

Comisión Interamericana del Atún Tropical
Inter-American Tropical Tuna Commission

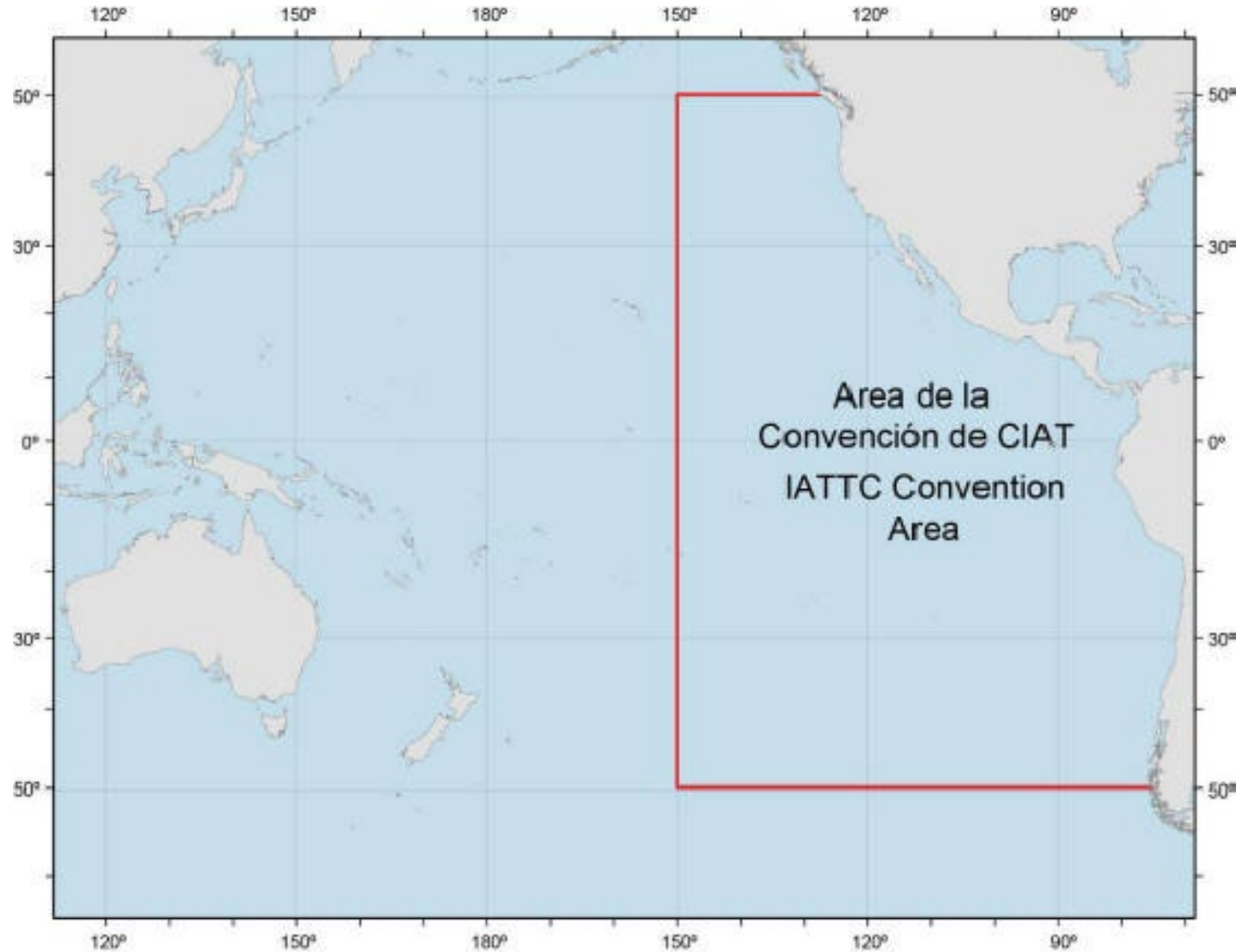


Background to the yellowfin tuna fishery in the EPO

Outline

- IATTC structure
- The fisheries
- The data collection programs
- Research
- Assessments
- Management

IATTC structure: Convention area



IATTC structure: Members

Belize	European Union	Nicaragua
Canada	France	Panama
China	Guatemala	Peru
Colombia	Japan	Chinese Taipei
Costa Rica	Kiribati	United States
Ecuador	Korea	Vanuatu
El Salvador	Mexico	Venezuela



IATTC structure: Time line

- Data available in mid March
- Stock assessments and management advice presented at the Scientific Advisory Committee (SAC) in May
- Stock assessments and management advice presented at the IATTC Annual Meeting in July/August
 - Scientific staff presents their advice
 - SAC presents their advice
- Management typically implemented in the following year
 - Variety of management measures implemented
 - Main tropical tuna conservation for three years, but not always

IATTC structure: Structure of the scientific program

Scientific research

Stock assessment

Ecosystem and Bycatch

Biology

Data collection and databases

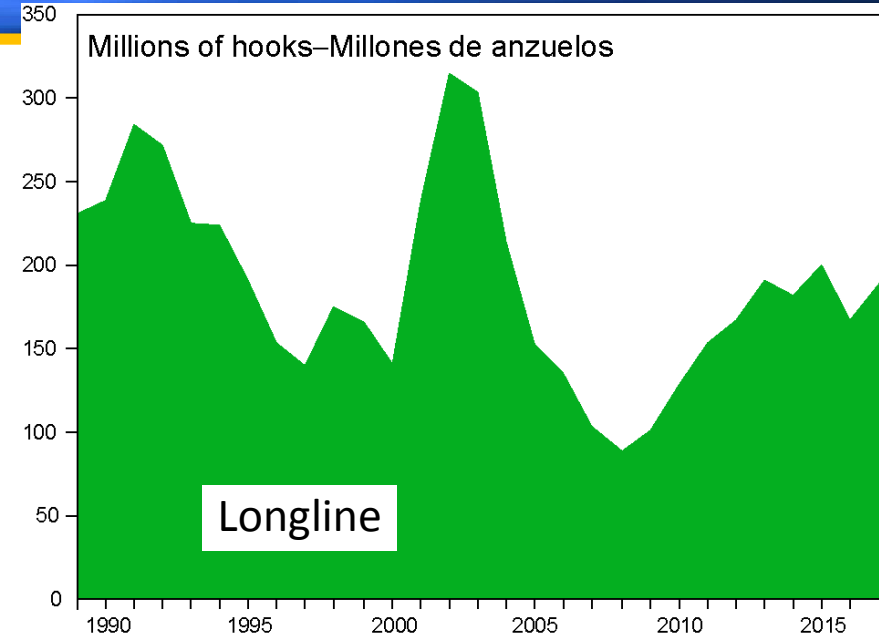
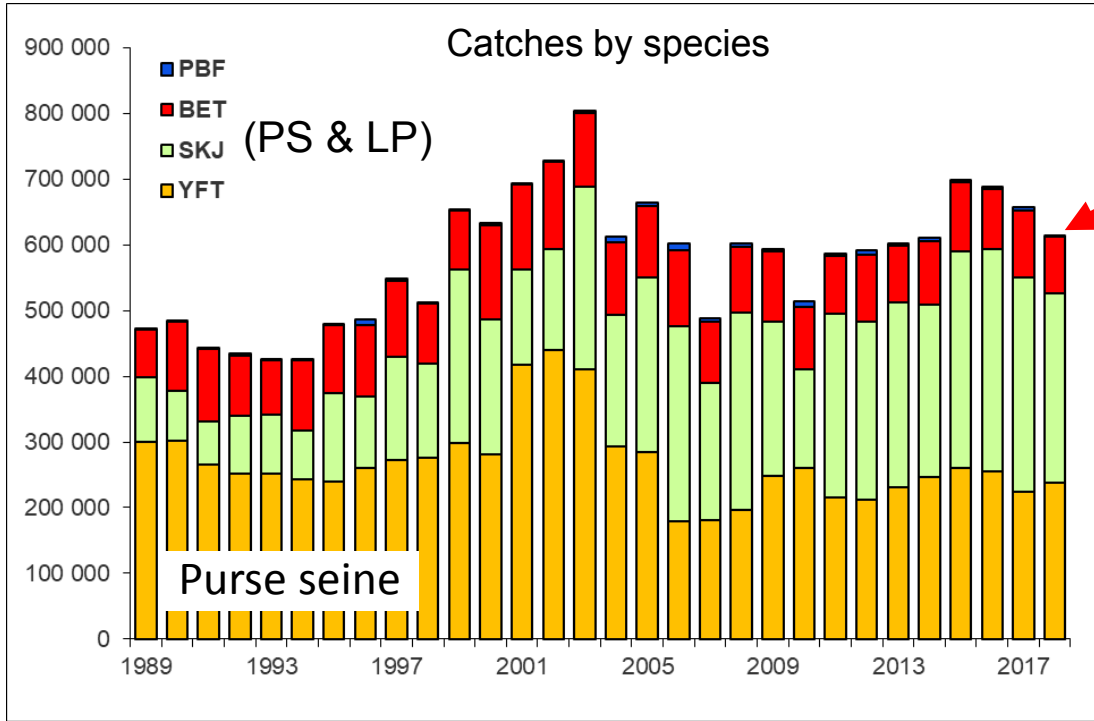
Ecosystem

