A compendium of indicators for target tuna stocks

SPC-OFP

WCPFC/SC21-2025/SA-WP-03

21st Scientific Committee

13-21 August 2025

Nuku'alofa, Tonga

Introduction

- The “Indicators” paper is an annual SC report tracking a set of indices for the four target tuna stocks.
- Includes short-term (3 year) projections under status quo (2024) catch/effort levels
- An additional report on South Pacific albacore (SA-IP-09) is also produced annually, and some results presented here
- Will only present indicators for all four tuna stocks but only data summaries for skipjack as there is a new assessment (not reported in this paper)

Indicators

- Catch by gear
- CPUE indices by gear
- Spatial maps of catch, effort and CPUE
- Catch at length/weight by gear type
- Mean weight by gear type
- Stochastic stock projections

Note: The indicators that are tracked have remained the same for 15 years and their continued reporting was requested at WCPFC 21. Acknowledging that these are nominal indicators, not corrected for e.g., effort creep or other variables affecting CPUE, including environmental conditions, etc., their purpose is to illustrate and highlight, promote discussion, but not necessarily explain why the indicators vary.

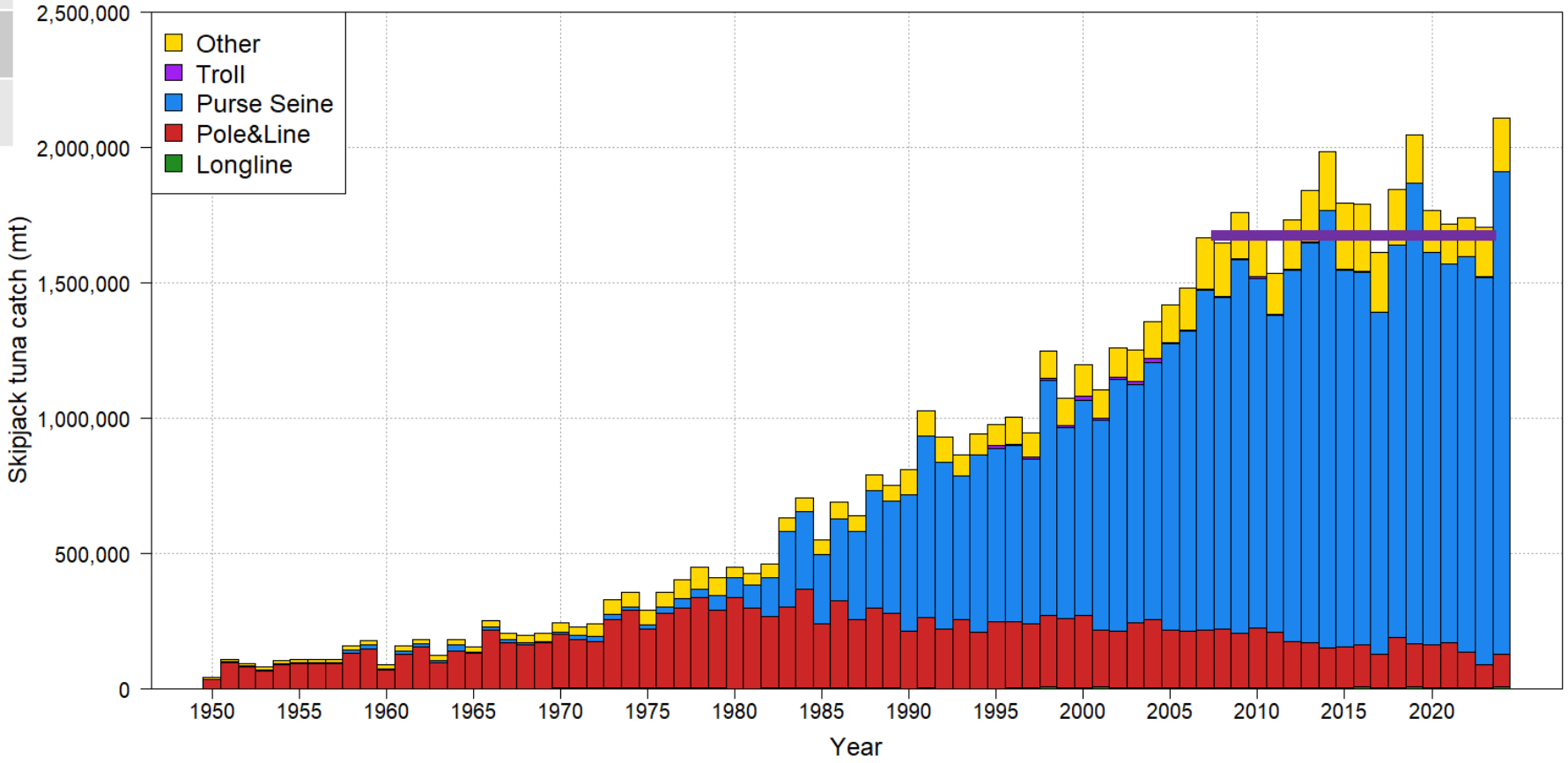
Skipjack – Total catch by gear

Gear	Prop.	Change from 2023	Change from 2019-23
PS	84%	+ 25%	+ 20%
PL	6%	+ 40%	- 13%
Other	9%	+ 8%	+ 23%
All	100%	+ 24%	+ 17%

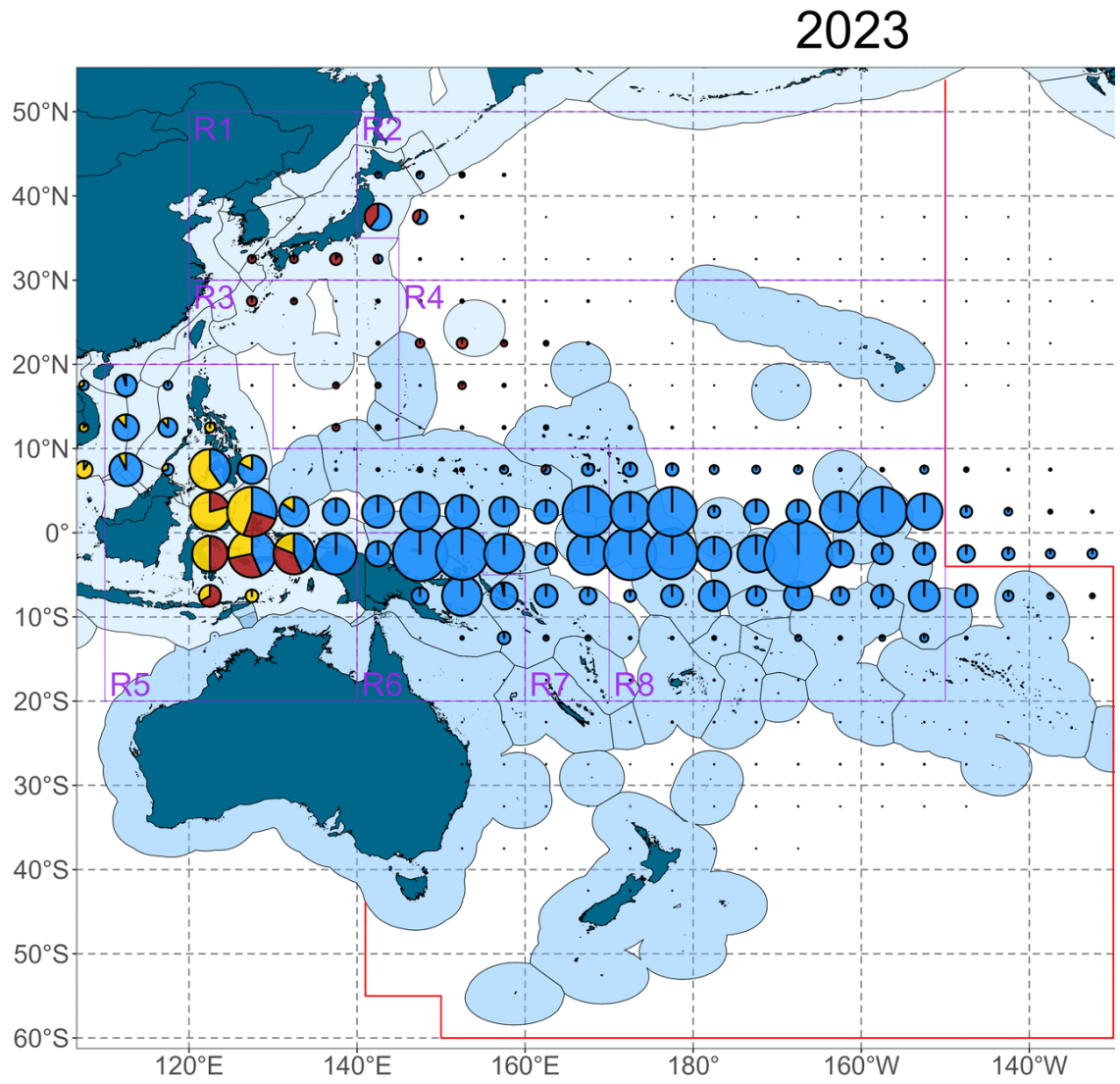
Info of note:

- A relatively stable fishery for 15 years
- 2024 PS catch was highest proportion on record (same as 2022 and 2023)
- 2023 PL catch rebounded slightly from 50-year low in 2023
- 2004, 2009, 2014, 2019, 2024 were all new record highs at the time in SkJ catch

2024 catch – 2,107,666t (highest ever)



Skipjack – distribution of catch

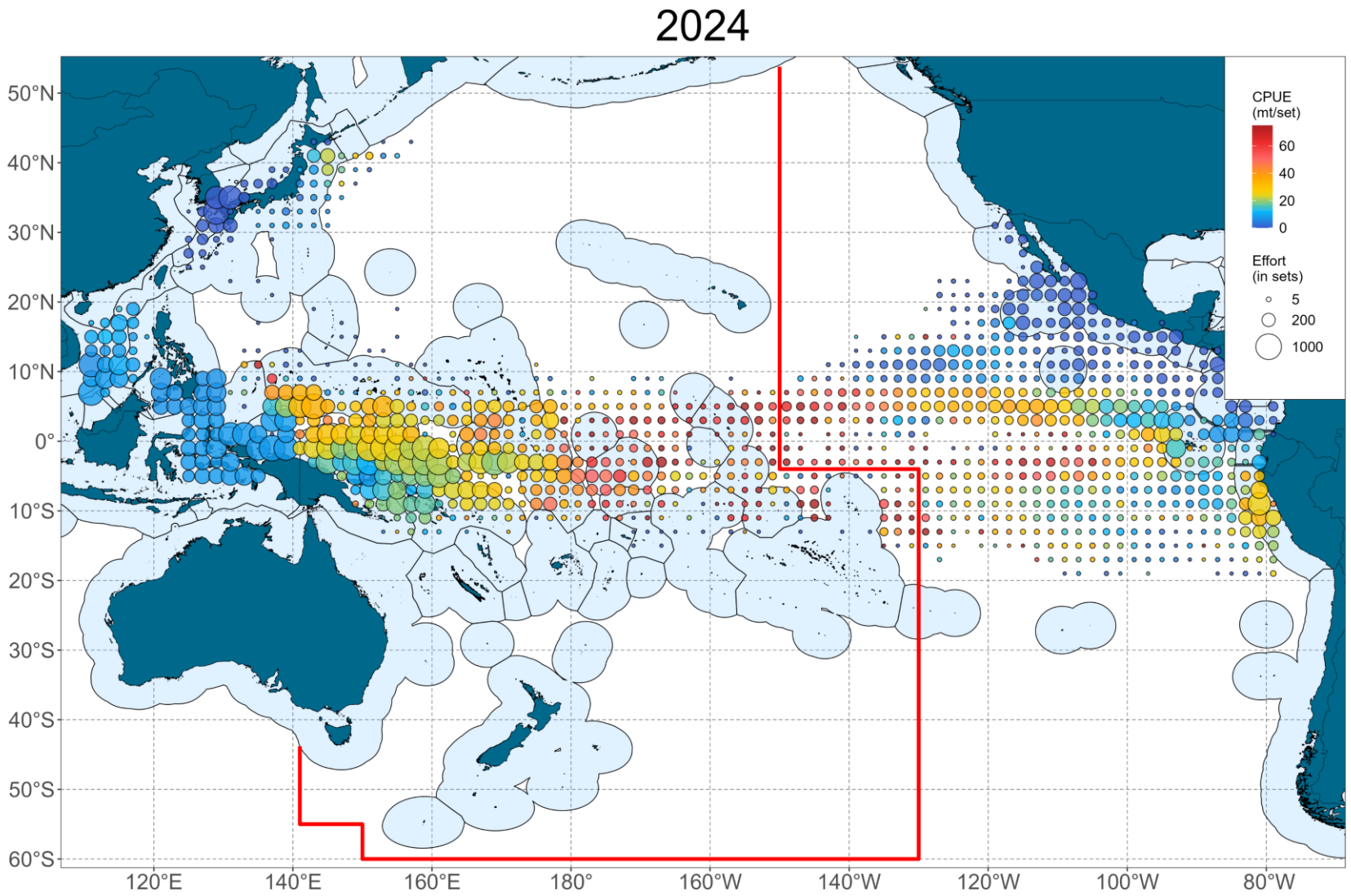


Catch map details:

- 2024 Eq. Pacific catches shifted back west relative to 2023 (likely due to **La Niña conditions 2nd half of year**)

- Pole and line proportion continues decline

Skipjack – distribution of PS CPUE



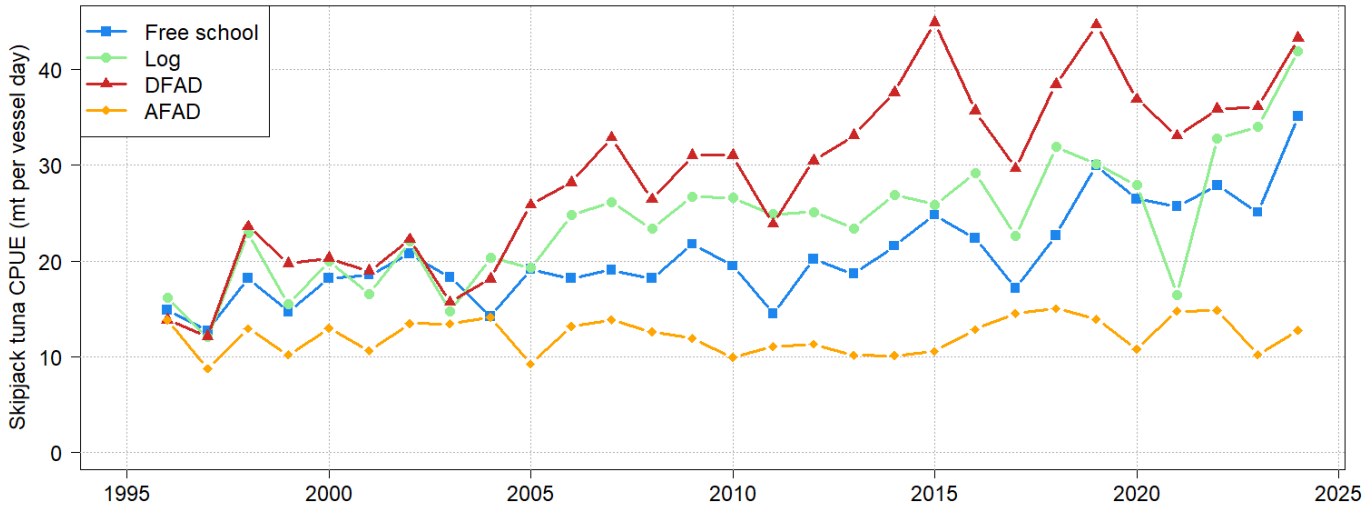
CPUE map details:

