

# The IATTC Eastern Pacific Ocean Tuna Tagging Program (EPOTTP) during 2019-2020; Objectives, Proposed Activities, and Implementation

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**Inter-American Tropical Tuna Commission**



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# INTRODUCTION

- Substantial changes in the purse-seine fishery dynamics over the past twenty years have made it difficult to assess stock status of tropical tunas in the eastern Pacific Ocean (EPO), particularly skipjack tuna (SKJ).
- Assessments conducted in recent years for the three principle tropical tuna species in the EPO have shown the need for caution in managing this fishery, but above all the need for better scientific information to reduce uncertainties in some assumptions and parameter estimates used in those assessments.
- The EPOTTP should provide a means for improving estimates of abundance, exploitation, movement, natural mortality, and growth rates for the three species.
- Due to its high and variable productivity, it is difficult to detect the effect of fishing on SKJ populations with standard fisheries data and stock assessment methods. This is particularly relevant for assessing the status of SKJ in the EPO, due to the lack of a reliable index of abundance, age-composition data, and tagging data. Estimates of abundance and exploitation rate derived from the EPOTTP are therefore essential for assessing SKJ stock status.

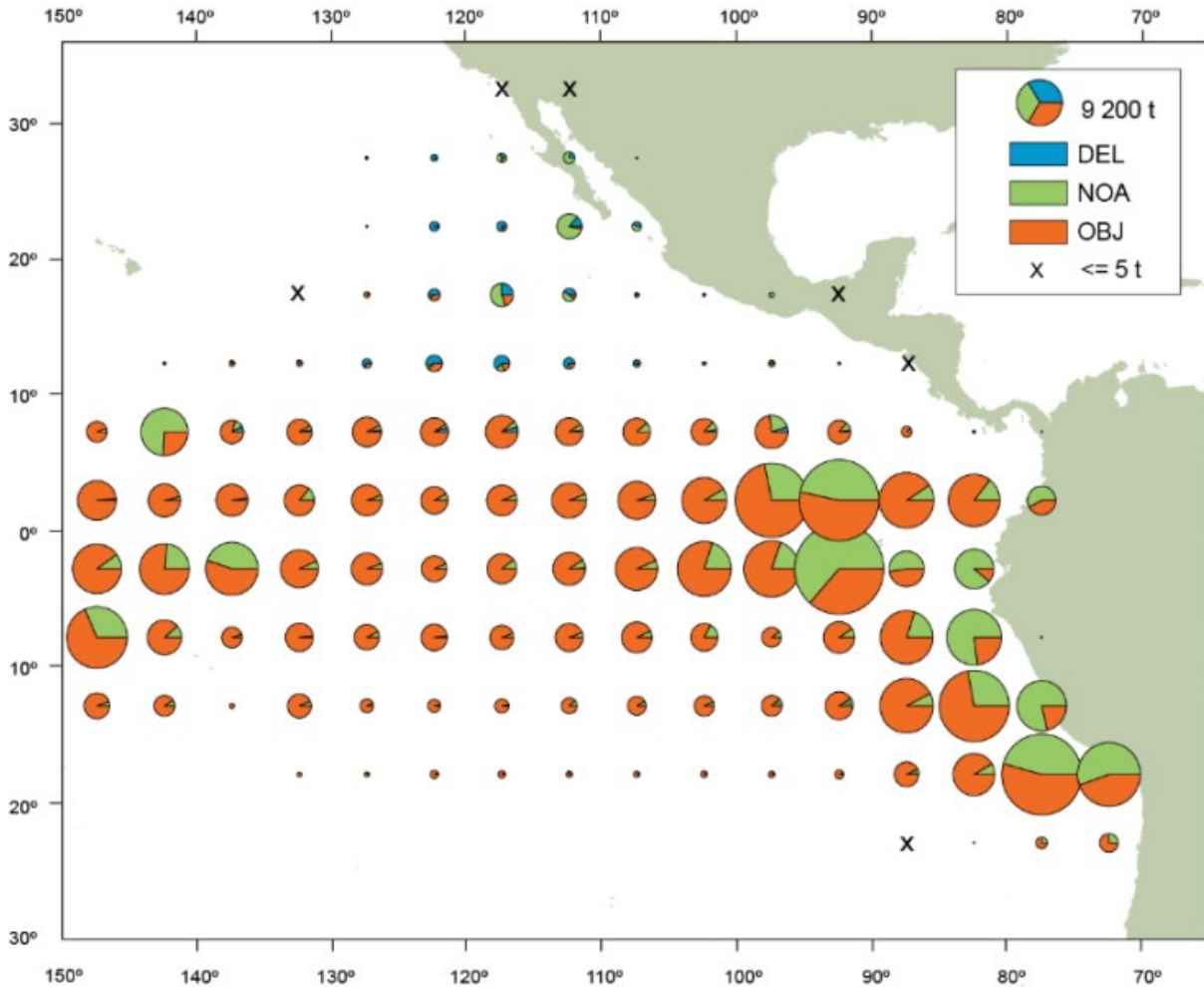
# OBJECTIVES

- Obtain information on movements and dispersion of skipjack, yellowfin, and bigeye tunas in the EPO to define the appropriate spatial scales for assessments and management.
- Improve the scientific basis for estimation of abundance, exploitation rates, selectivity, and growth and natural mortality rates for skipjack tuna, as well as yellowfin and bigeye tunas.
- The ultimate objective of the EPOTTP is to obtain the necessary data to conduct a stock assessment for skipjack, so as to determine whether current levels of exploitation are sustainable.

