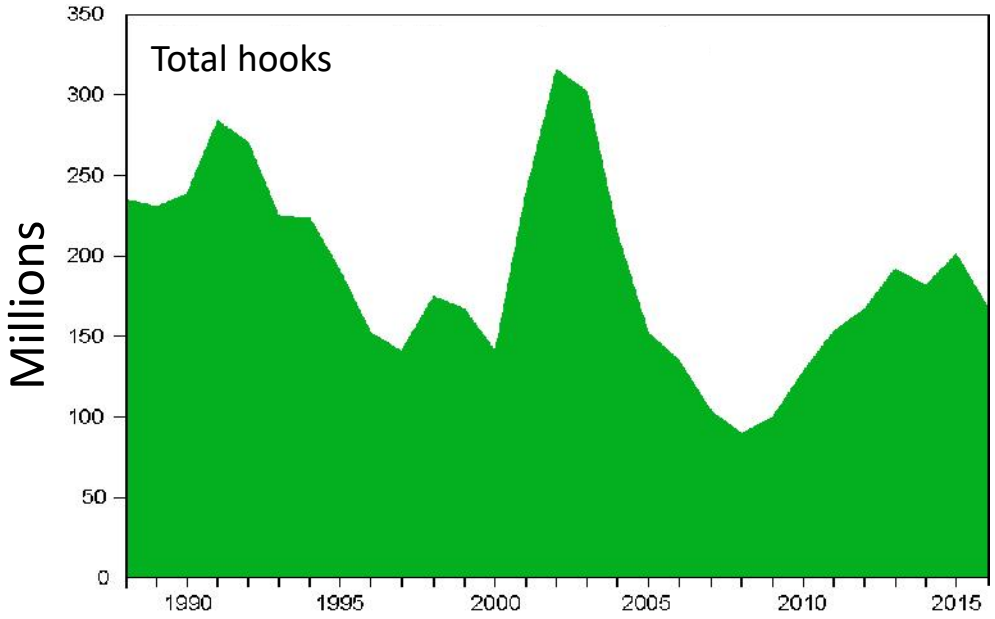
Inter-American Tropical Tuna Commission

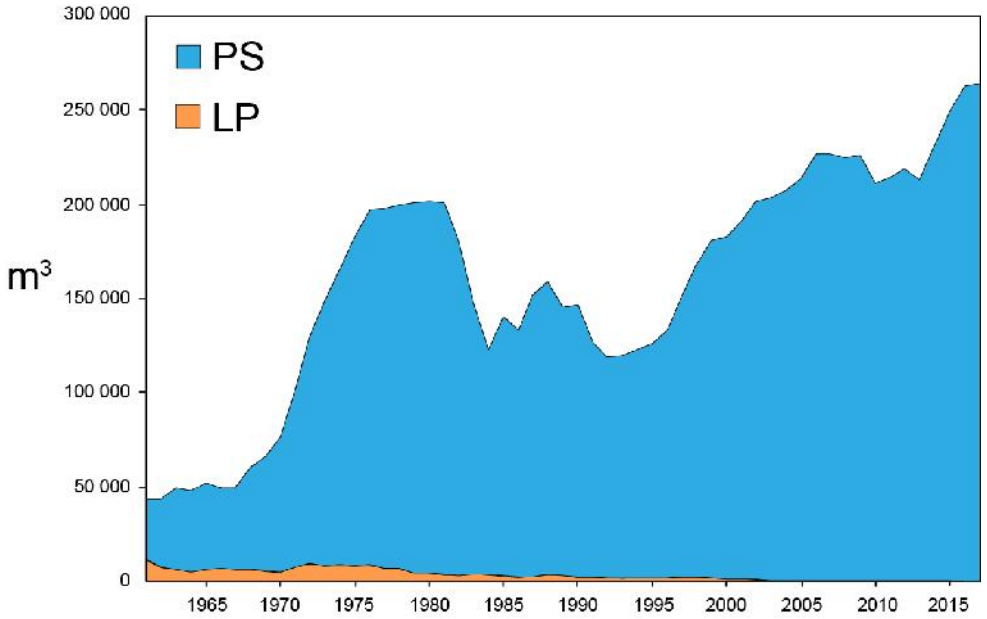
Summary of the fisheries, assessments, and conservation measures for the major stocks of tropical tunas exploited in the eastern Pacific Ocean in 2017

Fleet capacity

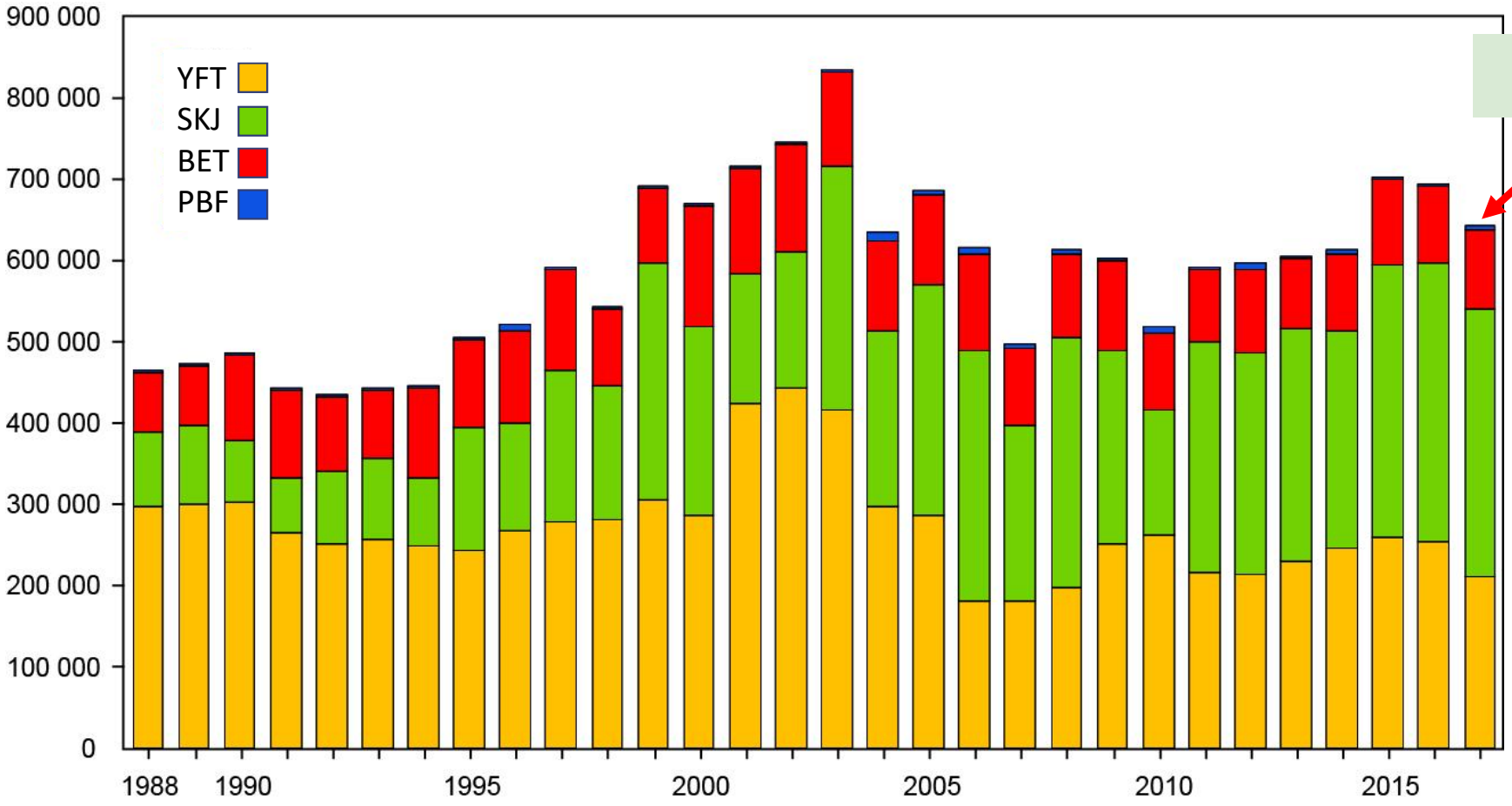
Longline



Purse-seine

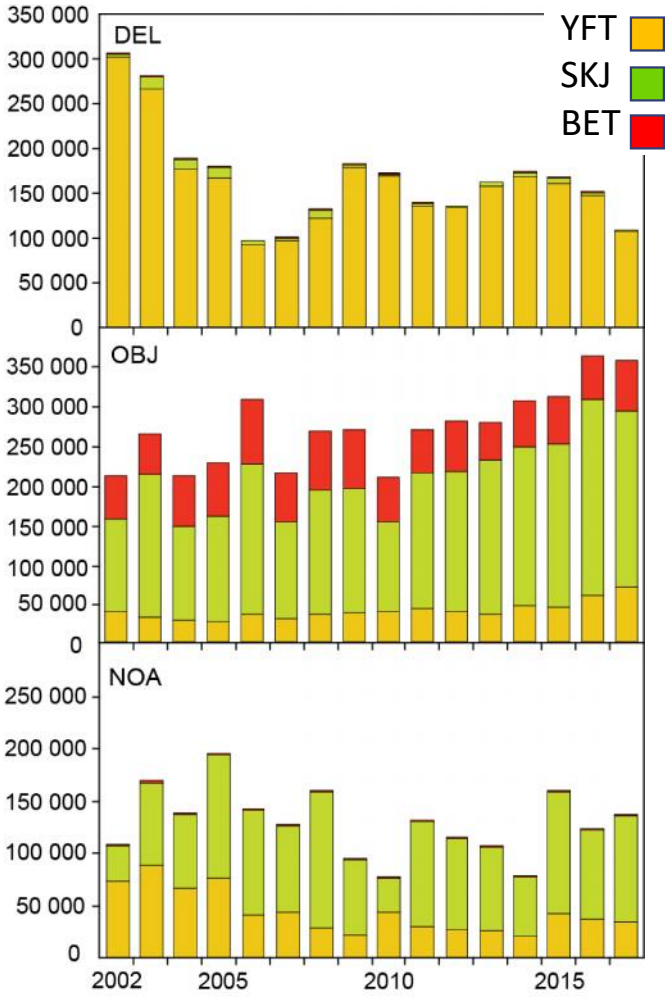


EPO retained catch – all gears



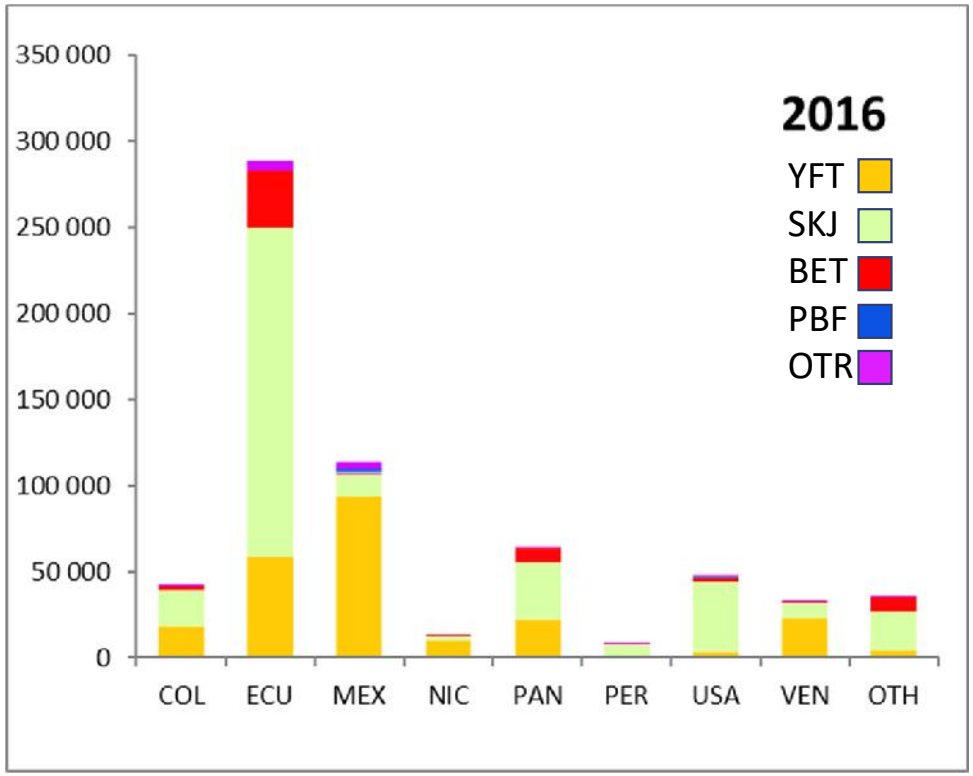
Purse-seine catches of tunas, by species and set type, 2002-2017