- 2024 saw very high CPUE in Tuvalu and Line Islands (Kiribati) region but effort decreased and moved west

- La Niña effect on effort movement

Skipjack – CPUE indices (nominal)

Purse seine

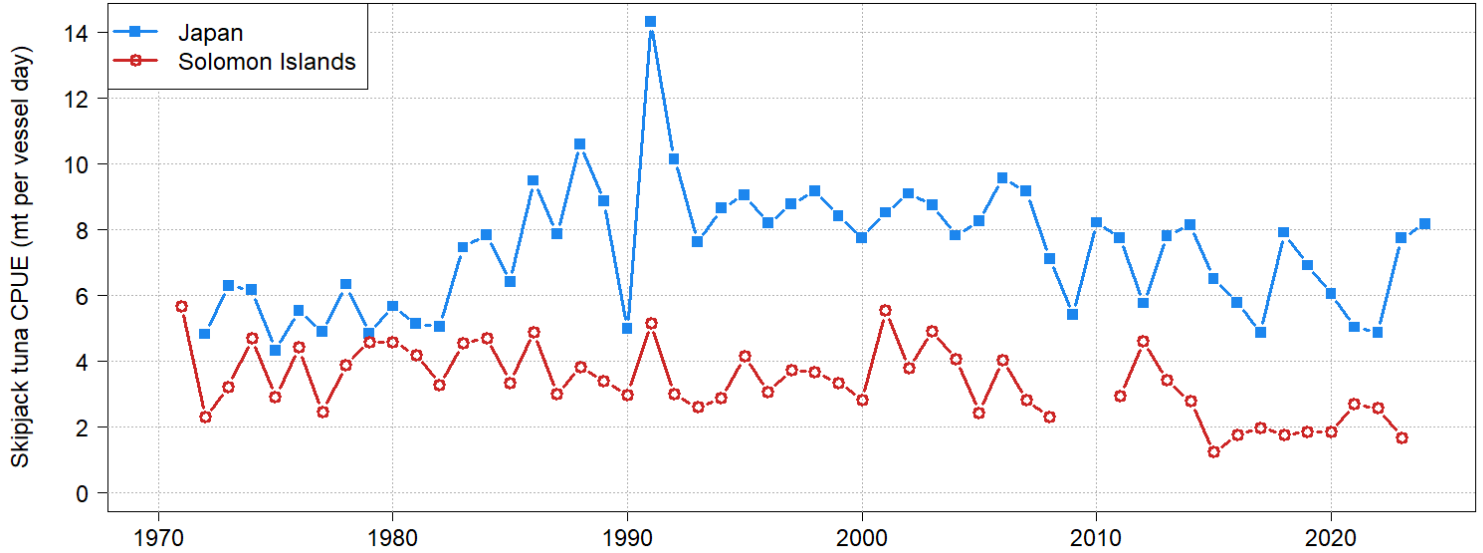


Increased nominal CPUE 2024

Record high CPUE for Free-school and Log-associated sets;

Associated set CPUE also near record high

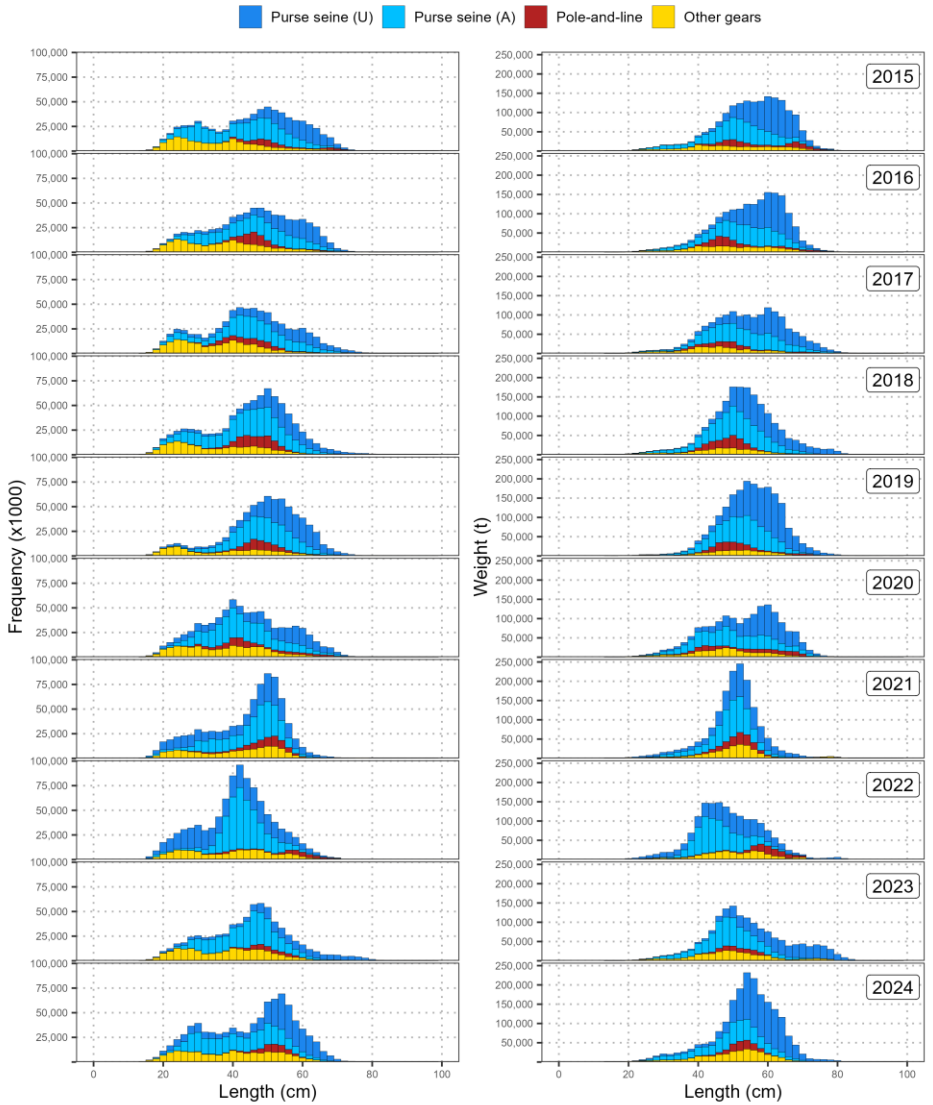
Pole-and-line

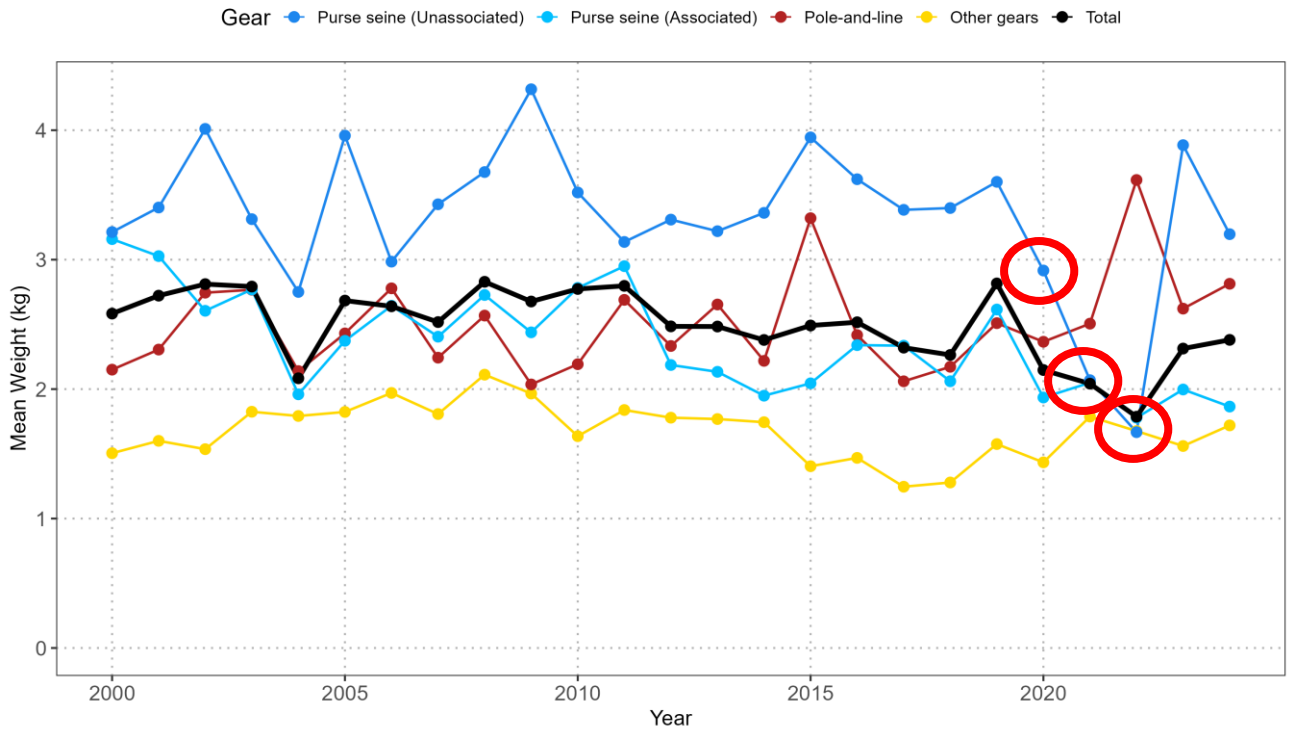


Japan PL maintained increased CPUE seen in 2023;

Solomon Islands Pole-and-Line fleet has ended operations so no 2024 value

Skipjack – size distribution in catches





Decrease in mean size of Unassociated (Free-school) skipjack in 2020-22 – working through this – but linked to reduced observer size data from equatorial region fisheries (grab samples), influences of numerically high spill samples from fisheries further west/Philippines? **Not a true reflection.**

