INTER-AMERICAN TROPICAL TUNA COMMMISSION
COMISION INTERAMERICANA DEL ATUN TROPICAL
QUARTERLY REPORT--INFORME TRIMESTRAL

July-September 2000
Julio-Septiembre 2000

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The

QUARTERLY REPORT

July-September 2000

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.

The Quarterly Reports are sent to the Commissioners, their industry advisors, and a few organizations and individuals with needs for current knowledge of the tuna fishery.

El

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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.

Los Informes Trimestrales son enviados a los Comisionados, a los asesores de la industria, y a algunas organizaciones y personas que necesitan estar al corriente de los acontecimientos de la pesca atunera.

Editor--Redactor:
William H. Bayliff

TUNA-BILLFISH PROGRAM

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

Statistical data from the Commission's field stations are continuously being collected and processed. 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, processed, and verified. The estimates included in the weekly reports are the most preliminary, while those made six months to a year after monitoring of a 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 a vessel's return from a fishing trip. In this report, therefore, the catch-per-unit-of-effort statistics include only the January 1-June 30 period (hereafter called the report period).

Fleet statistics

The estimated total capacity of the vessels that are fishing, or are expected to fish, in the eastern Pacific Ocean (east of 150°W; EPO) during 2000 is about 189,500 cubic meters (m^3) (Table 1). The weekly average at-sea capacity for the fleet, for the weekly periods ending July 10 through October 2, was about 113,900 m^3 (range: 88,500 to 139,800 m^3). Data on the tuna fleet of the EPO are given in Table 2. The changes of flag and additions to and deletions from the IATTC's fleet list for the period of July 10-October 2 are given in Table 3.

Catch and catch-per-unit-of-effort statistics

Weekly report data summaries

The total catches of tunas in the EPO for the January 1-October 2, 2000, period were estimated from weekly report analysis procedures to have been about 211,700 metric tons (mt) of yellowfin, 191,300 mt of skipjack, 62,100 mt of bigeye, and 3,200 mt of bluefin. The averages and ranges for the comparable periods of 1995-1999 are as follows: yellowfin, 212,100 mt (184,200 to 240,400 mt); skipjack, 116,200 mt (80,300 to 220,400 mt); bigeye, 28,300 mt (22,000 to 38,100 mt); bluefin, 2,500 (500 to 6,600 mt). Estimates of the cumulative catches from January 1, 2000, by week, the capacity of the monitored fleet, and the percent of capacity at sea, for the weekly periods ending July 10 through October 2, are listed in Table 4. During this period the average estimated weekly catches of yellowfin, skipjack, and bigeye in the EPO were about 4,300, 2,700, and 1,300 mt, respectively. Summaries of the estimated catches, by flag of vessel, are shown in Table 5.

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. Nearly all of the purse-seine catches of yellowfin, skipjack, and bigeye are made by Class-6 vessels (vessels with carrying capacities greater than 363 mt), and only data for Class-6 purse seiners are included herein for comparisons among years. There are now far fewer baitboats than in previous years, so the baitboat data are combined without regard to size classes. There are no adjustments included for other factors, such as type of set or vessel operating costs and market prices, which might identify whether a vessel was directing its effort toward a specific species. It will be noted that the logged catch data in Tables 6, 7, and 8, referred to below, are considerably less than the

cumulative catch data in Table 4. This is because the cumulative catch data are essentially complete, whereas the logbook data do not include data for current trips, trips of vessels which have recently returned to port and whose logbook data have not yet been entered into the data base, and data for trips of vessels for which logbook data have not been received or which are, for various reasons, unusable.

The catch per day of fishing (CPDF) for yellowfin in the Commission's Yellowfin Regulatory Area (CYRA) by purse seiners during the 2000 report period is estimated to have been about 10.1 mt, which is lower than the range of rates observed during the 1995-1999 report periods (10.6 to 14.2 mt) (Table 6). The CPDF of yellowfin in the CYRA by baitboats during the 2000 report period is estimated to have been about 1.4 mt, which falls within the range of rates observed during the 1995-1999 report periods (range: 1.0 to 3.2 mt) (Table 6).

During the 1995-1999 report periods the CPDF of yellowfin by purse seiners north of 5°N ranged from about 15.3 to 19.4 mt, averaging about 17.2 mt, whereas south of 5°N it ranged from about 3.8 to 6.9 mt, averaging about 5.9 mt. Preliminary estimates for 2000 show the CPDFs of yellowfin north and south of 5°N to have been about 14.9 and 8.1 mt, respectively.

The CPDF of skipjack in the EPO by purse seiners during the 2000 report period is estimated to have been about 10.4 mt, which is greater than any of the rates observed during the 1995-1999 report periods (3.3 to 9.8 mt) (Table 7). The CPDF of skipjack in the EPO by baitboats during the 2000 report period is estimated to have been about 0.7 mt, which is within the range of rates observed during the 1995-1999 report periods (range: 0.3 to 3.2 mt) (Table 7).

In general, the greatest catches of skipjack are taken in waters south of 5°N. During the 1995-1999 report periods the CPDF of skipjack by purse seiners south of 5°N averaged about 9.3 mt (range: about 5.5 to 22.1 mt), whereas north of 5°N it averaged about 1.6 mt (range: about 0.9 to 2.6 mt). Preliminary estimates for 2000 show the CPDFs of skipjack south and north of 5°N to have been about 15.3 and 3.8 mt, respectively.

The CPDF of bigeye in the EPO by purse seiners during the 2000 report period is estimated to have been about 3.1 mt, which is greater than the range of the values for the 1997-1999 report periods (0.8 to 1.6 mt) (Table 8).

Size compositions of the surface catches of tunas

The methods for sampling the catches of tunas have been changed, beginning on January 1, 2000, as described in the IATTC Quarterly Report for April-June 2000. Briefly, the fish in a well of a purse seiner or baitboat 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), based on the staff's most recent stock assessments. Data for fish caught during the second quarter of 2000 are presented in this report.

There are ten surface fisheries for yellowfin defined for stock assessments: four floating-object, two unassociated school, three dolphin, and one baitboat (Figure 1). Of the 197 wells sampled, 153 contained yellowfin. The estimated size compositions of these fish are shown in Figure 2. The majority of the yellowfin catch was taken in dolphin sets in Areas H and I. The catch taken in sets on unassociated schools made up a smaller portion of the total yellowfin catch than during the first quarter. The average weight of the fish caught in association with dolphins was more than twice that of those caught in the other two types of sets.

The estimated size compositions of the yellowfin caught by all fisheries combined during the second quarter of 1995-2000 are shown in Figure 3. The size ranges of the fish were similar in all six years, but the size distributions differed among years. Yellowfin less than 100 cm in length made up a smaller portion of the catch of second-quarter than of that of the first quarter.

There are eight fisheries for skipjack defined for stock assessments: four floating-object, two unassociated school, one dolphin, and one baitboat. The last two fisheries include all 13 sampling areas. Of the 197 wells sampled, 116 contained skipjack. The estimated size compositions of these fish are shown in Figure 4. The majority of the fish was taken in sets on unassociated schools in Area G and in floating-object sets in Area C. The estimated catches of skipjack taken by baitboats, in dolphin sets, and in sets on unassociated schools in Area F were too small to show in the graphs.

The estimated size compositions of the skipjack caught by all fisheries combined during the second quarter of 1995-2000 are shown in Figure 5. The average weight of the fish caught during the second quarter of 2000 was greater than that of the fish caught during the second quarter of any of the previous five years. The same was also true for the fish caught during the first quarter.

There are seven surface fisheries for bigeye defined for stock assessments: four floating-object, one unassociated school, one dolphin, and one baitboat. The last three fisheries include all 13 sampling areas. Of the 197 wells sampled, 59 contained bigeye. The estimated size compositions of these fish are shown in Figure 6. As was the case for the first quarter, the majority of the bigeye was caught in sets made on floating objects in Area C. A small amount of bigeye was caught in sets on unassociated schools. There were no recorded catches of bigeye in dolphin sets or by baitboats.

The estimated size compositions of the bigeye caught by all fisheries combined during the second quarter of 1995-2000 are shown in Figure 7. The average weights of the fish caught during the first and second quarters of 2000 were considerably greater than those of the fish caught during the first and second quarters of any of the previous years.

Pacific bluefin are caught by surface gear off California and Baja California from about 23°N to 35°N, with most of the catch being taken during May through October. During 2000 bluefin were caught between 27°N and 37°N, and most of the catch was taken during June, July, and August. Length-frequency histograms of the bluefin catches will be presented in the Quarterly Report for October-December 2000.

Tuna tagging

Tropical tunas

Some initial results of the bigeye tuna pilot tagging project in the equatorial EPO, conducted during March to May 2000, are provided in the IATTC Quarterly report for April-June 2000. The following is an update on the project, including preliminary results based on recoveries of conventional and archival tags, as of the end of September 2000.

The most current information, as of the end of September, on recoveries of tagged tunas is as follows:

Species	Tag type	Released	Returned	Percent returned
Bigeye	conventional	101	13	12.9
Bigeye	archival	96	21	21.9
Skipjack	conventional	1,238	251	20.3
Yellowfin	conventional	71	7	9.9

Most of the returns to date are from fish caught by purse-seine vessels during sets on fish-aggregating devices (FADs) in the equatorial EPO. The especially noteworthy recoveries include a bigeye with an archival tag recaptured by a longline vessel and 26 skipjack (10.4 percent of the total returns of this species) recaptured in unassociated schools of tunas. The high percentage of conventional tags returned thus far from recaptured skipjack is partially attributable to a single purse-seine set on a FAD in which 148 tagged skipjack were recaptured; 126 of these fish had been tagged and released together, 18 days previously, about 47 nautical miles (nm) from the recapture location. The other 22 had been tagged and released during four other tagging events at FADs, which occurred 17 to 37 days previously and 52 to 137 nm from the recapture location.

The percentages of the returns of skipjack and bigeye, by months at liberty, are shown in Figure 8. The percentages peaked at 1 and 2 months, respectively.

The displacements of bigeye and skipjack, by days at liberty, are shown in Figure 9. Although the data are limited, there appear to be positive relationships between the days at liberty and displacement for both species. Both bigeye and skipjack at liberty more than 60 days had moved distances in excess of several hundred nautical miles. Currently, 97 percent of the recapture locations for bigeye and 99 percent of those for skipjack have been within 1,000 nm of the points of release.

The displacements for recaptured bigeye and skipjack, illustrated as directions and distances in excess of 100 nm from the points of release, are shown in Figure 10.

Nineteen of the twenty-one archival tags recovered from bigeye have been received at the IATTC headquarters in La Jolla, and the data for eighteen of these have been successfully downloaded and processed. The light intensity data have been processed with computer programs supplied by the manufacturer of the tags that provide estimates of the latitudes and longitudes of the fish, and ranges of uncertainty for those estimates. The accuracy of the estimates of latitude and longitude has been evaluated by calculating the differences between the known recapture positions for 17 bigeye at FADs and the corresponding estimates for the day of recapture. The mean difference for latitude is 1.5° (range: 0.2° to 4.8°), and that for longitude is 0.3° (range: 0.0° to 1.1°).

The archival tag data for each fish provide detailed information on daily movements and body temperatures of the fish, and the depths, ambient temperatures, and light levels experienced by them. The horizontal movements for two bigeye released at separate FADs within the same 1-degree area are shown in Figure 11. The first fish, released on April 15, when it was 113 cm long, was at liberty for 112 days. The second fish, released on April 16, when it was 115 cm long, was at liberty for 129 days. The estimates of the daily locations are plotted only for the days in which the ranges of uncertainty associated with latitude were less than or equal to 3 degrees in each direction. This resulted in 70 and 56 percent of the daily positions being plotted for the first and second fish, respectively.

Archival tags have two important advantages over conventional tags. First, archival tags can provide information on the locations of the fish at daily intervals between its release and its recapture, whereas conventional tags provide information only on the locations of release and recapture. If a fish spends time in areas where there are no fisheries, that fact can be ascertained from data provided by an archival tag, but not from data provided by a conventional tag. Second, archival tags provide information on the depths, body temperatures, and ambient temperatures at frequent intervals between a fish's release and recapture, whereas such data are not provided by conventional tags.

Current analyses of the archival tag data include evaluations of horizontal and vertical movements, classification and analyses of different behavioral patterns, including FAD associations, assessment of environmental preferences, and definition of bigeye tuna habitat in the equatorial EPO. In addition, work is in progress to provide animated displays of the horizontal and vertical movements of bigeye tuna, relative to their environment, based on the archival tag data and ancillary environmental data sets, for improved visualization and interpretation of these data.

Bluefin tuna

The IATTC staff now has 11 returns of bluefin from those tagged by personnel of the Monterey Bay Aquarium in July 1999. Seven of them were recaptured off Baja California, three during 1999 and four during 2000. The other four were recaptured by Japanese purse seiners in the western Pacific Ocean during 2000.

