INTER-AMERICAN TROPICAL TUNA COMMMISSION
COMISIÓN INTERAMERICANA DEL ATÚN TROPICAL

QUARTERLY REPORT—INFORME TRIMESTRAL

July-September 2007—Julio-Septiembre 2007

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The

QUARTERLY REPORT

July-September 2007

of the

INTER-AMERICAN TROPICAL TUNA COMMISSION

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

El

INFORME TRIMESTRAL

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de la

COMISIÓN INTERAMERICANA DEL ATÚN TROPICAL

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

Editor—Redactor:
William H. Bayliff

INTRODUCTION

The Inter-American Tropical Tuna Commission (IATTC) operates under the authority and direction of a convention originally entered into by Costa Rica and the United States. The convention, which came into force in 1950, is open to adherence by other governments whose nationals fish for tropical tunas and tuna-like species in the eastern Pacific Ocean (EPO). Under this provision Panama adhered in 1953, Ecuador in 1961, Mexico in 1964, Canada in 1968, Japan in 1970, France and Nicaragua in 1973, Vanuatu in 1990, Venezuela in 1992, El Salvador in 1997, Guatemala in 2000, Peru in 2002, Spain in 2003, the Republic of Korea in 2005, and Colombia in 2007. 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 17 June 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 21 May 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 15 February 1999. In 2007 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 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 24-27 June 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 were Parties to the 1949 Convention on the date that the Antigua Convention was open for signature. It has been ratified or acceded to by Mexico on 14 January 2005, El Salvador on 10 March 2005, the Republic of Korea on 13 December 2005, the European Union on 7 June 2006, Nicaragua on 13 December 2006, Belize on 12 June 2007, Panama on 10 July 2007, and France on 20 July 2007.

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 57th 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.

SPECIAL NOTICE

We are pleased to report that Panama deposited its instrument of accession to the 2003 "Antigua Convention" on 10 July 2007 and that France ratified that convention on 20 July 2007. The convention has now been ratified or acceded to by Belize, El Salvador, the European Union, France, Mexico, Nicaragua, Panama, and the Republic of Korea.

A CHANGE IN DIRECTORS OF THE IATTC

Dr. Robin Allen, Director of the IATTC since June 1999, retired on 19 September 2007, after working for the Commission for 17 years.

He was born in Tauranga, New Zealand, in 1943, and studied mathematics and statistics at Victoria University of Wellington and the University of Otago. He began his career in fisheries as a statistician with the New Zealand Fisheries Management Division. Subsequently he earned his Ph.D. at the University of British Columbia, where he studied modeling of fish

population dynamics under the late Professor Peter Larkin. His research involved the application of age-structured models, including stock-recruit relationships, to fisheries data. The then Director of the IATTC, Dr. James Joseph, encouraged him to make use of data for the eastern Pacific Ocean yellowfin tuna in his thesis work, initiating his connection with the IATTC.

After completing his degree, Dr. Allen returned to New Zealand and became involved in the population dynamics of a number of commercial and recreational fisheries, and in particular that for the New Zealand oyster.

In 1976, Dr. Joseph invited him to join the staff of the IATTC where, initially, he investigated the use of linear models to make standardized estimates of abundance of tunas. In 1978, he was asked to establish a tuna-dolphin program for the IATTC, fulfilling the mandate that the Commission adopted when it decided that it should concern itself with the problems arising from the tuna-dolphin relationship in the eastern Pacific Ocean.

Dr Allen returned to New Zealand in 1981 as Assistant Director, and subsequently Director, of the Fisheries Research Division. At that time New Zealand had recently introduced a 200-mile Exclusive Economic Zone; the domestic industry was growing rapidly to take advantage of expanded opportunities in deep-water fisheries that had been revealed by the presence of foreign vessels, and was suffering from the consequences of overfishing in inshore waters. Together with a few other fisheries officials, he advocated the introduction of a comprehensive system of management using individual transferable quotas, which remains the heart of New Zealand's current fishery management system. He assumed a number of other positions within the Ministry of Agriculture and Fisheries, culminating in his appointment as Group Director of Fisheries Policy, where he was responsible for policy development and drafting of what eventually became the New Zealand Fisheries Act of 1996.

He was invited to return to the IATTC as Assistant Director in 1995, and upon Dr. Joseph's retirement in 1999 was appointed Director.

During his tenure, there have been several important changes within the Commission. The number of member countries increased from 10 to 15, the Commission's new Convention, the "Antigua Convention," was negotiated and adopted, and the legally-binding Agreement on the International Dolphin Conservation Program replaced the previous "La Jolla Agreement." Dr. Allen took particular interest in the stock assessment work of the staff, and encouraged the development of new methods. He established a working group of scientists of member countries and interested organizations to provide a peer review of the staff's stock assessments and conservation recommendations before they were presented to the Commission.

Dr. Allen is well known internationally, particularly in the area of cooperation among Regional Fisheries Management Organizations (RFMOs). He was the first Chairman of the Regional Fisheries Bodies network of the Fisheries Resource Monitoring System, served as Chairman of the Tuna RFMOs network during 2004-2006, and was instrumental in establishing a global list of vessels authorized to fish for tunas. He worked closely with the Food and Agriculture Organization of the United Nations, particularly with its project on the management of tuna fishing capacity, and chaired a Technical Advisory Committee for that project.

He has published numerous papers and articles in scholarly and trade journals.

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Dr. Guillermo A. Compeán Jiménez succeeded Dr. Allen as Director of the IATTC on 20 September 2007. Dr. Compeán earned a B.Sc. in biology at the Universidad Autónoma de Nuevo León (Mexico) in 1974, and an advanced degree in biological oceanography, with a major in fisheries biology, at the Université d'Aix-Marseille II (France) in 1980. From 1975 to 1977 he was employed by Ministry of Public Education of Mexico at the School of Fisheries on Cedros Island, Baja California (Mexico). From 1987 to 1980, during his thesis preparation, he participated in tagging programs, sampling of landings, and aging of fish, in association with the tuna program of the Centre Océanologique de Bretagne (France). Dr. Compeán returned to Mexico in 1981 as Director of the Mexican Tuna Program for the period of 1981-1984. From 1985 to 1989 he was associated with the Universidad Autónoma de Nuevo León, where he developed sampling programs and assessments of the longline fishery for yellowfin tuna in the Gulf of Mexico. From 1990 to 2001 he developed and headed the Mexican Tuna-Dolphin Program and participated in the first tuna-farming operation on the Pacific coast of Mexico. From 2002 to 2006 he was Director of the National Institute of Fisheries of Mexico.

MEETINGS

On 19-24 July 2007, Dr. Michael G. Hinton participated in meetings of the Swordfish and Marlin Working Group, the Pacific Bluefin Tuna Working Group, and the Statistics Working Group, which preceded the Seventh Meeting of the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific in Pusan, Korea.

Dr. Mark N. Maunder participated in a review of the South African pelagic (anchovy, sardine, and penguin) and rock lobster stock assessments and management strategies in Cape Town, South Africa, on 9-13 July 2007. His travel expenses were paid by the University of Cape Town.

Dr. Martín A. Hall participated in the Bellagio Sea Turtle Conservation Initiative, a meeting held in Kuantan, Malaysia, on 14-21 July 2007.

Dr. Robin Allen participated in a "Meeting of Joint Tuna RFMO Technical Working Group" in Raleigh, North Carolina, on 22-23 July 2007. (RFMO stands for Regional Fishery Management Organization.) The purpose of the meeting was to consider ways to harmonize and improve the trade-tracking programs of the various Commissions. The working group agreed on a proposal to harmonize the bigeye tuna statistical documents for consideration by the Commissions, and also agreed there was a need to move toward better catch documentation in the tuna RFMOs.

Dr. Mark N. Maunder participated in the Ecological Risk Assessment Workshop in Honolulu, Hawaii, on 6-9 August 2007, where he gave two keynote addresses, "Integrated Modelling of Protected Species: Advantages and Limitations" and "Capturing Climate Change in Biological Reference Points: Recruitment Variability and Dynamic MSY." His expenses were paid by a project of the Secretariat of the Pacific Community funded by the Pelagic Fisheries Research Program of the University of Hawaii at Manoa.

Dr. Mark N. Maunder participated in the Third Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission (WCPFC) in Honolulu, Hawaii, on 13-16 August 2007, where he gave a presentation, "Status of the Stocks in the EPO."

Mr. Kurt M. Schaefer also participated in the Third Regular Session of the Scientific Committee of the WCPFC on 16-24 August 2007, where he presented an invited paper entitled "Acoustic Imaging, Visual Observations, and Other Information Used for Classification of Tuna Aggregations Associated with Floating Objects in the Pacific Ocean." He also participated, as the IATTC representative, at meetings of the WCPFC regional tagging project steering committee and the WCPFC informal working group on bycatch mitigation of small tunas on floating objects.

Drs. Mark N. Maunder and Robert J. Olson participated in a planning meeting for a project, "Intra-Guild Predation and Cannibalism in Pelagic Predators: Implications for the Dynamics, Assessment and Management of Pacific Tuna Populations" funded by the Pelagic Fisheries Research Program (PFRP) of the University of Hawaii at Manoa. The meeting was held in Seattle, Washington, on 27-28 August 2007, and Drs. Maunder and Olson gave presentations entitled "Stock Assessment of Tunas in the EPO" and "Predation on Tunas by Pelagic Predators in the EPO," respectively. The work of the project is a formal assessment of the hypothesis that the production of economically-important tuna stocks has been enhanced by the depletion of large-bodied predators. Drs. Maunder and Olson are two of the four Project Investigators, the others being Dr. Timothy Essington of the University of Washington and Dr. James Kitchell of the University of Wisconsin. Drs. Maunder and Olson's expenses were paid by the PFRP.

At the invitation of AVINA, Dr. Martín A. Hall gave a talk on the IATTC's sea turtle program at a meeting of that organization in Lima, Peru, in August.

Dr. Robin Allen participated in the "Taller sobre Derechos de Participación en Organismos Regionales de Pesca," sponsored by the Comisión Permanente del Pacífico Sur (CPPS) in Santiago, Chile, on 4-5 September 2007. His travel expenses were paid partially by the CPPS.

Dr. Mark N. Maunder participated in a meeting of the Scientific and Statistical Committee of the U.S. Pacific Fishery Management Council (PFMC) in Portland, Oregon, on 10 September 2007, where he gave a presentation on stock assessment of yellowfin tuna in the eastern Pacific Ocean. His expenses were paid by the PFMC.

Dr. Martín A. Hall participated in an International Smart Gear Competition, sponsored by the World Wildlife Fund, in Chinese Taipei on 9-15 September 2007, a bycatch reduction workshop in Seattle, Washington, on 15-20 September 2007, and the "Taller para Ecotiquetado del Dorado o Perico" in Manta, Ecuador, on 22-27 September 2007.