t

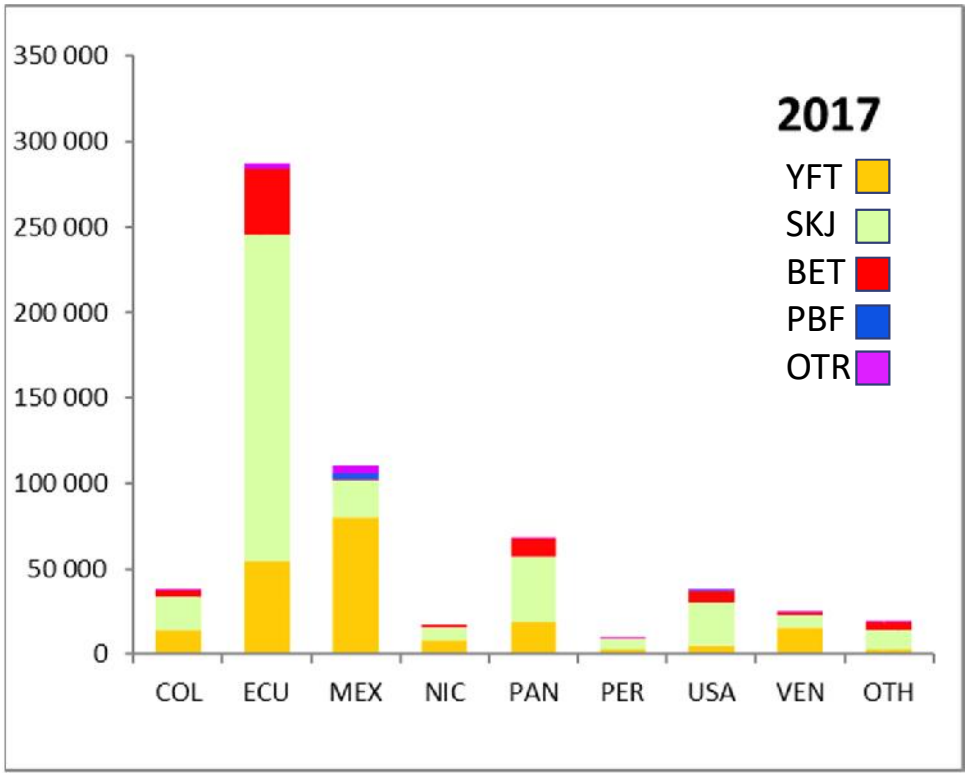


EPO Purse-seine tuna catches by country – All tuna species

t

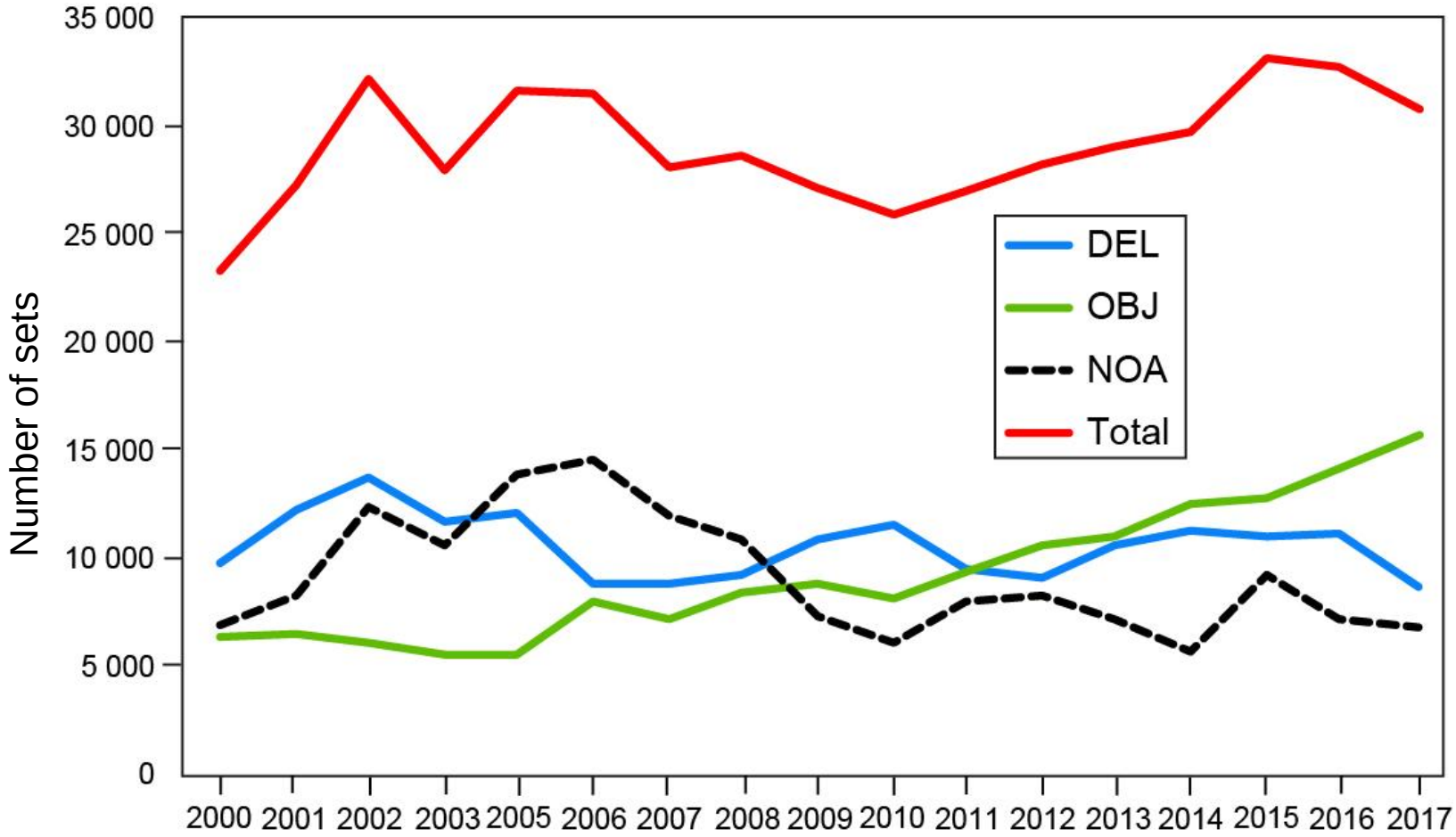


Total catch
650 000 mt

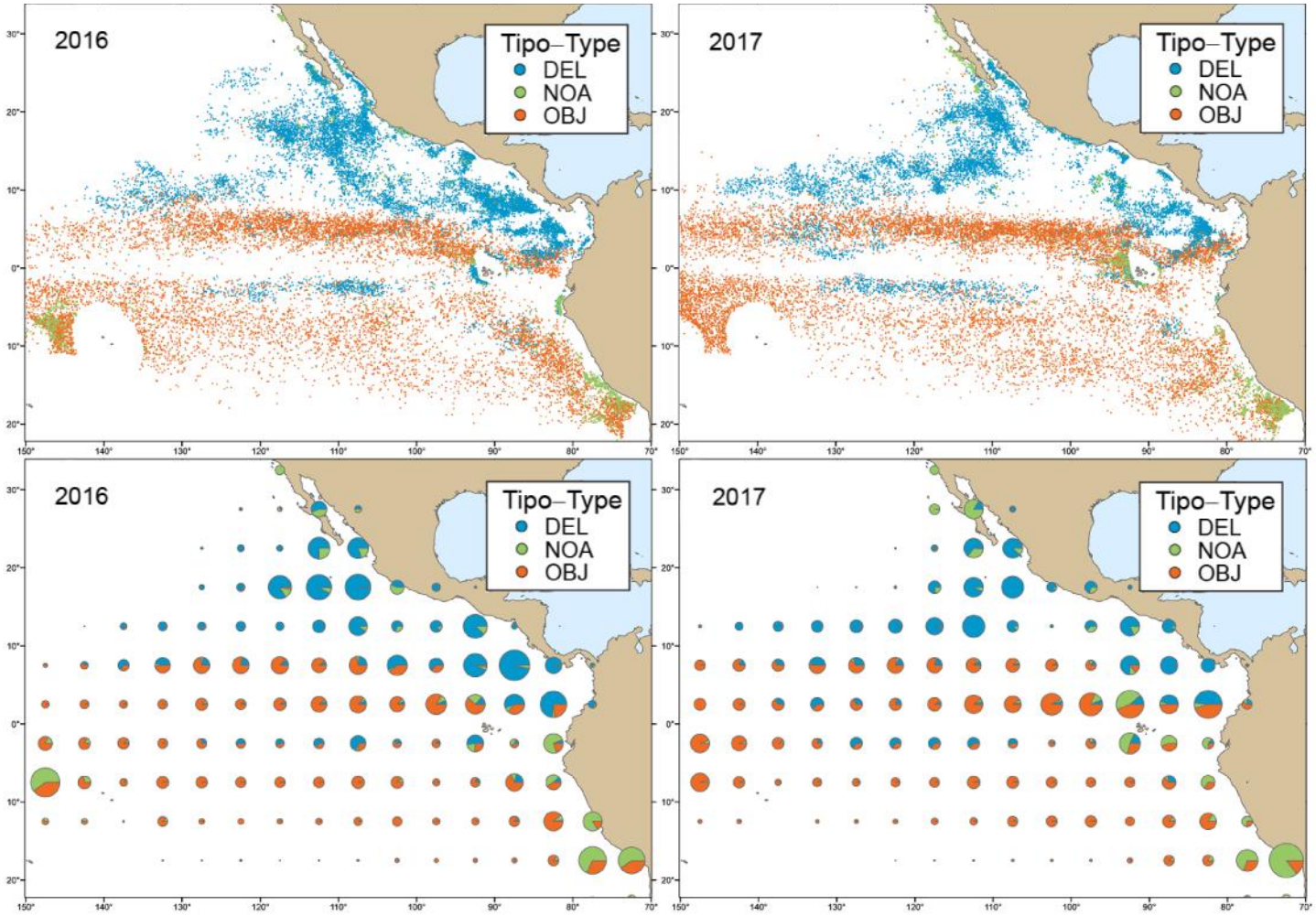


Total catch
615 000 mt

Estimated numbers of sets, by set type

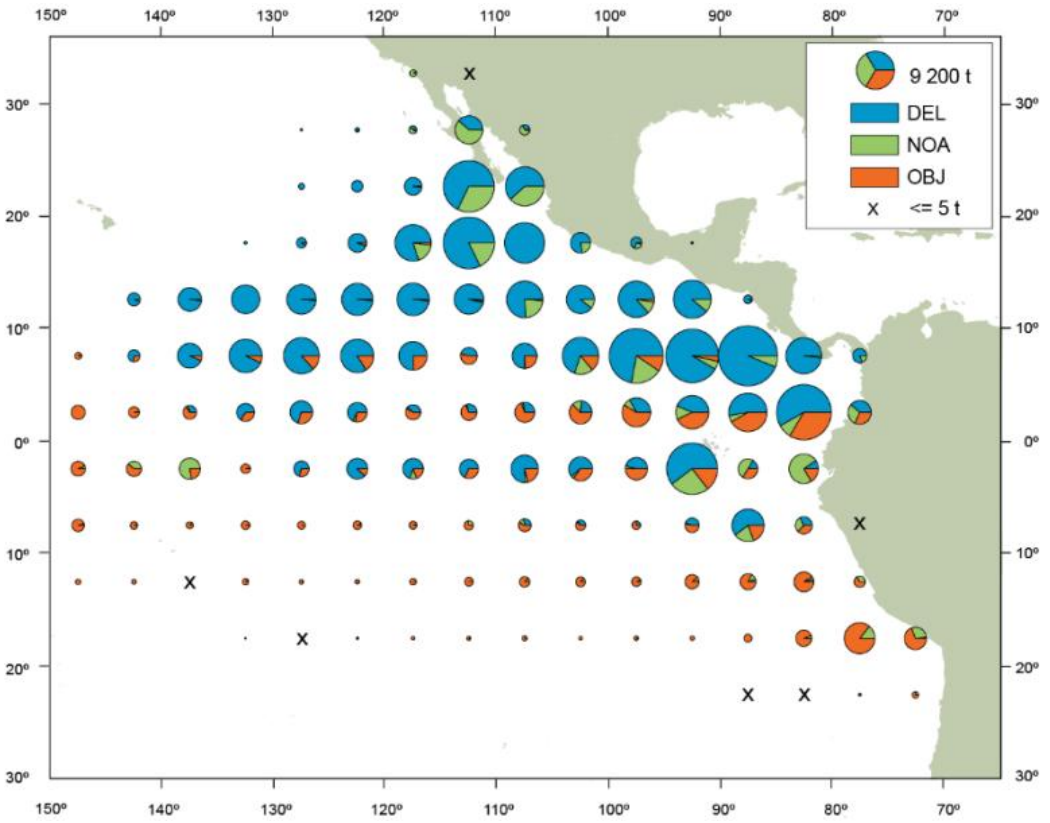


Purse-seine set locations by set type – All tuna species



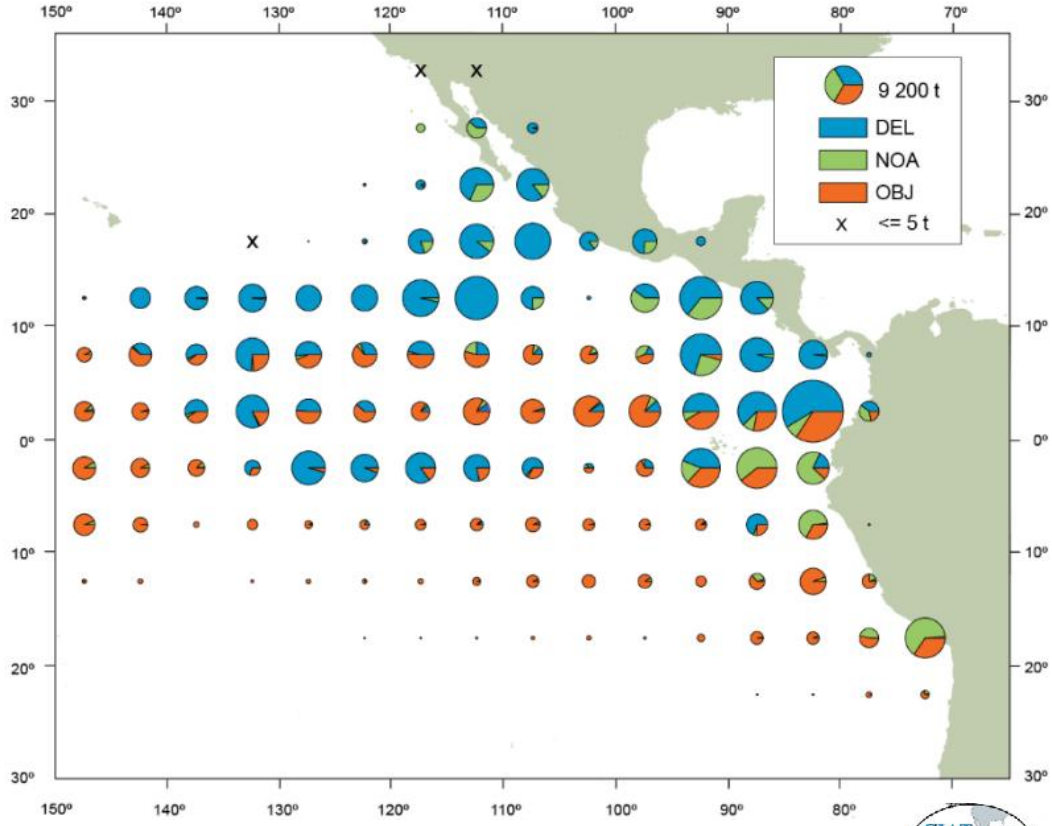
Yellowfin - Distribution of purse-seine catches