# Skipjack - Distribution of purse-seine catches

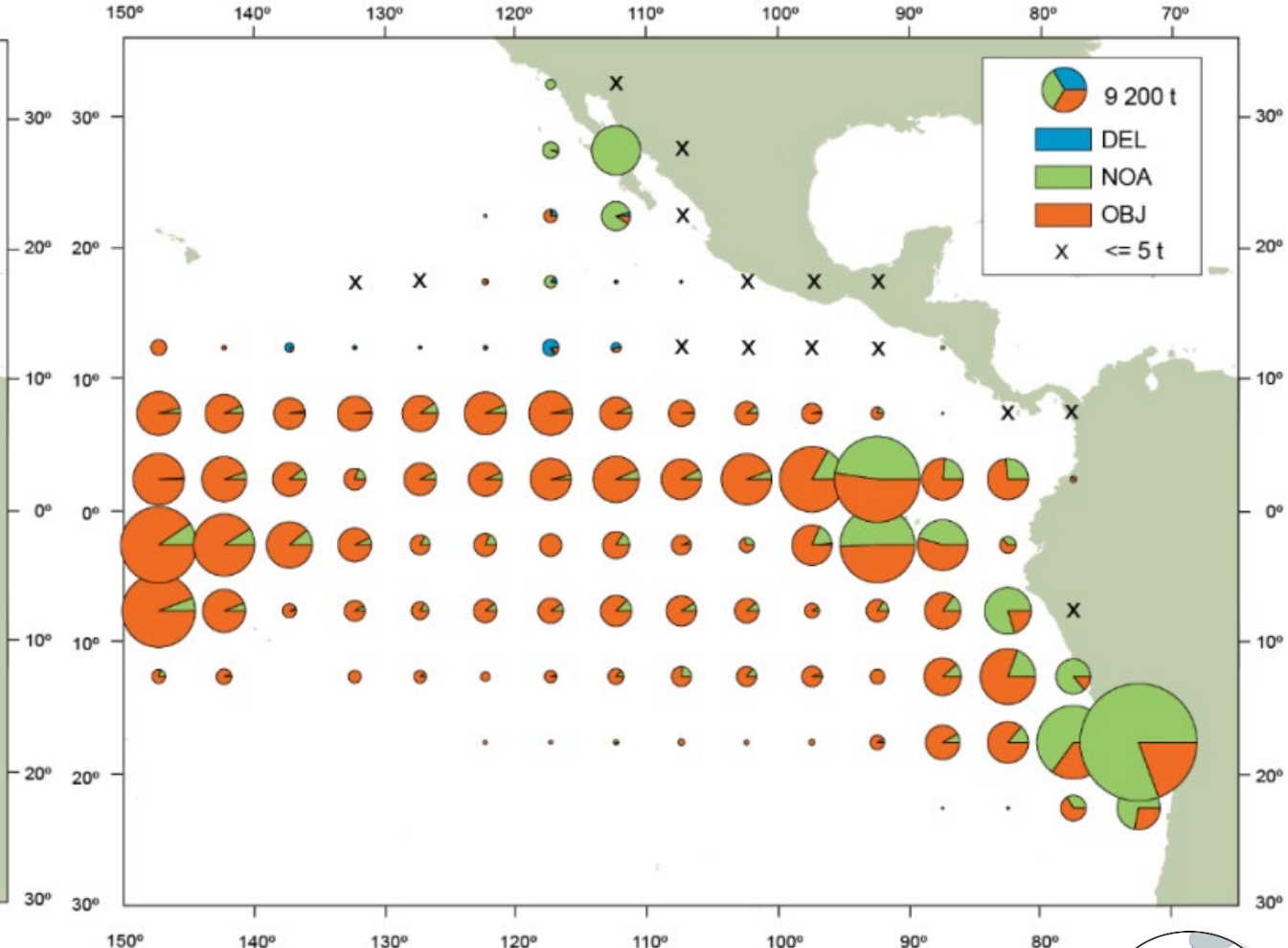


## Average 2012-2016



**295 000 mt (261 000 - 338 000)**

## 2017

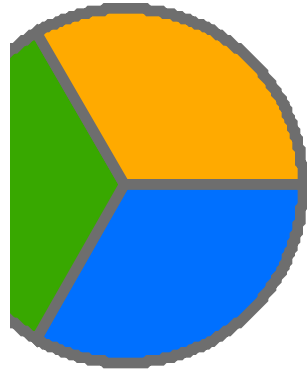


**326 000 mt 11% Higher**

# Skipjack - Distribution of purse-seine catches quarterly



Q1



Q2

Q3



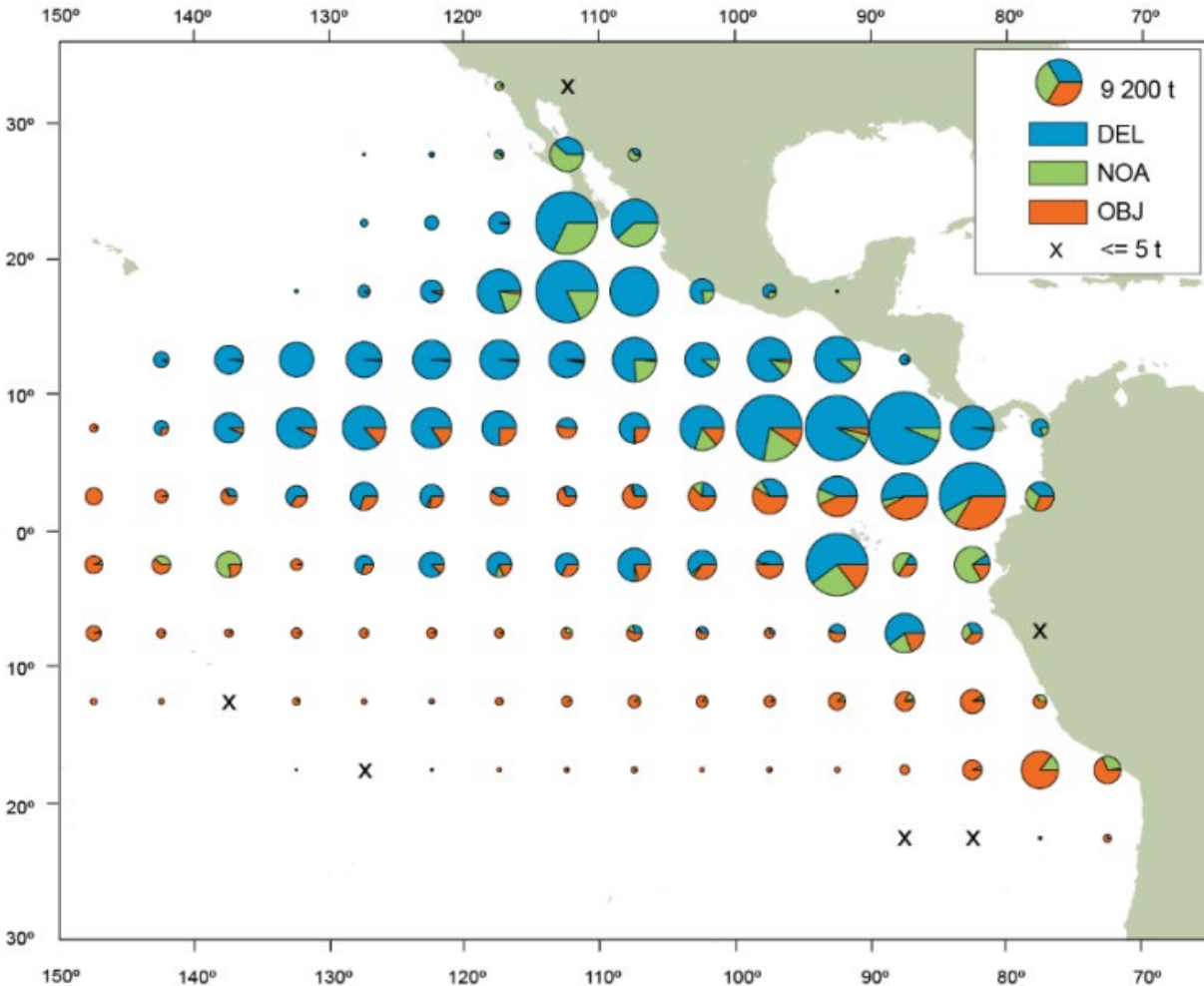
Q4



# Yellowfin - Distribution of purse-seine catches

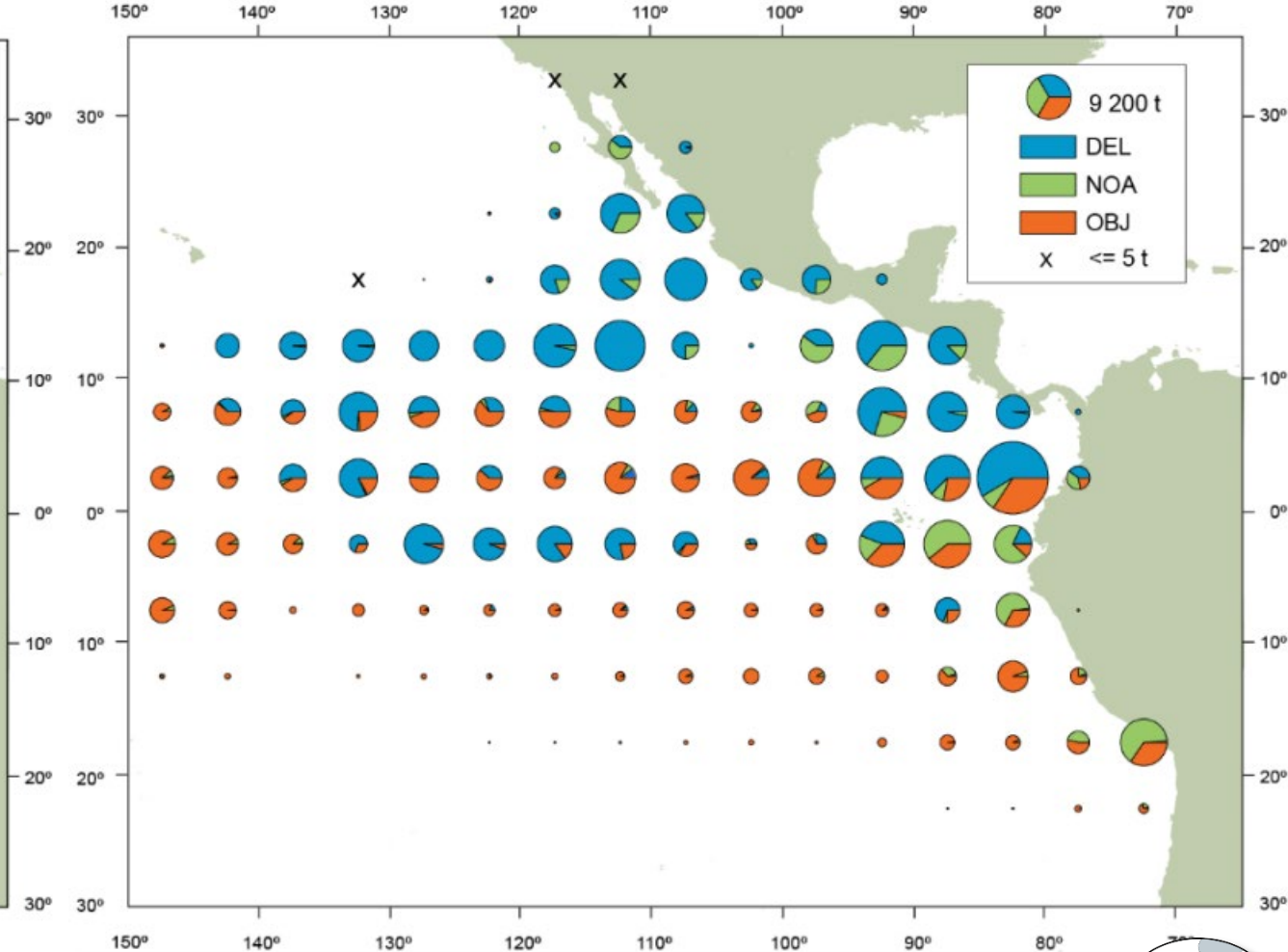


## Average 2012-2016



**228 000 mt (198 000 - 246 000)**

## 2017

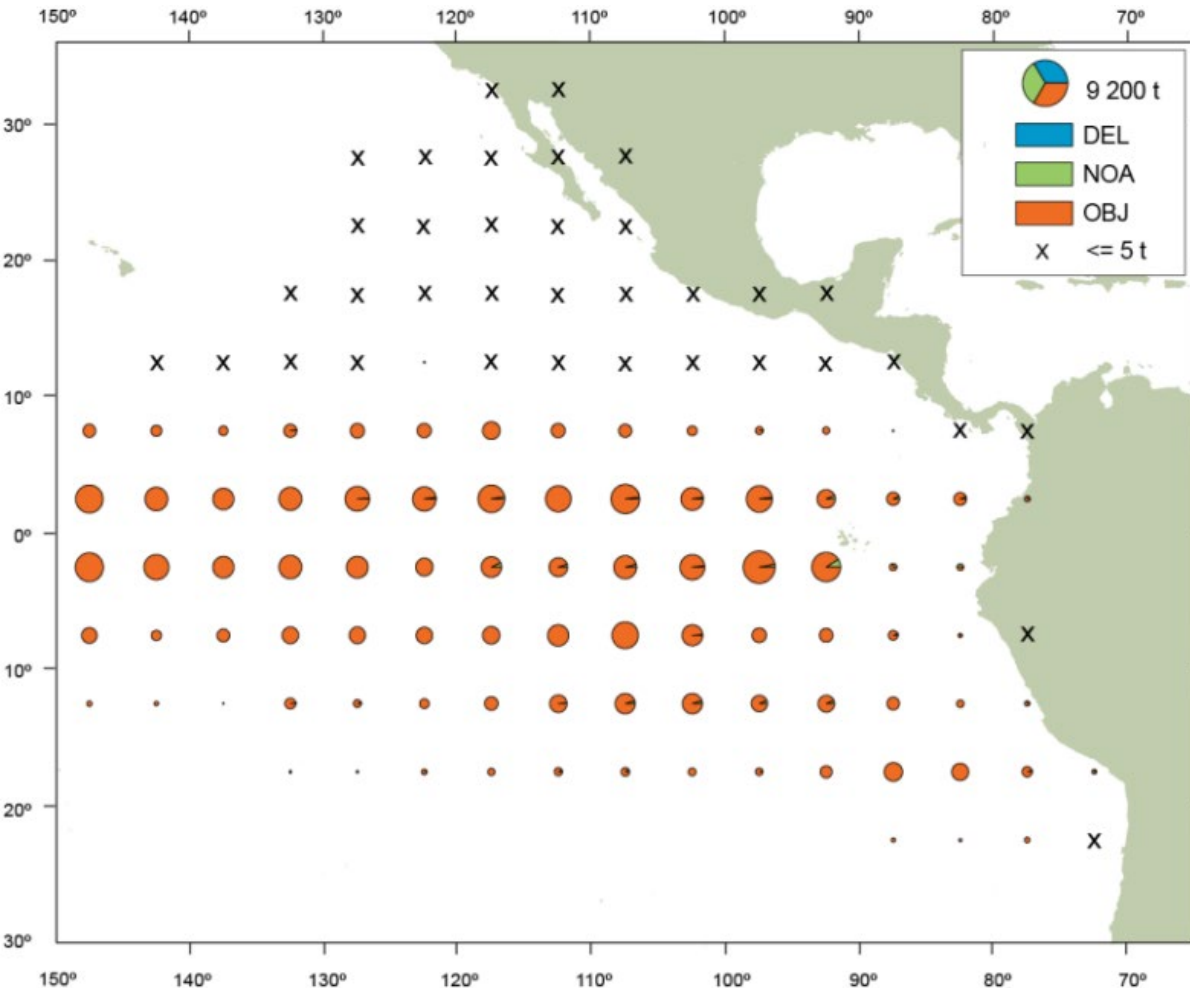


**210 000 mt 8% Lower**

# Bigeye - Distribution of purse-seine catches

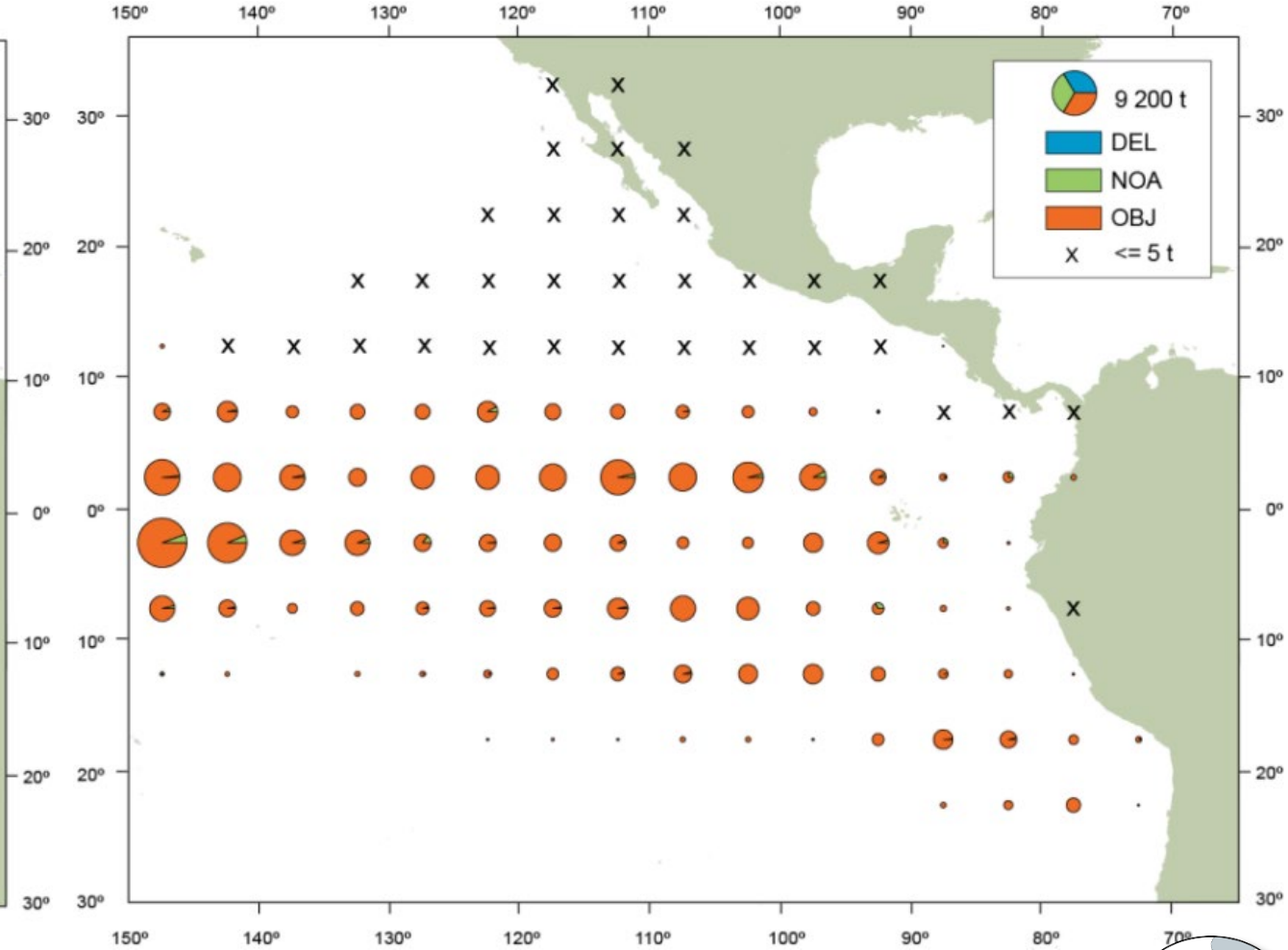


