INTER-AMERICAN TROPICAL TUNA COMMMISSION
COMISIÓN INTERAMERICANA DEL ATÚN TROPICAL

QUARTERLY REPORT—INFORME TRIMESTRAL

April-June 2011—Abril-Junio 2011

The Quarterly Report of the Inter-American Tropical Tuna Commission is an informal account 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 de la Comisión Interamericana del Atún Tropical es un relato informal 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.

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INTRODUCTION

The Inter-American Tropical Tuna Commission (IATTC) operated from 1950 to 2010 under the authority and direction of a Convention signed by representatives of the governments of Costa Rica and the United States of America on 31 May 1949. The Convention was open to the adherence by other governments whose nationals participated in the fisheries for tropical tunas and tuna-like species in the eastern Pacific Ocean (EPO). The original convention was replaced by the "Antigua Convention" on 27 August 2010, 15 months after it had been ratified or acceded to by seven Parties that were Parties to the original Convention on the date that the Antigua Convention was open for signature. On that date, Belize, Canada, China, Chinese Taipei, and the European Union became members of the Commission, and Spain ceased to be a member. Spanish interests were henceforth handled by the European Union. Kiribati joined the IATTC on 28 June 2011. There were 21 members of the IATTC at the end of the second quarter of 2011.

The Antigua Convention states that the "Scientific Staff shall operate under the supervision of the Director," that it will "conduct scientific research … approved by the Commission," and "provide the Commission, through the Director, with scientific advice and recommendations in support of the formulation of conservation and management measures and other relevant matters." It states that "the objective of this Convention is to ensure the long-term conservation and sustainable use of the "tunas and tuna-like species and other species of fish taken by vessels fishing for tunas and tuna-like species," but it also states that the Commission is to "adopt, as necessary, conservation and management measures and recommendations for species belonging to the same ecosystem and that are affected by fishing for, or dependent on or associated with, the fish stocks covered by this Convention, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened."

The scientific program is now in its 61st 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 ANNOUNCEMENT

We are pleased to announce that Kiribati, which had previously been a cooperating non-party of the IATTC, became a member of the IATTC on 28 June 2011.

MEETINGS

IATTC meetings

The second meeting of the Scientific Advisory Committee was held in La Jolla, California, USA, on 9-12 May 2011. Dr. Guillermo A. Compeán served as chairman and Drs. Daniel Margulies and Robert J. Olson served as rapporteurs for the meeting. Fifteen documents (listed on the IATTC web site under Meetings) were presented, and talks were given by Dr. Richard B. Deriso, Martín A. Hall, Mark N. Maunder, Robert J. Olson, Cleridy E. Lennert-Cody, Alexandre Aires-da-Silva, and Michael G. Hinton and Messrs. Edward H. Everett and Marlon H. Román. In addition to IATTC staff members, representatives of the Associación de Atuneros de Ecuador, the Institut de Recherche pour le Development of France, the Instituto Costarricense de Pesca y Acuicultura, the Instituto Español de Oceangrafiá, the Instituto Nacional de la Pesca of Mexico, the International Seafood Sustainability Foundation, the Ministerio de Agricultura y Ganadería of El Salvador, the Ministerio de Ambiente, Vivienda y Desarollo Rural of Colombia, the National Research and Development Institute of Japan, the National Research and Development Institute of Korea, the National Research Institute of Far Seas Fisheries of Japan, National Taiwan Ocean University, the Organización de Productores Asociados de Grandes Atuneros Congeladores of Spain, Pew Charitable Trusts, the Programa Nacional de Observadores de Venezuela-Fundación para la Pesca Sostenida y Responsable de Tunidos, Shanghai Ocean University, the Subsecretaría de Recursos Pesqueros of Ecuador, and the U.S. National Marine Fisheries Service.

The Second Technical Meeting on Sharks: Preparatory Workshop on Data and Modeling for a Stock Assessment of Silky Shark in the Eastern Pacific Ocean was held in La Jolla, California, USA, on 13-14 May 2011. Dr. Alexandre Aires-da-Silva served as chairman of the meeting, and talks were given by Drs. Aires-da-Silva, Mark N. Maunder, and Cleridy E. Lennert-Cody. Scientists from most of the organizations listed in the previous paragraph participated in the meeting.

Other meetings

Mr. Kurt M. Schaefer participated at a meeting, held under the auspices of the Fisheries and Aquaculture Department of FAO on behalf of the Global Environmental Facility (GEF) at the headquarters of the International Commission for Conservation of Atlantic Tunas (ICCAT) in Madrid, Spain, on 11-13 April 2011. The meeting was entitled "Workshop to Formulate a Project on Tuna Fisheries within GEF's Program on Areas beyond National Jurisdiction (ABNJ)." The purpose of the meeting was to review the research proposals submitted in advance by the five tuna Regional Fisheries Management Organizations and by non-governmental organizations, and to discuss and formulate a coherent proposal to be submitted to the GEF for consideration of funding opportunities within the specified guidelines for the project. Mr. Schaefer's travel expenses were paid by the International Seafood Sustainability Foundation.

Dr. Martín A. Hall participated in the 2011 International Circle Hook Symposium in Coral Gables, Florida, USA, on 4-6 May 2011. Dr. Hall was a member of the Science Advisory Committee and co-author of several documents produced at the symposium.

A second meeting of the members of the Northern Committee of the Western and Central Pacific Fisheries Commission and the IATTC was held in La Jolla, California, USA, on 13 May 2011, to discuss coordinated management of Pacific bluefin tuna. The participants included several members of the Northern Committee and scientists from the IATTC (Drs. Guillermo A. Compeán and Richard B. Deriso), Japan, Mexico, and the United States.

Many members of the IATTC staff participated in all or parts of the 62nd Tuna Conference at Lake Arrowhead, California, USA, on 16-19 May 2011. Dr. Cleridy E. Lennert-Cody and Ms. Joydelee C. Marrow served as co-chairs of the conference. Talks were given by Drs. Daniel Margulies and Mark N. Maunder, Mss. Leanne M. Duffy and Maria C. Santiago, and Mr. Marlon H. Román. In addition, research in which Drs. Margulies, Alexandre Aires-da-Silva, Martín A. Hall, and Robert J. Olson, Mss. Duffy, Santiago, and Jeanne B. Wexler, and Mr. Vernon P. Scholey had participated was presented by other speakers.

At the invitation of the Organization of Fisheries and Aquaculture in Central America (OSPESCA) and the World Wildlife Fund (WWF), Mr. Nickolas W. Vogel spent the period of 17-20 May 2011, in Guatemala City, Guatemala, leading a workshop in the use of the data base for the reduction of incidental capture of sea turtles in the longline fishery. Sixteen participants from Costa Rica, El Salvador, Guatemala, Nicaragua, and Panama practiced common data analysis methods, using Access queries and Excel pivot tables to summarize and display the data. They were also introduced to several standard methods developed to compare the effectiveness of different types and sizes of hooks in the reduction of sea turtle mortality, while at the same time maintaining the catch rates of the target species. Mr. Vogel's expenses were paid for by OSPESCA and the WWF.

Dr. Alexandre Aires-da-Silva participated in an Albacore Model Subgroup meeting of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean in Shimizu, Japan, on 30 May-3 June 2011.

Dr. Martín A. Hall participated in the Fifth Conference of the Parties of the Inter-American Convention for the Protection and Conservation of Sea Turtles in Bonaire, Netherlands Antilles, on 1-3 June 2011. He gave a presentation entitled "Sea Turtle Bycatch in the IATTC Region" and participated in a discussion of the Memorandum of Understanding between the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC) and the Inter-American Tropical Tuna Commission (IATTC).

Dr. Richard B. Deriso participated in a meeting of the Science and Statistical Committee of the Western Pacific Regional Fishery Management Council in Honolulu, Hawaii, USA, on 13-15 June 2011.

Dr. Mark N. Maunder participated in an AD Model Builder Developers Workshop at the National Center for Ecological Analysis and Synthesis, University of California at Santa Barbara, in Santa Barbara, California, USA, on 20-23 June 2011. Drs. Maunder and John Sibert of the Pelagic Fisheries Research Program, University of Hawaii, coordinated the workshop. Sixteen scientists from several countries participated in the workshop. They were trained in how to make changes to the ADMB source code, and progress was made on several improvements, *e.g.* documentation, PRIORS_SECTION, parallel processing, fixing bugs, and issue-tracking software. Dr. Maunder is the current president of the AD Model Builder Foundation.

RESEARCH

DATA COLLECTION AND DATABASE PROGRAM

The IATTC had field offices at Las Playas and Manta, Ecuador; Manzanillo and Mazatlan, Mexico; Panama, Republic of Panama; and Cumaná, Venezuela, during the second quarter of 2011. Personnel at these offices collected 329 length-frequency samples from 225 wells and abstracted logbook information for 215 trips of commercial fishing vessels during the second quarter of 2011.

