

INTERNATIONAL PACIFIC



HALIBUT COMMISSION

Data overview and stock assessment for Pacific halibut at the end of 2024

Agenda item: 5.2

IPHC-2025-AM101-11

(I. Stewart, A. Hicks, R. Webster & D. Wilson)



Summary of results

- Fishing mortality decreased from 2023 to 2024
 - Continued shift from older to younger fish in both the fishery and FISS
 - Assessment results indicate that spawning biomass is lower than estimated last year
 - The stock remains at a low productivity level due to low weight-at-age and low recruitment through at least 2016
-
- These results have been updated since the Interim Meeting to include a revision to the 2024 commercial fishery landings and discards

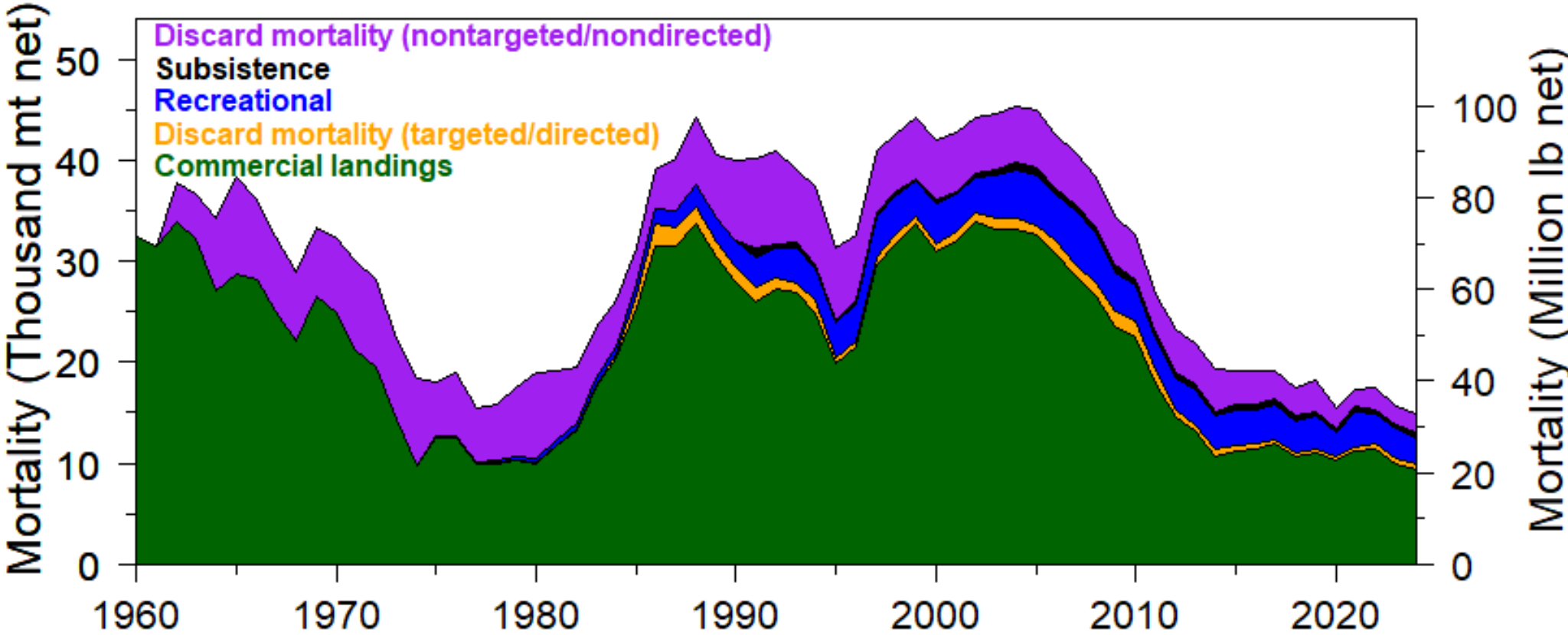


Outline

- Data sources
 - Mortality
 - Trends
 - Biological
- Modelling
 - Results
 - Reference points



Historical mortality



2024 Mortality

Projected from AM100 based on adopted mortality limits

Year	Commercial Landings	Commercial discards	Recreational	Subsistence	Non-directed discards	Total
2024	24.03	1.32	6.24	0.83	4.42	36.84

Estimated for this year's stock assessment analysis

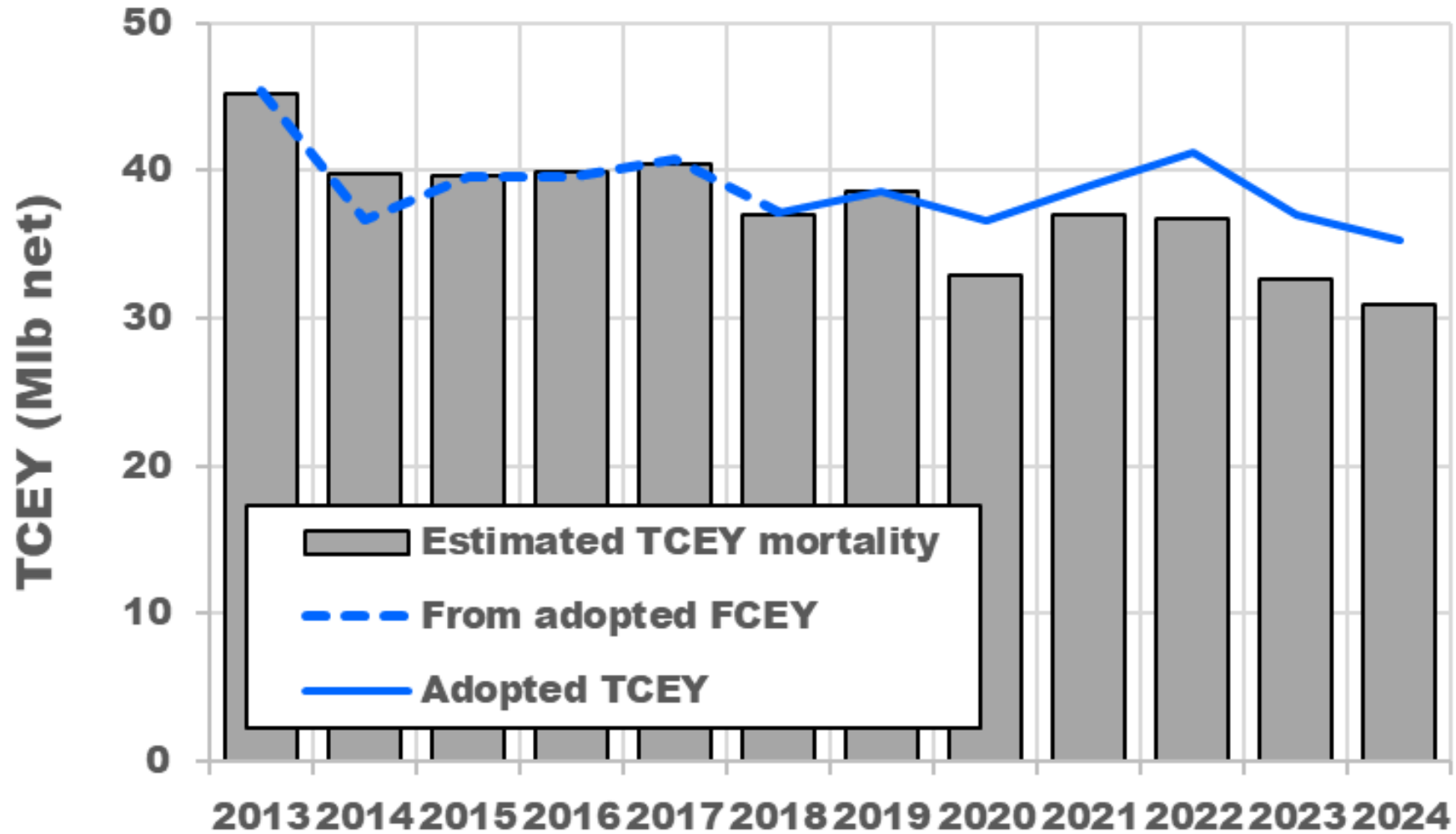
Year	Commercial Landings	Commercial discards	Recreational	Subsistence	Non-directed discards	Total
2024	20.54	1.34	5.88	0.83	4.11	32.70

Updated through end-of-2024: **4.39**

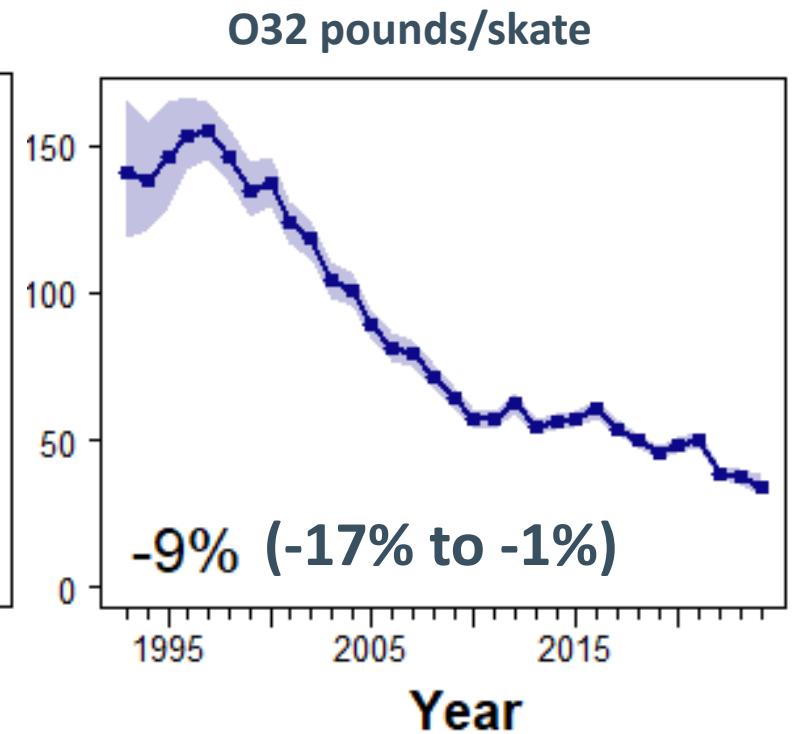
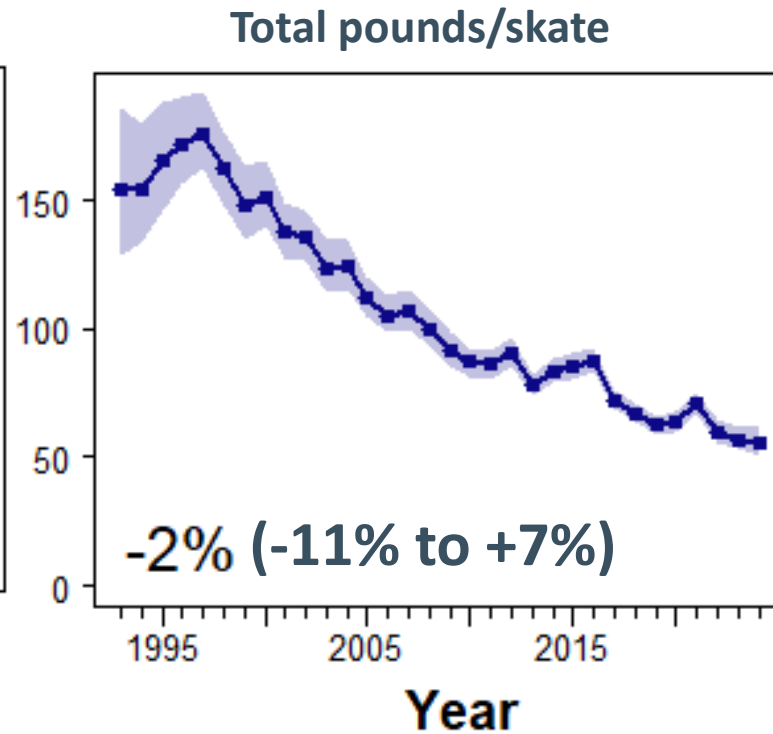
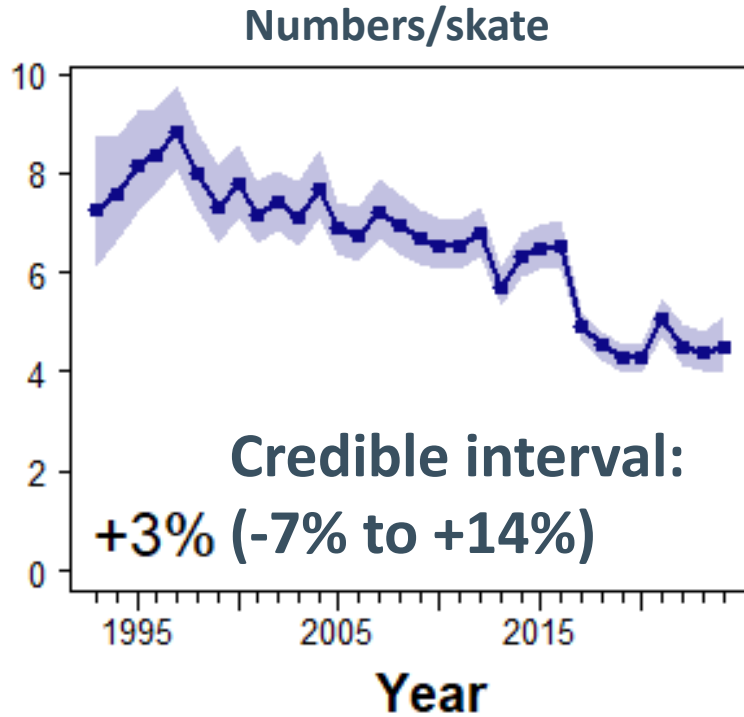
3-yr avg: **4.59**