Dr. Richard B. Deriso participated in the 96th meeting of the Scientific and Statistical Committee of the U.S. Western Pacific Fishery Management Council (WPFMC) in Honolulu, Hawaii, on 25-27 September 2007. His travel expenses were paid by the WPFMC.

DATA COLLECTION

The IATTC had field offices at Las Playas and Manta, Ecuador; Manzanillo and Mazatlan, Mexico; Panama, Republic of Panama; Mayaguez, Puerto Rico, USA; and Cumaná, Venezuela, during the third quarter of 2007.

Personnel at these offices collected 274 length-frequency samples from 162 wells and abstracted logbook information for 231 trips of commercial fishing vessels during the third quarter of 2007.

Also during the third quarter members of the field office staffs placed IATTC observers on 109 fishing trips by vessels that participate in the AIDCP On-Board Observer Program. In addition, 104 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 2007 is about 229,600 cubic meters (m^3) (Table 1). The weekly average at-sea capacity for the fleet, for the weekly periods ending 2 July through 30 September, was about 133,600 m^3 (range: 81,300 to 176,200 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 2007 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 1 January-30 September 2007, and the corresponding periods of 2002-2006, in metric tons, were:

Species	2007	2002-2006			Weekly average, 2007
		Average	Minimum	Maximum	
Yellowfin	142,400	249,100	146,800	325,000	3,700
Skipjack	147,800	171,200	130,600	207,400	3,800
Bigeye	37,500	31,200	23,600	43,600	1,000

The catches of yellowfin were less than those of any year of the 2002-2006 period.

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 vessels with carrying capacities greater than 363 metric tons, and only data for such 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 carrying capacity. There are no adjustments included for other factors, such as type of set or vessel operating costs and market prices, which might identify whether a vessel was directing its effort toward a specific species.

Preliminary estimates of the catches per unit of effort (CPUEs), expressed as 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 2007 and the corresponding periods of 2002-2006, in metric tons, were:

Species	Region	2007	2002-2006		
			Average	Minimum	Maximum
Yellowfin	N of 5° N	9.7	16.2	9.4	25.6
	S of 5° N	2.9	5.2	2.2	7.2
Skipjack	N of 5° N	2.1	2.5	1.0	3.6
	S of 5° N	6.2	8.6	6.8	10.7
Bigeye	EPO	1.7	1.8	1.5	2.0

Preliminary estimates of the CPUEs, also expressed as catches per day's fishing, by pole-and-line vessels, of yellowfin (Table 5) and skipjack (Table 6) in the EPO during the first two quarters of 2007 and the corresponding periods of 2002-2006, in metric tons, were:

Species	Region	2007	2002-2006		
			Average	Minimum	Maximum
Yellowfin	EPO	0.8	1.1	0.3	4.0
Skipjack	EPO	0.0	1.3	0.7	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 2006 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 its Annual Reports for 1954-2002, in its Fishery Status Reports 1-4 (covering the years 2002-2005), 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 2002-2007 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 2007, and the second shows data for the combined strata for the second quarter of each year of the 2002-2006 period. Samples from 243 wells were taken during the second quarter of 2007.

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 243 wells sampled that contained fish caught during the second quarter of 2007, 159 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 in the Northern and Southern areas, and on schools associated with dolphins in the Northern and Inshore areas. There were also significant amounts of large yellowfin (140-170 cm) taken in

schools associated with dolphins in the Southern area. Small amounts of 40-60 cm yellowfin were taken in floating-object sets, primarily in the Northern area.

The estimated size compositions of the yellowfin caught by all fisheries combined during the second quarters of 2002-2007 are shown in Figure 2b. The average weight of the yellowfin caught during the second quarter of 2007 (10.9 kg) was greater than that of 2006 (6.9 kg), but was slightly less than those of 2003-2005 (11.6-11.9 kg) and considerably less than that of 2002 (21.4 kg).

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 243 wells sampled that contained fish caught during the second quarter of 2007, 175 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, and Southern regions. The majority of the skipjack caught during the second quarter in the floating-object fishery ranged between about 40 to 55 cm in length. Larger skipjack (60-70 cm) were caught in the Southern unassociated fishery.

The estimated size compositions of the skipjack caught by all fisheries combined during the second quarters of 2002-2007 are shown in Figure 3b. The average weight for the second quarter of 2007 (2.4 kg) was considerably greater than that of 2006 (1.8 kg), but less than those of the 2004-2005 period (3.0-3.5 kg).

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 243 wells sampled that contained fish caught during the second quarter of 2007, 77 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 the Northern, Equatorial, and Southern areas. Small amounts of bigeye were taken in the Inshore floating-object and the unassociated fisheries.

The estimated size compositions of the bigeye caught by all fisheries combined during the second quarters of 2002-2007 are shown in Figure 4b. The average weight of bigeye during the second quarter of 2007(5.7 kg) was greater than the previous year (4.9 kg), but less than those of the 2004-2005 period (6.5-7.0 kg).

The estimated retained catch of bigeye less than 60 cm in length during the first two quarters of 2007 was 13,518 metric tons (t), or about 51 percent of the estimated total purse-seine catch of bigeye during the first two quarters of 2007. The corresponding amounts for the first two quarters of 2000-2006 ranged from 1,997 to 20,413 t, or 4 to 48 percent. These values differ slightly from those given in previous Quarterly Reports due to a switch from using the “Standard Sampling Model” to using the “Species Composition Sampling Model.”

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, Nicaragua, Panama, 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 2007 the observer programs of Colombia, the European Union, Mexico, Nicaragua, Panama, and Venezuela are to sample half, and that of Ecuador approximately one-third, of the trips by vessels of their respective fleets, while IATTC observers are to sample the remainder of those trips. Except as described in the next paragraph, the IATTC is to cover all trips by vessels registered in other nations that are required to carry observers.

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

Observers from the On-Board Observer Program departed on 186 fishing trips aboard purse seiners covered by that program during the third quarter of 2007. Preliminary coverage data for these vessels during the quarter are shown in Table 9. In addition to those trips, the Program is also placing observers aboard two vessels of less than 364 metric tons capacity during 2007, as required by AIDCP Resolution A-02-01. One fishing trip by each of those vessels was 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 during the quarter, except on 1-7, 10, and 26-31 July and 5-14 and 23-27 August. Spawning occurred between 10:15 p.m. and 00:10 a.m. The numbers of eggs collected after each spawning event ranged from about 25,000 to 815,000. The water temperatures in the tank ranged from 27.5° to 28.9°C during the quarter.

Two 8-kg males, one 5-kg female, and one 60-kg female died during the quarter. The two males and the larger female died from striking the tank wall; the smaller female died due to blindness and the resultant inability to feed. At the end of September there were 6 54- to 60-kg and 6 16- to 26-kg yellowfin tuna in Tank 1.

From January 2003 through July 2005 archival tags had been implanted in yellowfin tuna (IATTC Quarterly Reports for January-March 2003, April-June 2004, October-December 2004, and July-September 2005), and at the end of December five fish from those groups remained in Tank 1. In late January 2007 10 yellowfin (4 to 10 kg) held in the 170,000-L reserve broodstock tank (Tank 2) were implanted with prototype archival tags and transferred to Tank 1. At the end of September, five of the smaller fish and two of the six larger fish in Tank 1 had archival tags.

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.

Experiments with yellowfin tuna larvae

During the quarter an experiment was conducted to examine the density effect on growth in early-stage juveniles between 15 and 24 days after hatching. Previous experiments had been conducted to estimate the density-dependent growth of larvae during the first two weeks of feeding (3-18 days after hatching) and the results indicated that the larvae grow more rapidly when they are maintained at lower densities. The results of the experiment conducted this quarter are being analyzed to determine the effect of stocking densities on growth rates during the early juvenile stage. A similar experiment will be conducted during the following quarter to confirm results of the first experiment.

Approximately 500 remaining juveniles from the density experiment were transferred to a 12,000-liter capacity tank where they were maintained through the end of the quarter. They were fed a mixed diet of fish larvae (minced and whole) and artificial food granules. At the end of the quarter the juveniles were approximately 4-5 cm total length.

Studies of snappers

The work on spotted rose snappers (*Lutjanus guttatus*) is carried out by the Autoridad de los Recursos Acuáticos de Panamá (ARAP).

Two separate broodstocks of snappers are being kept in two 85,000-L tanks. The first consists of 15 individuals from the original broodstock caught in 1996. They spawned about once per week during the quarter.

The second group consists of 25 individuals from a group bred at the Laboratory from eggs obtained from spawning in 1998. These fish began spawning in late April, and continued to spawn about once per week throughout the quarter.

During September, Mr. Amado Cano of ARAP and members of the Achotines Laboratory staff transported 1,700 juvenile snappers from the Laboratory to the Estación de Maricultura del Pacífico at Vacamonte, where they will be maintained as part of a research project funded by the Secretaría Nacional de Ciencia, Tecnología e Innovación (SENACYT) of Panama. The juveniles, which were grown from eggs spawned at the Achotines Laboratory, were the survivors of the simulated transport trials described in the IATTC Quarterly Report for January-March 2007.

Visitors at the Achotines Laboratory

On 4 July 2007, a production crew from the Panamanian Servicio Estatal de Radio y Televisión spent about half a day filming activities at the Achotines Laboratory for a program to be presented on public television. Mr. Luís Alberto Jiménez, the program host, was accompanied by his producer, Ms. Maruja Royer, and cameraman, Mr. Eric Osorio.

Mr. Luís Domínguez, Coordinator for the Panama Marine and Conservation Program at the School for International Training in Panama City, accompanied by five international students, visited the Achotines Laboratory on15-16 July 2007, where they learned about the current research activities at the laboratory and participated in routine collection of yellowfin tuna eggs and estimation of the hatching rates.

Dr. Frank Hailer, a postdoctoral research fellow in the Genetics Program at the U.S. National Museum of Natural History, Washington, D.C., and Dr. Jon Beadell, a postdoctoral fellow at the University of Maryland, spent the period of 17-20 July 2007 at the Achotines Laboratory. While there, they visited the Frailes Islands and Iguana Island, where they took blood samples from migrating seabirds.

Dr. Mark Ashton, Director of the Yale Tropical Resources Institute, accompanied by Drs. Heather Peckham-Griscom and Bronson Griscom, spent the period of 21-22 July 2007 at the Achotines Laboratory, where they inspected forest sites established by Dr. Peckham-Griscom during 2002 and plantings made by the Proyecto de Reforestación con Especies Nativas in the vicinity of the laboratory.

Drs. Mario Osuna García and José Manuel Mazón Suastegui of the Centro de Investigaciones Biológicas del Noroeste in Baja California, Mexico, visited the Achotines Laboratory on 17-18 September 2007. They brought 100,000 juvenile scallops, *Argopectem*

ventricosus, for an initial 2-month trial acclimation at the Achotines Laboratory. The survivors of the trial will be moved to the Estación de Maricultura del Pacífico as part of a cooperative program to enhance local populations of this species in Central America.