Personnel of the Monterey Bay Aquarium tagged nine more bluefin off Baja California in August 2000, again using IATTC tags.

Another bluefin released with an archival tag near Japan has been recaptured in the eastern Pacific Ocean. The fish was released at 34°49'N-129°13'E on November 26, 1998, when it was 53.5 cm long. It was recaptured by the purse seiner *Barbara H*. at 35°26'N-121°32'W on September 24, 2000, at which time it was 92.5 cm long. Information on another bluefin with an archival tag that went from the western to the eastern Pacific is given in the IATTC Quarterly Report for July-September 1998.

Early life history studies

Joint OFCF-Panama-IATTC project

Yellowfin broodstock

The yellowfin broodstock in Tank 1 (1,362,000 L) at the Achotines Laboratory spawned daily during July, August, and September. The water temperatures in the tank ranged from 27.3° to 28.8°C during the quarter. The numbers of eggs collected after each spawning event ranged from about 14,000 to 815,000. Spawning occurred as early as 5:37 p.m. and as late as 7:15 p.m.

There were two mortalities (a 24- and a 32-kg fish) in Tank 1, and at the end of the quarter there were 2 giant (85-95 kg), 8 large (25-39 kg), 6 medium (13-17 kg), and 11 small (9-12 kg) yellowfin in the tank.

Throughout the quarter the two 170,200-L capacity reserve broodstock tanks (Tanks 2 and 6) were stocked with captured yellowfin, and at the end of the quarter there were 21 5- to 7-kg fish in the two tanks. During the fourth quarter the fish in Tanks 2 and 6 will be used in a diet comparison study.

Rearing of yellowfin eggs, larvae, and juveniles

During the quarter the following parameters were recorded for each spawning event: time 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.

Several groups of yellowfin larvae were reared beyond juvenile metamorphosis. The greatest time that a yellowfin was reared during the quarter was 6 weeks after hatching. In August a preliminary diet comparison trial was conducted with two groups of early juveniles, ranging in age from 27 to 33 days after hatching (15 to 38 mm SL), each in a 2.4-m diameter, 4,800-L capacity tank. The fish of one group were fed freeze-dried thread herring, *Opisthonema* spp., and squid, *Loligo* spp., and those of the other were fed minced, previously-frozen thread herring and squid, supplemented with a small amount of freeze-dried copepods. The growth over 3 to 7 days of feeding was observed. At the end of the quarter another group of early juveniles was being prepared for a longer-term feeding trial to compare the same two diets.

Experiments with yellowfin larvae

A 7-day experiment to determine the combined effects of microturbulence and larval density on the survival, growth, and production of yellowfin larvae was completed during the quarter. (The "production" for a tank is the total weight of fish in the tank at the end of the experiment, multiplied by the survival rate of the fish during the experiment.) The experiment was similar to other experiments conducted during 1998 and 1999. In the earlier experiments, microturbulence and larval density effects were studied separately, and it was determined that (1) there was an optimal range of turbulence for the survival of larval yellowfin, with the highest survival occurring at medium to semi-high levels of turbulence, and (2) yellowfin larvae exhibit pronounced density-dependent growth during the first week of feeding. In the current study, yellowfin larvae were exposed to different combinations of turbulence and larval density to study the interactive effects of these factors on the growth and survival of yellowfin larvae. The turbulence levels that were used in the current study were either low or semi-high, and the larval densities used were either low or high. All four combinations of these factors were used, and each combination was replicated, so eight tanks were used. Each of the tanks was 1.2 m in diameter, and nested within a 1.5-m diameter tank to control the ambient water temperatures within the 1.2-m tanks. The turbulence in each tank was controlled by the level of aeration, and daily measurements of the water velocities were made in each tank with a micro acoustic Doppler current meter, which measures the water velocities in three dimensions simultaneously. The larvae were initially fed enriched rotifers (300-2,000 per liter), and then enriched brine shrimp nauplii (200-500 per liter) were introduced into the diet on the sixth day of feeding. The water temperatures ranged from 26.7° to 27.9°C during the experiment. Larvae from each tank were sampled every 2 days, some to obtain length measurements and dry weights from fresh specimens and others to preserve in formalin for use in examining the feeding parameters. These latter will be measured, their stomachs dissected, and the contents enumerated and measured. The number of survivors in each tank after 7 days of feeding was calculated. The survival, growth, and production of the larvae will be analyzed relative to the turbulence levels and larval densities in the tanks, and the results will be compared to those of the turbulence and density experiments conducted during 1998 and 1999.

It has been assumed, from the results of a few published studies, that tuna larvae feed only during daylight hours. To test this assumption, a 7-day experiment to examine the diel feeding abilities of yellowfin larvae was conducted during July. The larvae were reared in a 1.2-

m diameter tank nested within a 1.5-m diameter tank. The larvae were exposed to a simulated daily natural photoperiod, using fluorescent lighting. Stepped levels of light were presented daily from 8:15 a.m. to 6:00 p.m., while no lighting was present from 6:00 p.m. to 8:15 a.m. The larvae were initially fed enriched rotifers (300-2,000 per liter), and then enriched brine shrimp nauplii (200-500 per liter) were introduced on the sixth day of feeding. The water temperatures in the tank ranged from 26.3° to 27.9°C during the experiment. Larvae were sampled over two 36-hour periods. The first and second samplings took place on Days 1 and 2 and on Days 6 and 7 of feeding, respectively. During each 36-hr sampling period, larvae were sampled from the tank at intervals of 1-4 hours. At each sampling interval, light measurements were recorded within the tank. The samples were preserved in formalin, and will be analyzed to determine the incidence of feeding and the gastric evacuation rates under simulated natural photoperiod conditions.

Studies of snappers and corvina

The spotted rose snapper (*Lutjanus guttatus*) broodstock, which began to spawn at the end of May 2000, continued to spawn throughout the third quarter. A group of 70 fish, hatched in captivity in October 1998, is being held in two 12,000-L tanks. At the beginning of the quarter, their feeding was reduced to once every two days to reduce their fat content and induce spawning. On average, these fish were about 37 cm long, and weighed about 700 g, at the end of the quarter.

One group of 125 juvenile polla drum (*Umbrina xanti*), hatched in captivity in July 1999, is being held in a 12,000-L tank. These fish are about 23 cm long and weigh about 150 g, on average. These fish will be used as broodstock.

At the end of the quarter 12 white corvina or Stoltzman's weakfish (*Cynoscion albus* or *C. stolzmani*) were being held in Tank 3 (85,000 L). Six fish died during the quarter, due to infections or starvation, and one other jumped out of the tank. None of these fish has spawned yet.

Oceanography and meteorology

Easterly surface winds blow almost constantly over northern South America, which causes upwelling of cool, nutrient-rich subsurface water along the equator east of 160ºW, in the coastal regions off South America, and in offshore areas off Mexico and Central America. El Niño events are characterized by weaker-than-normal easterly surface winds, which cause above-normal sea-surface temperatures (SSTs) and sea levels and deeper-than-normal thermoclines over much of the eastern tropical Pacific (ETP). 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.

In the ETP the third quarter of most years is a transition period during which the ocean and atmosphere approach their average seasonal circulation patterns. During this period the SST anomalies are usually small and the southerly winds of the northern summer monsoon begin to weaken and shift to blow from the north and east during the northern winter monsoon. In addition, the ocean currents go through changes in strength and direction as a result of changes in the vertical temperature structure of the ocean and in the surface winds. During this transition period

major tropical events, such as El Niño and anti-El Niño episodes, also experience some degree of weakening. By the austral summer (November to February) the El Niño episodes that had become established earlier will strengthen, whereas the anti-El Niño events will usually continue to weaken. In the latter case, the SSTs, sea level, thermocline depth, and vertical temperature structure in the Northern Hemisphere will all tend to return toward normal.

During the second quarter of 2000 the persistent anti-El Niño episode, which contributed to the excellent ocean fishing conditions for tunas over the past two years, was slowly coming to an end. The larger areas of the central equatorial Pacific with SSTs more than 1°C below normal that existed during the first quarter persisted during the second quarter. In the ETP, however, the areas of the negative anomalies were diminished in size. Scattered areas of SSTs 1°C below normal along the coasts of Ecuador and Peru were the remaining vestiges of the anti-El Niño event. There was also a small area of SSTs 1°C to 2°C above normal along the equator west of the Galapagos Islands. Over the remainder of the ETP the SSTs were near normal. The thermocline continued to deepen, to 60 to 80 m, which is near the normal depth for this area. In addition, the SOI values for the second quarter decreased from 1.2 in April to 0.2 in May to -0.6 in June. The indices for May and June were the lowest since September 1999. The low SOI values were consistent with the low wind speeds that occurred east of 120°W, especially in the equatorial region, where the upwelling was apparently reduced.

By the end of the third quarter of 2000 the oceanic and atmospheric conditions had returned to near-normal in the ETP, which was a strong indication that the long-enduring anti-El Niño episode had finally come to an end. The SST anomaly pattern in the eastern and central Pacific Ocean during August 2000 is shown in Figure 12. The patterns for July and September were similar to those of August. In this figure it can be seen that the areas with SSTs more than 1°C below normal occupied much smaller portions of the equatorial region between 5°N and 5°S from 120°W to 155°W than during the first half of the year (IATTC Quarterly Reports for January-March and April-June 2000, Figures 14 and 10, respectively). Small negative SST anomalies along the coasts of Ecuador and Peru became small positive anomalies by the end of the quarter. The SSTs over much of the Commission's Yellowfin Regulatory Area were, on average, closer to normal than during the first half of the year. The thermocline remained at depths of 40 to 60 m, which was about 10 m closer to the sea surface than normal, and the sea level was, on average, within 5 cm of its normal level over most of the ETP. The return to normal of the thermocline and sea level were also good indicators that the ETP was as nearly normal as could be expected. The SOI increased from -0.4 in July to 0.4 in August, and then to 1.0 in September, however, indicating an increase in the anti-El Niño episode which was not consistent with the weaker-than-normal the easterly winds during the quarter.

During the fourth quarter of 2000 conditions are expected to be normal over most of the ETP. Because of the very long duration of the recent anti-El Niño episode (nearly two years), however, favorable ocean conditions for fishing will probably persist into the fourth quarter. A new El Niño episode will probably not develop before the end of the year because of the residual effect of a weakened anti-El Niño, and the SSTs over some parts of the ETP north of the equator may remain slightly below normal.

TUNA-DOLPHIN PROGRAM

Data collection

The design for placement of observers during 2000 calls for 100-percent coverage of fishing trips in the eastern Pacific Ocean (EPO) by Class-6 purse seiners (over 363 metric tons

carrying capacity). Mexico's national observer program, the Programa Nacional de Aprovechamiento del Atún y de Protección de Delfines (PNAAPD), is to sample half of the trips by vessels of its fleet, while IATTC observers are to sample the other half of those trips. Venezuela's national observer program, the Programa Nacional de Observadores de Venezuela (PNOV), began placing observers on vessels of its fleet during the first quarter, and had increased its coverage during the second quarter to approximately 50 percent, where it is to remain for the rest of the year. The IATTC is sampling the other half of those trips, and will continue to have the responsibility for sampling all trips of Class-6 vessels registered in other nations that fish for tunas in the EPO.

During the third quarter of 2000 IATTC, PNAAPD, and PNOV observers departed on 151 fishing trips aboard Class-6 purse seiners. Preliminary coverage data for these vessels during the quarter are shown in Table 9.

Training

There were no IATTC observer training courses held during the third quarter.

Gear program

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

National observer programs

An IATTC staff member spent the period of July 9-15, 2000, in Caracas and Cumaná, Venezuela, where he assisted the staff of the Fundación para la Pesca Sostenida y Responsable de Túnidos (FUNDATUN) in the incorporation of data entry and editing programs and data bases which were originally developed for use by the IATTC staff. FUNDATUN is the organization responsible for the management of the Programa Nacional de Observadores of Venezuela (PNOV), and the IATTC is supporting its efforts to establish and maintain the program.

The computer programs and data base structures that are being shared with FUNDATUN include those used to enter and edit the observer trip logs, bycatch, turtle, and flotsam data bases, and the programs and data structures used to track fleet data. By implementing and maintaining identical table structures and editing standards, it is hoped that a complete exchange of comparable-quality data will be available to both organizations for all trips of Venezuelan-flag vessels.

Two IATTC staff members spent the period of September 18-October 5, 2000, in Guayaquil, Ecuador, where they participated in the training of personnel for the new Ecuadorian observer program, the Programa Nacional de Observadores Pesqueros de Ecuador (PROBECUADOR). Sampling under the new program would be initiated aboard Ecuadorian-flag vessels in November, with a goal of 25-percent sampling coverage by the end of 2000, and increasing the coverage to 50 percent during 2001. The IATTC program will sample the remainder of the trips of Ecuadorian vessels.

