

C2 Gulf of Alaska Groundfish November 2024 Plan Team Report

Sara Cleaver, Jim Ianelli, and Chris Lunsford



NOAA
FISHERIES



December 2024, Presentation to the Council

GF Plan Team Meetings, November 12-15th, 2024

Meeting of the Gulf of Alaska Groundfish Plan Team

Plan Team Report

November 12-15, 2024

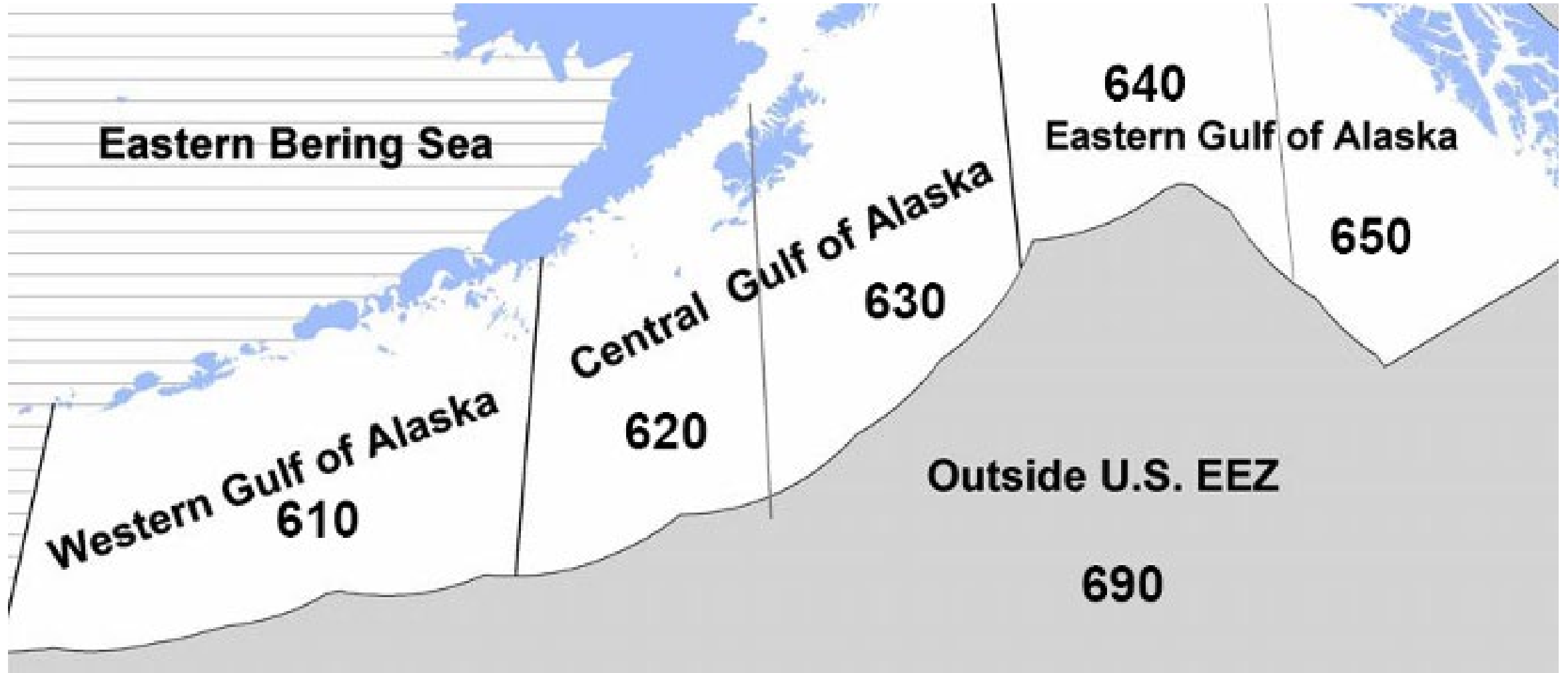
GOA Groundfish Plan Team Members:

Jim Ianelli	AFSC REFM (co-chair)	Sandra Lowe	AFSC REFM
Chris Lunsford	AFSC ABL (co-chair)	Nat Nichols	ADF&G
Sara Cleaver	NPFMC (coordinator)	Jan Rumble	ADF&G
Abby Jahn	NMFS AKRO	Paul Spencer	AFSC REFM
Craig Faunce	AFSC FMA	Ben Williams	AFSC ABL
Lisa Hillier	WDFW	James Thorson	AFSC REFM
Pete Hulson	AFSC ABL	Sophia Wassermann	AFSC RACE

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GOA Assessment Overview

Off year = no trawl survey



GOA Groundfish stock assessment plans 2024-2027

Key: ♦ operational, harvest projection, "—" catch report, and blank is nothing

Stock	Tier	Freq.	Last Full	2024	2025	2026	2027
Pollock	3	1	2023	♦	♦	♦	♦
Pacific cod	3	1	2023	♦	♦	♦	♦
Sablefish	3	1	2023	♦	♦	♦	♦
Dusky rockfish	3	2	2022	♦		♦	
Northern rockfish	3	2	2022	♦		♦	
Pacific ocean perch	3	2	2023		♦		♦
Rougeye & blackspotted rockfish	3	2	2023		♦		♦
Shortraker rockfish	5	2	2023	—	♦	—	♦
Skates	5	2	2023	—	♦	—	♦
Thornyheads	5	2	2022	♦	—	♦	—
Demersal shelf rockfish	4, 5, 6	2	2022	♦	—	♦	—
Other rockfish	4, 5, 6	2	2023	—♦	♦?	—	♦
Forage species (w/ squid)	Eco rep	2	2022	♦		♦	
Arrowtooth flounder	3	4	2021		♦		
Flathead sole	3	4	2022			♦	
Rex sole	3	4	2021		♦		
Atka mackerel	6	4	2021	—	♦	—	—
Octopus	6	4	2021	—	♦	—	—
Shallow water flatfish (incl. N/S rock sole)	3, 5	4	2021		♦		
Deep water flatfish (incl. Dover sole)	3, 6	4	2023				♦
Sharks	5, 6	4	2022	—	—	♦	—
Grenadiers	Eco rep	4	2020	♦			
Sculpins	Eco rep	4	2023				♦

GOA Ecosystem Status Report (ESR)—Plan Team discussion

- No formal recommendations but...ideas for future work:
 - Explore portfolio effects methods for community-wide consumption
 - Validate conceptual models
 - Develop composite indicators
 - Explore ecosystem dynamics due to trawling (EGOA vs CGOA/WGOA)
 - Provide a recap of previous year's highlights

2024 Gulf of Alaska Ecosystem Status Report: IN BRIEF

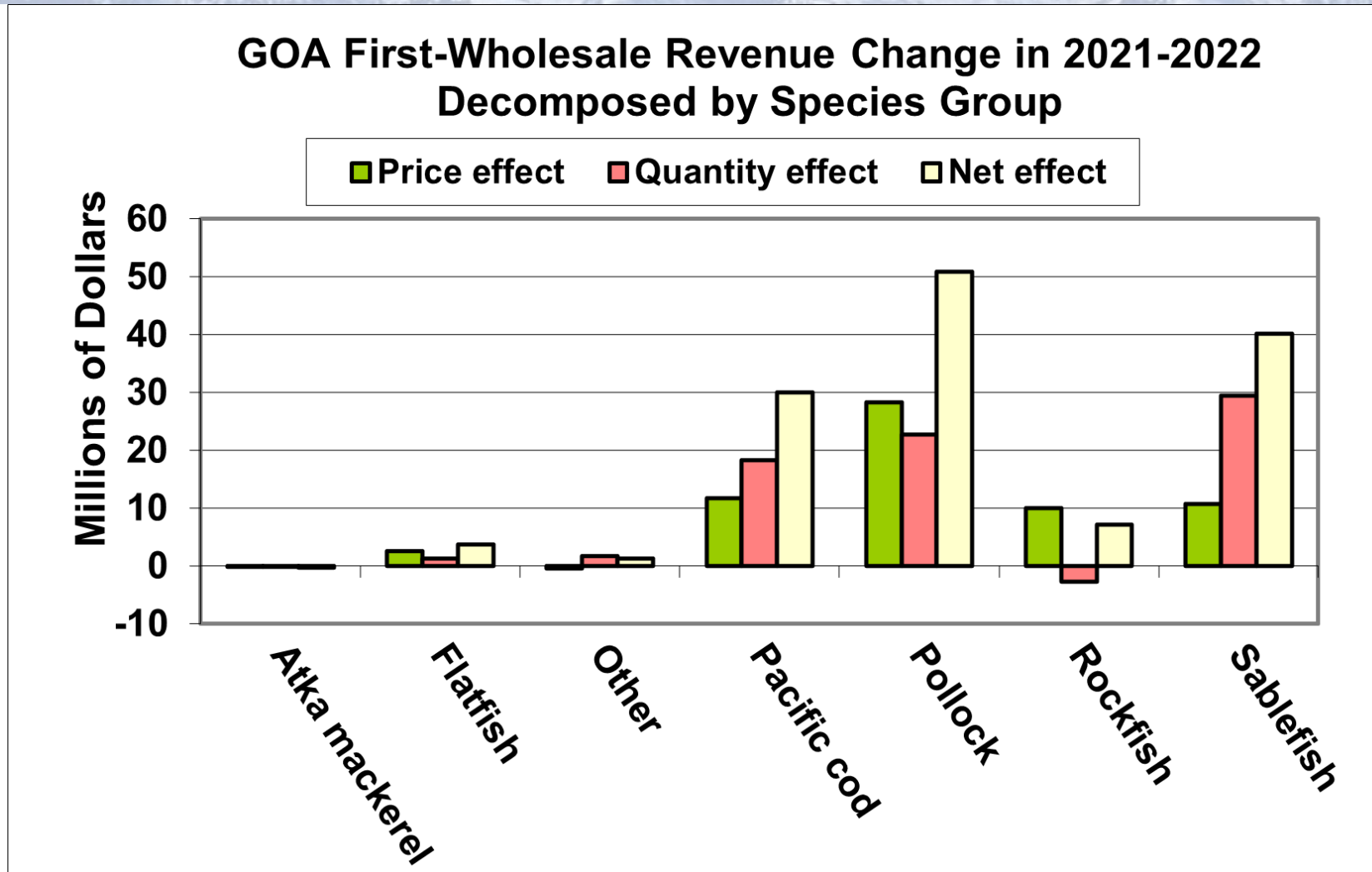
Overview

- Long-term trends in the Gulf of Alaska (GOA) include warming ocean temperatures, changes in salinity, and a shift in the groundfish community to more zooplankton-eating fish.
- Moderate El Niño conditions occurred during the winter of 2024, including warm winter and spring surface temperatures and increased shelf circulation. Few ecological responses to the warm event were observed.
- Feeding conditions for groundfish improved from 2023 to generally above average. Biomass of zooplankton increased, including larger, nutritious species (large copepods, euphausiids). Forage fish (herring, capelin, others) abundance continued to be above average across the GOA.
- GOA commercial salmon landings were some of the lowest since 1985, driven by unexpected low returns of pink salmon in Prince William Sound. Low returns were probably due to poor juvenile marine survival in 2023 and potential competition in the ocean gyre (2023/2024).
- While the GOA continues to warm over the long term, 2025 is predicted to be cooler than the 1991 – 2020 average due to developing La Niña conditions.



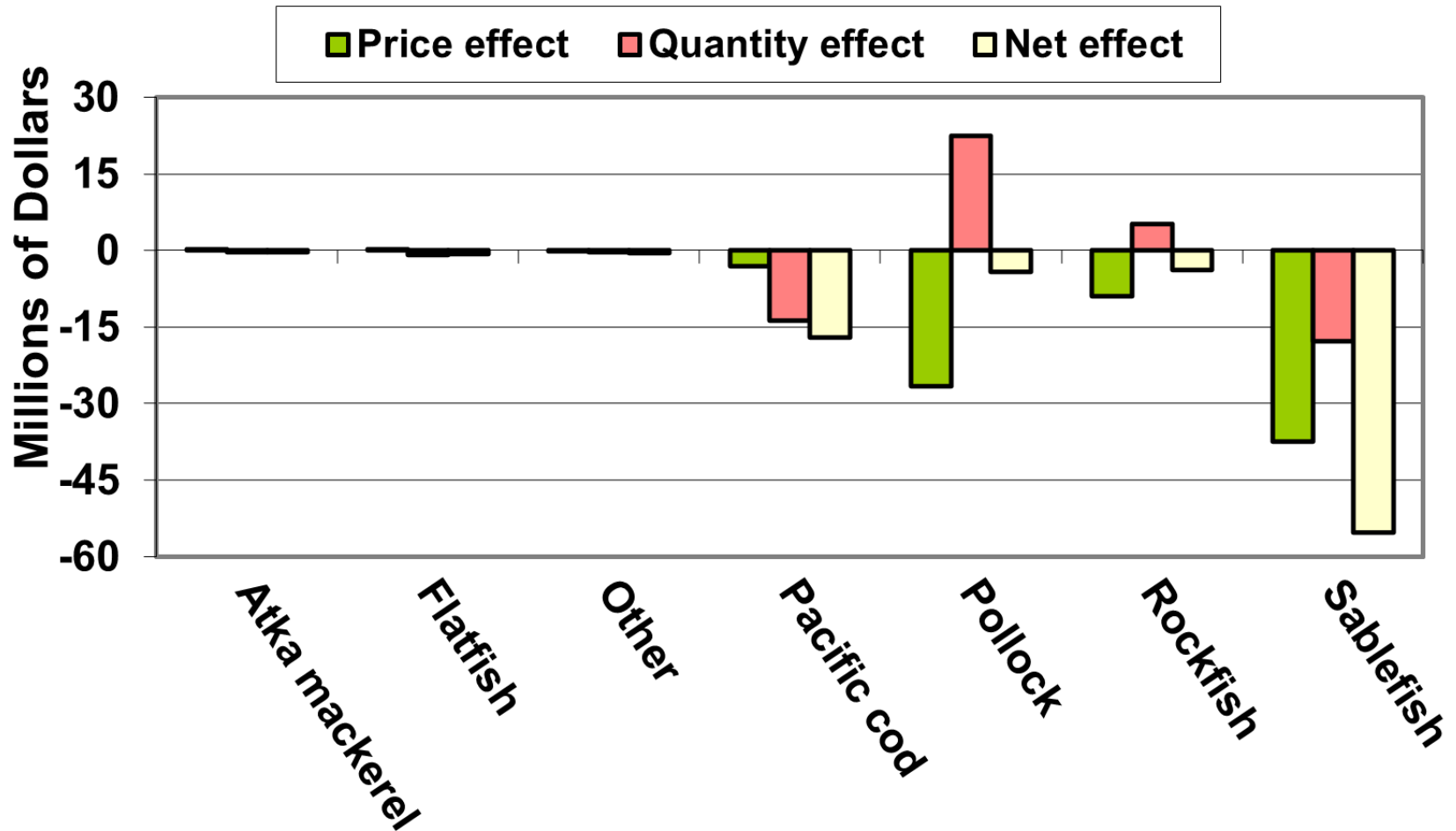
Thanks to Bridget Ferriss

Revenue changes (and source), 2021-2022

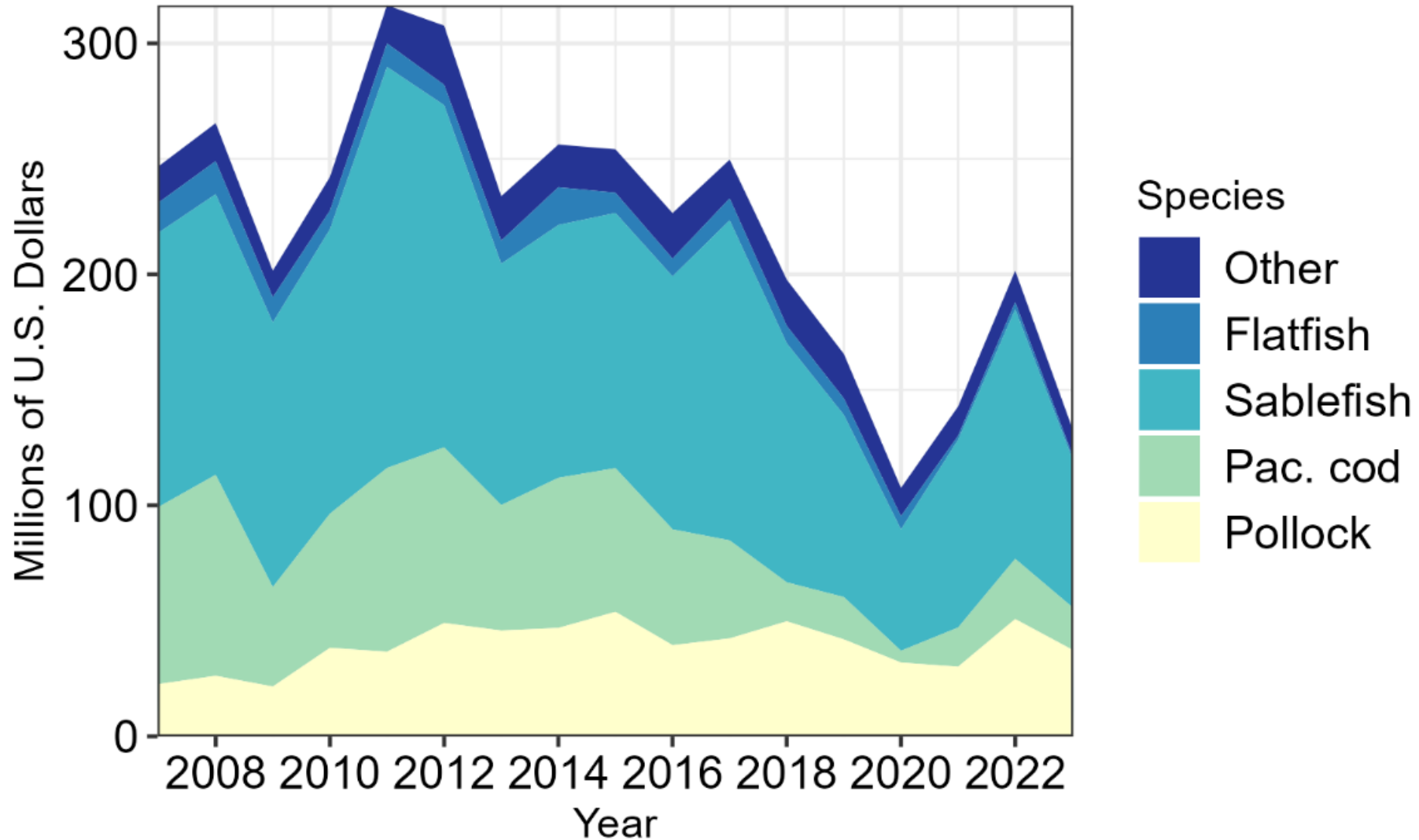


Revenue changes (and source), 2022-2023

GOA First-Wholesale Revenue Change in 2022-2023 Decomposed by Species Group



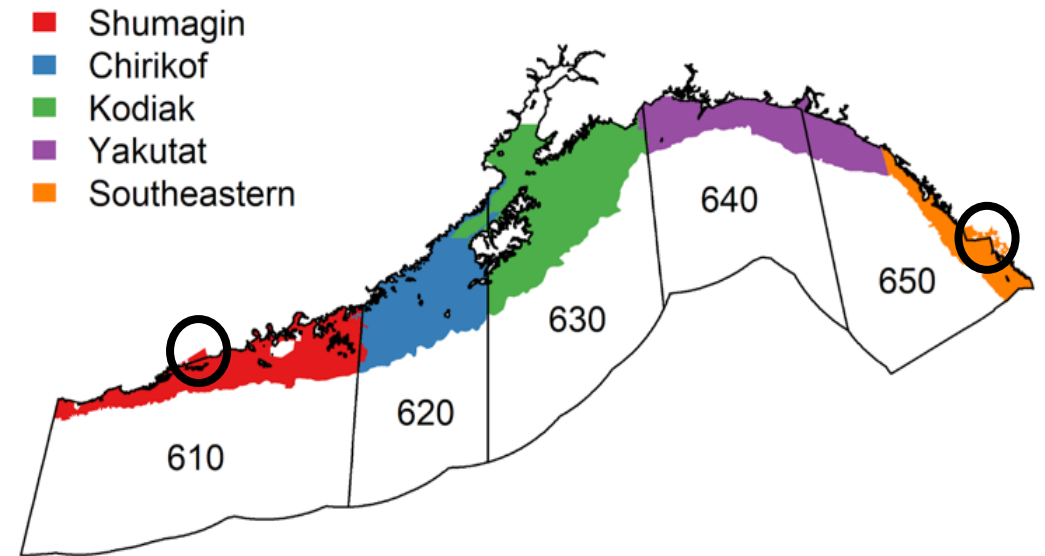
Ex-vessel value of the GOA groundfish catch 2007-2023