Drs. Tzyy-Ing Chen and Jin-Hua Cheng of the Fisheries Research Institute at the Tungkang Biotechnology Research Center in Chinese Taipei visited the Achotines Laboratory on 28 September 2007. They were in Panama primarily to provide technological assistance to the Estación de Maricultura del Pacífico.

Oceanography and meteorology

Surface winds blow almost constantly over northern South America, which causes upwelling of cool, nutrient-rich subsurface water along the equator east of 160ºW, in the coastal regions off South America, and in offshore areas off Mexico and Central America. El Niño events are characterized by weaker-than-normal easterly surface winds, which cause above-normal sea-surface temperatures (SSTs) and sea levels and deeper-than-normal thermoclines over much of the tropical eastern Pacific Ocean (EPO). In addition, the Southern Oscillation Indices (SOIs) are negative during El Niño episodes. (The SOI is the difference between the anomalies of sea-level atmospheric pressure at Tahiti, French Polynesia, and Darwin, Australia. It is a measure of the strength of the easterly surface winds, especially in the tropical Pacific in the Southern Hemisphere.) Anti-El Niño events, which are the opposite of El Niño events, are characterized by stronger-than-normal easterly surface winds, below-normal SSTs and sea levels, shallower-than-normal thermoclines, and positive SOIs. Two additional indices, the NOI* (Progress Ocean., 53 (2-4): 115-139) and the SOI*, have recently been devised. The NOI* is the difference between the anomalies of sea-level atmospheric pressure at the North Pacific High (35°N-130°W) and Darwin, Australia, and the SOI* is the difference between the anomalies of sea-level atmospheric pressure at the South Pacific High (30°S-95°W) and Darwin. Ordinarily, the NOI* and SOI* values are both negative during El Niño events and positive during anti-El Niño events.

During July 2006 there was a fairly extensive area of cool water off Mexico. During August there was a small area of warm water off northern Mexico and some small areas of warm water along the equator. In September there were three larger areas of warm water along the equator from the coast of South America to west of 180° and a small area of warm water off Baja California. The SSTs were more than 1°C above normal along the equator from near the coast to about 170°E throughout the fourth quarter. In addition, there were areas of warm water off northern and central Mexico and in a few other scattered areas during that quarter (IATTC Quarterly Report for October-December 2006: Figure 11). During January 2007 there was a narrow strip of warm water extending along the equator from the Galapagos Islands to about 130°W and an area of cool water off Mexico at about 25°N. In February the former was replaced by a narrow strip of cool water extending from about 120°W to about 135°W. The latter persisted in February. An area of warm water appeared off northern Chile during that month. In March a narrow band of cool water extended along the equator from the coast to about 110°W. This band of cool water persisted during April, May, and June, and it extended southward along the coast of South America, reaching 40°S in June. Scattered areas of warm and cool water appeared offshore, particularly in May and June (IATTC Quarterly Report for April-June 2007: Figure 8). In July there was a narrow strip of cool water extending westward

along the equator from the coast to about 135°W and southward along the coast of South America to about 50°S and a small area of cool water centered at about 20°N-135°W. In August the strip of cool water became wider, and the small area of cool water moved northwestward to about 40°N-140°W. In September the strip of cool water was not quite as wide as it had been in August, but it extended westward to about 160°W (Figure 5). The data in Table 10 are mixed. No patterns are evident in the data for the SOIs, SOI*s, and NOI*s. However, the SOI* value for August, 7.92, is the second-greatest value on record, being exceeded only by the value for May 1956 (8.66). (The series of data for NOI* extends from January 1948 to September 2007.) According to the Climate Diagnostics Bulletin of the U.S. National Weather Service for September 2007, "The recent SST forecasts indicate a weak-to-moderate [anti-El Niño event] continuing into early 2008. Current atmospheric and oceanic conditions and recent trends indicate that [the anti-El Niño episode] will continue and may strengthen during the next 3 months."

GEAR PROGRAM

During the third quarter the IATTC staff did not participate in any dolphin safety-gear inspections or safety-panel alignment procedures aboard purse seiners.

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

The U.S. National Oceanic and Atmospheric Administration has awarded the IATTC a contract to place observers, on a voluntary basis, on sufficient numbers of trips of "Class-5" purse seiners (vessels with carrying capacities of 273-363 metric tons) based in ports on the Pacific Coast of Latin America to obtain data on "catch, bycatch, interaction with protected species, and gear" for 1,000 days at sea per year and to "sample 100 percent of the in-port unloadings of Class 4-5 purse seine vessels [vessels with well capacities of 182-363 metric tons]." If that is not possible, observers can be placed on sufficient numbers of trips of Class-3 and/or -4 vessels (vessels with well capacities of 92-272 metric tons) to bring the total numbers of days at sea observed to 1,000.

No observers were placed on vessels during the third quarter. The numbers of trips completed, numbers of samples taken, and numbers of fish sampled were as follows:

Month	Trips completed	Samples taken	Fish sampled		
			Yellowfin	Skipjack	Bigeye
July	22	22	6,461	600	50
August	4	4	924	50	-
September	1	1	586	-	-
Total	27	27	7,971	650	50

INTER-AGENCY COOPERATION

Mr. Vernon P. Scholey participated in a meeting of the Board of Directors of the Secretaría Nacional de Ciencia, Tecnología e Innovación **(**SENACYT) of Panama on 14 August 2007.

PUBLICATIONS

Aldana Flores, Gabriel, Kurt Schaefer, and Dan Fuller. 2007. Uso de marca de tipo archivadora y tradicional en el marcado de atún aleta amarilla (*Thunnus albacares*) y peto (*Acanthocybium solandri*) capturado en la Reserva de la Biosfera de Archipiélago de Revillagigedo en 2006 y 2007. El Vigía, 12 (31): 5-7.

Galván-Magaña, Felipe, Robert J. Olson, Noemi Bocanegra-Castillo, and Vanessa G. Alatorre-Ramirez. 2007. Cephalopod prey of the apex predator guild in the epipelagic eastern Pacific Ocean. GLOBEC [Global Ocean Ecosystem Dynamics], Rep., 24: 45-48.

Hall, Martín A., Hideki Nakano, Shelley Clarke, Simon Thomas, Janice Molloy, S. Hoyt Peckham, Johath Laudino-Santillán, Wallace J. Nichols, Eric Gilman, Jim Cook, Sean Martin, J. P. Croxall, K. Rivera, C. A. Moreno, and Stephen J. Hall. 2007. Working with fishers to reduce by-catches. *In* Kennelly, Steven J. (editor), By-catch Reduction in the World's Fisheries, Springer, Dordrecht, The Netherlands: 235-288.

Olson, Robert J., and Jock W. Young (editors). 2007. The Role of Squid in Open Ocean Ecosystems, GLOBEC [Global Ocean Ecosystem Dynamics], Rep., 24: vi, 94 pp.

Popp, Brian N., Brittany S. Graham, Robert J. Olson, Cecilia C. S. Hannides, Michael J. Lott, Gladis A. López-Ibarra, Felipe Galván-Magaña, and Brian Fry. 2007. Insight into the trophic ecology of yellowfin tuna, *Thunnus albacares*, from compound-specific nitrogen isotope analysis of proteinaceous amino acids. *In* Dawson, Todd E., and Rolf T. W. Siegwolf (editors), Stable Isotopes as Indicators of Ecological Change. Elsevier-Academic Press, Terrestrial Ecology Series, San Diego: 173-190.

Schaefer, Kurt M., and Daniel W. Fuller. 2007. Vertical movement patterns of skipjack tuna (*Katsuwonus pelamis*) in the eastern equatorial Pacific Ocean, as revealed with archival tags. U.S. Nat. Mar. Fish. Serv., Fish. Bull., 105 (3): 379-389.

Schaefer, Kurt M., Daniel W. Fuller, and Barbara A. Block. 2007. Movements, behavior, and habitat utilization of yellowfin tuna (*Thunnus albacares*) in the northeastern Pacific Ocean, ascertained through archival tag data. Mar. Biol., 152 (3): 503-525.

Schnute, Jon T., Mark N. Maunder, and James N. Ianelli. 2007. Designing tools to evaluate fishery management strategies: can the scientific community deliver? ICES Jour. Mar. Sci., 64 (6): 1077-1084.

ADMINISTRATION

Dr. Robin Allen retired as Director of the IATTC in September 2007, and was replaced by Dr. Guillermo A. Compeán. Details about this important event are located elsewhere in this report.

Ms. Sharon Booker, who had quietly and efficiently carried out her duties with the fisheries statistics section in La Jolla since June 1988, retired on August 31, 2007. She will

move to Texas to be closer to members of her family. Ms. Booker will be missed, but everyone wishes her a long and pleasant life in Texas.

Mr. Mauricio Orozco-Zöller resigned his position in La Jolla on 14 September 2007, to return to Ecuador, where he will continue his studies in computer science. He began working with the IATTC in June 2001, and contributed to the data analysis efforts of the tuna-dolphin group. He completed extensive investigations into the automation of GIS mapping software, and provided support to many staff members with various mapping projects. Mr. Orozco also took the lead in coordinating an effort to join fishing vessel registries of multiple international organizations into a single data base that will eventually be easily accessible and updateable through an internet application. Other web-related activities included contributions to the vessel register pages of the IATTC web site, and the web site for the Eastern Pacific Regional Sea Turtle Program. He was co-author, with Mr. Marlon H. Román Verdesoto, of one IATTC publication, Data Report 11, "Bycatches of sharks in the tuna purse-seine fishery of the eastern Pacific Ocean reported by observers of the Inter-American Tropical Tuna Commission, 1993-2004." Everyone wishes him the best in his future endeavors.