Average 2012-2016



228 000 mt (198 000 - 246 000)

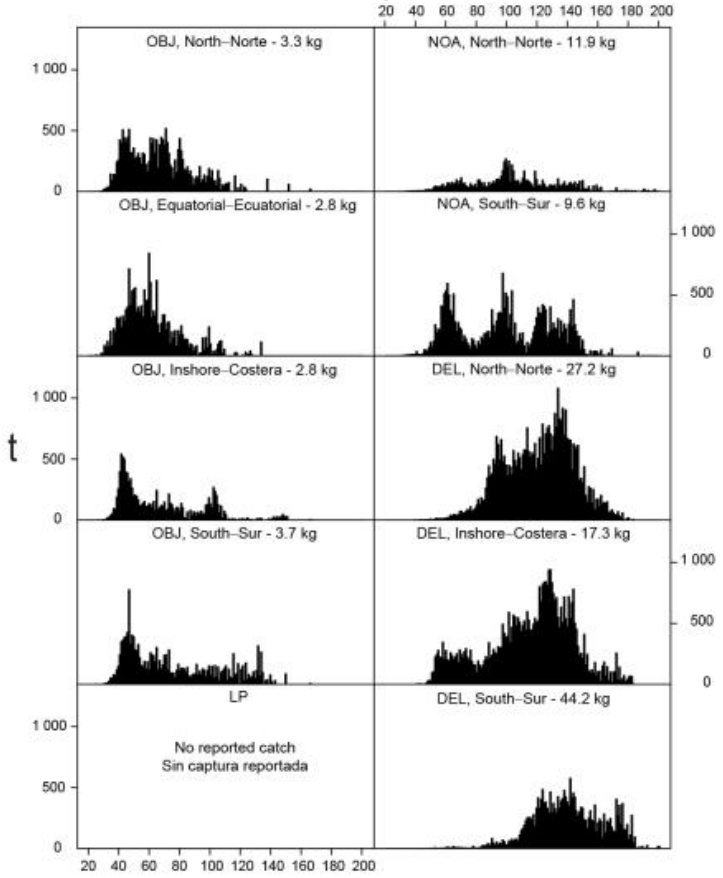
2017



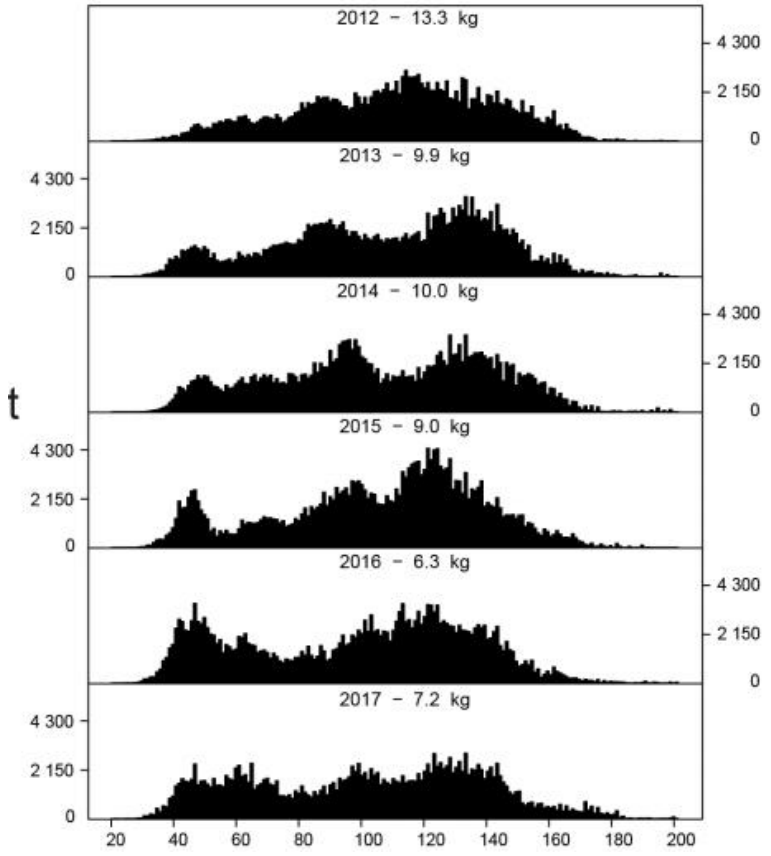
210 000 mt 8% Lower

Yellowfin – Length compositions

2017 by Area



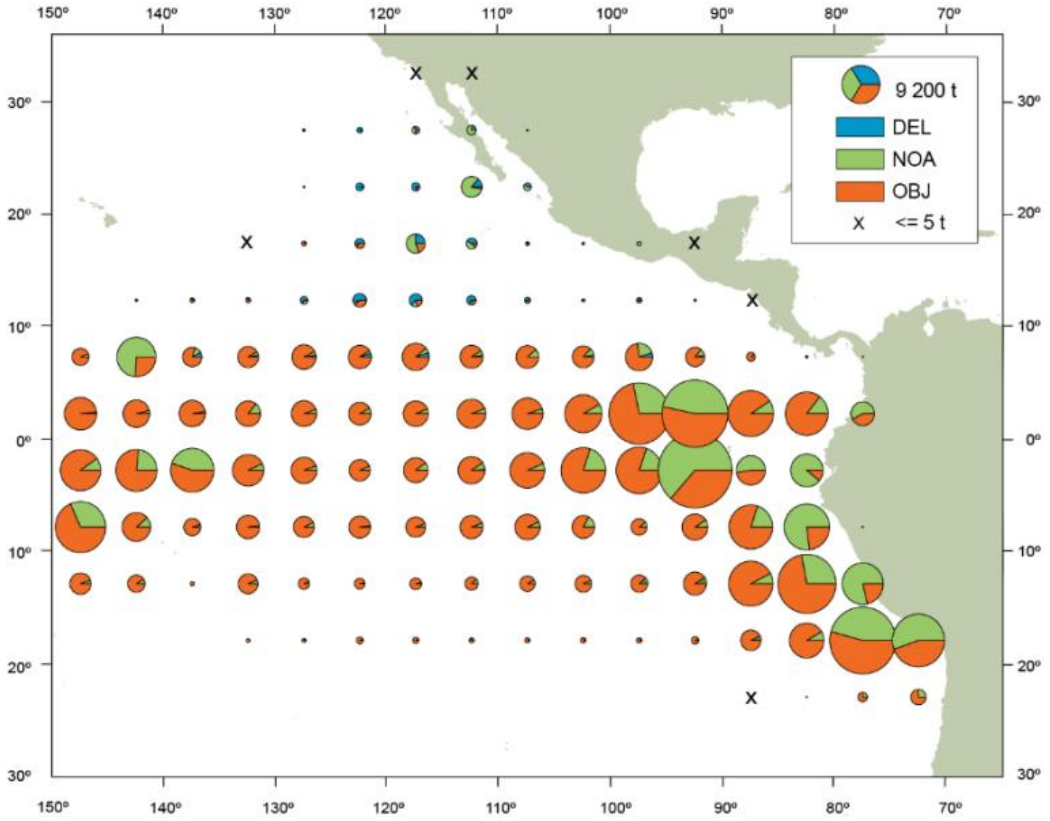
2012 - 2017



Length (cm)

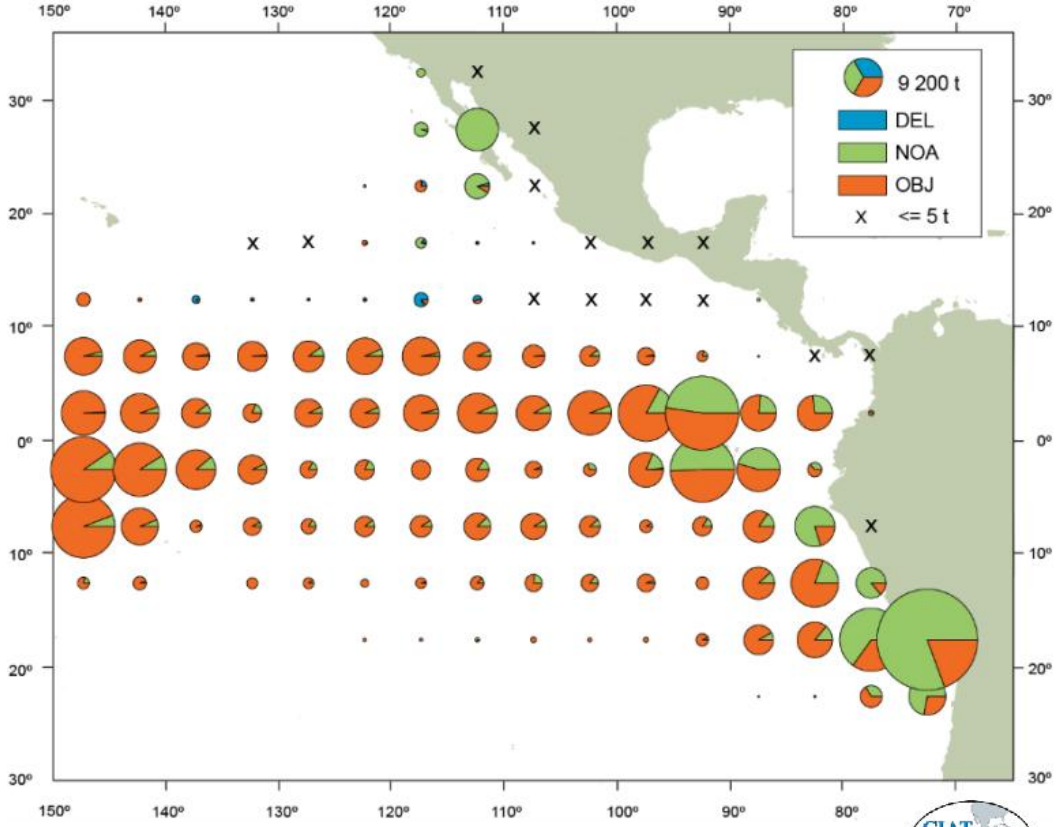
Skipjack - Distribution of purse-seine catches

Average 2012-2016



295 000 mt (261 000 - 338 000)