2025 GOA bottom-trawl survey re-stratification

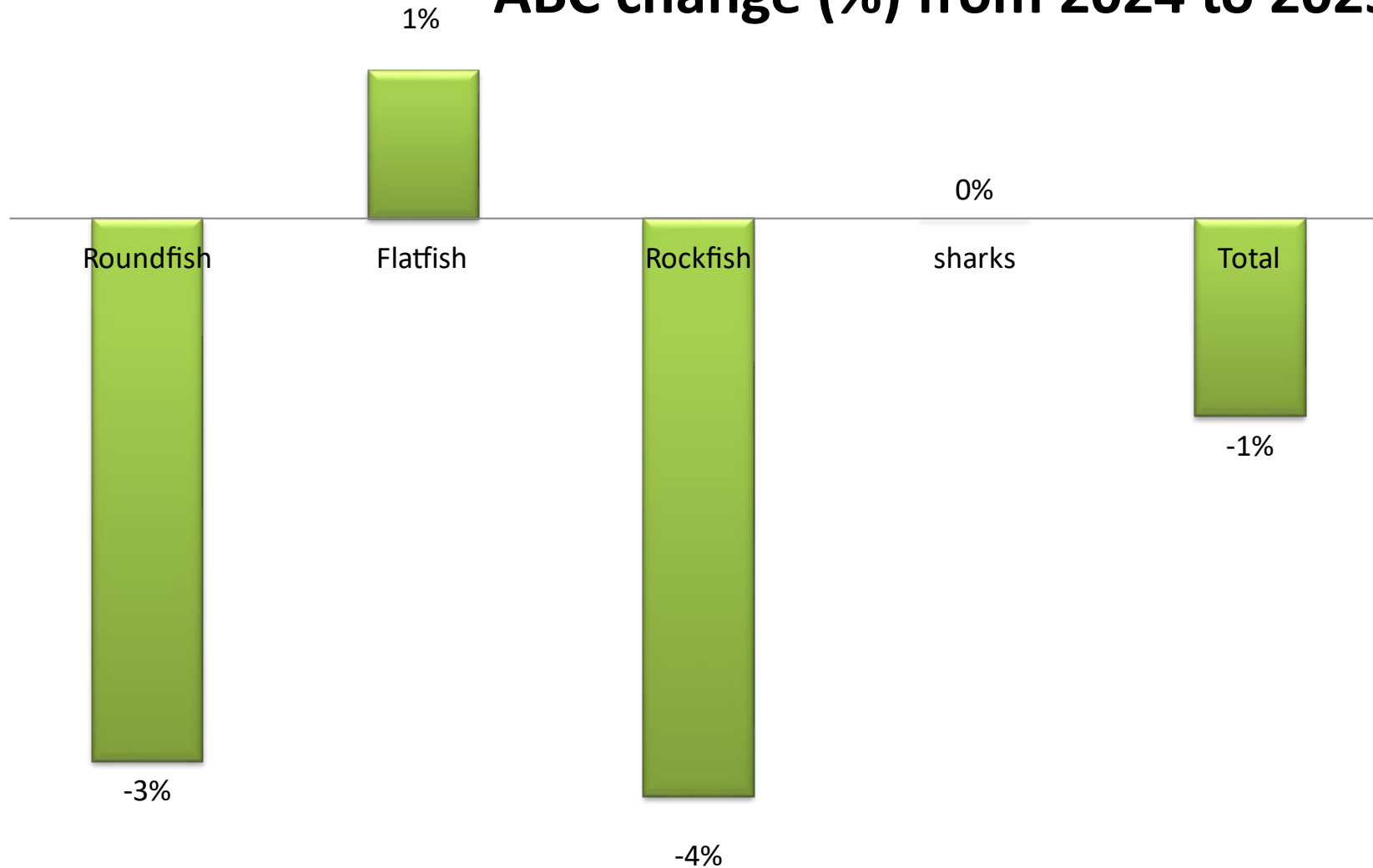
- ❖ The Team agreed re-stratification an improvement and recommended:
 - ❖ re-calculating the time series of design-based indices of abundance and age composition in steps
 - ❖ Present percent differences by area and combined
 - ❖ assuring shapefiles be available