FIELD STATION ACTIVITIES

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

Personnel at these stations and in La Jolla collected 158 length-frequency samples and abstracted the logbook information for 426 trips of fishing vessels during the third quarter of 2000.

Also, during the third quarter members of the field staffs placed IATTC observers on 121 fishing trips by vessels that participate in the on-board observer program. In addition, 134 IATTC observers completed trips during the quarter, and were debriefed by field staff members at their assigned stations.

MEETINGS

IATTC meetings

Permanent Working Group on Fleet Capacity

The fourth meeting of the Permanent Working Group on Fleet Capacity was held in Panama, R.P., on July 31-August 2, 2000. Ing. Arnulfo Franco of Panama presided at the meeting, which was attended by representatives of all the member governments, plus observers from Colombia, the European Community, Honduras, Peru, Spain, the Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA), Conservation International-Mexico, and the World Wildlife Fund. The working group considered several proposals to manage the size of the purse-seine fleet operating in the EPO. A resolution to acknowledge the commitment to establish a limit on the total capacity of the fleet was agreed to by correspondence on August 19, 2000. This resolution is available on the IATTC's web site, www.iattc.org.

Working Group on the IATTC Convention

The fifth meeting of the Working Group on the IATTC Convention was held in La Jolla on September 11-16, 2000. Amb. Jean-François Pulvenis of Venezuela presided at the meeting, which was attended by representatives of all the member governments and of the European Union, Honduras, Peru, Taiwan, and the World Wildlife Fund. The group continued its discussion of the revised Chairman's text of the Convention and of some issues left pending from its previous meetings; also, some new proposals were made. The members of the Group agreed to meet again in March 2001, and set June 2001 as a target date for presenting an agreed draft text to the Commission.

Other meetings

Dr. Mark N. Maunder participated in the 13th meeting of the Standing Committee on Tuna and Billfish (SCTB) in Noumea, New Caledonia, on July 5-12, 2000, where he presented his assessment of yellowfin in the EPO, and also assessments of bigeye on behalf of Dr. George M. Watters and swordfish on behalf of Dr. Michael G. Hinton.

Dr. Hinton also participated in the 13th meeting of the SCTB, including working groups on fisheries statistics and data and on fisheries oceanography. He was in Noumea during the July 2-8 period. He also participated in the Third ICCAT Billfish Workshop in Miami, Florida, USA, on July 18-28, 2000.

Dr. Cleridy E. Lennert-Cody spent the period of August 21-September 2, 2000, in St. Andrews, Scotland, where she participated in a workshop on distance-sampling methods. In addition, she spent some time there working with Dr. Stephen T. Buckland, a former employee of the IATTC and now a member of the faculty of the University of St. Andrews, and Ms. Fernanda Marques, a graduate student at that university, on revision of the IATTC's current methodology for estimating the relative abundances of dolphin species and stocks in the EPO.

Dr. Robin L. Allen and Mr. Brian S. Hallman participated in the seventh and final session of the Multilateral High Level Conference on the creation of a commission for international management of tunas in the western and central Pacific. The meeting took place in Honolulu, Hawaii, on August 26-September 6, 2000. The conference adopted the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. Before the Convention enters into force, a Preparatory Conference will be responsible for a range of initial matters, including the consideration of management measures for yellowfin, skipjack, bigeye, and South Pacific albacore in the Convention area.

Dr. Martín A. Hall participated in the IV Jornadas Nacionales de Ciencias del Mar, held in Puerto Madryn, Argentina, on September 11-15, 2000. This meeting was organized by the Centro Nacional Patagónico and the Universidad Nacional de la Patagonia San Juan Bosco. His presentation at the meeting was entitled Alternativas para el manejo de problemas de capturas incidentales [Alternatives for managing bycatch problems].

Dr. Mark N. Maunder spent the period of September 19-October 4, 2000, in the Seychelles, where he participated in a meeting of the tropical tuna working group of the Indian Ocean Tuna Commission.

PUBLICATION

Schaefer, Kurt M. 2000. Projecto conducido por la CIAT. Atún Mar, 4 (6): 34-35.

ADMINISTRATION

Ms. Nora Roa-Wade, who had been on maternity leave since March 2000, returned to work in July. Ms. Teresa Musano returned to work (part-time) in August, after four months of maternity leave. She is helping Ms. Roa-Wade with accounting.

Mr. Jorge B. Párraga Fernández, head of the IATTC's field office in Las Playas, Ecuador, was transferred to La Jolla, where, on August 21, 2000, he took the position in the Tuna-Dolphin Program vacated by Mr. Richard J. Lindsay on June 15, 2000. Mr. William E. Paladines was placed in charge of the Las Playas field office on August 1, 2000.

Dr. Yukio Takeuchi, a biologist from the National Research Institute of Far Seas Fisheries of Japan, began a 1-year stay in La Jolla in early September 2000. He is working with Drs. Michael G. Hinton, Mark N. Maunder, Hiroaki Okamoto, and George M. Watters on various aspects of bigeye assessment.

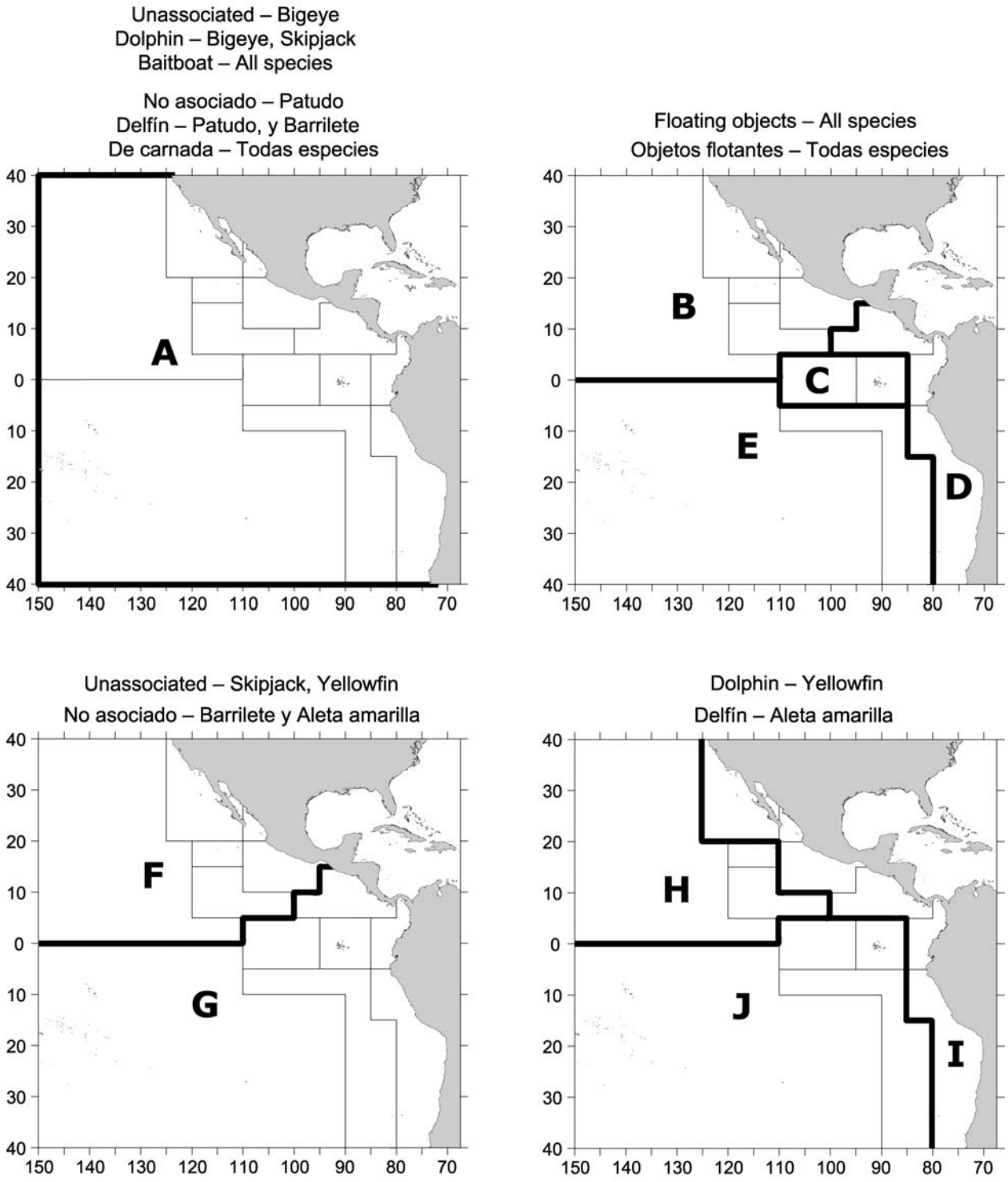

FIGURE 1. Spatial extents of the fisheries defined by the IATTC staff for stock assessment of yellowfin, skipjack, and bigeye in the EPO. The thin lines indicate the boundaries of the 13 length-frequency sampling areas, and the bold lines the boundaries of the fisheries.
FIGURA 1. Extensión especial de las pesquerías definidas por el personal de la CIAT para la evaluación de los stocks de atún aleta amarilla, barrilete, y patudo en el OPO. Las líneas delgadas indican los límites de las 13 zonasde muestreo de frecuencia de tallas, y las líneas gruesas los límites de las pesquerías.

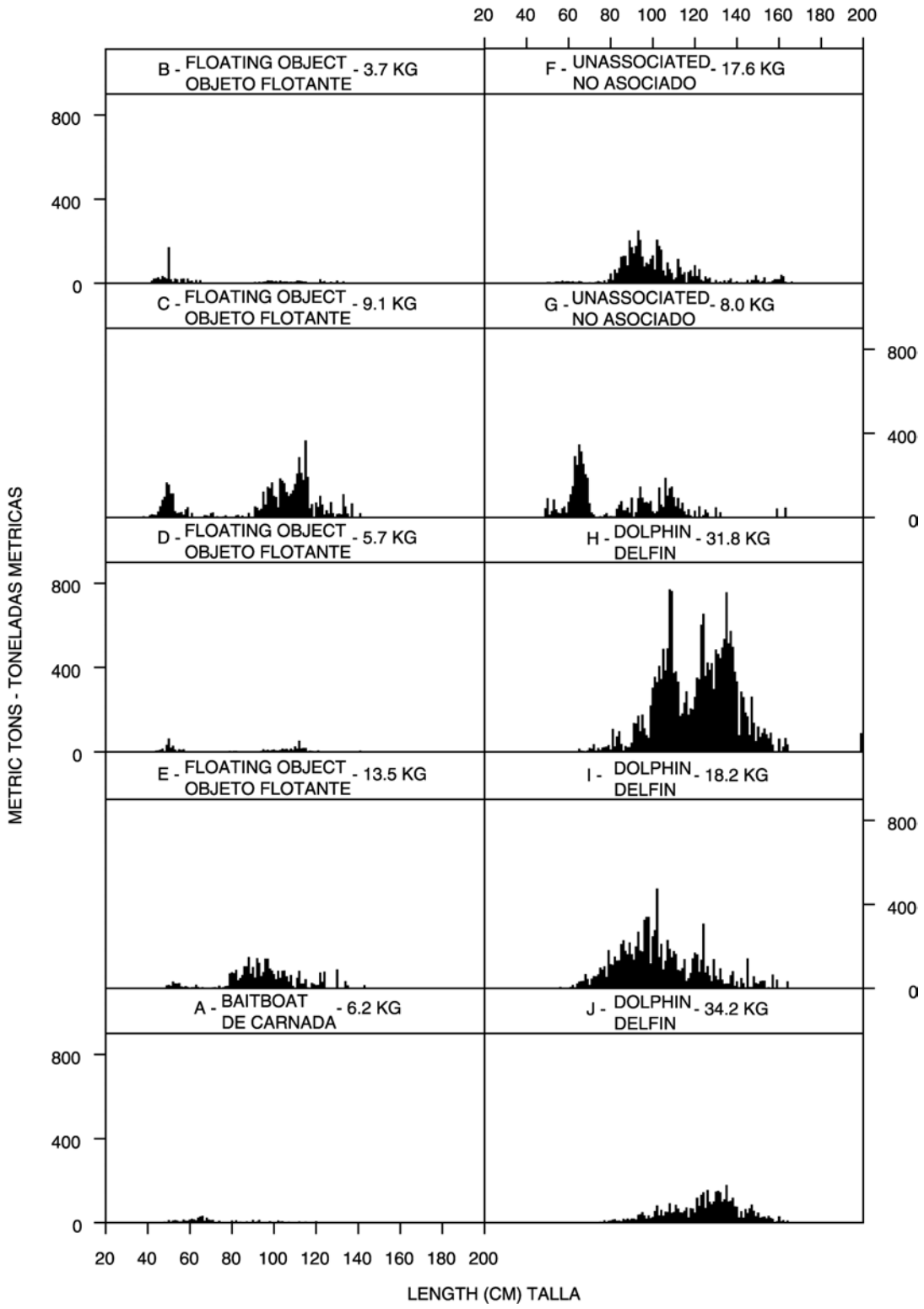

FIGURE 2. Estimated size compositions of the yellowfin caught in each fishery during the second quarter of 2000. The average weights of the fish in the samples are given at the top of each panel.