Reported fisheries statistics

The information reported herein are for the eastern Pacific Ocean (EPO: the region east of 150ºW, south of 50ºN, and north of 50°S), unless noted otherwise. The catches are reported in metric tons (t), the vessel capacities in cubic meters (m^3), and effort in days fishing. Estimates of fisheries statistics with varying degrees of accuracy and precision are available. The most accurate and precise are those made after all available information has been entered into the data base, processed, and verified. 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. Thus the estimates for the current week are the most preliminary, while those made a year later are much more accurate and precise. The statistics are developed using data from many sources, including reports of landings, fishing vessel logbooks, scientific observers, and governmental agencies.

Fleet statistics for the purse seine and pole-and-line fisheries

The lists of vessels authorized to fish for tunas in the EPO are given in the IATTC Regional Vessel Register (http://www.iattc.org/VesselListsENG.htm). The estimated total carrying capacity of the purse-seine and pole-and-line vessels that have or are expected to fish in the EPO during 2011 is about 209,600 m^3 (Table 1). The average weekly at-sea capacity for the fleet, for the weeks ending 3 April through 26 June, was about 147,100 m^3 (range: 133,000 to 163,700 m^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, in metric tons, of tropical tunas in the EPO during the period of January-June in 2011, and comparative statistics for 2006-2010, were:

Species	2011	2006-2010			Weekly average, 2011
		Average	Minimum	Maximum	
Yellowfin	130,400	118,800	105,900	135,700	5,000
Skipjack	150,900	129,100	112,400	179,200	3,400
Bigeye	22,600	27,600	19,500	37,700	900

Summaries of the estimated retained catches, by species and by flag of vessel, are shown in Table 2.

Catch-per-unit-of-effort statistics for purse seine vessels

No adjustments in the catch-per-unit-of-effort data are included for 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.

The measures of catch rate used in analyses 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 fish-carrying capacities greater than about 425 m^3), and only data for these vessels are included in these measures of catch rate. There are now far fewer pole-and-line vessels than in previous years, so the data for these vessels are combined without regard to fish-carrying capacities.

The estimated nominal catches per day of fishing for yellowfin, skipjack, and bigeye in the EPO during the first quarter of 2011 and comparative statistics for 2006-2010 were:

Region	Species	Gear	2011	2006-2010		
				Average	Minimum	Maximum
N of 5° N	Yellowfin	PS	14.7	11.7	9.0	15.5
S of 5° N			3.1	2.9	2.4	3.3
N of 5° N	Skipjack	PS	0.0	1.3	0.6	2.2
S of 5° N			12.0	9.2	7.1	13.6
EPO	Bigeye	PS	1.8	1.8	1.3	2.9
EPO	Yellowfin	LP	0.0	1.0	0.0	3.8
EPO	Skipjack	LP	0.0	0.7	0.0	2.3

Catch statistics for the longline fishery

The catches of bigeye by longline gear in the EPO are reported by flag states whose annual catches have exceeded 500 t (http://iattc.org/PDFFiles2/C-09-01-Tuna-conservation-2009-2011.pdf). Preliminary estimates of the catches reported for the first two quarters of 2011 are shown in Table 5.

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. 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.

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 first quarter of 2006-2011 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 first quarter of 2011, and the second shows data for the combined strata for the first quarter of each year of the 2006-2011 period. Samples from 198 wells were taken during the first quarter of 2011.

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 198 wells sampled that contained fish caught during the first quarter of 2011, 162 contained yellowfin. The estimated size compositions of these fish are shown in Figure 2a. The majority of the yellowfin catch during the first quarter was taken by sets on dolphins and on floating objects in the Inshore area. Lesser amounts were taken in the Northern dolphin and Southern unassociated fisheries and the Equatorial and Southern floating-object fisheries.

The estimated size compositions of the yellowfin caught by all fisheries combined during the first quarters of 2006-2011 are shown in Figure 2b. The average weight of yellowfin caught during the first quarter of 2011 (9.5 kg) was considerably less than that of 2009 (22.6 kg), but greater than those of 2006-2008.

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 198 wells sampled that contained fish caught during the first quarter of 2011, 100 contained skipjack. The estimated size compositions of these fish are shown in Figure 3a. Large amounts of skipjack in the 40- to 50-cm range were caught in the Inshore and Southern floating-object fisheries, and in the Southern unassociated fishery.

The estimated size compositions of the skipjack caught by all fisheries combined during the first quarter of 2006-2011 are shown in Figure 3b. The average weight of skipjack caught during the first quarter of 2011 (1.9 kg) was less than those of 2007, 2009, and 2010, but greater than those of 2006 and 2008.

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 198 wells sampled that contained fish caught during the first quarter of 2011, 26 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 Equatorial and Southern areas, with lesser amounts taken in floating-object sets in the Northern and Inshore areas.

The estimated size compositions of the bigeye caught by all fisheries combined during the first quarter of 2006-2011 are shown in Figure 4b. The average weight of bigeye caught during the first quarter of 2011 (9.5 kg) was greater than those of any of the previous five years.

The estimated retained purse-seine catch of bigeye less than 60 cm in length during the first quarter of 2011 was 2,176 t, or about 18 percent of the estimated total retained purse-seine catch of bigeye during that period. The corresponding amounts for 2006-2010 ranged from 2,228 to 7,126 t, or 17 to 43 percent. These values may differ slightly from those given in previous Quarterly Reports due to changes in the estimation procedure.

BIOLOGY AND ECOSYSTEM PROGRAM

Tuna tagging

Two trips were made during the quarter to the Revillagigedo Islands Marine Reserve aboard the 28-m sport-fishing vessel *Royal Star* for the purpose of tagging yellowfin tuna and wahoo. The tagging project is a collaborative effort between the IATTC, the Instituto Nacional de Pesca of Mexico, and the owners of the *Royal Star*. The permits obtained from the government of Mexico for this project provide a unique opportunity to conduct a comprehensive scientific evaluation of the movements and behavior of yellowfin tuna and wahoo within the Revillagigedo Islands Marine Reserve and in areas to which they might move through no-retention tag-and-release sport fishing trips aboard the *Royal Star*.

The first trip was made by Mr. Vernon P. Scholey, along with 15 anglers, during the period of 16-27 April 2011. A total of 500 yellowfin were landed aboard the vessel, measured, tagged with conventional plastic dart tags, and released, with 18 of these fish also having archival tags implanted into their peritoneal cavities. The yellowfin tagged ranged in size from about 4 to 250 pounds (2 to 114 kg). In addition, 14 wahoo (mostly about 15 to 35 pounds (7 to 16 kg) were tagged and released in the water with plastic intra-muscular tags.

The second trip was made by Dr. Michael D. Scott (IATTC) and Mr. Gabriel Aldana (Instituto Nacional de Pesca of Mexico), along with 18 anglers, during the period of 4-16 May 2011. A total of 439 yellowfin were landed aboard the vessel, measured, and tagged with conventional plastic dart tags; 334 of the tagged yellowfin were between about 50 and 100 pounds (about 23 and 45 kg) and 105 weighed more than about 100 pounds. The largest fish weighed about 240 pounds (about 109 kg). An additional 24 yellowfin were landed, measured, and had archival tags implanted in their peritoneal cavities (2 between Isla San Benedicto and Isla Socorro, 6 at Isla Socorro, 2 at Roca Partida, and 10 at Isla Clarion). In addition, 21 wahoo (mostly about 20 to 40 pounds or 9 to 18 kg) were tagged and released in the water with plastic intra-muscular tags.

The project, which has been conducted for six years, has been extremely successful in meeting the initial objectives of tag deployments. A large volume of useful tagging data has been obtained, particularly from the recoveries of archival tags deployed in yellowfin throughout the Revillagigedo Islands, and additional longer-term returns are expected over the next two years or so. This project has been extremely popular with the long-range sport-fishing community, and participation by anglers has grown over the period of its existence.

Messrs. Kurt M. Schaefer and Daniel W. Fuller left Ecuador on 11 May 2011 on a research trip, paid for by the International Seafood Sustainability Foundation, aboard the Ecuadorian-flag Class-6 (fish-carrying capacity greater than 363 metric tons) purse-seiner *Yolanda L.* The object of the trip is to find ways to minimize the catches of bigeye and other non-target species in sets on floating objects without reducing the catches of skipjack. The trip will end in late July 2011.

Early life history studies

Yellowfin broodstock

[q111- The yellowfin broodstock in Tank 1 (1,362,000 L) at the Achotines Laboratory spawned daily during the quarter. Spawning occurred between 6:20 p.m. and 11:10 p.m. The numbers of eggs collected after each spawning event ranged from about 15,000 to 736,000. The water temperatures in the tank during the quarter ranged from 25.3° to 29.1°C.

At the end of the quarter there were three 56- to 57-kg yellowfin (one with an archival tag), eight 30- to 43-kg yellowfin, and three 11- to 12-kg yellowfin in Tank 1. This group included 5 fish that had been transferred from the reserve tank (Tank 2, 170,000-L) in mid-May (2 of the 5 transferred fish died due to post-transfer starvation). Two yellowfin remained in Tank 2 in mid-May, with 1 fish sacrificed due to poor condition and the remaining fish sacrificed for RNA/DNA studies. At the end of the quarter, Tank 2 was empty, but there were plans to restock the tank during the third quarter.

During late 2008, 6 of the 15 yellowfin (7 to 10 kg) held in Tank 2 were implanted with prototype archival tags and transferred to Tank 1. At the end of the quarter, one of the October 2008 group, bearing an archival tag, remained in Tank 1.