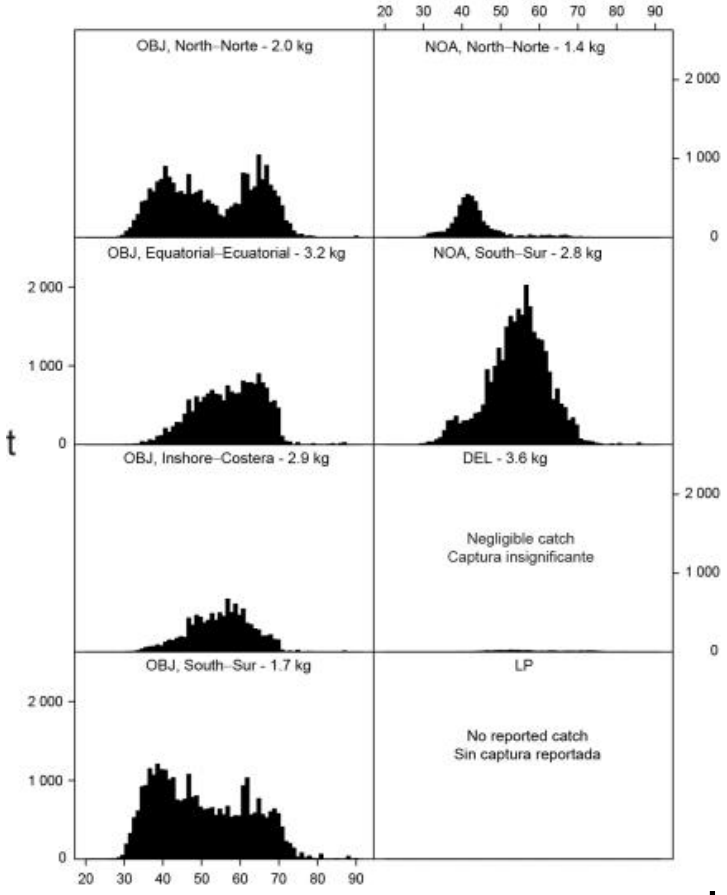
2017



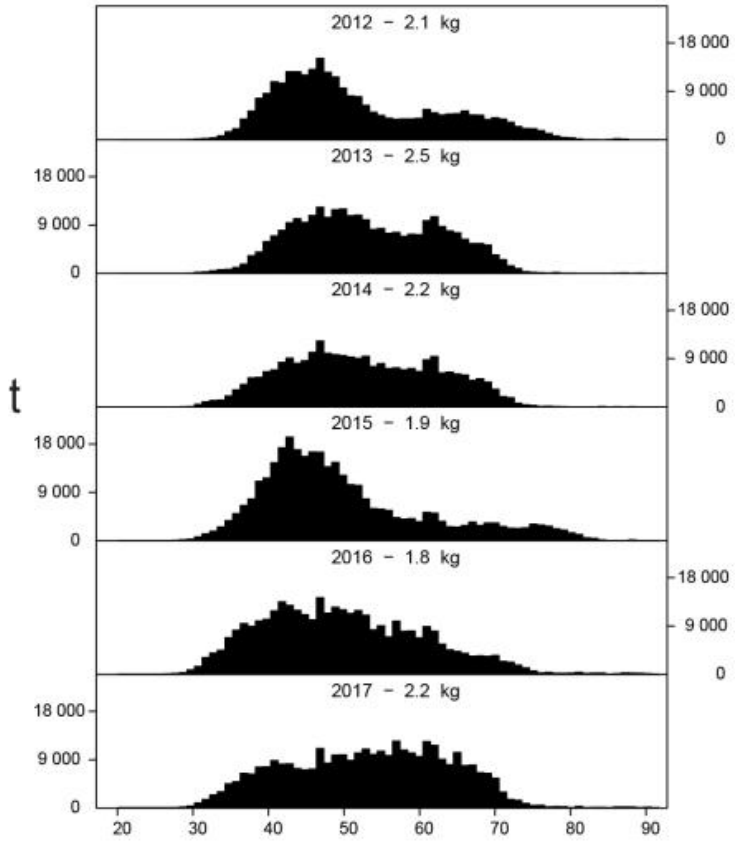
326 000 mt 11% Higher

Skipjack – Length compositions

2017 by Area



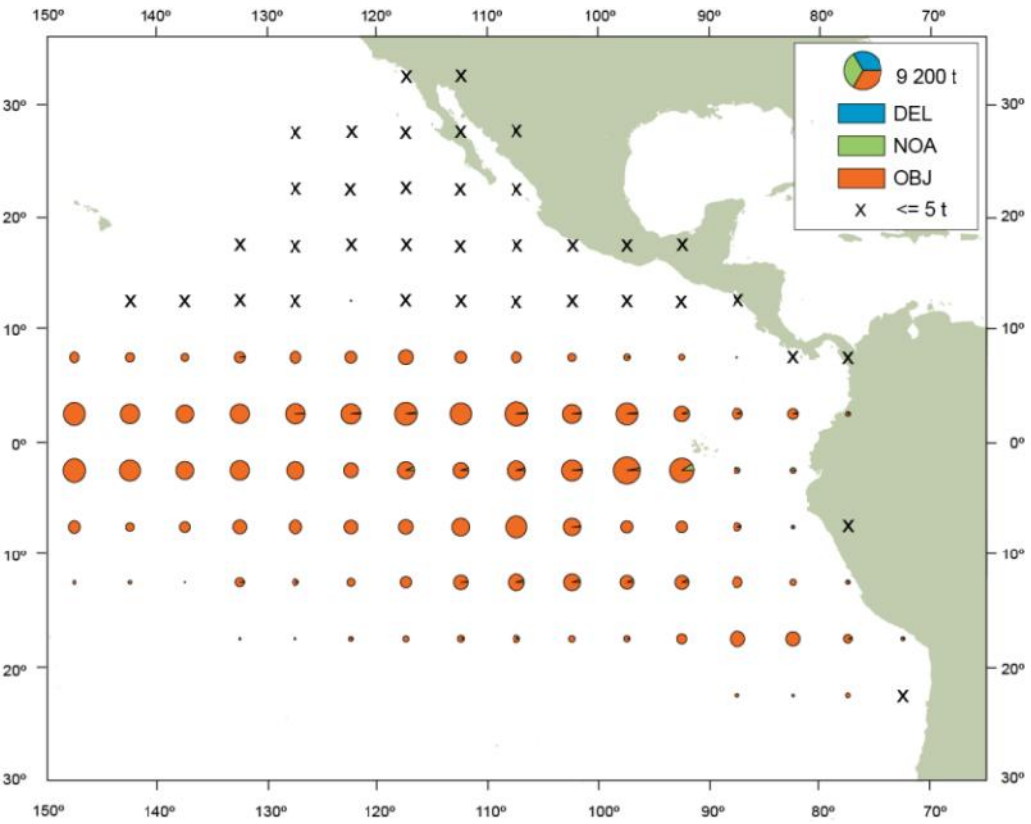
2012 - 2017



Length (cm)

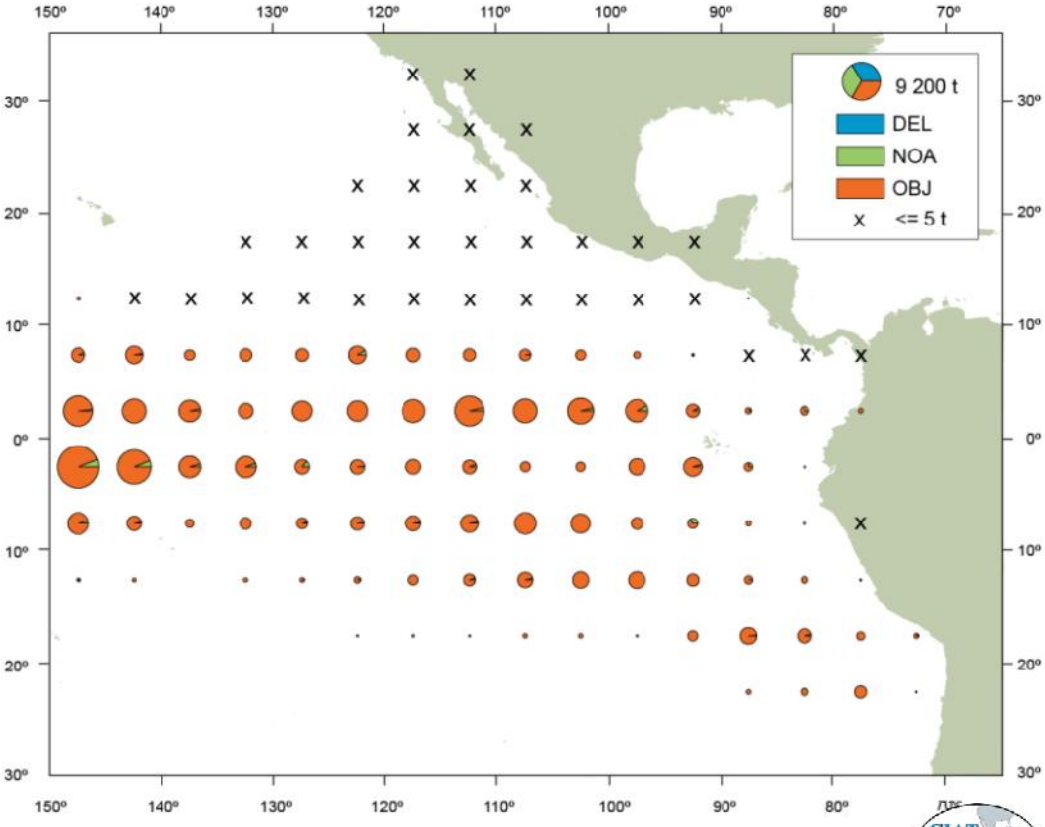
Bigeye - Distribution of purse-seine catches

Average 2012-2016



59 000 mt (49 000 - 66 000)