Skipjack – short term projections

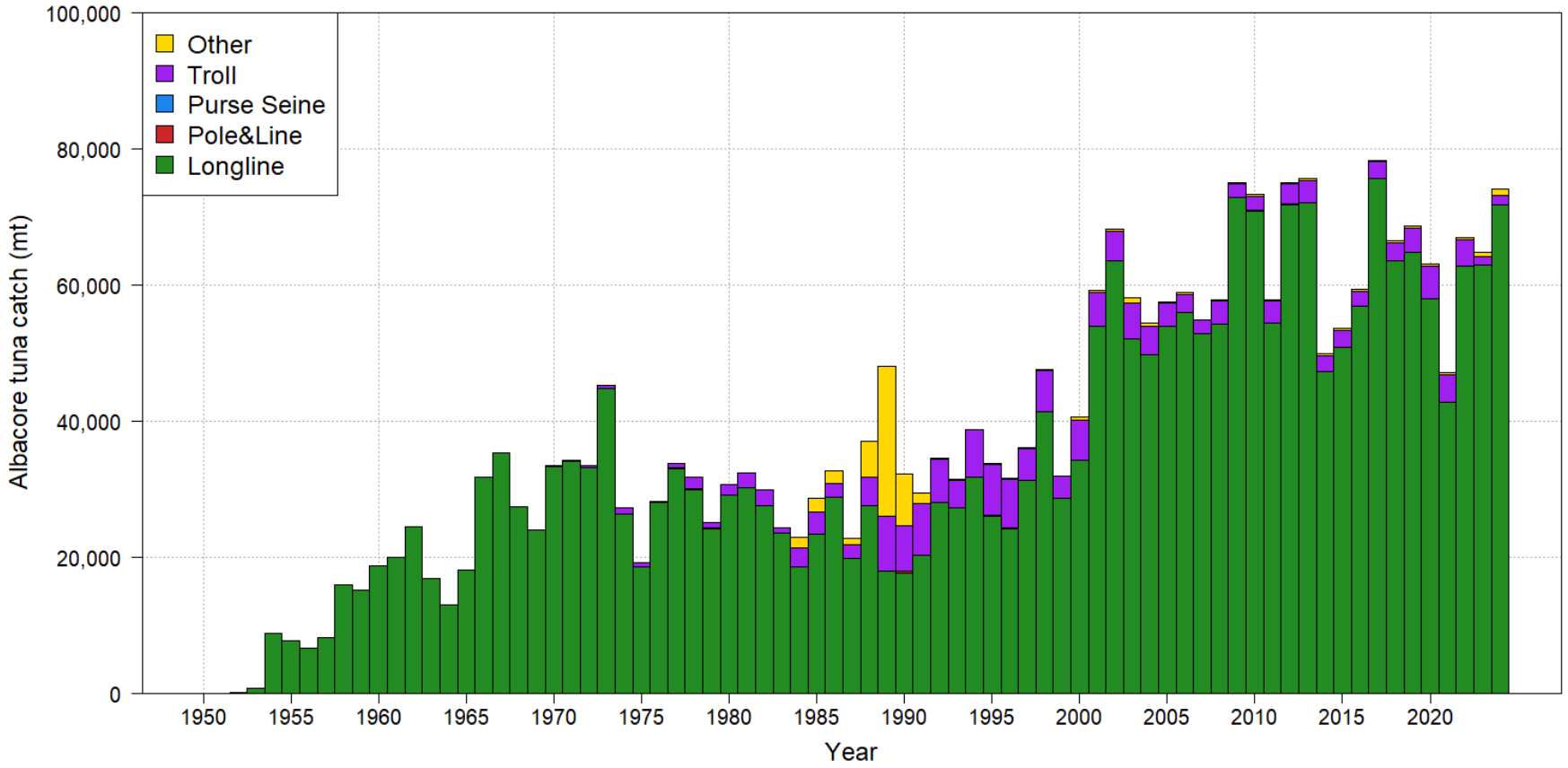
See new stock assessment

South Pacific albacore – Total catch by gear

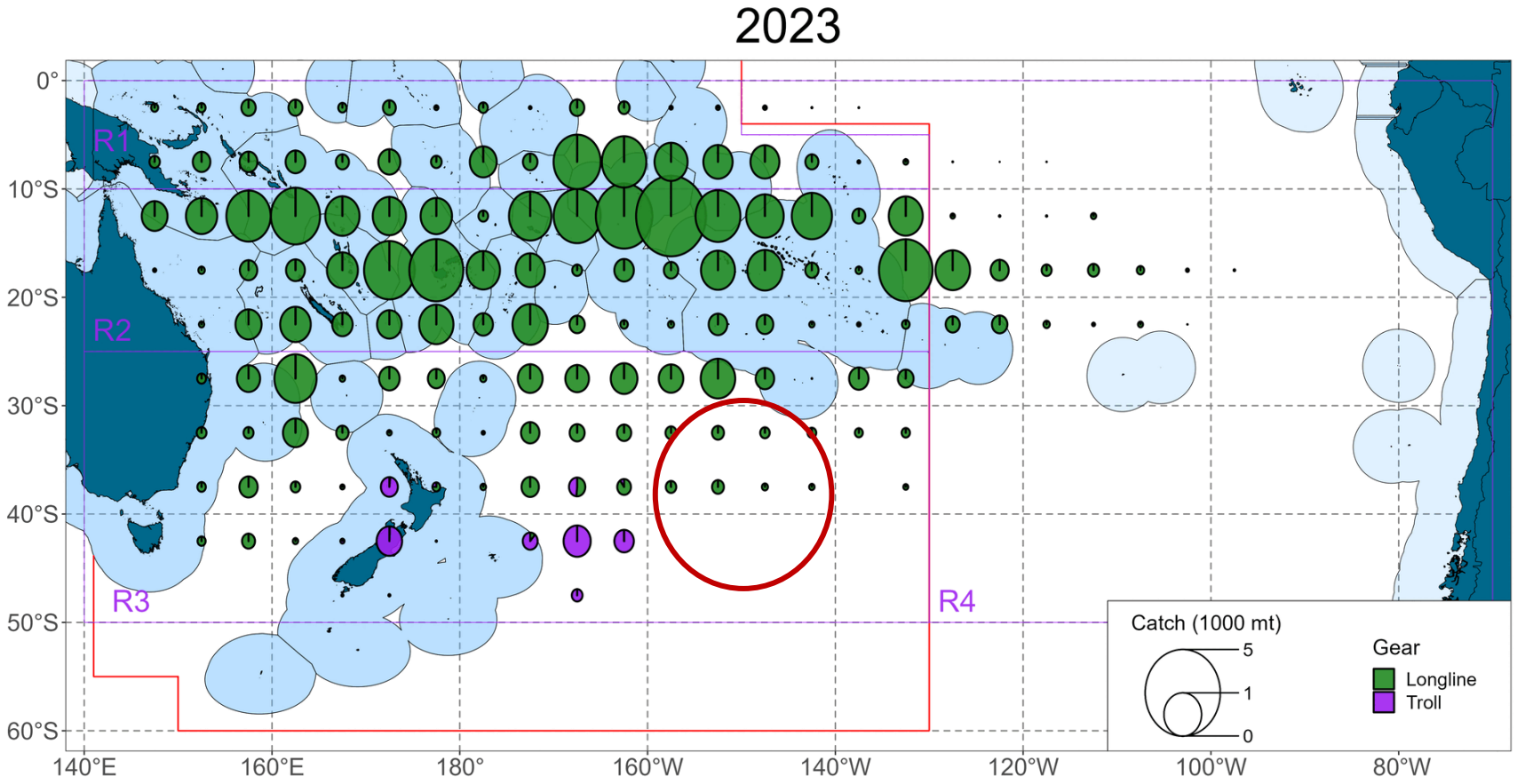
Gear	Prop.	Change from 2023	Change from 2019-23
LL	97%	+ 14%	+ 23%
Other	3%	+ 21%	+ 115%
All	100%	+ -6%	+ 2%

Info of note:

- **These data are WCPFC only**
- 2024 SPA 4,000 t less than 2017 record
- 2021 low catch due in part to increased EPO catch
- **Troll catch** 2024 increased 20% from 2023 but remains much lower than pre-2020
- Increase in “other” mostly artisanal



S.Pac. albacore – distribution of catch

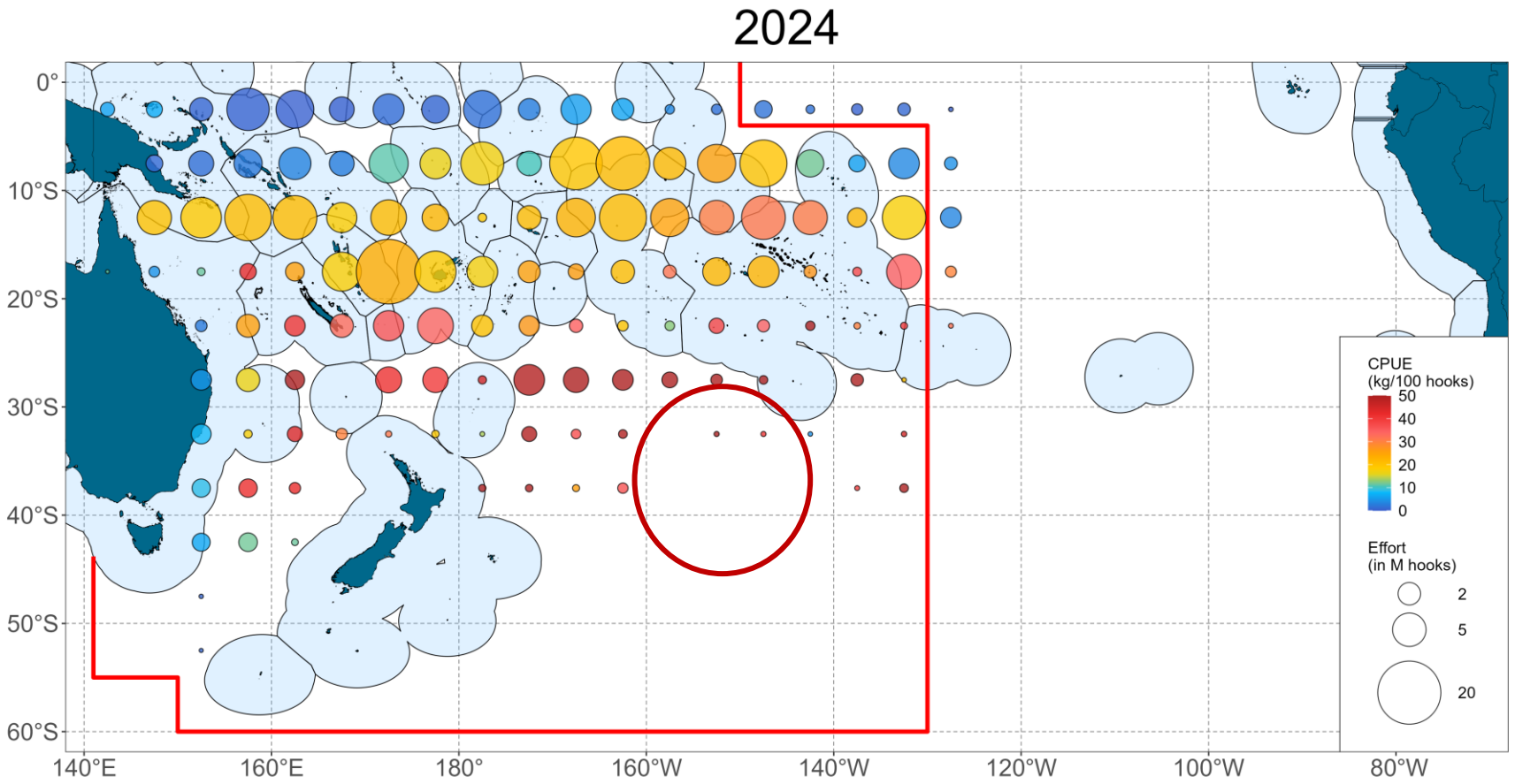


Catch map details:

- Increased catch north of 10°S
- **Increased catches Fiji/Vanuatu/Solomons/PNG/Kiribati**
- Decreased catches Tonga, Cook Islands

- Missing catch data in southeast region (circled)

S. Pac. albacore – distribution of LL CPUE

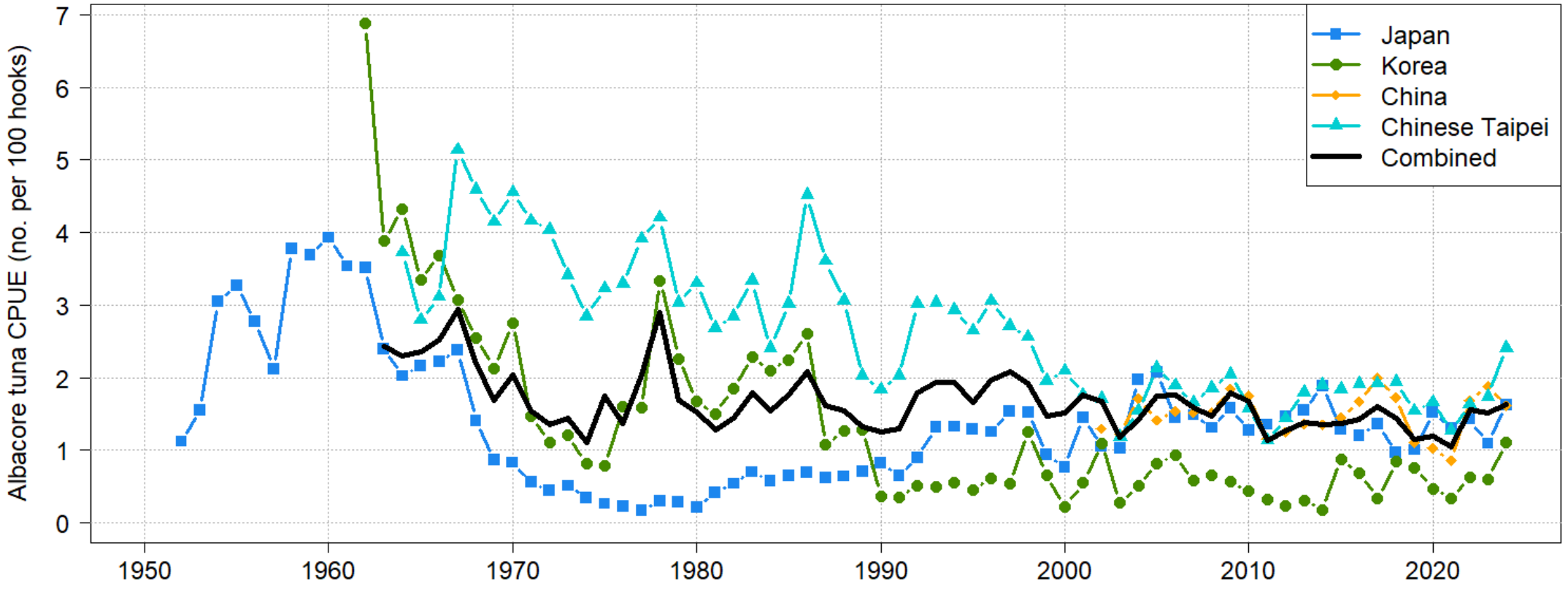


CPUE map details:

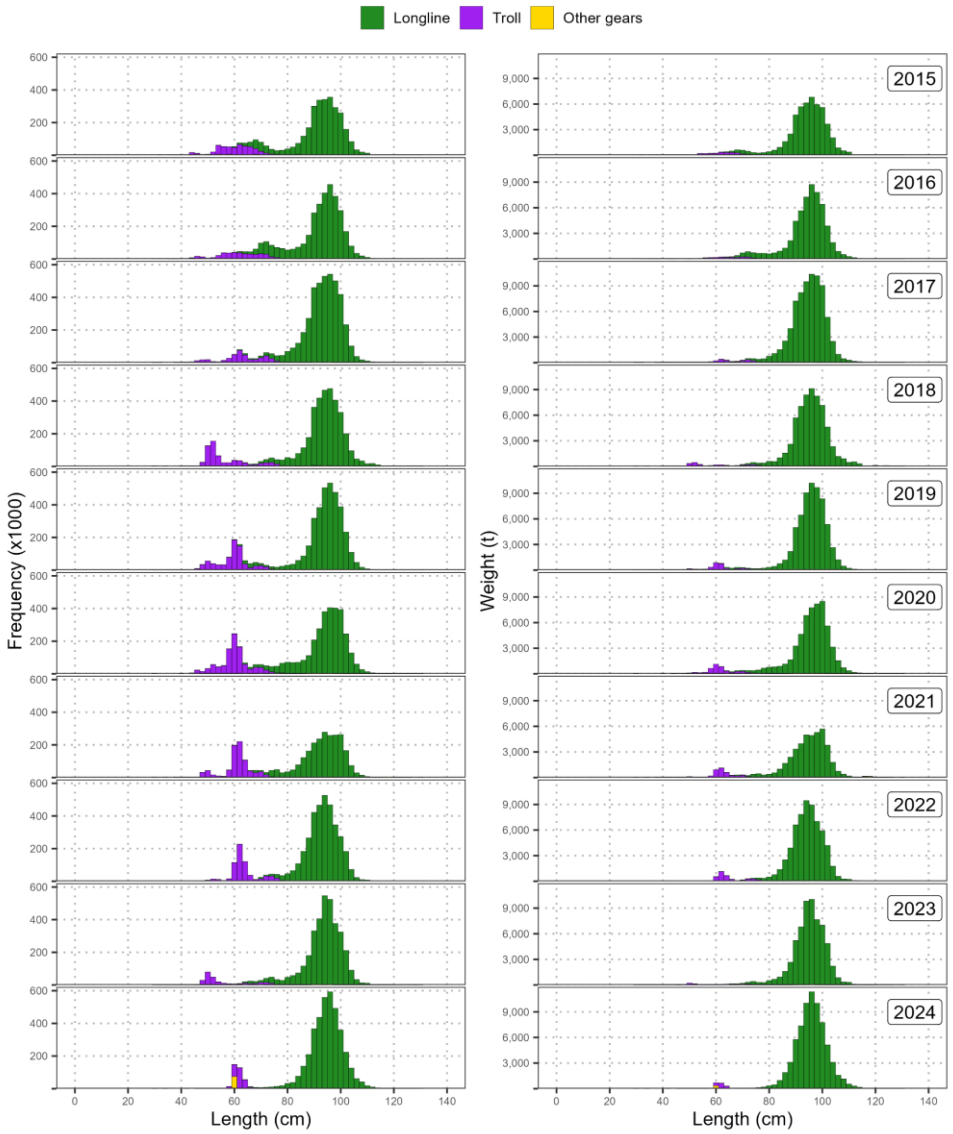
- Highest SPA LL CPUE in region between 20°S and 30°S
- Missing CPUE in southeast

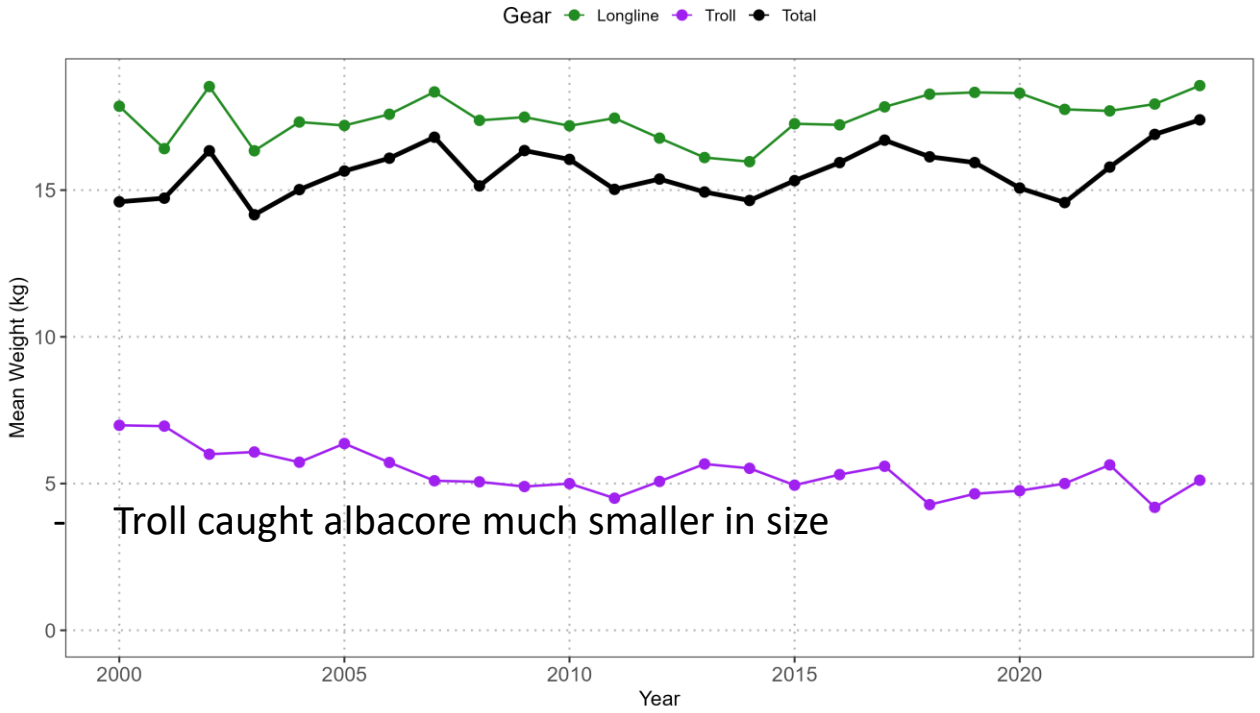
S. Pac. albacore – LL CPUE indices (nominal)

- Several year increase in CPUE for Korea, China and Chinese Taipei, stable/variable Japan.
- Weighted index up 7% and highest since 2009.