Rearing of yellowfin eggs, larvae, and juveniles

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

Collaborative research on yellowfin and bluefin

As reported in the IATTC Quarterly Report for January-March 2011, representatives of Kinki University in Japan, the IATTC, and the Autoridad de los Recursos Acuáticos de Panama (ARAP) signed an agreement in January 2011 to conduct comparative research on the early life history and reproductive biology of Pacific bluefin tuna and yellowfin tuna. The joint research project, which will be conducted mostly at the Fisheries Laboratories of Kinki University in Wakayama Prefecture, Japan, and at the IATTC's Achotines Laboratory, began in early 2011 and will continue for 5 years. It is being conducted by members of the faculty of Kinki University, the Early Life History Group of the IATTC, and staff scientists of ARAP. The project is being implemented under the Science and Technology Research Partnership for Sustainable Development (SATREPS). The studies conducted in Japan will be supported by the Japan Science and Technology Agency (JST), and those undertaken in Panama will be supported by the Japan International Cooperation Agency (JICA). In mid-May, a Kinki University fish culturist, Mr. Tomoki Honryo, and SATREPS Postdoctoral Fellows, Dr. Biswajit Biswas and Dr. Yang-Su Kim, arrived at the Achotines Laboratory. They were joined in late May by Dr. Yoshifumi Sawada and Dr. Toru Kobayashi of Kinki University. The Kinki University scientists initiated joint studies, conducted with the Early Life History Group of the IATTC and Achotines Laboratory staff members, to investigate aspects of the growth, feeding, physiology, and genetics of early life stages of yellowfin. In late May, several ARAP biologists arrived to participate in the joint experiments, which continued through the end of the quarter.

As part of the joint early life history studies, the Early Life History Group of the IATTC initiated several experiments during the quarter to investigate the growth potential of yellowfin larvae under variable food conditions. The growth experiments were the first trials undertaken as part of a comparative study of the growth potential of yellowfin and Pacific bluefin larvae under a wide range of food conditions. During June, yellowfin larvae were reared in replicated trials under semi-low (200-700 rotifers/L) and semi-high (1,000-2,000 rotifers/L) food levels. Similar trials in Japan with Pacific bluefin larvae were planned for the third quarter, and additional growth trials investigating the effects of very low and very high food levels on both species will continue during the next year.

The first annual meeting of the SATREPS Joint Coordinating Committee (JCC) was held at the ARAP offices in Panama City on 6 June 2011. Representatives of ARAP, Kinki University, JICA, and the IATTC participated in the meeting. Observers from the Japanese Embassy in Tokyo and JST were also present. The joint research plan and budgets for 2011 and 2012 were discussed during the meeting.

The Early Life History Group and the Hubbs Sea World Research Institute (HSWRI) of San Diego, California, USA, were awarded a grant in 2009 by the Saltonstall-Kennedy Program of the U.S. National Oceanic and Atmospheric Administration to conduct feasibility studies of the air shipment and subsequent rearing of yellowfin tuna eggs and larvae. The project has continued, with multiple air shipments of yellowfin eggs and larvae sent from the Achotines Laboratory to the HSWRI during 2010 and January-February of 2011. During May, another shipment of three boxes, containing two bags each of eggs or larvae stocked in seawater, arrived at the HSWRI about 36 hours after leaving the Achotines Laboratory. Due to an error in the shipping paperwork, the transit time was longer than that of the previous shipments (24 hours), resulting in reduced survival of the eggs and larvae. Several additional shipments of eggs and larvae were scheduled to be sent during the latter half of 2011.

Genetic studies of early life stages of yellowfin

Dr. Luke Gardner, a postdoctoral fellow at Hopkins Marine Station, Pacific Grove, California, USA, and Mr. Charles Farwell of the Monterey Bay Aquarium, Monterey, California, USA, visited the Achotines Laboratory in early May. During their visit, they sampled yellowfin tuna embryos and larvae for molecular analysis. Dr. Gardner, working in collaboration with Dr. Barbara Block at Stanford University, Pacific Grove, California, USA, will conduct a preliminary analysis of RNA from the samples to assess the feasibility of using a previously-developed bluefin tuna microarray analysis to analyze the overall health of yellowfin tuna early life stages. Microarray and other molecular tools may enable scientists to discern subtle changes in development, indicating how yellowfin and other tunas respond to potential environmental stresses.

Studies of snappers

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

During 1996-2009, the ARAP staff had conducted full life cycle research on spotted rose snapper (*Lutjanus guttatus*) in captivity. During the second and third quarters of 2009, the broodstock fish died due to low water temperatures and feeding problems. The mortality coincided with ARAP's plans to commence spawning and rearing studies during 2010 with a new, more commercially-important species of snapper. Yellow snapper (*Lutjanus argentiventris*) was chosen as the new species of snapper for study. In addition, ARAP decided to rebuild its spotted rose snapper broodstock. The fish were acquired from local fishermen. During 2010 there were 62 spotted rose snappers and 19 yellow snappers being held in broodstock tanks at the Achotines Laboratory. However, by the end of September 2010 only nine spotted rose snappers remained (see IATTC Quarterly Report for September-December 2010). The collection of more spotted rose snappers began in February 2011 and continued through June. At the end of the quarter, there were 10 spotted rose snappers being held in a broodstock tank at the Laboratory.

Installation of a Global Positioning System receiver at the Achotines Laboratory

Dr. Peter La Femina, Assistant Professor of Geosciences at Pennsylvania State University (PSU), University Park, Pennsylvania, USA, together with several PSU faculty members and students and faculty members and technicians of the Universidad de Panama Instituto de Geociencias, visited the Achotines Laboratory in mid-May 2011. During their visit, they completed the installation of a continuously-operating Global Positioning System (cGPS) receiver. Five other cGPS receivers were installed in the Republic of Panama, with all of the installations (including that at the Achotines Laboratory) funded by the US National Science Foundation, for the primary purpose of investigating the tectonics of the Isthmus of Panama. A complete meteorological station, which will be used to provide meteorological data for use in analysis of experimental results at the Achotines Laboratory, was to be connected to the cGPS receiver later in the year.

Visitors at the Achotines Laboratory

The ARAP Administrator, Ing. Giovanni Lauri, along with the ARAP Sub-Administrator and various ARAP Directors and Sub-Directors, visited the Achotines Laboratory on 3 June 2011. During their visit, they received a tour of the laboratory and a first-hand look at the joint research being carried out by the SATREPS project, and they participated in an informal planning discussion for a joint SATREPS meeting to be held on 6 June 2012.

Mr. Takao Omote, the new Resident Representative the Japan International Cooperation Agency in the Republic of Panama, visited the Achotines Laboratory on 14 June 2011 to tour the laboratory and discuss the SATREPS project.

Oceanography and meteorology

Easterly surface winds blow almost constantly over northern South America, which cause 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.]

There was a sizeable area of cool water in the eastern and central Pacific Ocean during the fourth quarter of 2010, which reached a maximum in December of that year (IATTC Quarterly Report for October-December 2010: Figure 6). The size of that area decreased during the first quarter of 2011 due to warming of the water between the coast and about 120°W (IATTC Quarterly Report for January-March 2012: Figure 8), and during the second quarter some small areas of warm water appeared off northern South America (Figure 5). The SSTs were below average, with only one exception, from July 2010 through March 2011, but the SST anomalies in Area 1 were above average during April, May, and June of 2011 (Table 4). The thermoclines along the equator were somewhat deeper during January-June 2011 than they had been during July-December 2010, indicating the weakening and subsequent disappearance of the anti-El Niño conditions of late 2010 and early 2011. However, the positive SOIs and SOI*s persisted through the first and second quarter of 2011. According to the Climate Diagnostics Bulletin of the U.S. National Weather Service for June 2011, ENSO [El Niño-Southern Oscillation]-neutral [conditions are] most likely [to exist] into the Northern Hemisphere fall [of] 2011, with most models and all multi-model forecasts predicting ENSO-neutral [conditions] to continue through early 2012."

BYCATCH PROGRAM AND AIDCP PROGRAM

Data collection

The IATTC had field offices at Las Playas and Manta, Ecuador; Manzanillo and Mazatlan, Mexico; Panama, Republic of Panama; and Cumaná, Venezuela, during the second quarter of 2011. Members of the field office staffs placed IATTC observers on 120 fishing trips by vessels that participate in the AIDCP On-Board Observer Program during the quarter. In addition, 128 IATTC observers completed trips during the quarter, and were debriefed by field office personnel.]

Observer program

Coverage

The Agreement on the International Dolphin Conservation Program (AIDCP) requires 100-percent coverage by observers on trips by Class-6 purse seiners (vesselsx with fish-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 2011 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 217 fishing trips aboard purse seiners covered by that program during the second quarter of 2011. Preliminary coverage data for these vessels during the quarter are shown in Table 5.

Training

There were no IATTC observer training courses conducted during the second quarter of 2011.

GEAR PROJECT

IATTC staff members did not participate in any dolphin safety-gear inspections or safety-panel alignment procedures aboard purse seiners during the second quarter of 2011.