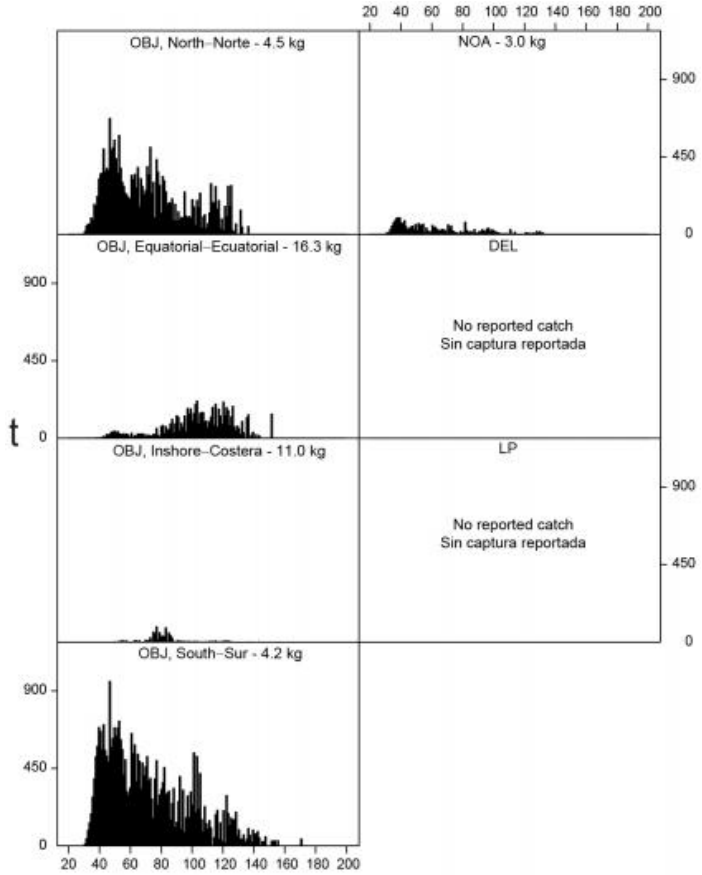
2017



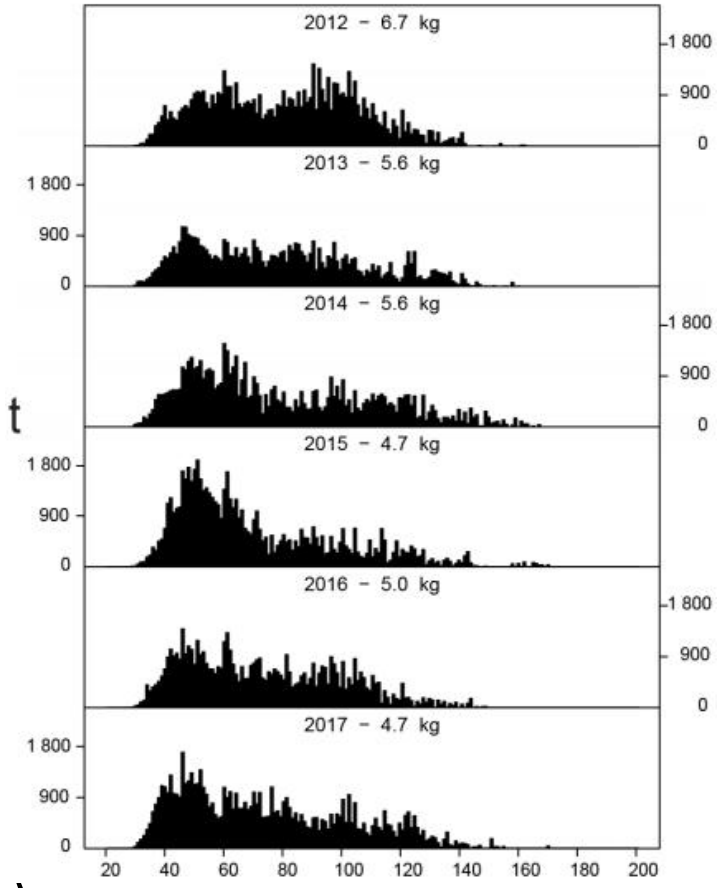
66 000 mt 12% Higher

Bigeye – Length compositions

2017 by Area

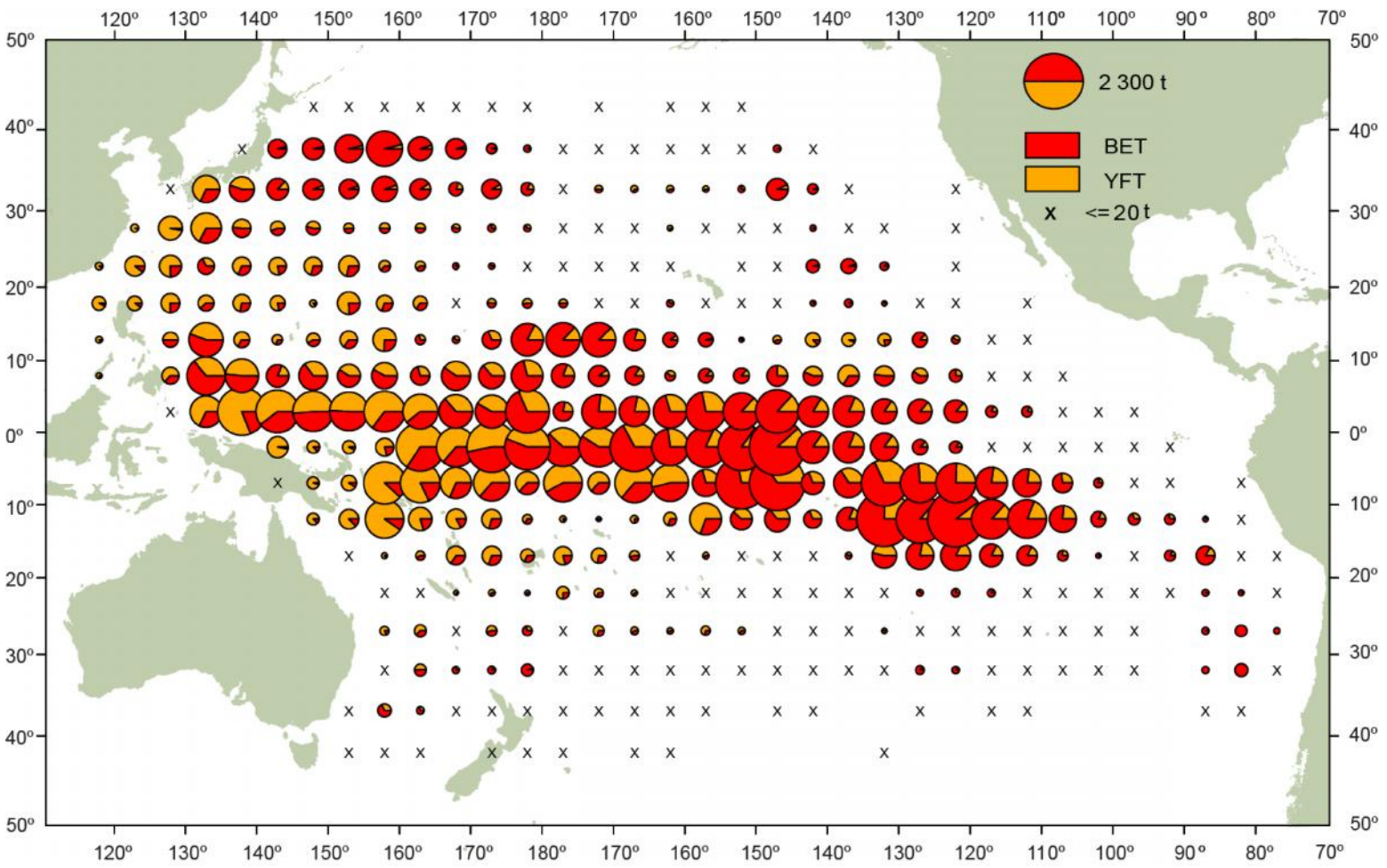


2012 - 2017



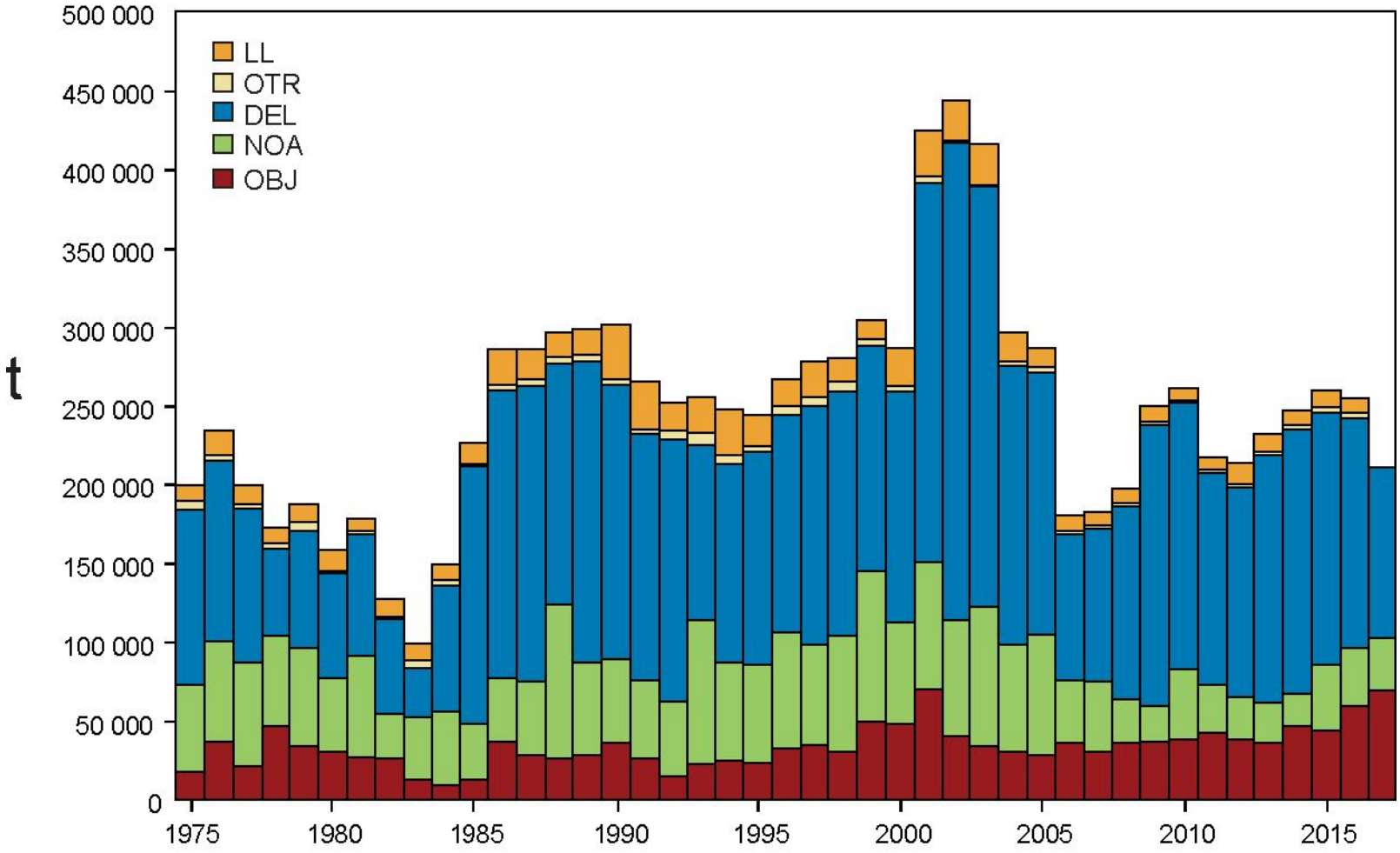
Length (cm)

Distribution of Bigeye and Yellowfin Longline catches 2012-2016



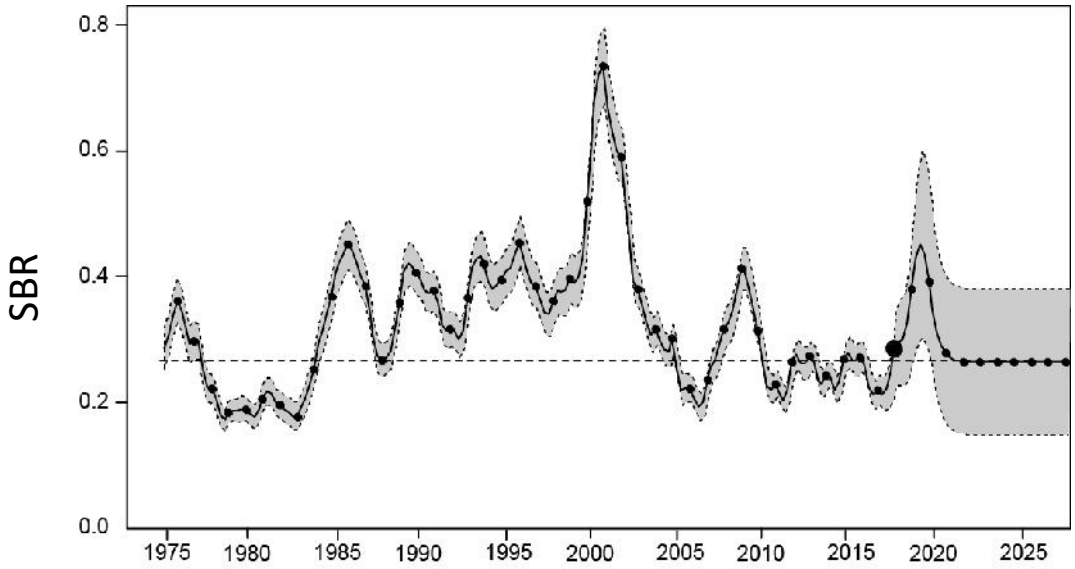
STATUS OF YELLOWFIN TUNA IN THE EASTERN PACIFIC OCEAN IN 2017 SAC-09-06

Yellowfin - Catch by gear and type of purse-seine set



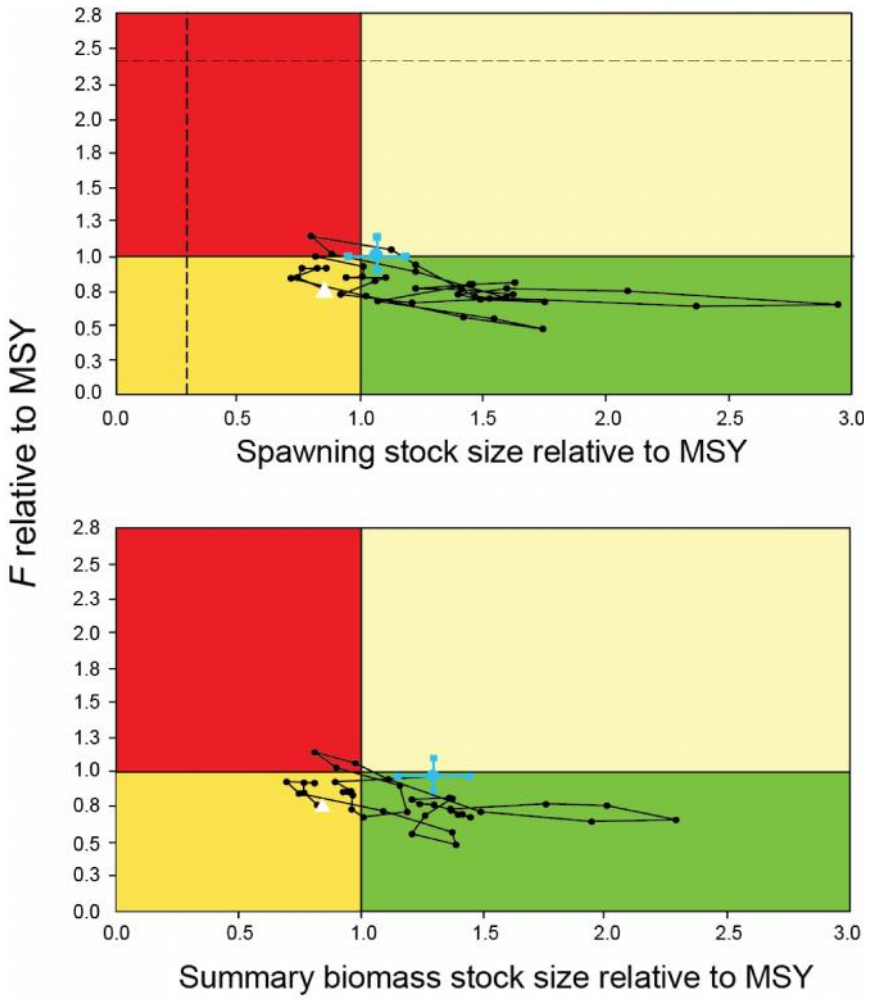
Yellowfin – stock status

- There have been three different productivity regimes since 1975, and the levels of maximum sustainable yield (MSY) and the biomasses corresponding to the MSY may differ among the regimes
- The recruitment of 2015 and 2016 are high, the population and catches are expected to increase in the next year or two
- At current fishing mortality levels, and average recruitment, SBR is predicted to stabilize at about SBR at MSY