Bycatch mitigation
and gear technology

Life history
and behavior

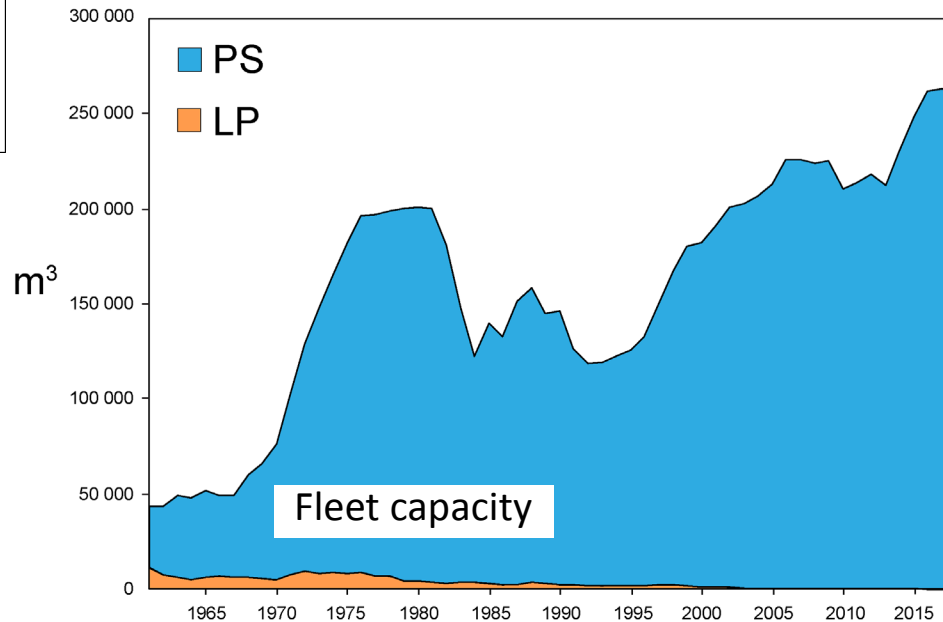
Early life history
(Ashotines Laboratory)

The fisheries: Fishery components



BET: bigeye
 PBF: Pacific bluefin
 SKJ: skipjack
 YFT: yellowfin

PS: purse-seine
 LP: pole-and-line

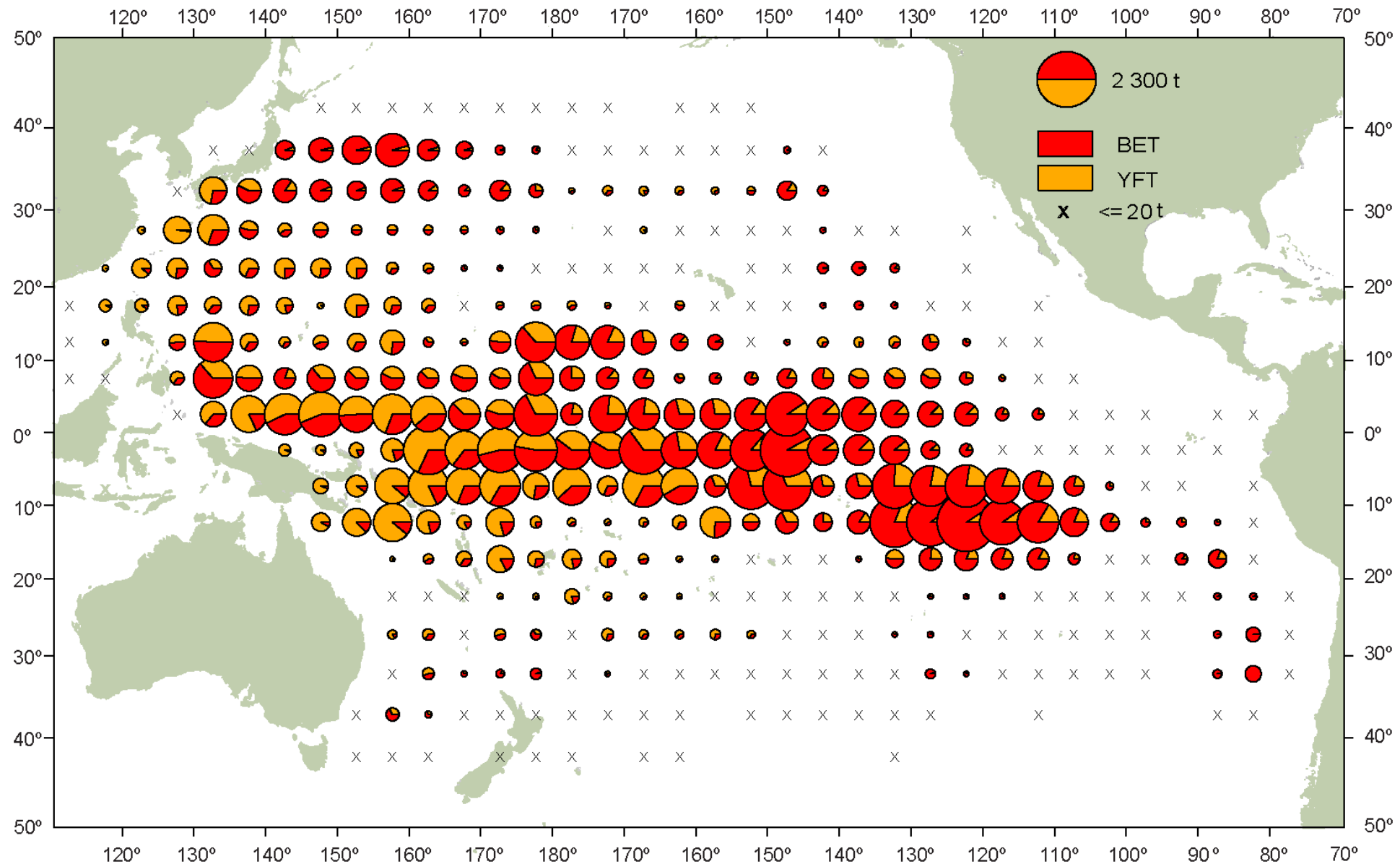


The fisheries: Tropical tunas (yellowfin, skipjack, bigeye)