FIGURA 2. Composición por tallas estimada para el aleta amarilla capturado en cada pesquería durante el segundo trimestre de 2000. En cada recuadro se detalla el peso promedio de los peces en las muestras.

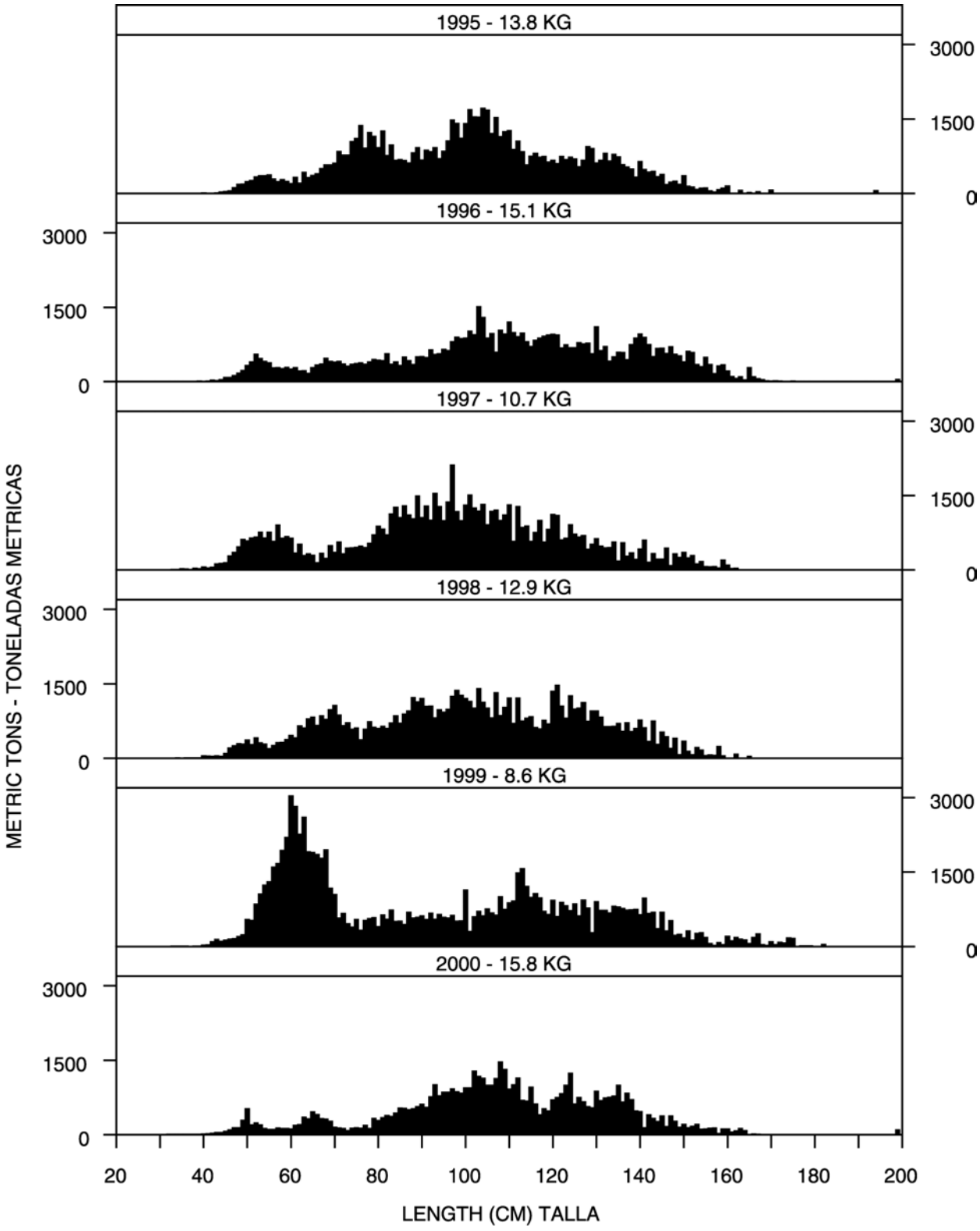

FIGURE 3. Estimated size compositions of the yellowfin caught in the EPO during the second quarter of 1995-2000. The average weights of the fish in the samples are given at the top of each panel.

FIGURA 3. Composición por tallas estimada para el aleta amarilla capturado en el OPO durante el segundo trimestre de 1995-2000. En cada recuadro se detalla el peso promedio de los peces en las muestras.

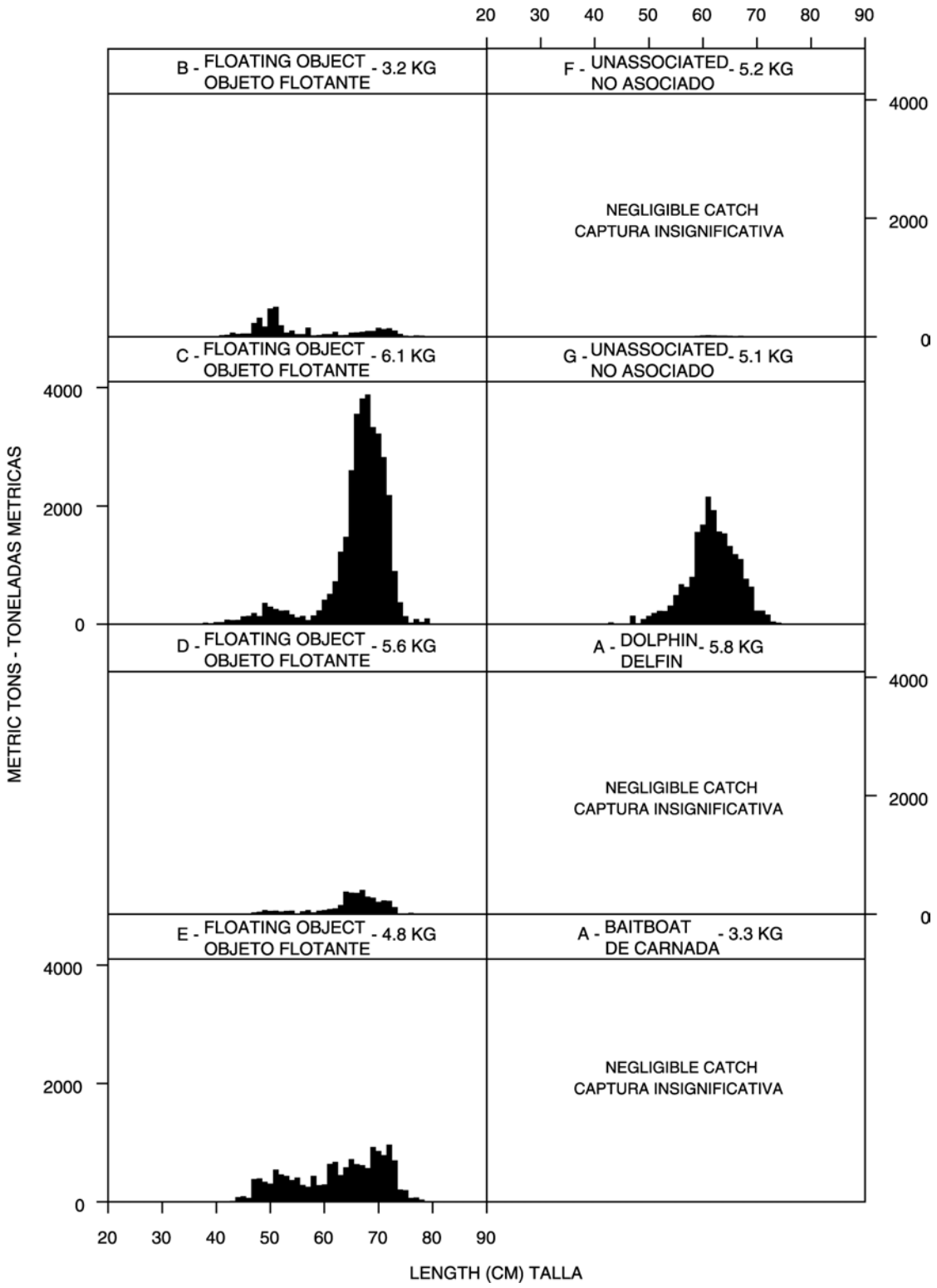

FIGURE 4. Estimated size compositions of the skipjack caught in each fishery during the second quarter of 2000. The average weights of the fish in the samples are given at the top of each panel.

FIGURA 4. Composición por tallas estimada para el barrilete capturado en cada pesquería durante el segundo trimestre de 2000. En cada recuadro se detalla el peso promedio de los peces en las muestras.

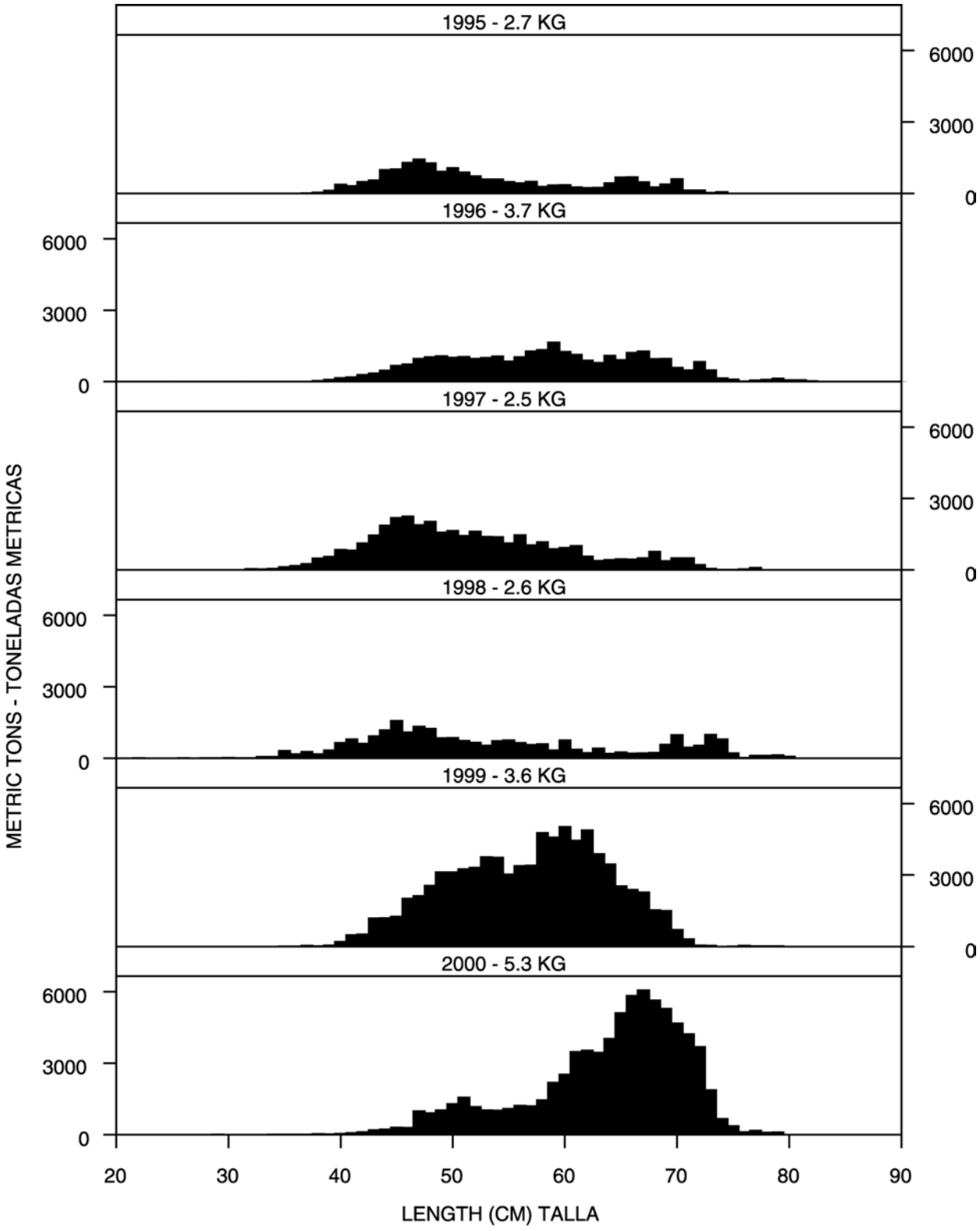

FIGURE 5. Estimated size compositions of the skipjack caught in the EPO during the second quarter of 1995-2000. The average weights of the fish in the samples are given at the top of each panel.