Recent TCEYs

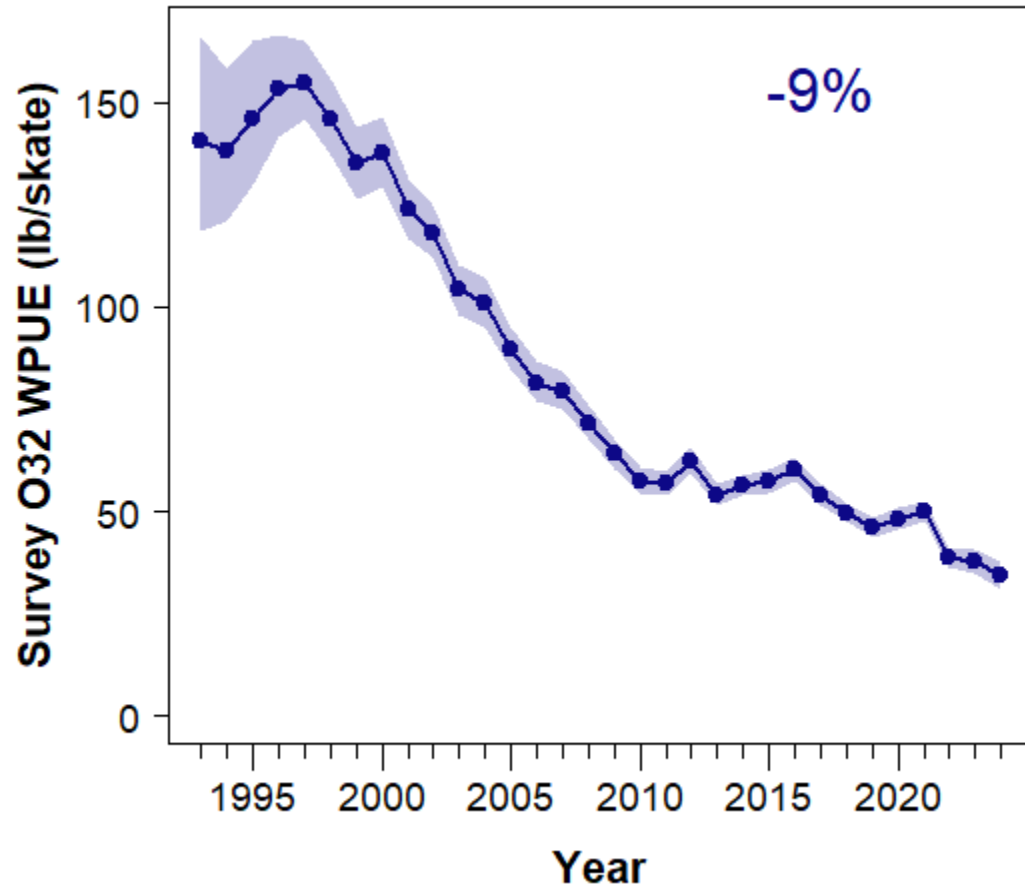


Coastwide FISS trends

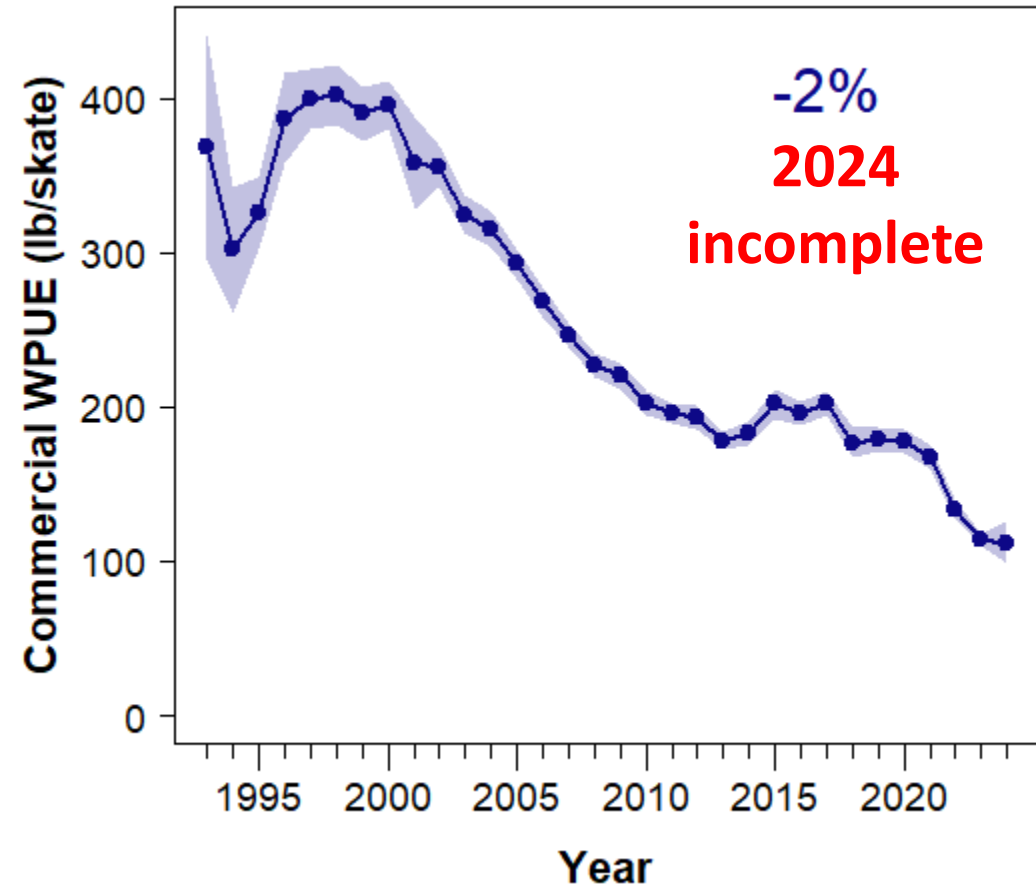


O32 FISS and Fishery trends

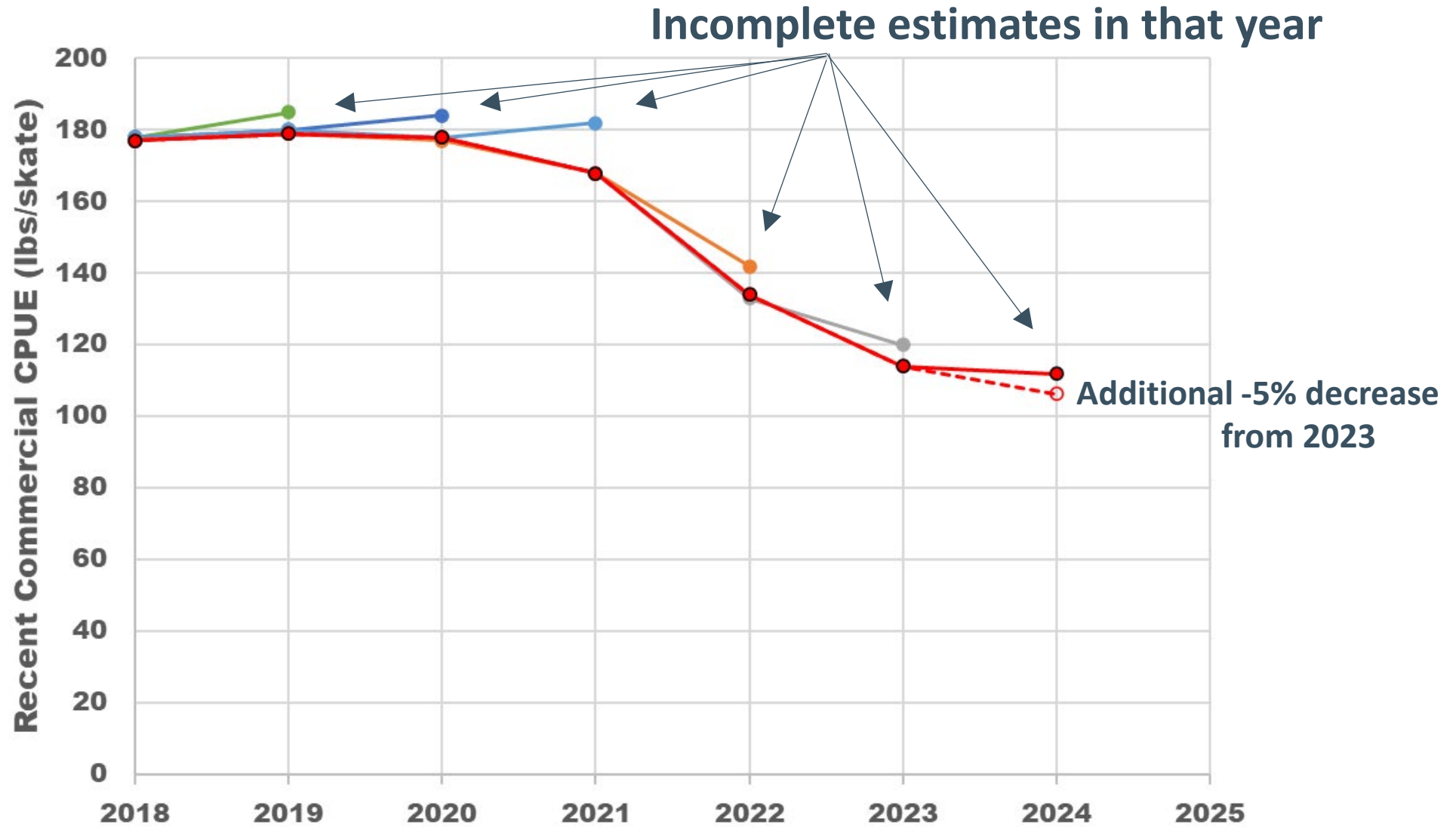
Coastwide survey



Coastwide commercial



Recent fishery WPUE updates



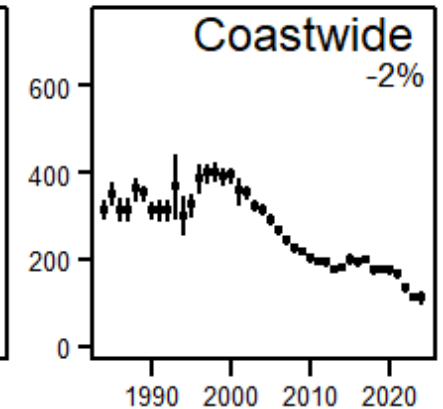
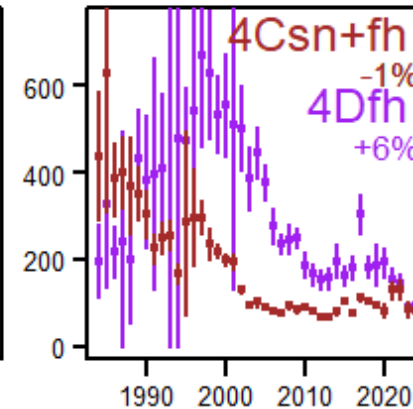
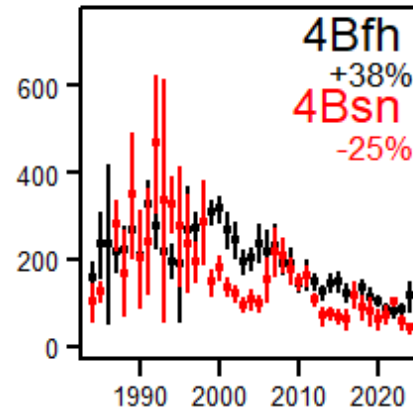
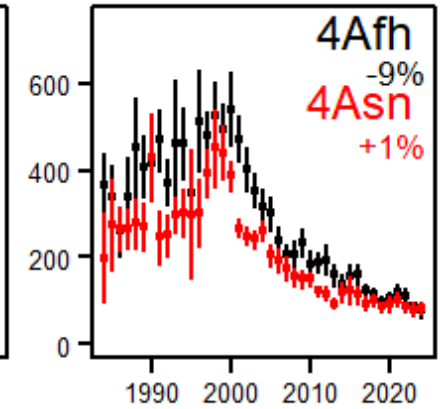
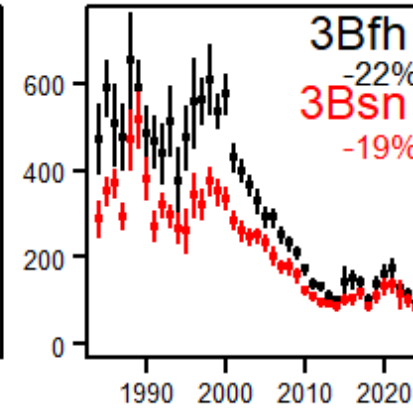
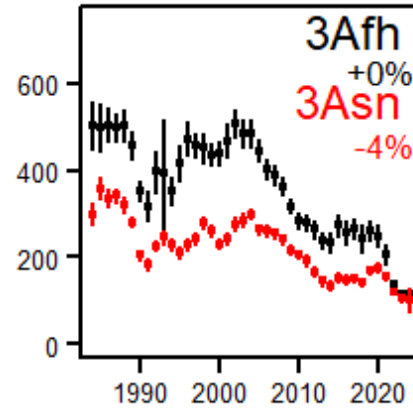
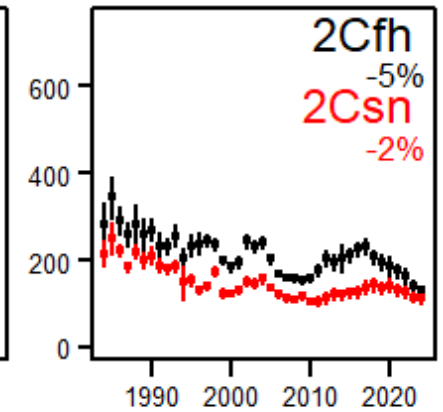
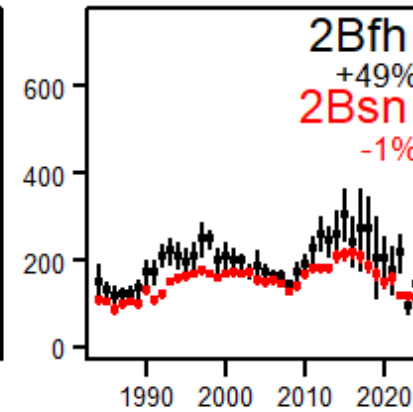
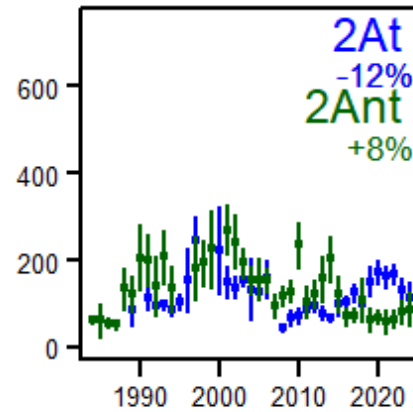
Fishery trends (2024 incomplete)