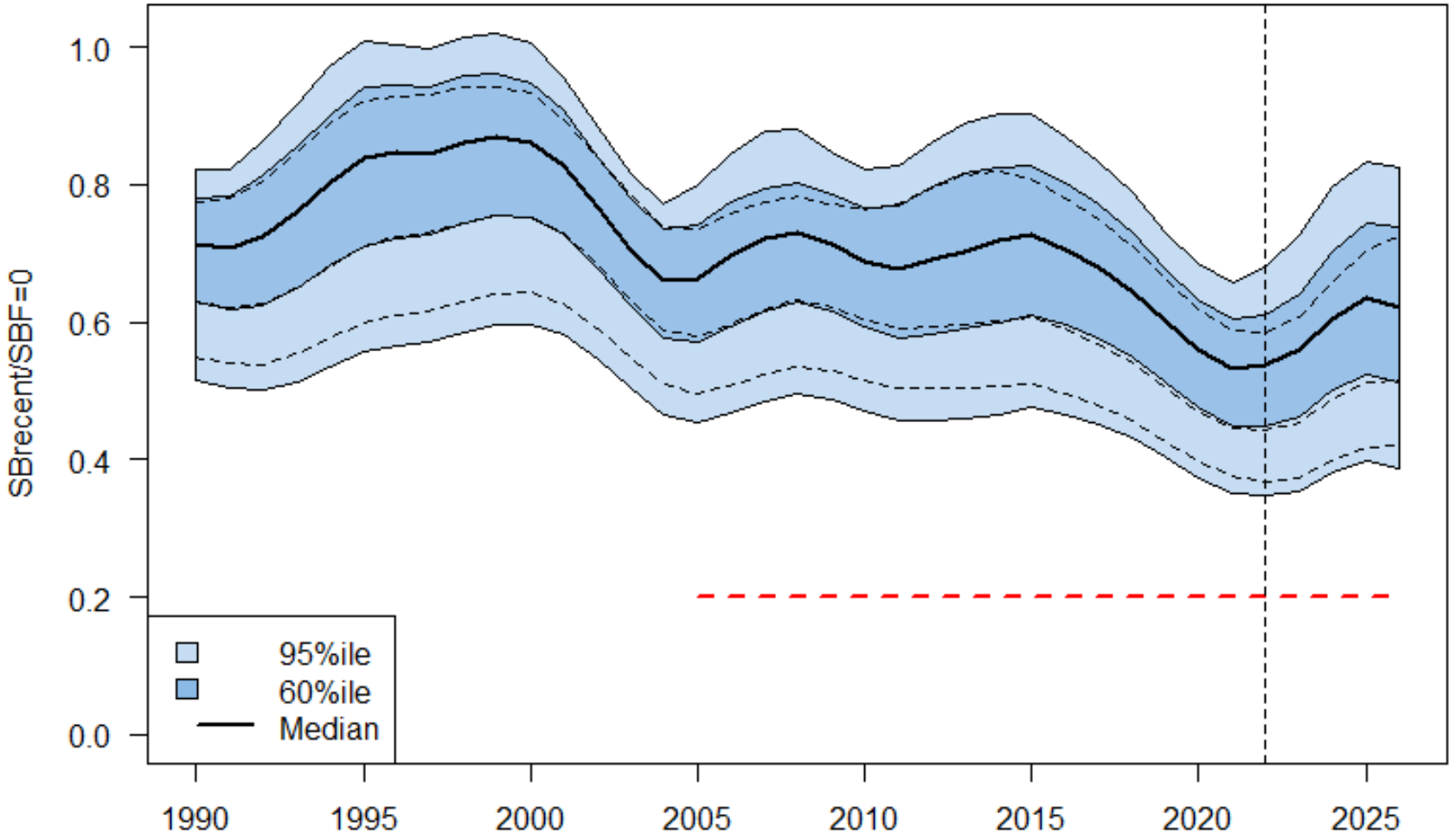
S.Pac. albacore – size distribution in catches





Distribution and mean size of SPA is stable over time. Mean weight of LL and weighted average (weighted by catch) near historical high (since 2000) – driven by LL

S.Pac. Albacore – short term stochastic projections



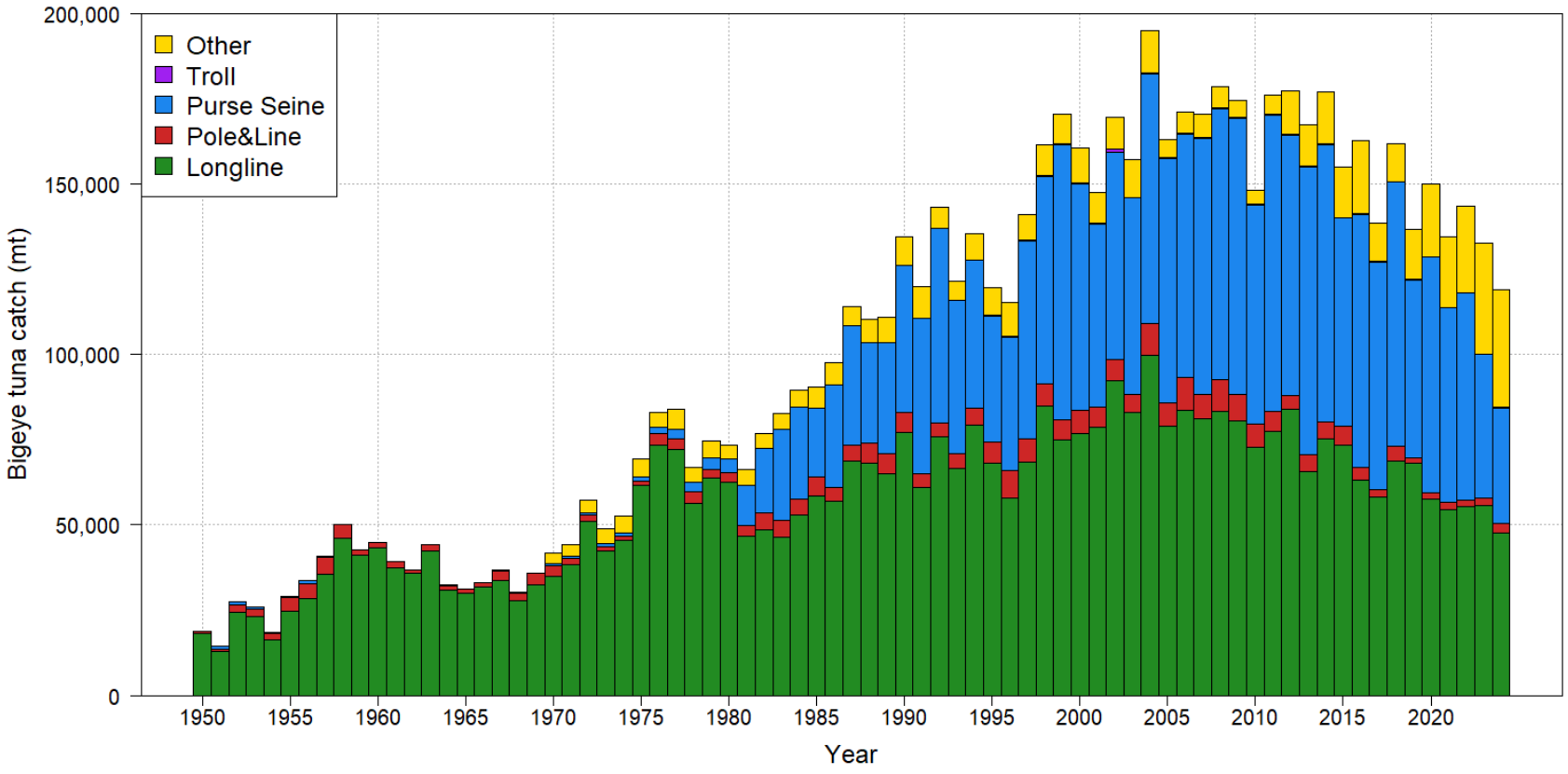
The projections indicate that median WCPFC-CA $SB_{2023\text{-}2026}/SB_{F=0}$ = 0.62

There is zero risk of overfishing or overfished status in 2026.

Bigeye – Total catch by gear

Gear	Prop.	Change from 2023	2019-23
PS	28%	- 20%	- 40%
LL	40%	- 14%	- 18%
PL	2%	+ 22%	+ 46%
Other	29%	+ 6%	+ 51%
All	100%	- 10%	- 15%

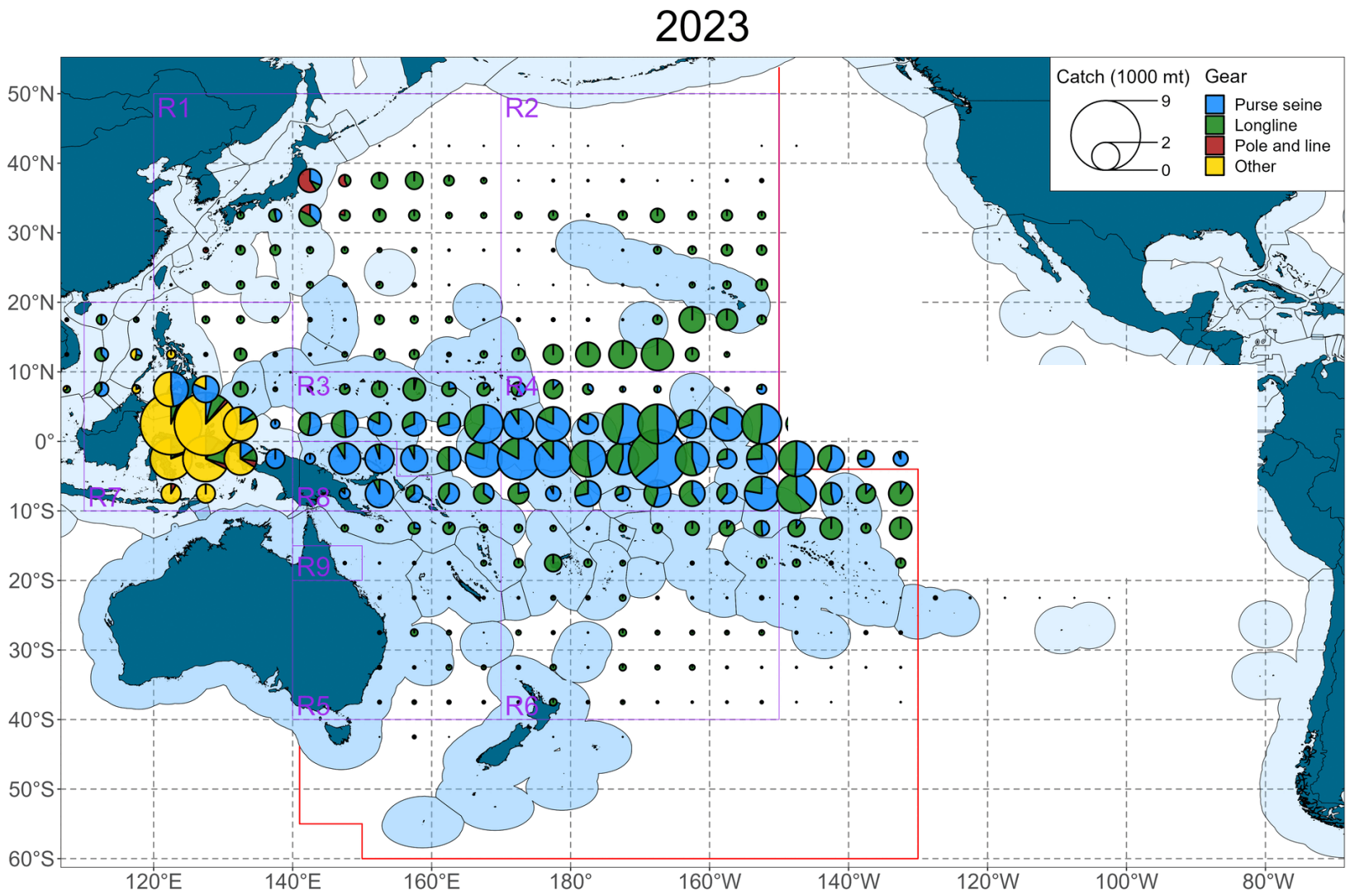
2024 catch – 119,021 t (lowest in 30 years)



Info of note:

- Bigeye catches have declined steadily for a decade, down > 40% since early 2000s
- 'Other' gear catch proportion highest on record