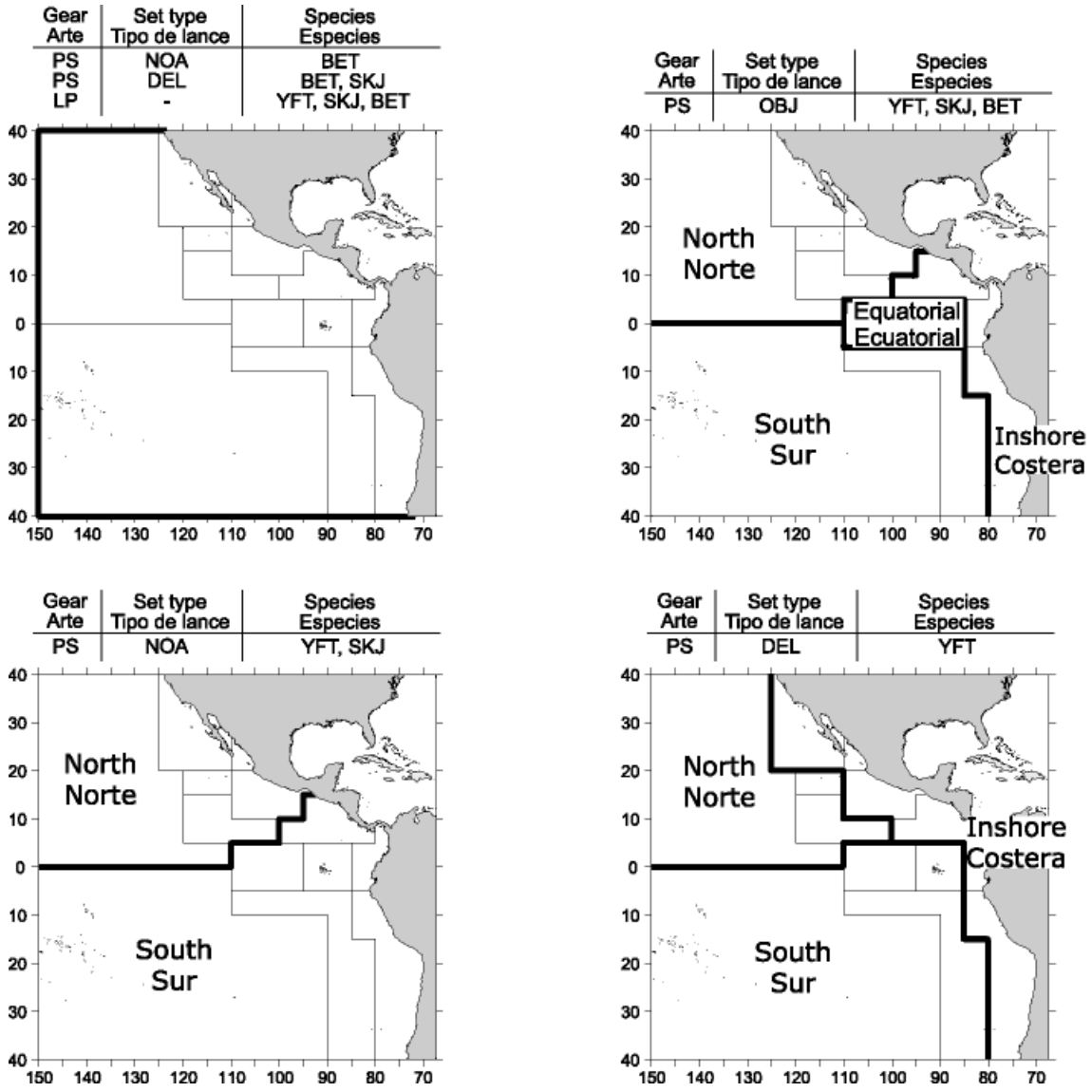

FIGURE 1. Spatial extents of the fisheries defined by the IATTC staff for stock assessment of yellowfin, skipjack, and bigeye in the EPO. The thin lines indicate the boundaries of the 13 length-frequency sampling areas, and the bold lines the boundaries of the fisheries. Gear: PS = purse seine, LP = 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.

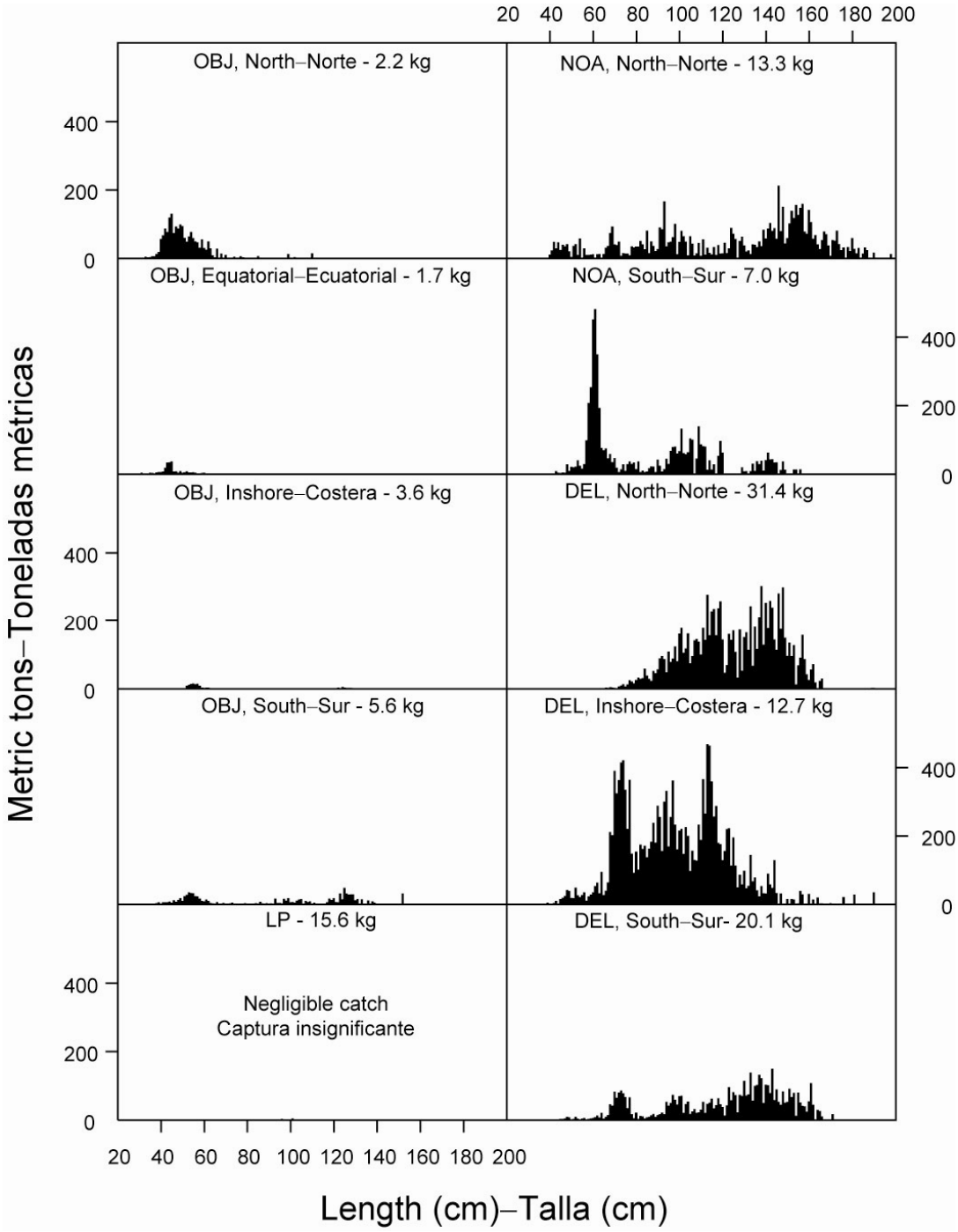

FIGURE 2a. Estimated size compositions of the yellowfin caught in each fishery of the EPO during the second quarter of 2007. The average weights of the fish in the samples are given at the tops of the panels. OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 2a. Composición por tallas estimada para el aleta amarilla capturado en cada pesquería del OPO durante el segundo trimestre de 2007. En cada recuadro se detalla el peso promedio de los peces en las muestras. OBJ = objeto flotante; LP = caño; NOA = unassociated; DEL = delfín.

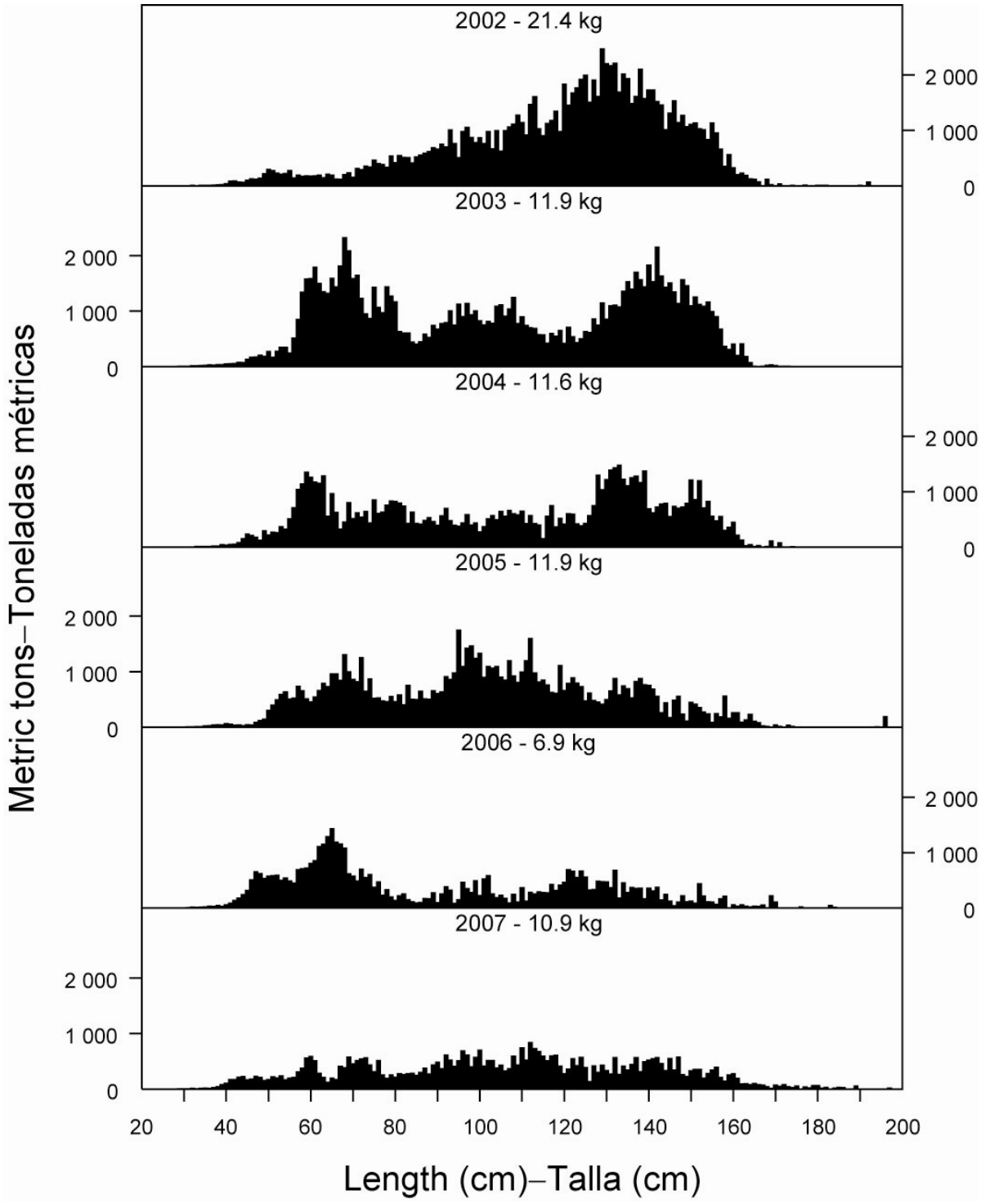

FIGURE 2b. Estimated size compositions of the yellowfin caught in the EPO during the second quarter of 2002-2007. The average weights of the fish in the samples are given at the tops of the panels.