2A Tribal
2A non-Tribal

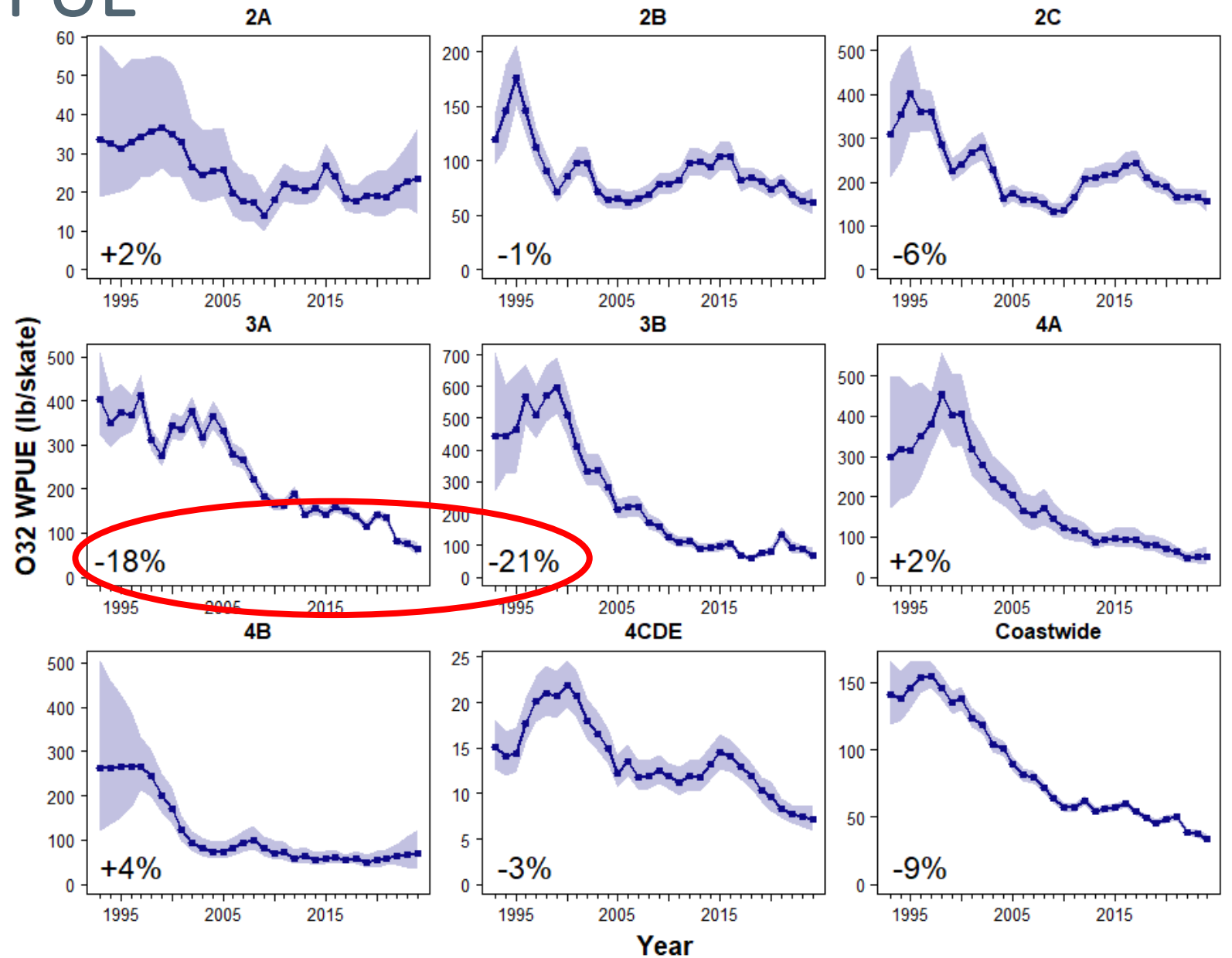
Fixed hook
Snap

4C
4D

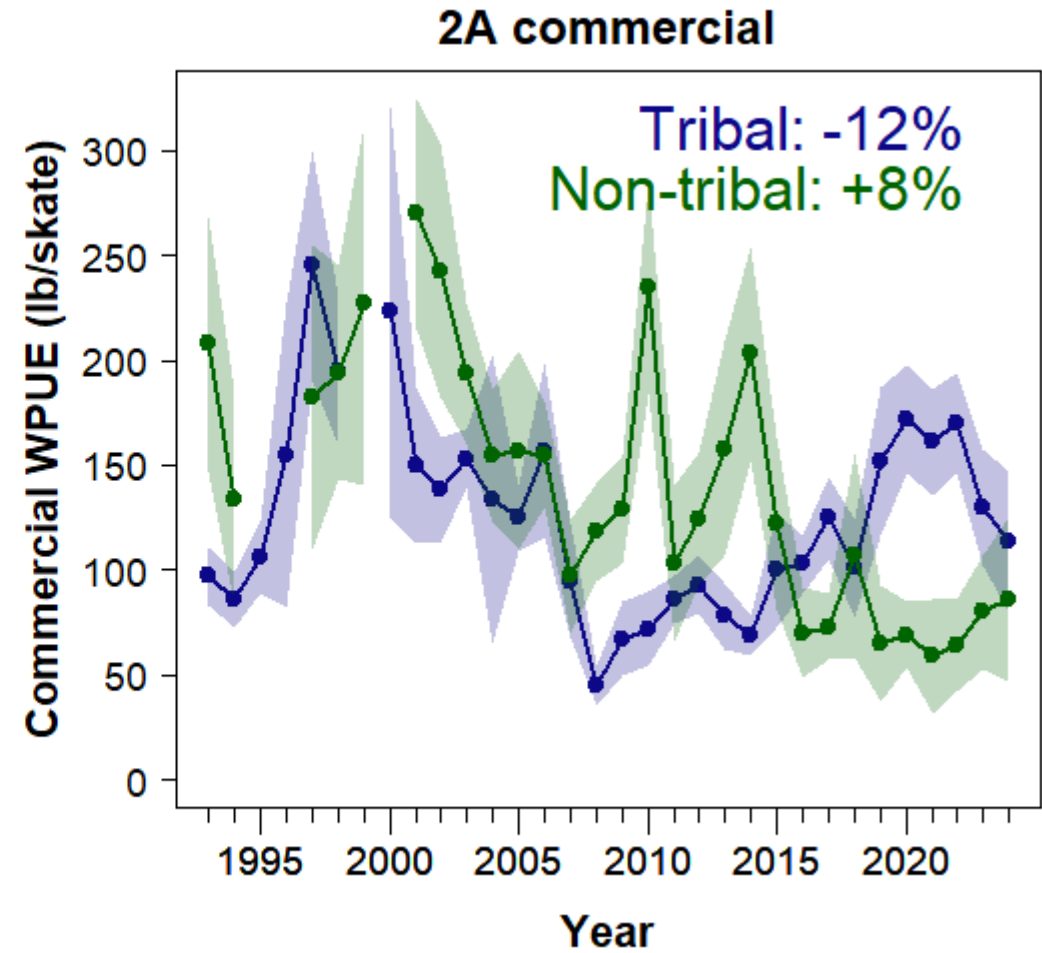
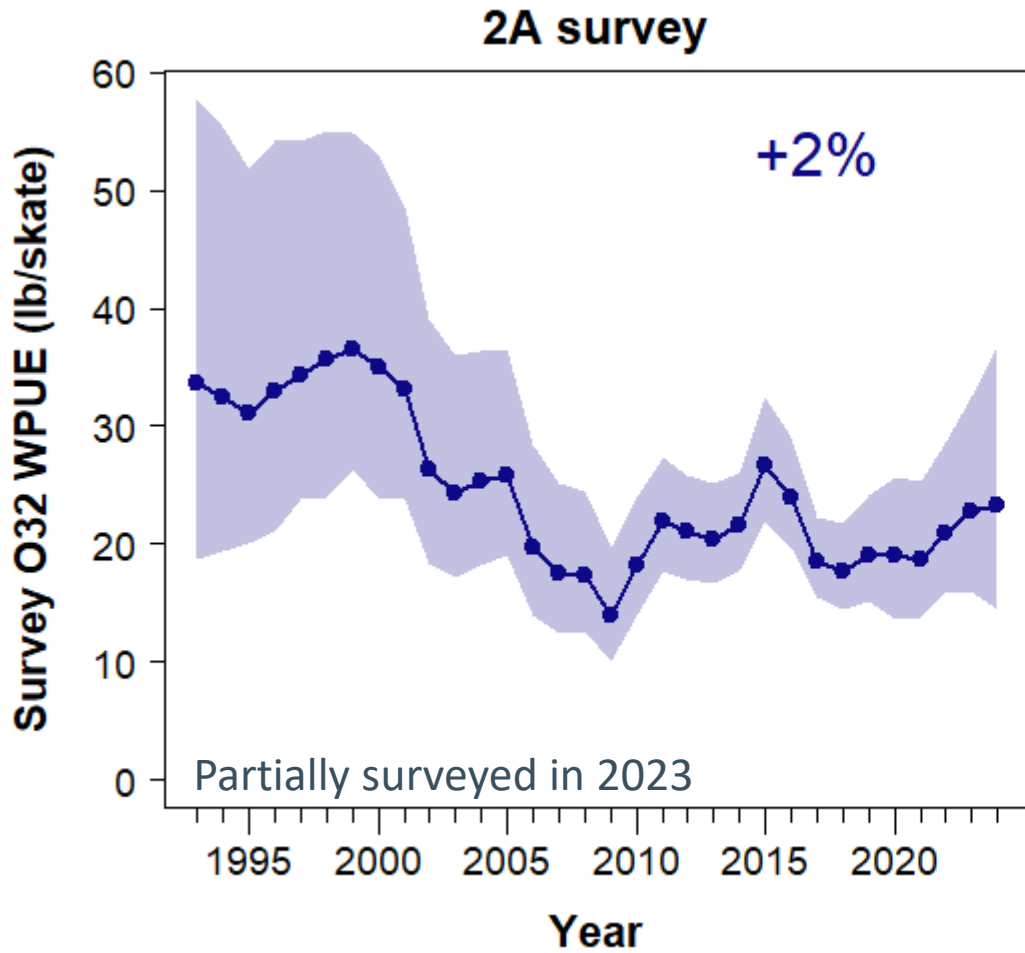
Commercial WPUE (net lb/skate)