FIGURA 5. Composición por tallas estimada para el barrilete capturado en el OPO durante el segundo trimestre de 1995-2000. En cada recuadro se detalla el peso promedio de los peces en las muestras.

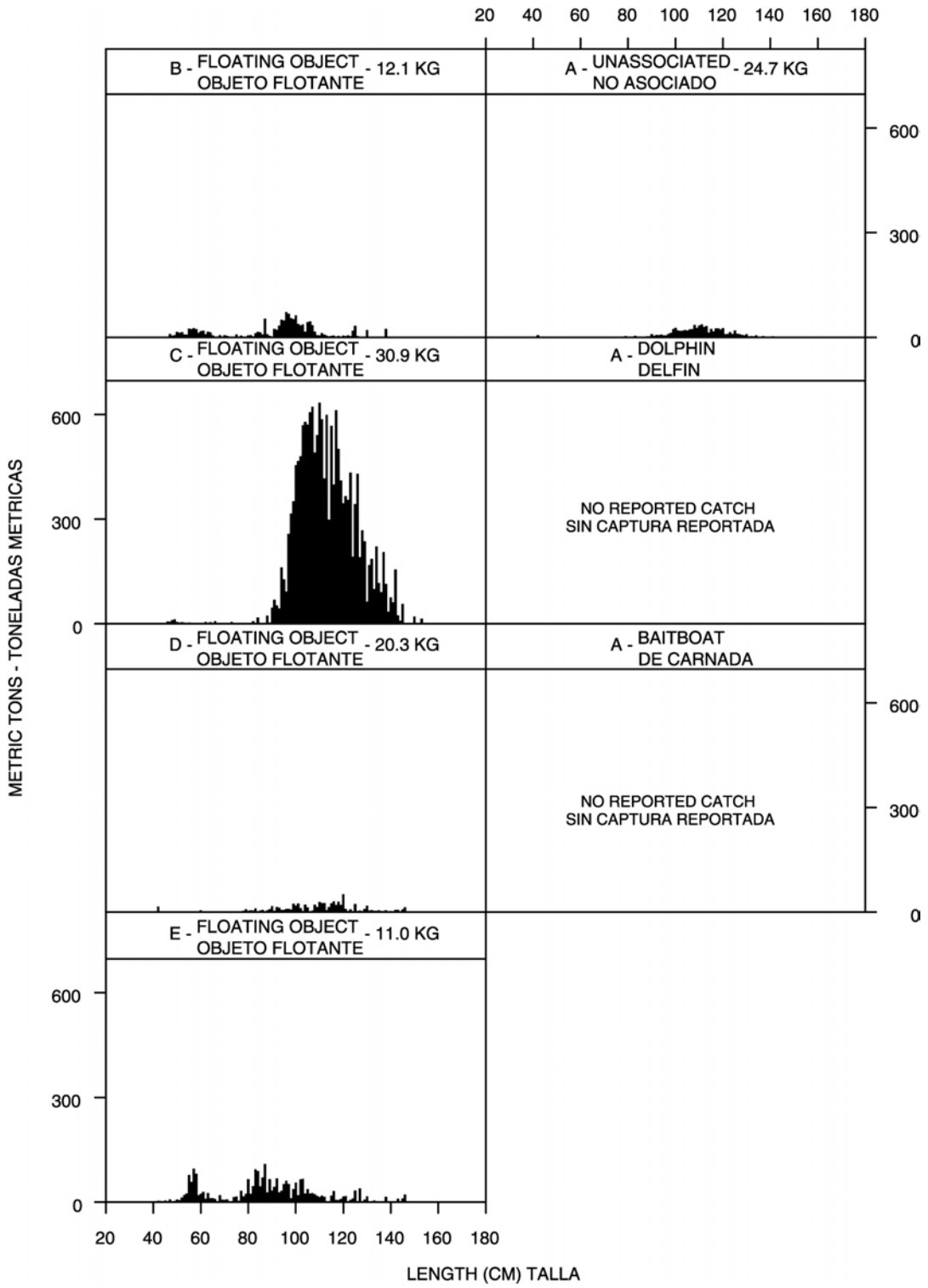

FIGURE 6. Estimated size compositions of the bigeye caught in each fishery during the second quarter of 2000. The average weights of the fish in the samples are given at the top of each panel.

FIGURA 6. Composición por tallas estimada para el patudo capturado en cada pesquería durante el segundo trimestre de 2000. En cada recuadro se detalla el peso promedio de los peces en las muestras.

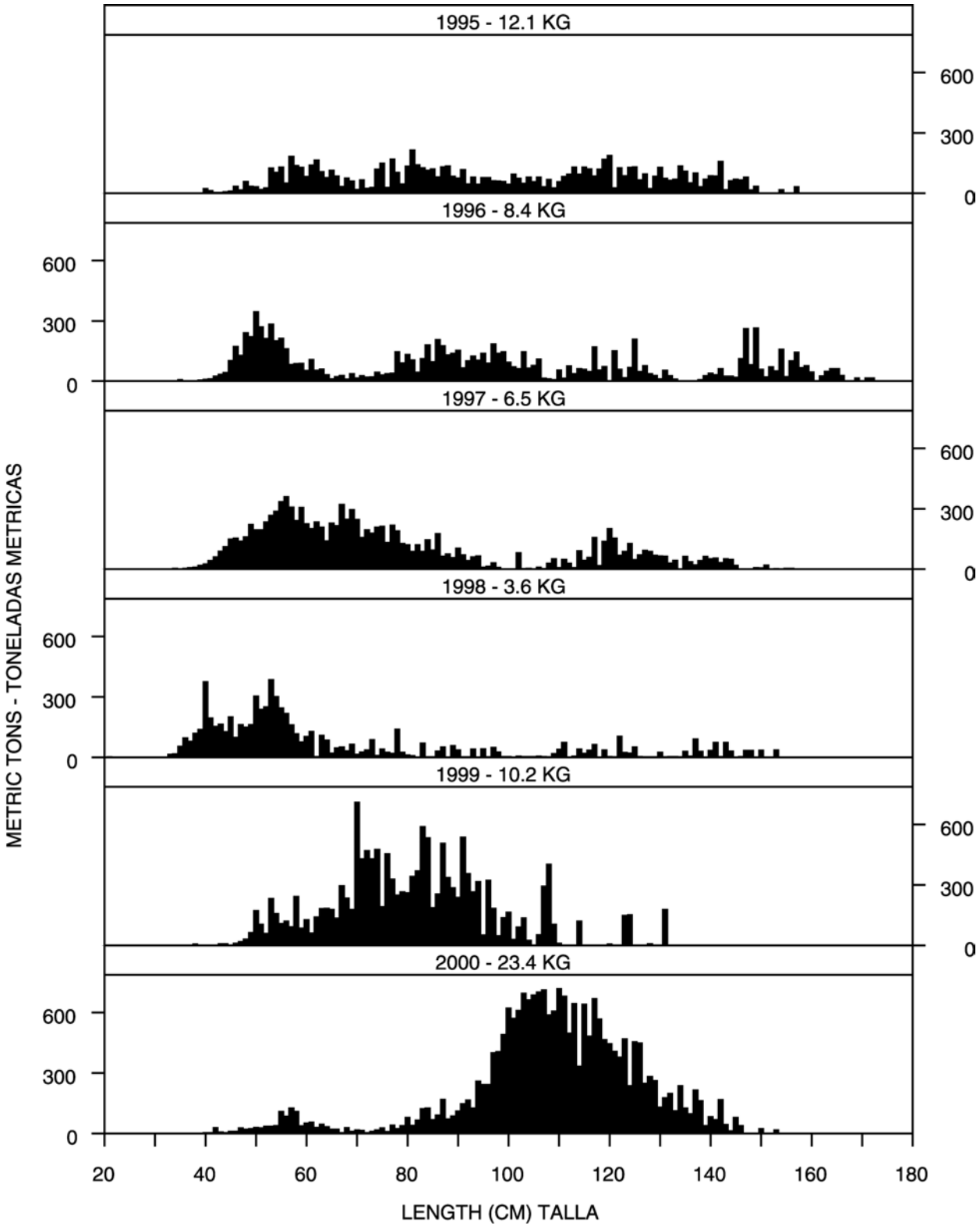

FIGURE 7. Estimated size compositions of the bigeye caught in the EPO during the second quarter of 1995-2000. The average weights of the fish in the samples are given at the top of each panel.

FIGURA 7. Composición por tallas estimada para el patudo capturado en el OPO durante el segundo trimestre de 1995-2000. En cada recuadro se detalla el peso promedio de los peces en las muestras.

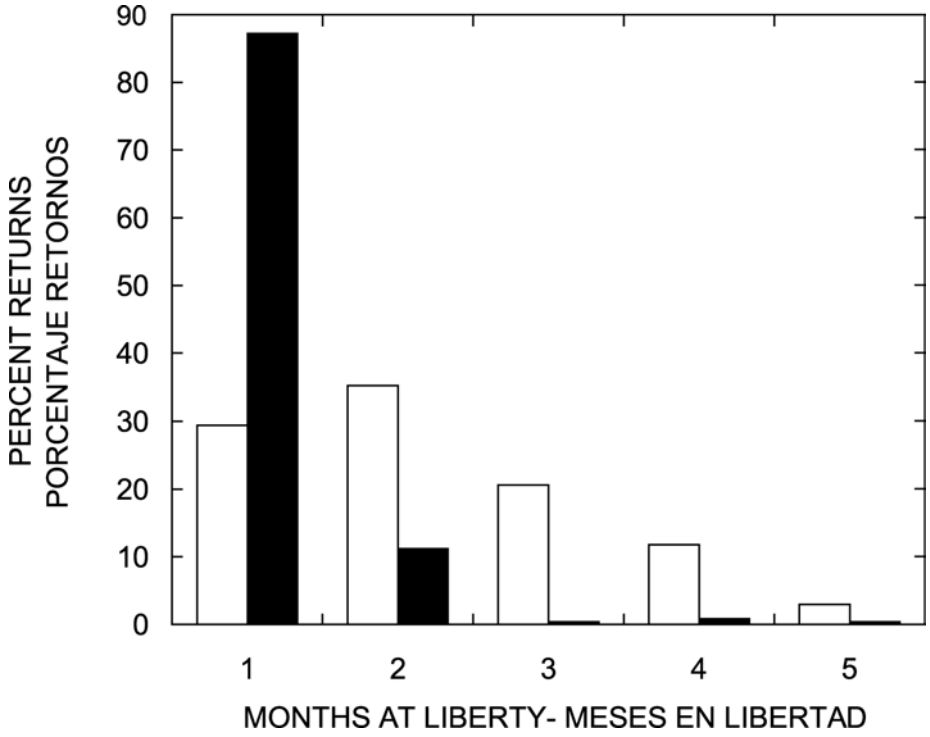

FIGURE 8. Percentages of the total numbers of bigeye tuna (white bars) and skipjack tuna (black bars) returned, by months at liberty.
FIGURA 8. Porcentajes del número total de atunes patudo (barras blancas) y barrilete (barras negras) devueltos, por meses en libertad.

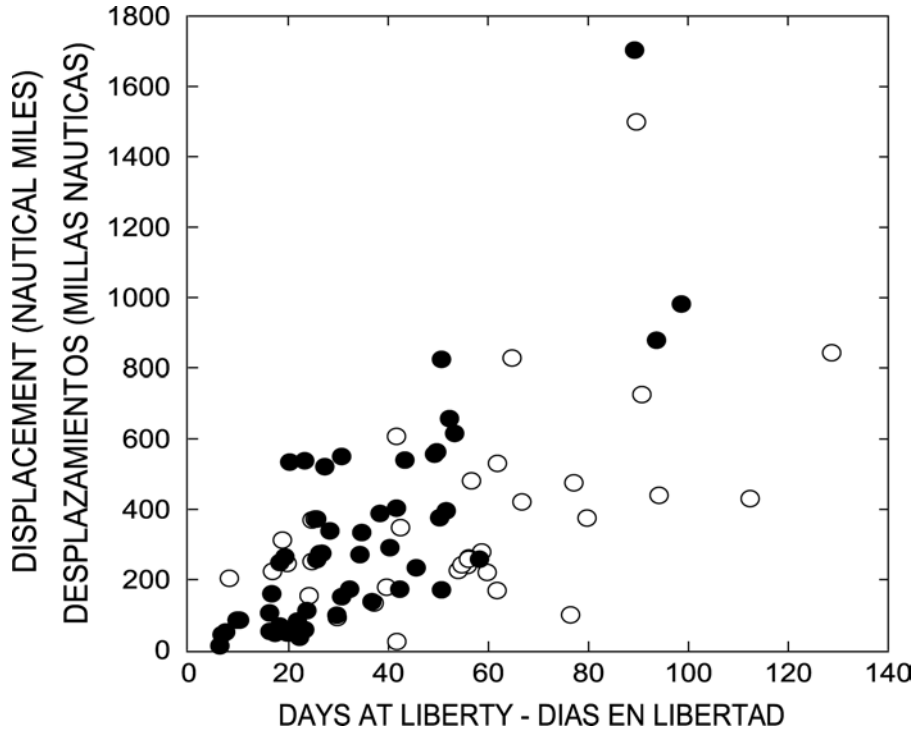

FIGURE 9. Displacements of bigeye tuna (open circles) and skipjack tuna (solid circles), by days at liberty.
FIGURA 9. Desplazamientos de atunes patudo (círculos abiertos) y barrilete (círculos sólidos), por días en libertad.