FIGURA 2b. Composición por tallas estimada para el aleta amarilla capturado en el OPO en el segundo trimestre de 2002-2007. En cada recuadro se detalla el peso promedio de los peces en las muestras.

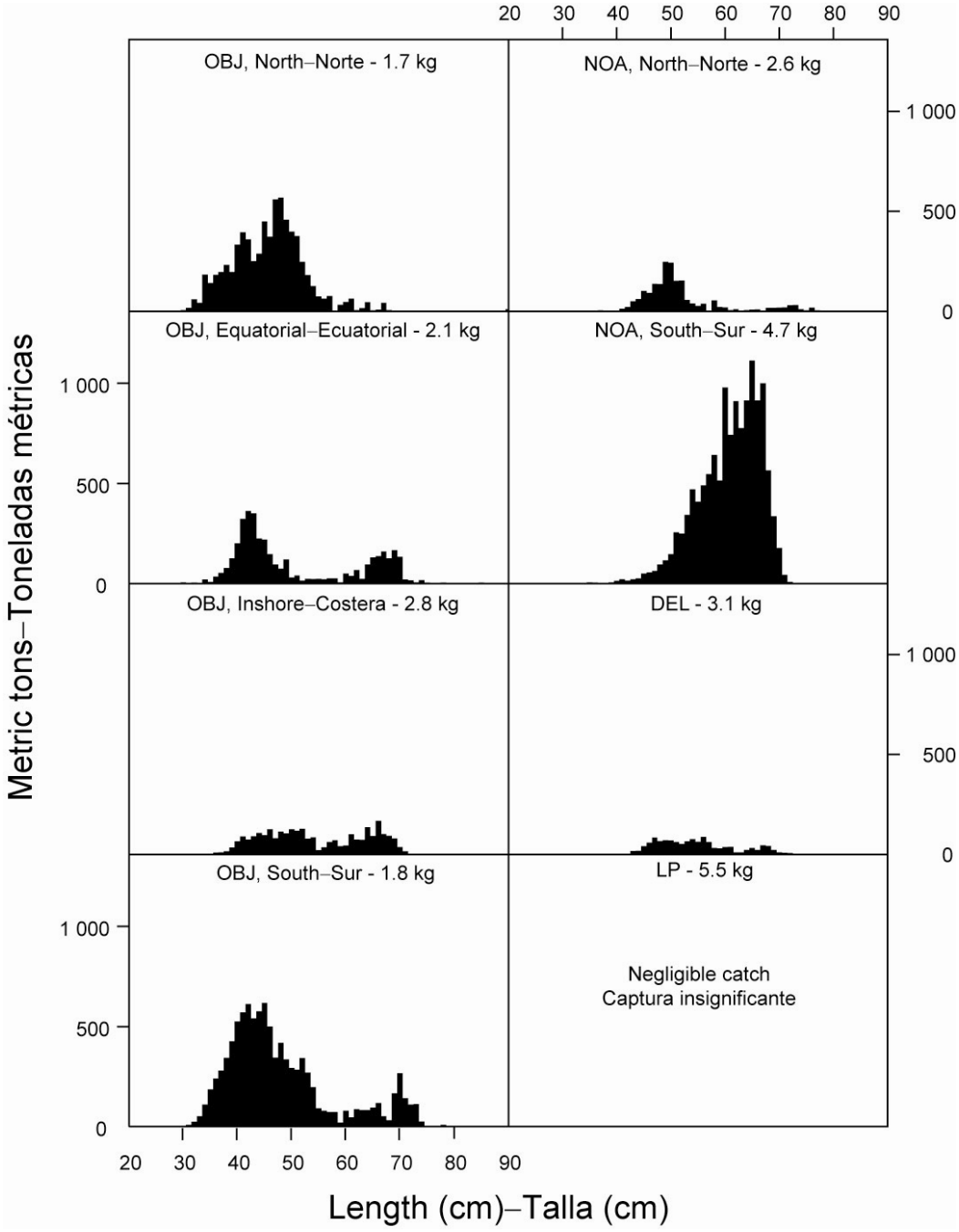

FIGURE 3a. Estimated size compositions of the skipjack caught in each fishery of the EPO during the second quarter of 2007. The average weights of the fish in the samples are given at the tops of the panels. OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 3a. Composición por tallas estimada para el barrilete capturado en cada pesquería del OPO durante el segundo trimestre de 2007. En cada recuadro se detalla el peso promedio de los peces en las muestras. OBJ = objeto flotante; LP = caño; NOA = unassociated; DEL = delfín.

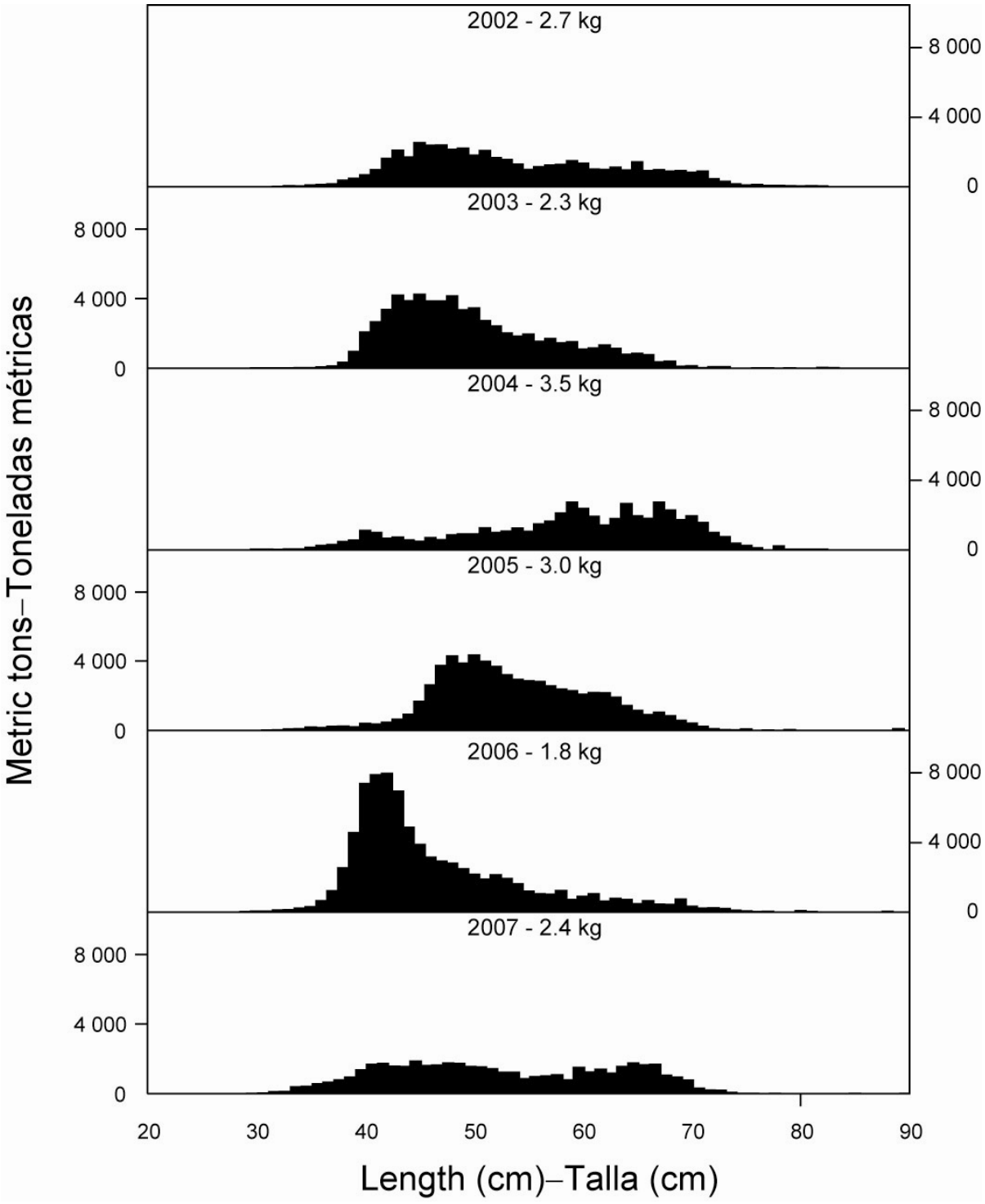

FIGURE 3b. Estimated size compositions of the skipjack caught in the EPO during the second quarter of 2002-2007. The average weights of the fish in the samples are given at the tops of the panels.

FIGURA 3b. Composición por tallas estimada para el barrilete capturado en el OPO en el segundo trimestre de 2002-2007. En cada recuadro se detalla el peso promedio de los peces en las muestras.