FISS trends: O32 WPUE

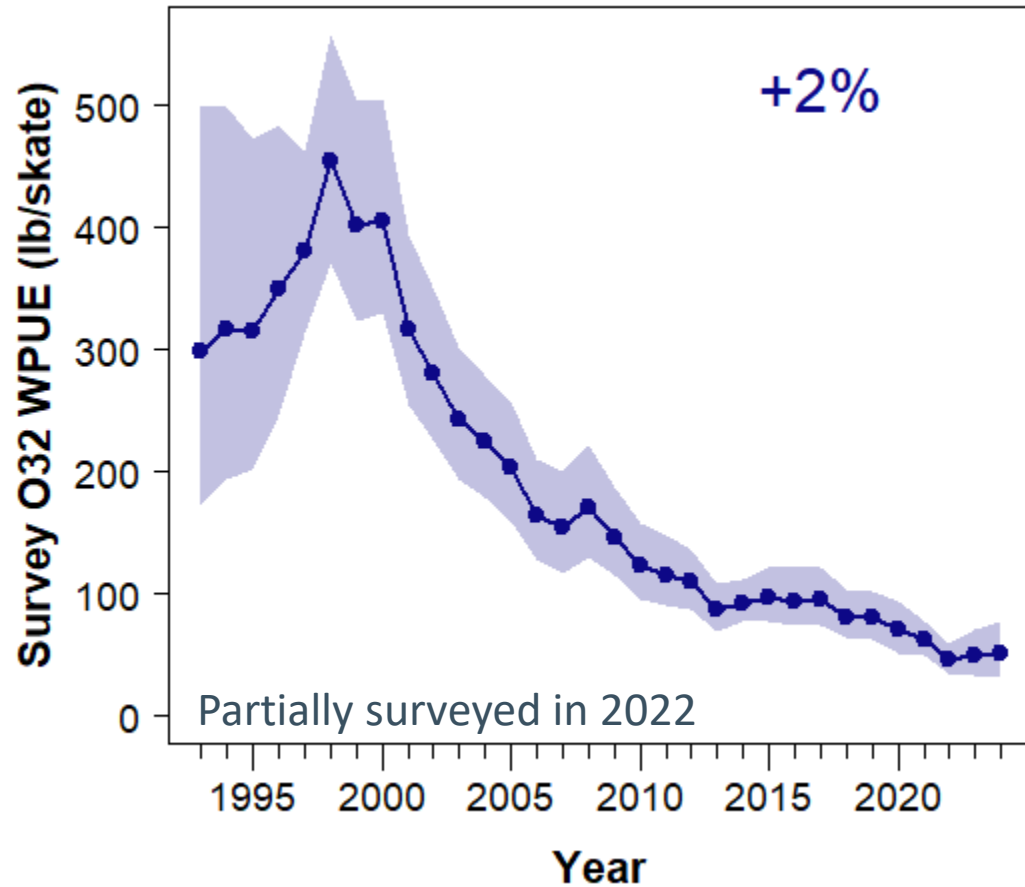


O32 FISS and Fishery trends – Areas without FISS sampling in 2024

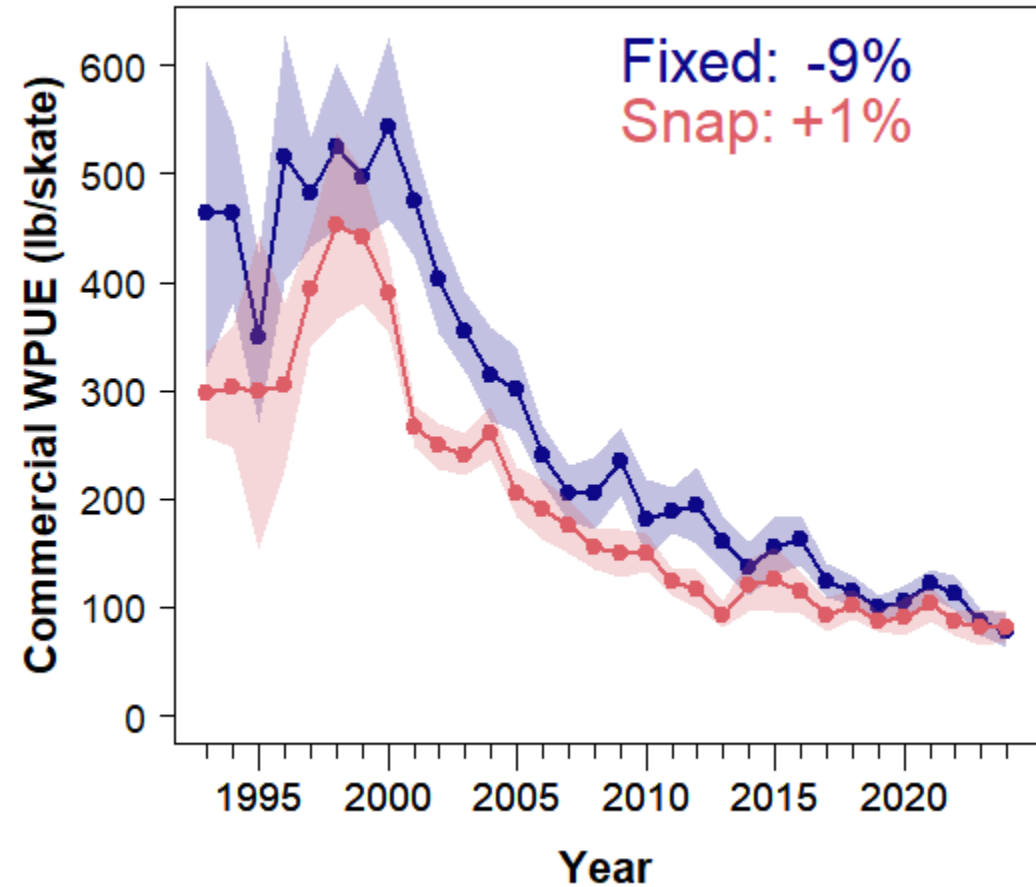


O32 FISS and Fishery trends – Areas without FISS sampling in 2024

4A survey

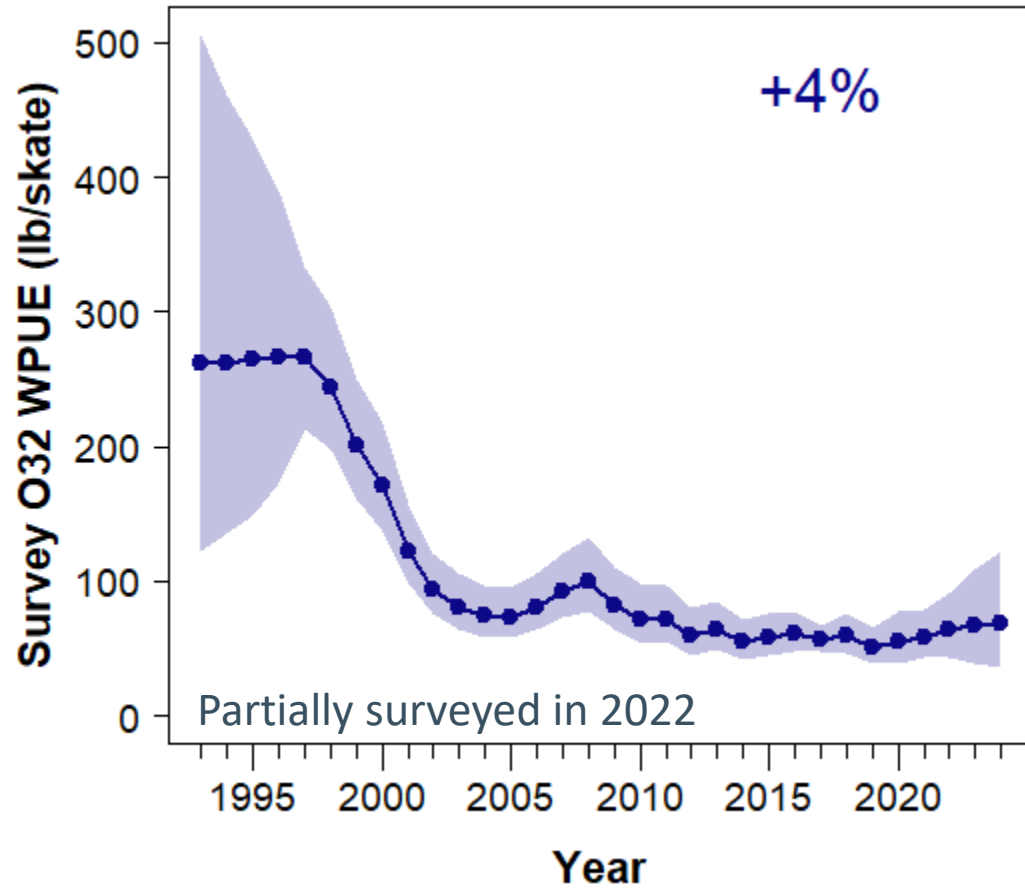


4A commercial

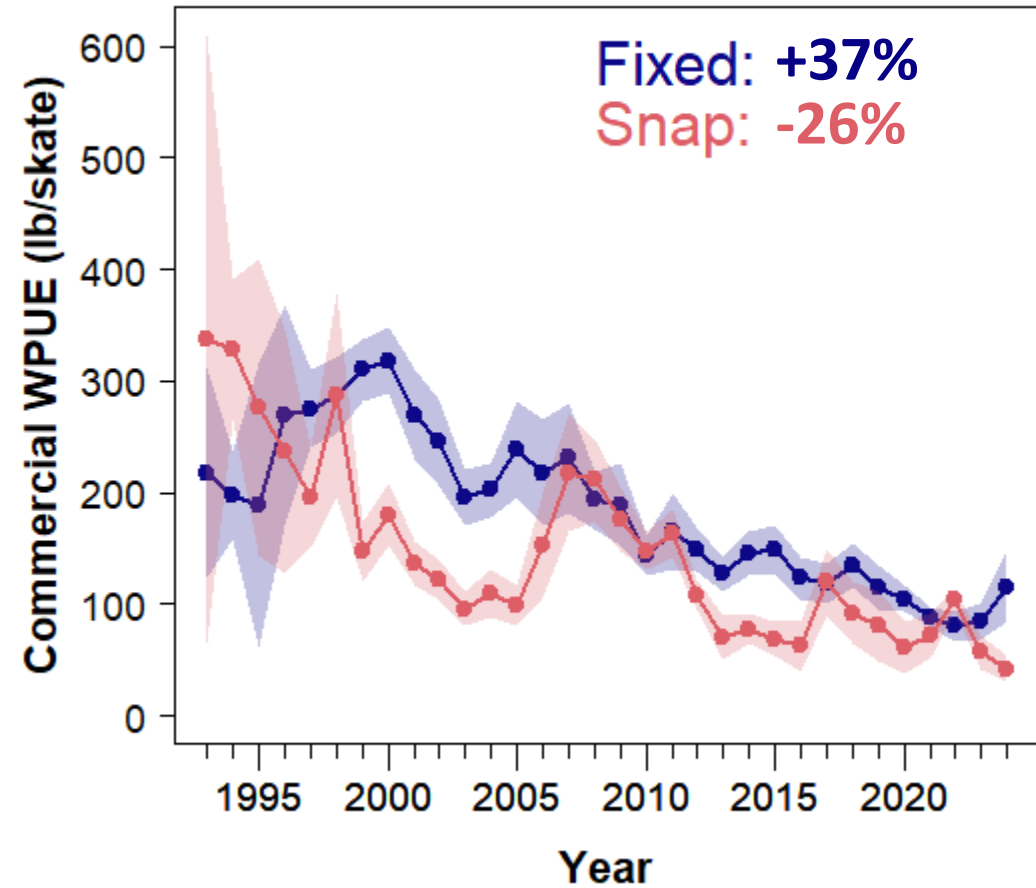


O32 FISS and Fishery trends – Areas without FISS sampling in 2024

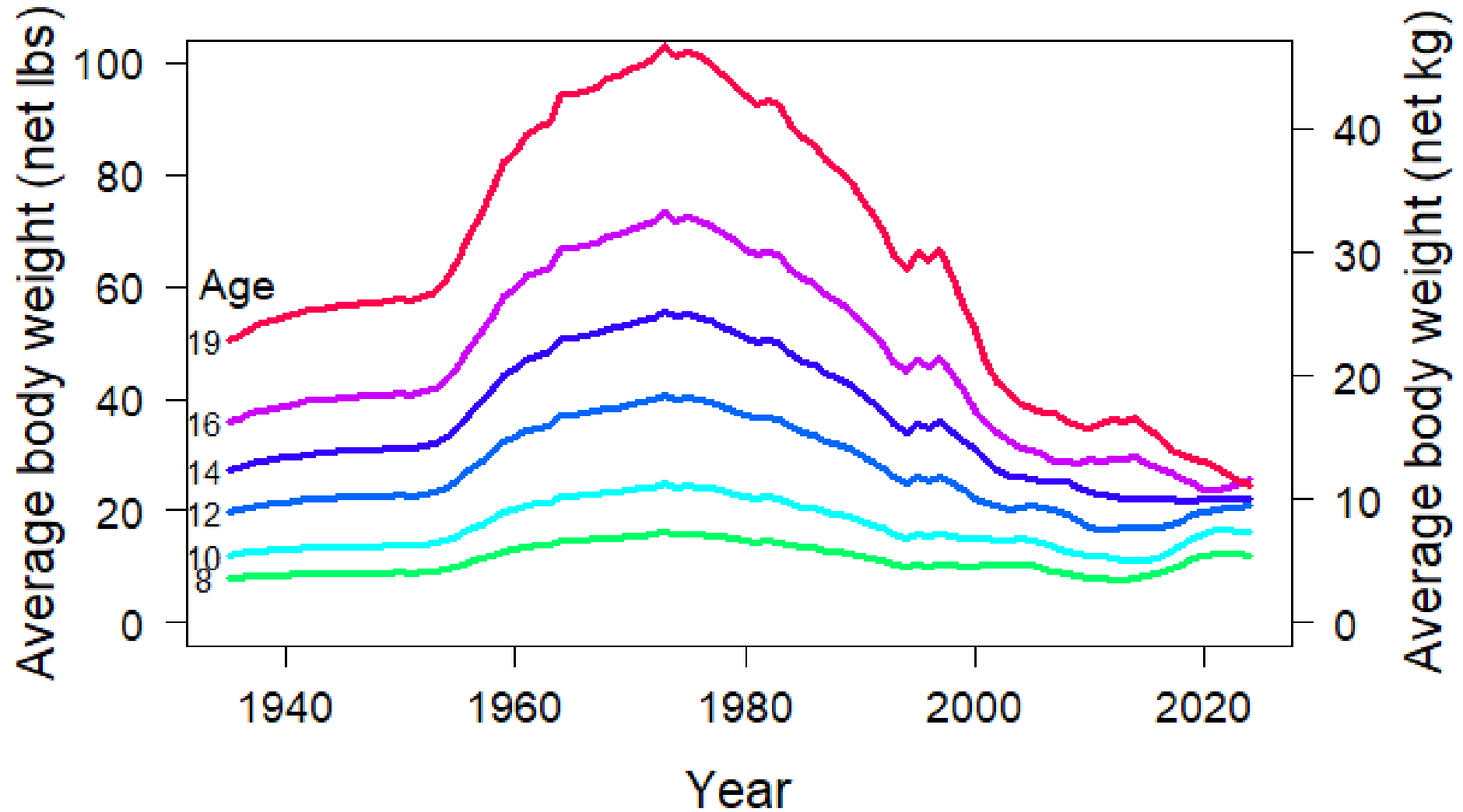
4B survey



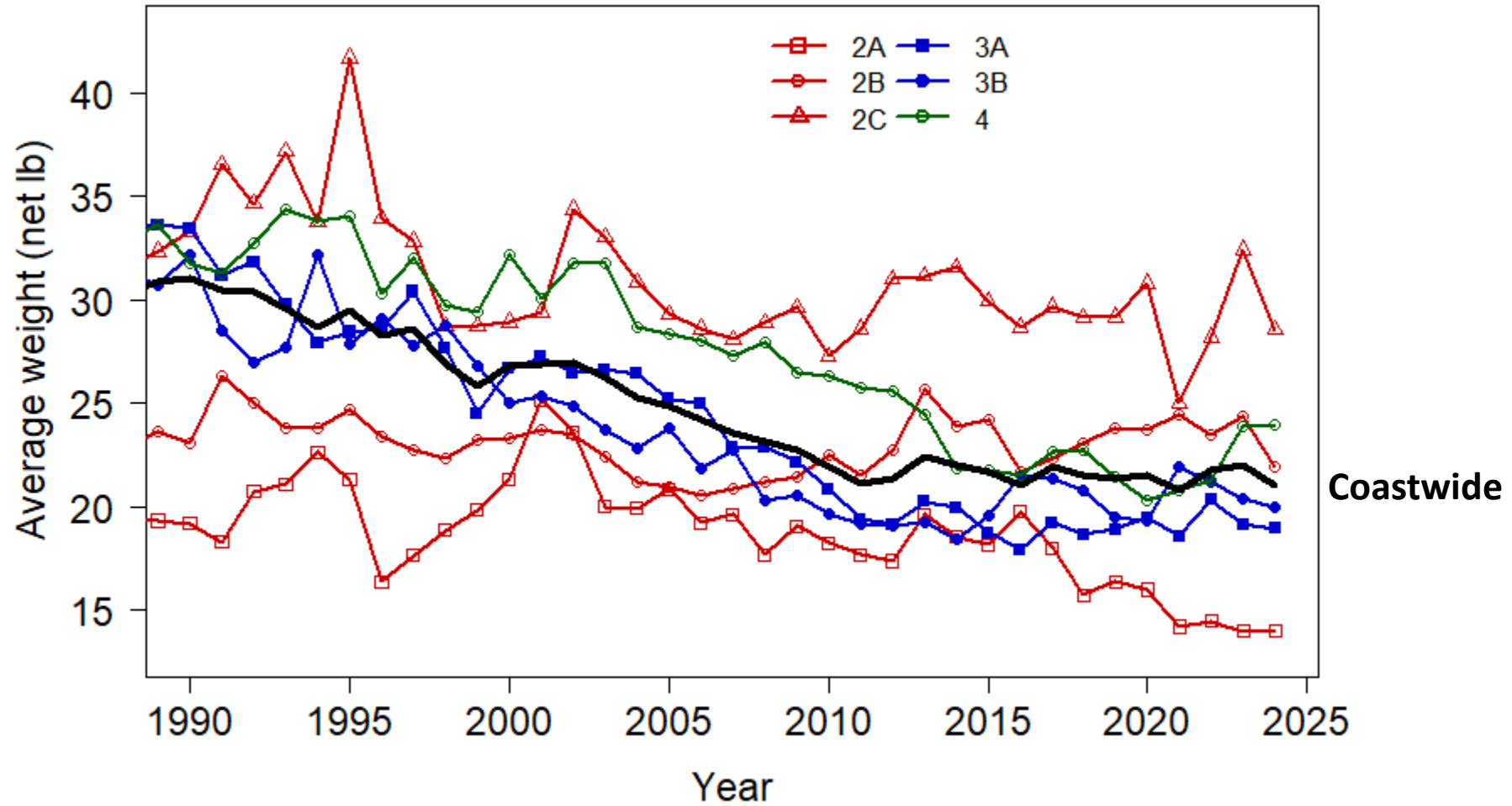
4B commercial



Female weight-at-age

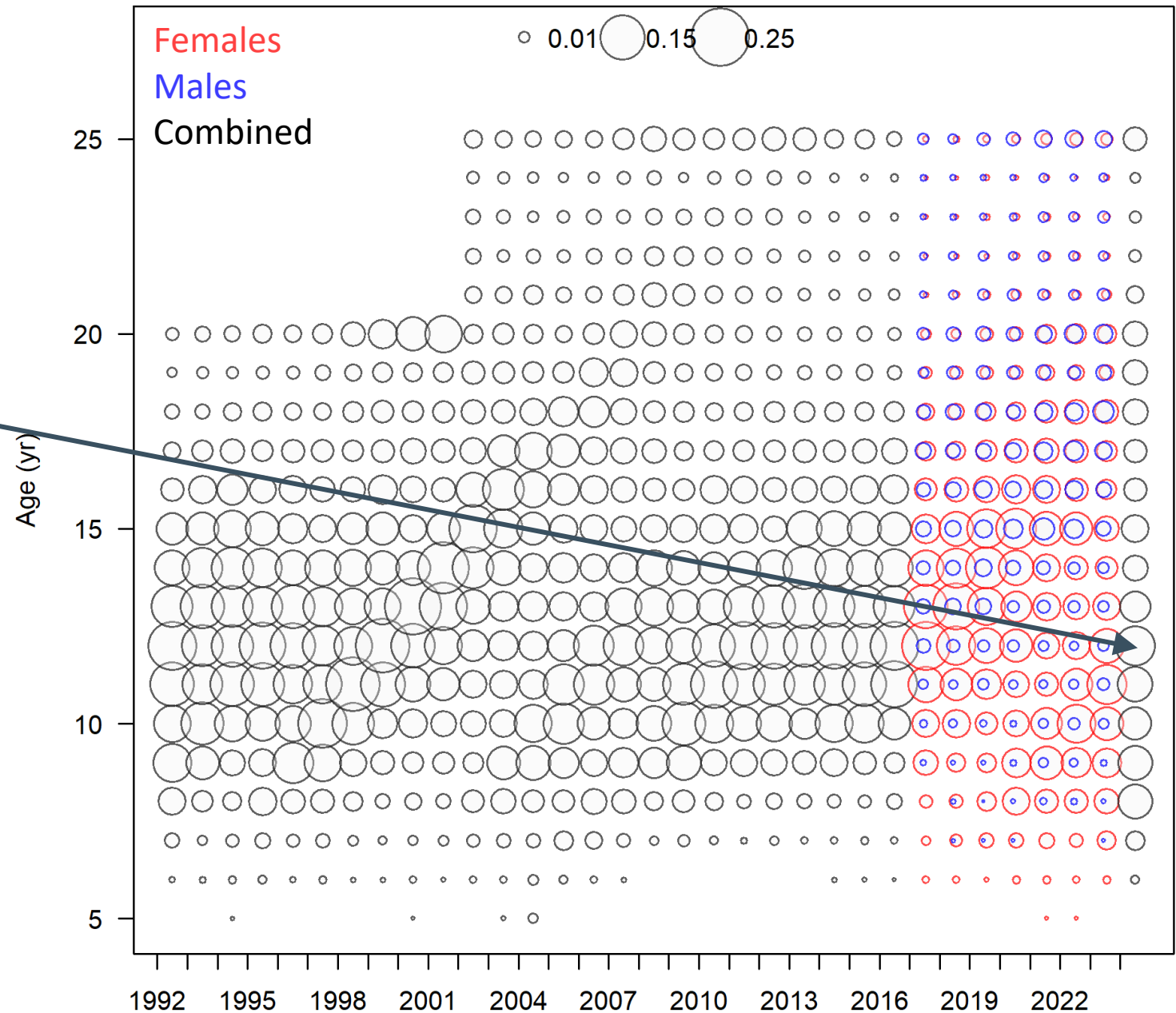


Average weight – landed fish



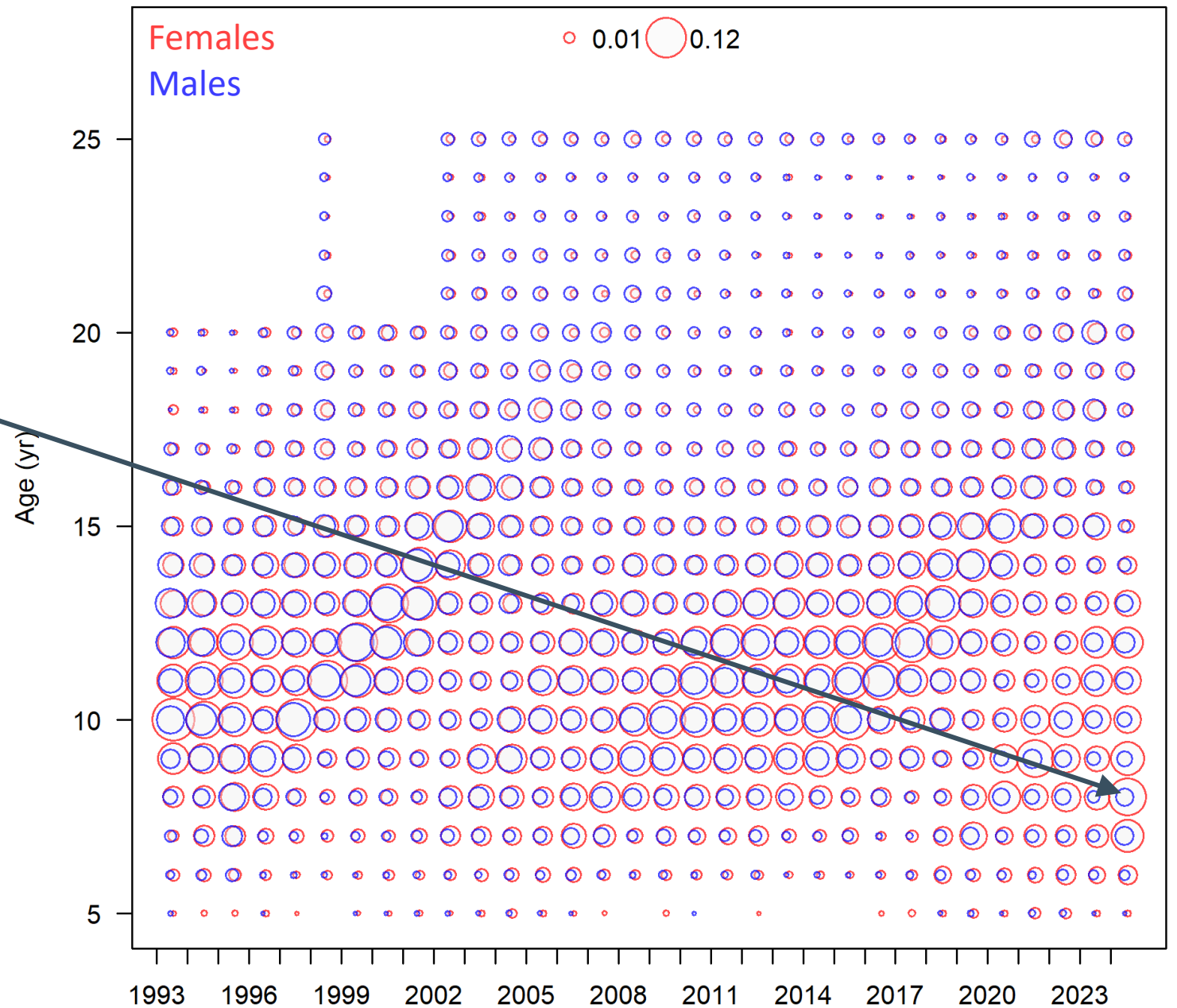
Recent fishery ages

Largest proportion in 2024:
2012 year-class

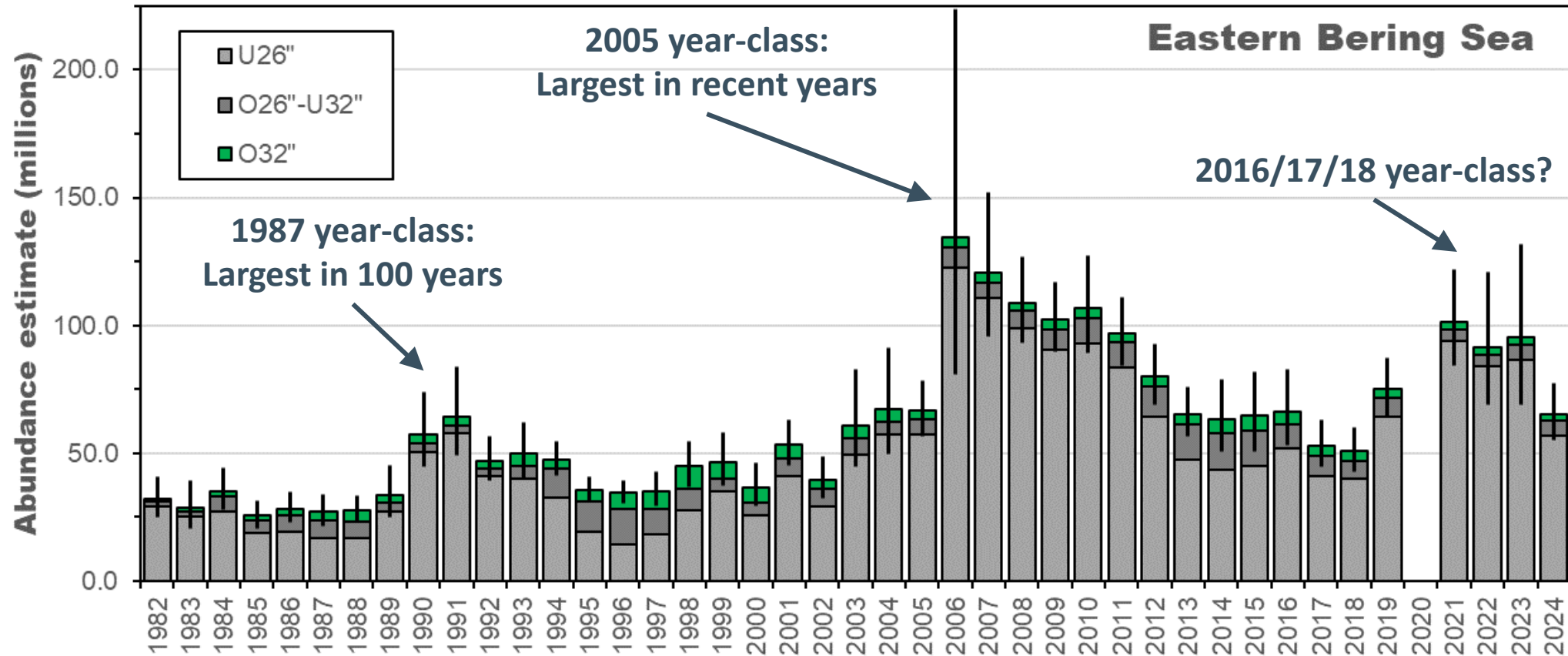


FISS ages

Largest proportion in 2024:
2016 year-class

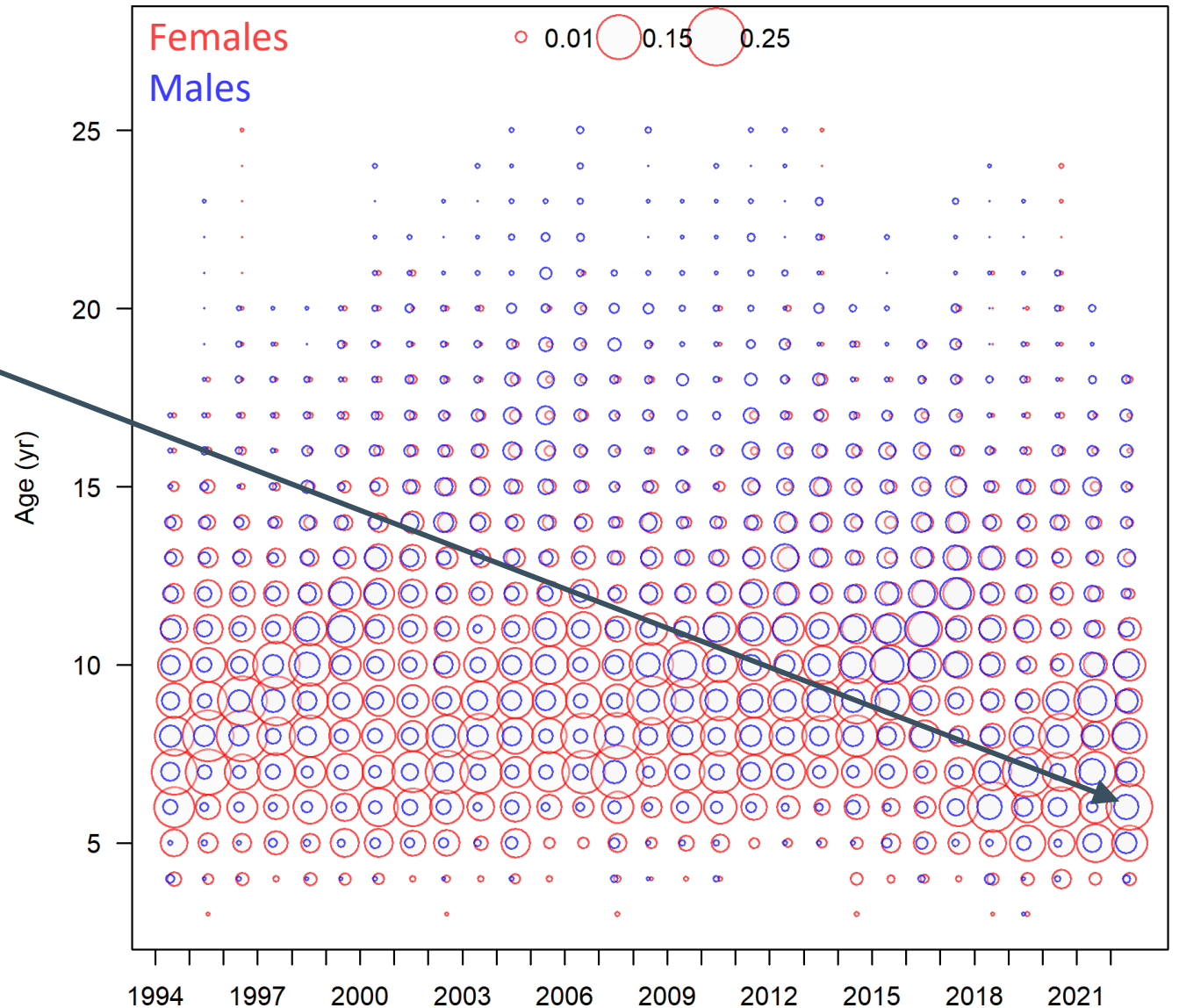


NOAA Fisheries Eastern Bering Sea trawl survey

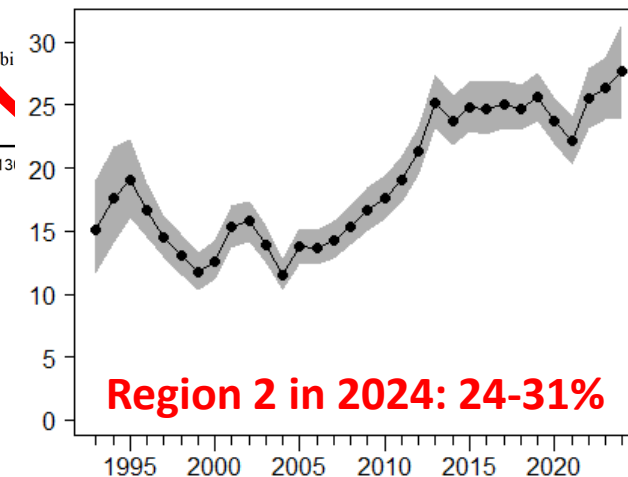
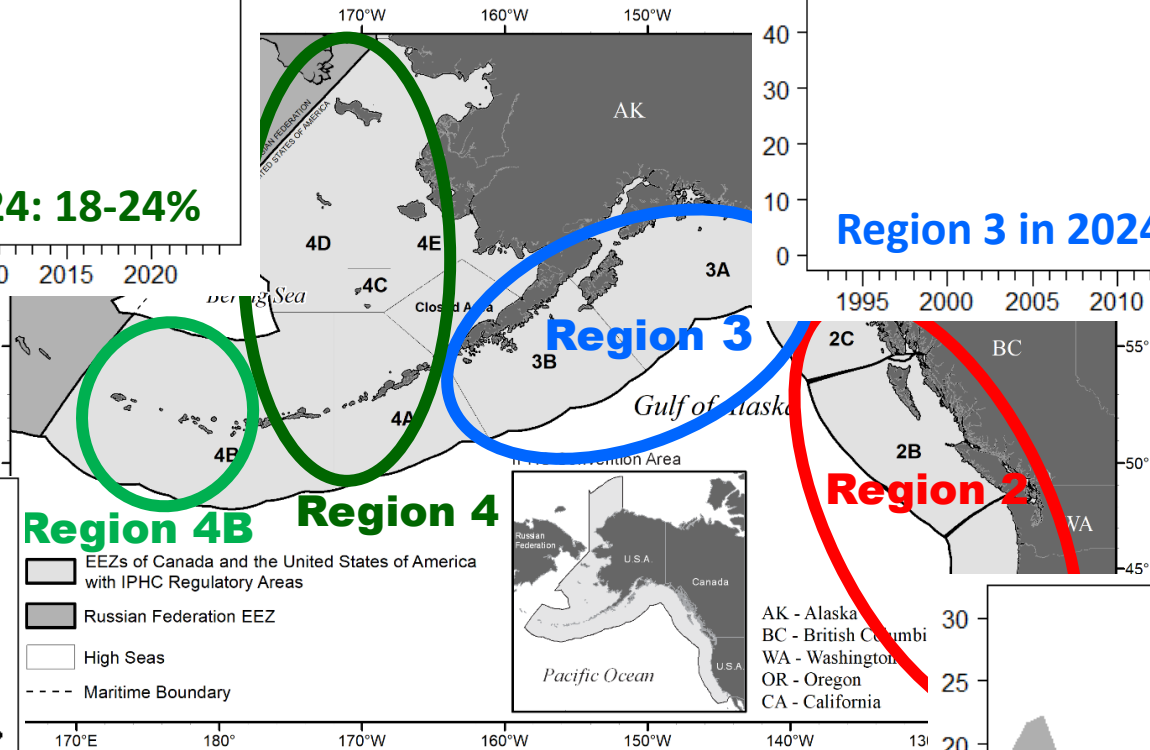
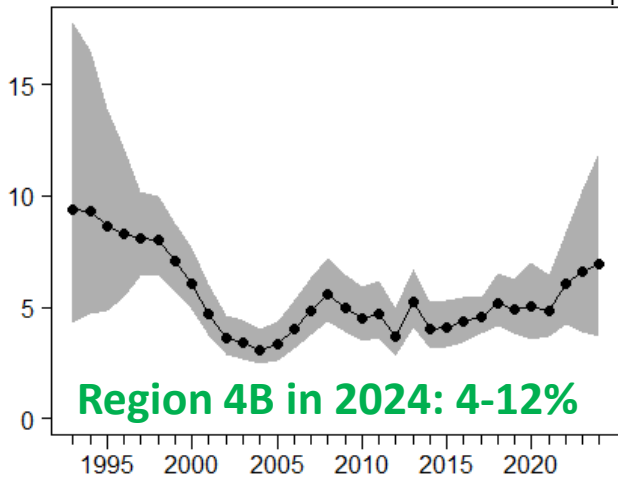
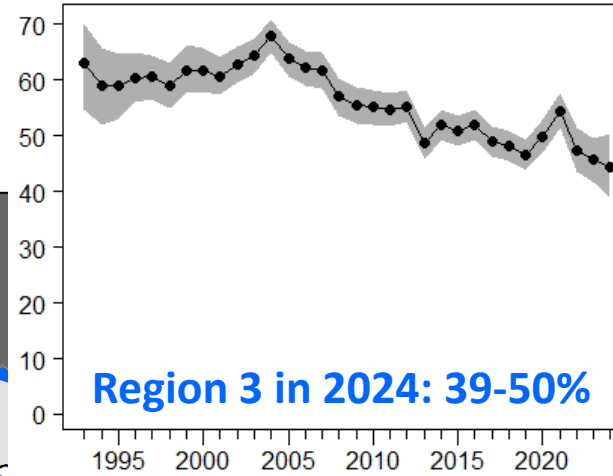
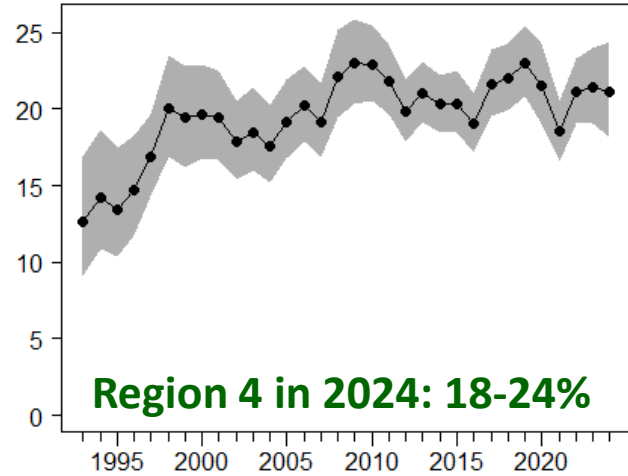


ADFG recreational ages: 3A (1994-2022)

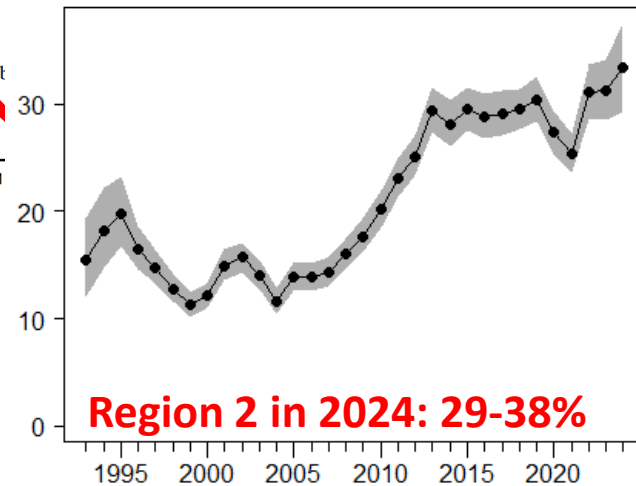
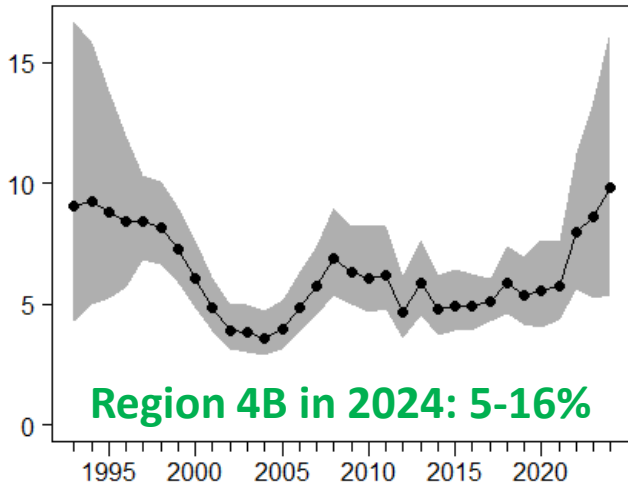
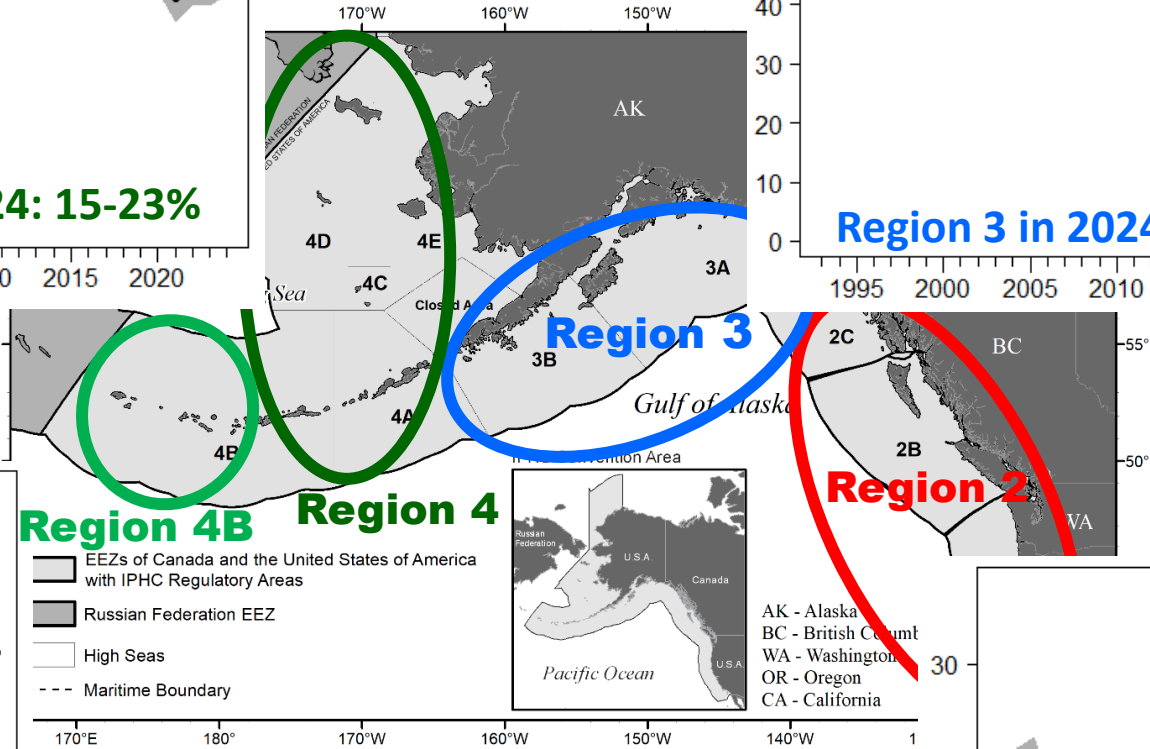
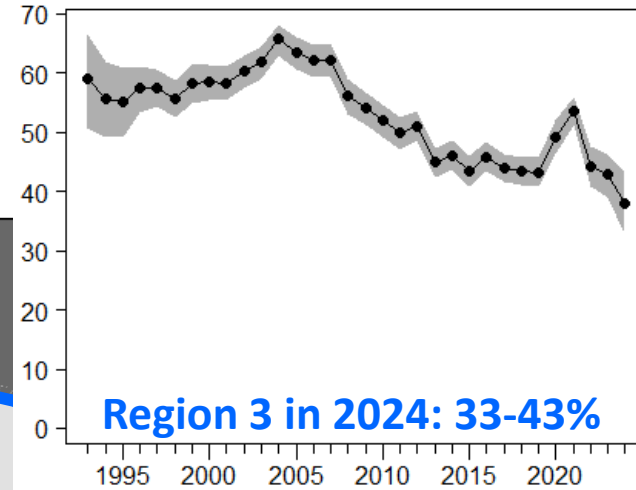
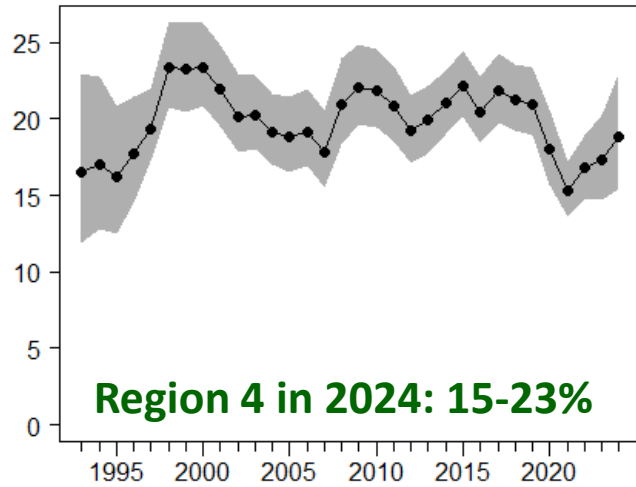
Largest proportion in 2022:
2016 year-class