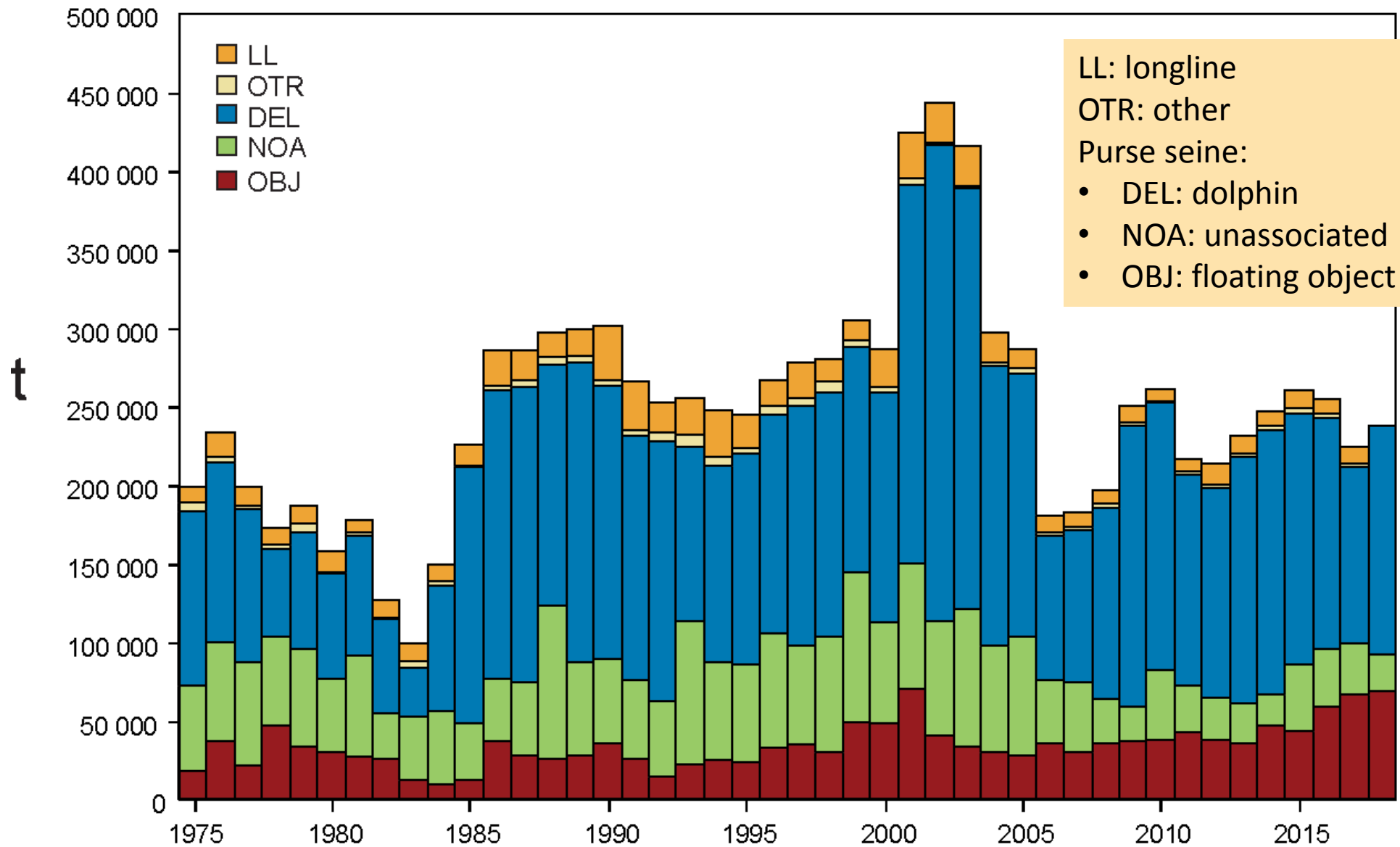


The fisheries: Distribution of longline catch

2013-2017



The fisheries: Yellowfin catch by gear



The fisheries: Purse seine sets on yellowfin associated with dolphins



The fisheries: Distribution of purse-seine sets

Individual sets

Number

2017 **2018**

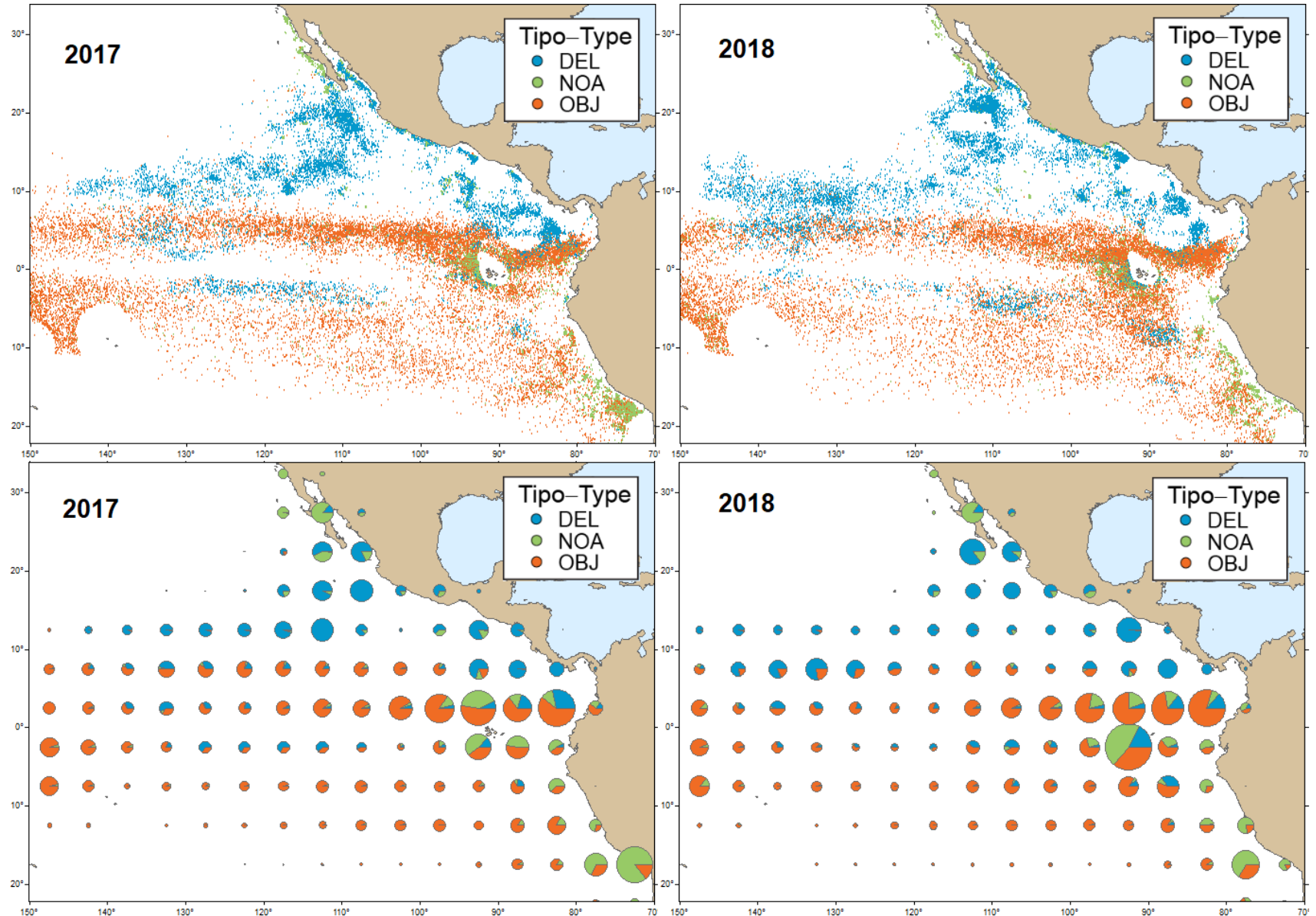