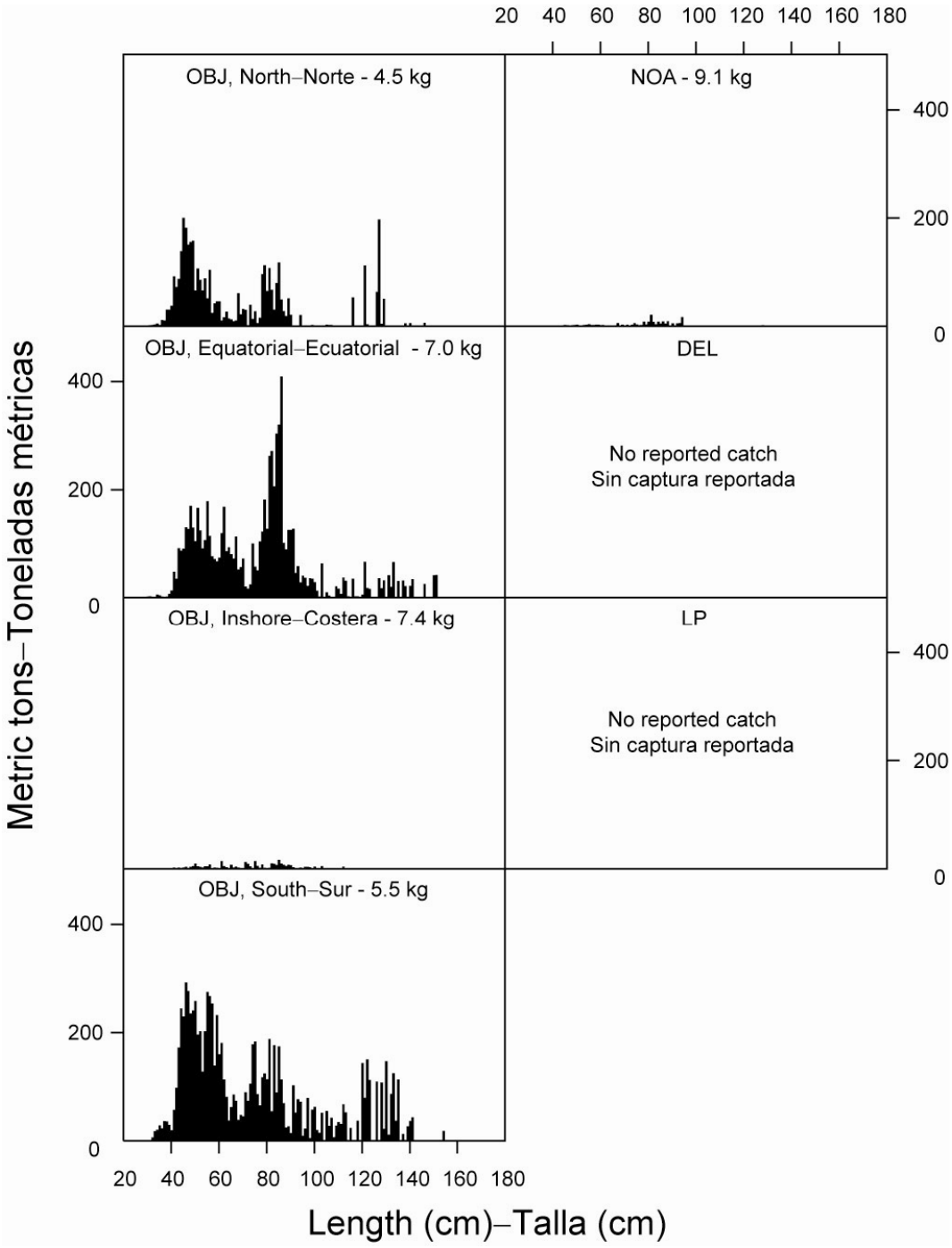

FIGURE 4a. Estimated size compositions of the bigeye caught in each fishery of the EPO during the second quarter of 2007. The average weights of the fish in the samples are given at the tops of the panels. OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin.

FIGURA 4a. Composición por tallas estimada para el patudo capturado en cada pesquería del OPO durante el segundo trimestre de 2007. En cada recuadro se detalla el peso promedio de los peces en las muestras. OBJ = objeto flotante; LP = caño; NOA = unassociated; DEL = delfín.

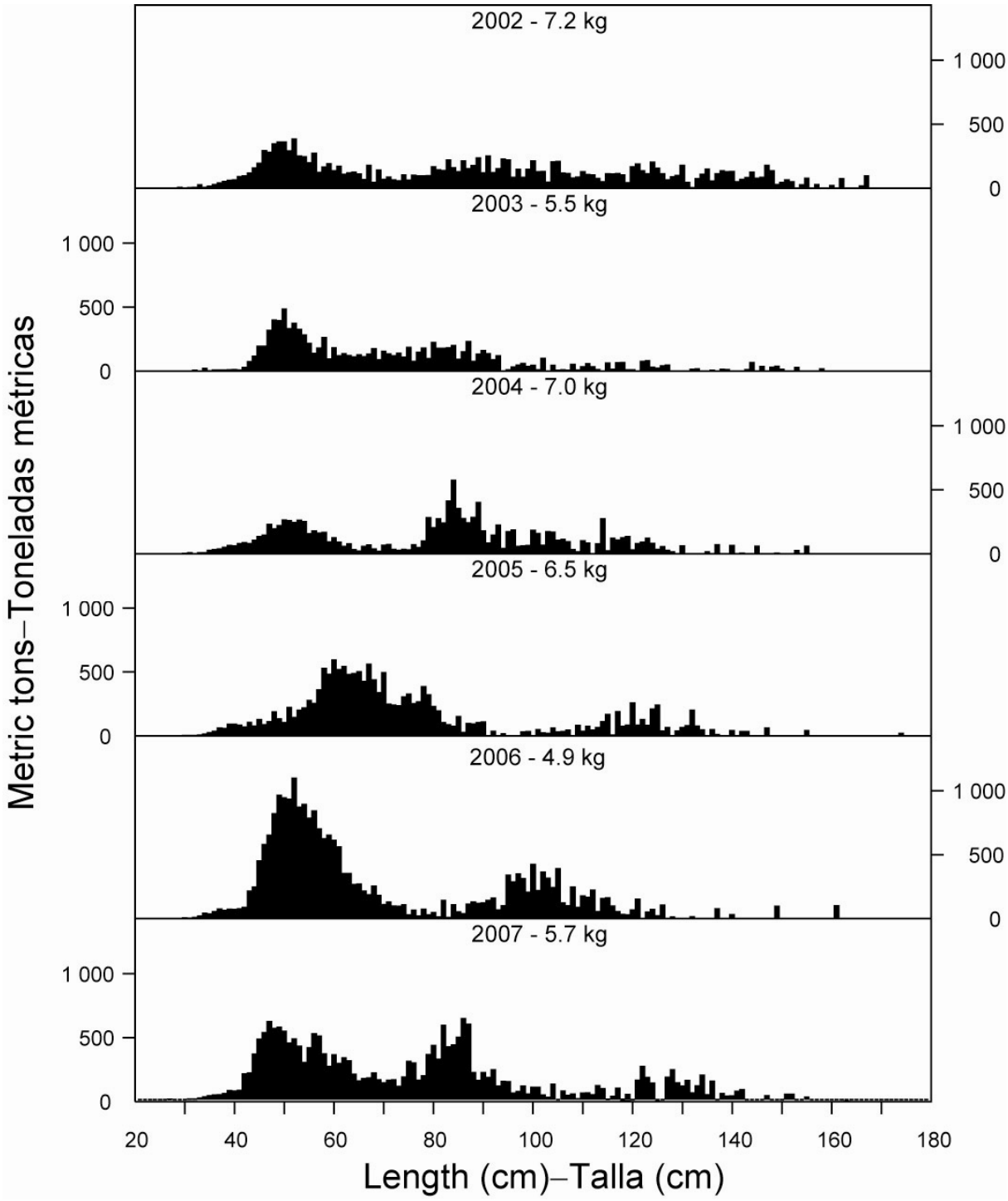

FIGURE 4b. Estimated size compositions of the bigeye caught in the EPO during the second quarter of 2002-2007. The average weights of the fish in the samples are given at the tops of the panels.

FIGURA 4b. Composición por tallas estimada para el patudo capturado en el OPO en el segundo trimestre de 2002-2007. En cada recuadro se detalla el peso promedio de los peces en las muestras.

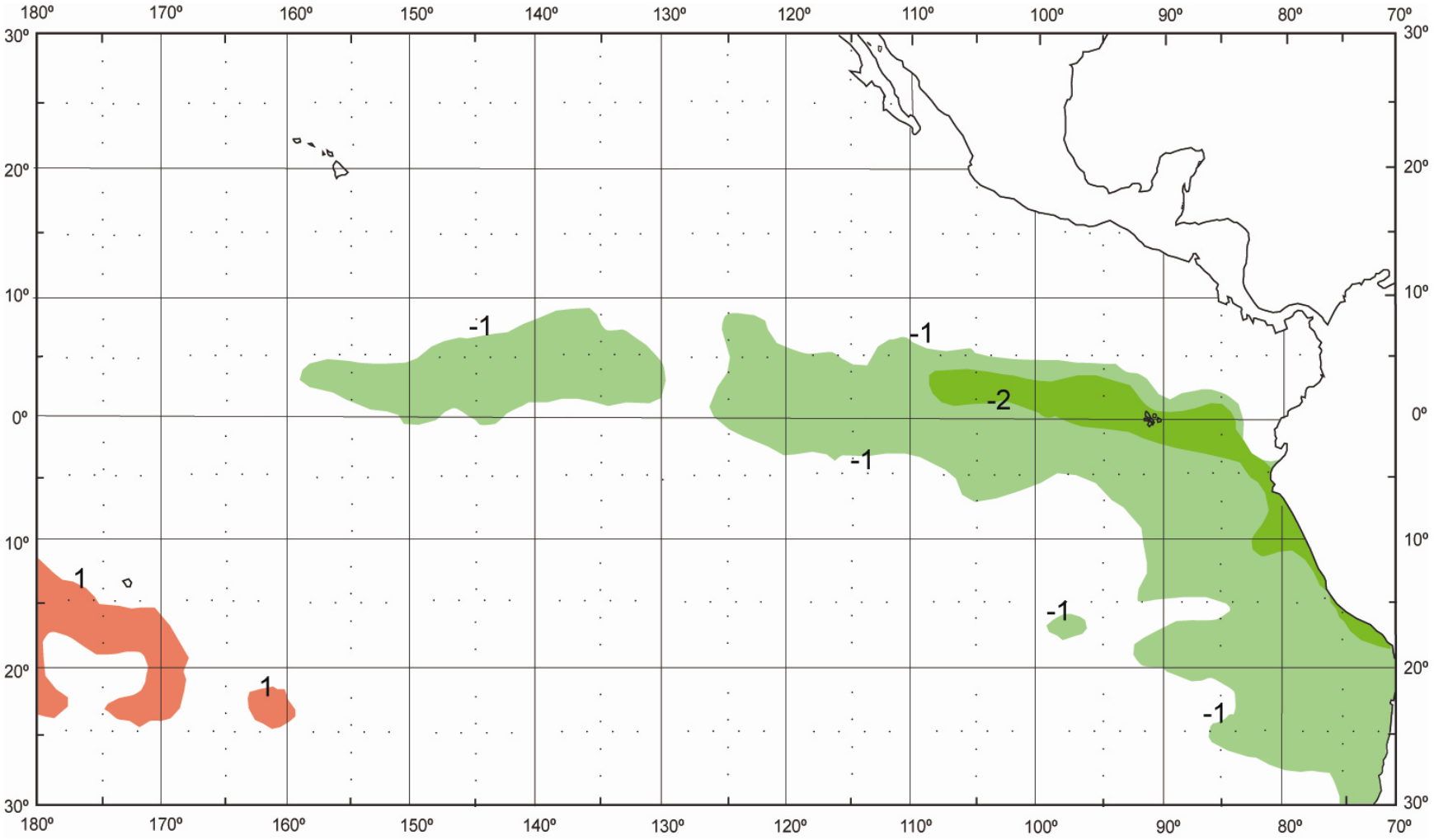

FIGURE 5. Sea-surface temperature (SST) anomalies (departures from long-term normals) for September 2007, based on data from fishing boats and other types of commercial vessels.
FIGURA 5. Anomalías (variaciones de los niveles normales a largo plazo) de la temperatura superficial del mar (TSM) en septiembre de 2007, basadas en datos tomados por barcos pesqueros y otros buques comerciales.