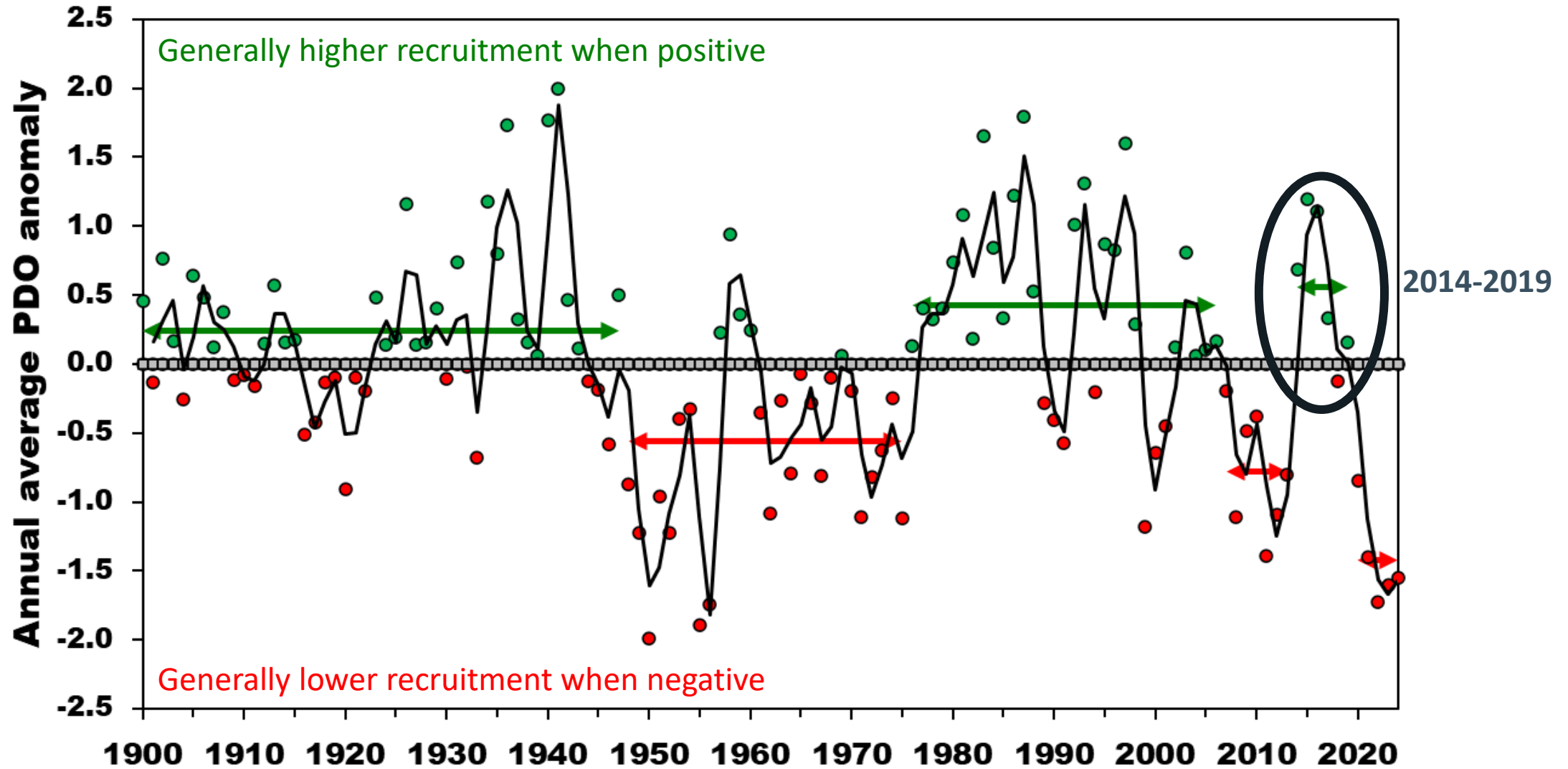
Stock distribution (all sizes - credible intervals)



Stock distribution (O32 – credible intervals)



Ecosystem conditions: Pacific Decadal Oscillation (PDO)



Recent ecosystem conditions

- Bering Sea (2024): Oceanography (e.g., temperature, ice cover) near-average, biological/species response mixed, crab stocks remain low
- Aleutian Islands (2024): Slightly cooler than last 10+ years, lower productivity in the west, generally poor groundfish body condition
- GOA (2024): Continued long-term warming, planktivorous groundfish doing better than benthic feeders, forage fish above average
- B.C. (2023): Below average upwelling, mixed groundfish trends
- California current (2023-24): Continued offshore marine heatwaves, reduced upwelling, mixed productivity across species

Take-away: Potential effects difficult to characterize for Pacific halibut, new patterns each year indicate low predictability

Most recent reports: [Bering Sea](#), [Gulf of Alaska](#), [Aleutian Islands](#), [B.C.](#), [California current](#)



Outline

- Data sources
 - Mortality
 - Trends
 - Biological
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 - Results
 - Reference points



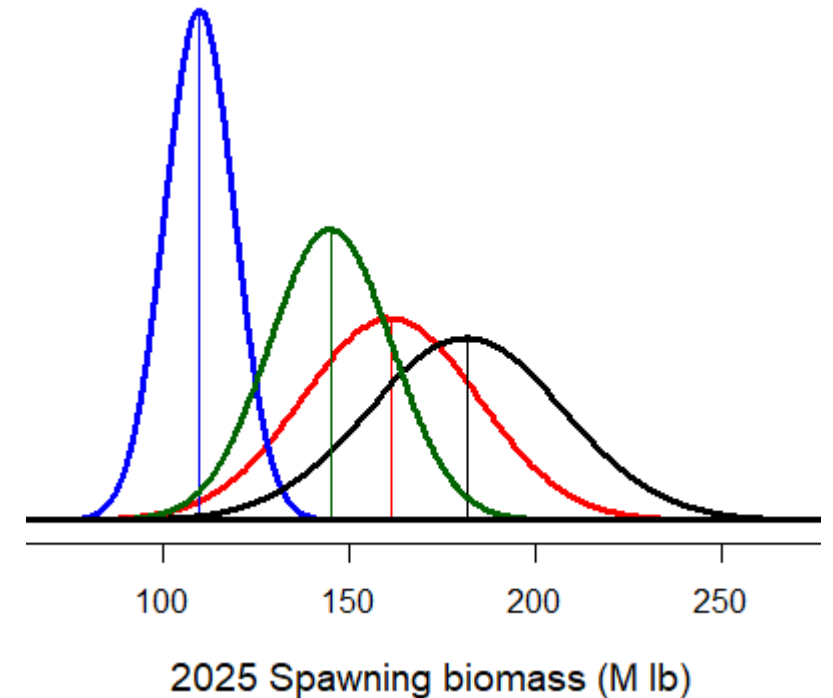
Stock assessment development history

- 2015: Full assessment – formalized 4-model ensemble methods
- 2016-2018: Updates
- 2019: Full assessment – included new commercial fishery sex-ratio data
- 2020-2021: Updates
- 2022: Full assessment – improved treatment of natural mortality
- 2023: Update
- 2024: Update – no changes to treatment of data or model structure
- 2025: *Full assessment planned*

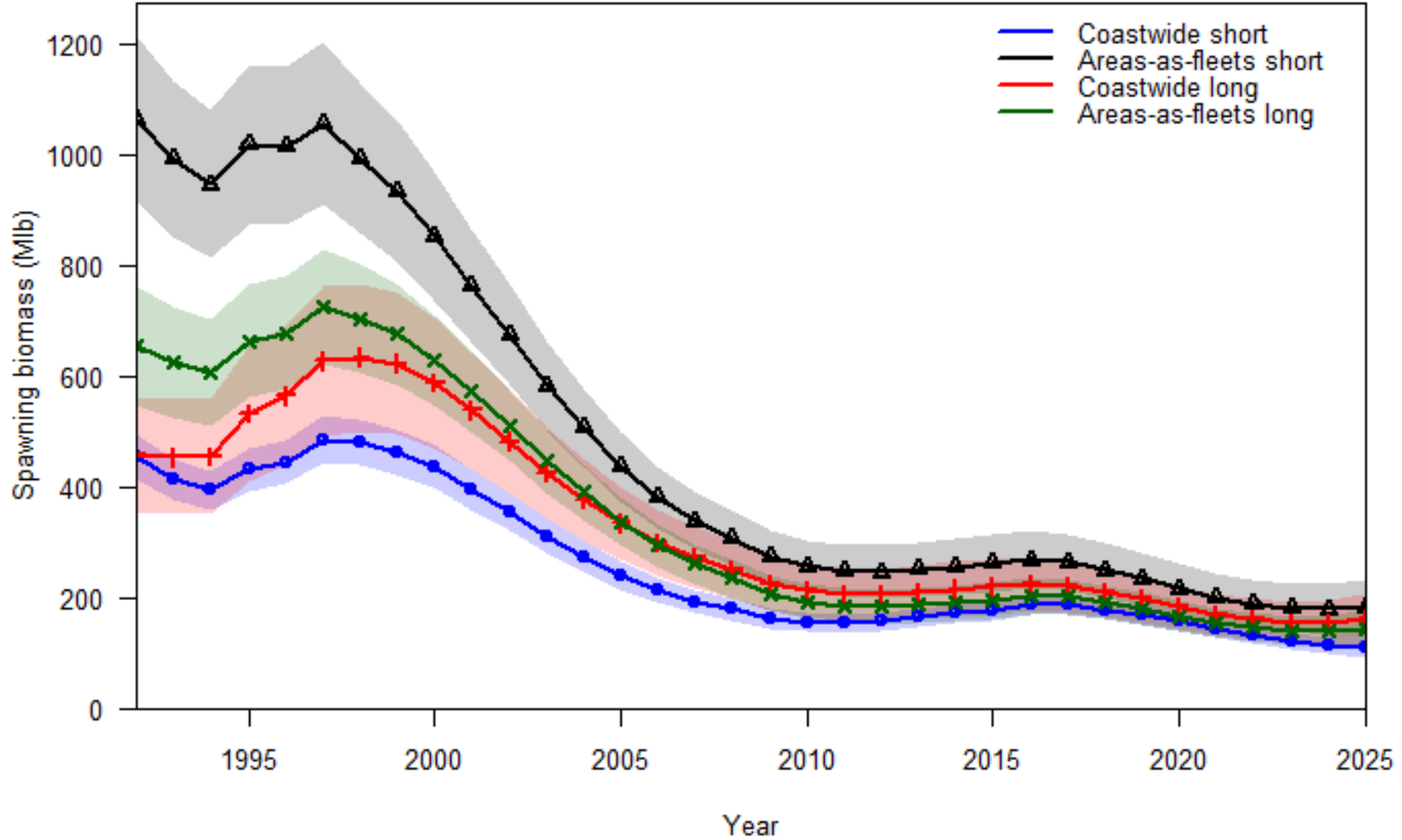


2024 stock assessment

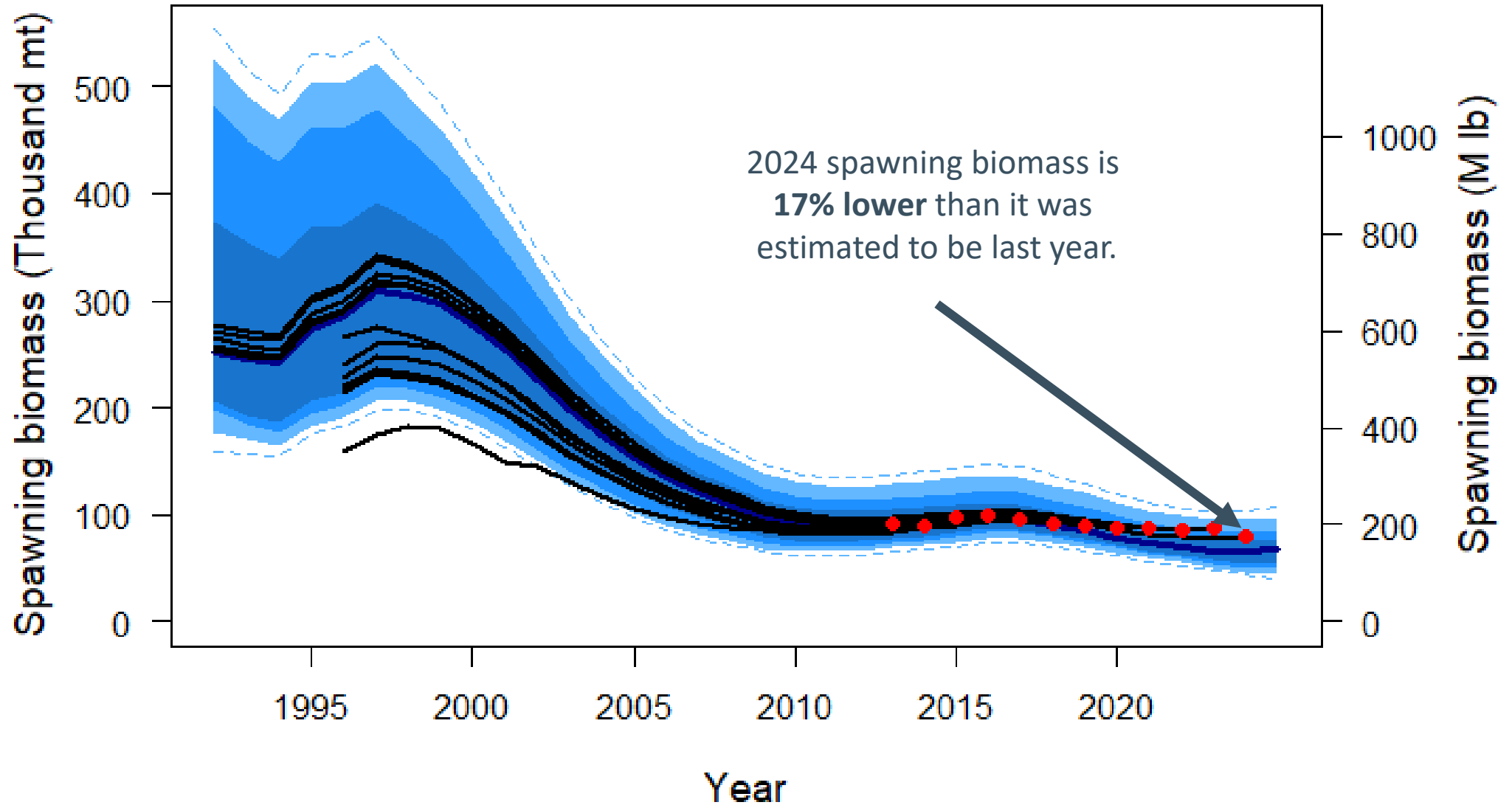
- Same 4 models as in recent assessments:
 - Long and short time-series
 - Aggregated, separate data by Region
- Each responds differently to new data and represents a different hypothesis about how the population dynamics and observations are best represented
- Results are equally weighted and integrated into a single probability distribution