DEL 8,864 9,774

NOA 6,971 5,943

OBJ 15,682 16,806

31,517 30,523

By 5°x5° area

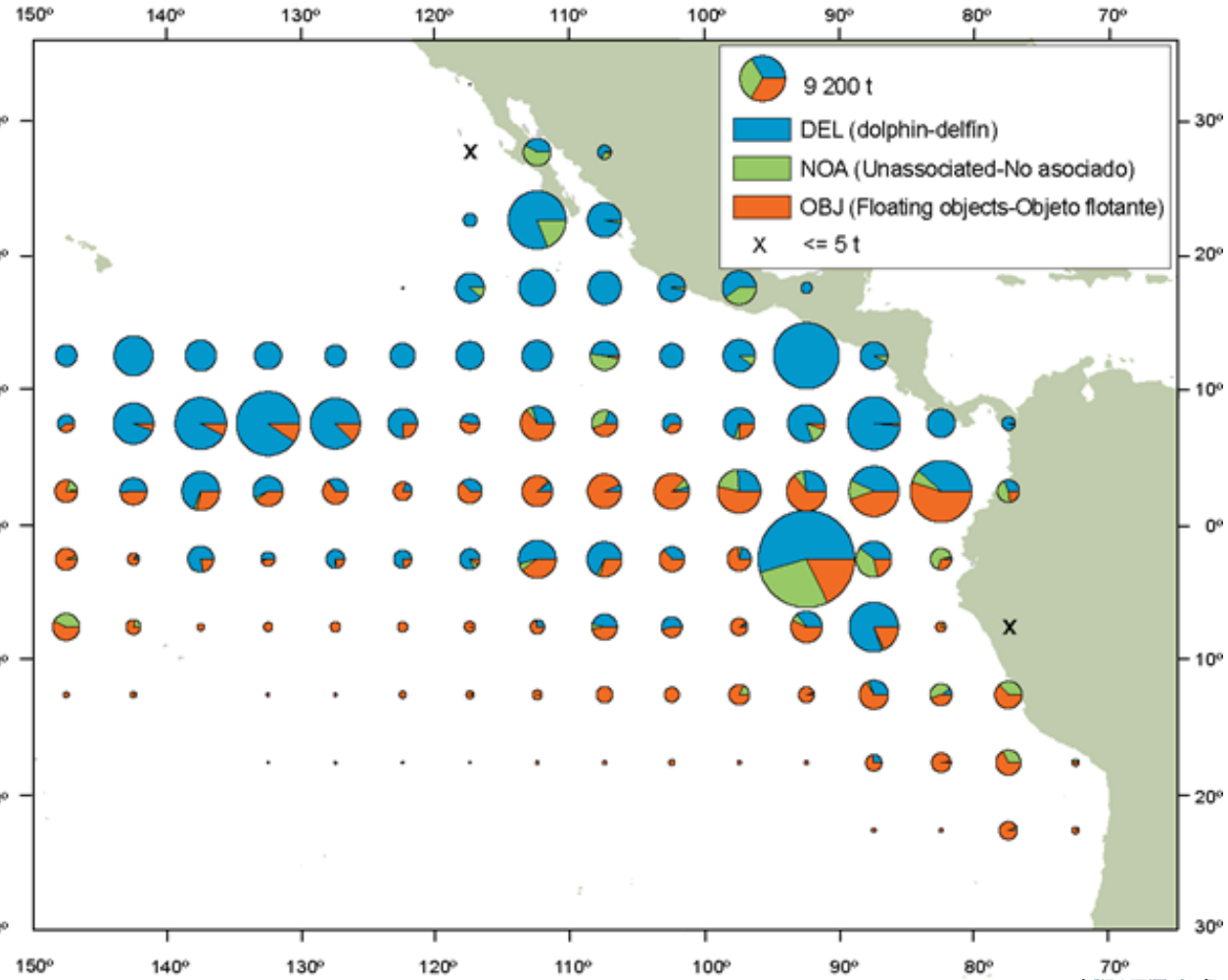
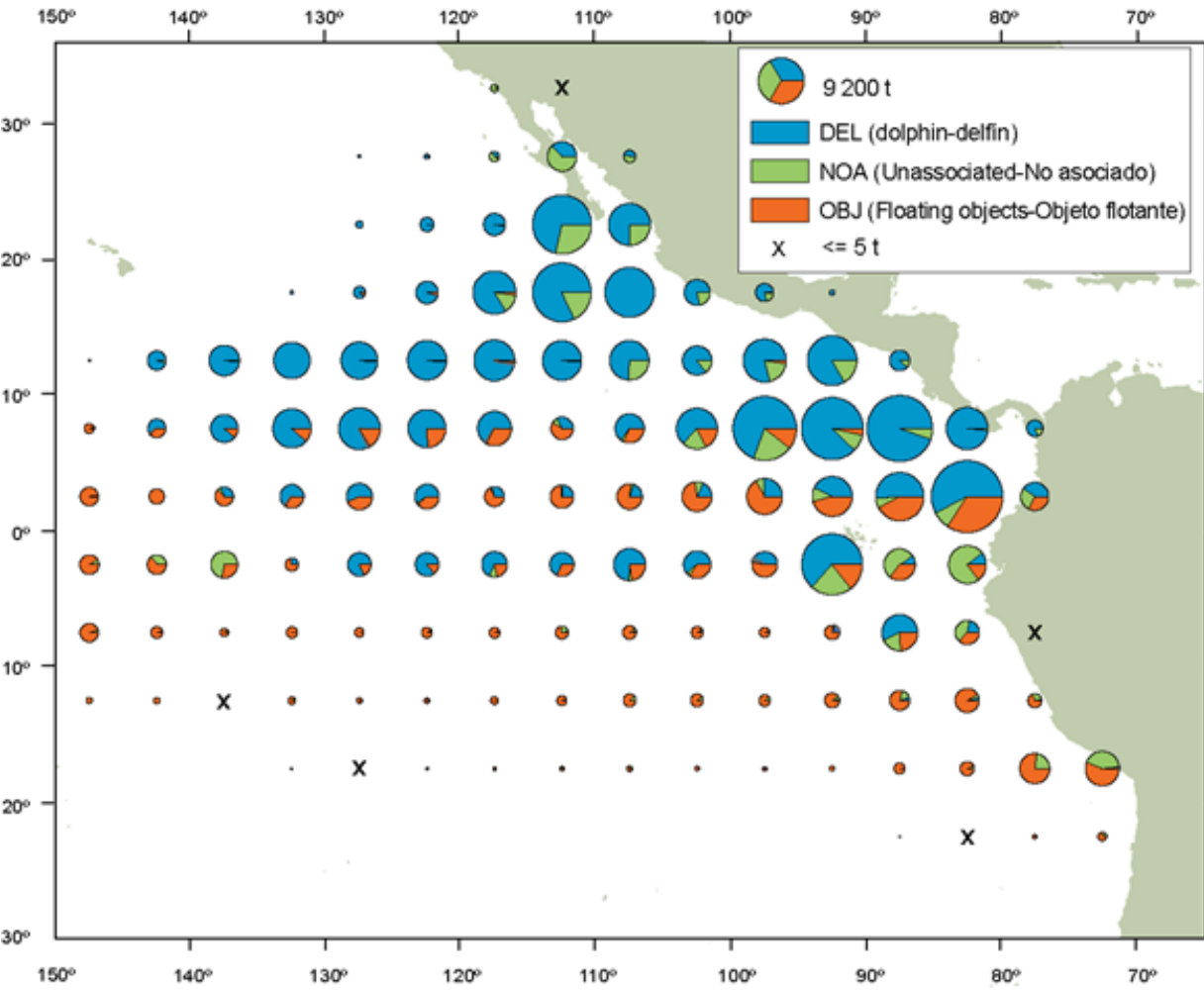


The fisheries: Distribution of purse-seine yellowfin catches, by set type



Average 2013-2017

2018

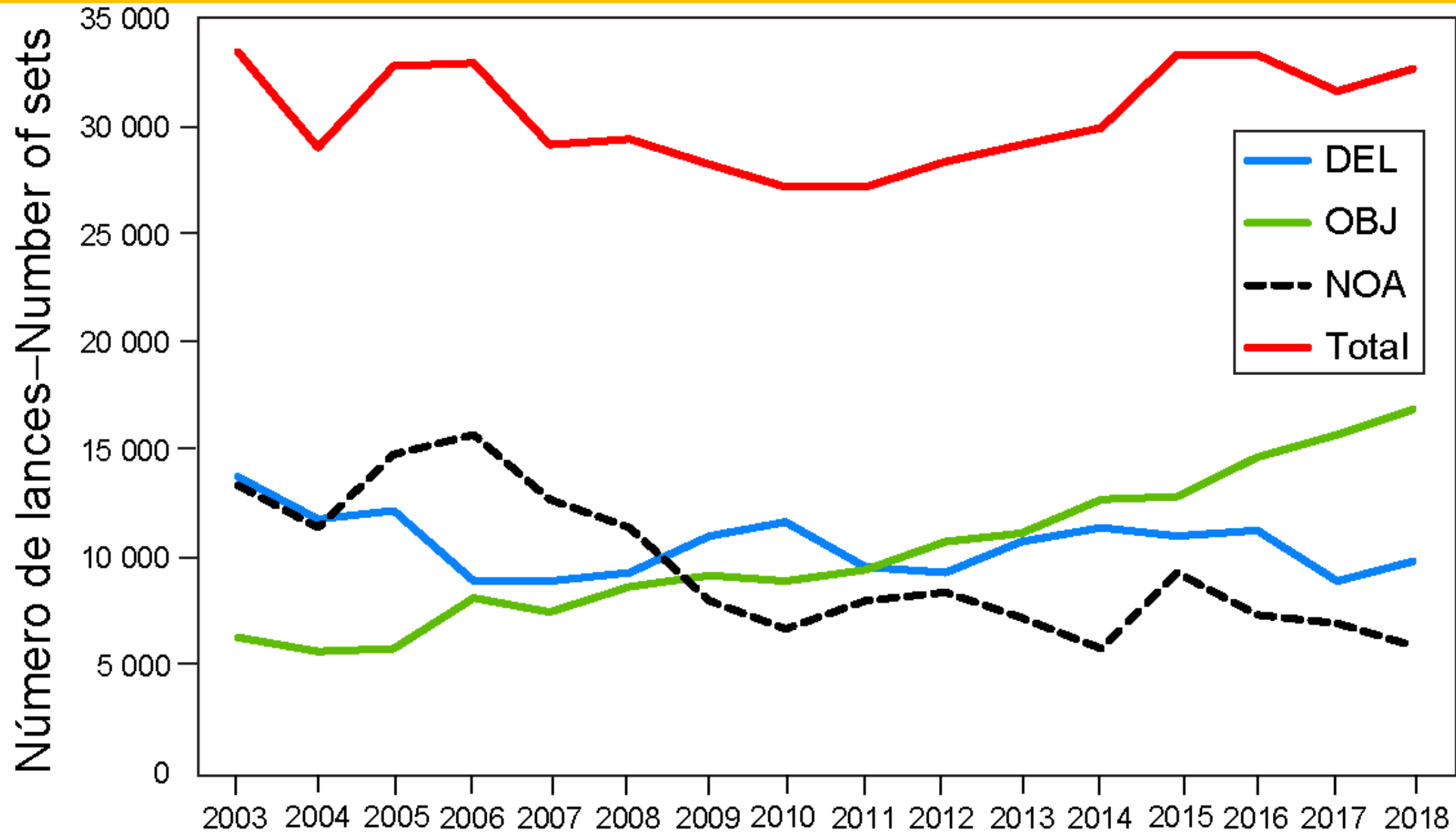


230 000 t (211 000 - 246 000)