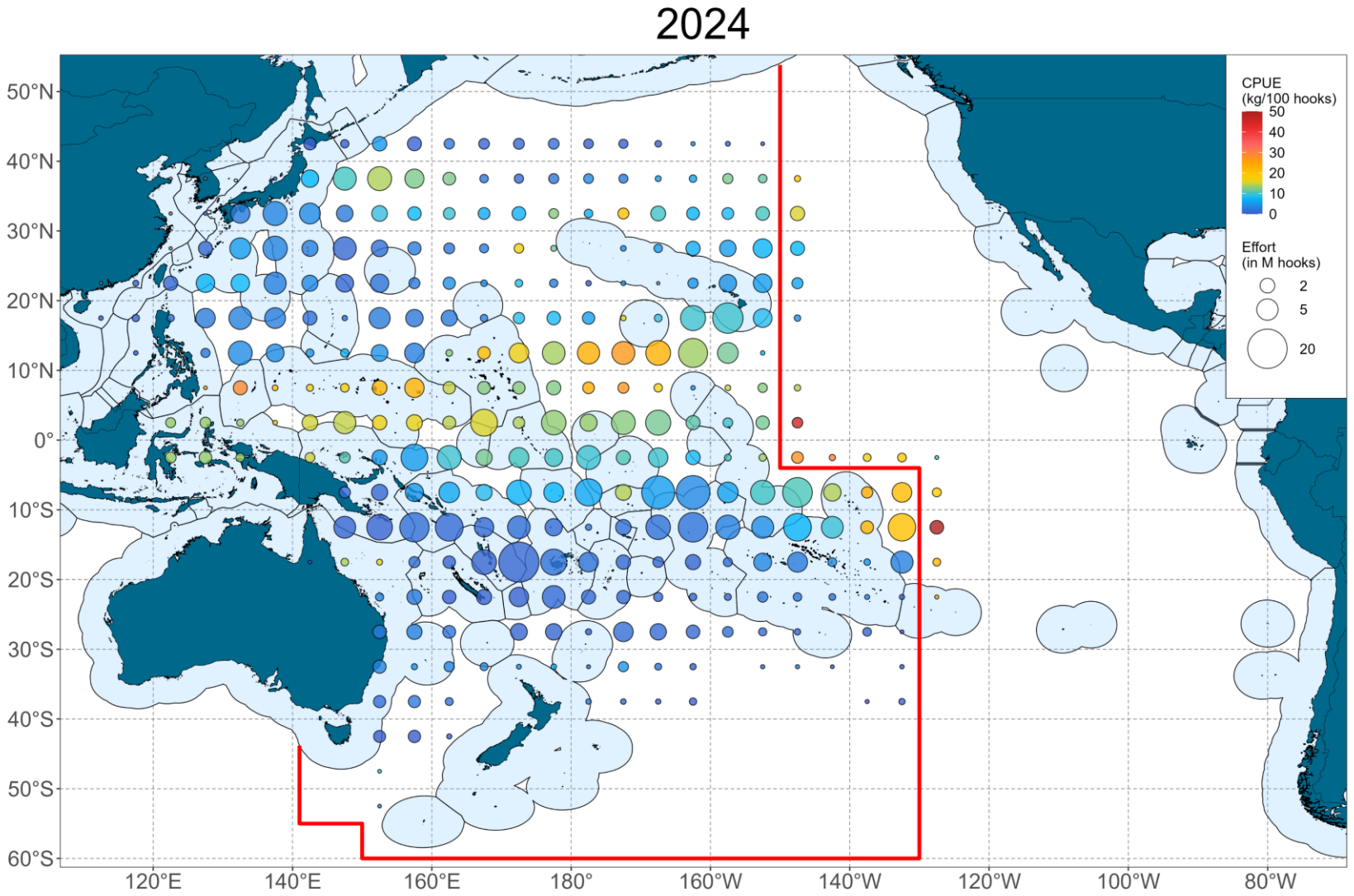
Bigeye – distribution of catch



Catch map details:

- Increasing amount of catch in Other fisheries (ID/VN/PH)
- **Catch decline strongest in central equatorial region**
- Pole and line proportion continues decline
- EPO catches incomplete at time of writing

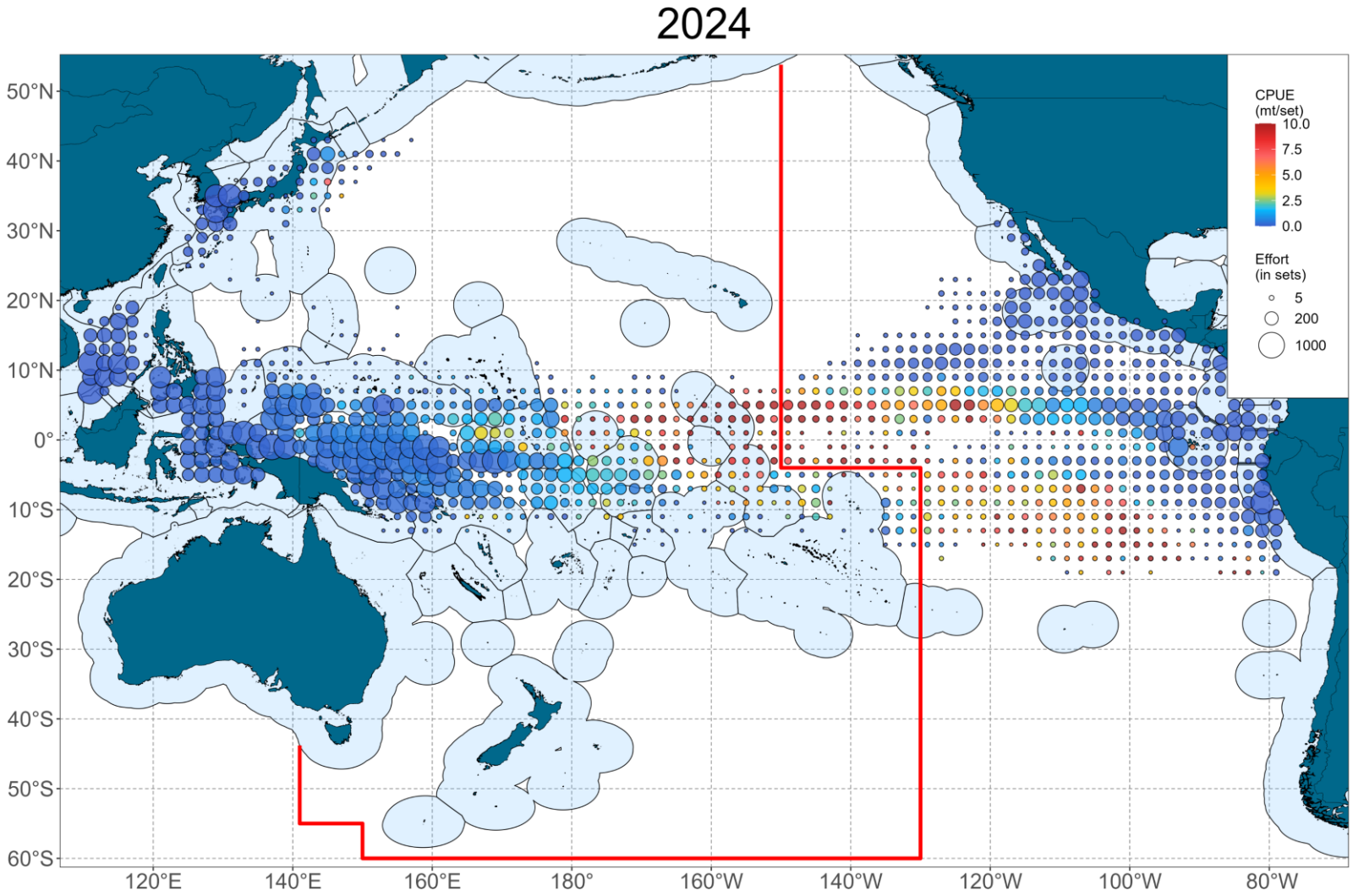
Bigeye – distribution of LL CPUE



CPUE map details:

- CPUE down across the entire equatorial zone (of the WCPFC-CA)
- 2024 EPO data incomplete

Bigeye – distribution of PS CPUE



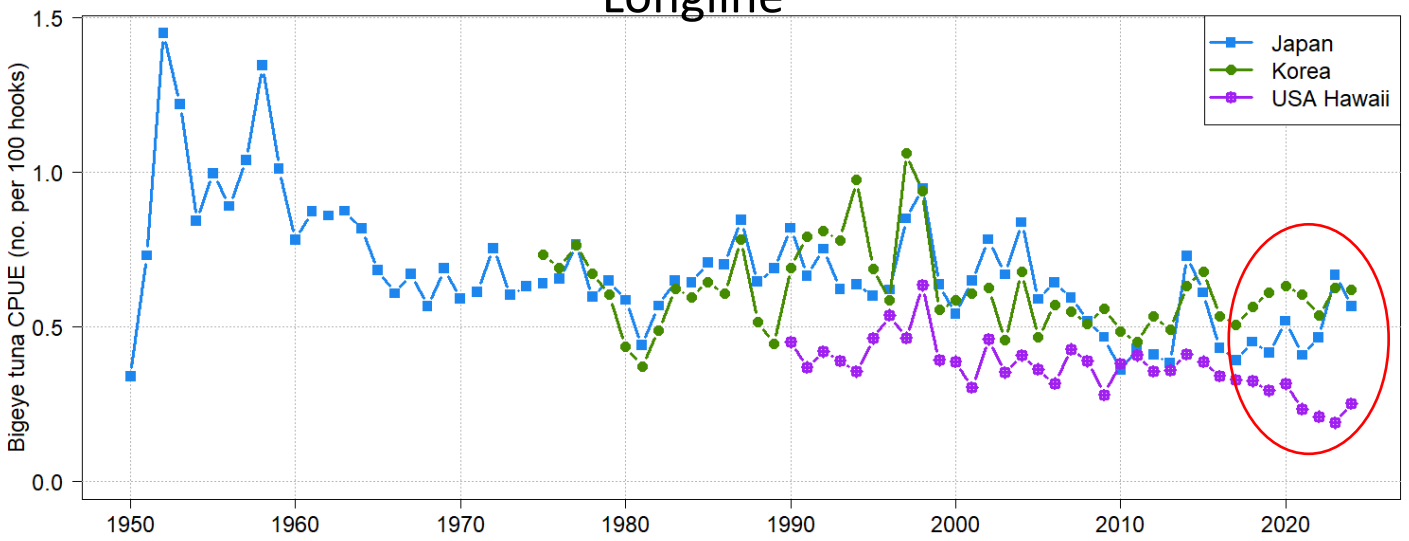
CPUE map details:

- Region between 155°W and 180° have been a bigeye "hotspot" last few years (HS area between KI-PX and KI-LI) but reduced fishing in that area in 2024

- 2023 EPO data complete

Bigeye – CPUE indices (nominal)

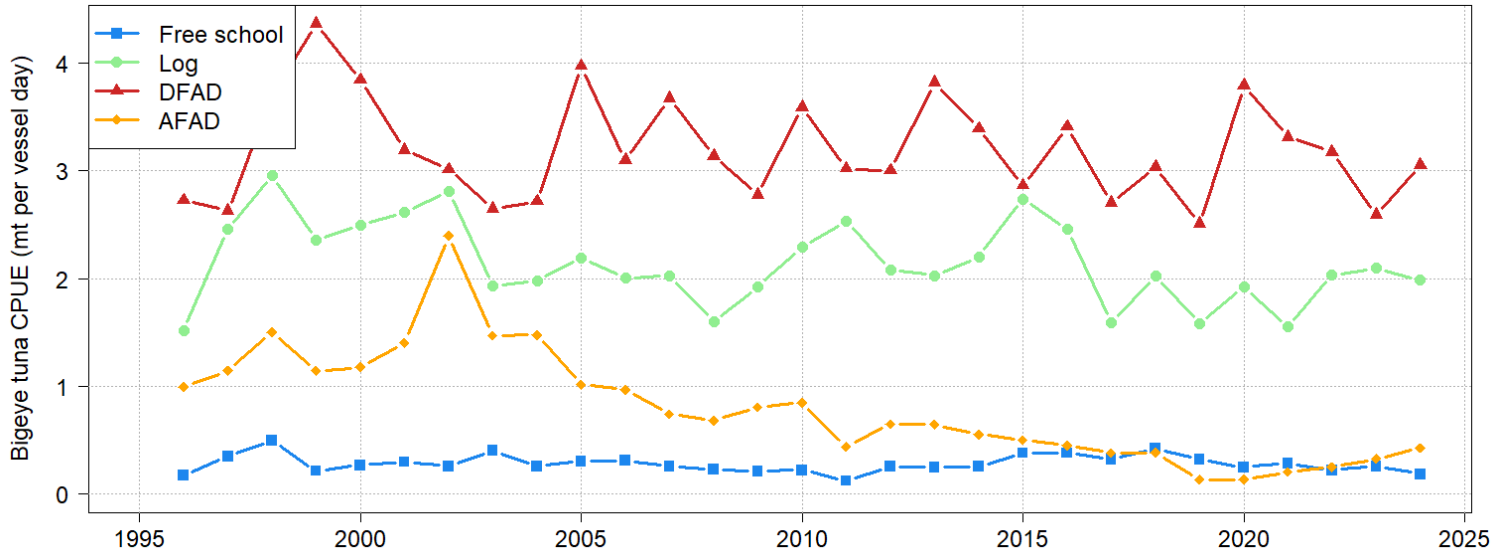
Longline



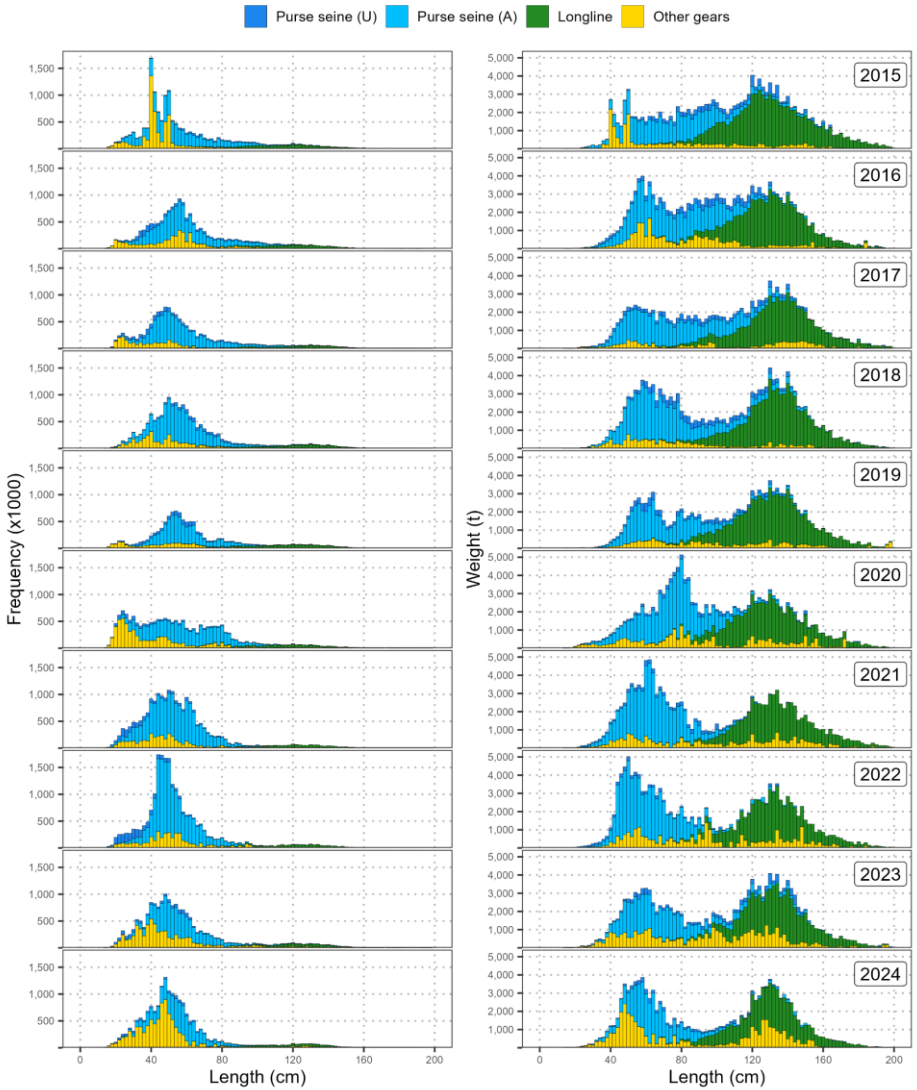
Japan (-15%) and Korea (-1%) both decreased; US index remains low despite some minor 2024 increase, downward trend since 2010 is inconsistent with Japan and Korea.