VISITING SCIENTIST

Dr. Petra Kuhnert, Research Statistician at CSIRO Mathematics, Informatics and Statistics, South Australia, spent the period of 4-8 April 2011 at the IATTC headquarters in La Jolla, where she continued her collaboration with Ms. Leanne M. Duffy and Dr. Robert J. Olson on the development of classification tree methodology for predicting fish diet composition. (CSIRO stands for Commonwealth Scientific and Industrial Research Organisation.) They improved the methodology and applied it to IATTC's diet data for eastern Pacific yellowfin tuna and to CSIRO's diet data for Australian-caught yellowfin tuna. Dr. Kuhnert's travel expenses were paid for by a CSIRO Julius Scholarship awarded to her.

PUBLICATIONS

Maunder, Mark N., and Shelton J. Harley. 2011. Using cross validation model selection to determine the shape of nonparametric selectivity curves in fisheries stock assessment models. Fish. Res., 110 (2): 283-288.

Wexler, Jeanne B., Daniel Margulies, and Vernon P. Scholey. 2011. Temperature and dissolved oxygen requirements for survival of yellowfin tuna, *Thunnus albacares*, larvae. Jour. Exper. Mar. Biol. Ecol., 404 (1-2): 63-72.

ADMINISTRATION

Dr. Jean-François Pulvenis de Séligny joined the IATTC staff on 16 June 2011. He has taken Mr. Brian S. Hallman's position as the person in charge of fishery management. His most recent previous position was Director (since August 2002) of the Fishery and Aquaculture Economics and Policy Division, Fisheries and Aquaculture Department, Food and Agriculture Organization of the United Nations. Previous to that, from 1993 to 2002, he was an IATTC Commissioner from Venezuela.

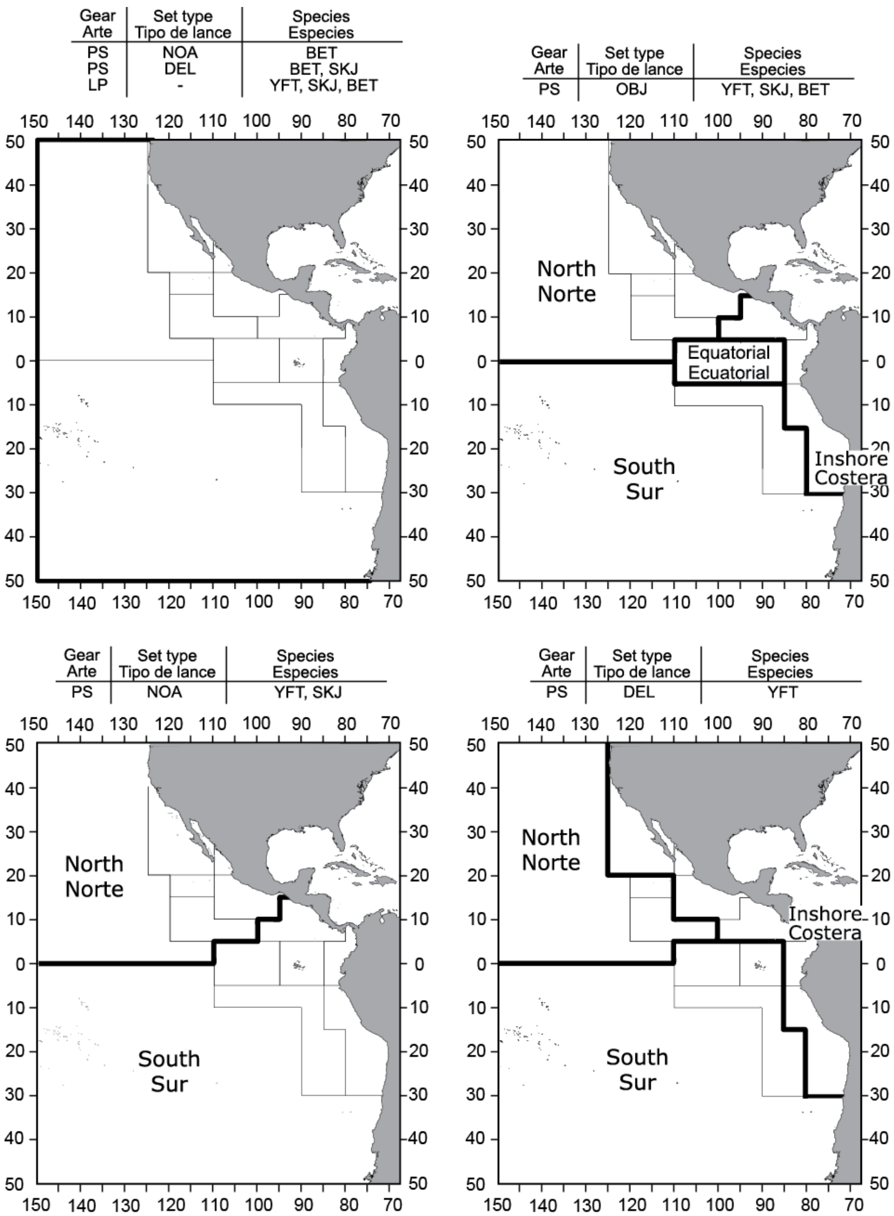

FIGURE 1. Spatial extents of the fisheries defined by the IATTC staff for stock assessment of yellowfin, skipjack, and bigeye in the EPO. The thin lines indicate the boundaries of the 13 length-frequency sampling areas, and the bold lines the boundaries of the fisheries. Gear: PS = purse seine, LP = 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, y patudo 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 = peces no asociados, DEL = delfín; OBJ = objeto flotante; Especies: YFT = aleta amarilla, SKJ = barrilete, BET = patudo.

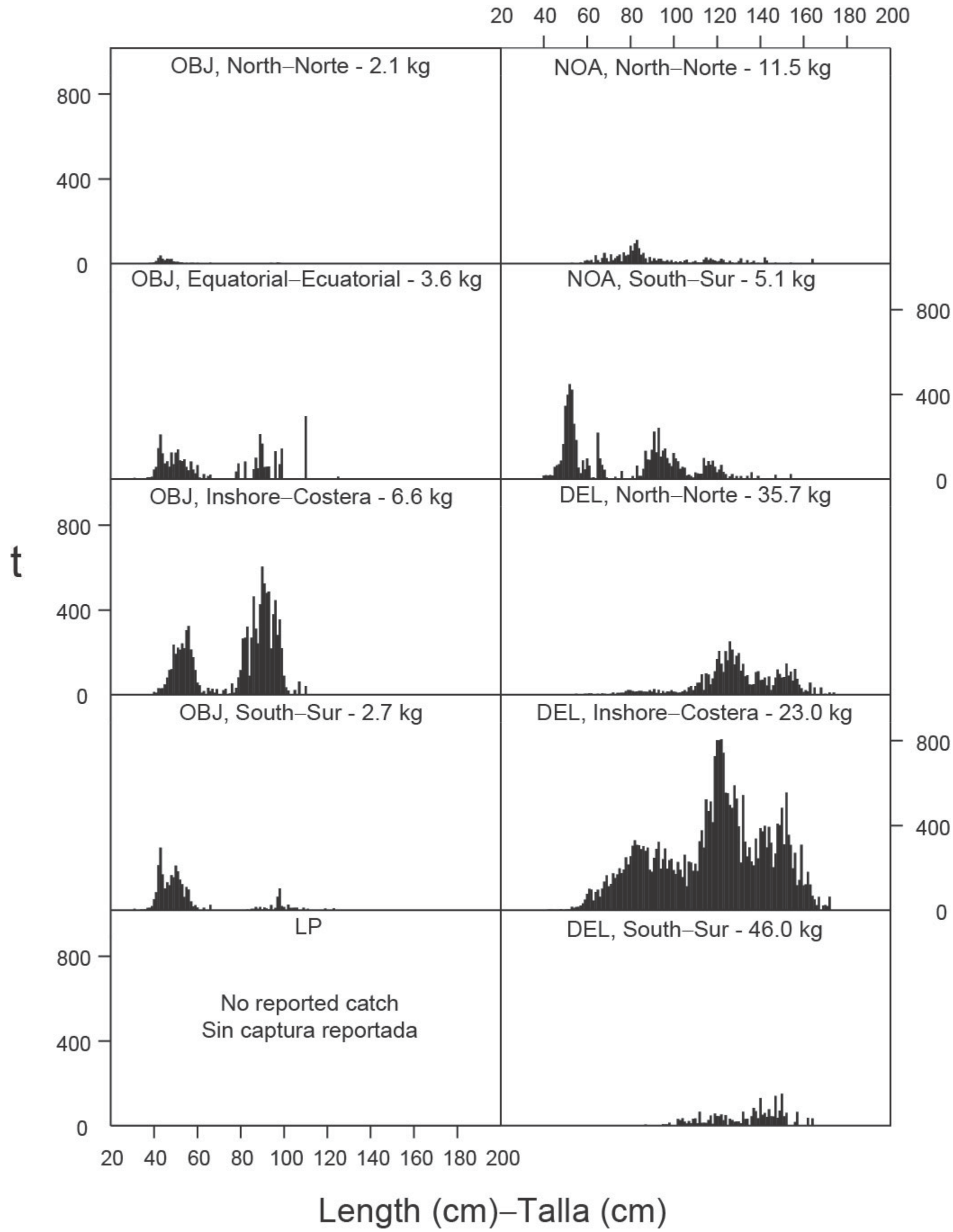

FIGURE 2a. Estimated size compositions of the yellowfin caught in each fishery of the EPO during the first quarter of 2011. The average weights of the fish in the samples are given at the tops of the panels. OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin; t = metric tons.