- ❖ To be taken up internally at AFSC



2024-2025 ABC change

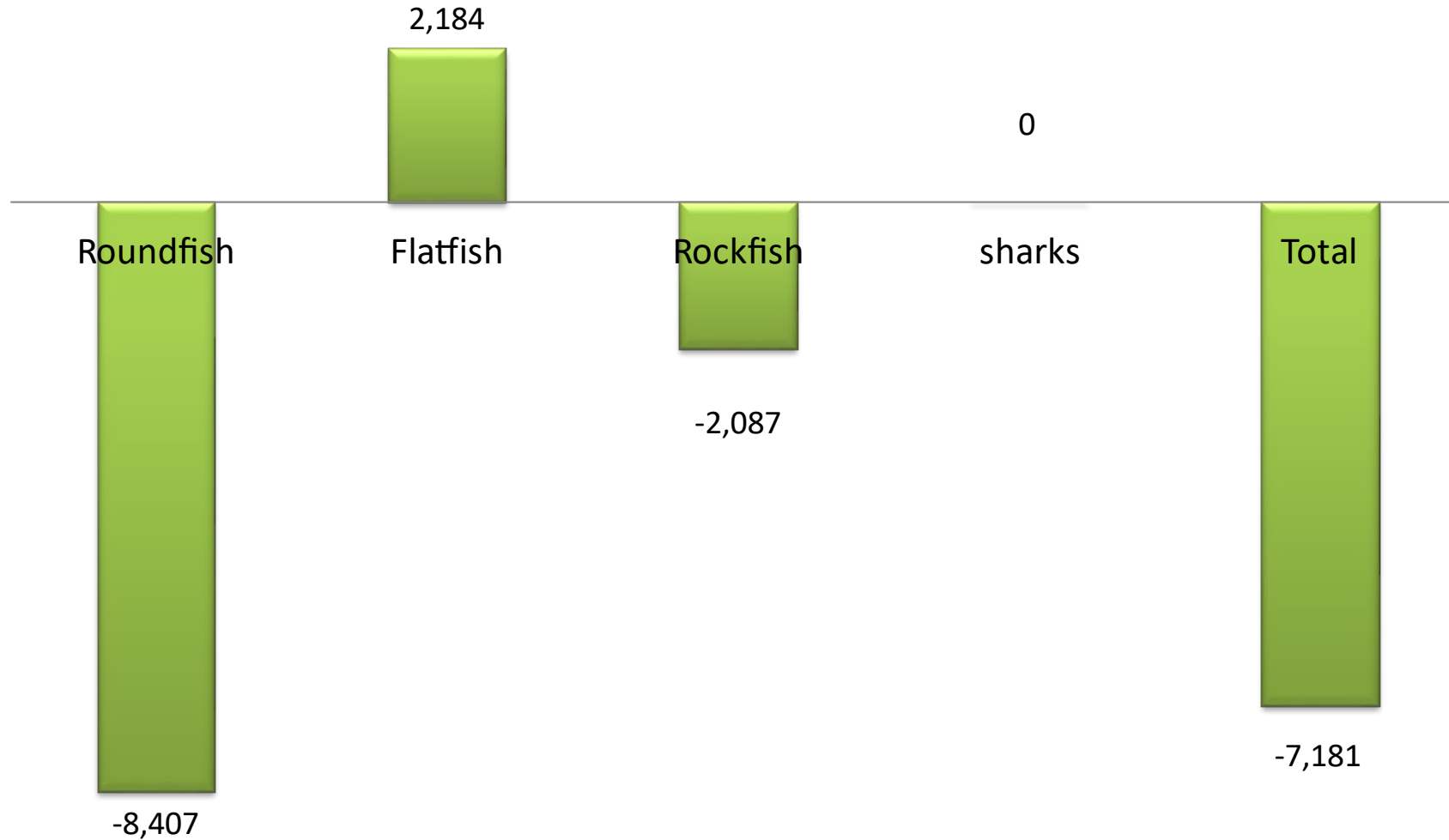
ABC change (%) from 2024 to 2025



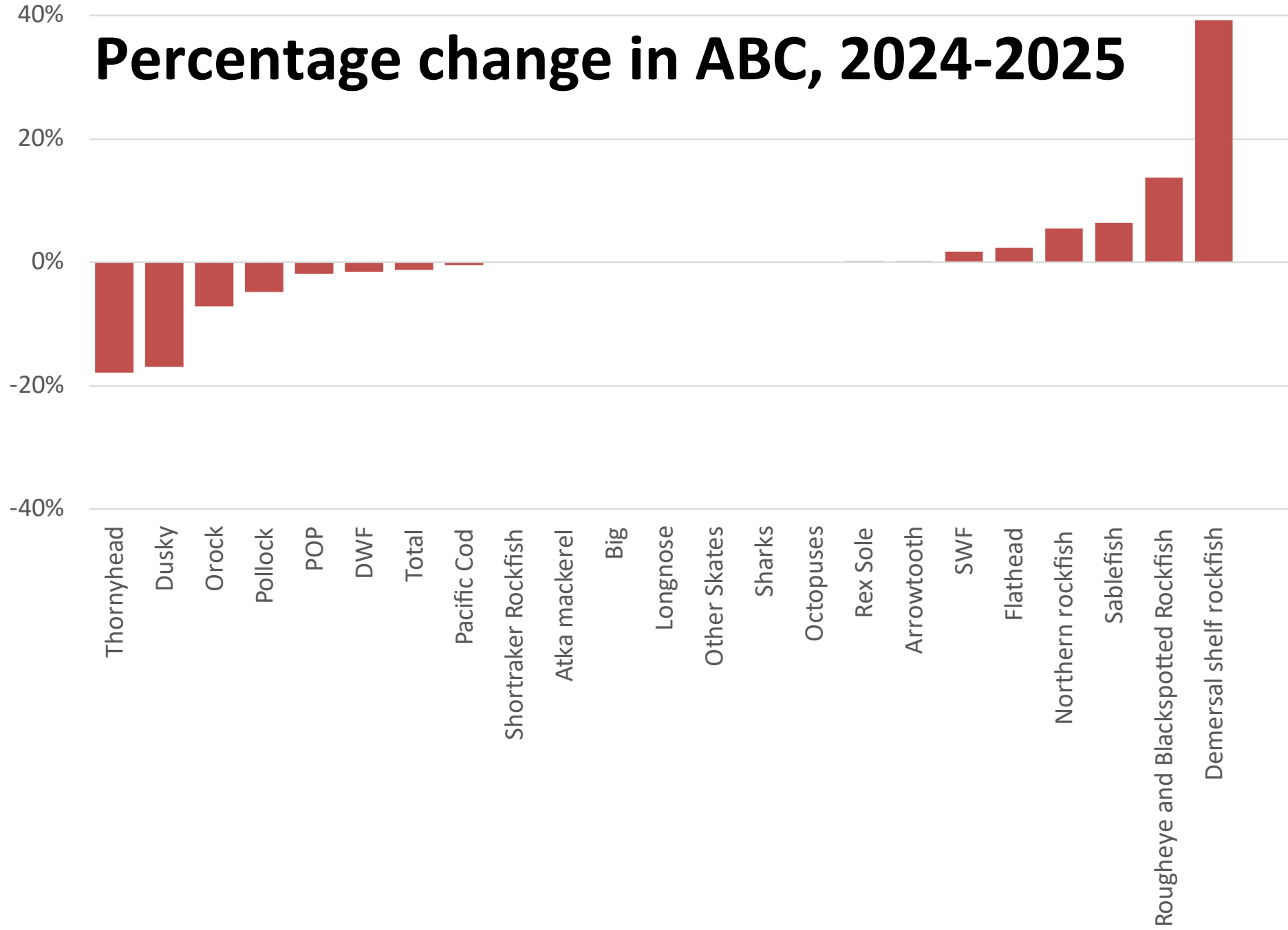
Overall a 1% decrease

2024-2025 ABC change

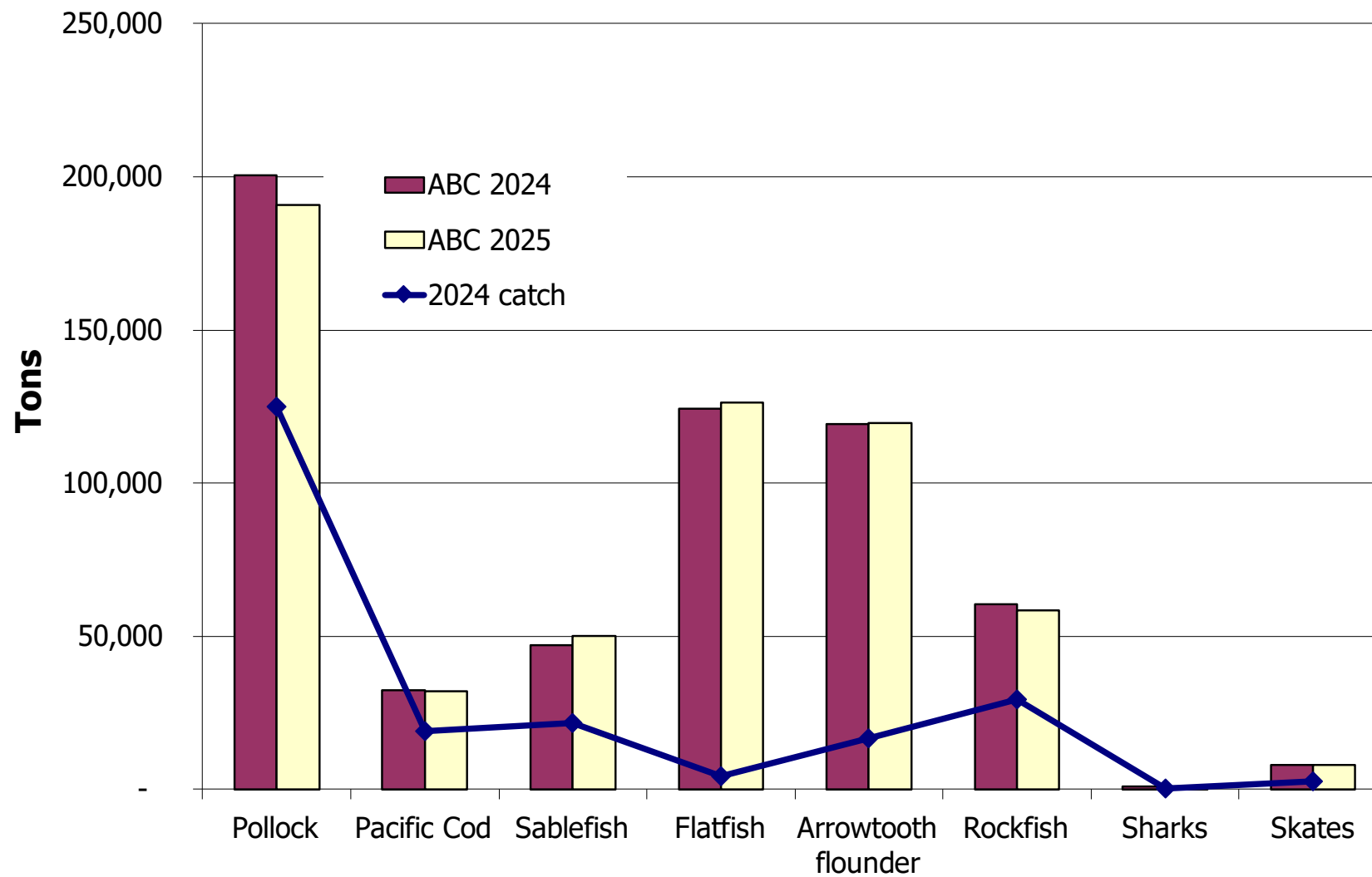
ABC change (tons) from 2024 to 2025



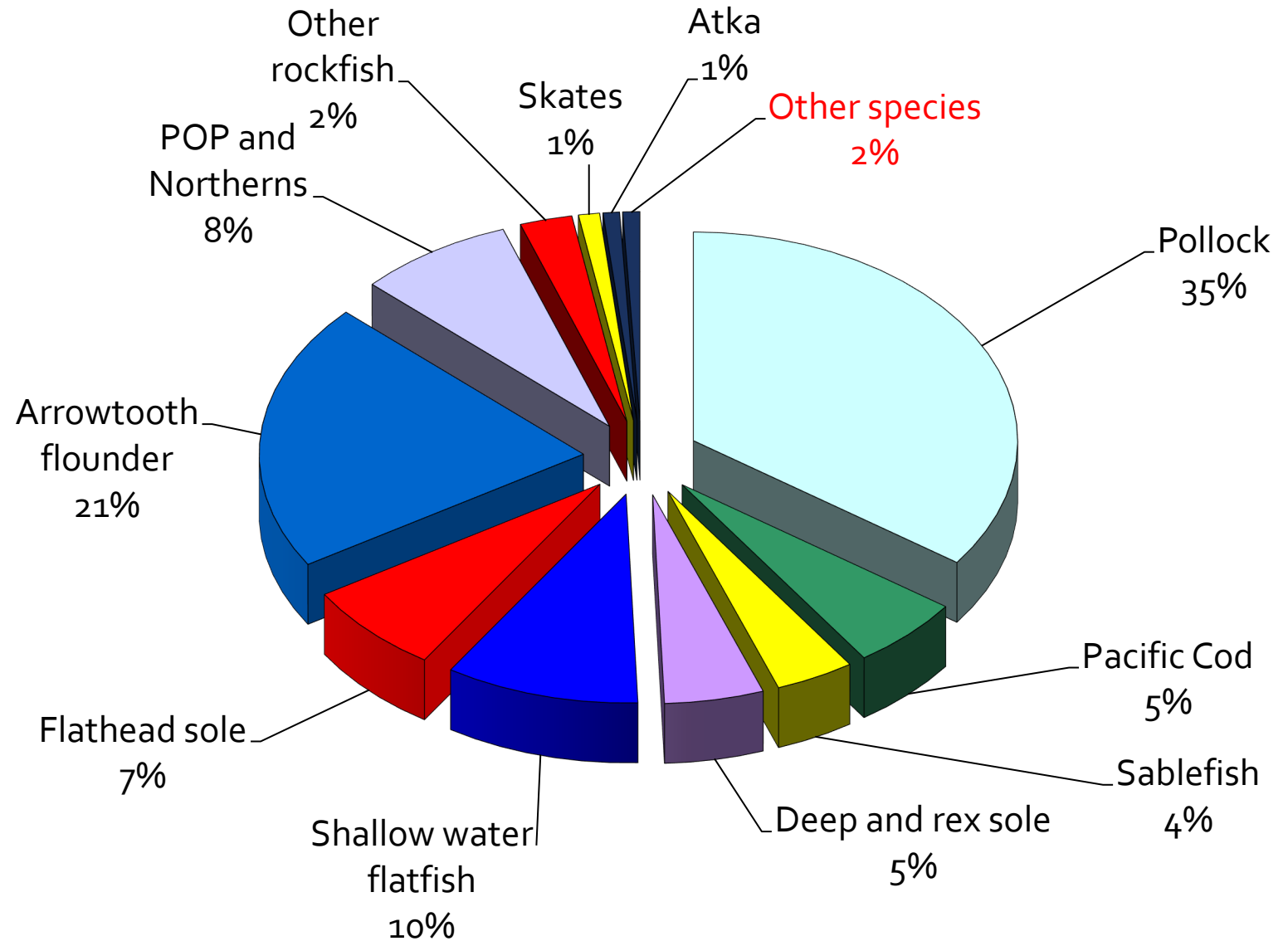
Percentage change in ABC, 2024-2025



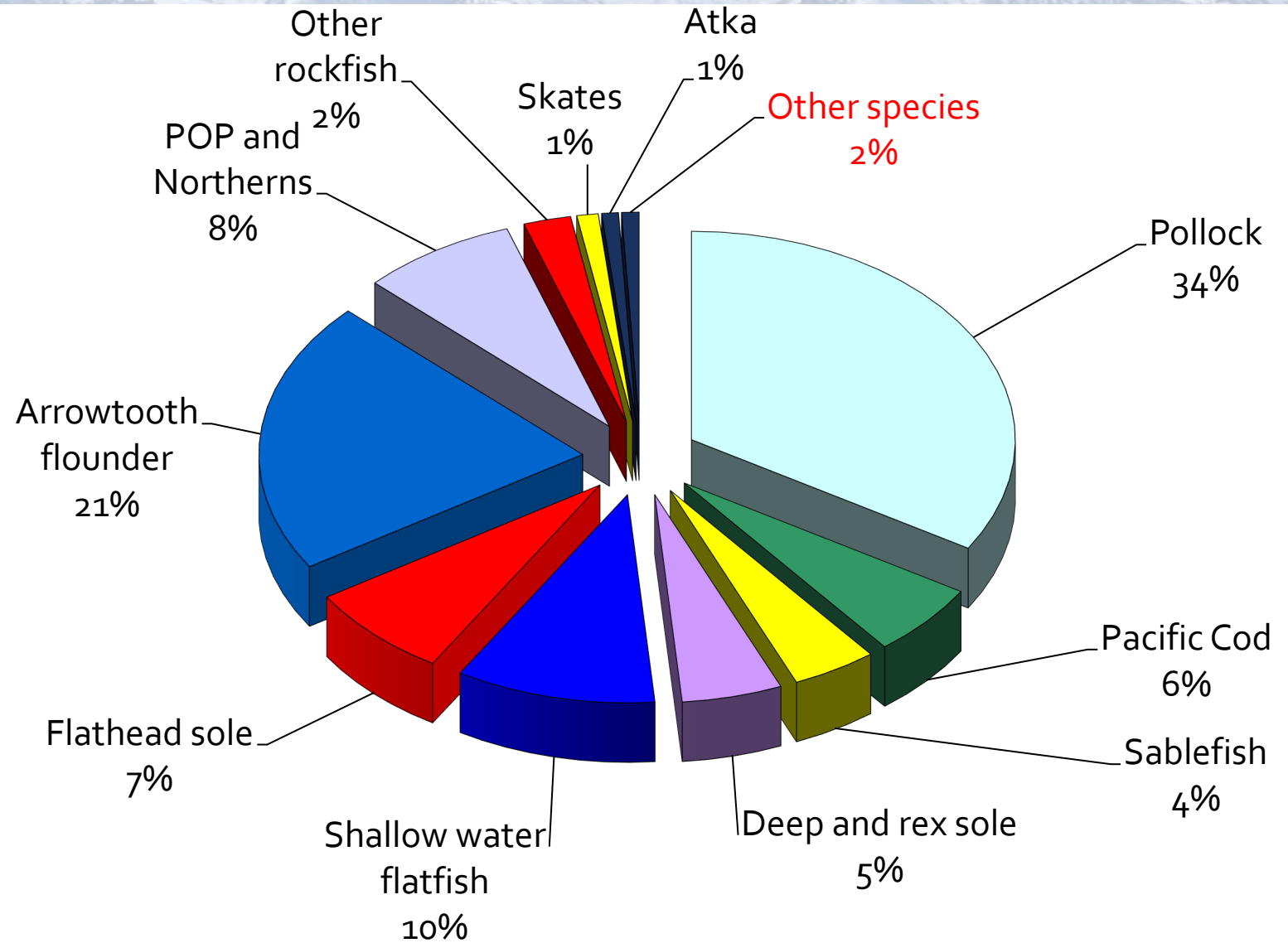
GOA Catch and ABC levels



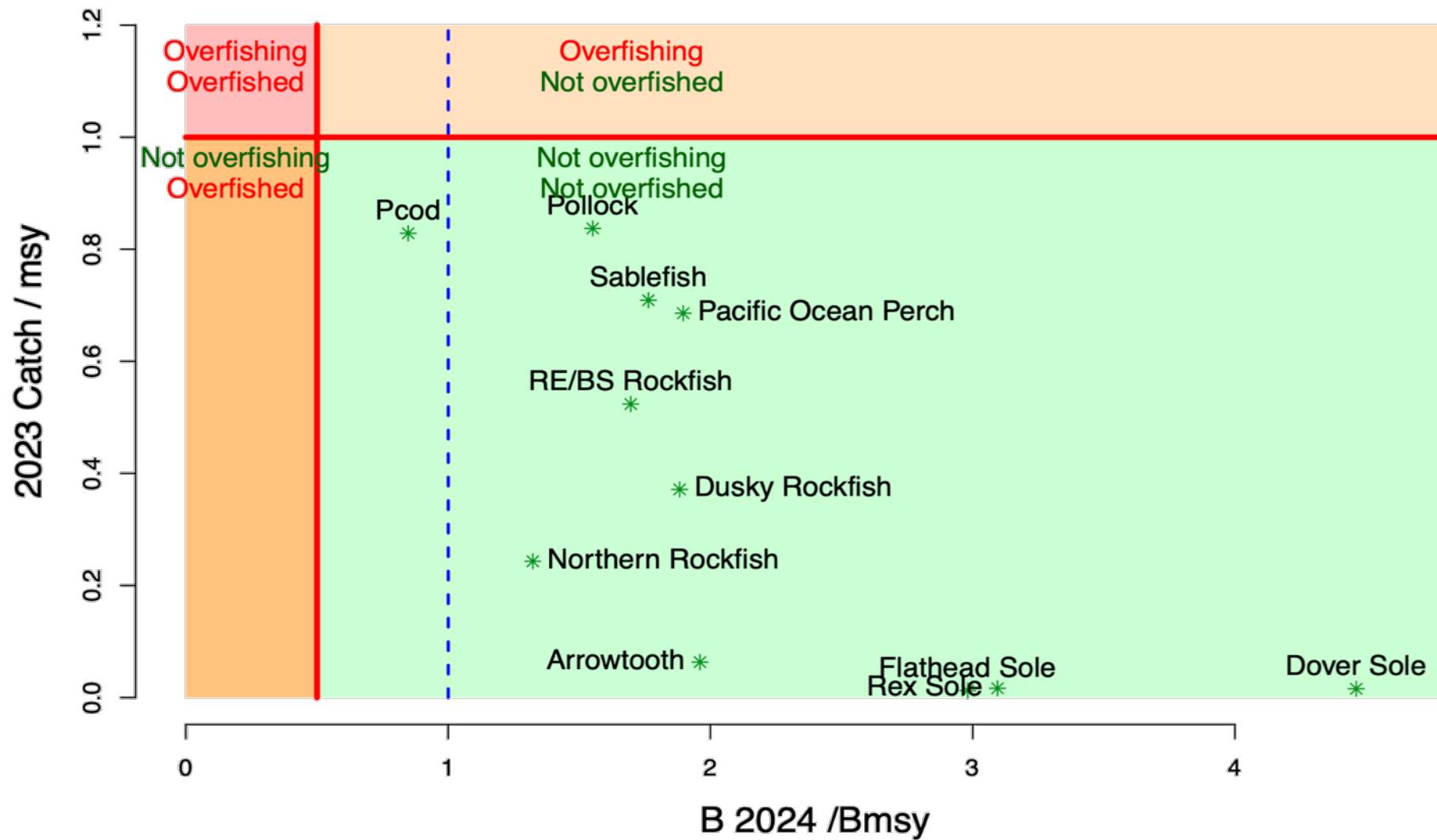
GOA 2024 ABC's: 575,234 t



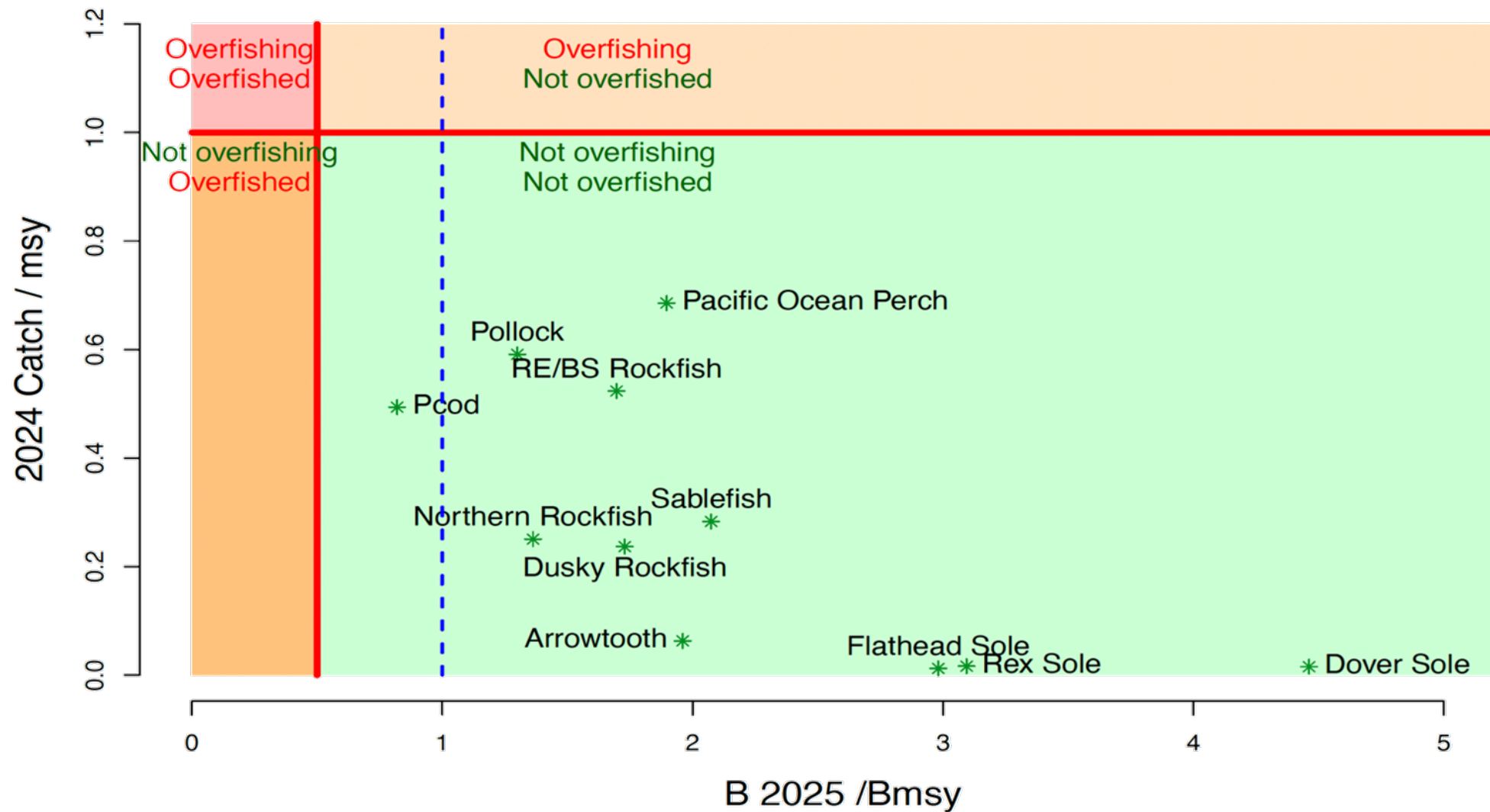
GOA 2025 ABC's: 566,924 t



Stock status summary **last** year



Stock status summary **this** year



GOA Pollock

Species	2024 catch	ABC 2024	ABC 2025	Change
Pollock	124,944	200,489	190,771	down 9,718 (5%)
Pacific Cod	19,106	32,272	32,141	down 131 (0%)
Sablefish	15,686	22,596	24,038	up 1,442 (6%)
Flatfish	4,304	124,494	126,380	up 1,886 (2%)
Arrowtooth flounder	16,866	119,249	119,547	up 298 (0%)
Rockfish	29,727	59,527	57,440	down 2,087 (4%)
Atka mackerel	380	4,700	4,700	same (0%)
Skates	2,381	6,036	6,036	same (0%)
Sharks	1,288	4,891	4,891	same (0%)
Octopus	197	980	980	same (0%)
Total	214,879	575,234	566,924	down 8,310 (1%)

GOA Pollock Ecosystem and Socioeconomic Profile (ESP)



Ecosystem (ABC Information):

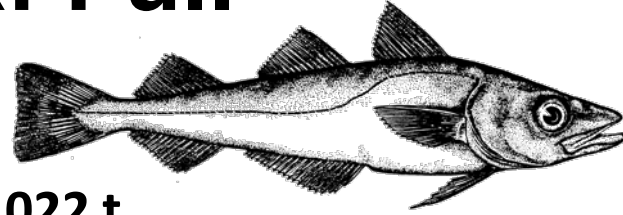
- Overall average (YOY ↑, juv ↔, adult ↓)
- No heatwave, avg temp, moderate habitat conditions, few larval indicators (no survey) but sufficient prey based on seabirds
- High nearshore CPUE in beach seine
- Adult condition mixed, low biomass consumed, but high sablefish and POP
- DSEM + integrated in model

Socioeconomic (TAC Information):

- CPUE decreased in winter & spring, less concentrated
- May impact roe quality, ex-vessel price low



GOA Pollock: Full



Author's 2025 ABC = 181,022 t

- Increase of 56% from 2023
- 2026 ABC decreases to 133,075 t
- No reduction from max ABC

Changes (cumulative) to model:

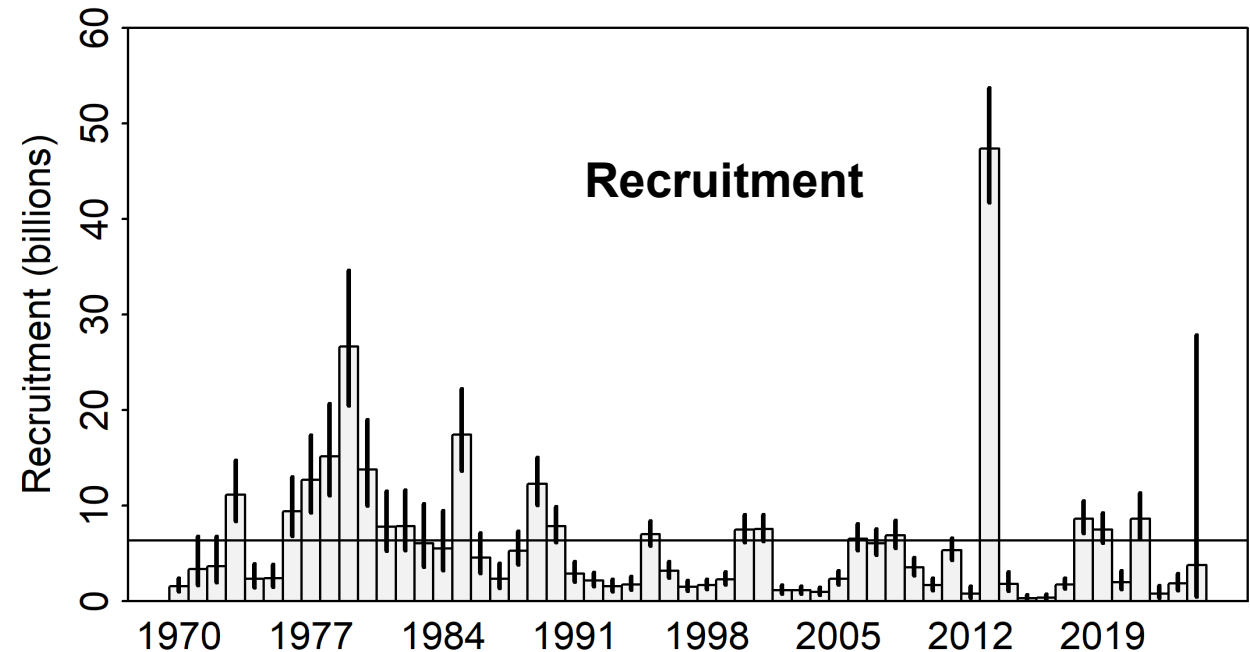
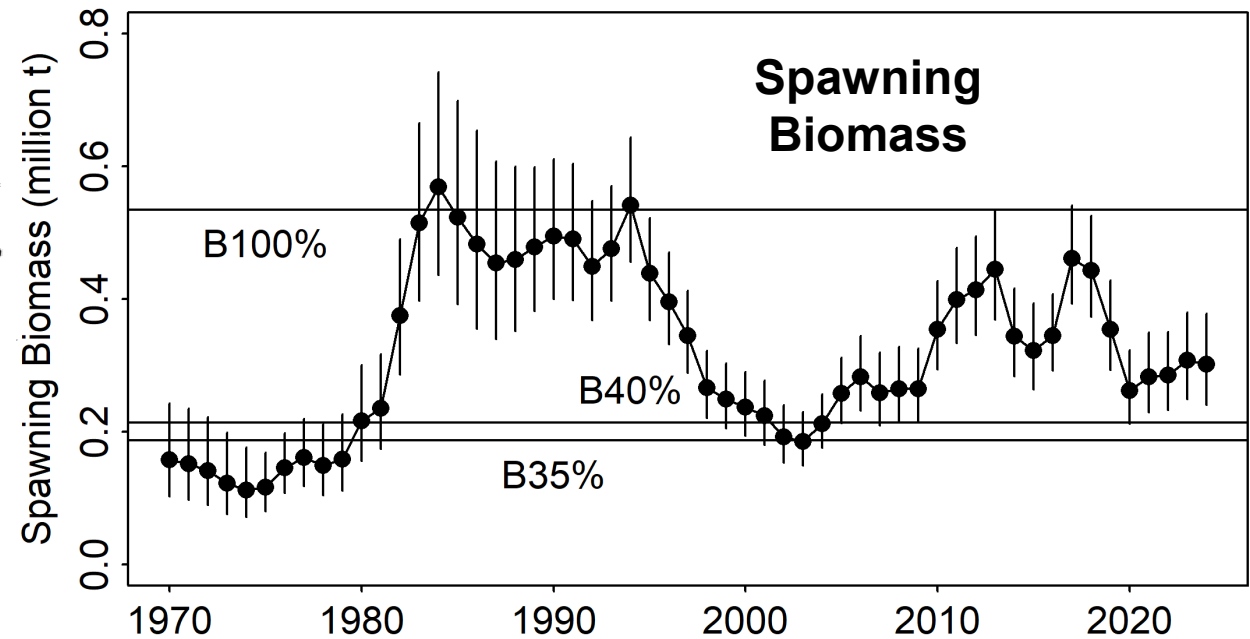
- 23a: Revamped ISS & CVs
- 23b: Environmental covariate on catchability
- 23c: Remove age 1 and 2 Shelikof indices
- **23d: Use Dirichlet-multinomial**

Concerns:

- Poor fit to NMFS bottom trawl index

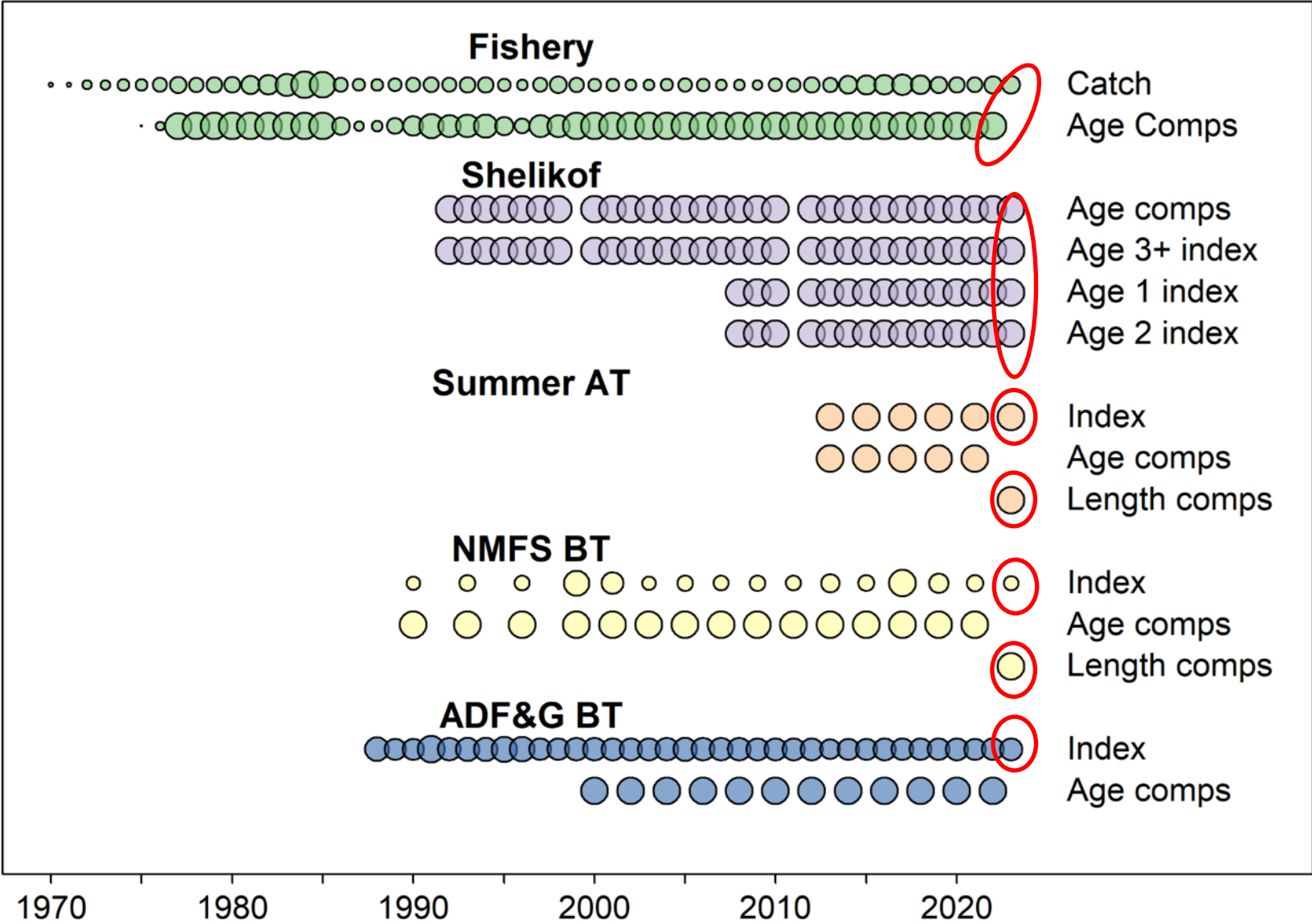
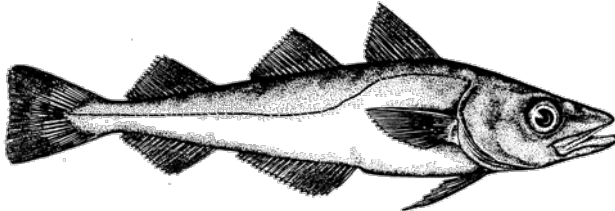
Positives:

- 2017, 2018, 2020 cohorts above average
- Better retrospective pattern

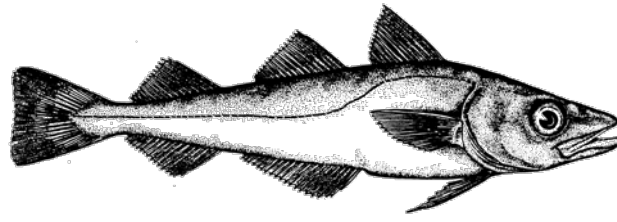


Thanks to Cole Monnahan

GOA Pollock: Data



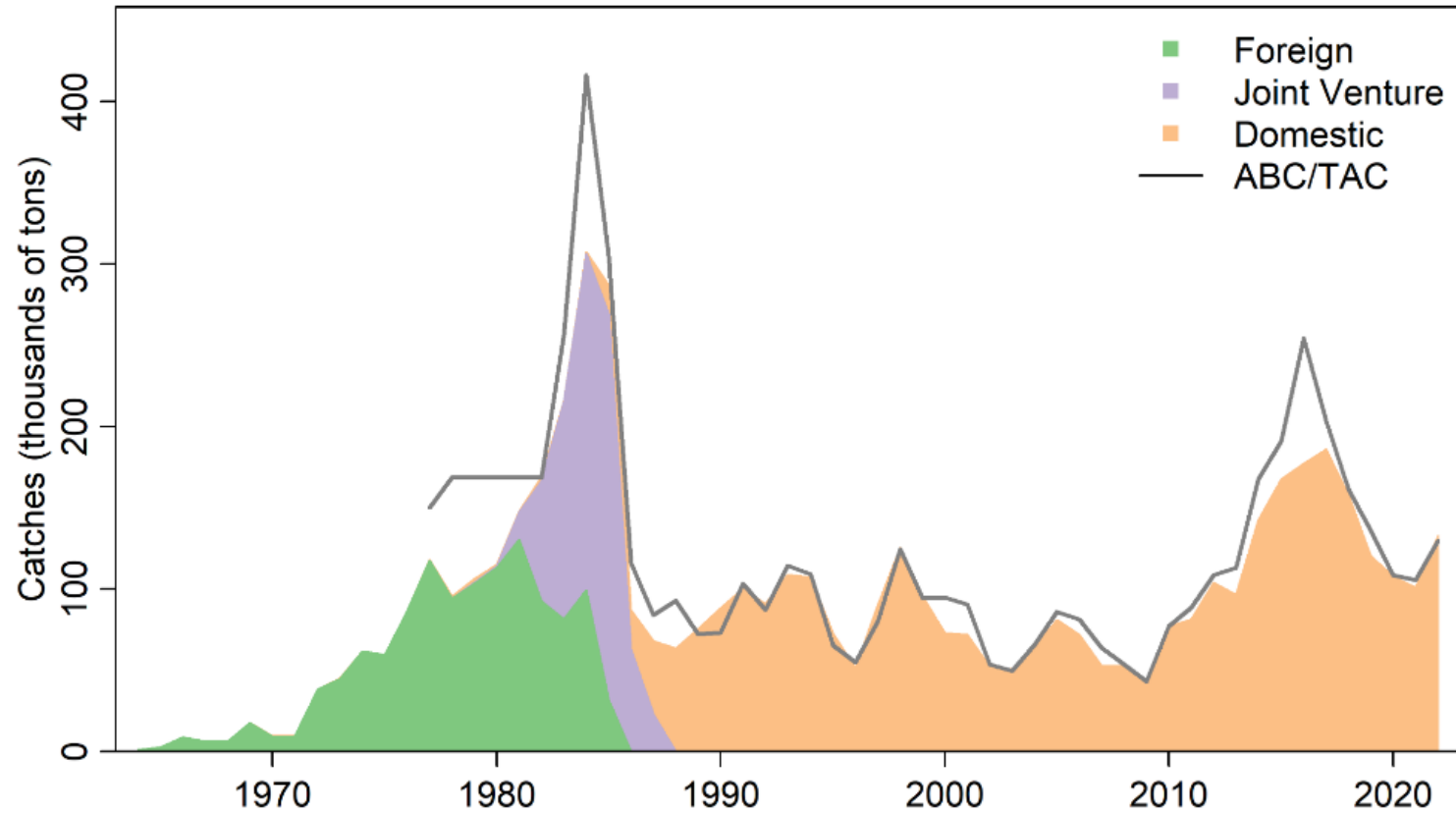
GOA Pollock: Catch



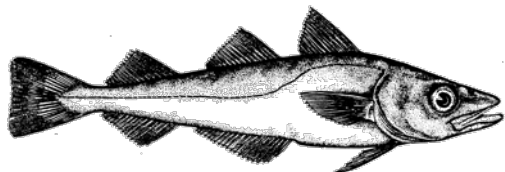
2023 projected catch = 145,215 t

2023 realized catch = 135,103 t

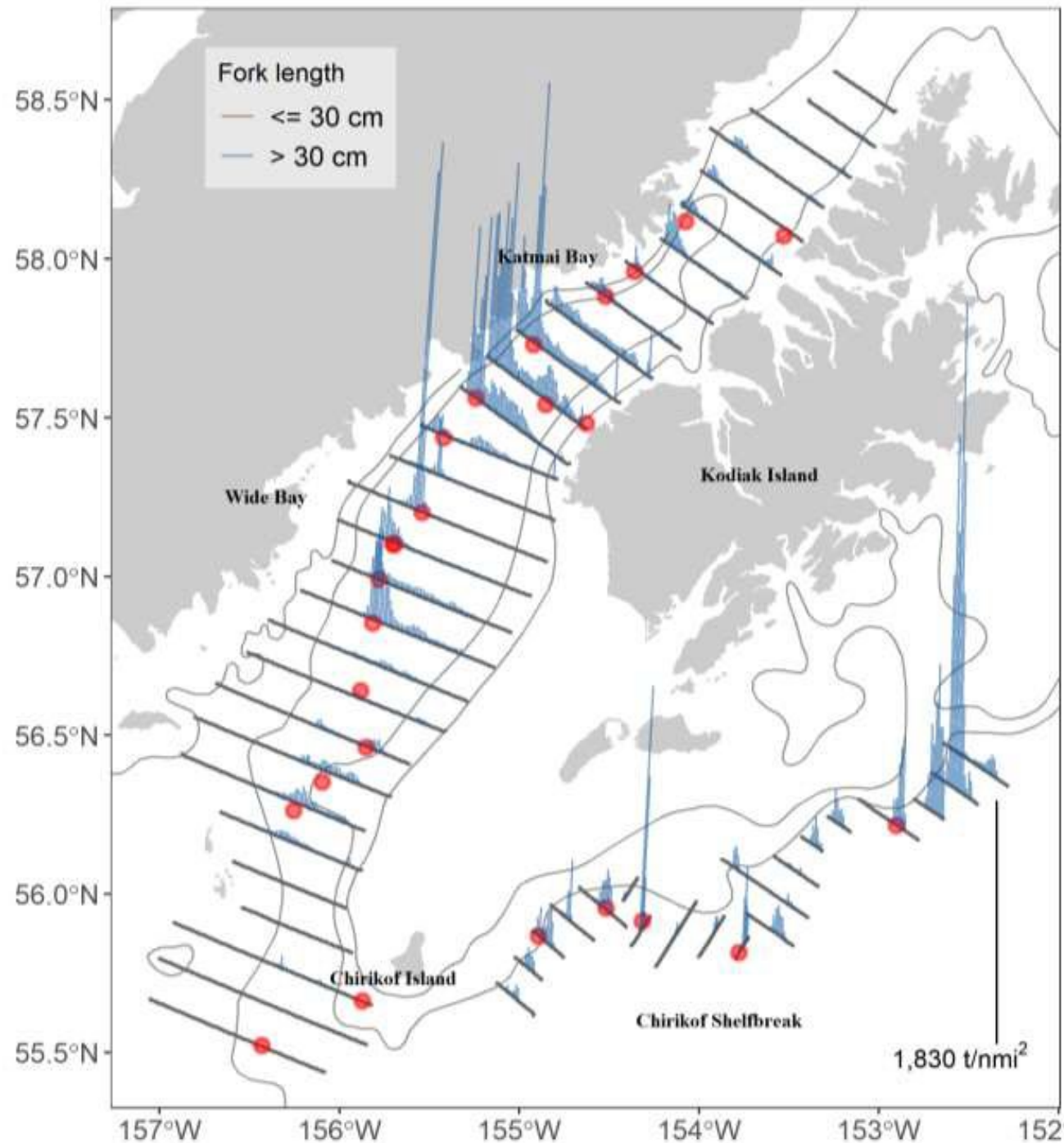
2024 projected catch = 131,000 t
(CGOA closure in Sep-2024)



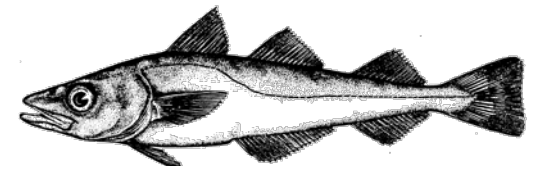
GOA Pollock: 2024 Shelikof Strait acoustic trawl survey



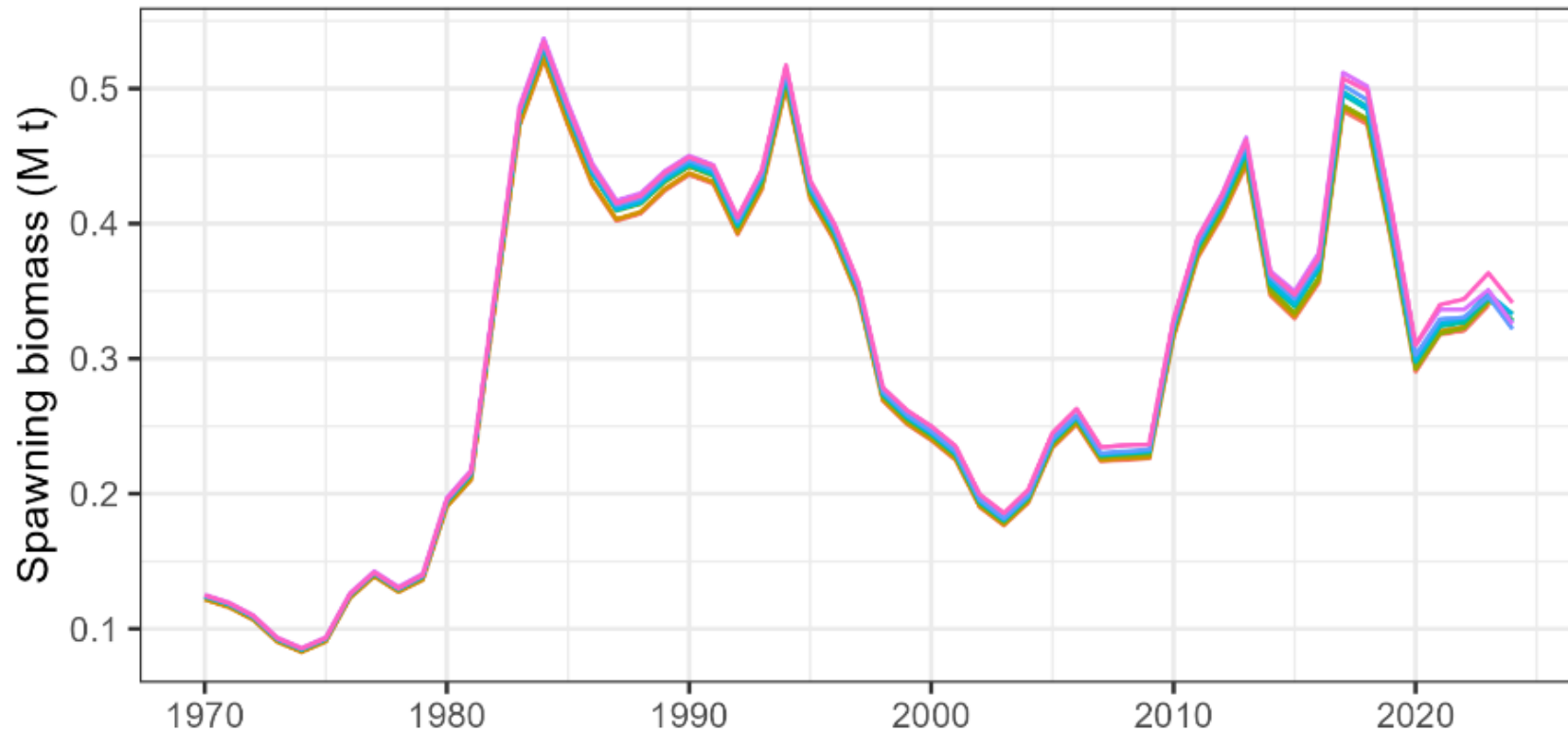
- Shelikof up 12%
 - No small fish (similar to 2023)
- Chirikof up 189% to 115 kt



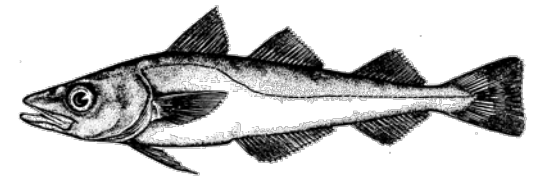
GOA Pollock: Sequential addition of data



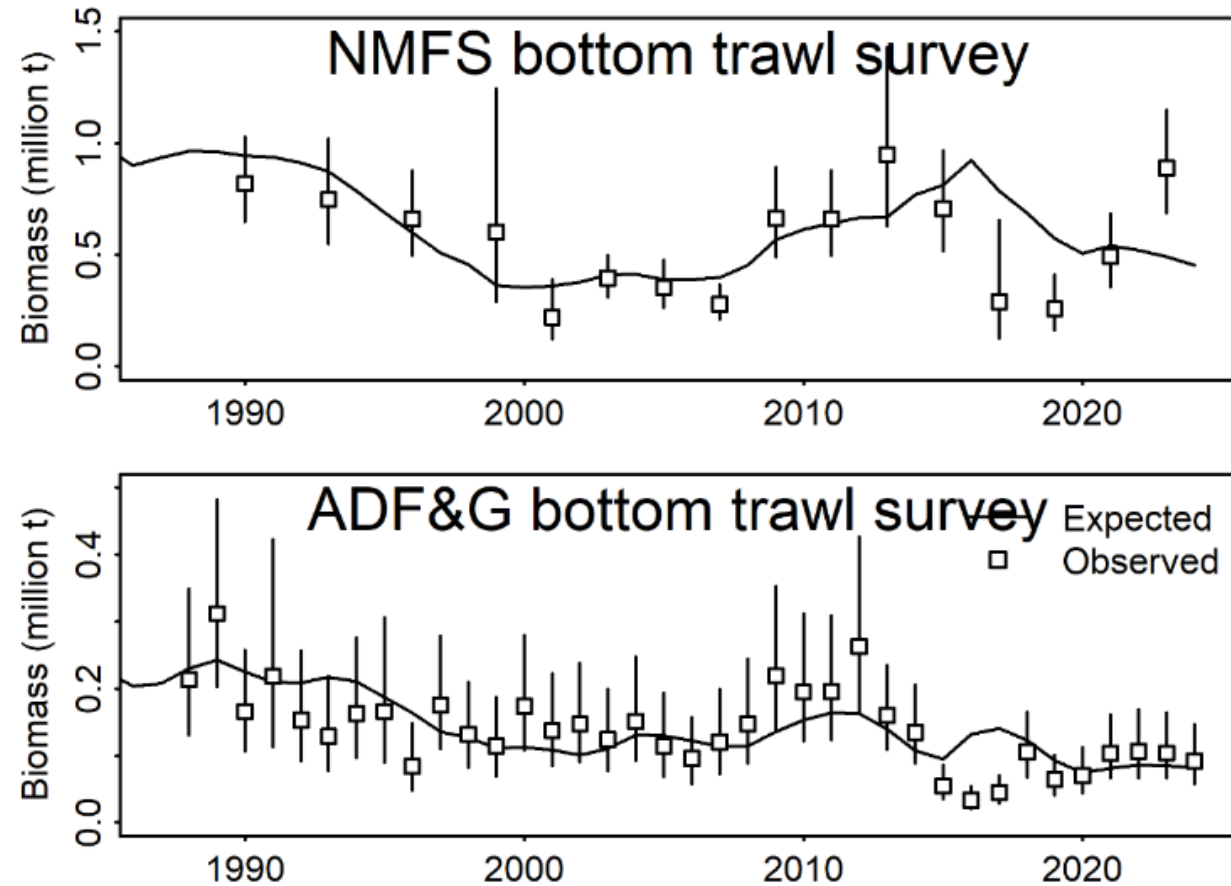
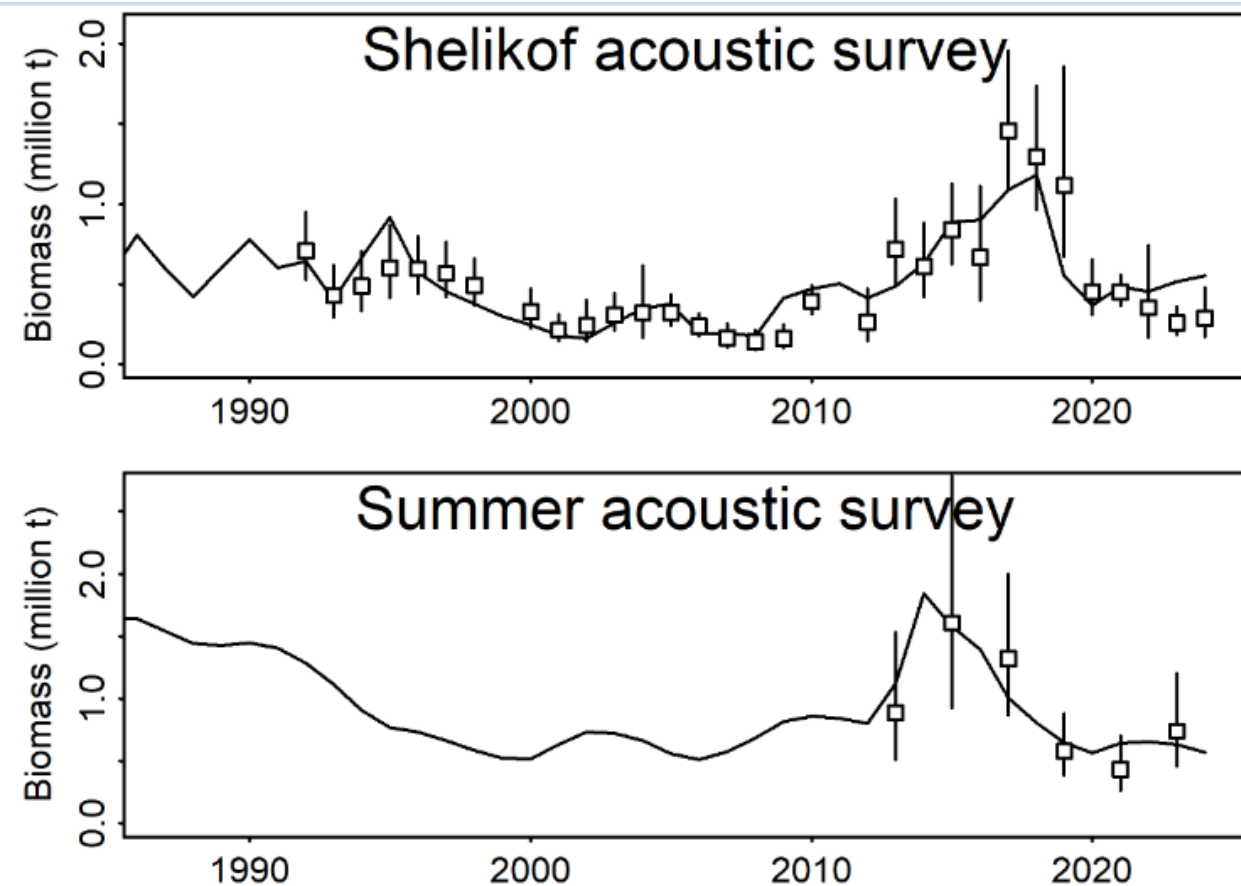
- Track 2023 accepted model (23) changes as new data are added
- Relatively stable trend and scale compared to 2023