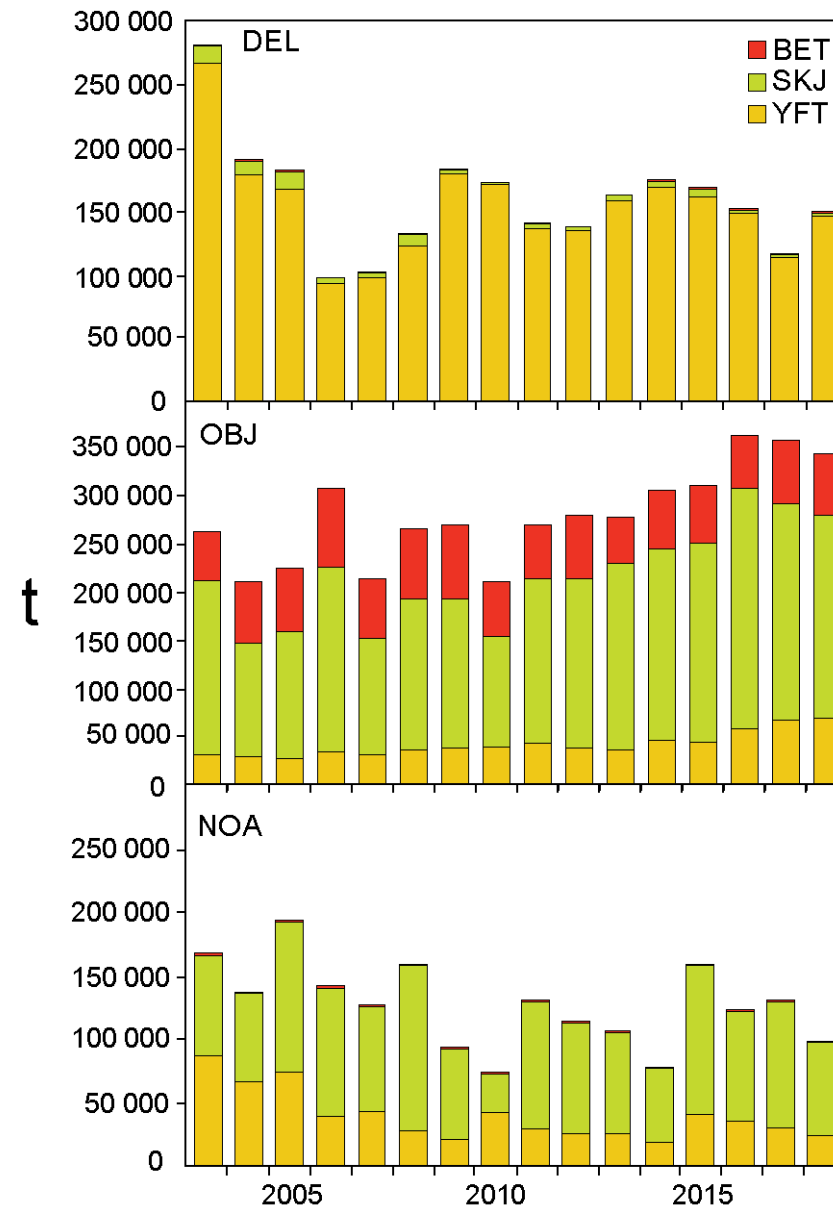
237 000 t 3% mayor-higher



The fisheries: Number of sets, by type 2003-2018



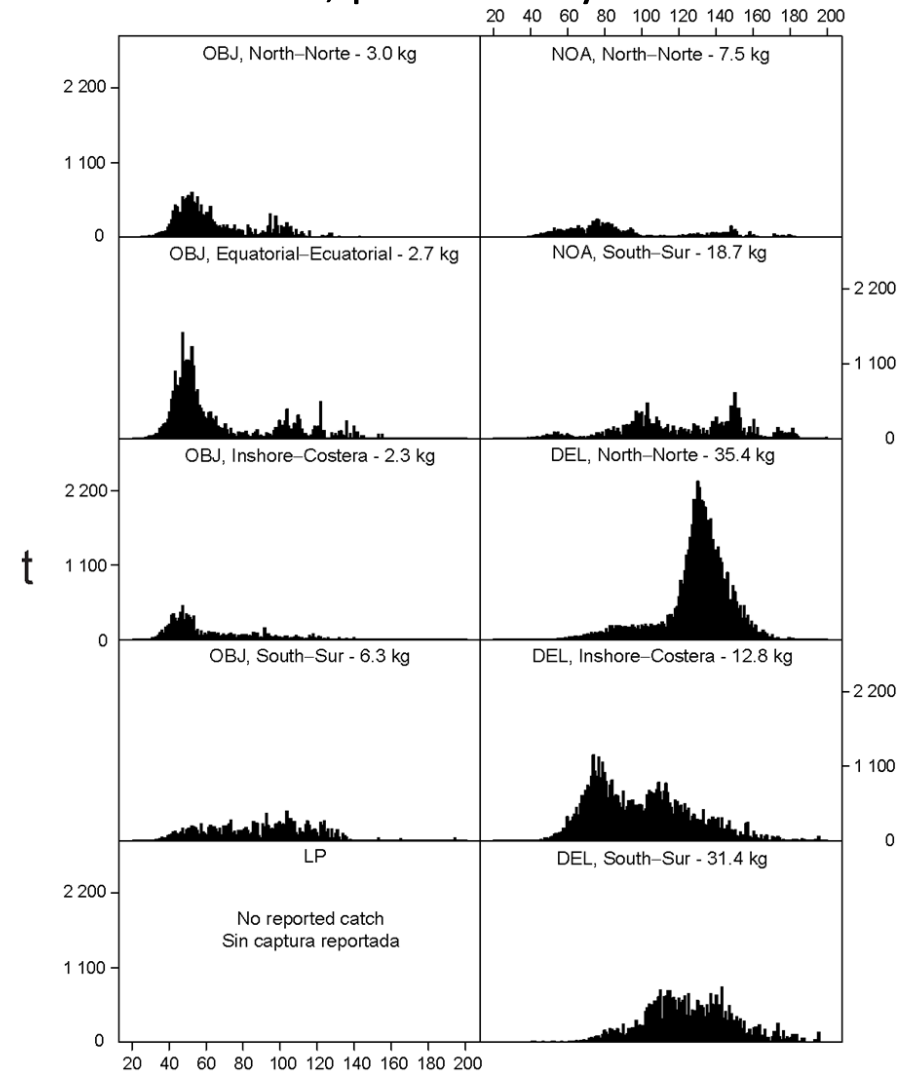
The fisheries: Purse-seine catches of tunas, by species and set type, 2003-2018



The fisheries: Yellowfin Length composition, purse-seine and pole-and-line catches