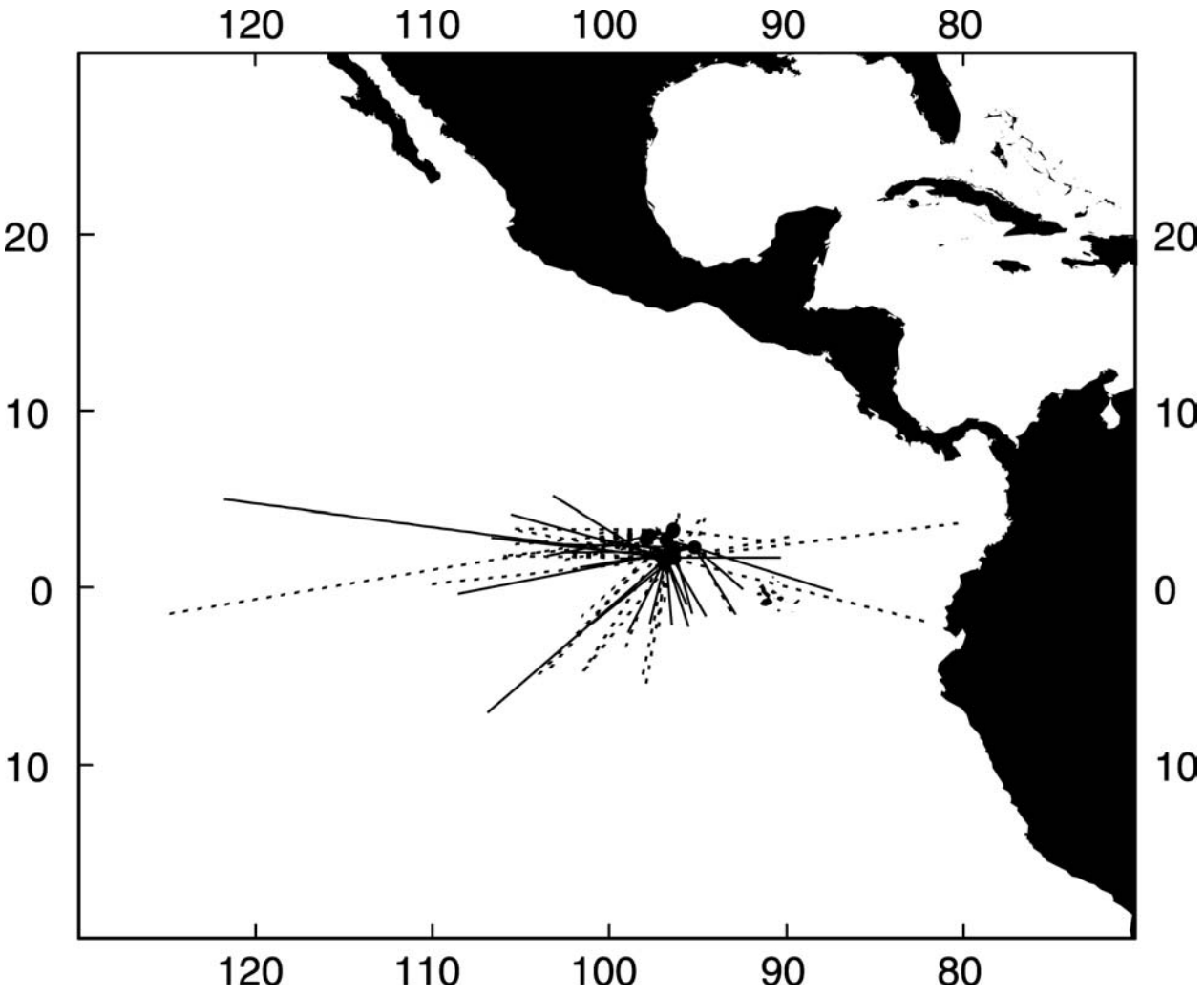

FIGURE 10. Displacements of bigeye tuna (solid lines) and skipjack tuna (dashed lines) in excess of 100 nautical miles from their points of release (dots). The releases of both species took place from mid-April to mid-May 2000 between 1° and 3°N and 95° and 99°W.
FIGURA 10. Desplazamientos de atunes patudo (líneas sólidas) y barrilete (líneas de trazos) de más de 100 millas náuticas desde el punto de liberación (puntos). Se liberaron los peces entre mediados de abril y mediados de mayo de 2000 entre 1° y 3°N y 95° y 99°O.

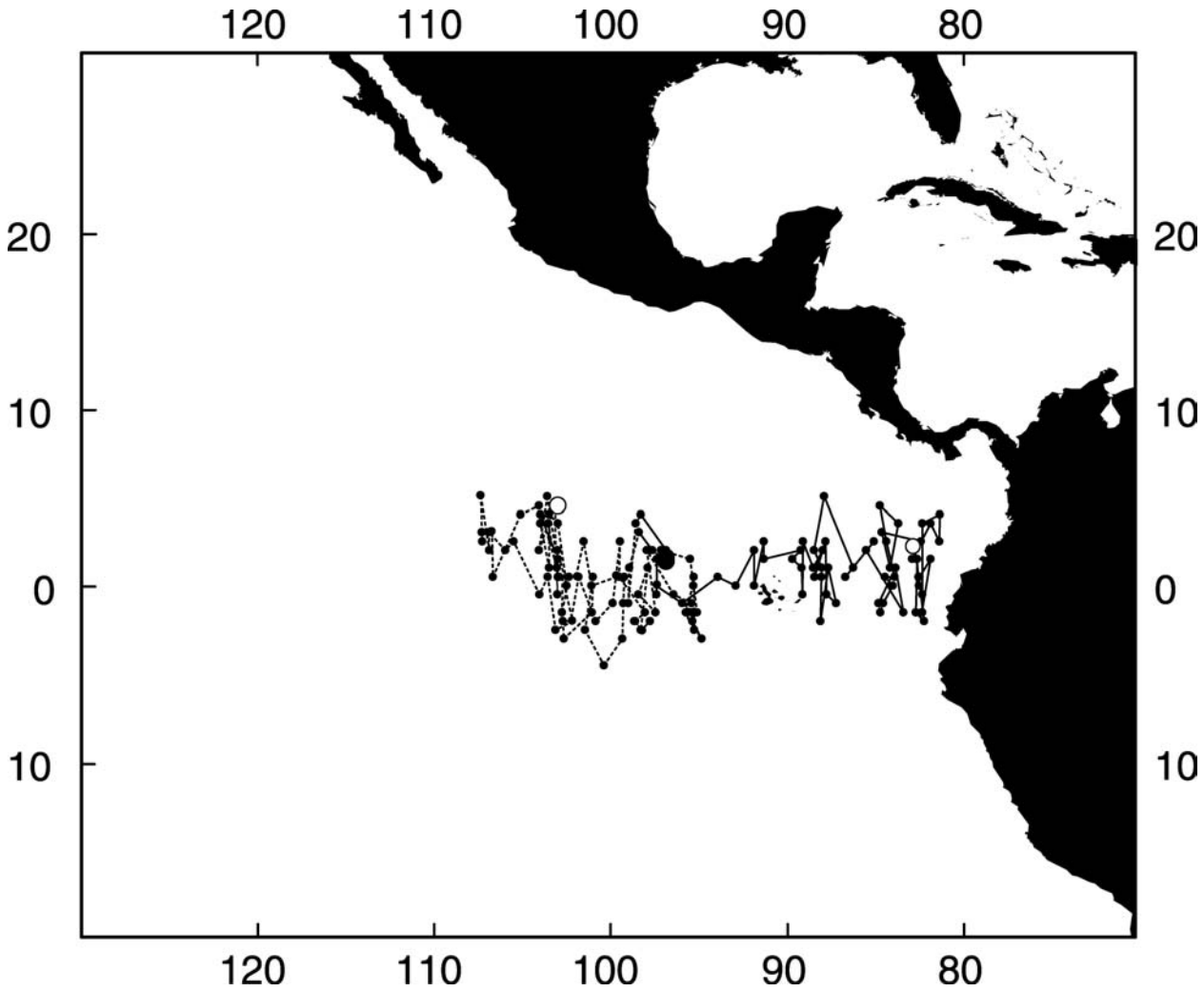

FIGURE 11. Movements of two bigeye tuna (115 and 113 cm in length), at liberty for 129 (solid line) and 112 days (dashed line), respectively. The small dots along the tracks are the estimated locations of latitude and longitude for 56 and 70 percent of the 129 and 112 days at liberty, respectively. The large solid dot is the release location, and the open circles are the recapture positions.

FIGURA 11. Desplazamientos de dos atunes patudo (de 115 y 113 cm de talla), en libertad 129 (línea sólida) y 112 días (línea de trazos), respectivamente. Los puntos pequeños en las trayectorias representan la posición estimada correspondiente al 56 y 70% de los 129 y 112 días en libertad, respectivamente. El punto sólido grande representa el punto de liberación, y los círculos abiertos las posiciones de recaptura.

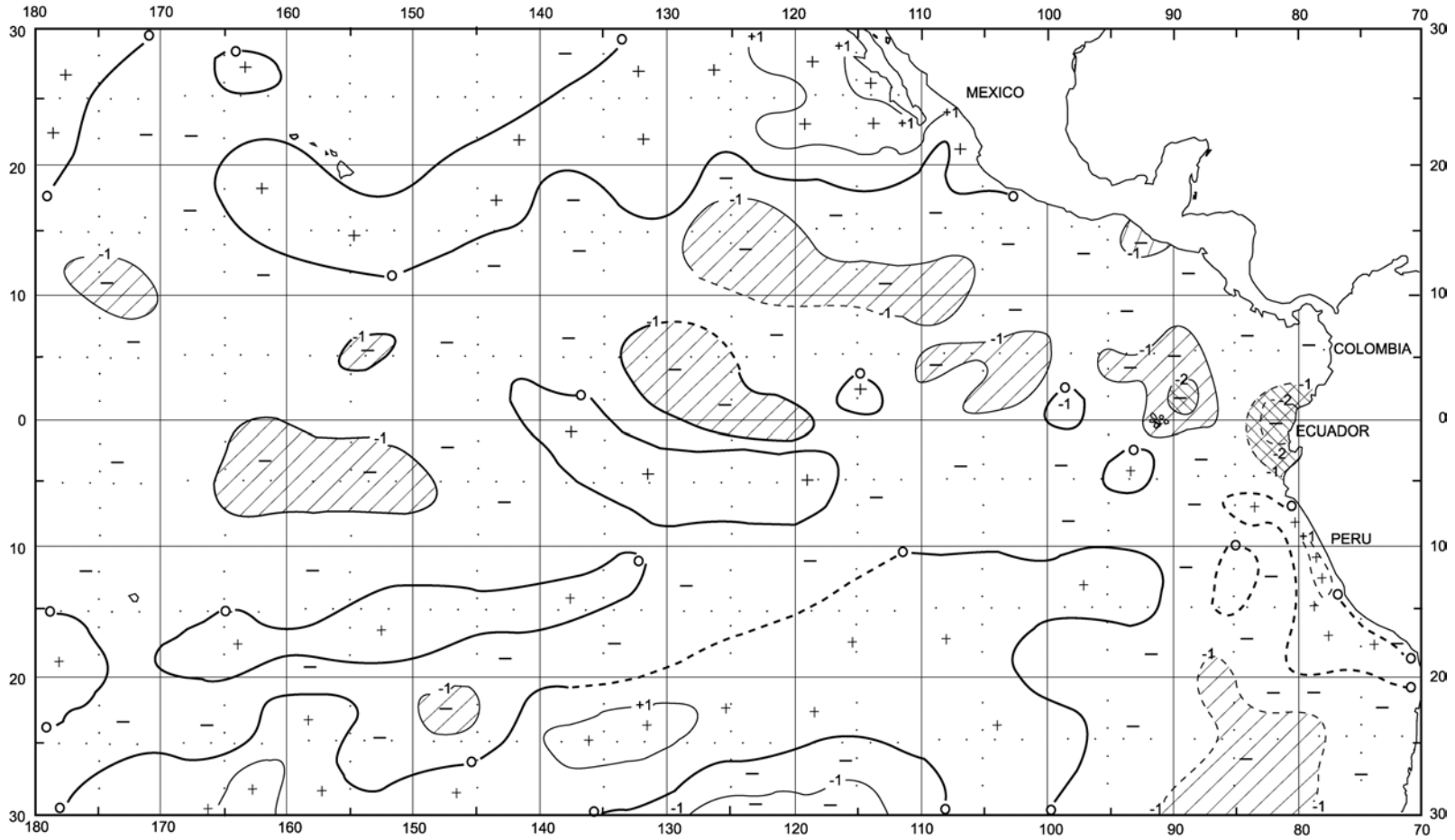

FIGURE 12. Sea-surface temperature (SST) anomalies (departures from long-term normals) for August 2000, based on data from fishing boats and other types of commercial vessels. The areas with SSTs from 1° to 2°C below normal are hatched, and those more than 2°C below normal are cross hatched. The contours are dashed in areas of sparse data.