## Average 2012-2016



**59 000 mt (49 000 - 66 000)**

## 2017



**66 000 mt 12% Higher**



# PROPOSED ACTIVITIES

## Tagging cruises

- We propose to undertake 3 tropical tuna tagging cruises in the EPO, each of about 90 days duration, during 2019 and 2020 utilizing a chartered live-bait pole-and-line vessel.
- An essential requirement for each cruise is obtaining permits from some IATTC member countries for capturing bait, and fishing and tagging tunas in waters under their jurisdiction. We are also requesting permits to conduct those activities within some marine protected areas, including those around the Revillagigedo Islands, Mexico, Cocos Island, Costa Rica, Malpelo Island, Colombia, and the Galapagos Islands, Ecuador.
- Tunas of as great a size range as possible will be targeted for tagging with plastic dart tags (PDTs) and archival tags (ATs), with the intent to deploy a minimum of 10,000 PDTs per cruise, with a distribution of approximately 50% skipjack and 25% each for bigeye and yellowfin tunas. The tagging activities will target tunas in unassociated surface schools, as well as tunas associated with floating objects, islands, seamounts, and dolphins.



# PROPOSED ACTIVITIES

## Tagging cruises - 1<sup>st</sup> tagging cruise

- The first tagging cruise is scheduled to commence on March 1, 2019, for a duration of about 85 days, through a charter agreement between IATTC and the owner/captain of the San Diego based live-bait pole-and-line vessel *Her Grace*. During the period of 2000-2006 the IATTC successfully conducted tagging cruises targeting BET in the equatorial EPO through charters with the same owner/captain of *Her Grace*.