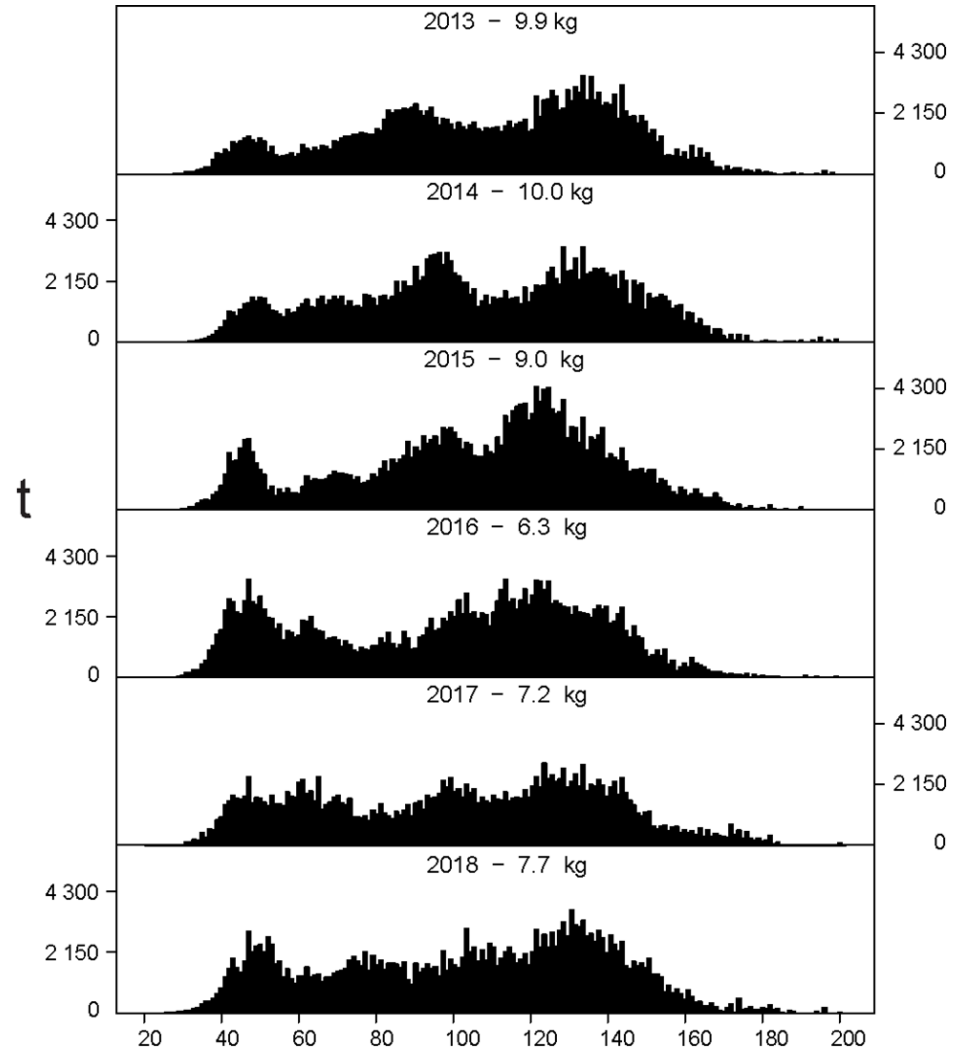


2018, por área-by area



Length (cm)-Talla (cm)

2013 - 2018



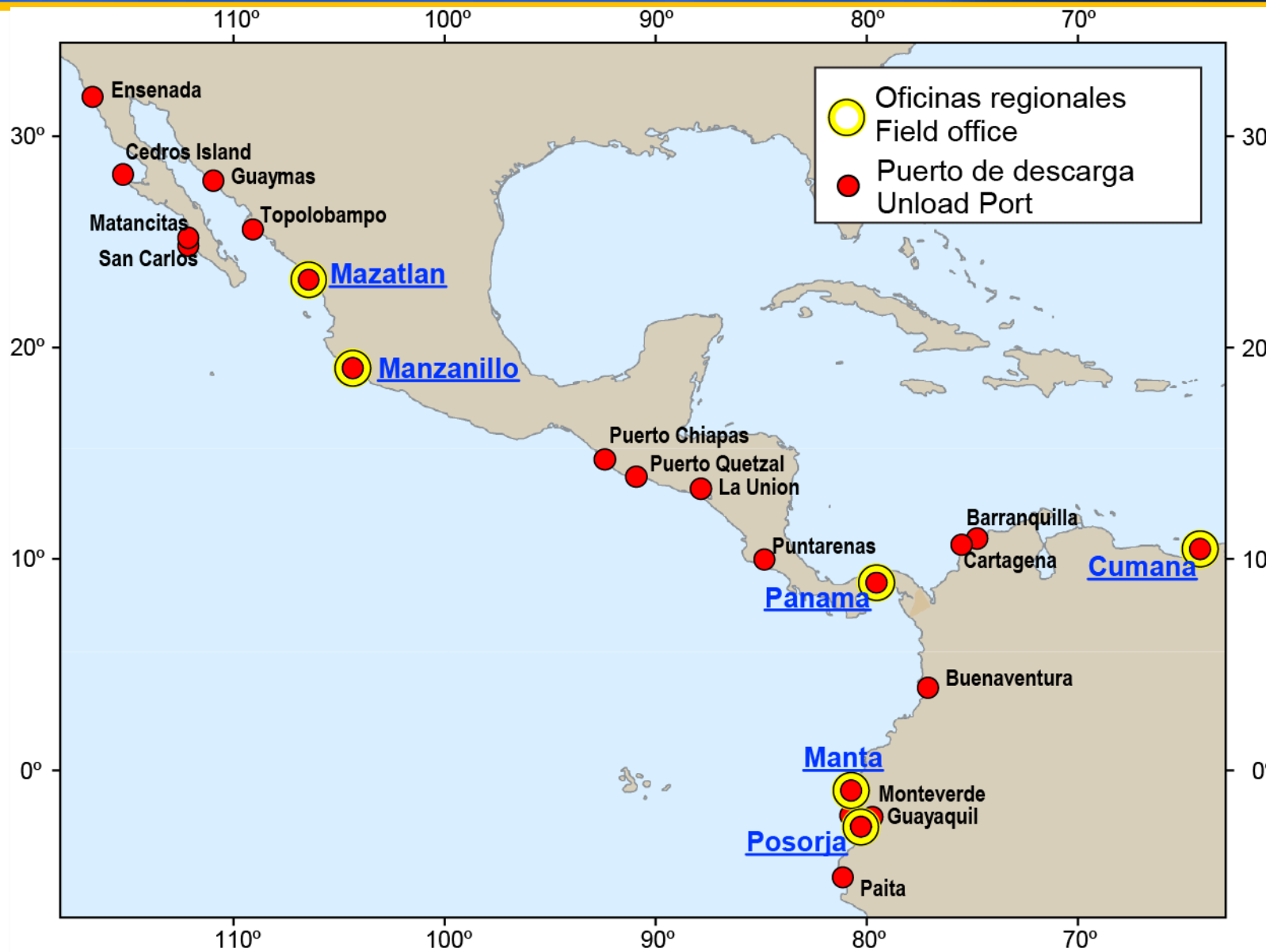
Length (cm)-Talla (cm)