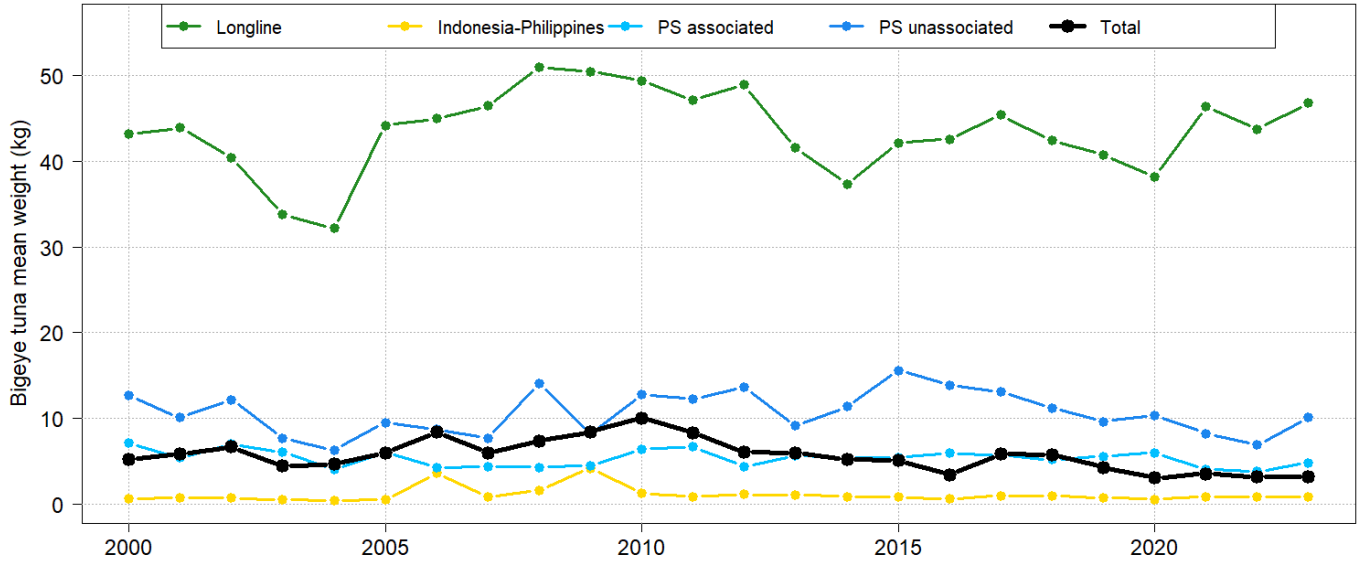
Purse seine

dFAD index slight increase but note the drop in FAD sets and hence lower BET PS catch



Bigeye – size distribution in catches



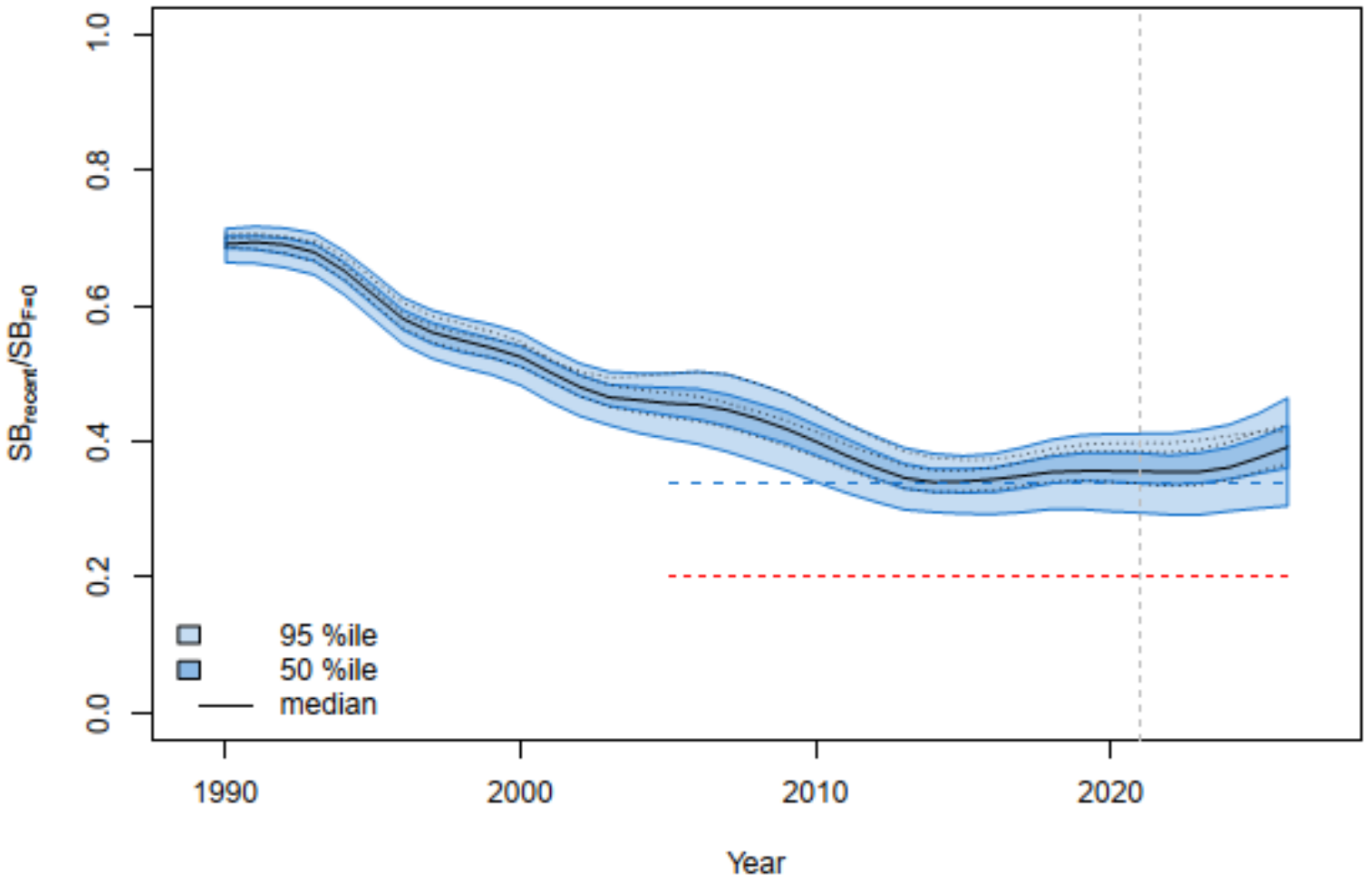


Info of note:

- Large numbers of small fish taken in IN/PH and FAD PS sets
- By weight, relatively similar amounts of small/large fish comprise catch

Not much trend in mean weight of bigeye in any of the gears; note the very tiny mean weight of 'other' gear fish. Associated bigeye about half the mean weight of Unassociated bigeye.

Bigeye – short term projections



The projections indicate that median WCPFC-CA

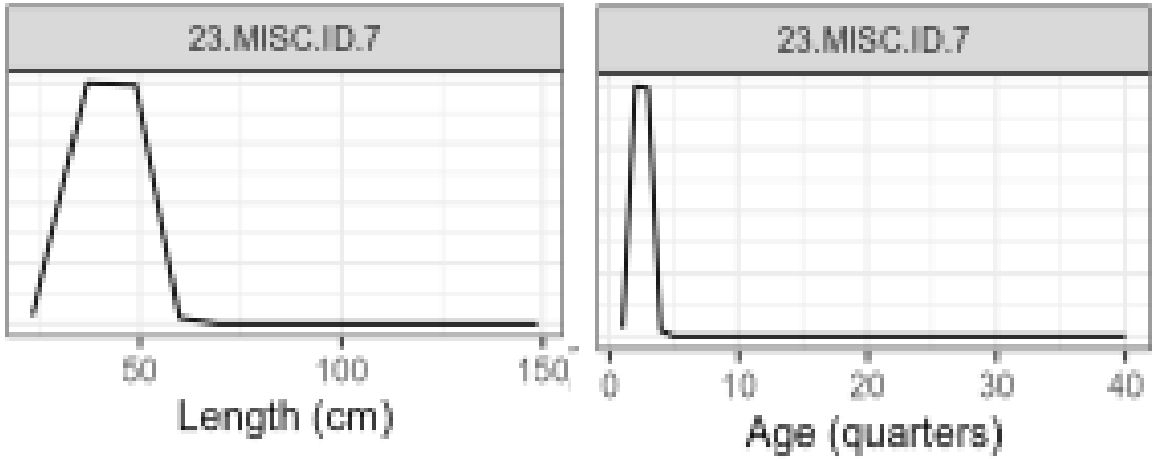
$SB_{2023\text{-}2026}/SB_{F=0} = 0.62$
Prob. $SB_{2023\text{-}2026}/SB_{F=0} <$ LRP = 2%

$F_{2022\text{-}2025}/F_{MSY} = 1.5^{*}$
Prob. $F_{2022\text{-}2025} > F_{MSY} = 97\%$

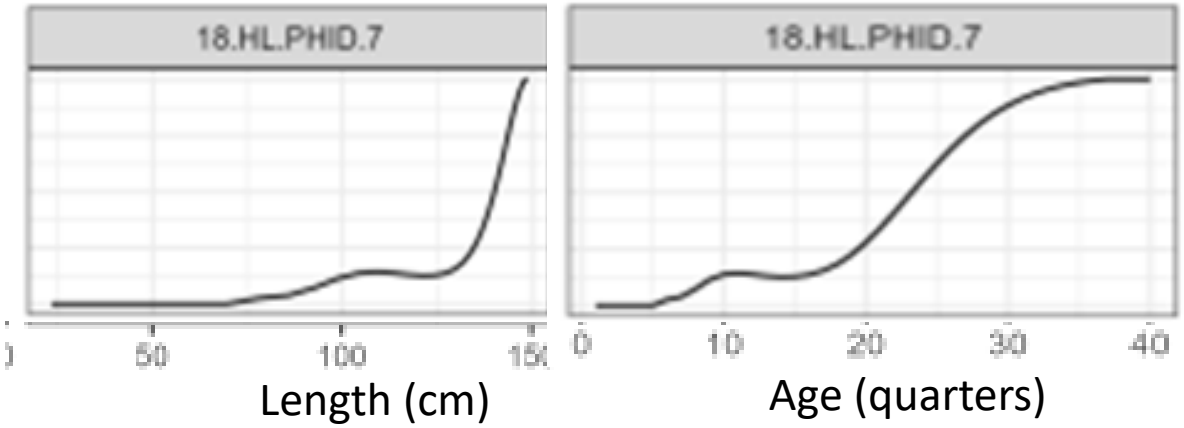
The large increase in the F-based BRP and resulting high probability of overfishing results from the 2023 catch estimate of small bigeye in the 'other' gear fisheries within region 7 (primarily Fishery 23)* ***of the assessment model being almost 80% higher than that of the baseline period. As that 2023 catch is currently carried forward into 2024 and then assumed to continue, the equilibrium calculation of MSY and its associated F are greatly impacted**, resulting in the estimate of median* $F_{2022\text{-}2025}/F_{MSY} = 1.84$*. The most recent bigeye assessment (Day et al., 2023) estimated this value at 0.59 at the end of 2021.*

2023 catches carried forward to 2024

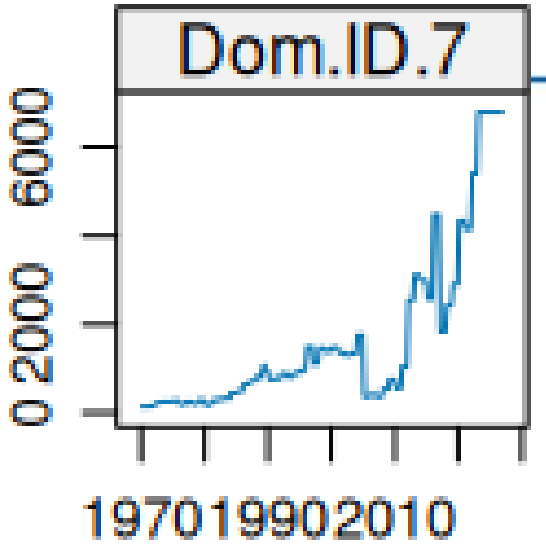
Small fish fishery - BET



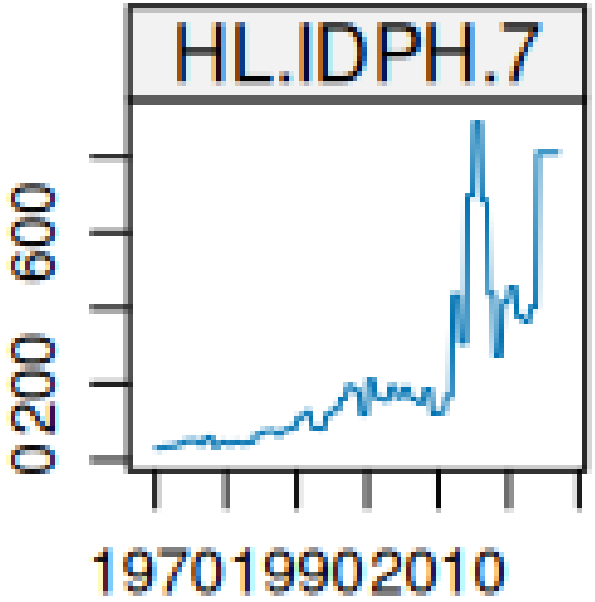
Large fish hand line fishery - BET



Small fish catches



Large fish handlines



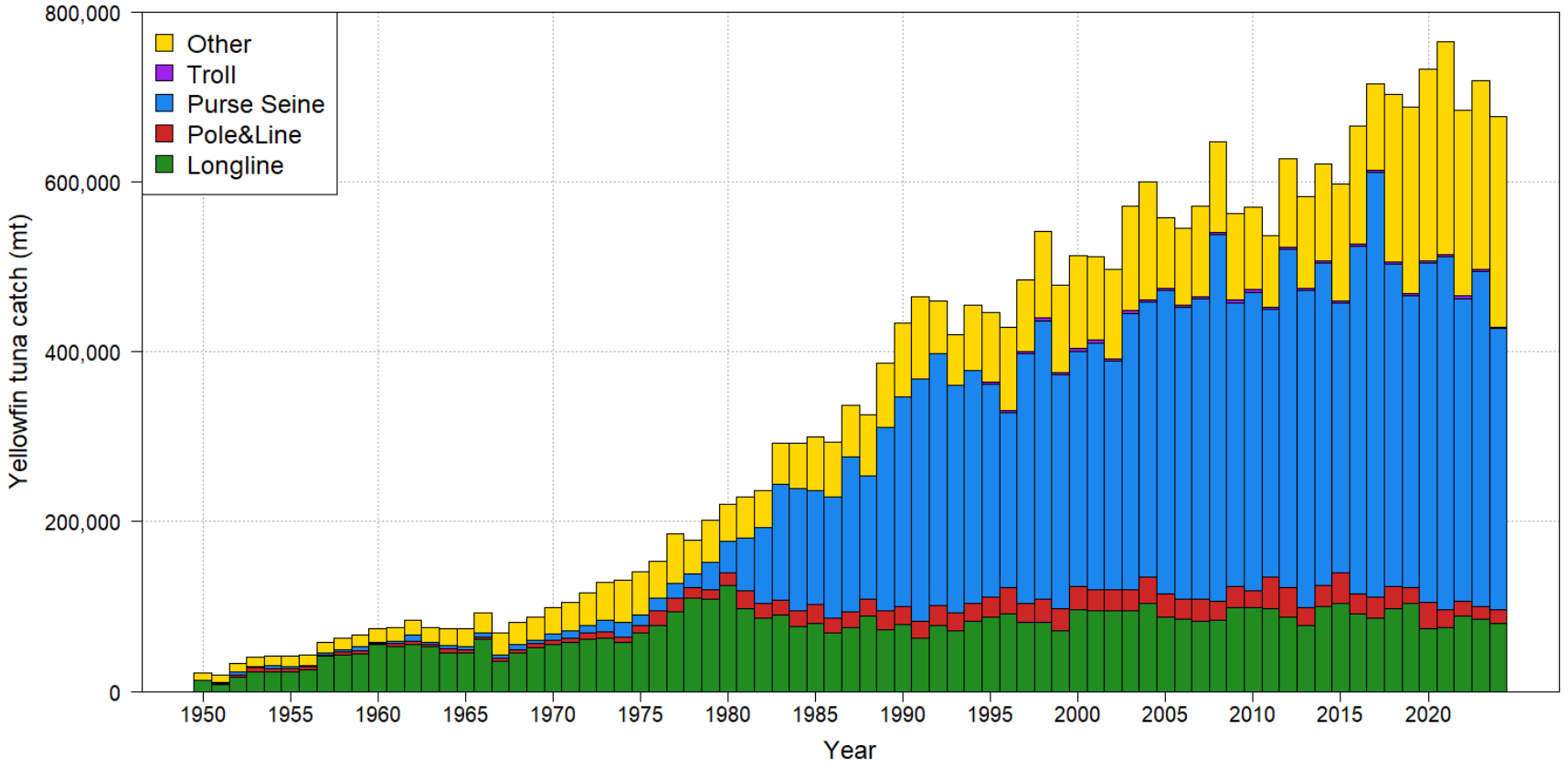
Yellowfin – Total catch by gear

Gear	Prop.	Change from 2023	Change from 2019-23
PS	49%	- 16%	- 13%
LL	12%	- 6%	- 6%
PL	2%	+ 1%	- 23%
Other	37%	+ 11%	+ 9%
All	100%	- 6%	- 6%