FIGURA 2a. Composición por tallas estimada para el aleta amarilla capturado en cada pesquería del OPO durante el primer trimestre de 2011. En cada recuadro se detalla el peso promedio de los peces en las muestras. OBJ = objeto flotante; LP = caña; NOA = peces no asociados; DEL = delfín; t = toneladas métricas.

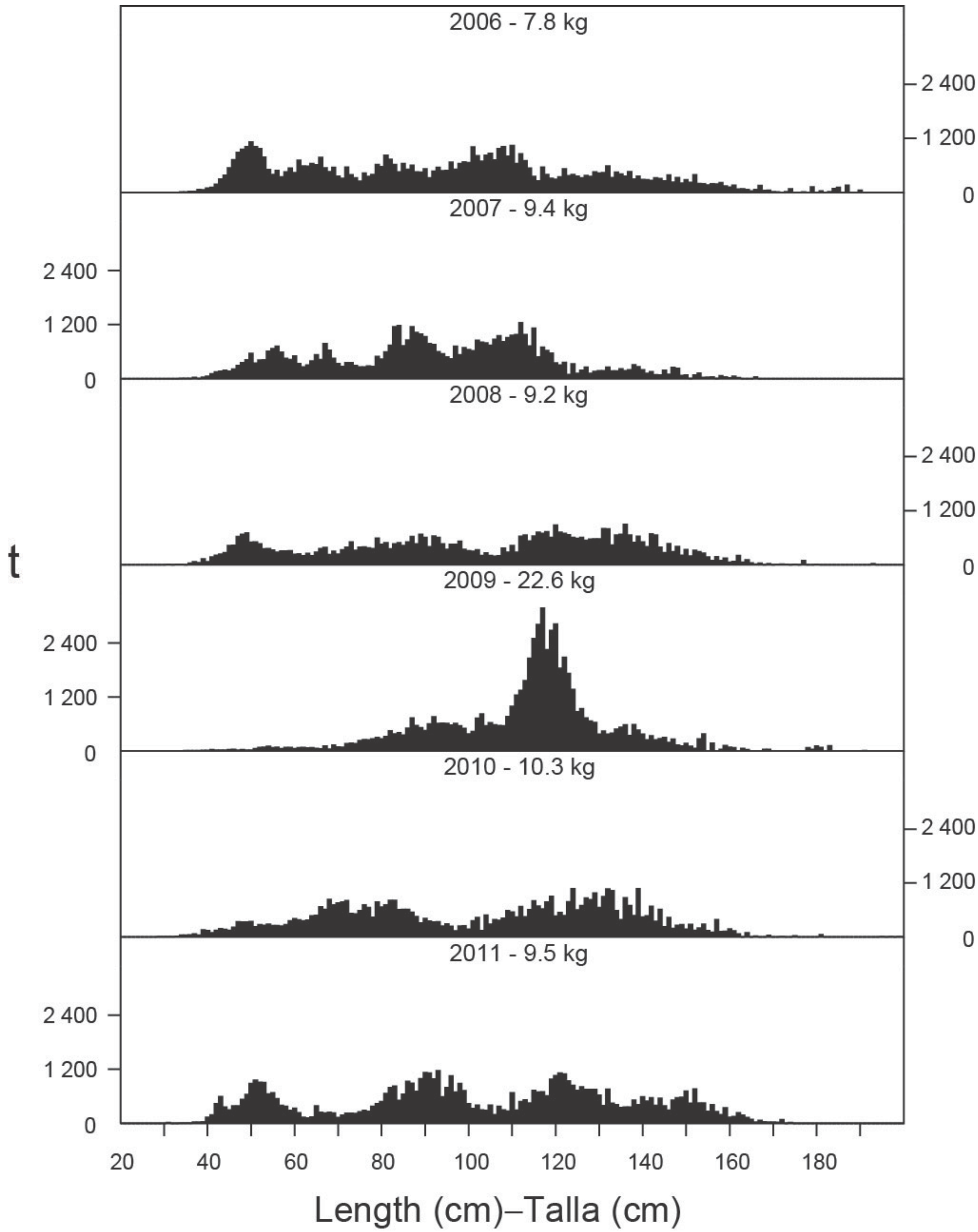

FIGURE 2b. Estimated size compositions of yellowfin tuna caught in the EPO during the first quarter of 2006-2011. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 2b. Composición por tallas estimada para el aleta amarilla capturado en el OPO en el primer trimestre de 2006-2011. En cada recuadro se detalla el peso promedio de los peces en las muestras; t = toneladas métricas.

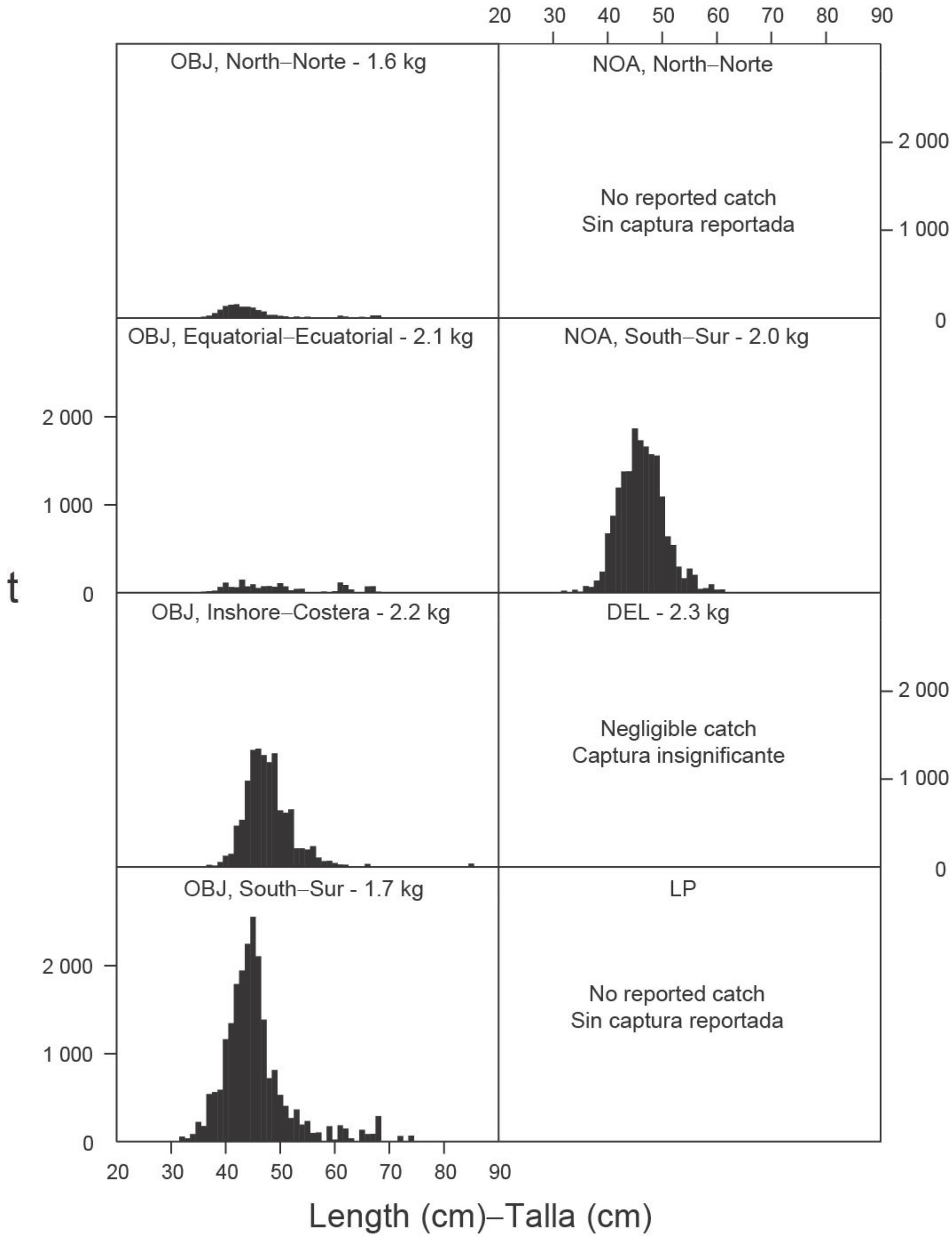

FIGURE 3a. Estimated size compositions of the skipjack caught in each fishery of the EPO during the first quarter of 2011. The average weights of the fish in the samples are given at the tops of the panels. OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin; t = metric tons.

FIGURA 3a. Composición por tallas estimada para el barrilete capturado en cada pesquería del OPO durante el primer trimestre de 2011. En cada recuadro se detalla el peso promedio de los peces en las muestras. OBJ = objeto flotante; LP = caña; NOA = peces no asociados; DEL = delfín; t = toneladas métricas.