- There will be a total of 10 persons aboard the vessel upon departure, including the Captain, six crew, and 3 IATTC employees including myself, Dan Fuller, and a tagging technician to be hired from Ecuadorian observer pool.
- The cruise will be departing from San Diego, with intent to first catch live-bait off San Diego or Baja, CA, Mexico. We propose to focus fishing/tagging operations primarily off Central America and northern South America, but also fishing/tagging in waters of Mexico should opportunities arise, during transits to and from the vessel's home port.
- The principal area of operation for this tagging cruise will be between 10°N and 5°S and 80°W and 95°W. We intend to also catch live bait, specifically anchoveta, in the Gulf of Panama, and additional bait potentially in the Galapagos Islands.



# PROPOSED ACTIVITIES

## Tagging cruises – 2<sup>nd</sup> tagging cruise

- The second tagging cruise is proposed to commence on November 1, 2019, for a duration of about 85 days, through a charter agreement with the owner of a San Diego based live-bait pole-and-line vessel.
- The logistics for the second tagging cruise are proposed to be similar to the first, regarding principal area of operation, but in addition an effort would be made to allocate time to fishing/tagging tunas in waters of Mexico, including around the Revillagigedo Islands.

# PROPOSED ACTIVITIES

## Tagging cruises – 3<sup>rd</sup> tagging cruise

- The third tagging cruise is proposed to commence on February 1, 2020, for a duration of about 85 days, through a charter agreement with the owner of a San Diego based live-bait pole-and-line vessel.
- The principal area of operation proposed for the third tagging cruise is off Peru. Following a minimum one month effort off Peru targeting skipjack and yellowfin for tagging, an optimal northbound course based on successes during the first two tagging cruises will be implemented.
- We propose to solicit bids from the same three San Diego based live-bait pole-and-line vessels for the first tagging charter, for the second and third tagging cruises independently or combined. Preferably we would charter the same vessel for the second and third cruises, so we could save about 1 month of total transit time to and from south America in association with the third proposed tagging cruise.