Index fits

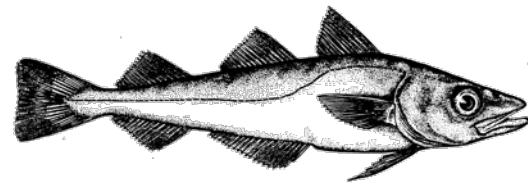


- Improved Shelikof fits (q-link); poor NMFS BT



GOA Pollock

W/C/WYK area apportionment

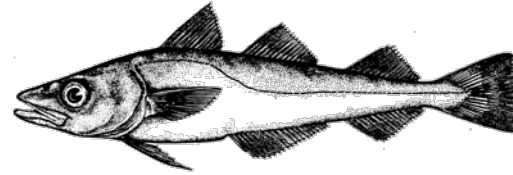


Year	Area	Season A ABC (t)	Season B ABC (t)
2025	610	5,589	31,755
	620	63,267	18,998
	630	16,751	34,854
	640	5,282	
2026	610	4,109	23,344
	620	46,510	13,967
	630	12,314	25,622
	640	3,883	

Changes from 2024 apportionment

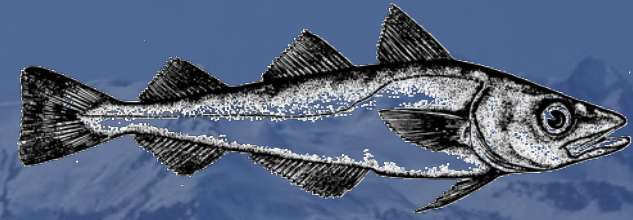
Area	ABC (t)		Percent	
	Season A	Season B	Season A	Season B
610	-1,022	-9,038	0.00	0.00
620	-23,194	-5,407	-0.02	0.00
630	-150	-9,920	0.02	0.00
640		-1,503		0.00

GOA Pollock SE Tier 5 (unchanged from 2023)



	As estimated or <i>specified last year</i> for:		As estimated or <i>recommended this year</i> for:	
Quantity/Status	2023	2024	2024	2025
Biomass (t)	50,505	50,505	43,328	43,328
F_{OFL}	0.30	0.30	0.30	0.30
$maxF_{ABC}$	0.23	0.23	0.23	0.23
F_{ABC}	0.23	0.23	0.23	0.23
OFL (t)	15,150	15,150	12,998	12,998
$maxABC$ (t)	11,363	11,363	9,749	9,749
ABC (t)	11,363	11,363	9,749	9,749
	As determined <i>last year</i> for:		As determined <i>this year</i> for:	
Status	2022	2023	2023	2024
Overfishing	No	n/a	No	n/a

GOA Pollock: Team Discussion



The Team agreed with the authors' recommended model (Model 23d) etc.

The Team recommended:

- evaluating vertical distribution of pollock in the water column due to the lack of fit to the bottom trawl survey
- looking into methods that allow inclusion of additional surveyed areas not currently included in the winter survey index estimates
- evaluating dropping 3-year-olds from the Shelikof Strait survey, which would also include reevaluation of dropped age 1 and 2 data

GOA Pacific cod

Species	2024 catch	ABC 2024	ABC 2025	Change
Pollock	124,944	200,489	190,771	down 9,718 (5%)
Pacific Cod	19,106	32,272	32,141	down 131 (0%)
Sablefish	15,686	22,596	24,038	up 1,442 (6%)
Flatfish	4,304	124,494	126,380	up 1,886 (2%)
Arrowtooth flounder	16,866	119,249	119,547	up 298 (0%)
Rockfish	29,727	59,527	57,440	down 2,087 (4%)
Atka mackerel	380	4,700	4,700	same (0%)
Skates	2,381	6,036	6,036	same (0%)
Sharks	1,288	4,891	4,891	same (0%)
Octopus	197	980	980	same (0%)
Total	214,879	575,234	566,924	down 8,310 (1%)

GOA Pacific cod Ecosystem and Socioeconomic Profile (ESP)



Ecosystem (ABC Information):

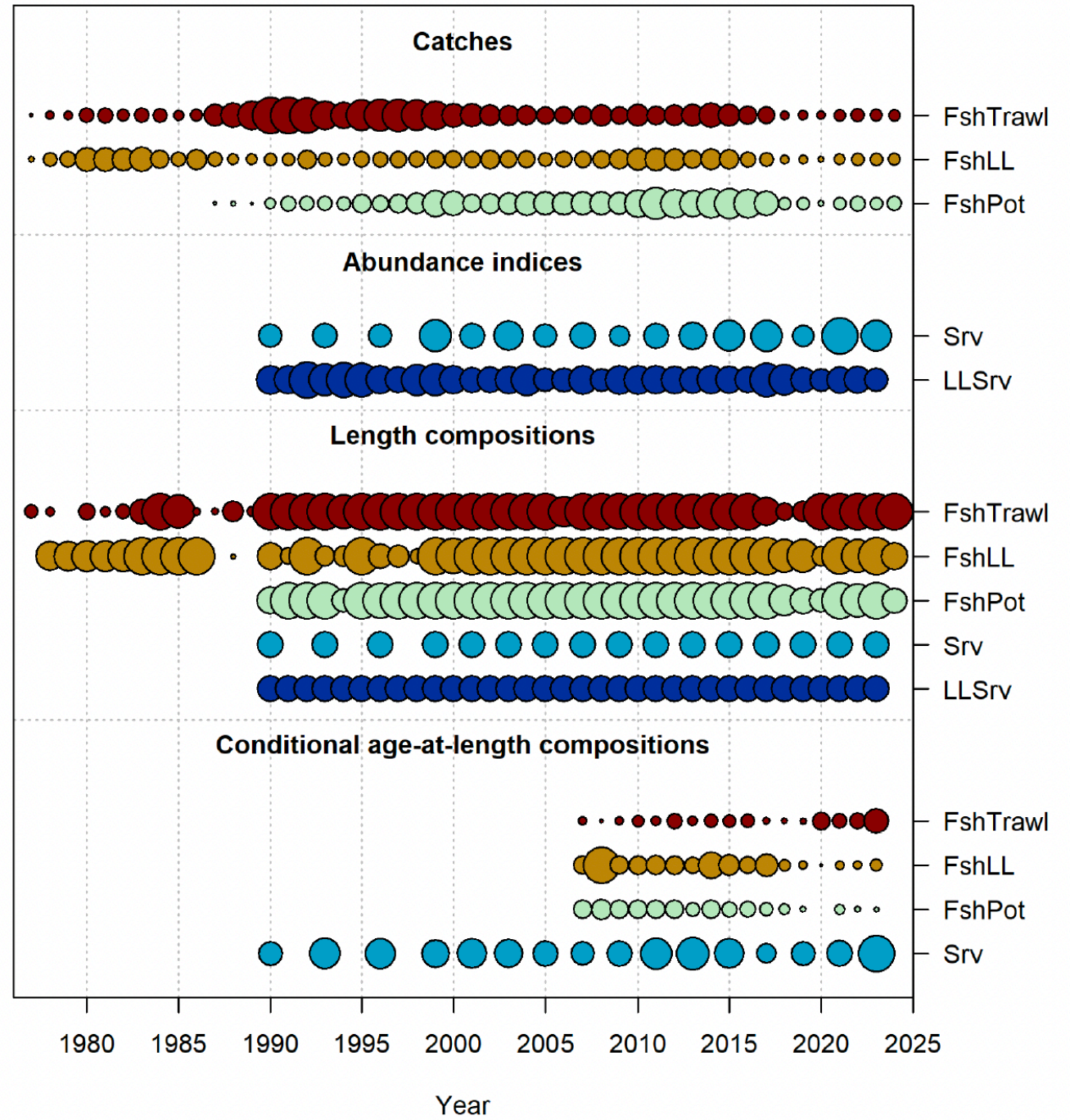
- Overall above average (YOY ↑, juv ↔, adult ↔)
- No heatwave, below average habitat suitability, reduced energy and transport
- Sufficient prey, nearshore YOY just below average
- Age-1 natural mortality consistently above the operational model
- Below average bioenergetic demand, low biomass consumed

Socioeconomic (TAC Information):

- Ex-vessel value low for five of last six years
- Price decreased and below avg
- Revenue/unit effort < from historic high to below avg



GOA Pacific cod



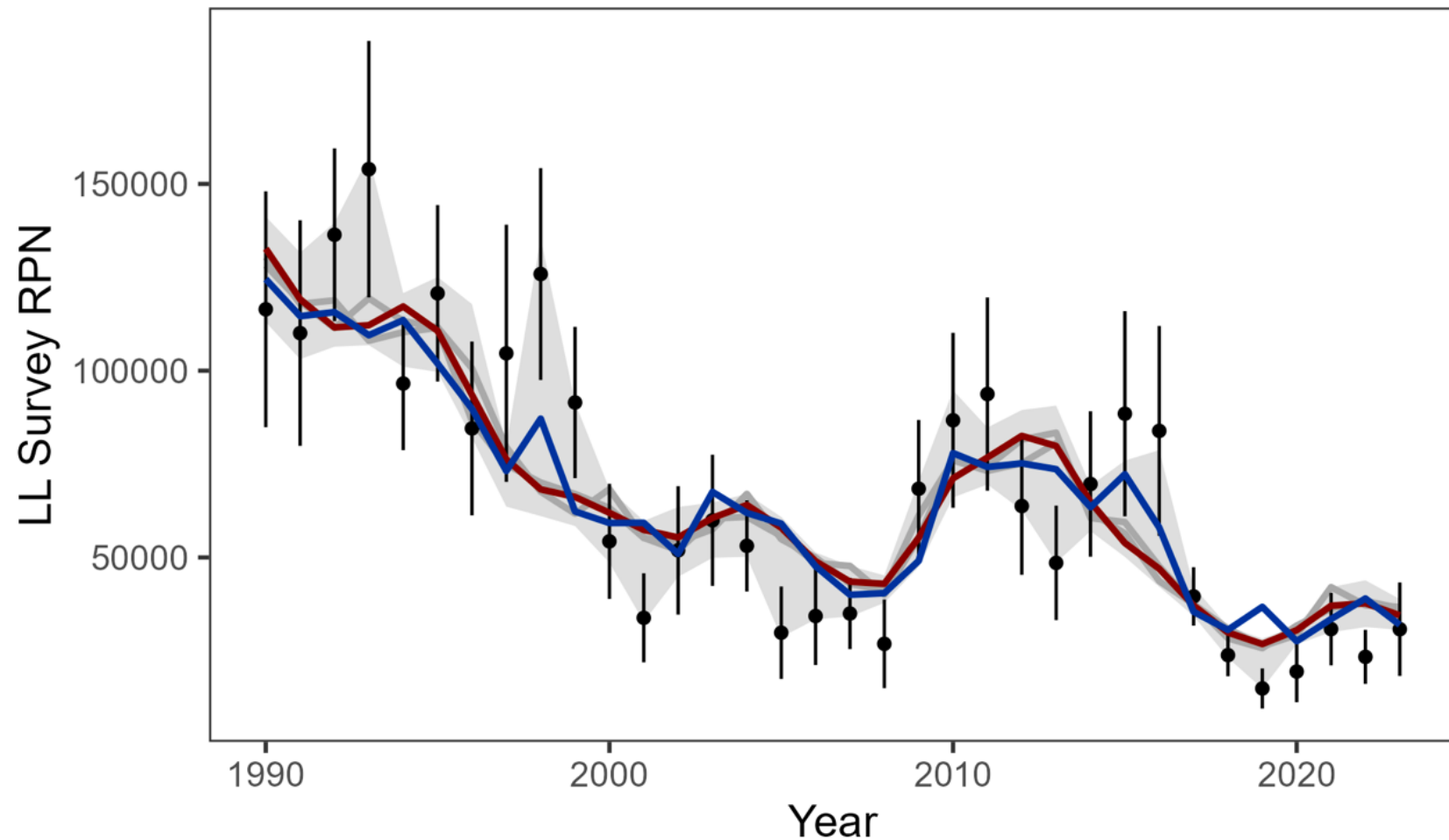
Thanks to Pete Hulson

GOA Pacific cod

- Environmental with AFSC longline survey catchability included



Catchability — No covariate — Random — Recommended

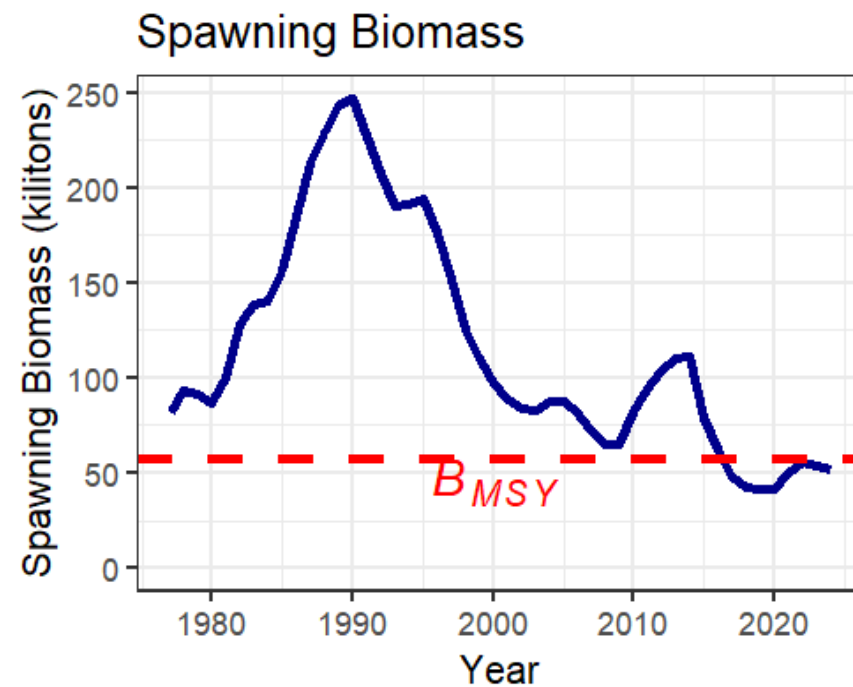
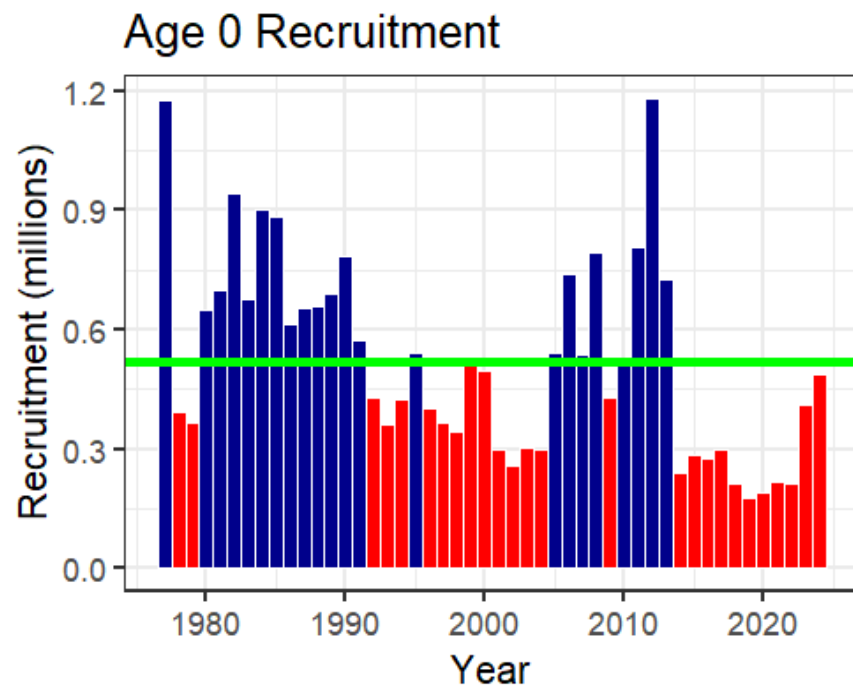
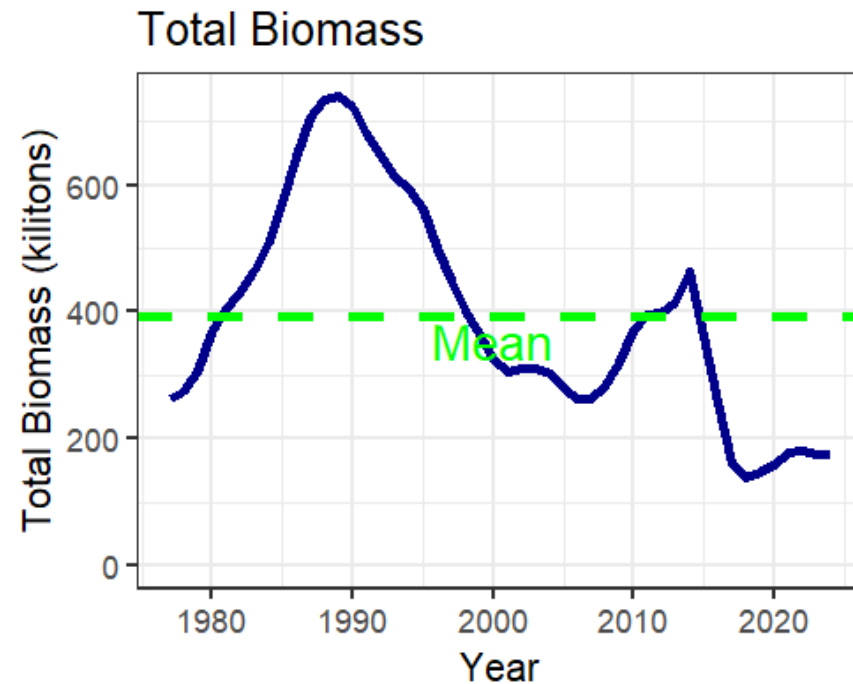
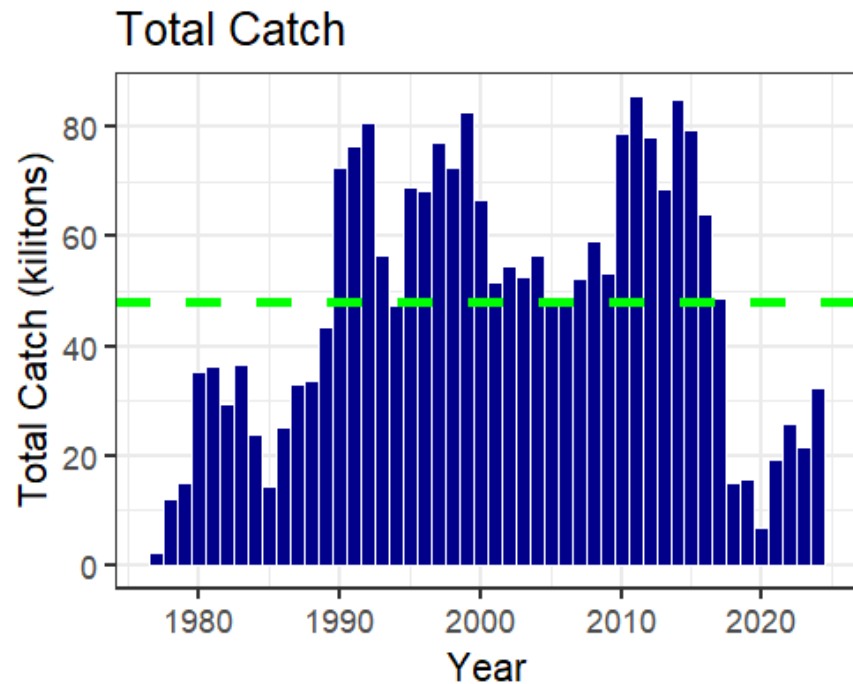


GOA Pacific cod: Team Discussion

- The Team agreed with the authors' recommended model (Model 24.0) and the authors' recommended ABCs and OFLs, with no reduction from maxABC.
- The Team recommended: continued work on the modeling of size and weight at age, potentially including:
 - whether the conditional age-at-length data needs to be corrected for length-stratified survey sampling;
 - evaluating time-varying growth;
 - using age compositions rather than conditional length at age; and
 - using empirical estimates of length and weight at age.