TABLE 1. Preliminary estimates of the numbers and capacities, in cubic meters, of purse seiners and pole-and-line vessels operating in the EPO in 2007 by flag, gear, and well volume. 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 cañeros que pescan en el OPO en 2007, y de la capacidad de acarreo de los mismos, en metros cúbicos, por bandera, arte de pesca, y volumen de bodega. 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	Well volume–Volumen de bodega				Capacity Capacidad
		1-900	901-1700	>1700	Total	
			Number—Número			
Bolivia	PS	1	-	-	1	222
Colombia	PS	4	10	-	14	14,577
Ecuador	PS	62	15	9	86	61,048
España—Spain	PS	-	-	3	3	6,955
Guatemala	PS	-	1	-	1	1,475
Honduras	PS	2	1	-	3	1,700
México	PS	23	34	1	58	57,919
	LP	4	-	-	4	498
Nicaragua	PS	-	5	-	5	6,024
Panamá	PS	5	18	5	28	36,782
El Salvador	PS	-	1	3	4	7,415
USA—EE.UU.	PS	1	2	-	3	3,288
Venezuela	PS	-	20	2	22	29,577
Vanuatu	PS	1	2	-	3	3,609
All flags—	PS	99	108	23	230	
Todas banderas	LP	4	-	-	4	
	PS + LP	103	108	23	234	
			Capacity—Capacidad			
All flags—	PS	42,893	138,717	47,535	229,145	
Todas banderas	LP	498	-	-	498	
	PS + LP	43,391	138,717	47,535	229,643	

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 30 September 2007.
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 30 de septiembre de 2007.

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**
Bolivia			**Ecuador (cont.)**		
Mar Cantabrico	PS	222	*Elizabeth Cinco*	PS	1,265
			Elizabeth F	PS	755
Colombia			*Emperador*	PS	82
Amanda S	PS	1,480	*Fernandito*	PS	147
American Eagle	PS	1,272	*Fiorella L*	PS	390
Cabo De Hornos	PS	729	*Gabriela A*	PS	420
El Dorado	PS	390	*Gloria A*	PS	699
El Rey	PS	1,152	*Gloria C*	PS	248
Enterprise	PS	1,274	*Guayatuna Dos*	PS	1,881
Gold Coast	PS	1,193	*Guayatuna Uno*	PS	1,881
Grenadier	PS	1,176	*Ile Aux Moines*	PS	818
Marta Lucia R.	PS	1,603	*Ingalapagos*	PS	285
Mary Lynn	PS	138	*Intrepido*	PS	85
Nazca	PS	1,451	*Isabel Victoria V*	PS	389
Patricia Lynn	PS	270	*Isabel Victoria VI*	PS	493
Sandra C	PS	1,175	*Jacobita*	PS	374
Sea Gem	PS	1,274	*Joselito*	PS	91
			Julia D	PS	1,419
Ecuador			*Killa*	PS	399
Alejandra	PS	464	*Lizi*	PS	1,038
Alessia	PS	399	*Ljbuica M.*	PS	275
Alize	PS	688	*Lucia T*	PS	738
Amalis	PS	217	*Lucy*	PS	245
Andrea	PS	267	*Malula*	PS	849
Balbina	PS	217	*Mandy*	PS	786
Betty C	PS	1,010	*Manuel Ignacio F*	PS	644
Betty Elizabeth	PS	290	*Maria Fatima*	PS	338
Cap. Berny B.	PS	1,269	*Maria Isabel*	PS	276
Carmen D	PS	490	*Mariajosé*	PS	1,040
Cesar V	PS	335	*Mariella*	PS	1,041
Charo	PS	2,023	*Medjugorje*	PS	843
Chasca	PS	399	*Milagros A*	PS	1,581
Ciudad De Portoviejo	PS	591	*Miriam*	PS	176
Daiichi Maru No. 25	PS	218	*Miry Ann D*	PS	497
Danilo C	PS	142	*Monte Cristi*	PS	456
Doménica L	PS	274	*Monteneme*	PS	908
Don Alvaro	PS	180	*North Queen*	PS	257
Don Antonio	PS	197	*Panama Tuna*	PS	3,264
Don Bartolo	PS	495	*Patricia*	PS	962
Don Luis	PS	180	*Rafa A*	PS	357
Don Mario	PS	552	*Ramoncho*	PS	96
Don Ramón	PS	1,881	*Roberto A*	PS	420
Doña Roge	PS	592	*Rocio*	PS	1,366
Doña Tula	PS	603	*Rodolfo X*	PS	662
Drennec	PS	1,915	*Romeo*	PS	125
Edu	PS	168	*Rosa F*	PS	756
Eillen Marie	PS	350	*Rossana L*	PS	809

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**
Ecuador (cont.)			**México (cont.)**		
Samsun Ranger	PS	1,033	*Buenaventura I*	PS	996
San Andres	PS	1,862	*Buenaventura II*	PS	996
San Mateo	PS	1,033	*Cabo Marzo*	PS	1,242
Saturno	PS	106	*Camila*	PS	493
Southern Queen	PS	137	*Cartadedeces*	PS	702
Tarqui	PS	459	*Chac Mool*	PS	1,159
Ugavi	PS	1,875	*Clipperton*	PS	1,480
Ugavi Dos	PS	1,864	*Delfin IX*	LP	160
Via Simoun	PS	1,324	*El Dorado*	PS	1,711
Yelisava	PS	855	*Ensenada*	PS	381
Yolanda L	PS	1,168	*Franz*	PS	1,610
			Guaymas	PS	460
España—Spain			*Hanna*	PS	1,610
Albacora Uno	PS	2,835	*Jeannine*	PS	1,281
Aurora B.	PS	2,060	*Juan Pablo I*	PS	300
Rosita C	PS	2,060	*Lupe Del Mar*	PS	1,298
			Manolo	PS	300
Guatemala			*Maranatha*	LP	125
J M Martinac	PS	1,475	*Maria Antonieta*	PS	1,118
			María Beatriz	PS	829
Honduras			*Maria Fernanda*	PS	1,416
Blue Tuna	PS	1,012	*Maria Gabriela*	LP	112
Eastern Pacific	PS	547	*Maria Guadalupe*	PS	808
Lady Jannette	PS	141	*Maria Isabel I*	PS	497
			María Luisa	PS	1,260
México			*Maria Rosana*	PS	1,160
Aguila Descalza	PS	493	*Maria Veronica*	PS	1,416
Amalia Cristina	PS	1,311	*Mazatun*	PS	1,480
Arkos I Chiapas	PS	1,348	*Mazcu I*	PS	276
Arkos II Chiapas	PS	1,348	*Mazpesca*	PS	493
Atilano Castano	PS	1,297	*Molly N*	LP	101
Atun I	PS	807	*Monica*	PS	1,154
Atun VI	PS	1,062	*Nair*	PS	1,398
Atun VII	PS	751	*Nair II*	PS	1,161
Atun VIII	PS	806	*Nair III*	PS	234
Azteca 1	PS	1,147	*San Gabriel*	PS	294
Azteca 10	PS	1,627	*San José*	PS	220
Azteca 11	PS	493	*San Uriel*	PS	296
Azteca 12	PS	493	*Tamara*	PS	493
Azteca 2	PS	1,304	*Theresa Janene*	PS	1,275
Azteca 3	PS	1,520			
Azteca 4	PS	1,273	**Nicaragua**		
Azteca 5	PS	1,273	*Andrea F*	PS	1,217
Azteca 6	PS	1,273	*Atlantis IV*	PS	1,274
Azteca 7	PS	1,520	*Capt. Joe Jorge*	PS	1,198
Azteca 8	PS	1,358	*Pendruc*	PS	1,251
Azteca 9	PS	806	*Raffaello*	PS	1,084
Bonnie	PS	1,312			

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			**USA—EE.UU.**		
Aracely F	PS	1,449	*Cape Cod*	PS	1,525
Baraka	PS	1,287	*Cape Finisterre*	PS	1,593
Cape Breton	PS	2,032	*Donna B*	PS	170
Cape Ferrat	PS	2,032			
Contadora I	PS	1,750	**Venezuela**		
Delia	PS	995	*Amazonas*	PS	1,084
El Marquez	PS	486	*Athena F*	PS	1,958
Esmeralda C.	PS	1,358	*Calypso*	PS	1,361
Esthercho	PS	1,170	*Canaima*	PS	1,386
Jane IV	PS	1,633	*Caribe Tuna*	PS	1,260
Julie L	PS	2,056	*Carmela*	PS	1,265
La Parrula	PS	1,188	*Caroni II*	PS	1,410
Lautaro	PS	1,275	*Cayude*	PS	1,145
Lucile F	PS	1,582	*Conquista*	PS	1,145
Maria Del Mar A	PS	2,304	*Curimagua*	PS	1,361
Marinero F	PS	1,244	*Daniela F*	PS	1,958
Milena A.	PS	996	*Don Abel*	PS	1,226
Napoleon I	PS	1,668	*Don Francesco*	PS	1,265
Pacific Tuna	PS	796	*Falcon*	PS	1,060
Pescatun	PS	1,161	*Judibana*	PS	1,145
San Antonio	PS	255	*La Rosa Mística*	PS	1,154
Sea King F	PS	1,487	*Los Roques*	PS	1,260
Sea Royal F	PS	1,488	*Orinoco II*	PS	1,422
Sirenza I	PS	490	*Taurus I*	PS	1,380
Sofia Lynn	PS	586	*Taurus Tuna*	PS	1,380
Templario I	PS	1,363	*Ventuari*	PS	1,506
Tiuna	PS	1,202			
Vicente F	PS	1,449	**Vanuatu**		
			Chiara	PS	803
El Salvador			*Cuyuni*	PS	1,446
Montealegre	PS	1,860	*Mirelur*	PS	1,360
Montelape	PS	1,082			
Montelucia	PS	2,554			
Monterocio	PS	1,919			

TABLE 3. Changes in the IATTC fleet list recorded during the third quarter of 2007. PS = purse seine; UNK = unknown.
TABLA 3. Cambios en la flota observada por la CIAT registrados durante el tercero trimestre de 2007. PS = cerquero; UNK = desconocida.