FIGURA 12. Anomalías (variaciones de los niveles normales a largo plazo) de la temperatura superficial del mar (TSM) en agosto de 2000, basadas en datos tomados por barcos pesqueros y otros buques comerciales. Las TSM en las zonas sombreadas fueron de 1° a 2°C inferiores a lo normal, y aquéllas en las zonas con sombreado doble más de 2°C inferiores a lo normal. Contornos de trazos significan que los datos para esa zona son escasos.

TABLE 1. Preliminary estimates of the numbers and carrying capacities, in cubic meters, of vessels (exclusive of longliners and miscellaneous small vessels) operating in the EPO in 2000, by flag, gear, and size class. Each vessel is included in the totals for each flag under which it fished during the year, but is included only once in the fleet total. Therefore the totals for the fleet may not equal the sums of the individual flag entries.

TABLA 1. Estimaciones preliminares del número de barcos que pescaron en el OPO en 2000 (sin incluir palangreros y barcos pequeños diversos), y de la capacidad de acarreo de los mismos, en metros cúbicos, por bandera, arte de pesca, y clase de arqueo. Se incluye cada barco 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 = red de cerco; BB = carnada.

Flag Bandera	Gear Arte	Size class Clase de arqueo							Capacity Capacidad
		1	2	3	4	5	6	Total	
					Number—Número				
Belize	PS	-	-	-	1	1	2	4	2,249
Bolivia	PS	-	-	-	-	-	3	3	3,736
Colombia	PS	-	-	2	-	2	5	9	7,130
Ecuador	PS	-	7	12	13	6	37	75	46,341
El Salvador	PS	-	-	-	-	-	2	2	1,523
España--Spain	PS	-	-	-	-	-	5	5	11,466
Guatemala	PS	-	-	-	-	-	4	4	7,640
Honduras	PS	-	-	-	-	-	2	2	1,926
México	PS	-	-	7	3	4	40	54	48,333
	BB	1	4	7	-	-	-	12	1,502
Nicaragua	PS	-	-	-	-	-	1	1	1,229
Panamá	PS	-	-	2	2	-	5	9	8,413
U.S.A.--EEUU	PS	-	2	1	-	2	6	11	9,081
	BB	2	5	1	-	-	-	8	657
Vanuatu	PS	-	-	-	-	-	10	10	12,239
Venezuela	PS	-	-	-	-	-	25	25	31,005
All flags	PS	-	9	24	19	15	142	209	
Todas las	BB	3	9	8	-	-	-	20	
banderas	All gear	3	18	32	19	15	142	229	
					Capacity—Capacidad				
All flags	PS	-	1,016	4,254	5,471	7,118	169,634	187,493	
Todas las	BB	137	846	1,175	-	-	-	2,158	
banderas	All gear	137	1,862	5,429	5,471	7,118	169,634	189,651	

TABLE 2. Eastern Pacific Ocean surface fleet, by flag, vessel name, gear type (PS = purse seine; BB = baitboat), and cubic meters of fish-carrying capacity, as of October 11, 2000.
TABLA 2. La flota atunera de superficie del Océano Pacífico oriental, por bandera, nombre del barco, tipo de arte (PS = cerquero; BB =barco de carnada), y metros cúbicos de capacidad de acarreo, hasta el 11 de octubre de 2000.

Flag and vessel name	Gear type	Capacity	Flag and vessel name	Gear type	Capacity
Bandera y nombre de barco	Tipo de arte	Capacidad	Bandera y nombre de barco	Tipo de arte	Capacidad
Belize			**Ecuador (cont.)**		
Don Italo	PS	441	*Gloria A*	PS	543
Karla Renata	PS	1041	*Ignacio*	PS	1470
Patricia Lynn	PS	270	*Ile Aux Moines*	PS	750
			Indico	PS	267
Bolivia			*Ingalapagos*	PS	318
Amanda	PS	1268	*Intrepido*	PS	85
Sea Gem	PS	1274	*Isabel Cinco*	PS	1265
			Isabel Victoria V	PS	389
Colombia			*Jacques Cartier*	PS	962
American Eagle	PS	1275	*Jambeli IV*	PS	440
Eileen Marie	PS	350	*Jorge IV*	PS	162
El Dorado	PS	385	*Joselito*	PS	91
El Rey	PS	1168	*Killa*	PS	348
Enterprise	PS	1272	*Lizi*	PS	1038
Grenadier	PS	1176	*Ljbuica M*	PS	526
Rocio del Pilar	PS	191	*Lucia T*	PS	738
Sandra C	PS	1175	*Lucy*	PS	245
Sea Rover	PS	138	*Malula*	PS	798
			Manuel Ignacio F	PS	644
Ecuador			*Maria*	PS	168
Alize	PS	688	*Maria Antonieta*	PS	144
Angel	PS	94	*Maria Fatima*	PS	338
Balbina	PS	176	*Maria Francisca*	PS	1041
Betty Elizabeth	PS	290	*Medjugorje*	PS	843
Cap Berny B	PS	1285	*Milagros A*	PS	1550
Charo	PS	1925	*Miry Ann D*	PS	497
Dominador	PS	162	*Monte Cristi*	PS	1232
Don Antonio	PS	197	*North Queen*	PS	257
Don Bartolo	PS	724	*Pacifico*	PS	219
Don Mario	PS	552	*Ramoncho*	PS	96
Don Quijote	PS	374	*Roberto A*	PS	318
Don Santiago	PS	1881	*Roberto M*	PS	1161
Don Tampirio	PS	786	*Rocio*	PS	1366
Dona Roge	PS	519	*Romeo*	PS	89
Doña Tula	PS	603	*Rosa F*	PS	662
Drennec	PS	1140	*Sajambre*	PS	694
Eli	PS	984	*San Andres*	PS	1359
Elizabeth F	PS	738	*San Antonio V*	PS	248
Emperador	PS	82	*San Lorenzo*	PS	210
Erasmo F	PS	701	*San Mateo*	PS	1033
Fernandito	PS	136	*Sara*	PS	722
Fiorella L	PS	390	*Saturno*	PS	106
Gabriela A	PS	318	*Southern Explorer*	PS	137

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

Flag and vessel name	Gear type	Capacity	Flag and vessel name	Gear type	Capacity
Bandera y nombre de barco	Tipo de arte	Capacidad	Bandera y nombre de barco	Tipo de arte	Capacidad
Ecuador (cont.)			**México (cont.)**		
Southern Queen	PS	137	*Audaz*	BB	90
Sun Ranger	PS	1033	*Azteca 1*	PS	1202
Tarqui	PS	459	*Azteca 2*	PS	1627
Via Simoun	PS	1324	*Azteca 3*	PS	1274
Victor Andres	PS	115	*Azteca 4*	PS	1524
Victoria A	PS	662	*Azteca 5*	PS	1278
Western Pacific I	PS	274	*Azteca 6*	PS	1282
Yelisava	PS	855	*Azteca 7*	PS	1283
Yolanda L	PS	1168	*Azteca 8*	PS	1383
			Azteca 9	PS	1157
El Salvador			*Azteca 10*	PS	733
Monserrat	PS	1020	*Cabo San Lucas*	PS	1478
Ribadesella	PS	503	*Cabo Tosco*	PS	250
			Cartadedeces	PS	807
España--Spain			*Chac Mool*	PS	1190
Albacora	PS	3318	*Delfin V*	BB	160
Albacora Quince	PS	1881	*Delfin VI*	BB	152
Albacora Uno	PS	2828	*Delfin X*	BB	152
Aurora B	PS	2081	*Don Jose*	BB	53
El Almirante	PS	1358	*Donna Cristina*	PS	1282
			El Quijote	PS	1295
Guatemala			*Ensenada*	PS	381
Albacora Catorce	PS	1880	*Erika*	BB	94
Albacora Doce	PS	1880	*Estado 29*	PS	725
Sant Yago Dos	PS	1940	*Famtiza*	PS	300
Sant Yago 1	PS	1940	*Guaymas*	PS	359
			Judith I	PS	809
Honduras			*Karla Paola*	PS	165
Aleta Azul	PS	1298	*Lupe del Mar*	PS	1298
Eastern Pacific	PS	628	*Macel*	PS	808
			Manolo	PS	300
México			*Maranatha*	BB	125
Akalan I	PS	1242	*Maria Fernanda*	PS	1232
Akalan II	PS	1311	*Maria Gabriela*	BB	112
Ana Maria	BB	188	*Maria Luisa*	PS	1168
Ariete	PS	490	*Maria Rosana*	PS	1142
Arkos II Chiapas	PS	1348	*Maria Valeria*	PS	798
Atilano Castano	PS	1297	*Maria Veronica*	PS	1232
Atun I	PS	807	*Maria W*	BB	102
Atun IV	PS	809	*Mariano Otero*	PS	1482
Atun VI	PS	809	*Mazcu I*	PS	240
Atun VII	PS	751	*Nair*	PS	1346
Atun VIII	PS	751	*Nair II*	PS	1275
Atun X	PS	778	*Nair III*	PS	240

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

Flag and vessel name	Gear type	Capacity	Flag and vessel name	Gear type	Capacity
Bandera y nombre de barco	Tipo de arte	Capacidad	Bandera y nombre de barco	Tipo de arte	Capacidad
México (cont.)			**Vanuatu**		
Neptuno	PS	793	*Asturias*	PS	1268
Ofelia	BB	176	*Betty C*	PS	814
Olivia	PS	145	*Cabo de Hornos*	PS	680
Oscar I	PS	135	*Gold Coast*	PS	1194
Pastora	PS	168	*Mirelur*	PS	1250
Tatiana	BB	97	*Nazca*	PS	1414
Theresa Janene	PS	1275	*Tiuna*	PS	1202
Tizoc	PS	180	*Ugavi*	PS	1875
Tono I	PS	115			
Tutankamon	PS	784	**Venezuela**		
			Amazonas	PS	1115
Nicaragua			*Calypso*	PS	1168
Pamela Ann	PS	1229	*Canaima*	PS	1094
			Carirubana	PS	1137
Panamá			*Carmela*	PS	1241
Cervantes	PS	775	*Caroni*	PS	1110
Don Alvaro	PS	180	*Cayude*	PS	1274
Don Luis	PS	180	*Conquista*	PS	1168
Geminis	PS	255	*Don Abel*	PS	1226
Genesis	PS	586	*Falcon*	PS	1137
Julie L	PS	2056	*Jane*	PS	1242
Mary Lynn	PS	285	*Jenny Margot II*	PS	1784
Panama Tuna	PS	3300	*Judibana*	PS	1231
San Marino I	PS	796	*La Foca*	PS	1287
			La Parrula	PS	889
United States-Estados Unidos			*Los Roques*	PS	1262
Atlantis	PS	1275	*Lucile*	PS	1583
Bold Adventuress	PS	1643	*Marinero*	PS	1244
Bonnie	PS	1277	*Napoleon*	PS	1250
Capt Vincent	PS	1643	*Orinoco II*	PS	1581
Cimarron	BB	80	*Sea Royal*	PS	1488
Connie Jean	PS	584	*Taurus I*	PS	1191
Donna B	PS	182	*Taurus Tuna*	PS	1175
Francesca Lynn	PS	425	*Ventuari*	PS	1542
Her Grace	BB	98			
Karen Jan	BB	42			
Kathy Jeanne	BB	90			
Lydorein	BB	96			
Mauritania	PS	423			
Millie G	BB	42			
Molly N	BB	99			
Romani Sons	PS	113			
Royal Dawn	BB	109			
Sea Queen	PS	241			
South Seas	PS	1275			

TABLE 3. Changes in the IATTC fleet list recorded during the third quarter of 2000. PS = purse seine; BB = baitboat.
TABLA 3. Cambios en la flota observada por la CIAT registrados durante el tercer trimestre de 2000 PS = cerquero; BB = barco de carnada.