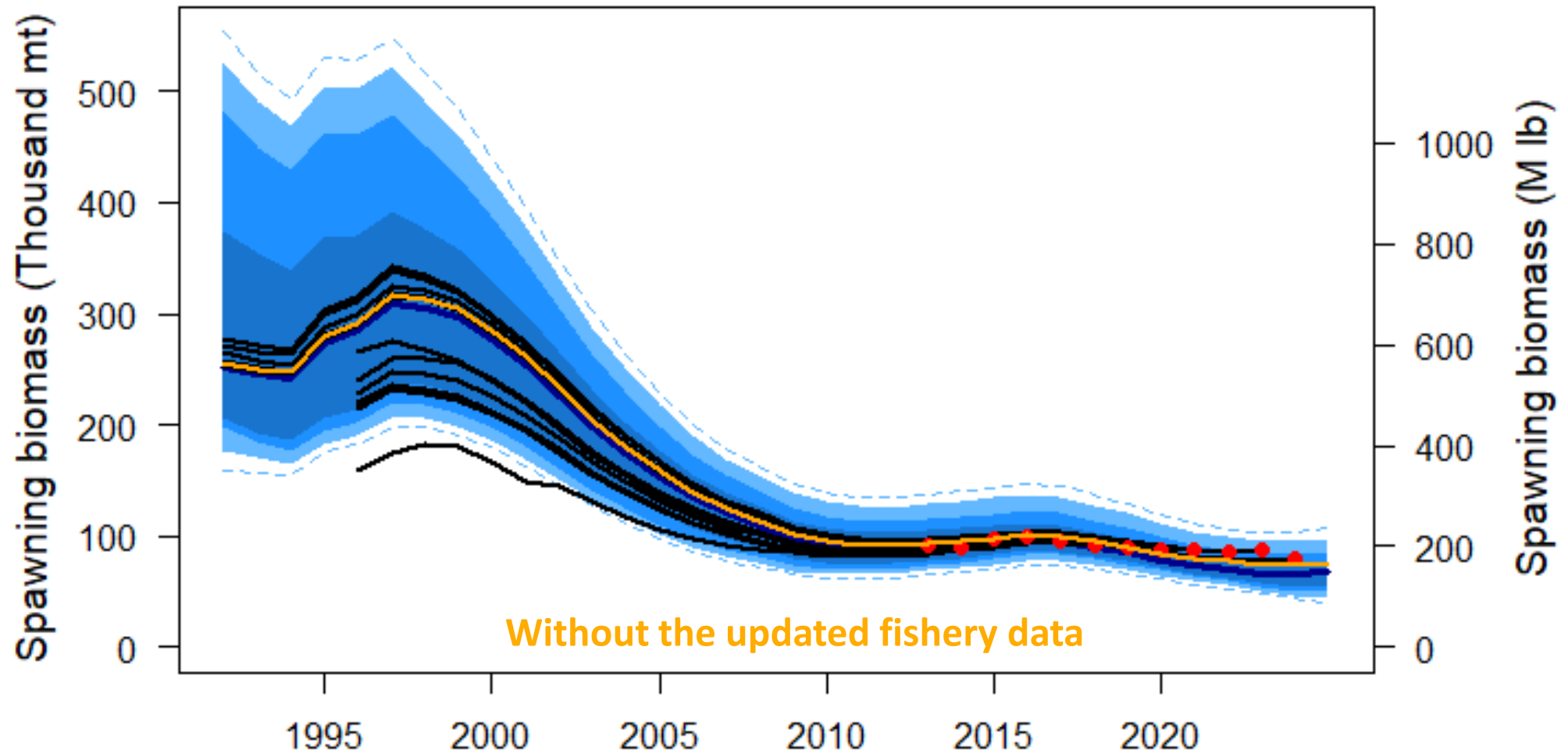
Spawning biomass from each of the four models



Comparison to previous assessments

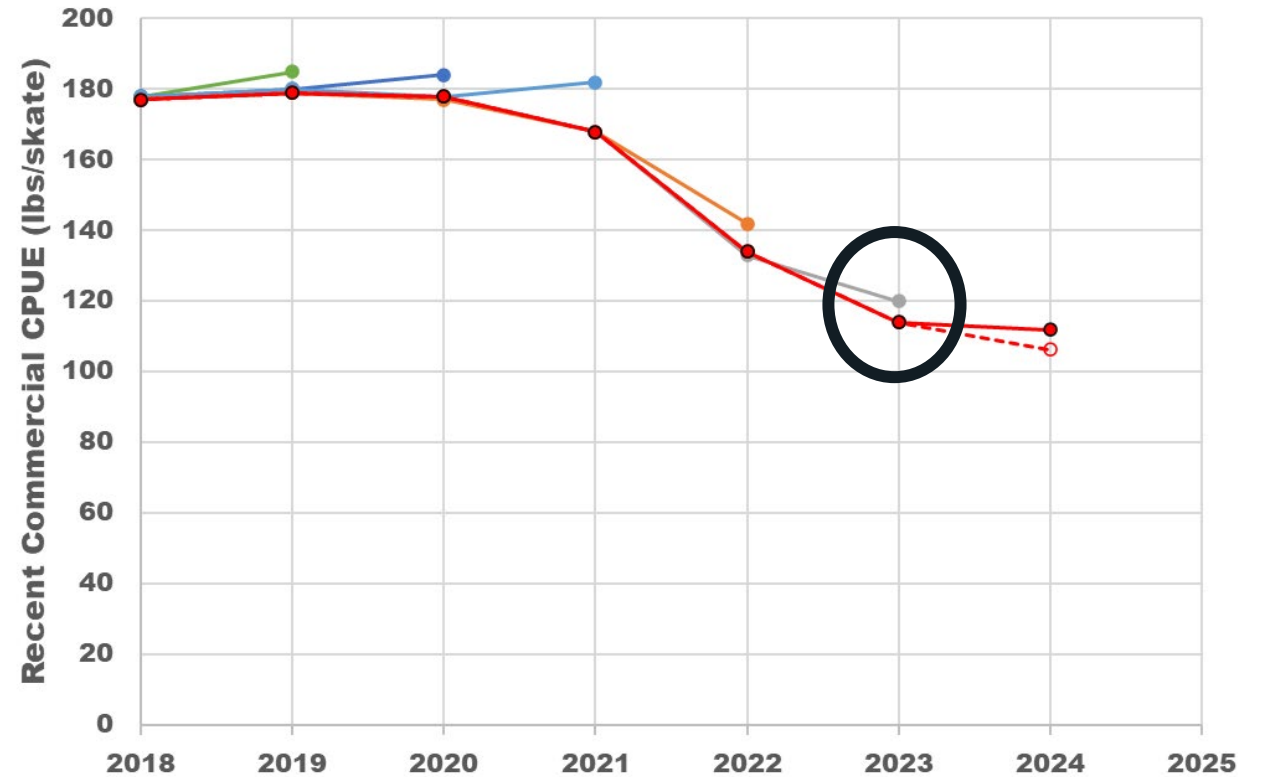


Effect of updated fishery data

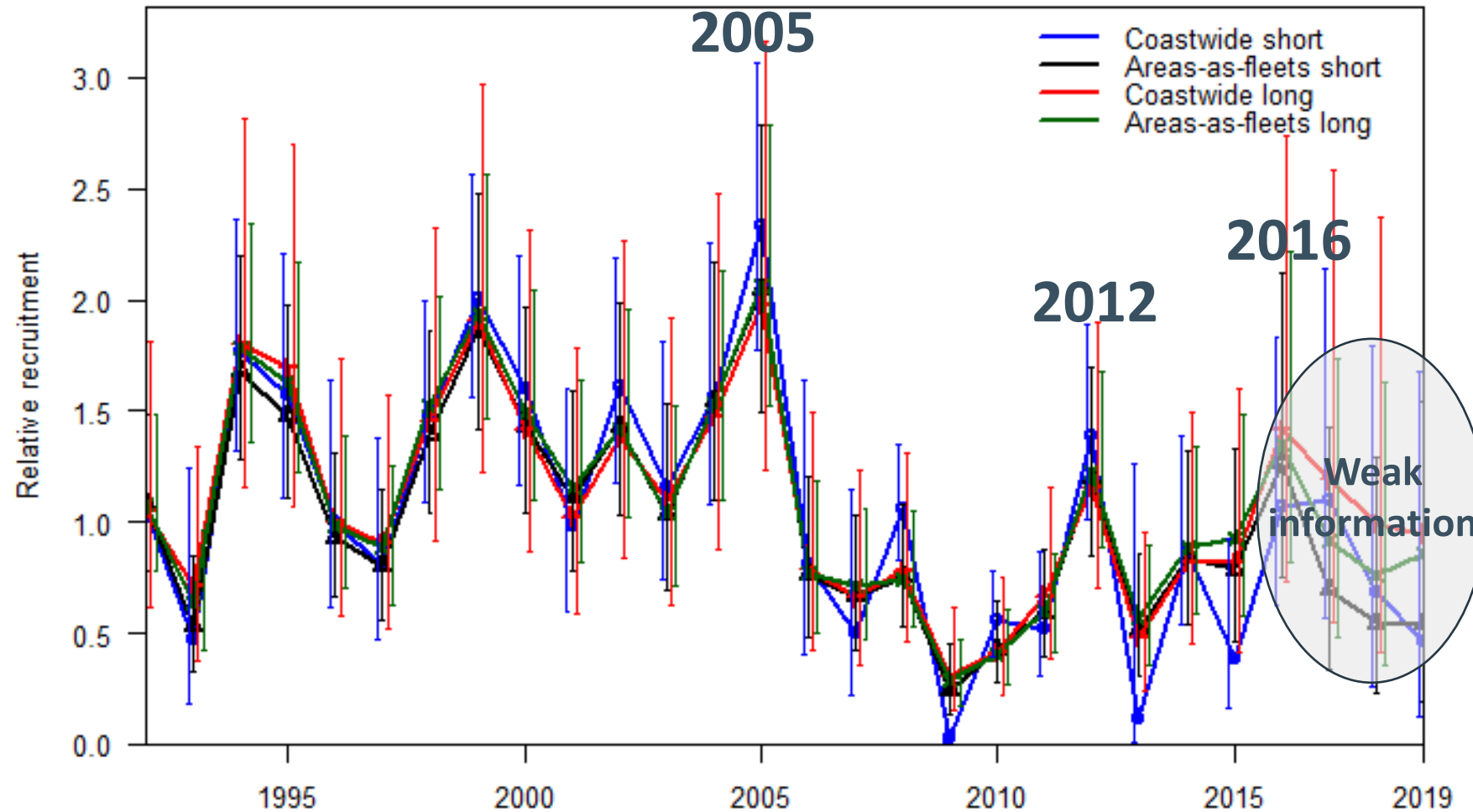


Effect of updated fishery data

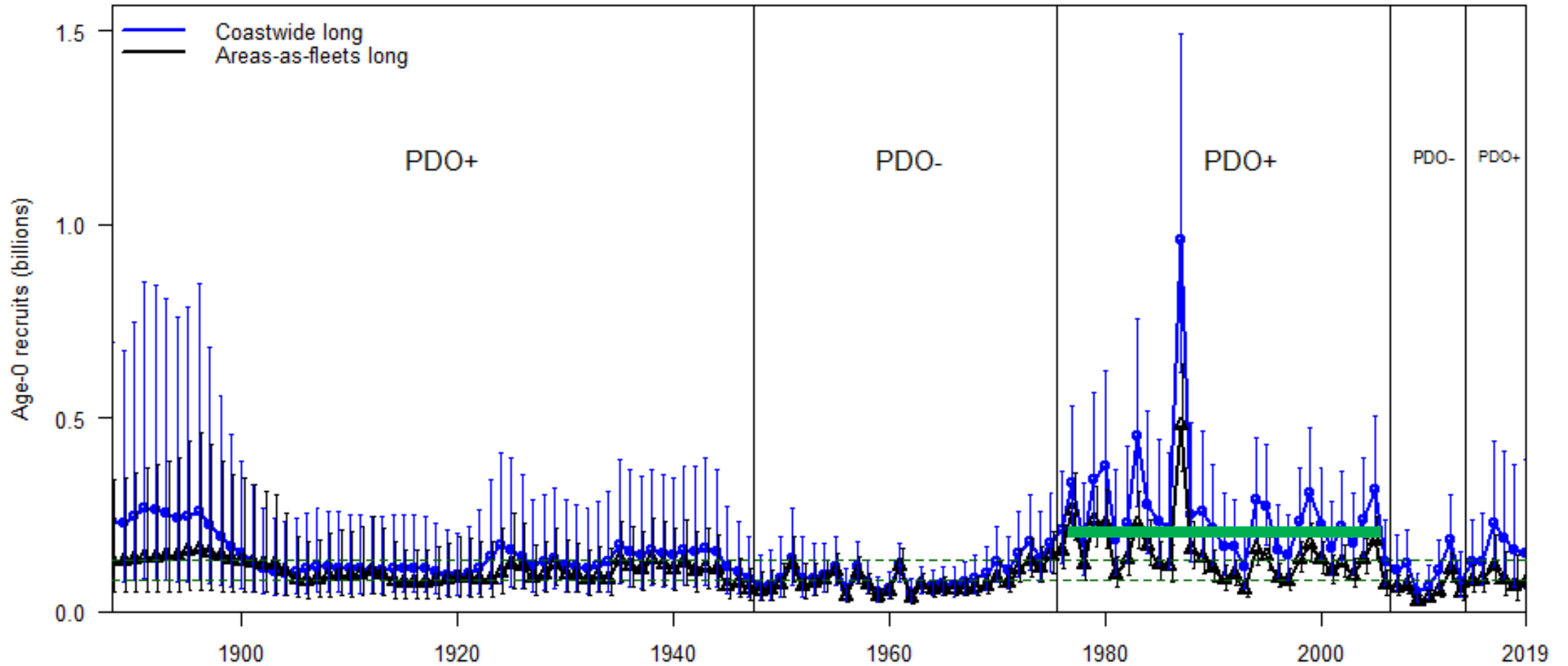
- The 2023 fishery catch-rate was very important last year. It is another 5% down when updated this year.
- Fishery data is providing some information not apparent (or lagged) in recent FISS data.
- This is not a model issue, but a data issue.
- Uncertainty in data updates is **not quantified** in the assessment.