GOA Pacific cod

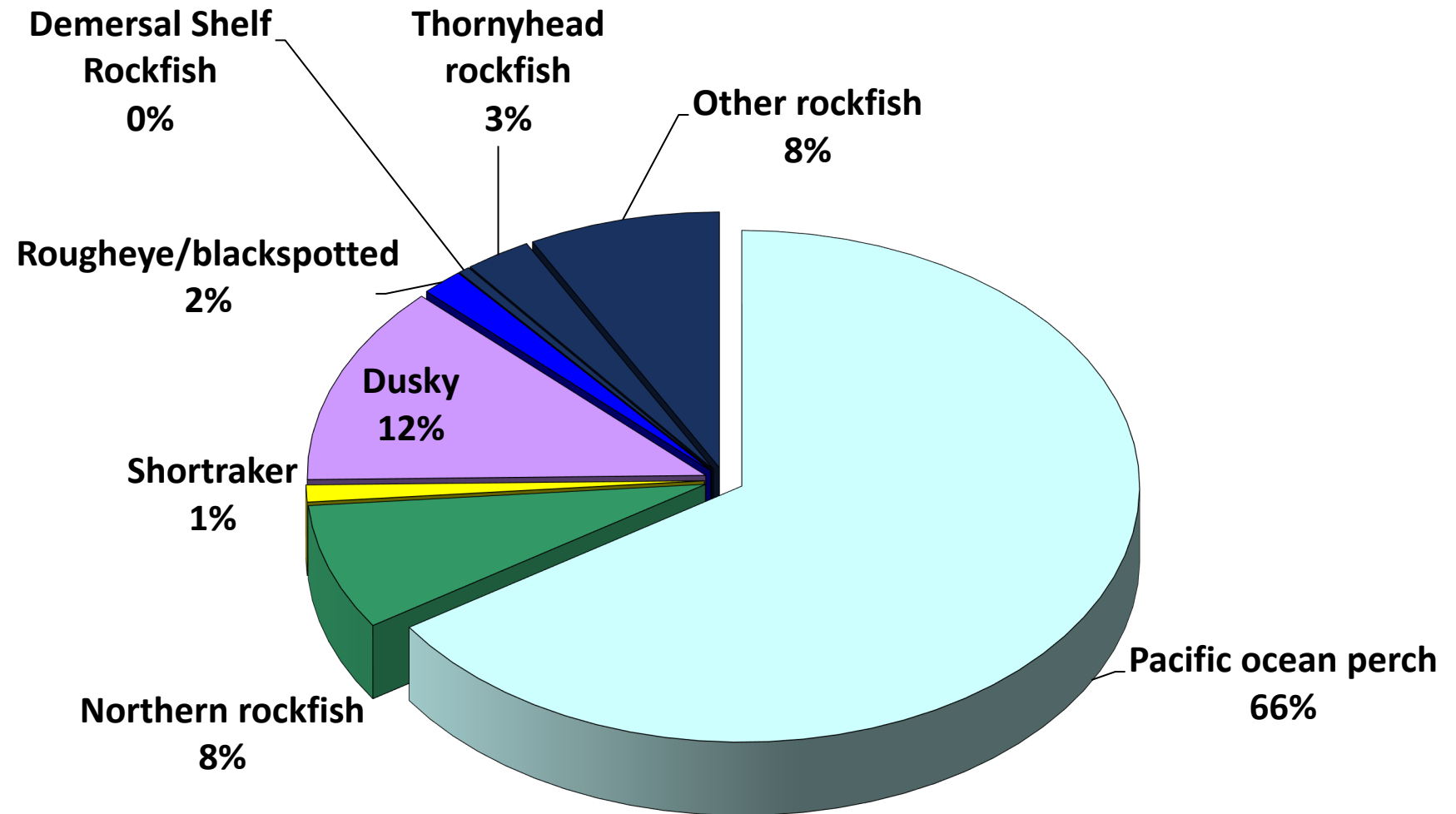


GOA rockfish

Species	2024 catch	ABC 2024	ABC 2025	Change
Pollock	124,944	200,489	190,771	down 9,718 (5%)
Pacific Cod	19,106	32,272	32,141	down 131 (0%)
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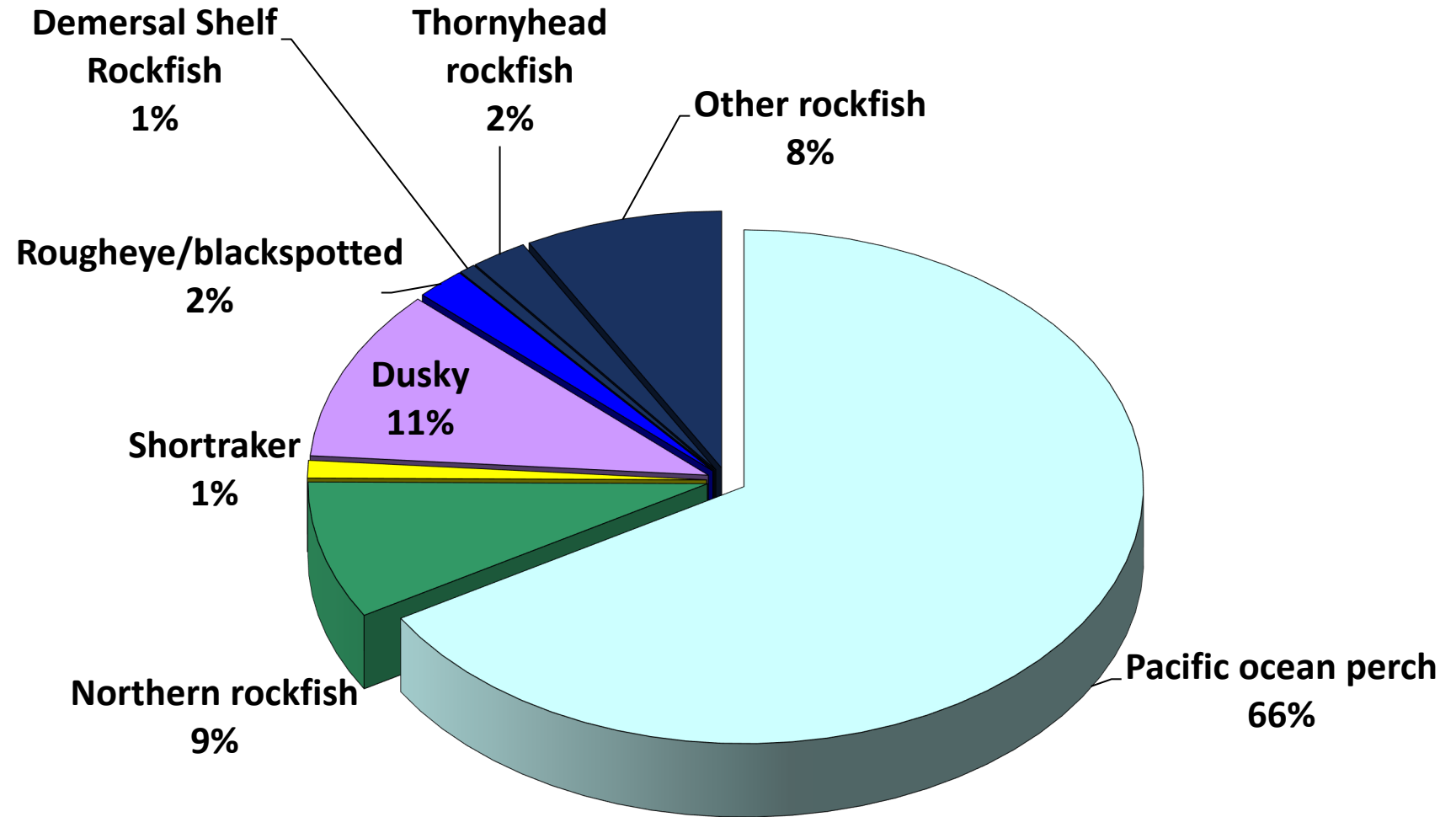
Rockfish 2024 ABC's

60,453 t total



Rockfish 2025 ABC's

58,635 t total

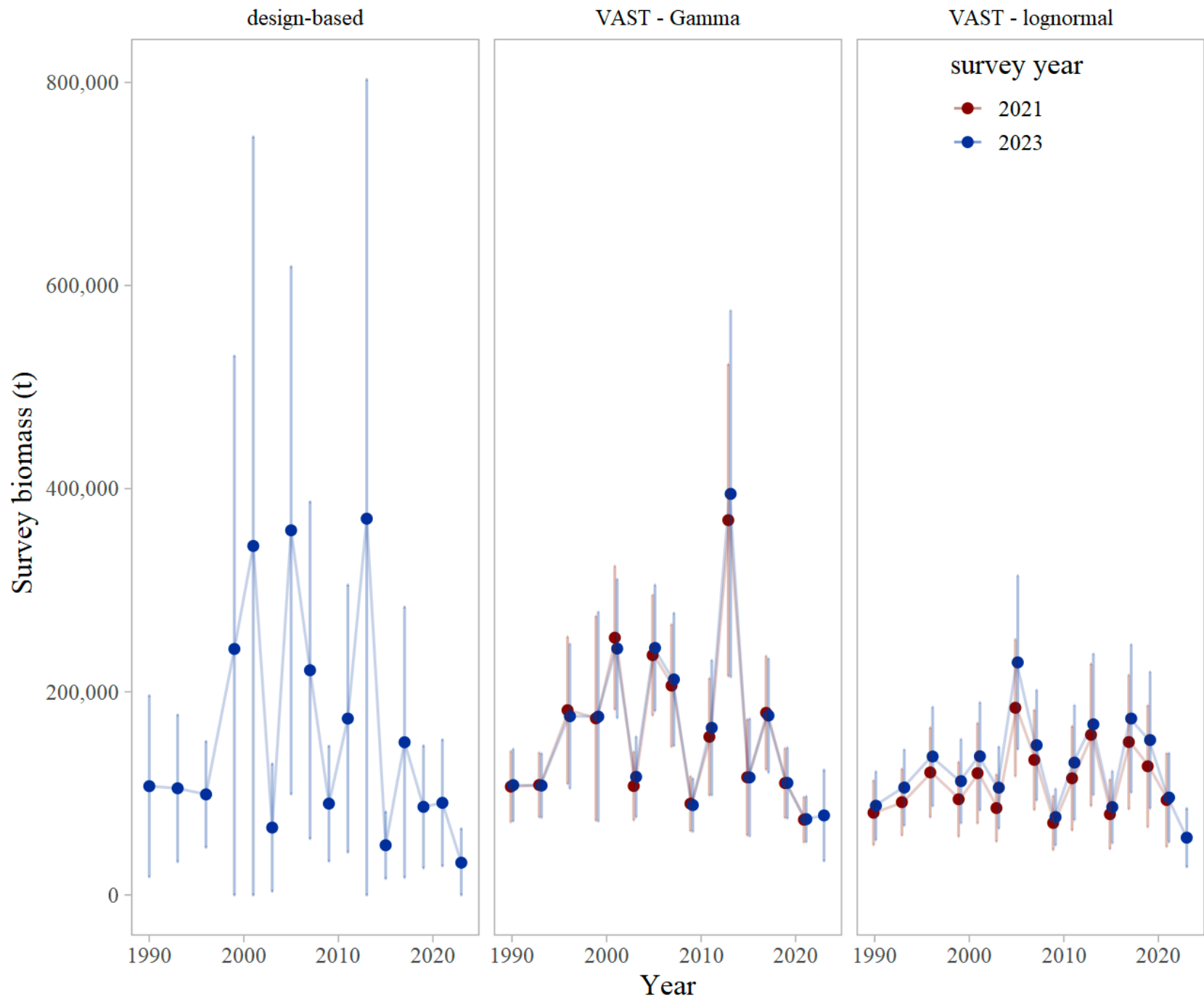


Northern rockfish

Species	ABC 2024	ABC 2025	Change
POP	39,719	38,962	down 757 (2%)
Northern rockfish	4,815	5,076	up 261 (5%)
Shortraker Rockfish	647	647	same (0%)
Dusky	7,624	6,338	down 1,286 (17%)
Rougheye and Blackspotted Rockfish	1,037	1,180	up 143 (14%)
Demersal shelf rockfish (W/C/WYAK)	n/a	271	-
Demersal shelf rockfish (SEO)	283	394	up 111 (39%)
Thornyhead	1,628	1,338	down 290 (18%)
Other rock	3,774	3,505	down 269 (7%)
Sub Total	59,527	57,711	down 1,816 (3%)