# PROPOSED ACTIVITIES

## Tagging methods

- Tunas will be tagged with yellow PDTs, manufactured by Hallprint Pty Ltd, using tubular stainless-steel applicators, passing the barbed head of the PDT below the second dorsal fin.
- On each PDT is printed a serial number and instructions in Spanish on how to report recaptured tagged fish and claim rewards for returned tags:

**\$RECOMPENSA\$ DEVOLVER A: CIAT**

**[tagreturns@iattc.org](mailto:tagreturns@iattc.org) or [www.iattc.org](http://www.iattc.org)**

- There will be four tagging stations on the stern coaming of the chartered vessel, directly behind the fishing racks. Most fish less than about 1 m in length will be measured and tagged in aluminum cradles, lined with high-density foam padding, with 1-cm graduations marked on a smooth liner.

# PROPOSED ACTIVITIES



# PROPOSED ACTIVITIES

## Tagging methods

- Larger fish, caught with various gears, including handlines and rod-and-reel at night, will be brought aboard, using long-handled 75-cm nets hung with knotless webbing, for tagging on a high-density foam mat with a smooth liner.
- Tag release data (date and time, location, fishing gear type, tagging station, species, length, tag type and number(s)) will be recorded on digital audio recorders by the taggers, and transcribed to paper forms within 24 hours.
- In addition to the PDTs, 200 Lotek LAT-2910 ATs are intended to be implanted in skipjack, and 50 Wildlife Computers MK9 ATs in yellowfin and 50 also in bigeye, per tagging cruise. The ATs will be surgically implanted in the coelomic cavity of the fish. Tunas which are tagged with ATs, will also receive a green colored PDT. On each AT and green PDT is printed a serial number and instructions in Spanish on how to report tagged fish and claim rewards for returned tags:

**RECOMPENSA US\$250: PARA MARCA ARCHIVADORA**

**[tagreturns@iattc.org](mailto:tagreturns@iattc.org) or [www.iattc.org](http://www.iattc.org)**



# PROPOSED ACTIVITIES

## **Additional activities**

- Double tagging experiments to estimate tag shedding rates, and tag seeding experiments to estimate tag reporting rates will be conducted, and described in a subsequent presentation.
- The IATTC tag recovery program, including publicity, tag recovery technicians, tag rewards, and drawings for monetary prizes will be described in a subsequent presentation.

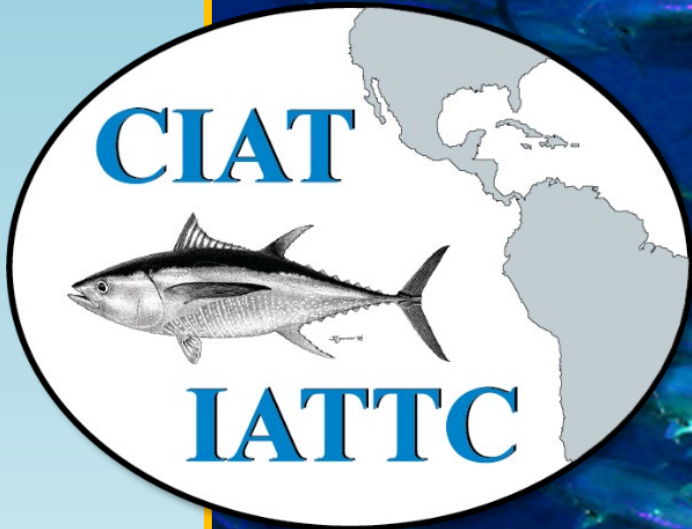
# PROPOSED ACTIVITIES

## EPOTTP PERSONNEL

- Kurt Schaefer (IATTC) will be the lead principal investigator, responsible for monitoring and supervising all activities and progress of the project. Both Kurt and Daniel Fuller (IATTC), co-principal investigator, have extensive experience in the design and execution of tuna-tagging experiments in the EPO carried out under the auspices of the IATTC since 1978 and 2000, respectively.
- Tagging technicians will be hired from the Ecuadorian observer pool to participate on each tagging cruise along with Kurt or Dan as cruise leaders.
- Three tag recovery technicians (TRTs) will be hired to work for a minimum of 2.5 years, and focus their efforts on collecting high-confidence tag recovery information from tagged tunas at the time they are found during unloading of purse-seine and freezer vessels in ports of Mazatlan, Mexico, and Manta and Psorja, Ecuador.
- An assistant scientist will be hired to work at IATTC headquarters La Jolla for editing, processing, and entering tag recapture data into the database, for a minimum of 2 years.







# Questions