Yellowfin – stock status

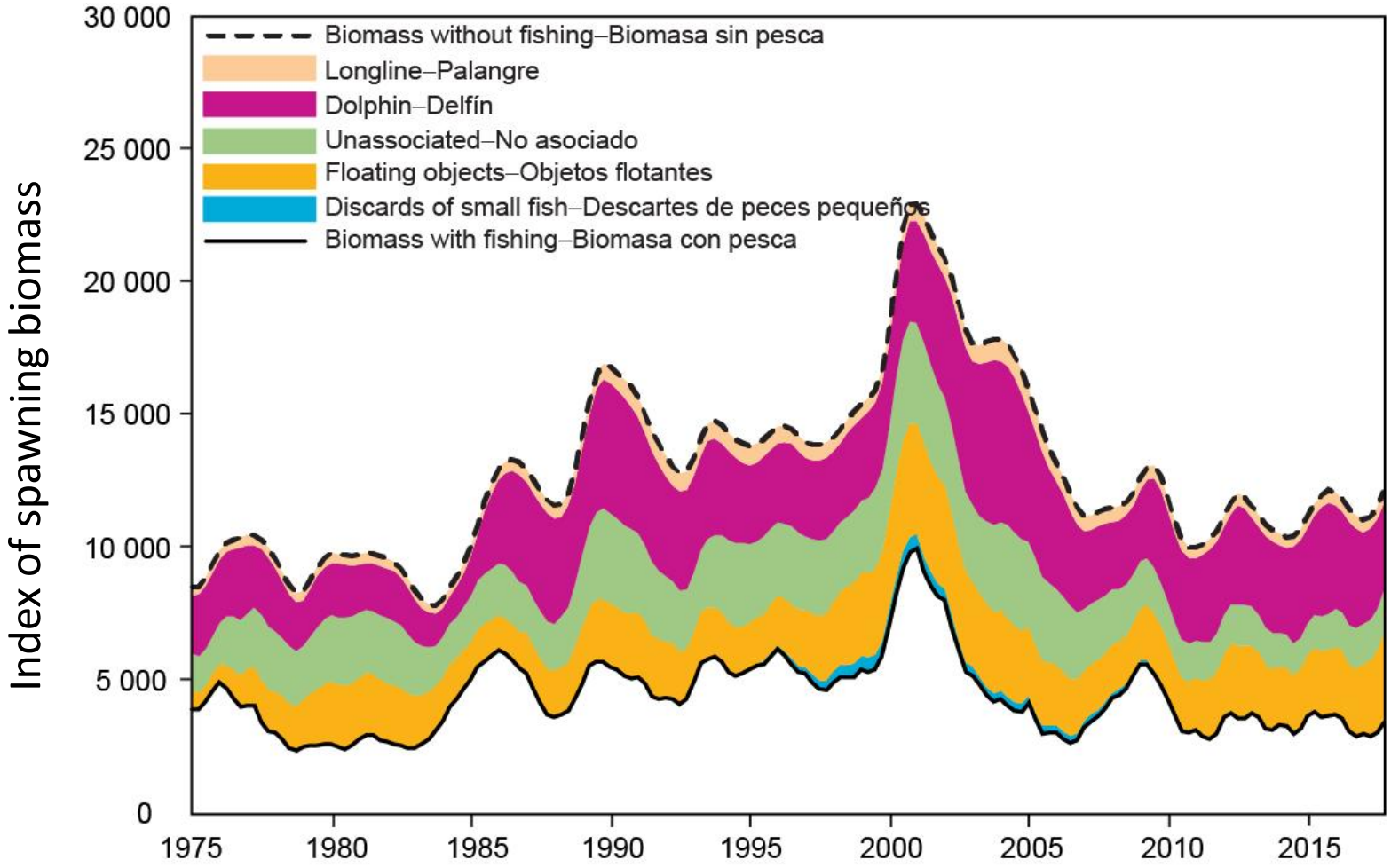
- These interpretations are subject to uncertainty



Yellowfin - Maximum Sustainable Yield (MSY)–quantities

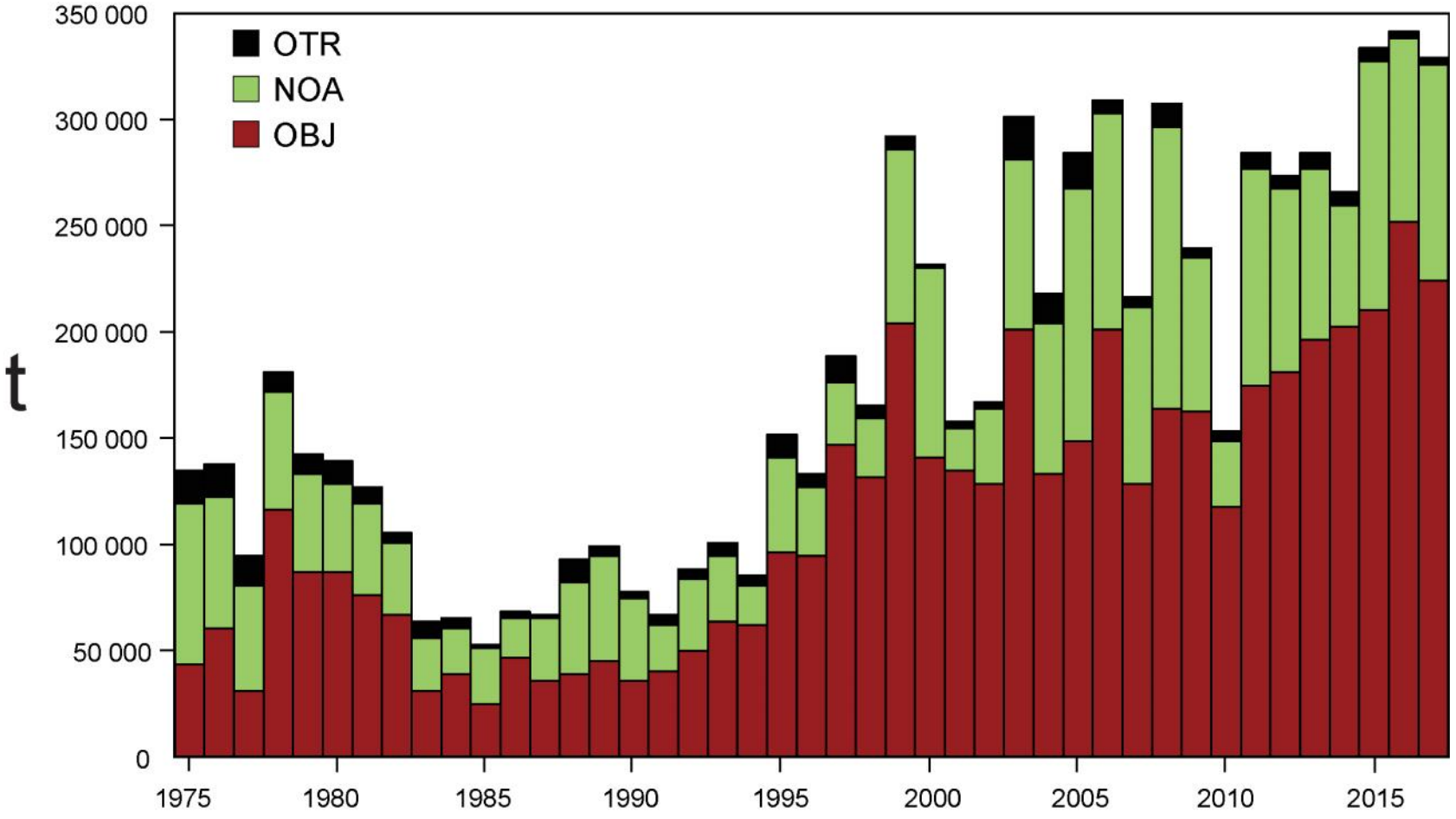
	Base case	h = 0.75
MSY(t)	264,283	278,584
C_{recent}/MSY	0.85	0.81
S_{recent}/S_{MSY}	1.08	0.64
F multiplier	0.99	0.64