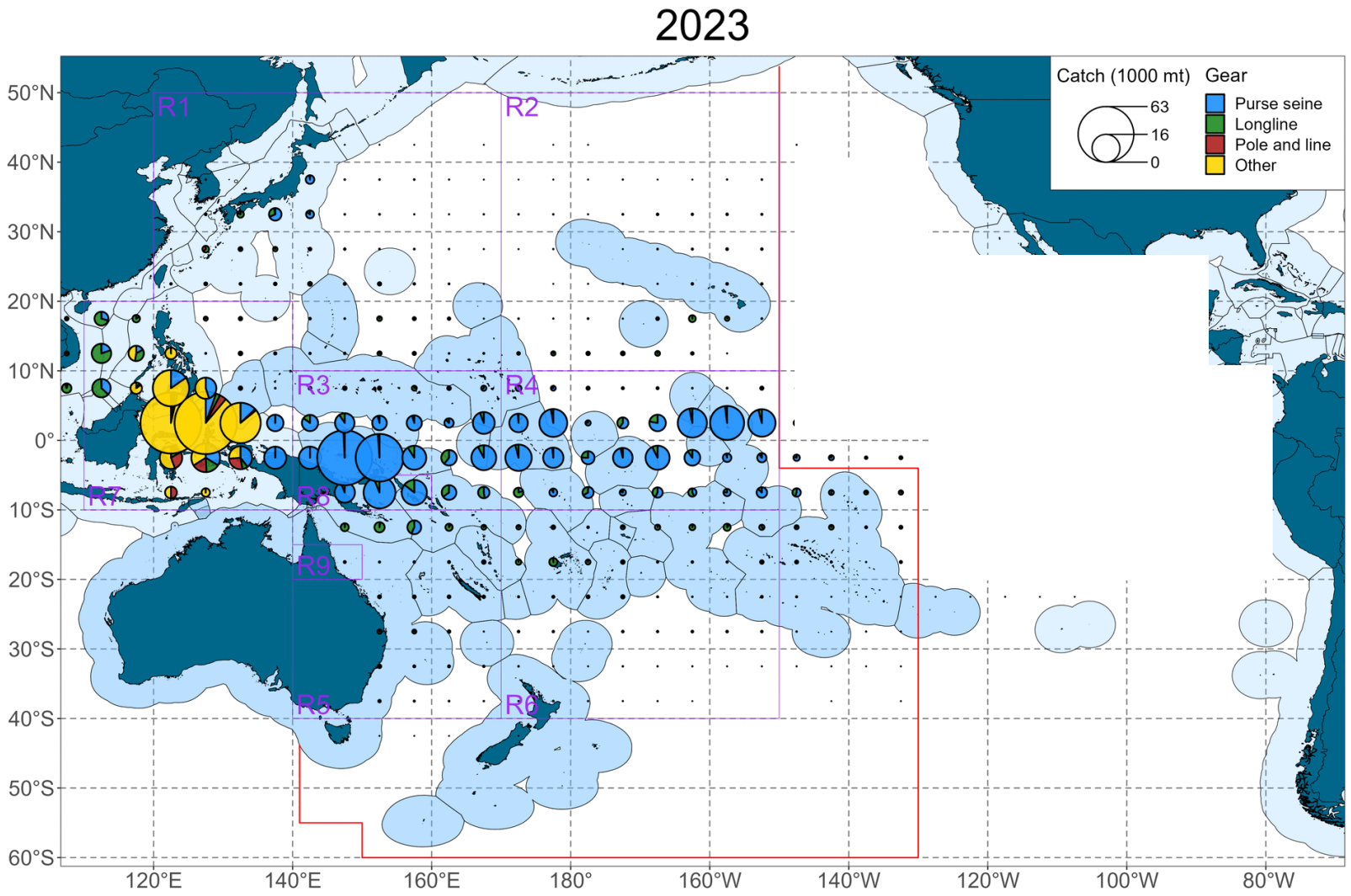
Info of note:

- After decades of increase, recent stability in catches
- Proportion taken by purse seine was lowest since 1997
- Proportion taken by 'other' gears highest on record

2024 catch – 677,594t (8th highest)



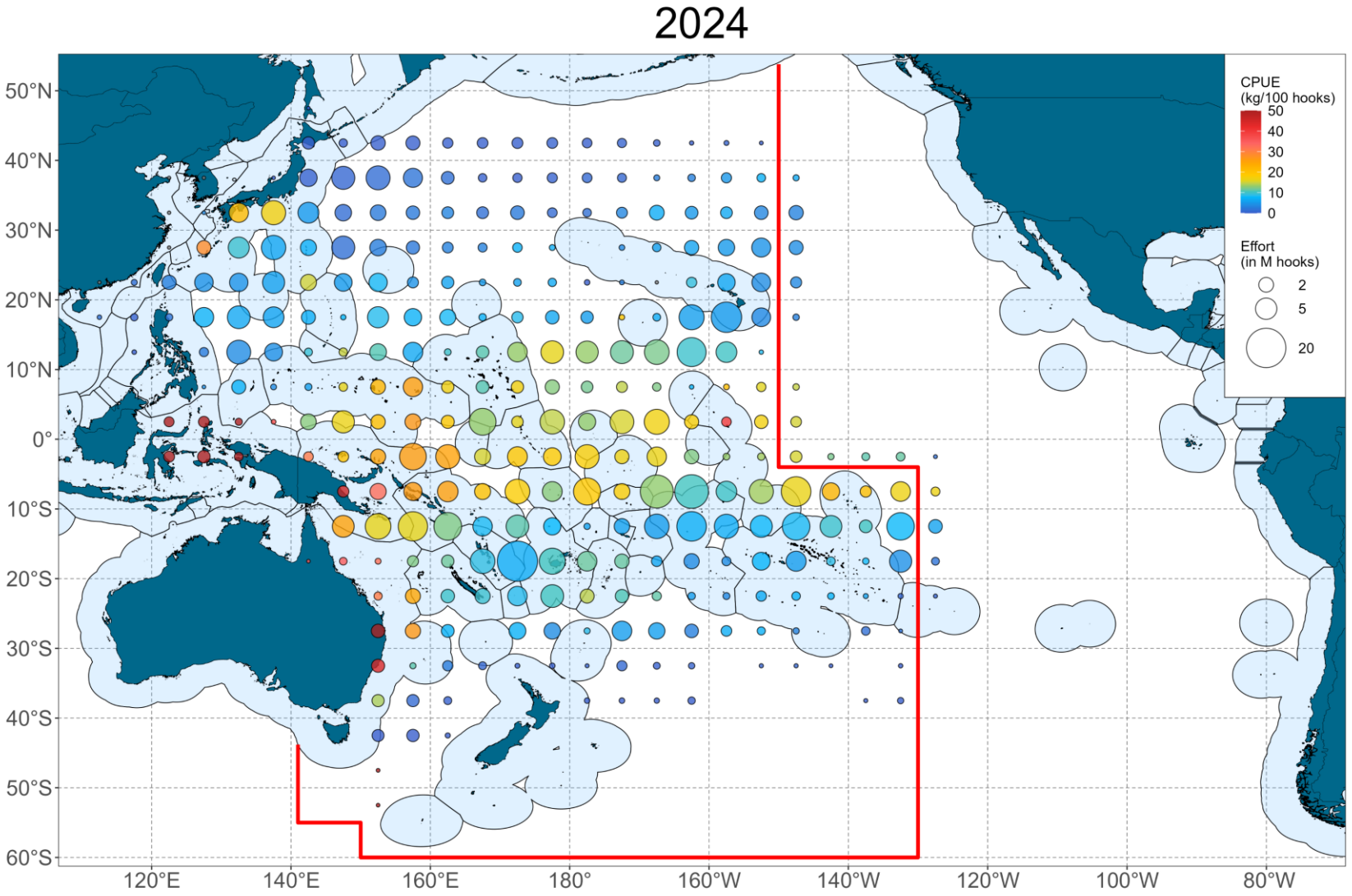
Yellowfin – distribution of catch



Catch map details:

- Note decrease in YFT catch in assessment Region 4 (170°W to 150°W, around the equator)
- 2024 EPO catches incomplete for LL (complete for PS)

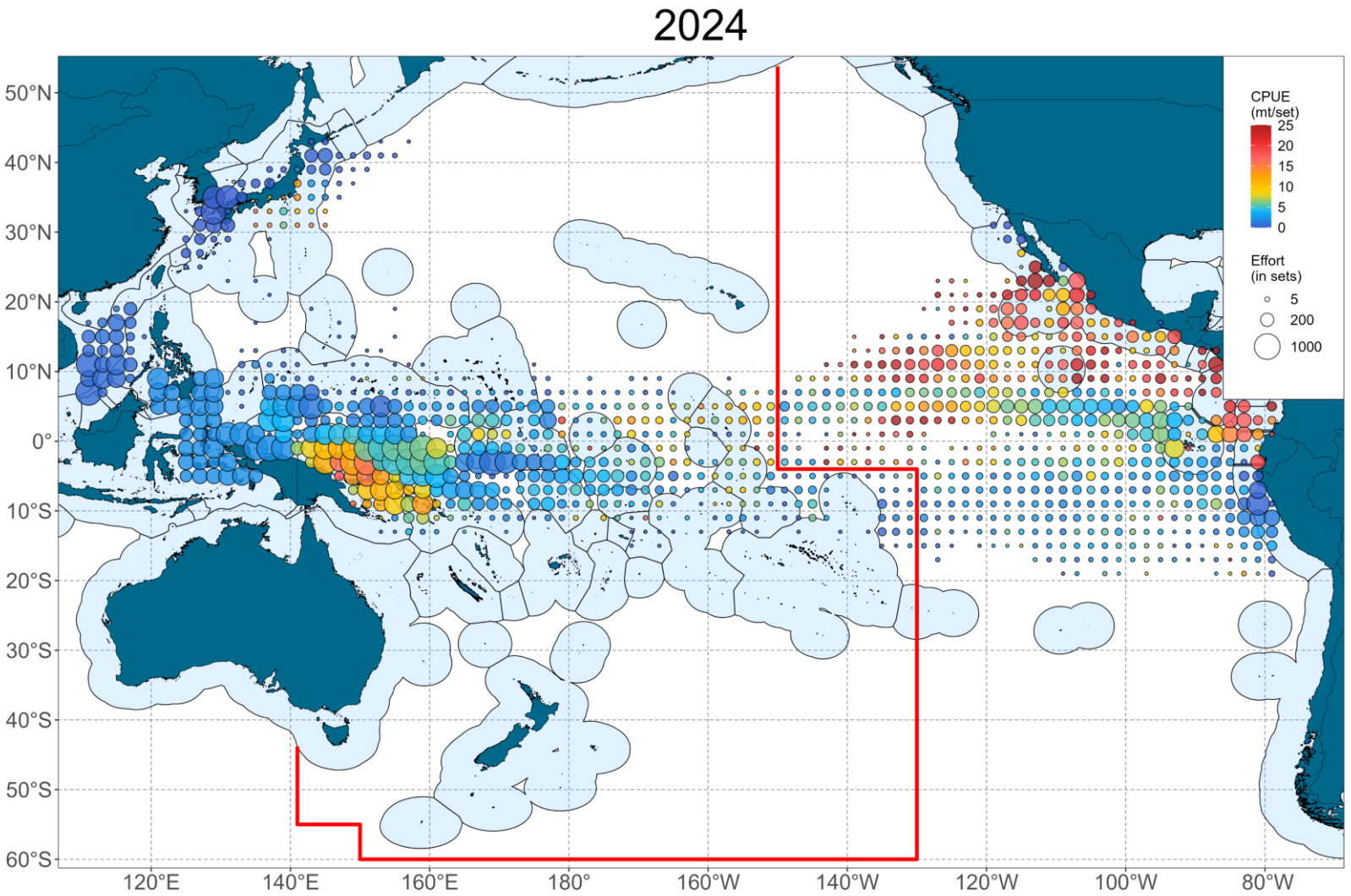
Yellowfin – distribution of LL CPUE



CPUE map details:

- High CPUE region mostly just off PNG and Solomons
- 2024 EPO data incomplete

Yellowfin – distribution of PS CPUE



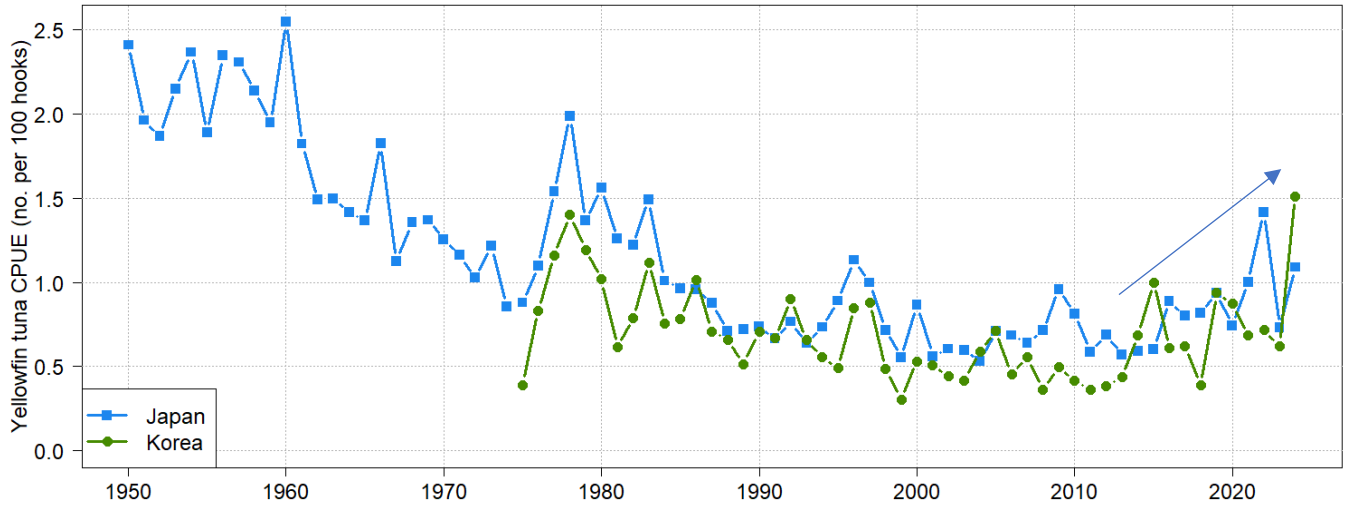
CPUE map details:

- Fragmented locations of high CPUE, mostly now concentrated to west and in HS pocket between TV and KI
- 2024 EPO complete.