Vessel name	Flag	Gear	Size class	Capacity (m^3)	Remarks
Nombre de barco	Bandera	Arte	Clase de arqueo	Capacidad (m^3)	Comentarios
Vessels changing name and/or flag—Barcos de nombre y/o bandera cambiada					
Angel	ECU	PS	2	94	New entry; 1er ingreso
Dona Roge	ECU	PS	6	519	New entry; 1er ingreso
Isabel Victoria V	ECU	PS	4	389	New entry; 1er ingreso
Pacifico	ECU	PS	4	219	New entry; 1er ingreso
Bonnie	USA	PS	6	1277	Re-entry; Reingreso
Killa	PER	PS	5	348	Re-entry; Reingreso Now flag--Ahora bandera: ECU
Ana Maria F	ECU	PS	6	662	Now:--Ahora: *Victoria A*
Ced-Mex	MEX	PS	3	250	Now--Ahora: *Cabo Tosco*
Amanda	VUT	PS	6	1268	Now flag--Ahora bandera: BOL
Genesis	VEN	PS	6	586	Now flag--Ahora bandera: PAN
Maria Antonieta	BLZ	PS	3	144	Now flag--Ahora bandera: ECU
Sea Gem	VUT	PS	6	1274	Now flag--Ahora bandera: BOL

TABLE 4. Cumulative catches (metric tons) of yellowfin (YFT), skipjack (SKJ), bigeye (BET), and bluefin (BFT) from January 1 to October 2, 2000, by area, capacity of fleet (cubic meters), and weekly percentage capacity at sea. The data are from IATTC weekly reports.
TABLA 4. Captura acumulativa (toneladas métricas) de aleta amarilla (YFT), barrilete (SKJ), patudo (BET), y aleta azul (BFT), del 1 de enero al 2 de octubre de 2000, por área, capacidad de la flota (metros cúbicos), y porcentaje de capacidad de la flota en el mar. Los datos provienen de los informes semanales de la CIAT.

		Cumulative catch from January 1 through weekly periods ending on indicated dates Captura acumulativa del 1 de enero hasta fin de la semana indicada					Fleet information Información de la flota	
		YFT		EPO—OPO[1]				
		CYRA ARCAA	Outside[2] Exterior[2]	SKJ	BET	BFT	Capacity Capacidad	% at sea % en el mar
Jul.	10	140,590	14,829	156,273	44,607	638	183,300	68.7
	17	143,741	14,180	158,102	46,082	1,304	183,300	71.2
	24	147,401	15,368	159,222	47,534	1,492	183,300	71.0
	31	151,478	15,389	163,528	49,498	1,988	183,300	68.2
Aug.	07	158,324	15,442	168,428	51,894	2,185	183,800	76.0
	14	163,835	16,767	171,218	54,511	2,080	183,800	68.7
	21	168,045	19,410	174,122	55,011	2,965	183,800	61.1
	28	167,426	23,515	176,586	57,739	3,106	183,800	57.4
Sep.	04	171,940	26,020	180,485	59,284	2,908	183,800	57.1
	11	170,494	29,883	184,331	60,131	2,941	183,800	55.7
	18	173,626	30,670	187,996	61,520	3,083	183,800	53.9
	25	171,880	35,734	190,019	62,385	3,090	183,800	49.2
Oct.	02	174,782	36,939	191,349	62,084	3,190	184,400	48.0

1 Includes the Pacific Ocean east of 150°W--Incluye el Océano Pacífico al este de 150°O

2 Includes the area west of the CYRA but east of 150°W--Incluye la zona al oeste del ARCAA al este de 150°O

TABLE 5. Preliminary estimates of the catches of tunas in the EPO from January 1 through October 2, 2000, by species and vessel flag, in metric tons.

TABLA 5. Estimaciones preliminares de las capturas de atunes en el OPO del 1 de enero al 2 de octubre de 2000, por especie y bandera del barco, en toneladas métricas.

Flag	Yellowfin		Skipjack	Bigeye	Bluefin	Bonito	Albacore	Black skipjack	Other[1]	Total	Percentage of total
	CYRA	Outside									
Bandera	Aleta amarilla		Barrilete	Patudo	Aleta azul	Bonito	Albacora	Barrilete negro	Otras[1]	Total	Porcentaje del total
	ARCAA	Exterior									
Colombia	10,178	2,723	5,157	915	-	-	-	-	-	18,973	4.0
Ecuador	27,570	3,762	98,128	24,535	-	-	-	8	30	154,033	32.8
España—Spain	3,035	2,042	16,422	15,236	-	-	-	-	-	36,735	7.8
México	63,907	14,892	14,793	23	2,520	410	59	-	37	96,641	20.6
Panamá	4,846	466	11,230	3,904	-	-	-	10	-	20,456	4.4
U.S.A.—EE.UU.	3,879	794	11,190	1,516	670	176	2	-	24	18,251	3.9
Vanuatu	7,855	2,616	10,391	5,583	-	-	-	-	-	26,445	5.6
Venezuela	43,398	8,587	4,299	195	-	-	-	12	-	56,491	12.0
Other—Otros[2]	10,114	1,057	19,739	10,177	-	-	-	-	-	41,087	8.9
Total	174,782	36,939	191,349	62,084	3,190	586	61	30	91	469,112	

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

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

[2] Includes Belize, Bolivia, Guatemala, Honduras, and Nicaragua. This category is used to avoid revealing the operations of individual vessels or companies.

[2] Incluye Belice, Bolivia, Guatemala, Honduras, y Nicaragua. Se usa esta categoría para no revelar información sobre faenas de barcos o empresas individuales

TABLE 6. Report period (January 1-June 30) logged yellowfin catch in metric tons [C(L)], and catch per day's fishing[1] [C(L)/E(L)], by year, area, and gear type, based on fishing vessel logbook information.
TABLA 6. Captura registrada de aleta amarilla [C(R)], y captura por día de pesca[1] [C(R)/E(R)], por año, área y tipo de arte, en toneladas métricas, en el período del informe (1 de enero-30 de junio), basado en información de los cuadernos de bitácora de barcos pesqueros.

Gear and area	Fishery statistic	Year-Año					
Arte y área	Estadística de pesca	1995	1996	1997	1998	1999	2000[2]
Purse seine	C(L)						
Red de cerco	C(R)	89,600	112,300	107,800	92,900	112,600	78,300
CYRA	C(L)/E(L)						
ARCAA	C(R)/E(R)	11.5	14.2	12.9	10.6	12.0	10.1
Outside[3]	C(L)						
Exterior[3]	C(R)	13,600	9,300	21,000	12,800	11,400	18,100
	C(L)/E(L)						
	C(R)/E(R)	15.9	6.9	11.7	5.7	11.6	17.3
EPO[4]	C(L)						
OPO[4]	C(R)	103,300	121,600	128,800	105,700	124,000	96,300
	C(L)/E(L)						
	C(R)/E(R)	12.0	13.1	12.7	9.6	11.9	11.0
Annual total	C(L)	184,100	201,200	209,900	192,400	205,900	
Total anual	C(R)						
Baitboat	C(L)						
Carnada	C(R)	400	400	1,600	1,500	600	200
	C(L)/E(R)						
	C(R)/E(R)	1.0	1.5	2.9	3.2	1.7	1.4
Annual total		1,100	2,800	3,500	2,600	1,600	
Total anual							

1 Purse-seiners, class-6 only; all baitboats. The C(L) values are rounded to the nearest 100, and the C(L)/E(L) values to the nearest 0.1.

1 Cerqueros de las clase 6; todos barcos de carnada. Se redondean los valores de C(R) al 100 más cercano, y los de C(R)/E(R) al 0.1 más cercano.

2 Preliminary: October 5, 2000

2 Preliminar: 5 de octubre de 2000

3 Includes the area west of the CYRA but east of 150°W

3 Incluye la zona al oeste del ARCAA al este de 150°O

4 Includes the Pacific Ocean east of 150°W

4 Incluye el Océano Pacífico al este de 150°O

TABLE 7. Report period (January 1-June 30 logged skipjack tuna catch in metric tons [C(L)] and catch per day's fishing[1] [C(L)/E(L)] in the EPO[2], by year and gear type, based on fishing vessel logbook information.

TABLA 7. Captura registrada de barrilete [C(R)], y captura por día de pesca[1] [C(R)/E(R)] en el OPO[2], por año y tipo de arte, en toneladas métricas, en el período del informe (1 de enero-30 de junio), basado en información de los cuadernos de bitácora de barcos pesqueros.

Gear	Fishery statistic	Year—Año					
Arte	Estadística de pesca	1995	1996	1997	1998	1999	2000[3]
Purse seine	C(L)						
Red de cerco	C(R)	31,400	35,400	41,300	36,100	101,900	90,900
	C(L)/E(L)						
	C(R)/E(R	3.6	3.8	4.1	3.3	9.8	10.4
Annual total	C(L)	91,900	74,900	98,800	97,200	177,400	
Total anual	C(R)						
Baitboat	C(L)						
Carnada	C(R)	400	900	200	300	100	100
	C(L)/E(L)						
	C(R)/E(R)	1.1	3.2	0.4	0.5	0.3	0.7
Annual total	C(L)	3,600	1,800	2,300	1,000	1,800	
Total anual	C(R)						

1 Purse-seiners, class-6 only; all baitboats. The C(L) values are rounded to the nearest 100, and the C(L)/E(L) values to the nearest 0.1.

1 Cerquero de la clase 6; todos barcos de carnada. Se redondean los valores de C(R) al 100 más cercano, y los de C(R)/E(R) al 0.1 más cercano.

2 Includes the Pacific Ocean east of 150°W

2 Incluye el Océano Pacífico al este de 150°O

3 Preliminary: October 5, 2000

3 Preliminar: 5 de octubre de 2000

TABLE 8. Report period (January 1-June 30) logged bigeye catch in the EPO and catch per day of fishing (CPDF) in the EPO, in metric tons, based on logbook information from purse seiners.
TABLA 8. Captura registrada de atún patudo en el OPO en el período del informe (1 de enero-30 de junio) captura por día de pesca (CPDP) en el OPO, en toneladas métricas, basadas en información de las bitácoras de barcos cerqueros.

Fishery statistic—Estadística de pesca	Year—Año			
	1997	1998	1999	2000*
Catch—Captura	15,800	8,900	13,400	27,200
CPDF—CPDP	1.6	0.8	1.3	3.1
Total annual catch--Captura total anual	34,100	20,400	22,700	

*Preliminary: October 5, 2000
*Preliminar: 5 de octubre de 2000

TABLE 9. Preliminary data on the sampling coverage of trips by Class-6 vessels (capacity >363 metric tons) by the IATTC, Mexican, and Venezuelan programs during the third quarter of 2000. The numbers in parentheses indicate cumulative totals for the year.
TABLA 9. Datos preliminares de la cobertura de muestreo de viajes de barcos de la Clase 6 (capacidad >363 toneladas métricas) por los programas de la CIAT, México, y Venezuela durante el tercero trimestre de 2000. Los números en paréntesis indican totales acumulados para el año.

Fleet	Number of trips		Trips sampled by program						Percent sampled	
			IATTC		National		Total			
Flota	Número de viajes		Viajes muestreados por programa						Porcentaje muestreado	
			CIAT		Nacional		Total			
Belize	1	(7)	1	(7)			1	(7)	100	(100)
Bolivia	2	(2)	2	(2)			2	(2)	100	(100)
Colombia	4	(17)	4	(17)			4	(17)	100	(100)
Ecuador	49	(209)	49	(209)			49	(209)	100	(100)
España--Spain	7	(30)	7	(30)			7	(30)	100	(100)
Guatemala	9	(30)	9	(30)			9	(30)	100	(100)
Honduras	1	(7)	1	(7)			1	(7)	100	(100)
México	43	(151)	24	(75)	19	(76)	43	(151)	100	(100)
Nicaragua	1	(5)	1	(5)			1	(5)	100	(100)
Panamá	3	(18)	3	(18)			3	(18)	100	(100)
U.S.A.-EE.UU.	3	(21)	3	(21)			3	(21)	100	(100)
Vanuatu	10	(39)	8	(37)			8	(37)	80.0	(94.9)
Venezuela	20	(80)	9	(50)	11	(30)	20	(80)	100	(100)
Total	153	(616)[1]	121	(508)[1]	30	(106)	151	(614)[1]	98.7	(99.7)

[1] Includes 33 trips that began in late 1999 and ended in 2000
[1] Incluye 33 viajes iniciados a fines de 1999 y completados en 2000