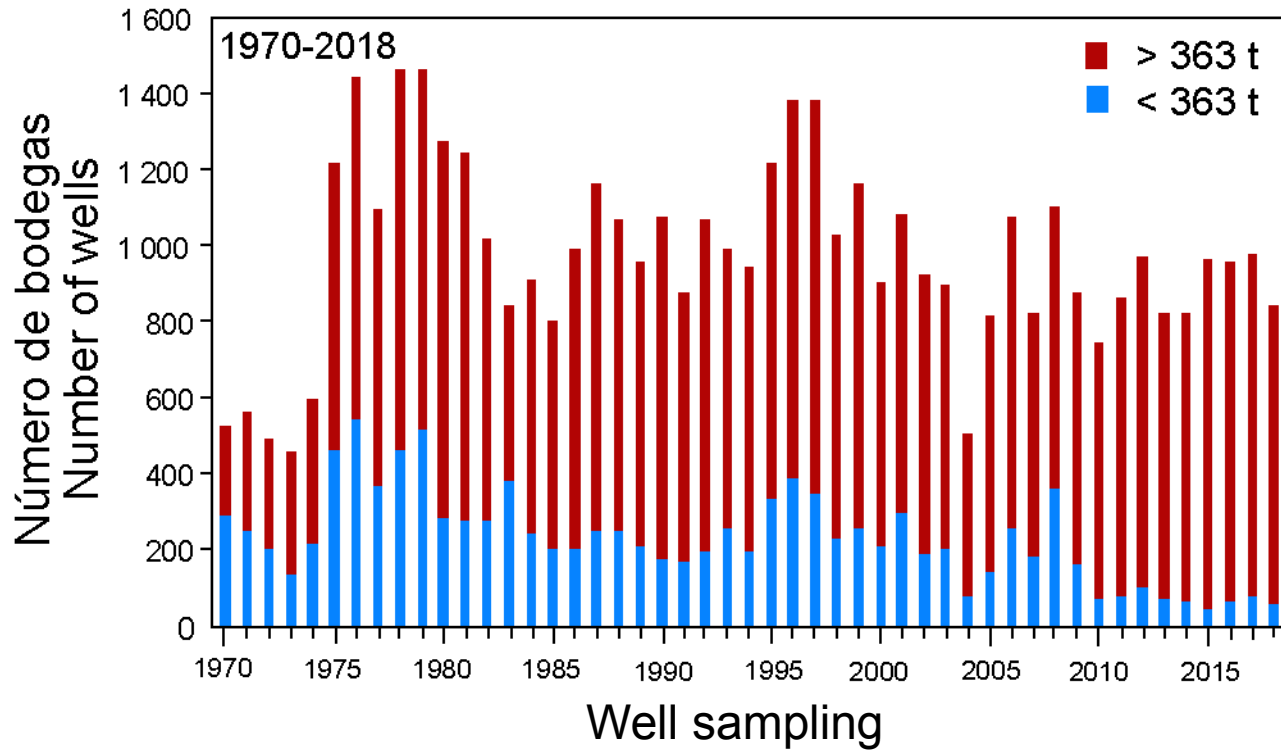
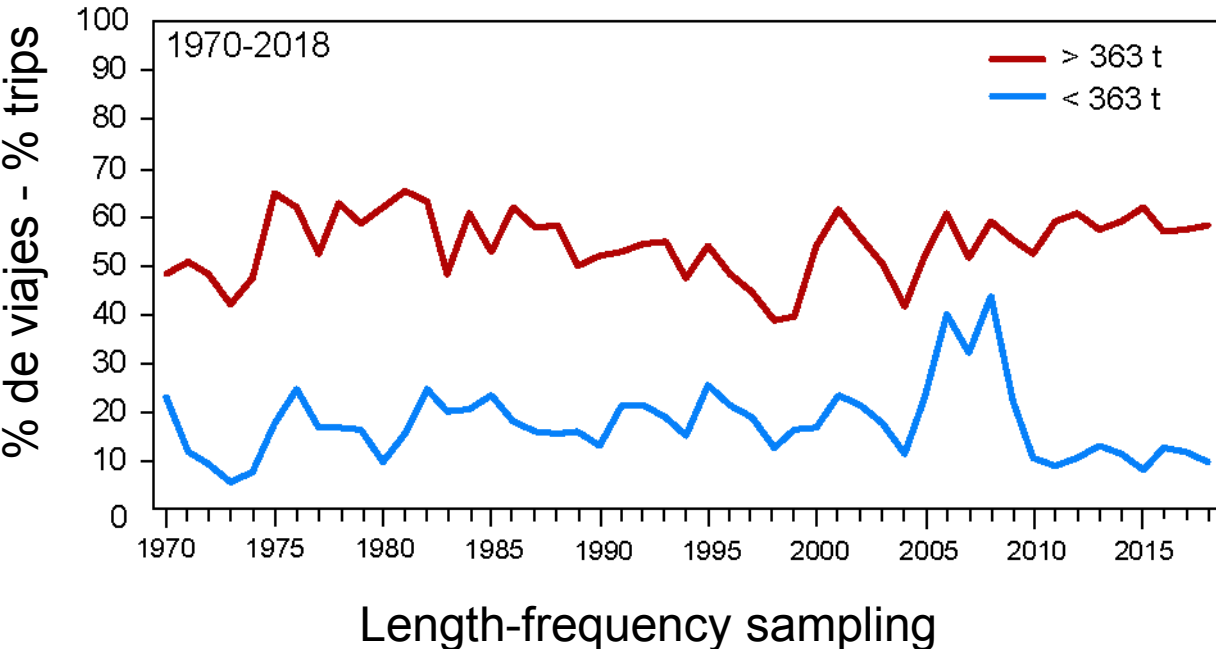
Data collection programs

- Purse seine (will expand in later presentation)
 - Canner/processor
 - Primary source for total fleet catch
 - Logbooks
 - Set-level information
 - Observers
 - 100% coverage of large vessels
 - IATCC and member country programs
 - Detailed data on fisheries operation and catch
 - Small, medium, and large size categories
 - At-sea reports
 - Near real-time catch
 - Port sampling
 - Species composition and length composition
- LL nations
 - Data provision
- Other
 - Biological sampling

CIAT oficinas regionales IATTC field offices



Sampling at IATTC field offices



Data collection programs: (longline) Data provision (RESOLUTION C-03-05)

- The data be provided, by species and fishing gear, where practical, via vessel logbooks and unloading records, and otherwise in aggregated form as in the following table, with Level 3 catch and effort data as a minimum requirement, and, whenever possible, Levels 2 and 1 catch and effort data and length-frequency data.

Category	Level	Resolution	Data
Catch and effort	1	Set-by-set, logbook data with information on gear configuration and target species	Total catch in numbers, and weight if available; fishing effort
	2	1°x1°-month, with information on gear configuration and target species	
	3	5°x5°-month, with information on gear configuration and target species	
Length frequency	1	Set position, start or end of set	Length or weight of individual fish
	2	Grid position, best possible spatial-temporal resolution of area of capture	

Research

- Stock assessment
 - CAPAM
- Ecosystem and Bycatch
 - Ecosystem
 - Risk assessment for prioritization (e.g. PSA)
 - Ecosystem models (biological interactions)
 - Bycatch mitigation and gear technology
- Biology
 - Life history and behavior
 - Age and growth
 - Movement from tagging
 - Maturity and fecundity
 - Early life history (Ashotines Laboratory)
 - Laval growth and survival
 - Recruitment mechanisms

Assessments

- Assessments
 - Benchmark (2020)
 - Update
 - Exploratory
 - Indicators
- Stock synthesis
 - Age-structured catch at length integrated analysis

ARTICLE II. OBJECTIVE

The objective of this Convention is to ensure the long-term conservation and sustainable use of the fish stocks covered by this Convention, in accordance with the relevant rules of international law.

... ensure the long-term **conservation** and **sustainable use** of the fish...

- Maintain or restore the populations of harvested species at levels of abundance which can produce the **Maximum Sustainable Yield (MSY)**
- Apply the **Precautionary Approach**:

“...be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.”

Management: Harvest control rule (RESOLUTION C-16-02)

3. The harvest control rule (HCR) recommended by the scientific staff for the purse-seine fishery for tropical tunas shall be adopted, in accordance with the following principles:
 - a. The scientific recommendations for establishing management measures in the fisheries for tropical tunas, such as closures, which can be established for multiple years, shall attempt to prevent the fishing mortality rate (F) from exceeding the best estimate of the rate corresponding to the maximum sustainable yield (F_{MSY}) for the species that requires the strictest management.
 - b. If the probability that F will exceed the limit reference point (F_{LIMIT}) is greater than 10%, as soon as is practical management measures shall be established that have a probability of at least 50% of reducing F to the target level (F_{MSY}) or less, and a probability of less than 10% that F will exceed F_{LIMIT} .
 - c. If the probability that the spawning biomass (S) is below the limit reference point (S_{LIMIT}) is greater than 10%, as soon as is practical management measures shall be established that have a probability of at least 50% of restoring S to the target level (dynamic S_{MSY}) or greater, and a probability of less than 10% that S will descend to below S_{LIMIT} in a period of two generations of the stock or five years, whichever is greater.
 - d. For fisheries that use gears other than purse-seine nets, the recommendations by the IATTC scientific staff on additional management measures shall be as consistent as possible with those adopted for the purse-seine fishery, while taking account of the impact of those fisheries on the species compared with that of purse-seine fishery.

$$F \leq F_{MSY}$$

$$P(F > F_{LIMIT}) \leq 10\%$$

Rebuild to $P(F \leq F_{MSY}) \geq 50\%$ and
 $P(F > F_{LIMIT}) \leq 10\%$ ASAP

$$P(S < S_{LIMIT}) \leq 10\%$$

Rebuild to $P(S \geq dS_{MSY}) \geq 50\%$ ASAP
And $P(S < S_{LIMIT}) \leq 10\%$ in max(2
generations or 5 years)

Management: Reference points (RESOLUTION C-16-02)

1. For the purposes of this Resolution, the following definitions¹ apply:
 - a. A limit reference point is a conservation reference point based on a level of spawning biomass (S_{LIMIT}) or fishing mortality (F_{LIMIT}) that should be avoided because going beyond it could endanger the sustainability of the stock; $E_{0.5R0}$ and $S_{0.5R0}$ assuming steepness $h = 0.75$ were adopted by the 87th meeting of the IATTC as interim limit reference points for tropical tunas in the EPO.
 - b. A target reference point is a management objective based on a level of spawning biomass (S_{TARGET}) or a fishing mortality rate (F_{TARGET}) that should be achieved and maintained. S_{MSY} and F_{MSY} were adopted by the 87th meeting of the IATTC as interim target reference points for tropical tunas in the EPO.
 - c. Harvest Control Rules (HCRs) are decision rules that aim to achieve the target reference point and avoid the limit reference point by specifying pre-agreed management actions.