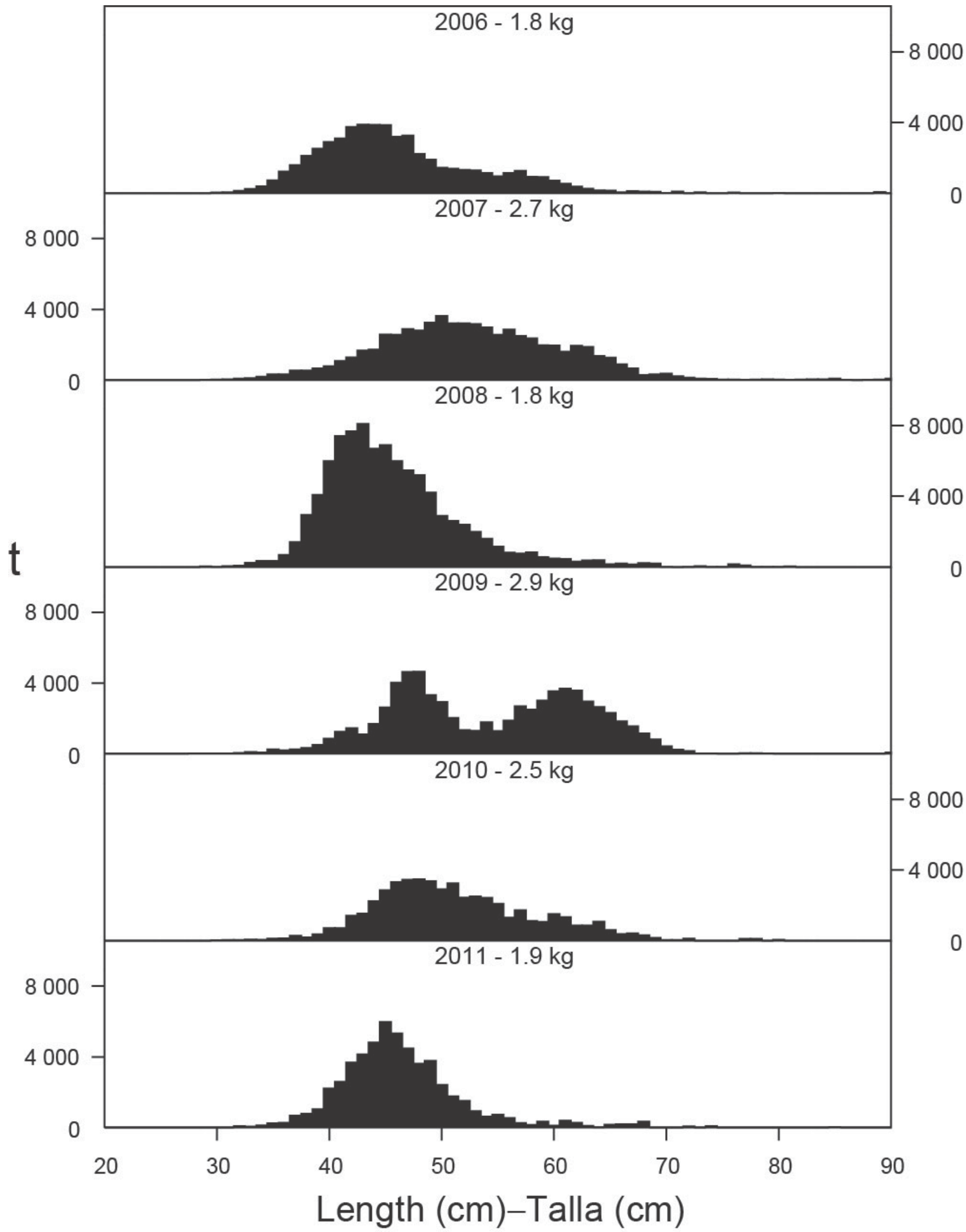

FIGURE 3b. Estimated size compositions of the skipjack caught in the EPO during the first quarter of 2006-2011. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.
FIGURA 3b. Composición por tallas estimada para el barrilete capturado en el OPO en el primer trimestre de 2006-2011. En cada recuadro se detalla el peso promedio de los peces en las muestras. t = toneladas métricas.

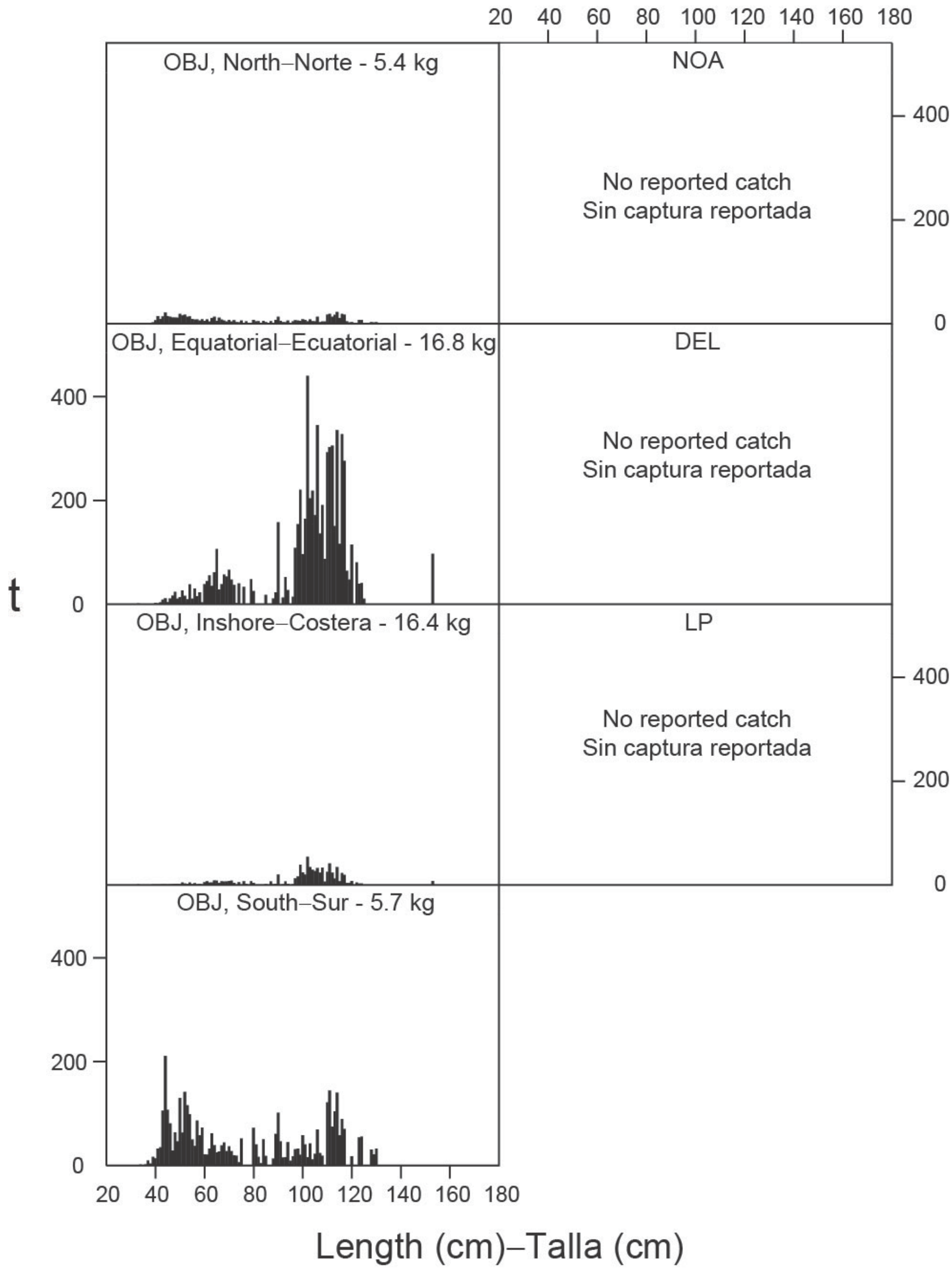

FIGURE 4a. Estimated size compositions of the bigeye caught in each fishery of the EPO during the first quarter of 2011. The average weights of the fish in the samples are given at the tops of the panels. OBJ = floating object; LP = pole and line; NOA = unassociated; DEL = dolphin; t = metric tons.

FIGURA 4a. Composición por tallas estimada para el patudo capturado en cada pesquería del OPO durante el primer trimestre de 2011. En cada recuadro se detalla el peso promedio de los peces en las muestras. OBJ = objeto flotante; LP = caña; NOA = peces no asociados; DEL = delfín; t = toneladas métricas.