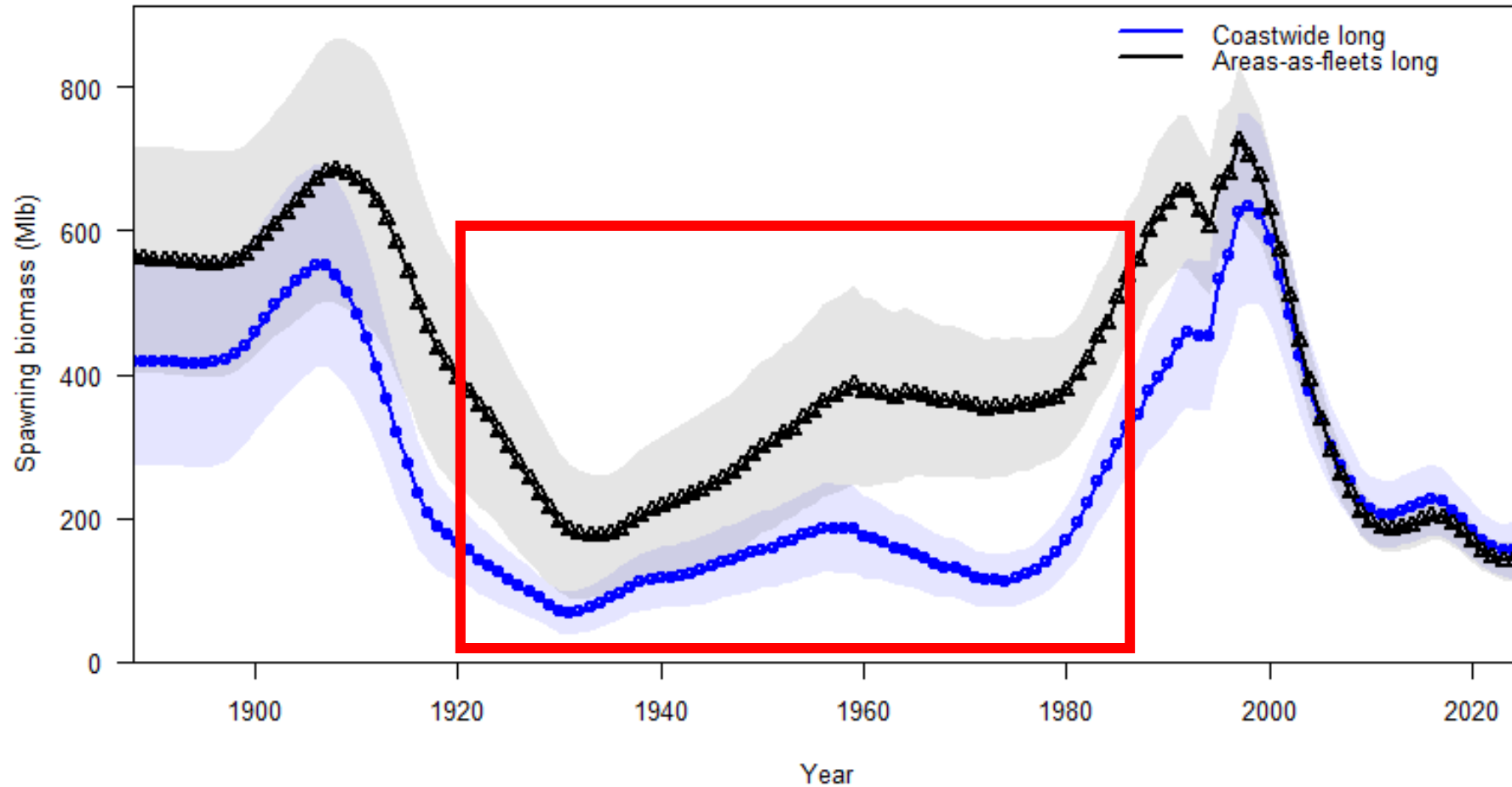
Recent relative recruitment estimates



Historical recruitment estimates



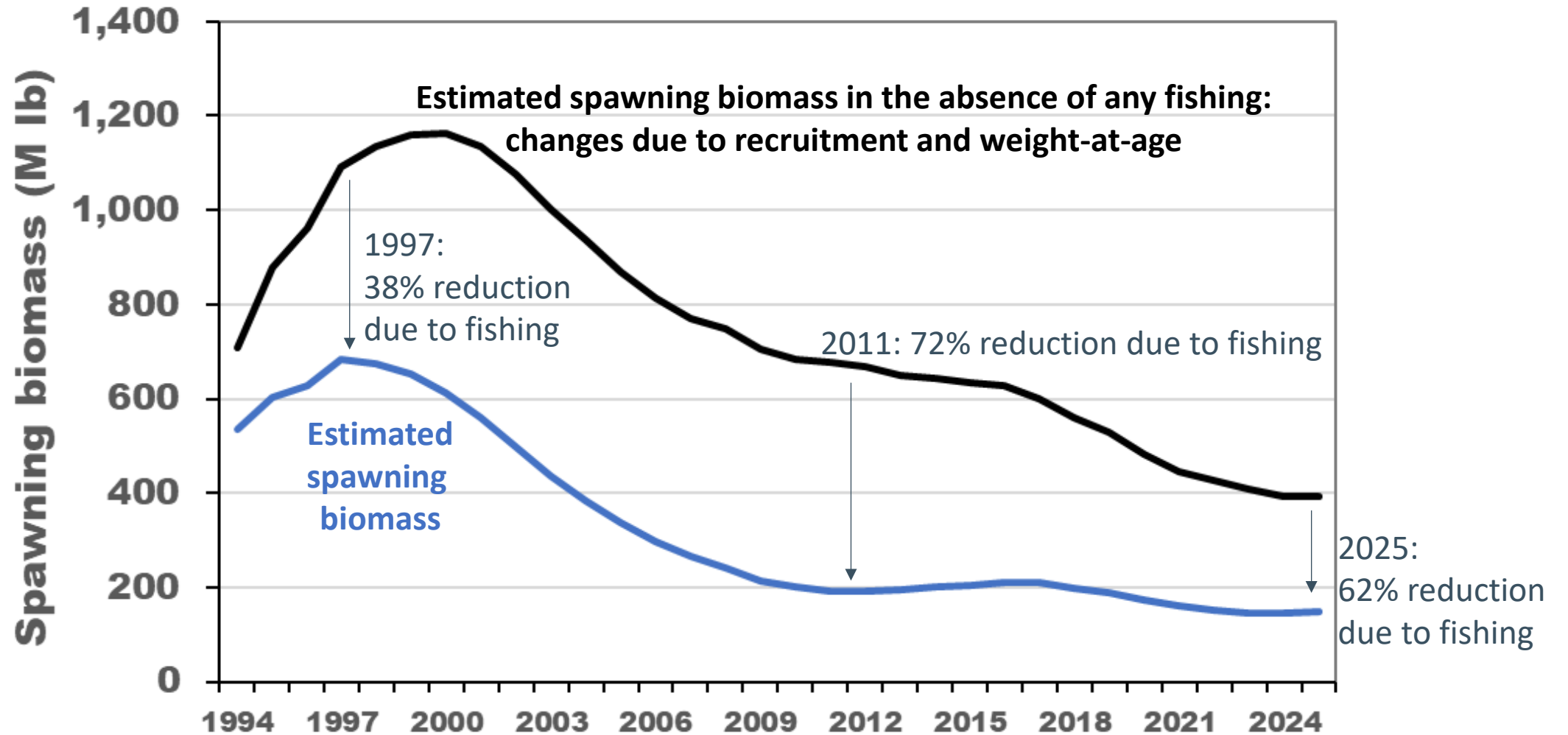
Historical spawning biomass



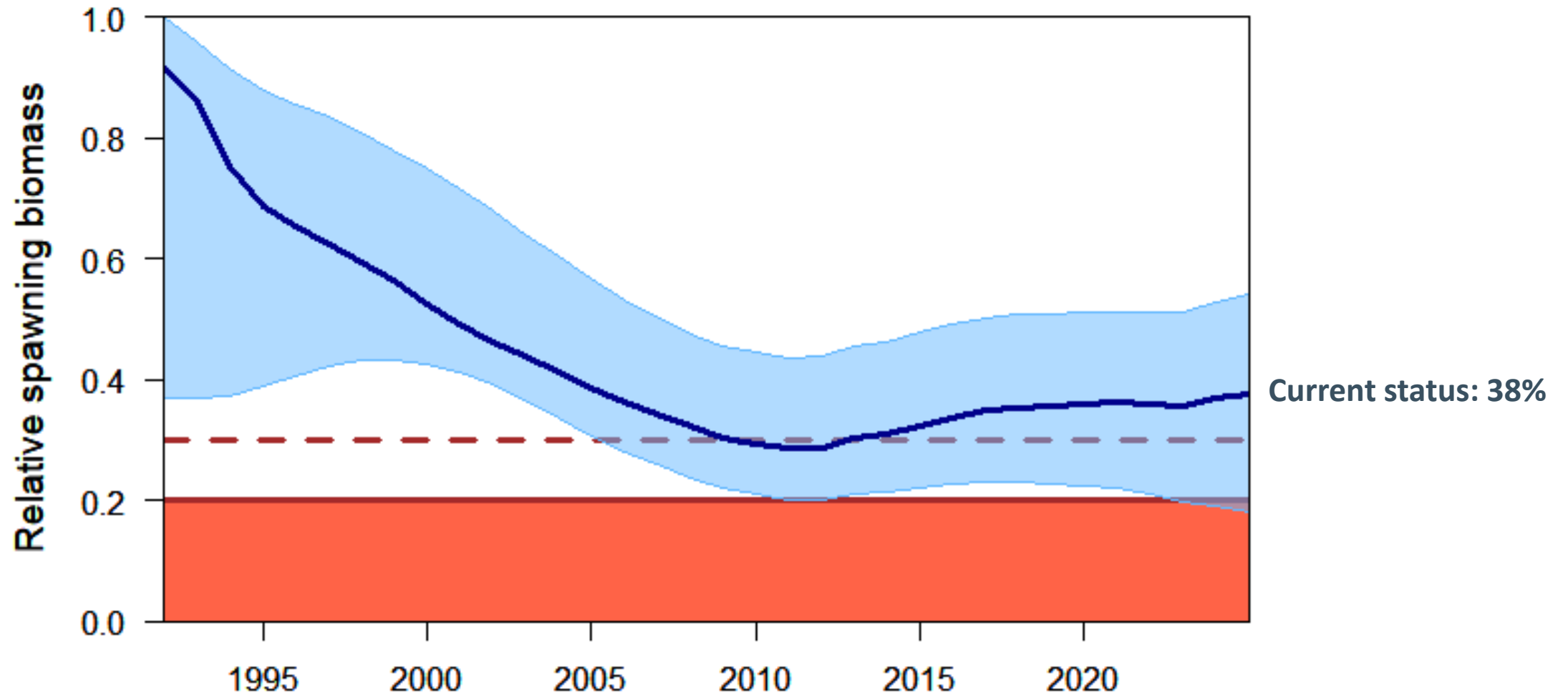
Uncertainty due to lack of data from Regions 4 & 4B



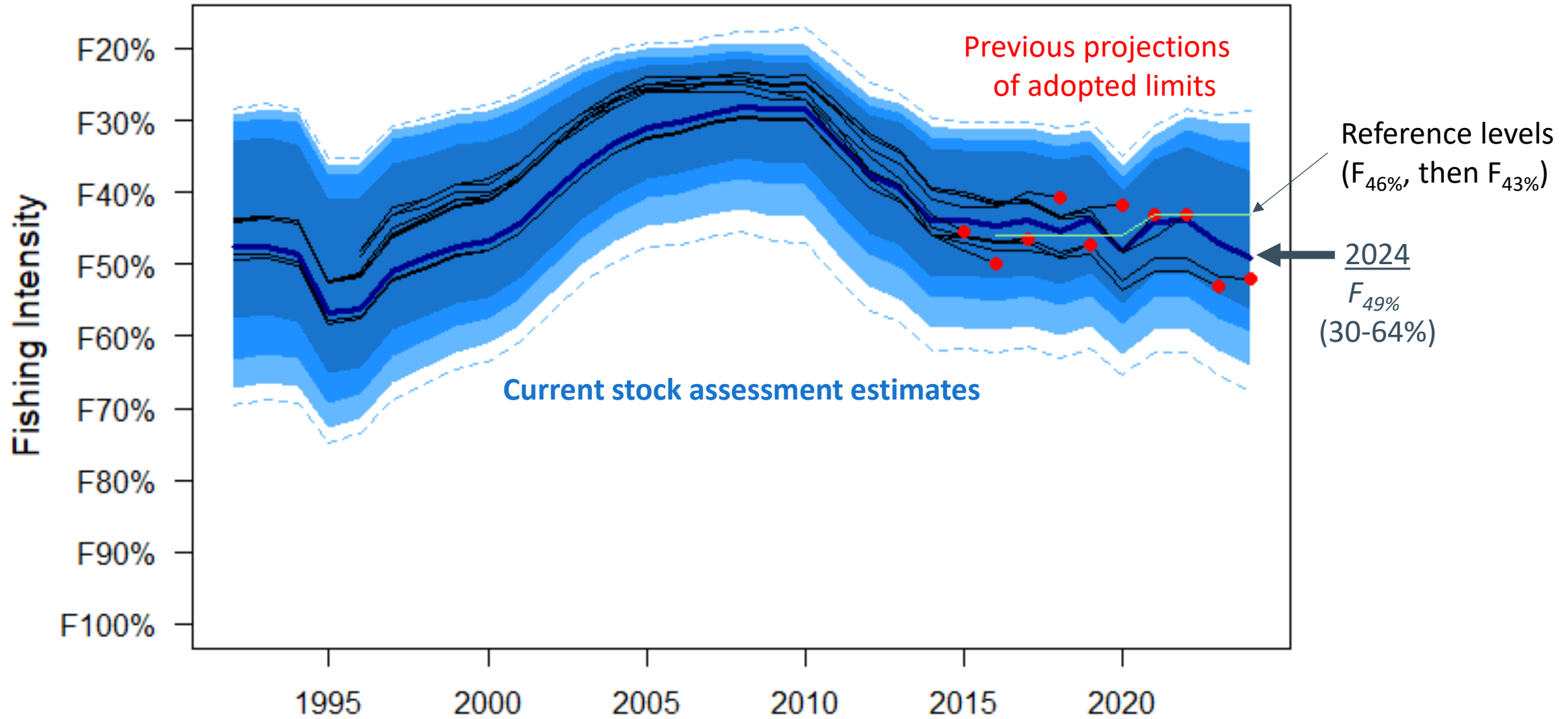
Stock status – measuring the effect of fishing



Stock status – measuring the effect of fishing



Estimated fishing intensity



Stock assessment summary table

Indicators	Values	Trends	Status
BIOLOGICAL			
SPR₂₀₂₄: 49% (30-64%) P(SPR<43%): 33% P(SPR<limit): LIMIT NOT SPECIFIED		FISHING INTENSITY DECREASED FROM 2023 TO 2024	FISHING INTENSITY BELOW REFERENCE LEVEL
SB₂₀₂₅ (MLBS): 149 (97–216) Mlbs SB₂₀₂₅/SB₀: 38% (18-55%) P(SB₂₀₂₅<SB₃₀): 30% P(SB₂₀₂₅<SB₂₀): 11%		SB INCREASED 3% FROM 2024 TO 2025	NOT OVERFISHED
Biological stock distribution:	SEE TABLES AND FIGURES	REGION 3 DECREASED, REGION 2 INCREASED FROM 2023 TO 2024	REGION 3 AT THE LOWEST OBSERVED PROPORTION
FISHERY CONTEXT			
Total mortality 2024: Percent retained 2024: Average mortality 2020–24:	32.70 Mlbs, 14,832 t 83% 35.66 Mlbs, 16,174 t	MORTALITY DECREASED FROM 2023 TO 2024	2024 MORTALITY AT 100-YEAR LOW



Summary of results

- Fishing mortality decreased from 2023 to 2024
- Continued shift from older to younger fish in both the fishery and FISS
- FISS and fishery indices at historical low levels
- Fishery data (CPUE) again had the largest effect on the stock assessment results, decreasing the 2024 spawning biomass by 17% compared to last year's assessment
- The stock remains at a low productivity level due to low weight-at-age and low recruitment through at least 2016
- The spawning biomass is estimated to be above $B_{30\%}$ and the fishing intensity lower than $F_{43\%}$



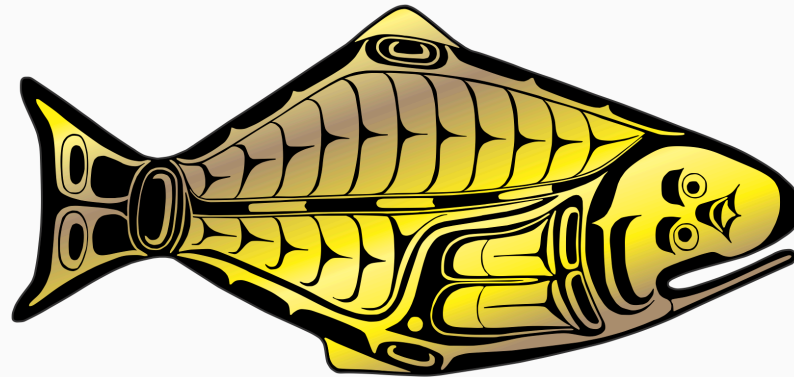
Recommendations

That the Commission:

- 1) **NOTE** paper IPHC-2025-AM101-11, which provides a summary of the data and the results of the 2024 stock assessment.



INTERNATIONAL PACIFIC



HALIBUT COMMISSION

<https://www.iphc.int/>