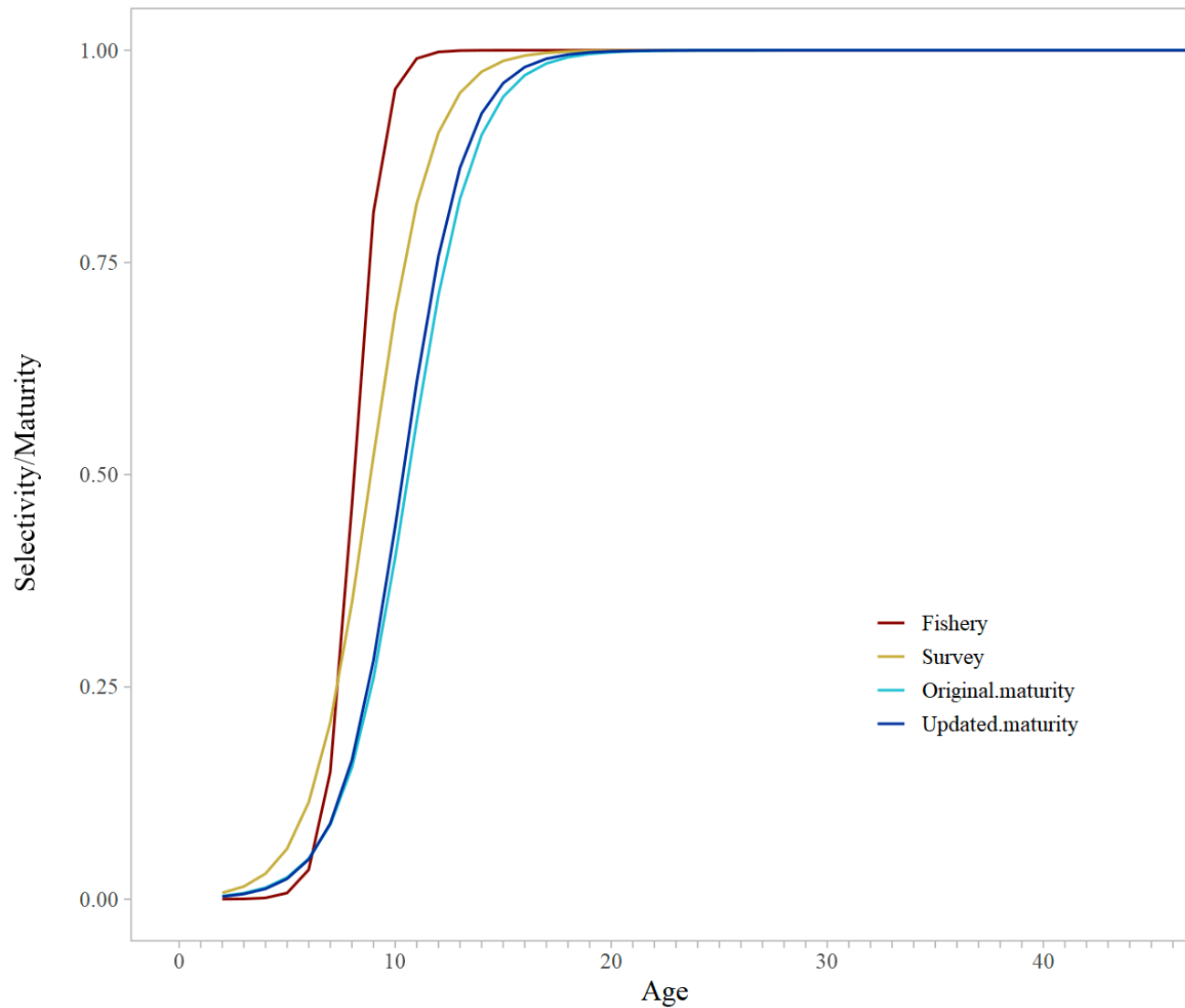


Changed from
design-based to
VAST-based in 2018



Thanks to Ben Williams

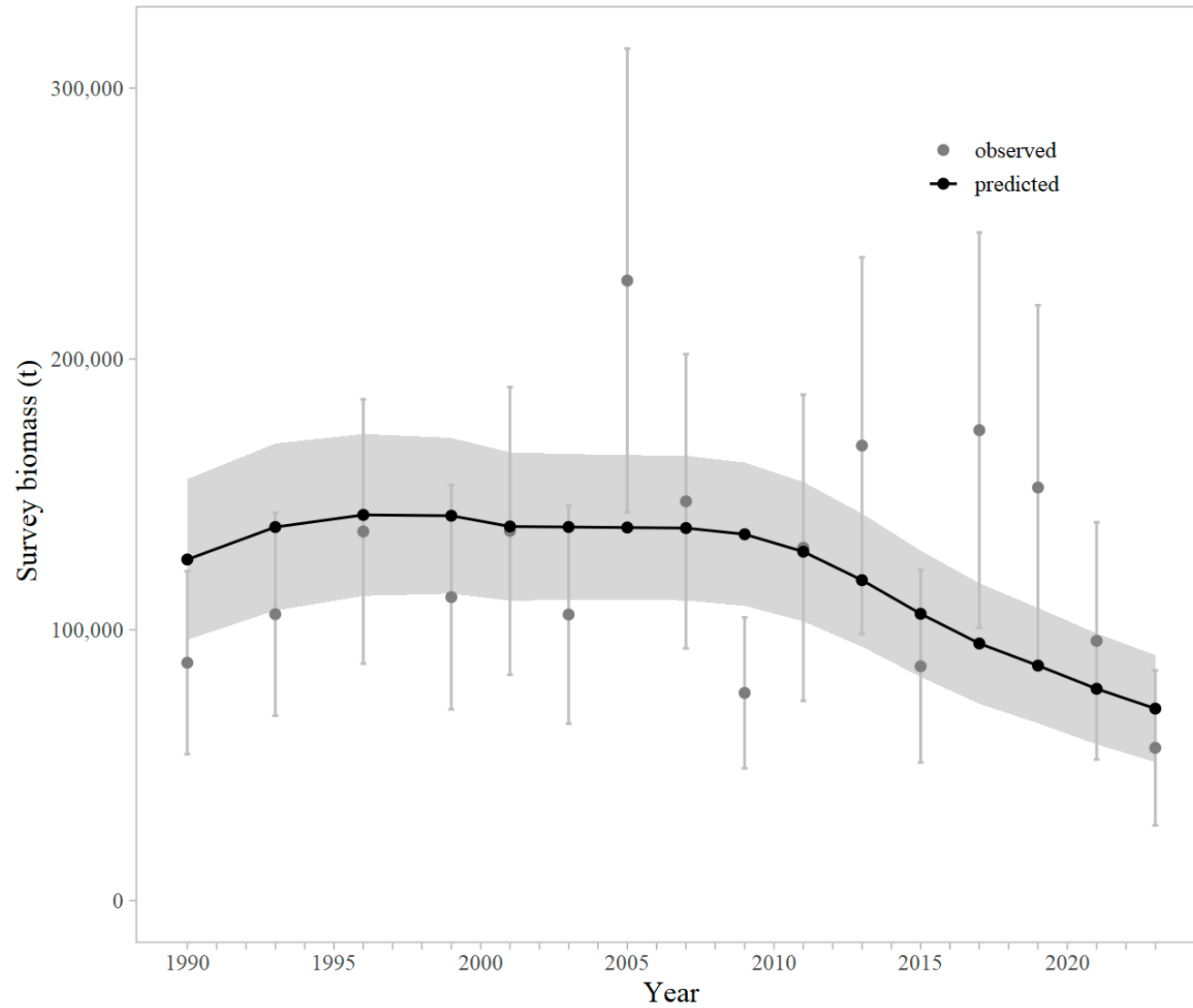
Northern rockfish: Maturity



Northern rockfish: Models

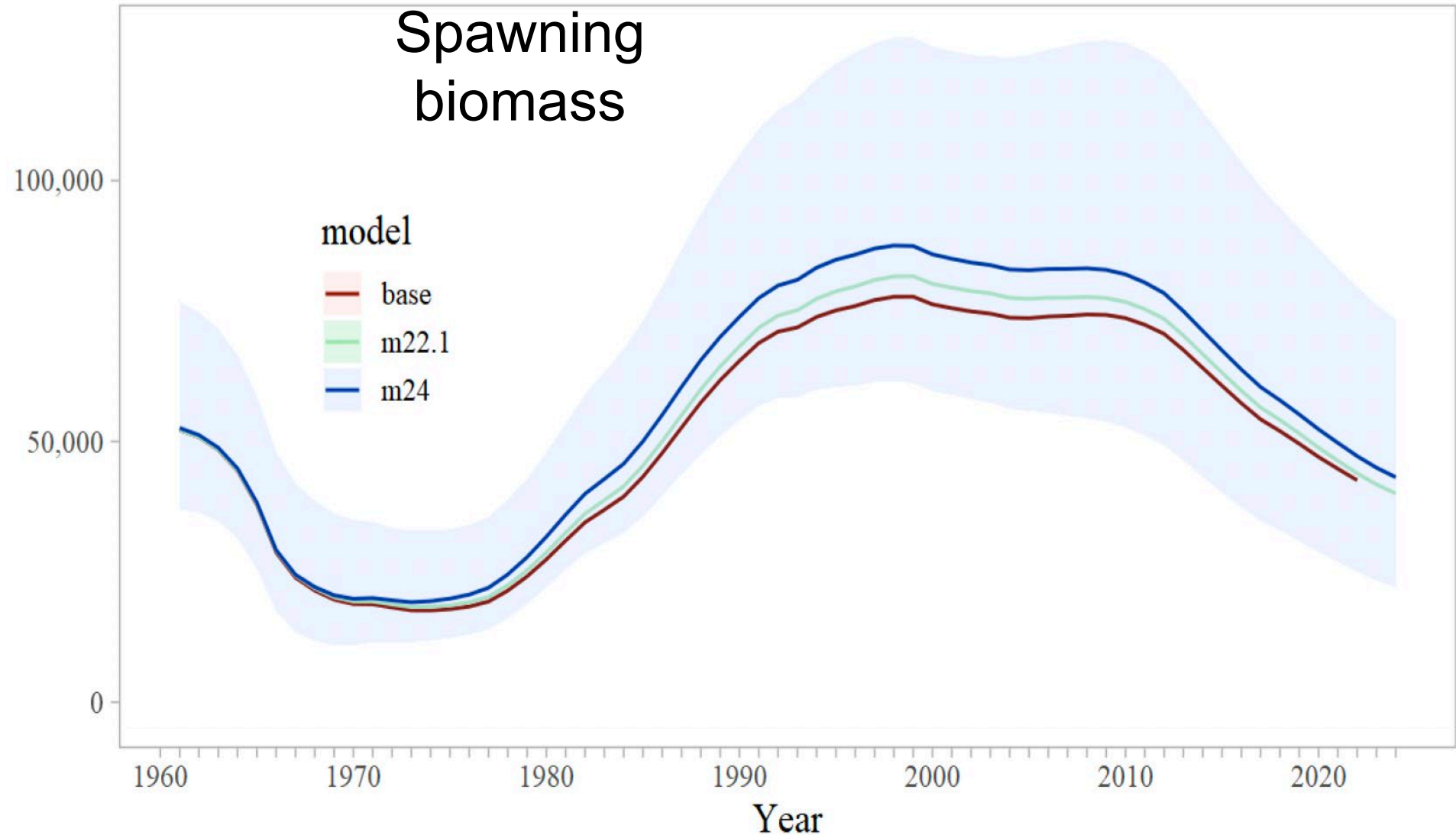
Model	Description
base	2022 model (m22.1) – ADMB/RTMB
m22.1	base model w/data updated through 2024 - RTMB
M22.1a	m22.1 change to lognormal survey NLL
m22.1b	m22.1a change survey age comp ISS
m22.1c	m22.1b change to lognormal VAST
m24	m22.1c w/additional maturity data

Northern rockfish: Fit to survey series



Northern rockfish: Team discussion

- The Team agreed change from ADMB to RTMB and ABCs and OFLs
- No reduction from maxABC.

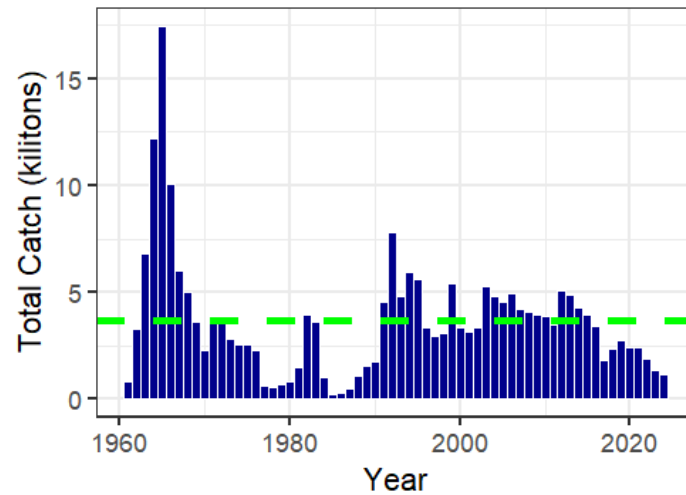


Northern rockfish apportionment

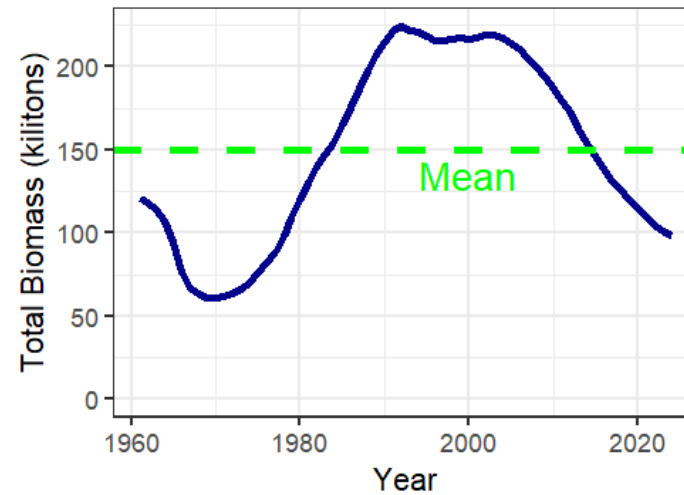
- Proposed alternative apportionment method
 - VAST approach (same as for model)
 - Large changes to apportionment, very different from expectations
- Team ultimately **recommended status quo approach for 2025.**
 - Noted that more research needed
- Also applies to Dusky rockfish apportionment

Northern rockfish

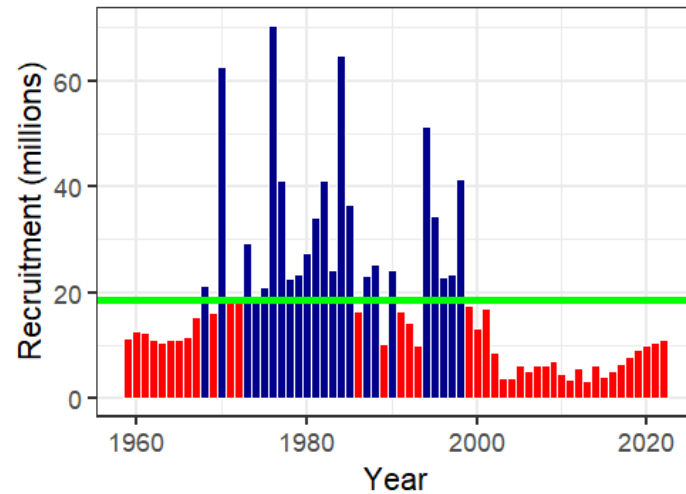
Total Catch



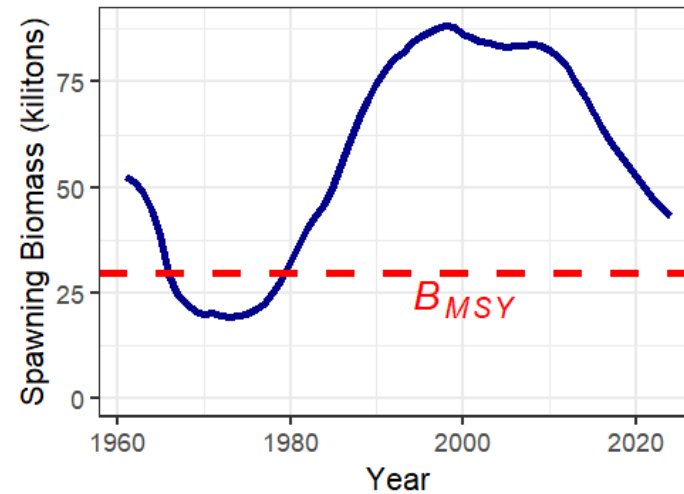
Total Biomass



Age 2 Recruitment



Spawning Biomass



Dusky Rockfish

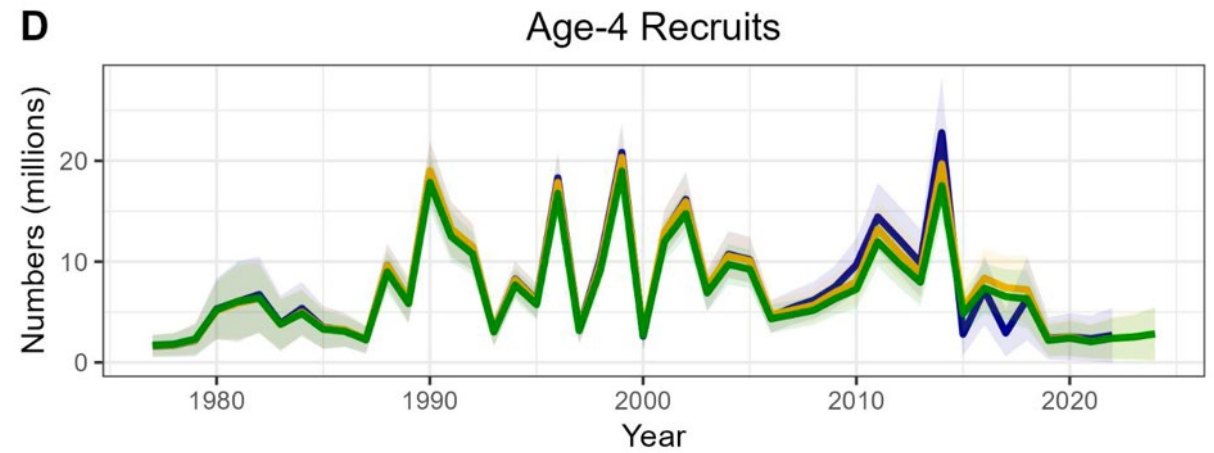
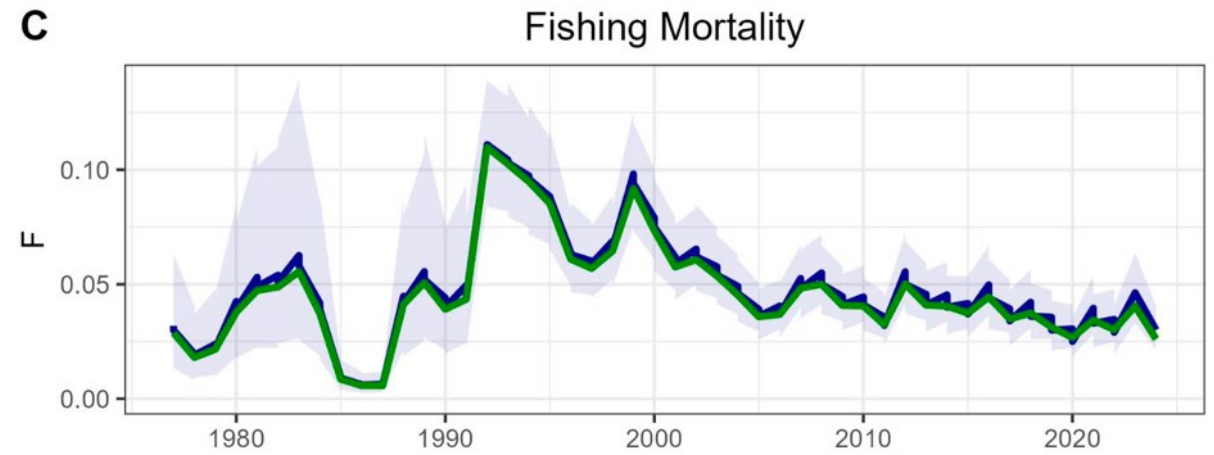
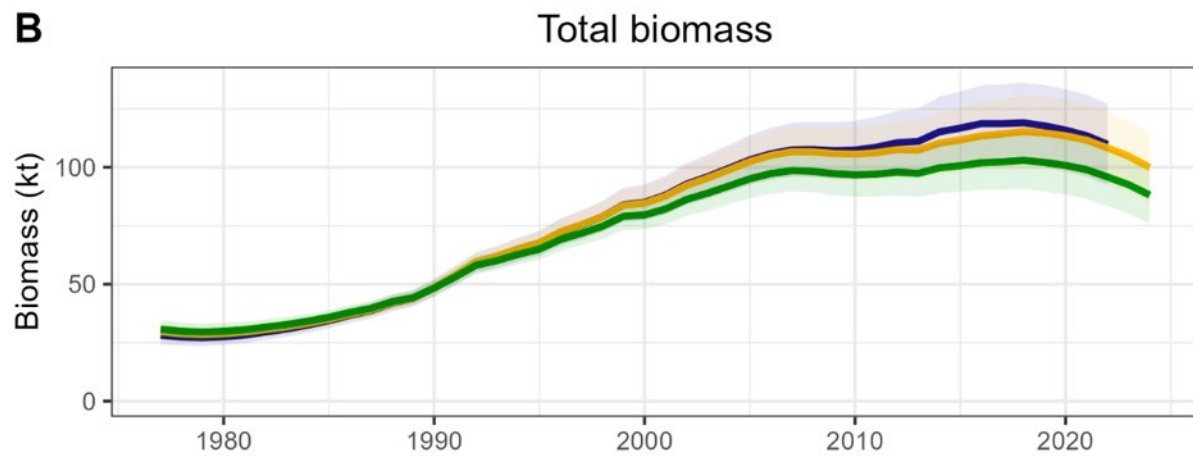
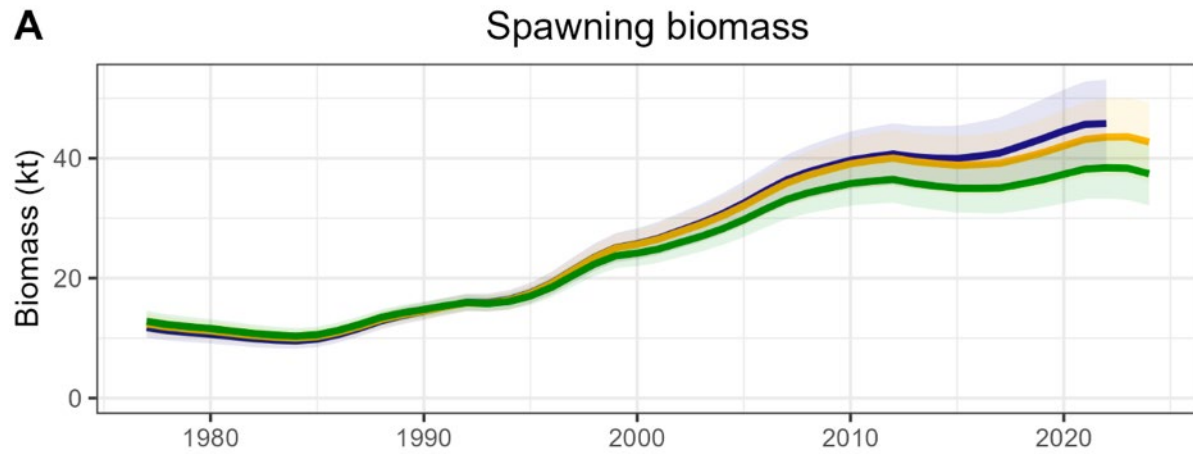
Species	ABC 2024	ABC 2025	Change
POP	39,719	38,962	down 757 (2%)
Northern rockfish	4,815	5,076	up 261 (5%)
Shortraker Rockfish	647	647	same (0%)
Dusky	7,624	6,338	down 1,286 (17%)
Rougheye and Blackspotted Rockfish	1,037	1,180	up 143 (14%)
Demersal shelf rockfish (W/C/WYAK)	n/a	271	-
Demersal shelf rockfish (SEO)	283	394	up 111 (39%)
Thornyhead	1,628	1,338	down 290 (18%)
Other rock	3,774	3,505	down 269 (7%)
Sub Total	59,527	57,711	down 1,816 (3%)

GOA Dusky rockfish

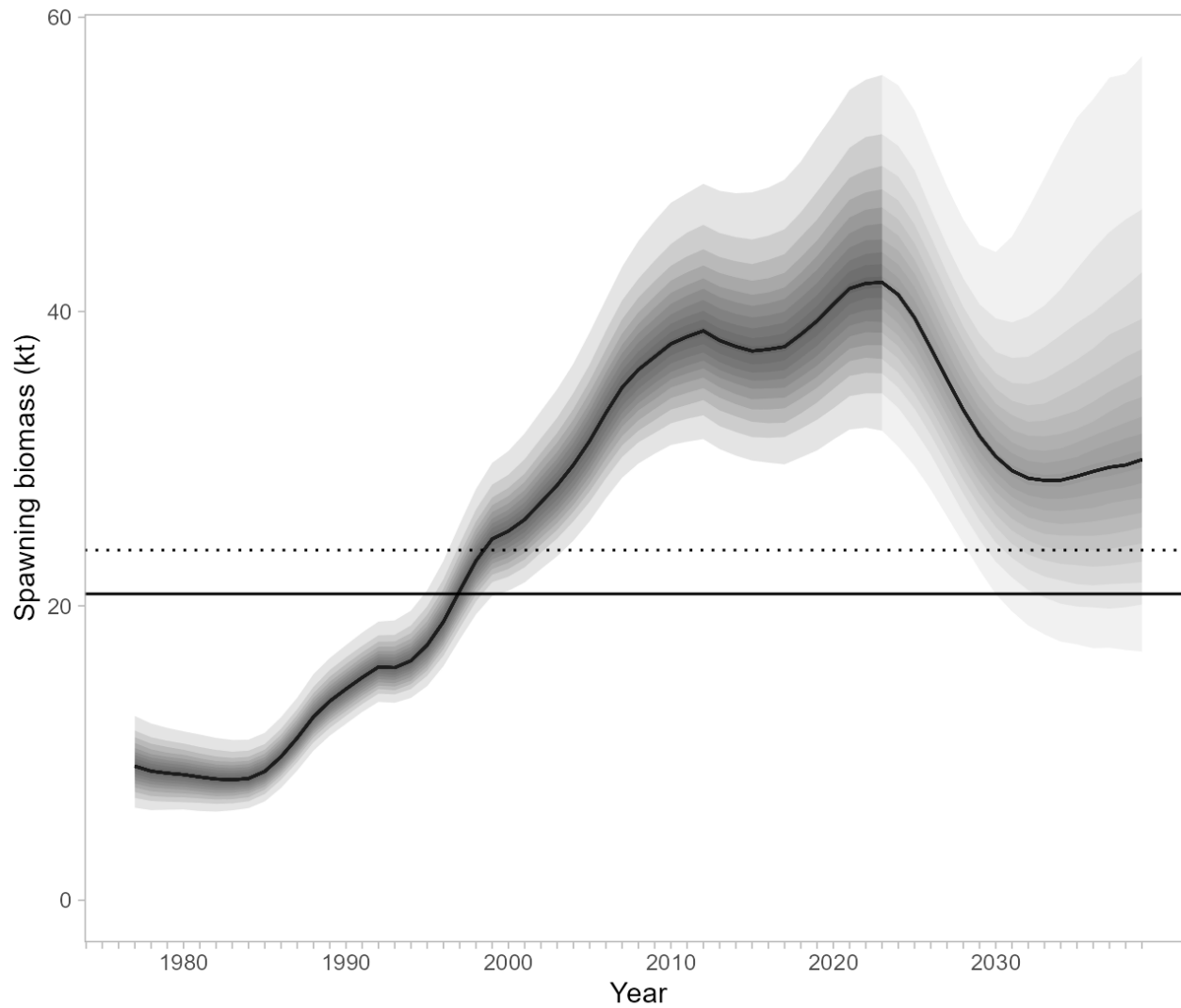
Source	Data	Years
NMFS Groundfish survey	Survey biomass	1990-1999 (triennial), 2001-2021 (biennial), 2023*
	Age composition	1990-1999 (triennial), 2003-2021 (biennial), 2023*
U.S. trawl fishery	Catch	1977-2022, 2023-2024*
	Age composition	1998-2002, 2004-2006, 2008-2020 (biennial), 2022*
	Length composition	1991-1997, 2003, 2007-2021 (biennial), 2023*