Limit reference points:

$$S_{LIMIT} = S(0.5R0, h=0.75)$$

$$F_{LIMIT} = F(S_{LIMIT})$$

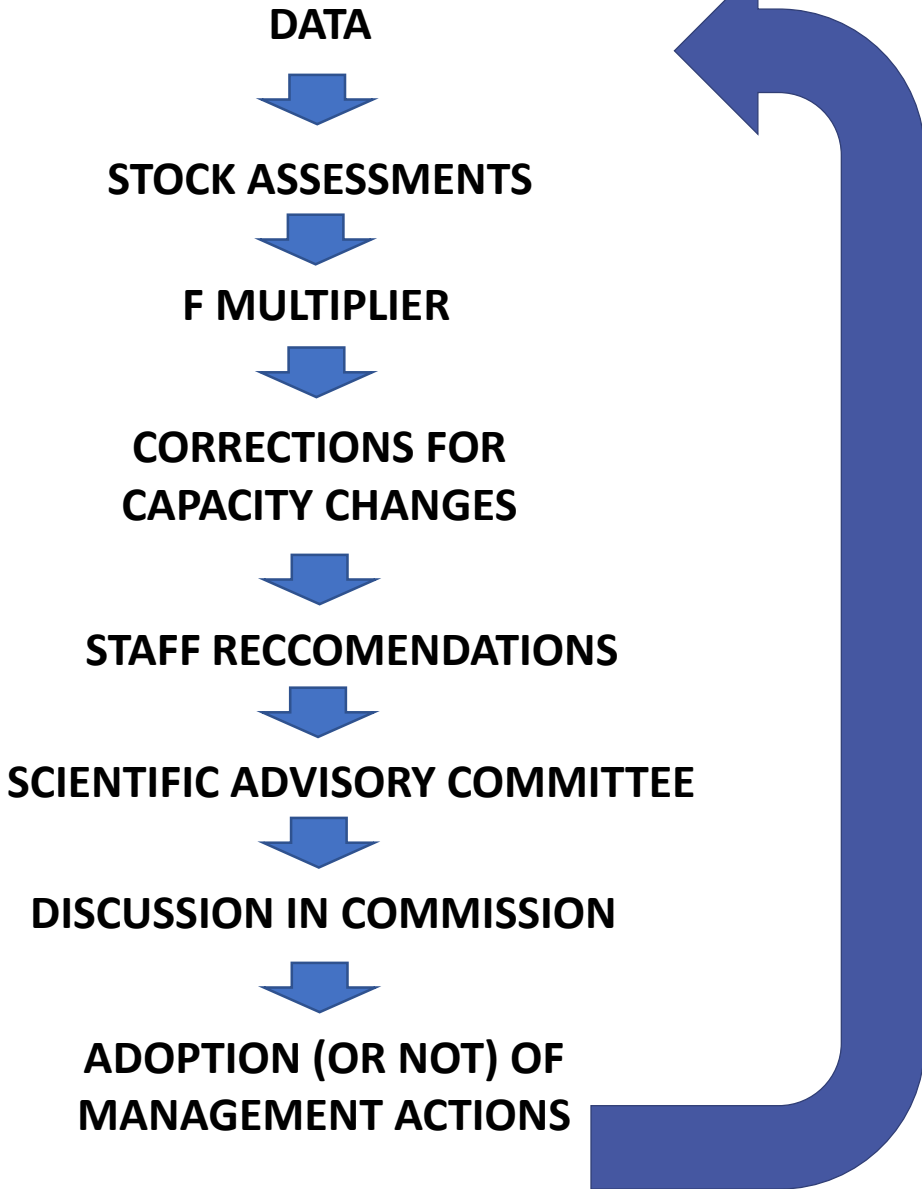
Target reference points:

$$F_{MSY} \text{ and } S_{MSY}$$

Management

- Reference points
- Control rule
- Management measures
 - Capacity limits
 - Seasonal closures
 - Spatial closure (Corralito)
 - Dolphin Mortality limits (DML)
 - Longline catch quotas (BET only)
 - Other
 - Ban on discards
 - FAD limit

Management: Process



Management: Spatial closure

- “Corralito”: spatial closure (Sep. 29 to Oct. 29)
- Equivalent to 3 closure days for all EPO (SAC-05-16).

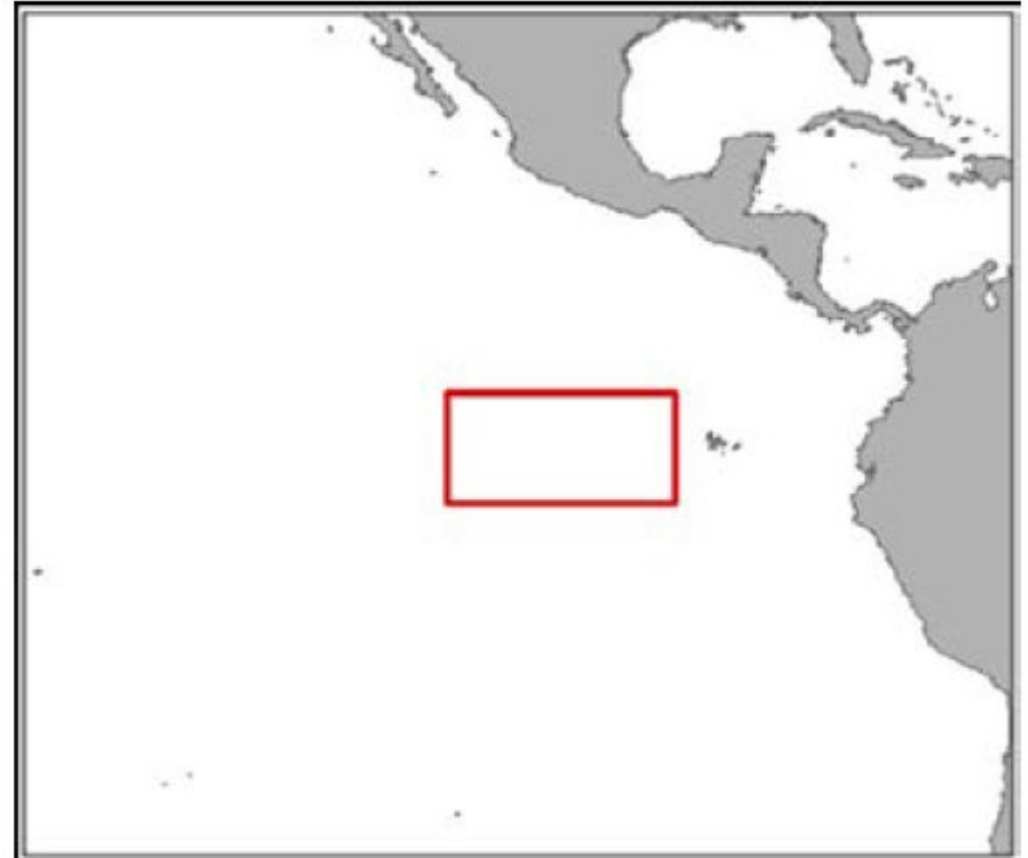
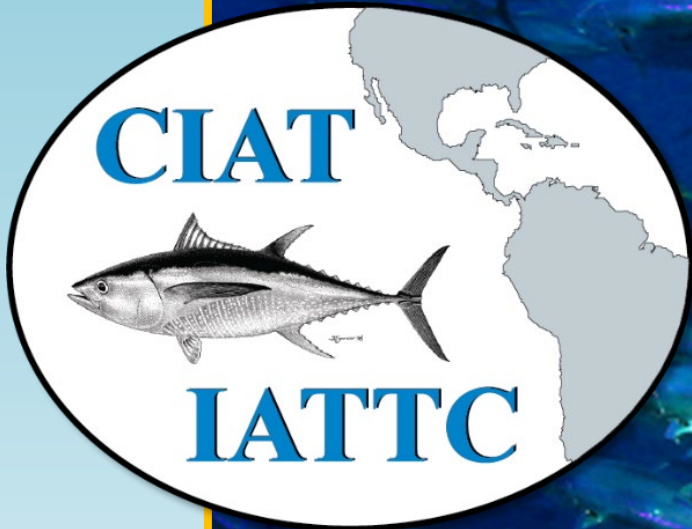


Figure 1. Closure area



Questions?