Yellowfin Biomass

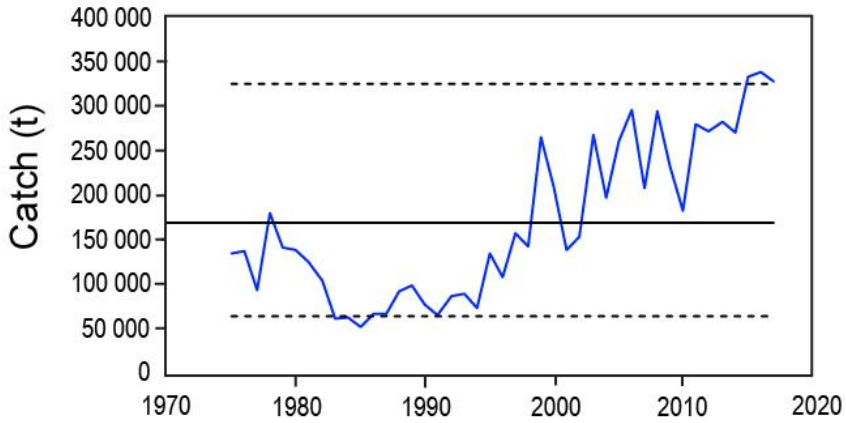


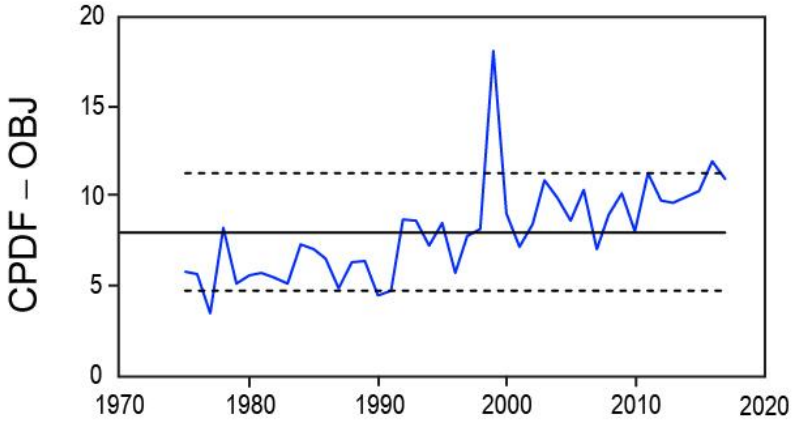
STATUS OF SKIPJACK TUNA IN THE EASTERN PACIFIC OCEAN IN 2017 SAC-09-07

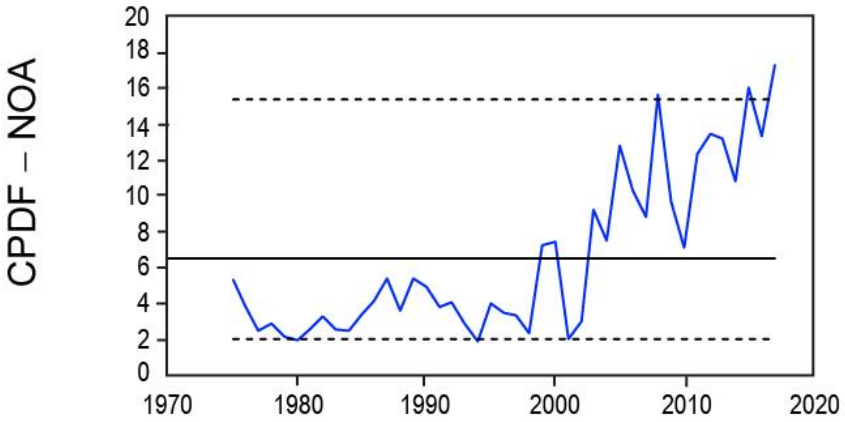
Skipjack - Catch by gear and set type

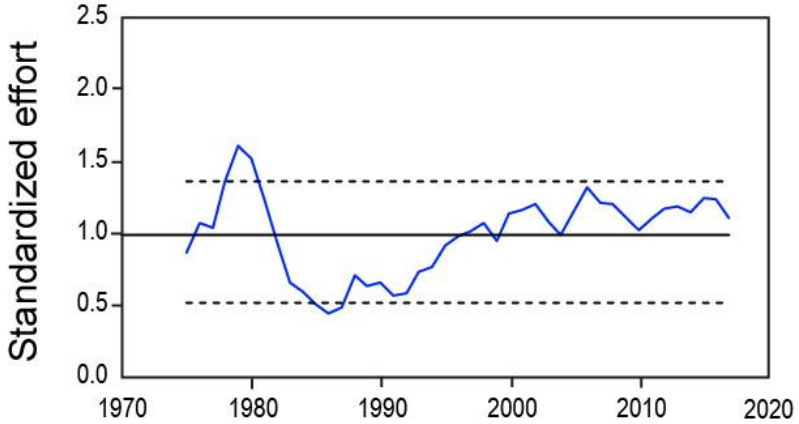


Skipjack - Indicators of the stock status

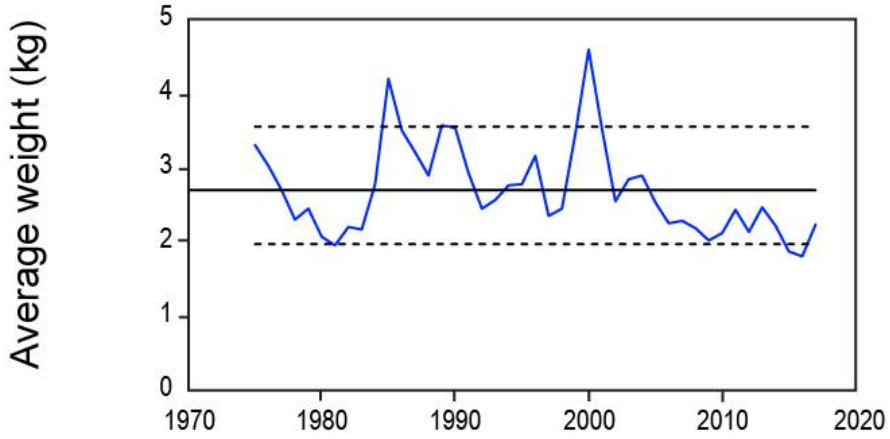


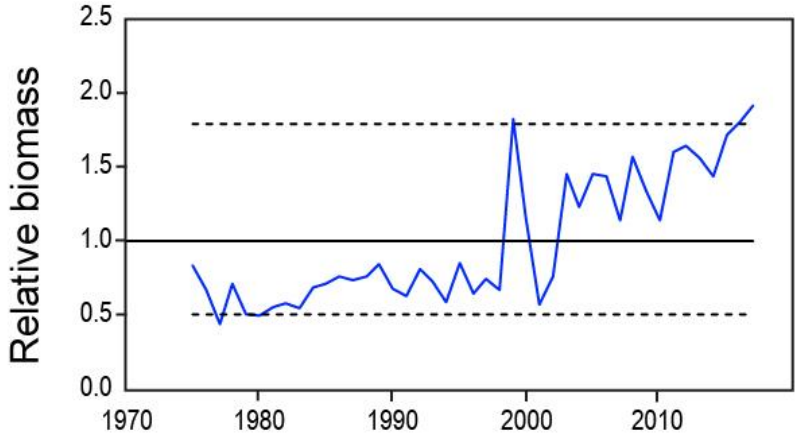


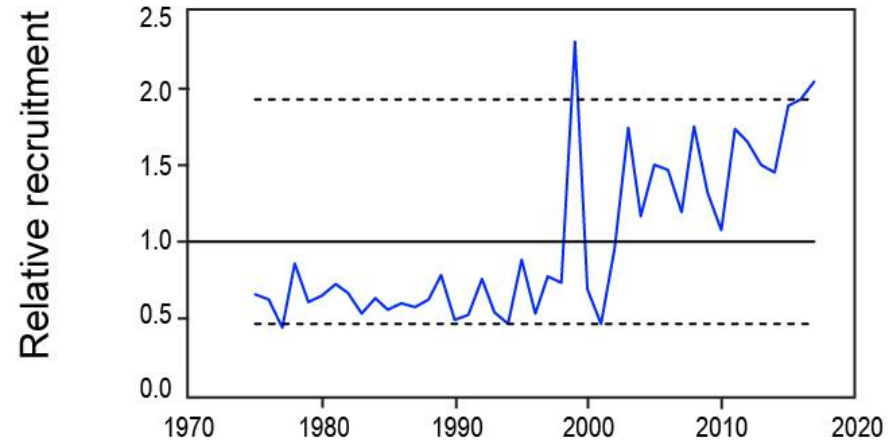


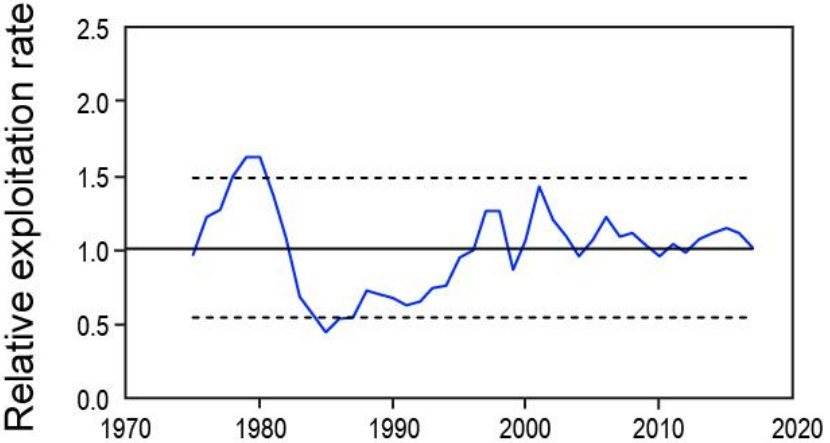


Skipjack - Indicators of the stock status (cont.)







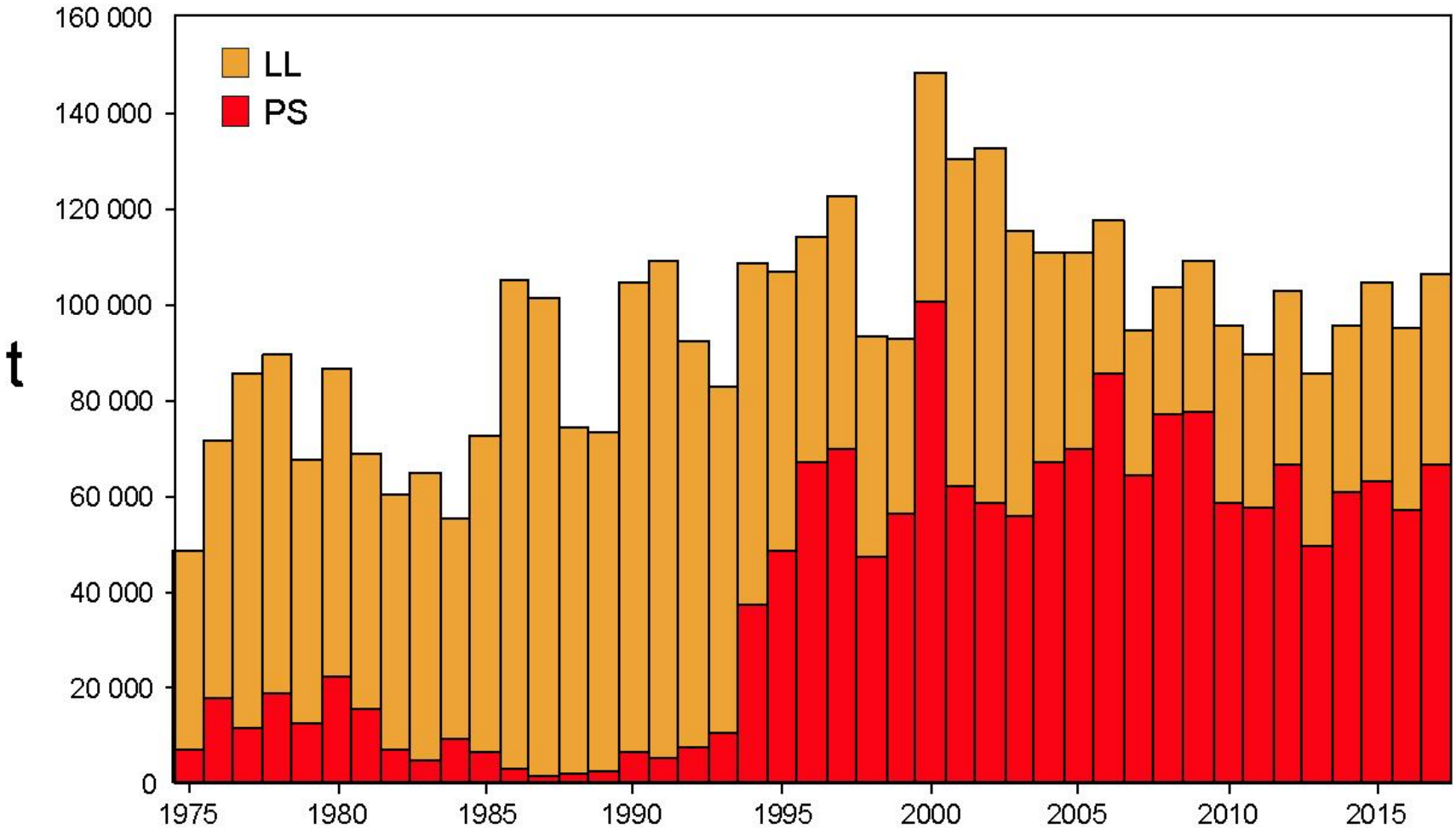


Skipjack - stock status

- Main concerns:
  - Some indicators approaching/exceeding historic levels
  - Substantial increase in numbers of sets on floating-objects
  - Average weight near its lower reference level in 2017

STATUS OF BIGEYE TUNA IN THE EASTERN PACIFIC OCEAN IN 2017 SAC-09-05

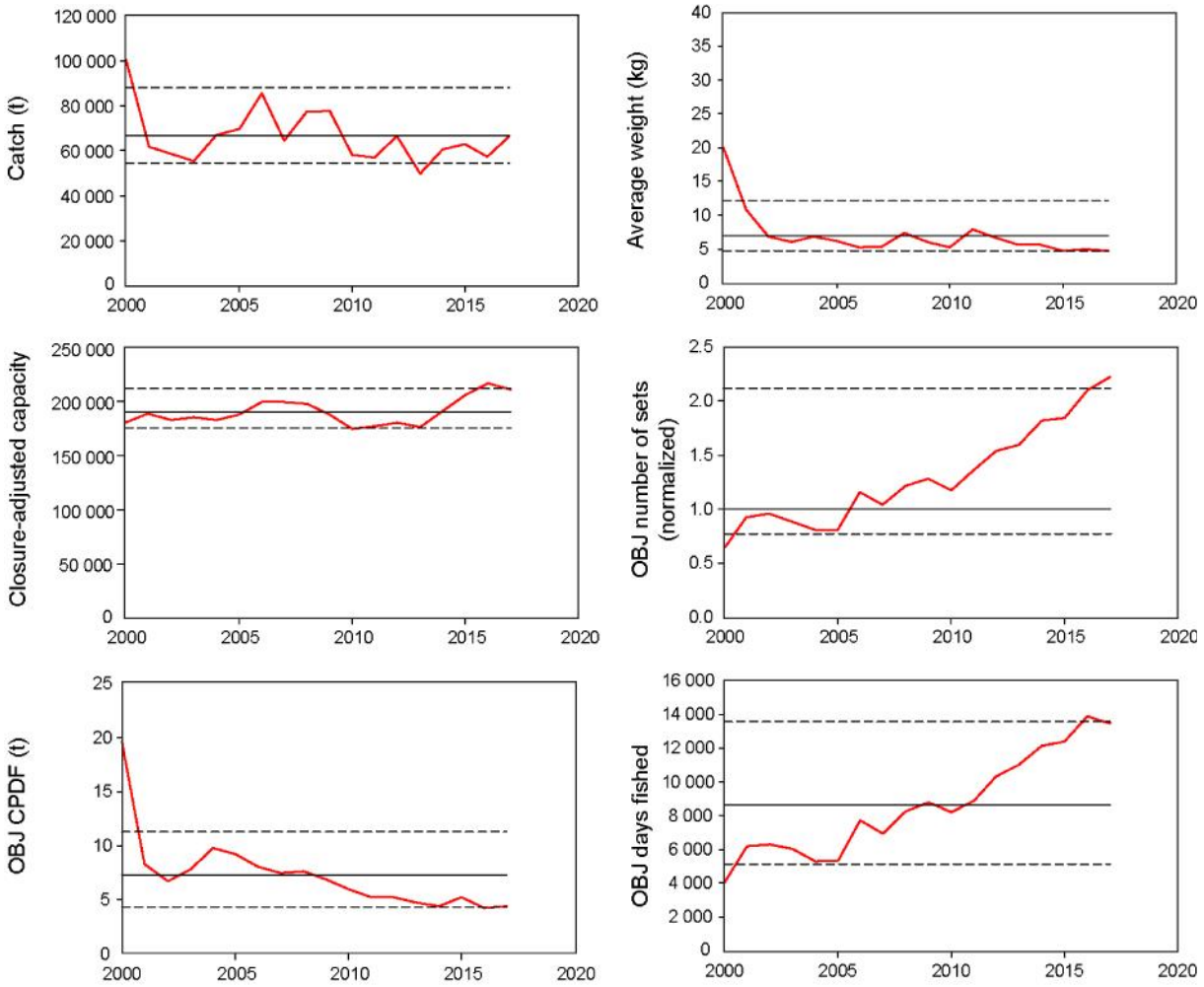
Bigeye - Catch by gear type



Bigeye - Substantial uncertainty in stock assessment model assumptions and outputs SAC-09 INF-B

- The results of the update stock assessment for bigeye conducted in 2018, using the same methodology as in previous years, led the staff to question its use as a basis for management advice
- The *F* multiplier for bigeye estimated in the SAC-09 assessment (0.87; SAC-09-05) is substantially lower than that estimated in the SAC-08 assessment (1.15; SAC-08-04a)
- This is due mainly to the new data for the indices of relative abundance, based on longline CPUE, which resulted in lower estimates of recent biomass
- The new length-composition data incorporated in the SAC-09 assessment also contribute to a lower *F* multiplier
- Additionally, there is substantial uncertainty in the estimates of the *F* multiplier and in the model assumptions
- The staff has put together a comprehensive work plan to improve the bigeye stock assessment
- The staff has therefore developed a suite of stock status indicators for bigeye, as an alternative basis for management advice and for monitoring the stock and the fishery until the uncertainties in the stock assessment have been resolved

Bigeye – stock status indicators based on purse-seine data SAC-09-16



IATTC Tuna Conservation Resolution (C-17-02) for the EPO

- Applies for 2017-2020
- Purse seine (> 182 mt capacity)
  - Must stop all fishing in the EPO for 72 days each year, in one of two periods
  - Closure of offshore area (96° to 110°W and 4°N to 3°S) during 9 Oct to 8 Nov

- Longline catches of bigeye tuna (2018-2020)
  - Fixed catch limits for China, Japan, Korea, Chinese Taipei, and United States. ≤ to 30% can be transferred.
  - Catches by other CPCs not to exceed 500 t or their respective catches in 2001, whichever is higher. Applies only to longline vessels >24m

TROPICAL TUNAS – IATTC STAFF Conservation Recommendations

- Maintain the provisions of the current resolution (C-17-02).
- For the purse-seine fishery, limit the total annual number of floating-object and unassociated sets combined by Class-6 vessels in 2019 and 2020 to 15,723. Once the limit is reached, only dolphin-associated sets will be allowed during the remainder of that year, and all vessels without a Dolphin Mortality Limit must return to port.

