo de viajes de buques con capacidad más que 363 toneladas métricas por los programas de observadores de la CIAT, Ecuador, México, el Unión Europea, Venezuela, y el Forum Fisheries Agency (FFA) durante el tercero trimestre de 2005. Los números en paréntesis indican totales acumulados para el año.

Flag	Trips		Observed by program						Percent observed	
			IATTC		National		FFA	Total		
Bandera	Viajes		Observado por programa						Porcentaje observado	
			CIAT		Nacional		FFA	Total		
Colombia	8	(38)	5	(26)	3	(12)		8 (38)	100.0	(100.0)
Ecuador	60	(250)	39	(166)	21	(84)		60 (250)	100.0	(100.0)
España—Spain	5	(16)	5	(15)	0	(1)		5 (16)	100.0	(100.0)
Guatemala	1	(4)	1	(4)				1 (4)	100.0	(100.0)
Honduras	0	(14)	0	(14)				0 (14)	100.0	(100.0)
México	55	(189)	23	(97)	32	(92)		55 (189)	100.0	(100.0)
Nicaragua	7	(16)	7	(16)				7 (16)	100.0	(100.0)
Panamá	20	(69)	20	(68)	0	(1[3])		20 (69)	100.0	(100.0)
El Salvador	3	(14)	3	(14)				3 (14)	100.0	(100.0)
U.S.A.—EE.UU.	1	(4)	1	(4)				1 (4)	100.0	(100.0)
Venezuela	23	(79)	11	(40)	12	(39)		23 (79)	100.0	(100.0)
Vanuatu	2	(9)	2	(9)				2 (9)	100.0	(100.0)
Total	185	(702[1,2])	117	(473)	68	(229)		185 (702)	100.0	(100.0)

[1] Includes 74 trips (52 by vessels with observers from the IATTC program and 22 by vessels with observers from the national programs) that began in late 2004 and ended in 2005

[1] Incluye 74 viajes (52 por observadores del programa del CIAT y 22 por observadores de los programas nacionales) iniciados a fines de 2004 y completados en 2005

[2] All fishing activity during two of these trips occurred west of 150°W.

[2] Todas las actividades de pesca durante dos de estos viajes ocurrieron al oeste de 150°O.

[3] Sampled by the Venezuelan national program. It was not known at the time that the vessel had changed flag from Venezuela to Panama just prior to the trip departure.

[3] Muestreado por el programa nacional venezolano. No se supo en ese momento que el buque había cambiado de pabellón de Venezuela a Panamá justo antes de comenzar el viaje.

TABLE 10. Oceanographic and meteorological data for the Pacific Ocean, April-September 2005. The values in parentheses are anomalies. SST = sea-surface temperature; SOI = Southern Oscillation Index; NOI* = Northern Oscillation Index.
TABLA 10. Datos oceanográficos y meteorológicos del Océano Pacífico, Abril-Septiembre 2005. 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	4	5	6	7	8	9
SST—TSM, 0°-10°S, 80°-90°W (°C)	24.9 (-0.6)	24.4 (0.1)	22.5 (-0.5)	21.2 (-0.6)	20.6 (-0.2)	19.7 (-0.8)
SST—TSM, 5°N-5°S, 90°-150°W (°C)	27.7 (0.3)	27.5 (0.4)	26.8 (0.4)	26.0 (0.4)	25.2 (0.2)	24.6 (-0.3)
SST—TSM, 5°N-5°S, 120°-170°W (°C)	28.0 (0.4)	28.2 (0.4)	28.1 (0.6)	27.5 (0.5)	26.9 (0.2)	26.6 (0.0)
SST—TSM, 5°N-5°S, 150W°-160°E (°C)	28.9 (0.5)	29.2 (0.5)	29.2 (0.6)	29.1 (0.5)	28.9 (0.4)	28.8 (0.4)
Thermocline depth—Profundidad de la termoclina, 0°, 80°W (m)	20	25	30	40	50	50
Thermocline depth—Profundidad de la termoclina, 0°, 110°W (m)	70	50	40	40	40	40
Thermocline depth—Profundidad de la termoclina, 0°, 150°W (m)	140	120	130	120	130	130
Thermocline depth—Profundidad de la termoclina, 0°, 180°W (m)	150	160	160	160	170	160
Sea level—Nivel del mar, Baltra, Ecuador (cm)	195.7 (13.0)	185.7 (4.3)	184.7 (3.8)	193.8 (13.3)	184.2 (6.5)	183.9 (6.6)
Sea level—Nivel del mar, Callao, Perú (cm)	113.9 (-0.6)	111.5 (-2.0)	108.7 (-3.3)	- -	- -	99.8 (-6.2)
SOI—IOS	-1.0	-1.2	0.1	0.0	-0.8	0.4
SOI*—IOS*	-1.00	2.29	-4.68	0.76	-2.91	3.64
NOI*—ION*	0.29	-2.47	1.03	-0.20	-0.76	3.34