Vessel name / Nombre del buque	Flag / Bandera	Gear / Arte	Capacity (m^3) / Capacidad (m^3)	Remarks / Comentarios	
Vessels added to the fleet—Buques añadidos a la flota					
New entries—1er ingresos					
				Now—Ahora	
Lady Jannette	Honduras	PS	141		
Re-entries—Reingresos					
				Now—Ahora	
San Uriel	México	PS	296		
Changes of name or flag—Cambios de nombre o pabellon					
				Now—Ahora	
Maria Isabel	México	PS	497	*Maria Isabel I*	
Sea King	Panamá	PS	1,487	*Sea King F*	
Sea Royal	Panamá	PS	1,488	*Sea Royal F*	
Cuyuni	Venezuela	PS	1,446		Vanuatu
Mary Lynn	Unknown – Desconocida	PS	138		Colombia

TABLE 4. Preliminary estimates of the retained catches of tunas in the EPO from 1 January through 30 September 2007, 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 30 de septiembre de 2007, 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	15,435	63,233	19,578	-	1,225	-	53	372	99,896	28.7
México	54,594	21,243	90	3,968	12,763	35	988	66	93,747	27.0
Nicaragua	4,502	2,149	772	-	-	-	-	-	7,423	2.1
Panamá	24,927	17,476	6,372	-	23	48	-	5	48,851	14.1
Venezuela	20,664	17,619	1,892	-	4	-	17	-	40,196	11.6
Other—Otros[2]	22,297	26,062	8,825	-	6	-	25	269	57,484	16.5
Total	142,419	147,782	37,529	3,968	14,021	83	1,083	712	347,597	

[1] Includes other tunas, sharks, and miscellaneous fishes

[1] Incluye otros túnidos, tiburones, y peces diversos

[2] Includes Colombia, El Salvador, Guatemala, Honduras, Spain, United States, Vanuatu, and unknown; this category is used to avoid revealing the operations of individual vessels or companies.

[2] Incluye Colombia, El Salvador, España, Estados Unidos, Guatemala, Honduras, Vanuatu, y desconocida; 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 1 January-30 June, 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 2002	2003	2004	2005	2006	2007[2]
Purse seine—Red de cerco							
North of 5°N Al norte de 5°N	Catch—Captura CPDF—CPDP	102,900 25.6	131,400 21.7	71,000 11.6	72,000 12.5	51,600 9.4	45,500 9.7
South of 5°N Al sur de 5°N	Catch—Captura CPDF—CPDP	41,500 6.4	30,000 5.0	59,500 7.2	35,800 5.4	17,000 2.2	12,300 2.9
Total	Catch—Captura CPDF—CPDP	144,400 20.1	161,400 18.6	130,500 9.6	107,800 10.1	68,600 7.6	57,800 8.2
Annual total Total anual	Catch—Captura	261,800	275,100	193,200	162,600	103,400	
Pole and line—Cañero							
Total	Catch—Captura CPDF—CPDP	200 1.0	<100 0.3	<100 0.3	400 4.0		<100 0.8
Annual total	Catch—Captura	800	500	1,800	800	400	

[1] Purse-seiners with carrying capacities greater than 363 metric tons only; all pole-and-line vessels. The catch values are rounded to the nearest 100, and the CPDF values to the nearest 0.1.

[1] Cerqueros con capacidad de acarreo más de 363 toneladas métricas únicamente; todos buques cañeros. Se redondean los valores de captura al 100 más cercano, y los de CPDP al 0.1 más cercano.

[2] Preliminary

[2] 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 1 January-30 June, 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.

Area	Fishery statistic Estadística de pesca	Year—Año 2002	2003	2004	2005	2006	2007[2]
Purse seine—Red de cerco							
North of 5°N Al norte de 5°N	Catch—Captura CPDF—CPDP	4,100 1.0	17,000 2.8	14,300 2.3	20,800 3.6	14,500 2.7	9,900 2.1
South of 5°N Al sur de 5°N	Catch—Captura CPDF—CPDP	45,800 7.1	58,700 10.0	56,600 6.8	71,300 10.7	64,300 8.4	26,300 6.2
Total	Catch—Captura CPDF—CPDP	49,900 6.6	75,700 8.3	70,900 5.9	92,100 9.1	78,800 7.4	36,200 5.1
Annual total Total anual	Catch—Captura	84,300	155,000	132,500	148,900	143,800	
Pole and line—Cañero							
Total	Catch—Captura CPDF—CPDP	400 1.8	<100 1.0	400 2.9	100 0.7		
Annual total	Catch—Captura	500	500	500	400	300	

[1] Purse-seiners with carrying capacities greater than 363 metric tons only; all pole-and-line vessels. The catch values are rounded to the nearest 100, and the CPDF values to the nearest 0.1.

[1] Cerqueros con capacidad de acarreo más de 363 toneladas métricas únicamente; todos buques cañeros. Se redondean los valores de captura al 100 más cercano, y los de CPDP al 0.1 más cercano.

[2] Preliminary

[2] 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 1 January-30 June, 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 junio, basado en información de los cuadernos de bitácora de buques cerqueros.

Fishery statistic—Estadística de pesca	Year—Año					
	2002	2003	2004	2005	2006	2007[2]
Catch—Captura	13,500	11,900	18,300	11,900	17,700	8,400
CPDF—CPDP	2.0	1.7	1.8	1.5	1.9	1.7
Total annual catch—Captura total anual	26,700	33,100	43,100	28,500	33,400	

[1] Vessels with carrying capacities greater than 363 metric tons only. The catch values are rounded to the nearest 100, and the CPDF values to the nearest 0.1.
[1] Buques con capacidad de acarreo más de 363 toneladas métricas únicamente. Se redondean los valores de captura al 100 más cercano, y los de CPDF al 0.1 más cercano.
[2] Preliminary
[2] Preliminar

TABLE 8. Catches of bigeye tuna in the eastern Pacific Ocean during 2007 by longline vessels.
TABLA 8. Captures de atún patudo en el Océano Pacífico oriental durante 2007 por buques palangreros.

	First quarter	Second quarter	Third quarter				Total to date
			July	August	Septem-ber	Total	
	Primer trimestre	Segundo trimestre	Tercer trimestre				Total al fecha
			Julio	Agosto	Septiem-bre	Total	
China	-	-	-	-	-	-	-
Japan—Japón	3,272	2,962	1,117	949	939	3,005	9,179
Republic of Korea—República de Corea	1,826	-	-	-	-	-	1,826
Chinese Taipei—Taipei Chino	1,096	905	406	-	-	406	2,407
USA—EE.UU	106	10	72	94	34	200	316
Vanuatu	273	221	-	-	-	-	494
Total	6,573	4,098	1,595	1,043	973	3,611	14,222

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, Colombia, Ecuador, the European Union, Mexico, Nicaragua, Panama, and Venezuela during the third quarter of 2007. 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, Colombia, Ecuador, México, Nicaragua, Panamá, el Unión Europea, y Venezuela durante el tercer trimestre de 2007. Los números en paréntesis indican totales acumulados para el año.

Flag	Trips		Observed by program						Percent observed	
			IATTC		National		Total			
Bandera	Viajes		Observado por programa						Porcentaje observado	
			CIAT		Nacional		Total			
Colombia	6	(37)	4	(17)	2	(20)	6	(37)	100.0	(100.0)
Ecuador	46	(196)	30	(130)	16	(66)	46	(196)	100.0	(100.0)
España—Spain	4	(15)	2	(8)	2	(7)	4	(15)	100.0	(100.0)
Guatemala	1	(4)	1	(4)			1	(4)	100.0	(100.0)
Honduras	2	(12)	2	(12)			2	(12)	100.0	(100.0)
México	68	(192)	35	(97)	33	(95)	68	(192)	100.0	(100.0)
Nicaragua	5	(16)	2	(8)	3	(8)	5	(16)	100.0	(100.0)
Panamá	28	(95)	13	(47)	15	(48)	28	(67)	100.0	(100.0)
El Salvador	4	(22)	4	(22)			4	(22)	100.0	(100.0)
U.S.A.—EE.UU.	1	(5)	1	(5)			1	(5)	100.0	(100.0)
Venezuela	17	(72)	9	(38)	8	(34)	17	(72)	100.0	(100.0)
Vanuatu	4	(11)	4	(10)		(1)[2]	4	(11)	100.0	(100.0)
Total	186	(677)[1]	107	(398)	79	(279)	186	(677)[1]	100.0	(100.0)

[1] Includes 49 trips (26 by vessels with observers from the IATTC program and 23 by vessels with observers from the national programs) that began in late 2006 and ended in 2007

[1] Incluye 49 viajes (26 por observadores del programa del CIAT y 23 por observadores de los programas nacionales) iniciados a fines de 2006 y completados en 2007

[2] When this vessel began its trip it was registered in Venezuela, and it carried a Venezuelan observer. Before the end of the trip, however, its registry was changed to Vanuatu.

[2] Cuando el buque inició su viaje estaba registrado en Venezuela, y llevaba observador venezolano, pero antes de terminar el viaje, cambió a registro de Vanuatu.

TABLE 10. Oceanographic and meteorological data for the Pacific Ocean, April-September 2007. The values in parentheses are anomalies. SST = sea-surface temperature; SOI = Southern Oscillation Index; SOI* and NOI* are defined in the text.
TABLA 10. Datos oceanográficos y meteorológicos del Océano Pacífico, abril-septiembre 2007. Los valores en paréntesis son anomalías. TSM = temperatura superficie del mar; IOS = Índice de Oscilación del Sur; IOS* y ION* están definidas en el texto.

Month—Mes	4	5	6	7	8	9
SST—TSM (°C)						
Area 1 (0°-10°S, 80°-90°W)	24.4 (-1.1)	22.8 (-1.6)	21.7 (-1.4)	20.4 (-1.5)	19.2 (-1.6)	18.6 (-1.9)
Area 2 (5°N-5°S, 90°-150°W	27.1 (-0.3)	26.4 (-0.7)	25.9 (-0.5)	24.9 (-0.7)	23.9 (-1.1)	23.6 (-1.3)
Area 3 (5°N-5°S, 120°-170°W)	27.8 (0.1)	27.6 (-0.2)	27.6 (0.1)	26.9 (-0.2)	26.2 (-0.5)	25.8 (-0.8)
Area 4 (5°N-5°S, 150W°-160°E)	28.7 (0.3)	28.9 (0.2)	29.0 (0.4)	28.8 (0.2)	28.6 (0.1)	28.1 (-0.4)
Thermocline depth—Profundidad de la termoclina, 0°, 80°W (m)	15	25	25	30	45	40
Thermocline depth—Profundidad de la termoclina, 0°, 110°W (m)	10	15	25	40	35	30
Thermocline depth—Profundidad de la termoclina, 0°, 150°W (m)	100	90	105	125	130	130
Thermocline depth—Profundidad de la termoclina, 0°, 180°W (m)	170	170	170	180	170	165
Sea level—Nivel del mar, Baltra, Ecuador (cm)	186.1 (3.4)	190.6 9.2	190.3 (9.4)	-	-	-
Sea level—Nivel del mar, Callao, Peru (cm)	102.8 (-11.7)	105.7 (-7.8)	99.7 (-12.3)	-	109.1 (1.5)	-
SOI—IOS	-0.4	-0.4	0.2	-0.5	0.1	0.2
SOI*—IOS*	1.24	5.50	2.69	4.36	7.92	4.12
NOI*—ION*	1.96	2.03	3.25	-1.61	-1.56	1.38