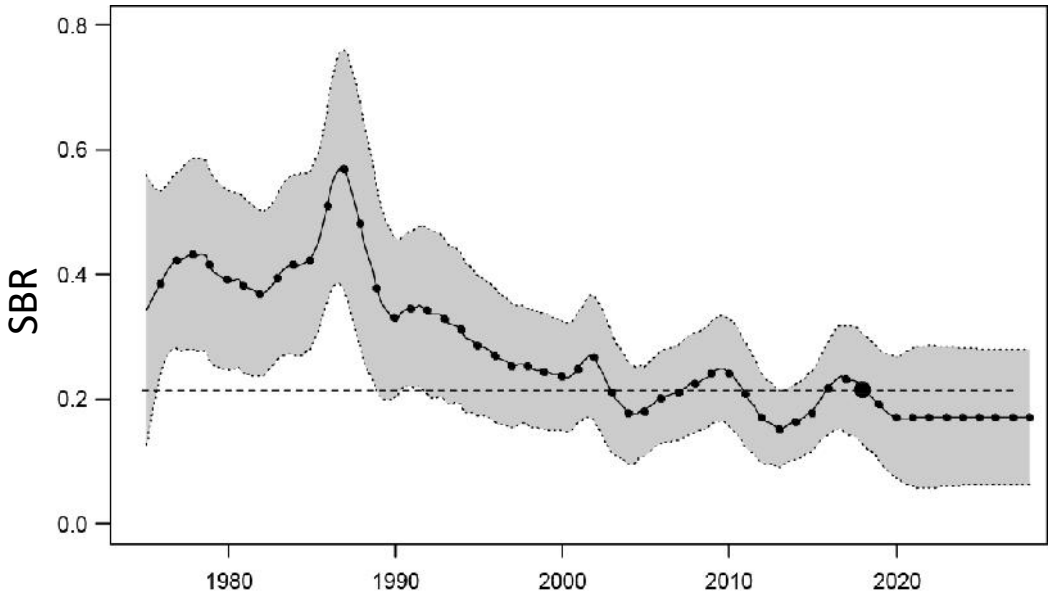
CIAT

IATTC

Questions

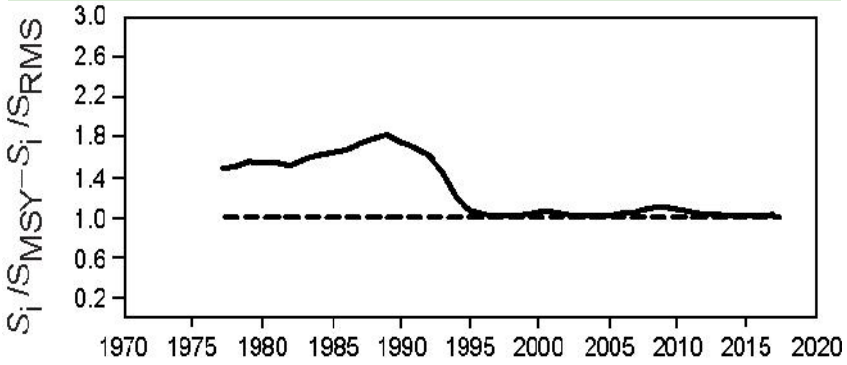
Bigeye – Stock status

- Population decline observed since the early 1990s ceased around 2005 following IATTC conservation resolutions
- The recent decline since 2010 may be related to series of below average recruitments coinciding with strong La Nina events
- The recent improvement since 2012 is driven by a recent increase in the longline CPUE data
- At current fishing mortality levels, and average recruitment, SBR is predicted to remain below SBR at MSY

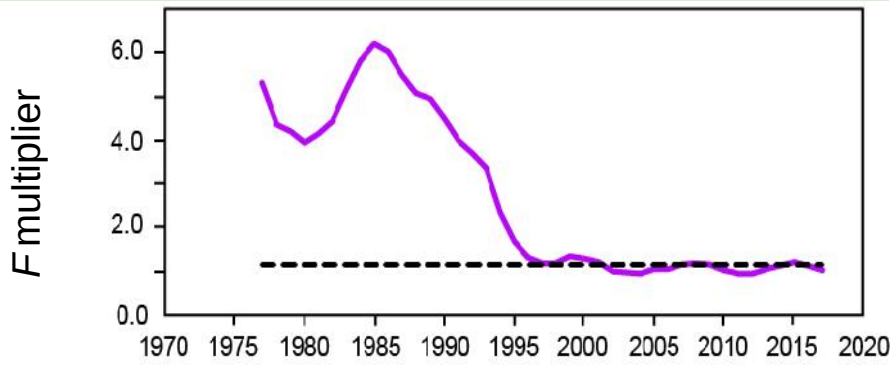


Bigeye – Stock status (cont.)

- The recent **spawning biomass (*S*)** is estimated to be above the MSY level ($S_{recent} > S_{MSY}$)
- $S_{recent}/S_{MSY} = 1.02$

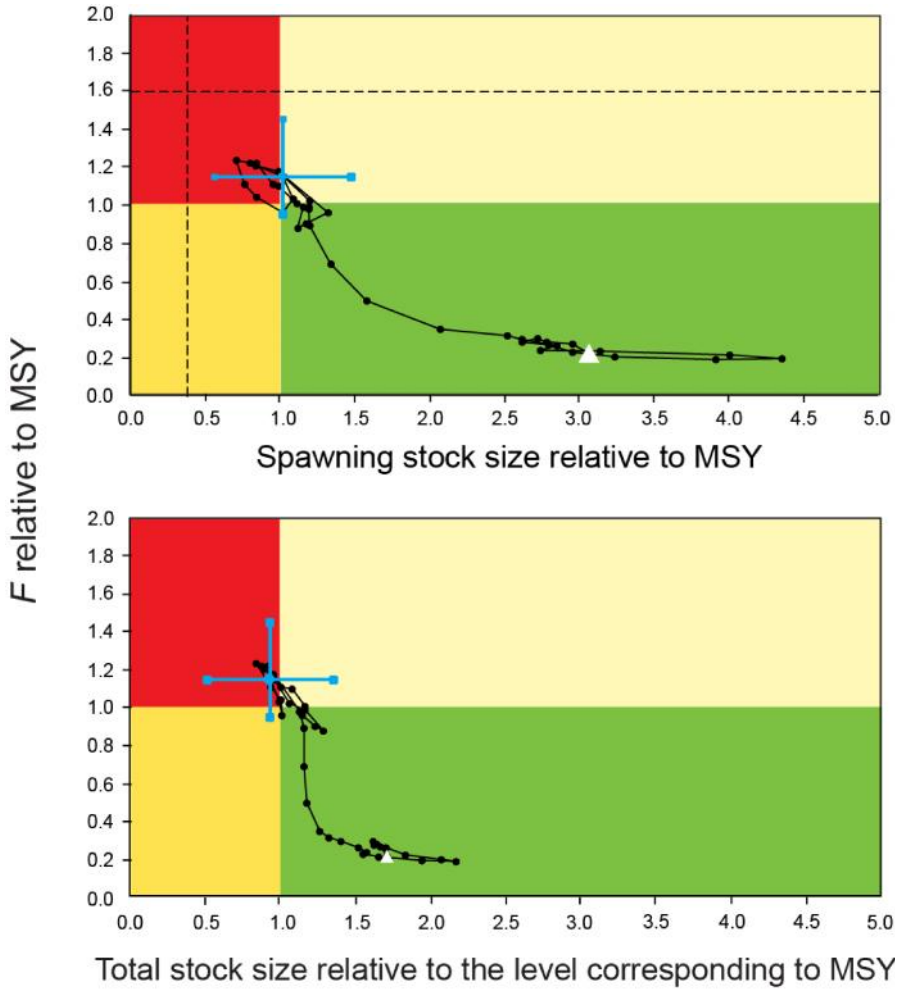


- The recent **fishing mortality (*F*)** is above the level corresponding to MSY ($F_{recent} > F_{MSY}$)
- *F* multiplier = 0.87



Bigeye – Stock status

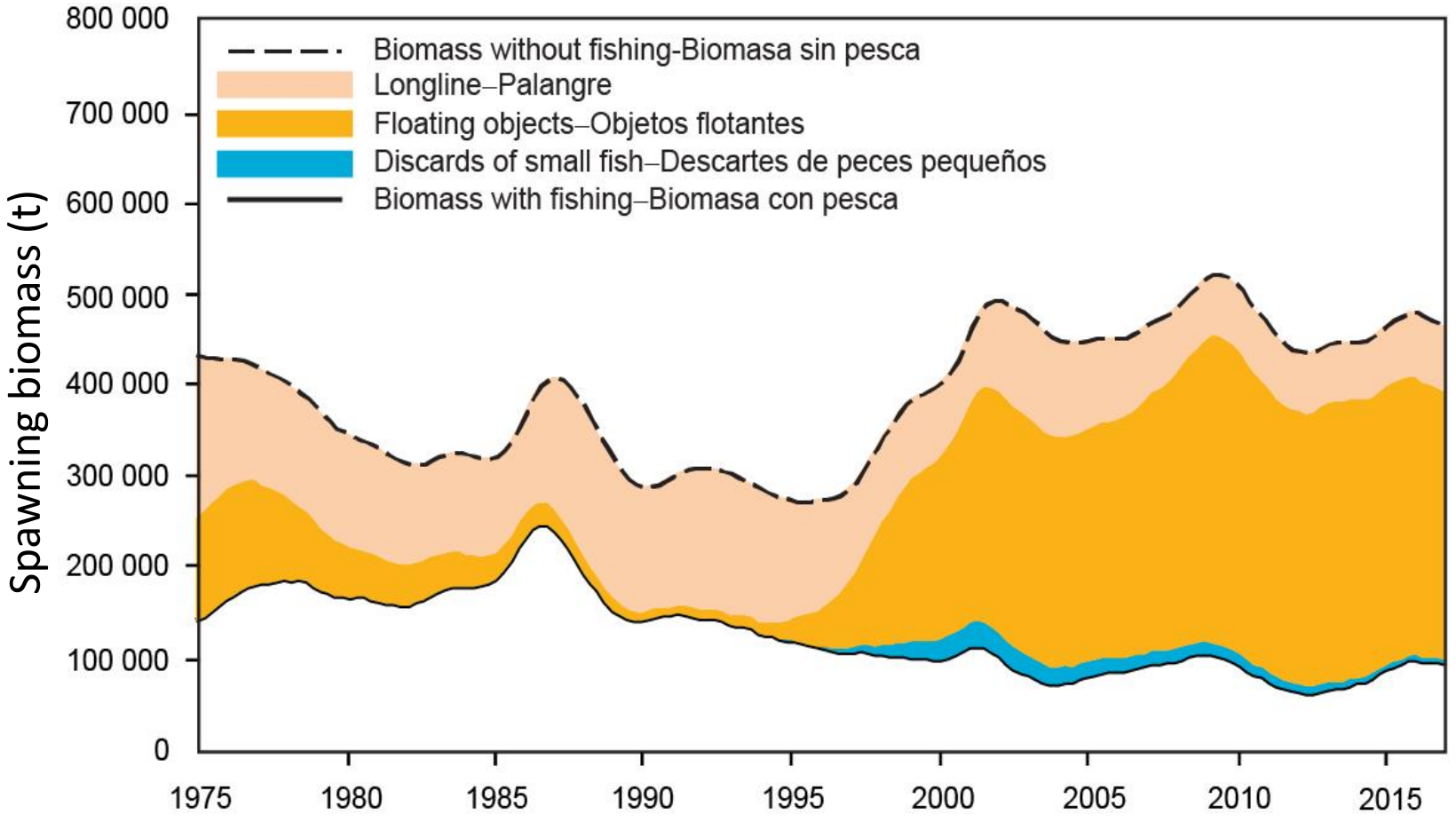
- These interpretations are subject to uncertainty



Bigeye - Maximum Sustainable Yield (MSY)–quantities

	Base case	h = 0.75
MSY(t)	95,491	97,766
C_{recent}/MSY	1.15	1.13
S_{recent}/S_{MSY}	1.02	0.92
F multiplier	0.87	0.80

Bigeye - Biomass



The proposed schedule of main activities leading to a benchmark bigeye tuna assessment in 2020 is summarized below

2017	
October: CAPAM workshop on recruitment: theory, estimation, and application in fishery stock assessment models	
Collaboration with Japanese scientists on identifying targeting changes	Presentation, SAC-09
2018	
February: CAPAM workshop on the development of spatio-temporal models of fishery catch-per-unit-effort data to derive indices of relative abundance	SAC-09-09
Investigation of the relationship between fishing mortality and fleet capacity	Project J.2.a
Developing a spatially structured stock assessment for bigeye tuna and other model improvements	Project I.1.a
October: CAPAM workshop on spatial stock assessment models focusing on bigeye tuna	Project X.1.a
2019	
January/February: Proposed longline CPUE workshop	Project H.1.d
March: Proposed bigeye tuna assessment independent review	Project T.1.a
May: Exploratory bigeye tuna assessment	Presentation, SAC-10
2020	
January: CAPAM workshop on Natural mortality	
May: Benchmark bigeye tuna assessment	Presentation, SAC-11
2021	
August: Presentation of new management recommendations to the Commission	IATTC annual meeting