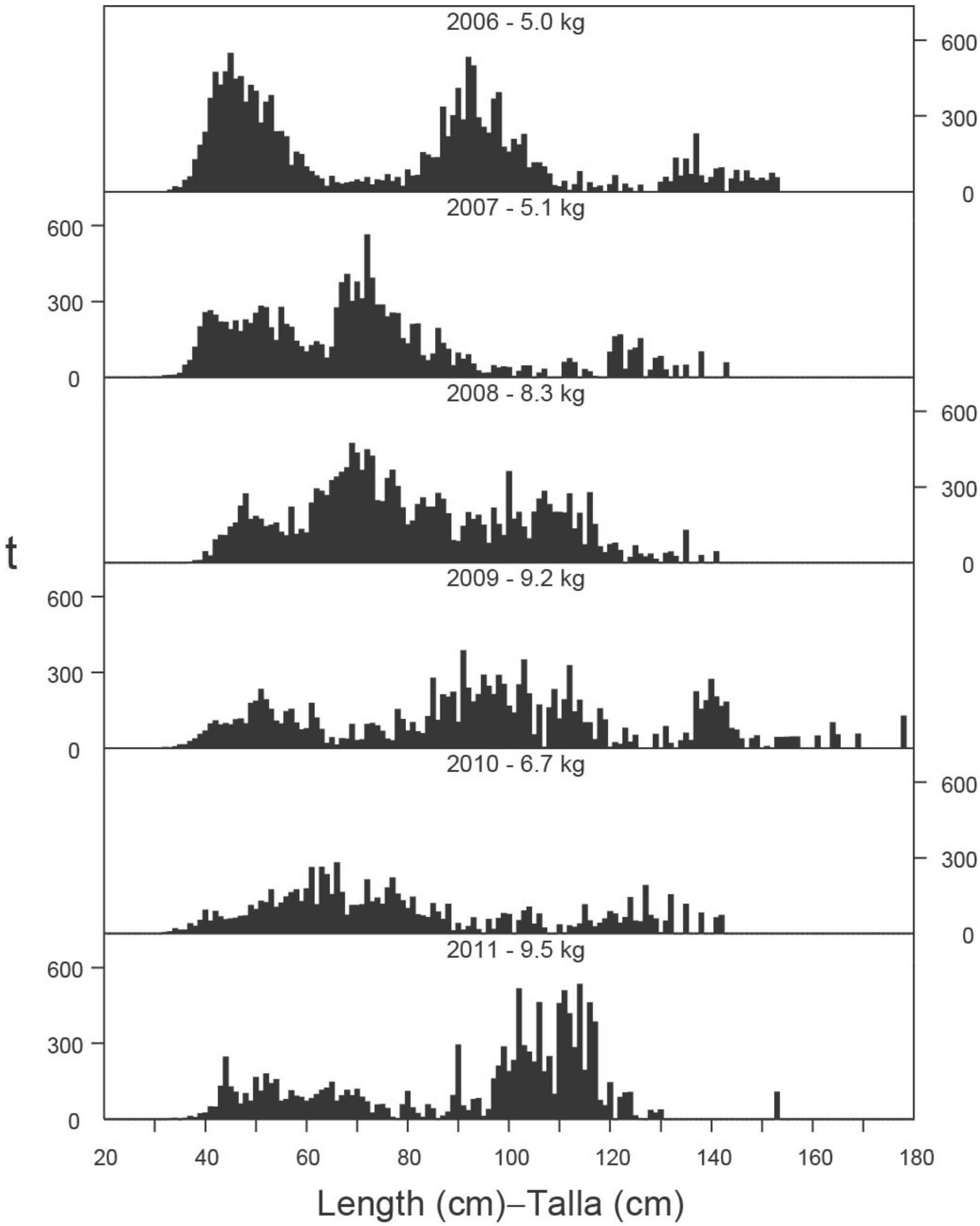

FIGURE 4b. Estimated size compositions of the bigeye caught in the EPO during the first quarter of 2006-2011. The average weights of the fish in the samples are given at the tops of the panels. t = metric tons.

FIGURA 4b. Composición por tallas estimada para el patudo capturado en el OPO en el primer trimestre de 2006-2011. En cada recuadro se detalla el peso promedio de los peces en las muestras; t = toneladas métricas.

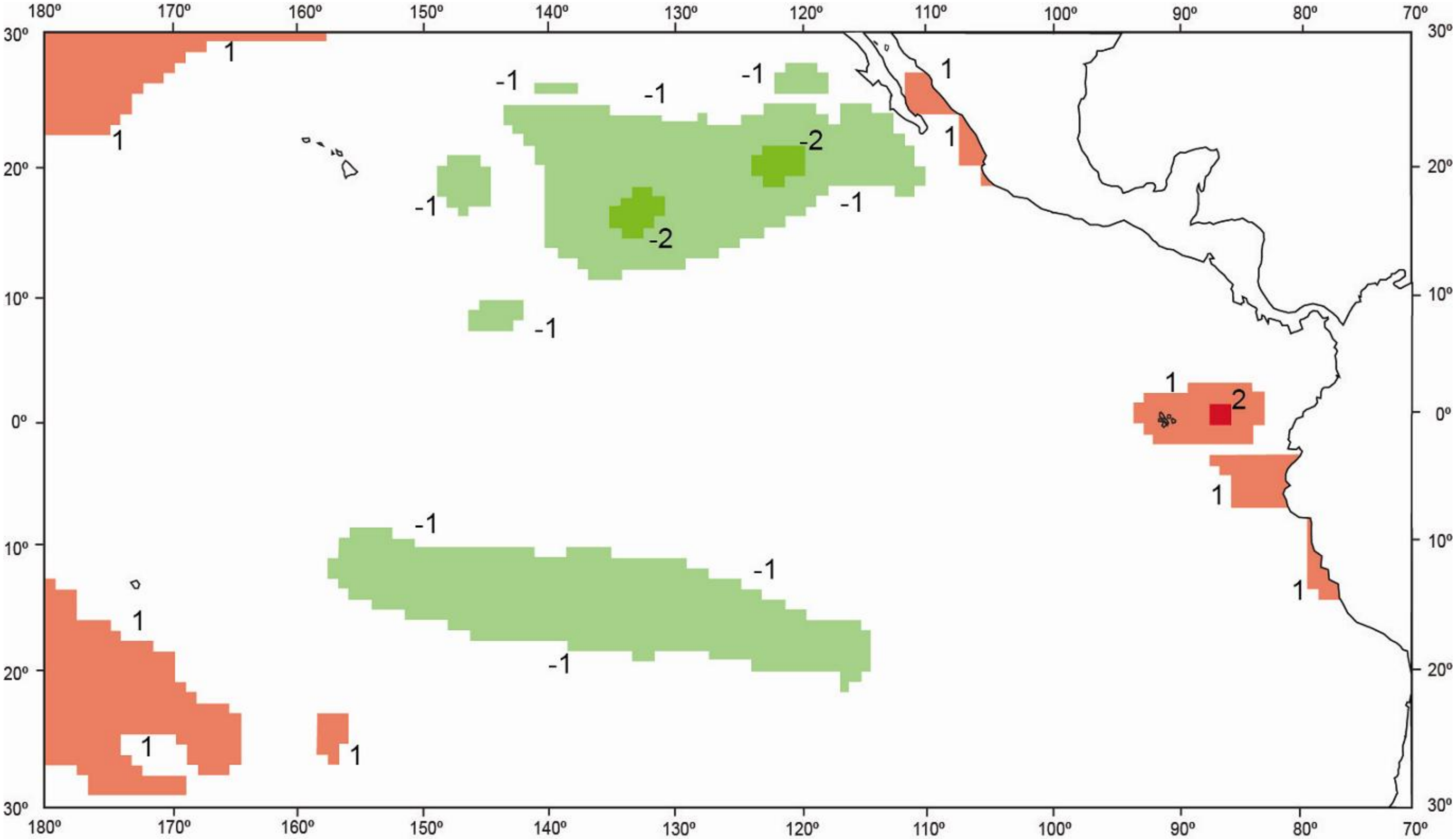

FIGURE 5. Sea-surface temperature (SST) anomalies (departures from long-term normals) for June 2011, based on data from fishing boats and other types of commercial vessels.
FIGURA 5. Anomalías (variaciones de los niveles normales a largo plazo) de la temperatura superficial del mar (TSM) en junio de 2011, basadas en datos tomados por barcos pesqueros y otros buques comerciales.