Yellowfin – CPUE indices (nominal)

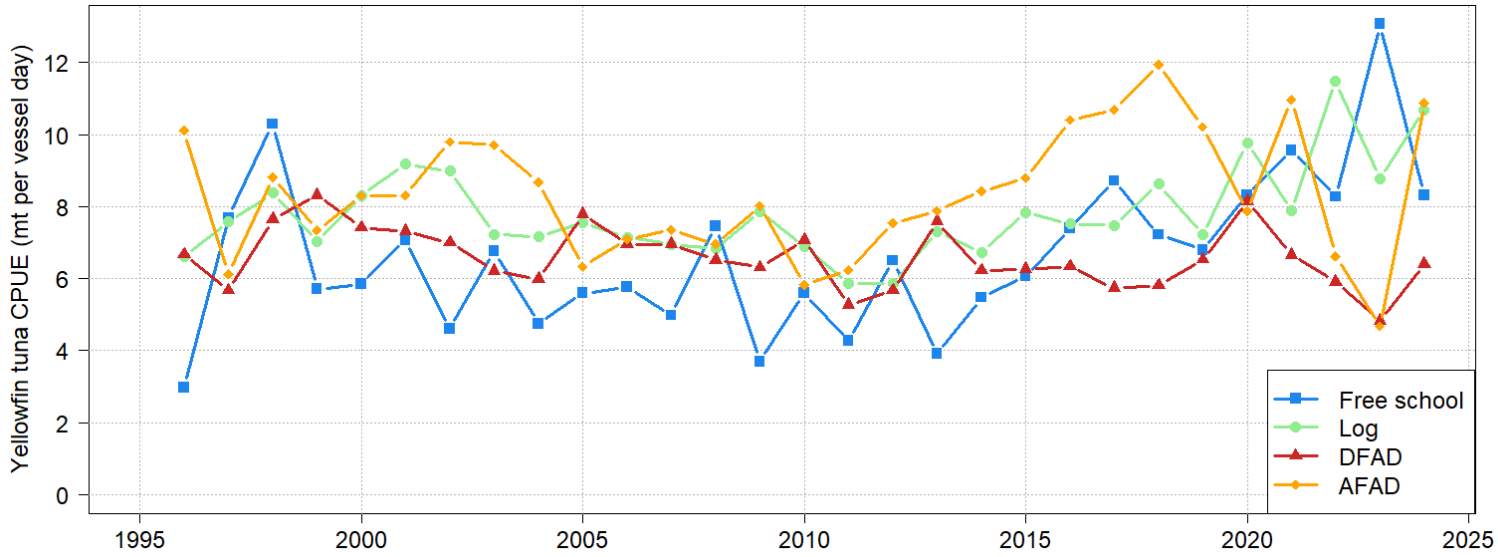
Pacific Community
Communauté du Pacifique

Longline



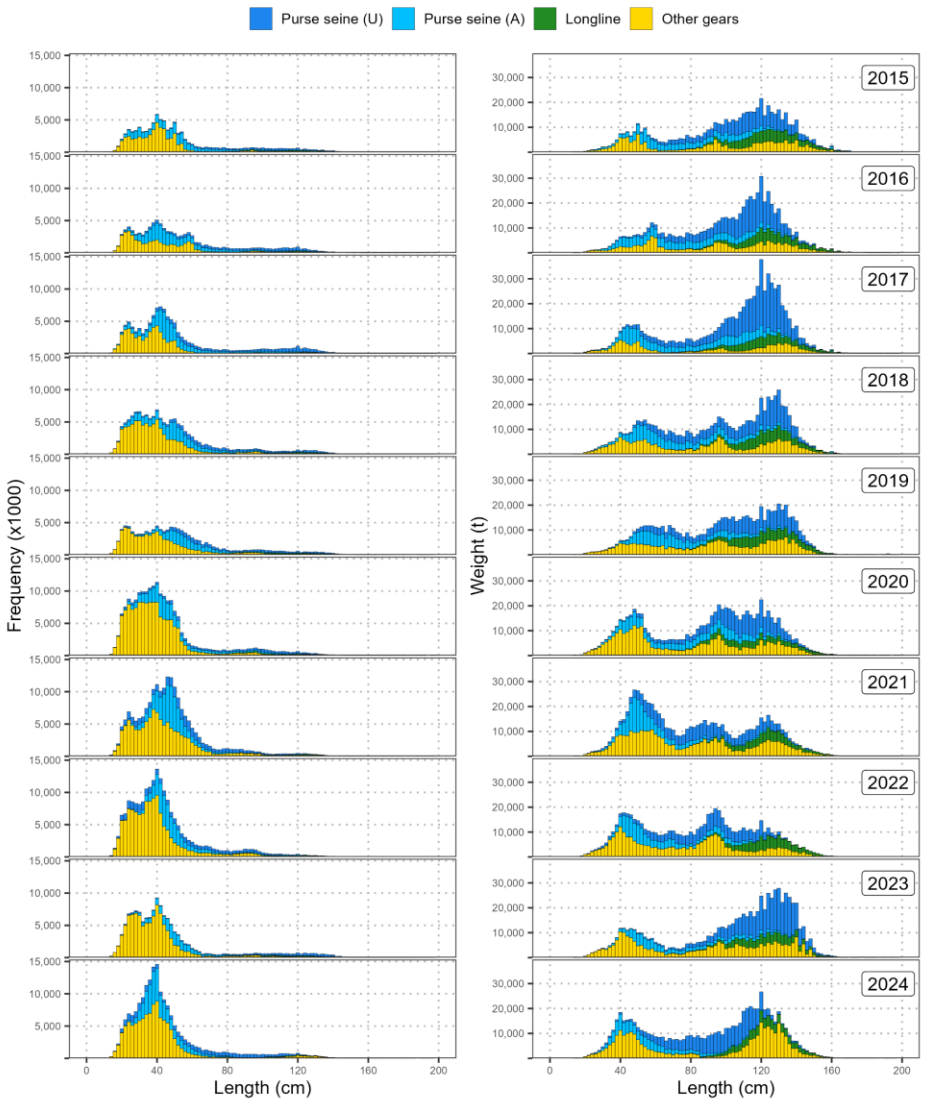
2024 increase for both the Japanese (+49%) and Korean (+ 143%) fleets from 2023

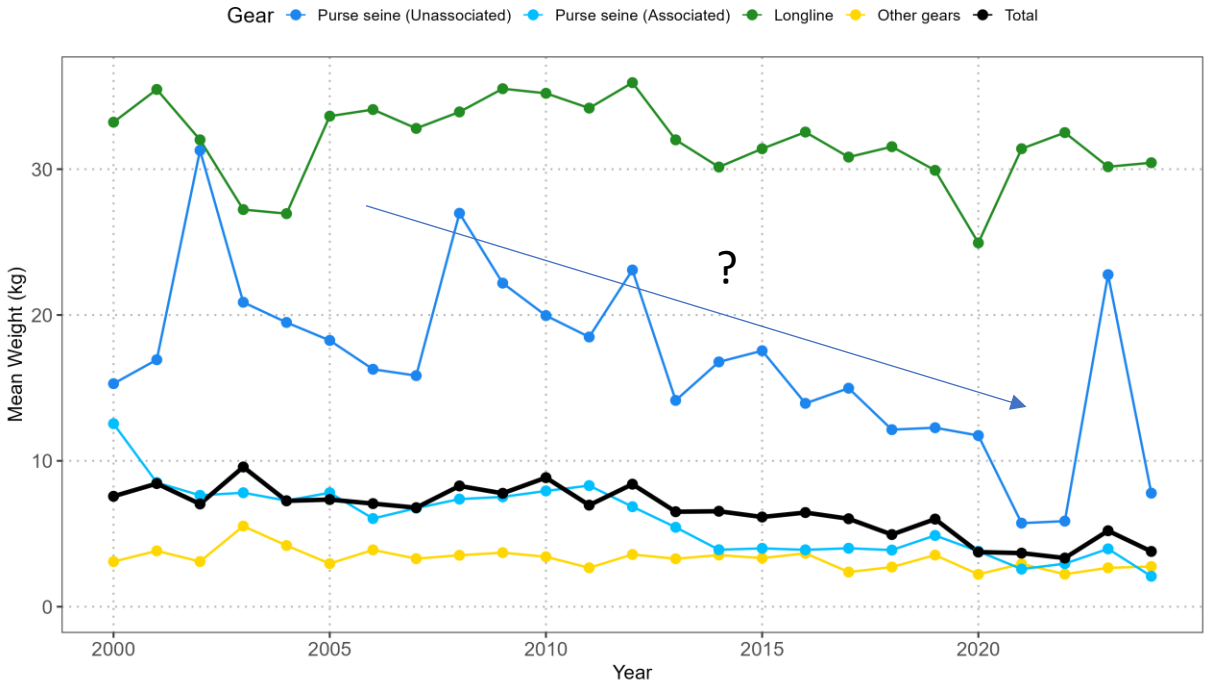
Purse seine



Some large changes in 2024: Free school -36%, dFAD +33%

Yellowfin – size distribution in catches



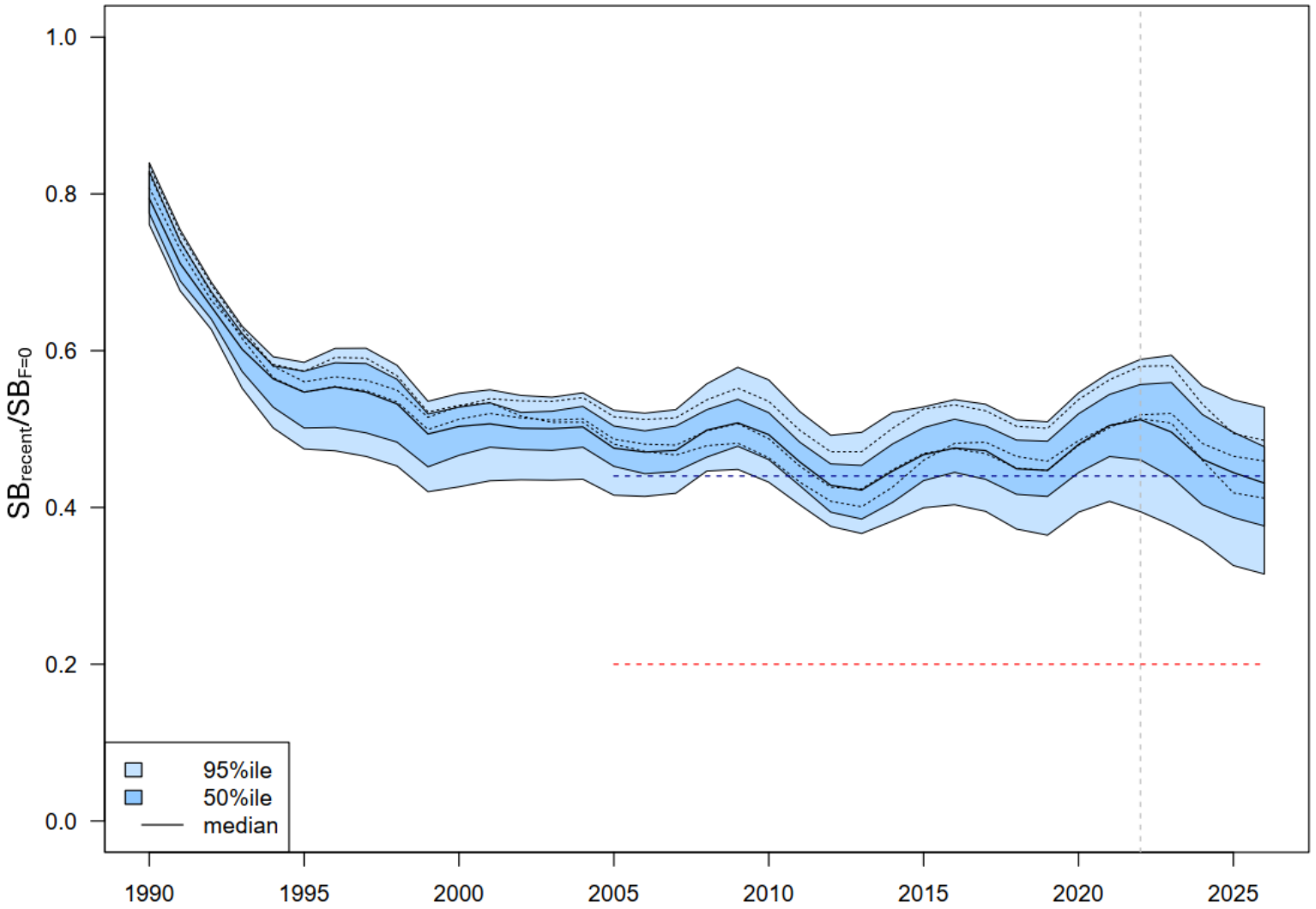


Info of note:

- Overwhelming numbers of small fish taken in IN/PH and FAD PS sets
- By weight, relatively similar amounts of small/large fish comprise catch

Declining trend and low mean weight in 2021-2022 of Free-school (Unassociated) yellowfin??

Yellowfin – short term projections



The projections indicate that median WCPFC-CA

$SB_{2023\text{-}2026}/SB_{F=0} = 0.41$
Prob. $SB_{2023\text{-}2026}/SB_{F=0} < LRP = 0\%$

$F_{2022\text{-}2025}/F_{MSY} = 0.70$
Prob. $F_{2022\text{-}2025} > F_{MSY} = 16\%$

Similar concerns to bigeye – selectivity applied in projections may be inappropriate.

In summary

- Albacore – continued increase in nominal LL CPUE on 2024, except for Chinese fleet, with question regarding operations in south-east high seas
- Bigeye – catch was lowest in 30 years
  - Proportion taken in ‘Other’ fisheries highest on record
  - Implications for projections as 2023/24 catch of large number of small fish impacts MSY calculations and F/FMSY ratio by end 2026
- Yellowfin – Mean size in catch is drifting lower across all gears
- Outlier in mean size of SKJ and YFT during Covid years with reduced/absent observer coverage – likely related to sampling biases – we will work on correcting this.