TABLE 1. Estimates of the numbers and capacities (m^3) of purse seiners and pole-and-line vessels operating in the EPO in 2011 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 del número de buques cerqueros y cañeros que pescan en el OPO en 2011, y de la capacidad de acarreo (m^3) de los mismos 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	Gear	Well volume–Volumen de bodega				Capacity
Bandera	Arte	1-900	901-1700	>1700	Total	Capacidad
			Number—Número			
Belice—Belize	PS	-	1	-	1	1,488
Bolivia	PS	1	-	-	1	222
Colombia	PS	4	10	-	14	14,860
Ecuador	PS	64	14	9	87	63,673
España—Spain	PS	-	-	4	4	10,116
Guatemala	PS	-	2	1	3	4,819
México	PS	9	29	1	39	45,067
	LP	3	-	-	3	255
Nicaragua	PS	-	6	-	6	7,840
Panamá	PS	2	12	4	18	24,701
El Salvador	PS	-	1	3	4	7,415
USA—EE.UU.	PS	-	1	-	1	1,578
Venezuela	PS	-	18	-	18	24,007
Vanuatu	PS	1	2	-	3	3,609
All flags—	PS	81	96	22	199	
Todas banderas	LP	3	-	-	3	
	PS + LP	84	96	22	202	
			Capacity—Capacidad			
All flags—	PS	37,432	125,266	46,697	209,395	
Todas banderas	LP	255	-	-	255	
	PS + LP	37,687	125,266	46,697	209,650	

TABLE 2. Estimates of the retained catches of tunas in the EPO, from 1 January through 3 July 2011, by species and vessel flag, in metric tons.
TABLA 2. Estimaciones preliminares de las capturas retenidas de atunes en el OPO del 1 de enero al 3 de julio 2011, por especie y bandera del buque, en toneladas métricas**.**

Flag	Yellowfin	Skipjack	Bigeye	Pacific bluefin	Bonitos (*Sarda* spp.)	Albacore	Black skipjack	Other[1]	Total	Percentage of total
Bandera	**Aleta amarilla**	**Barrilete**	**Patudo**	**Aleta azul del Pacífi-co**	**Bonitos (*Sarda* spp.)**	**Albacora**	**Barrilete negro**	**Otras[1]**	**Total**	**Porcentaje del total**
Ecuador	18,489	80,778	16,950	-	3	-	35	106	116,361	37.6
México	60,701	5,491	133	451	-	-	1,484	-	68,260	22.0
Panamá	13,527	16,365	3,344	-	-	-	-	63	33,299	10.7
Venezuela	11,975	17,094	34	-	-	-	35	11	29,149	9.4
Other—Otros[2]	25,732	31,184	5,799	-	-	-	-	2	62,717	20.3
Total	130,424	150,912	26,260	451	3	-	1,554	182	309,786	

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

TABLE 3. Preliminary estimates of the catches of bigeye tuna, in metric tons, in the eastern Pacific Ocean during the first and second quarters of 2011 by longline vessels more than 24 meters in overall length.
TABLA 3. Estimaciones preliminares de las capturas de atún patudo, en toneladas métricas, en el Océano Pacífico oriental durante el primero y segundo trimestres de 2011 por buques palangreros de más de 24 metros en eslora total.

	First quarter	Month			Second quarter	Total to date
		4	5	6		
	Primer trimestre	Mes			Segundo trimestre	Total al fecha
		4	5	6		
China	767	247	179	-	426	1,193
Republic of Korea—República de Corea*	2,764	308	258	506	1,072	3,836
Japan—Japón	1,996	-	-	-	-	1,996
Chinese Taipei—Taipei Chino	723	34	-	-	34	757
USA—EE.UU.	-	-	-	-	-	-
Vanuatu	-	-	-	-	-	-
Total	6,250	589	437	506	1,532	7,782

* Round weight obtained by adjustment applied to processed weight—Peso entero obtenido mediante ajuste aplicado al peso procesado provisto

TABLE 4. Oceanographic and meteorological data for the Pacific Ocean, July 2010-June 2011. The values in parentheses are anomalies. SST = sea-surface temperature; SOI = Southern Oscillation Index; SOI* and NOI* are defined in the text.
TABLA 4. Datos oceanográficos y meteorológicos del Océano Pacífico, julio 2010-junio 2011. 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	**7**	**8**	**9**	**10**	**11**	**12**
SST—TSM (°C)						
Area 1 (0°-10°S, 80°-90°W)	20.2 (-1.7)	19.3 (-1.5)	18.9 (-1.6)	19.1 (-1.9)	20.0 (-1.6)	21.4 (-1.5)
Area 2 (5°N-5°S, 90°-150°W	24.6 (-1.0)	23.9 (-1.1)	23.6 (-1.2)	23.3 (-1.6)	23.4 (-1.6)	23.5 (-1.6)
Area 3 (5°N-5°S, 120°-170°W)	26.1 (-0.9)	25.5 (-1.2)	25.1 (-1.6)	25.0 (-1.6)	25.1 (-1.5)	24.9 (-1.5)
Area 4 (5°N-5°S, 150W°-160°E)	28.1 (-0.5)	27.5 (-1.0)	27.1 (-1.4)	27.1 (-1.4)	27.1 (-1.3)	26.9 (-1.4)
Talara, Perú	16.9 (-0.8)	15.9 (-1.7)	15.1 (-2.8)	15.8 (-2.1)	15.9 (-2.2)	15.6 (-3.1)
Callao, Perú	15.0 (-1.2)	14.3 (-1.5)	14.2 (-1.2)	13.9 (-1.3)	13.7 (-2.0)	14.1 (-2.1)
Thermocline depth—Profundidad de la termoclina, 0°, 80°W (m)	30	35	40	40	40	35
Thermocline depth—Profundidad de la termoclina, 0°, 110°W (m)	20	20	15	25	15	10
Thermocline depth—Profundidad de la termoclina, 0°, 150°W (m)	100	100	120	115	120	125
Thermocline depth—Profundidad de la termoclina, 0°, 180°W (m)	170	150	150	185	160	170
Sea level—Nivel del mar, Callao, Perú (cm)	99.0 (-10.6)	94.6 (-12.7)	93.1 (-12.8)	96.5 (-9.3)	95.4 (-11.8)	100.2 (-8.3)
SOI—IOS	1.8	1.8	2.2	1.7	1.3	2.9
SOI*—IOS*	8.65	0.54	2.74	3.98	4.12	6.03
NOI*—ION*	-0.04	0.43	1.17	1.90	4.02	-2.89

Month—Mes	**1**	**2**	**3**	**4**	**5**	**6**
SST—TSM (°C)						
Area 1 (0°-10°S, 80°-90°W)	23.9 (-0.7)	26.0 (0.1)	26.2 (-0.4)	25.8 (0.2)	25.0 (0.8)	23.8 (0.9)
Area 2 (5°N-5°S, 90°-150°W	24.2 (-1.4)	25.5 (-0.9)	26.4 (-0.8)	27.2 (-0.3)	27.0 (-0.1)	26.6 (0.1)
Area 3 (5°N-5°S, 120°-170°W)	24.9 (-1.7)	25.4 (-1.3)	26.2 (-1.0)	27.0 (-0.8)	27.4 (-0.5	27.5 (-0.2)
Area 4 (5°N-5°S, 150W°-160°E)	26.7 (-1.6)	26.9 (-1.2)	27.4 (-0.8)	27.9 (-0.7)	28.3 (-0.5)	28.5 (-0.4)
Talara, Perú	-	-	-	-	-	-
Callao, Perú	-	-	-	-	-	-
Thermocline depth—Profundidad de la termoclina, 0°, 80°W (m)	30	20	10	15	25	25
Thermocline depth—Profundidad de la termoclina, 0°, 110°W (m)	25	50	75	40	55	40
Thermocline depth—Profundidad de la termoclina, 0°, 150°W (m)	120	160	140	140	125	115
Thermocline depth—Profundidad de la termoclina, 0°, 180°W (m)	190	200	200	180	185	180
Sea level—Nivel del mar, Callao, Perú (cm)	-	-	-	-	-	-
SOI—IOS	2.3	2.7	2.5	1.9	0.4	0.2
SOI*—IOS*	3.85	2.00	3.50	4.09	1.27	3.29
NOI*—ION*	5.23	4.64	0.89	3.59	0.95	-0.36

TABLE 5. Preliminary data on the sampling coverage of trips by Class-6 vessels (vessels with fish-carrying 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 second quarter of 2011. The numbers in parentheses indicate cumulative totals for the year.
TABLA 5. Datos preliminares de la cobertura de muestreo de viajes de buque de Clase 6 (buques con capacidad de acarreo de peces mayor a 363 toneladas métricas) por los programas de observadores de la CIAT, Colombia, Ecuador, México, Nicaragua, Panamá, la Unión Europea, y Venezuela durante el segundo trimestre de 2011. Los números entre paréntesis indican los 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	10	(29)	3	(12)	7	(17)	10	(29)	100.0	(100.0)
Ecuador	84	(181)	53	(119)	31	(62)	84	(181)	100.0	(100.0)
España—Spain	4	(9)	2	(4)	2	(5)	4	(9)	100.0	(100.0)
Guatemala	4	(9)	4	(9)			4	(9)	100.0	(100.0)
Honduras	2	(4)	2	(4)			2	(4)	100.0	(100.0)
México	56	(115)	25	(55)	31	(60)	56	(115)	100.0	(100.0)
Nicaragua	6	(13)	2	(7)	4	(6)	6	(13)	100.0	(100.0)
Panamá	19	(47)	9	(22)	10	(25)	19	(47)	100.0	(100.0)
El Salvador	6	(16)	6	(16)			6	(16)	100.0	(100.0)
United States	1	(1)	1	(1)			1	(1)	100.0	(100.0)
Venezuela	21	(50)	9	(25)	12	(25)	21	(50)	100.0	(100.0)
Vanuatu	4	(9)	4	(9)			4	(9)	100.0	(100.0)
Total	217	(483)[1]	120	(283)	97	(200)	217	(483)[1]	100.0	(100.0)

1 Includes 31 trips that began in 2010 and ended in 2011. Does not include1 14 observed trips that fished entirely outside the IATTC jurisdiction during the year (4 trips during this quarter)

1 Incluye 31 viajes iniciados en 2010 y terminados en 2011. No incluye 14 viajes observados en los que se pescó totalmente fuera de la jurisdicción de la CIAT durante el año (4 viajes durante este trimestre)