Thanks to Kristen Omori

Dusky rockfish



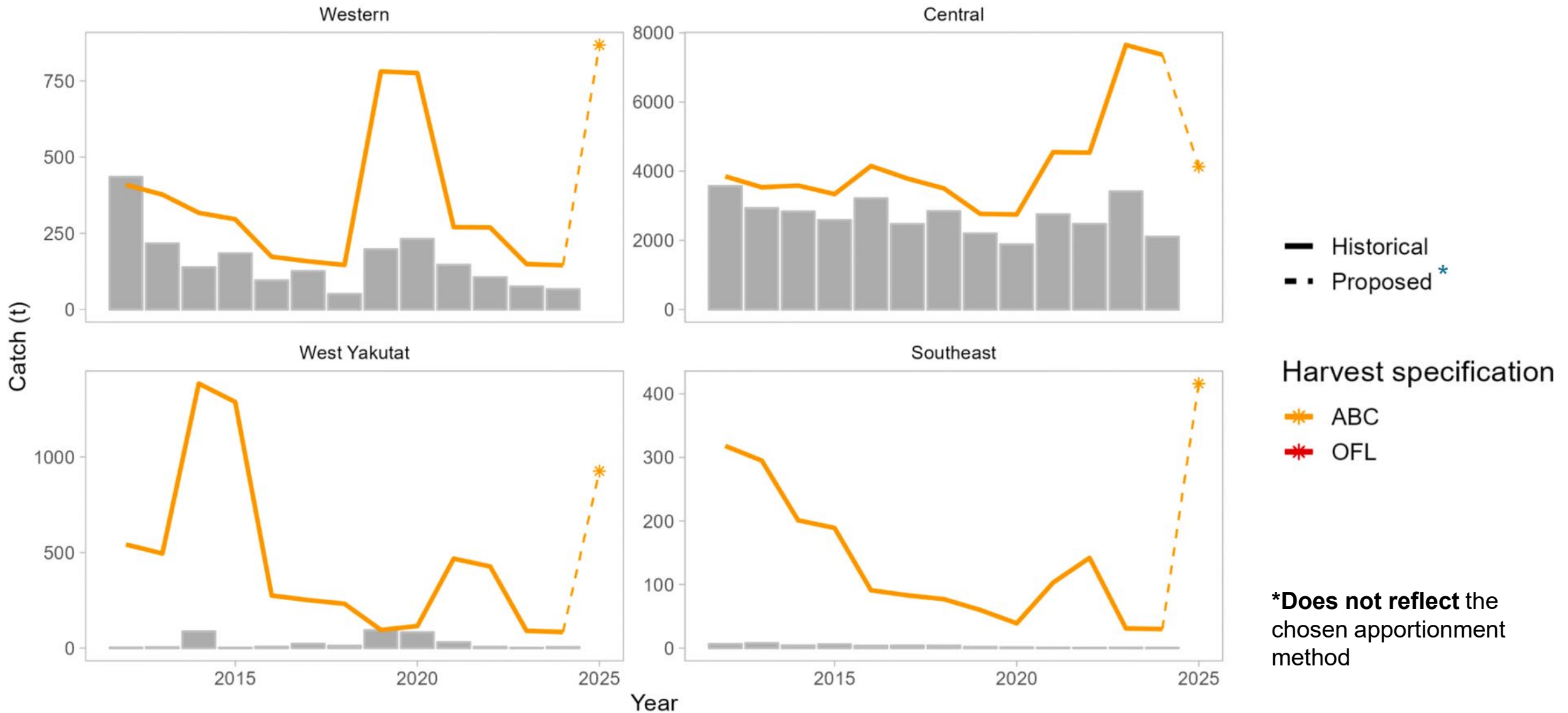
GOA Dusky rockfish



GOA Dusky rockfish

Assessment-related considerations	Population dynamics considerations	Environmental/ ecosystem considerations	Fishery-informed stock considerations
Level 2: Increased concern	Level 1: Normal	Level 1: Normal	Level 1: Normal
<ul style="list-style-type: none"> • Decent data fits (except length comps) • High recruitment uncertainty • Sensitive to the scaling of the VAST index • Bimodal pattern in retrospective analysis 	<ul style="list-style-type: none"> • No dramatic changes from last assessment • Unknown levels of skip spawning 	<ul style="list-style-type: none"> • No concerning conditions 	<ul style="list-style-type: none"> • Catch in 2024 is low from fishery not targeting rockfish (not biological reasons) • ~ 50% of ABC/ TAC caught

GOA Dusky rockfish



— Historical
 - - - Proposed *

Harvest specification
 * ABC
 * OFL

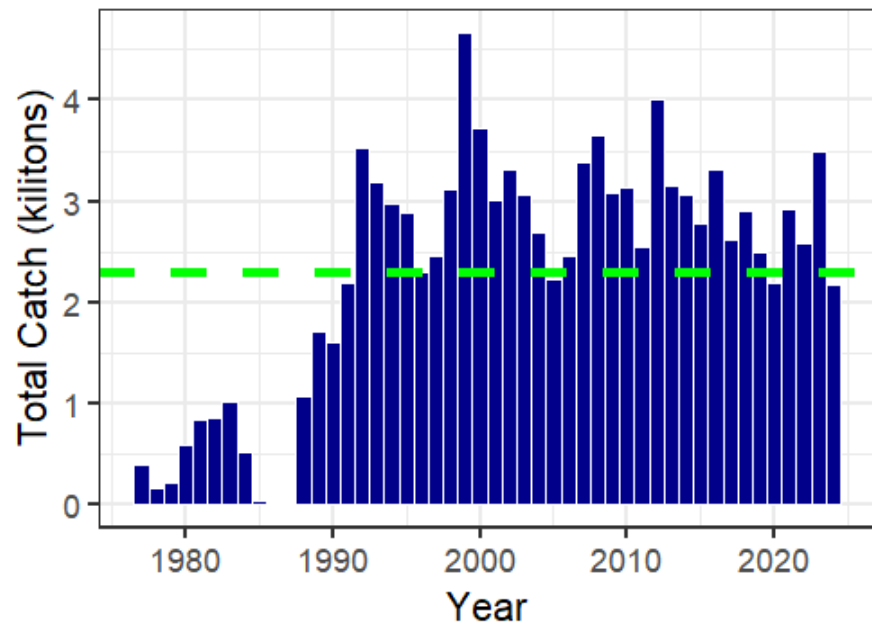
*Does not reflect the chosen apportionment method

GOA Dusky rockfish apportionment

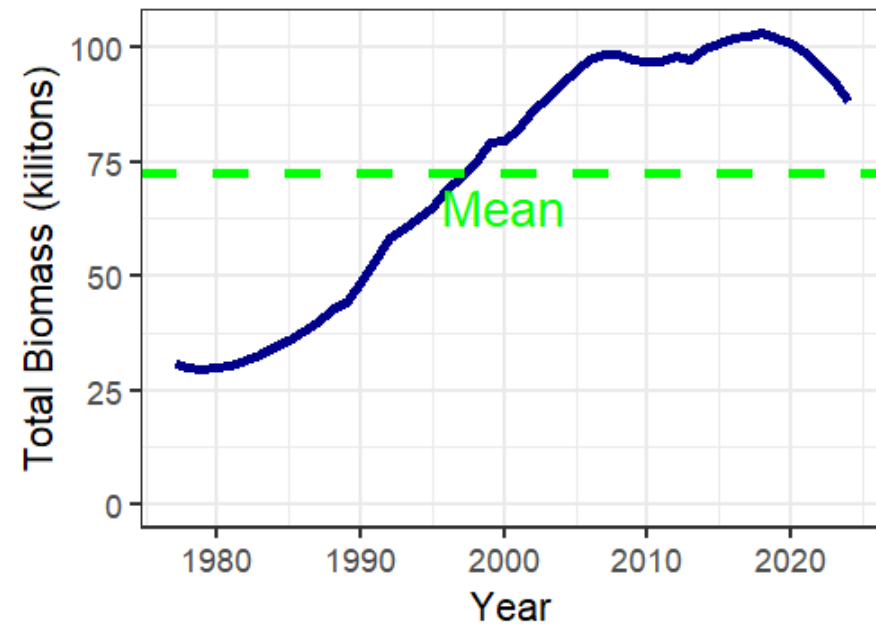
- Proposed alternative apportionment method
 - VAST approach (same as for model)
 - Large changes to apportionment, very different from expectations
- Team ultimately **recommended status quo approach for 2025.**
 - Noted that more research needed
- Also applies to Northern rockfish apportionment

Dusky rockfish

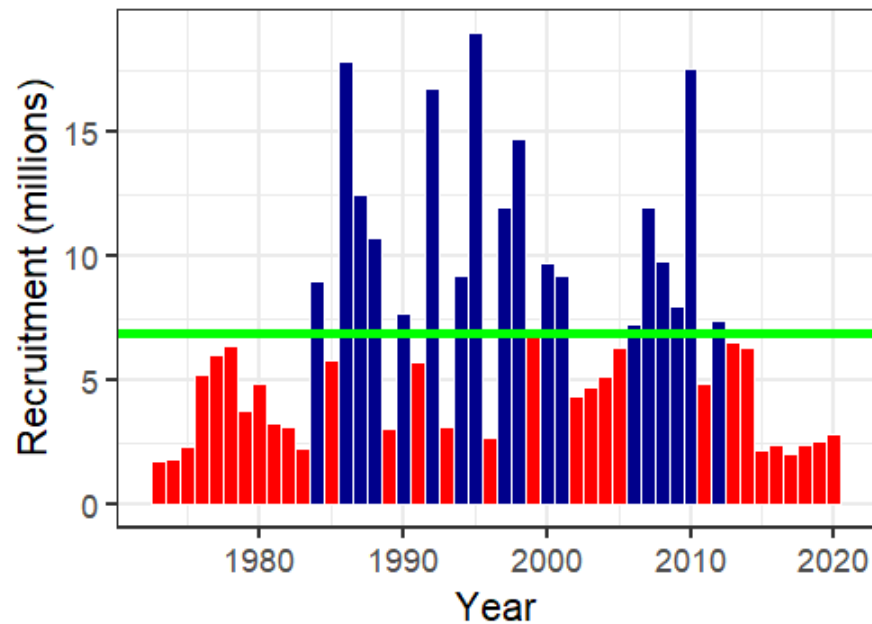
Total Catch



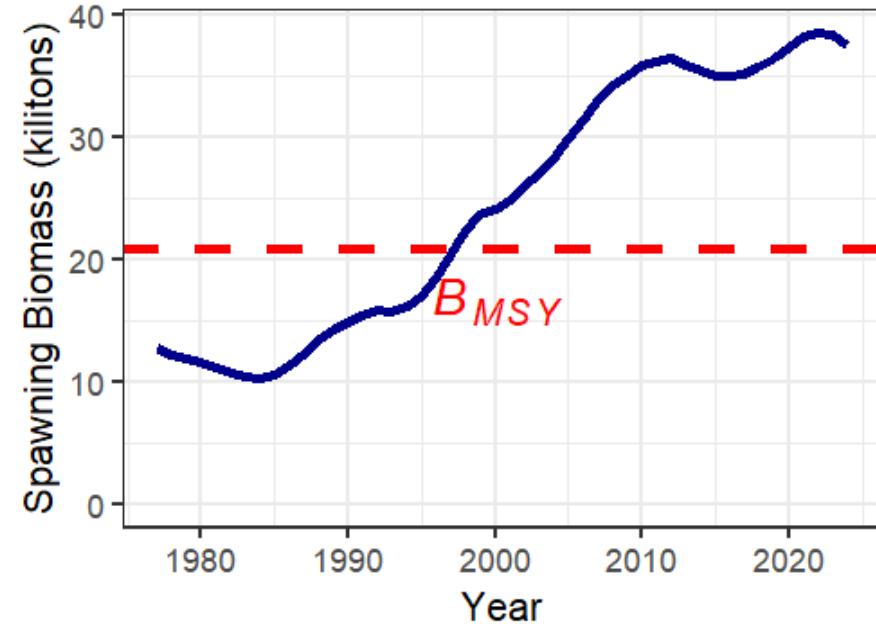
Total Biomass



Age 4 Recruitment



Spawning Biomass



Other Rockfish

Species	ABC 2024	ABC 2025	Change
POP	39,719	38,962	down 757 (2%)
Northern rockfish	4,815	5,076	up 261 (5%)
Shortraker Rockfish	647	647	same (0%)
Dusky	7,624	6,338	down 1,286 (17%)
Rougheye and Blackspotted Rockfish	1,037	1,180	up 143 (14%)
Demersal shelf rockfish (W/C/WYAK)	n/a	271	-
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Other rock	3,774	3,505	down 269 (7%)
Sub Total	59,527	57,711	down 1,816 (3%)

GOA Other rockfish

“The Council is considering a motion to change the spatial management of demersal shelf rockfish (DSR), by moving DSR species out of the other rockfish category to a GOA wide assessment. The SSC supports making this change to the DSR complex in the 2024 stock assessment for implementation for the 2025 fisheries and looks forward to examining the area apportionment at that time.” (SSC, October 2023)

- Was therefore an update assessment to reflect the species membership change in the stock complex (i.e., removal of DSR species from Other Rockfish)

	Common name	Tier
Other Slope	sharpchin rockfish	4
	harlequin rockfish	5
	redbanded rockfish	5
	redstripe rockfish	5
	silvergray rockfish	5
	aurora rockfish	6
	blackgill rockfish	6
	bocaccio	6
	Chilipepper	6
	darkblotched rockfish	6
	greenstriped rockfish	6
	pygmy rockfish	6
	shortbelly rockfish	6
	splitnose rockfish	6
	stripetail rockfish	6
	vermilion rockfish	6
	widow rockfish	6
	yellowmouth rockfish	6
	yellowtail rockfish	6
	northern rockfish ^a	n/a
DSR	canary rockfish ^a	6
	China rockfish ^a	6
	rockfish^a	6
	quillback r	6
	rockfish^a	6
	tiger rockfish^a	6
	yelloweye rockfish ^a	6

GOA Other rockfish

No new model runs (no new survey data)

Tiers	Data Input	Assessment method	OFL calculations	Change?
Tier 4: 1 species	GOA bottom trawl survey	REMA	Biomass x $F_{35\%}$	NO
Tier 5: 4 species	GOA bottom trawl survey	REMA	Biomass x \overline{Wt}_M	NO
Tier 6: 14 species	Fishery catch	Catch history	Maximum catch	YES

Thanks to Kristen Omori

GOA Other rockfish

Complex	Western GOA/ Central GOA/ West Yakutat	Southeast Outside	Total
Area ABC (t)	1,083	2,421	3,504
OFL (t)			4,618

ABC and OFL recommendations for the full Other Rockfish complex for 2025–2026.

Quantity All Other Rockfish Combined	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2024	2025	2025	2026
Tier	4/5/6	4/5/6	4/5/6	4/5/6
OFL (t)	4,977	4,977	4,618	4,618
<u>maxABC</u> (t)	3,774 ¹	3,774 ¹	3,504	3,504
ABC (t)	3,774 ¹	3,774 ¹	3,504	3,504
Status	As determined <i>last year for:</i>		As determined <i>this year for:</i>	
	2023	2024	2024	2025
Overfishing		n/a		n/a

¹ABCs include the transferred northern rockfish ABC to the Other Rockfish ABC.

Demersal shelf rockfish

Species	ABC 2024	ABC 2025	Change
POP	39,719	38,962	down 757 (2%)
Northern rockfish	4,815	5,076	up 261 (5%)
Shortraker Rockfish	647	647	same (0%)
Dusky	7,624	6,338	down 1,286 (17%)
Rougheye and Blackspotted Rockfish	1,037	1,180	up 143 (14%)
Demersal shelf rockfish (W/C/WYAK)	n/a	271	-
Demersal shelf rockfish (SEO)	283	394	up 111 (39%)
Thornyhead	1,628	1,338	down 290 (18%)
Other rock	3,774	3,505	down 269 (7%)
Sub Total	59,527	57,711	down 1,816 (3%)

Demersal shelf rockfish (DSR)



7 DSR subgroup species from OROX → W/C/WYAK DSR

- Separate OFLs, separate ABCs
- First year with a single GOA wide DSR assessment (SAFE chapter)

SEO: Tier 5 (yelloweye) + Tier 6 (quillback, copper, rosethorn, canary, China, and tiger rockfish)

W/C/WYAK: Tier 6 (yelloweye, quillback, copper, rosethorn, canary, China, and tiger rockfish)

Species	Area	2024			Catch 11/1/2024	SSC Recommended 2025	
		OFL	ABC	TAC		OFL	ABC
Demersal shelf rockfish	W/C/WYAK	n/a	n/a	n/a	n/a	361	271
	SEO	376	283	283	153	524	394

Demersal shelf rockfish (DSR)



Tier 5 (Yelloweye) Model 22.2

- Catch data
- Updated ADFG ROV survey data for 2022 and 2023
- IPHC CPUE index included as a secondary index of abundance
- Both surveys have equal weights
- No ROV surveys were conducted in 2024 nor currently planned for future years.

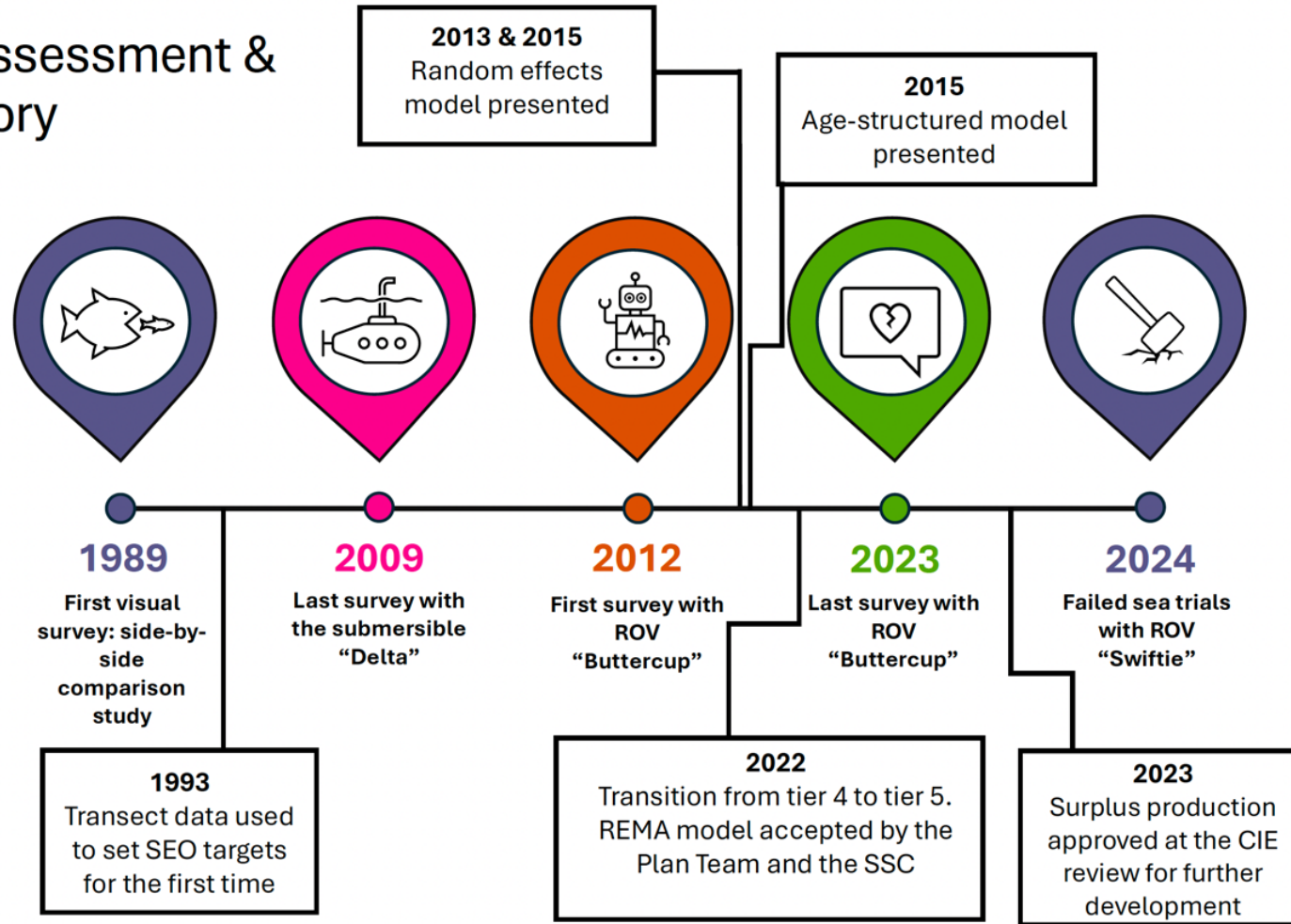
Tier 6 species

- CG/WG/WY 271 t ABC
- SEO 20 t ABC

Demersal shelf rockfish (DSR) SEO



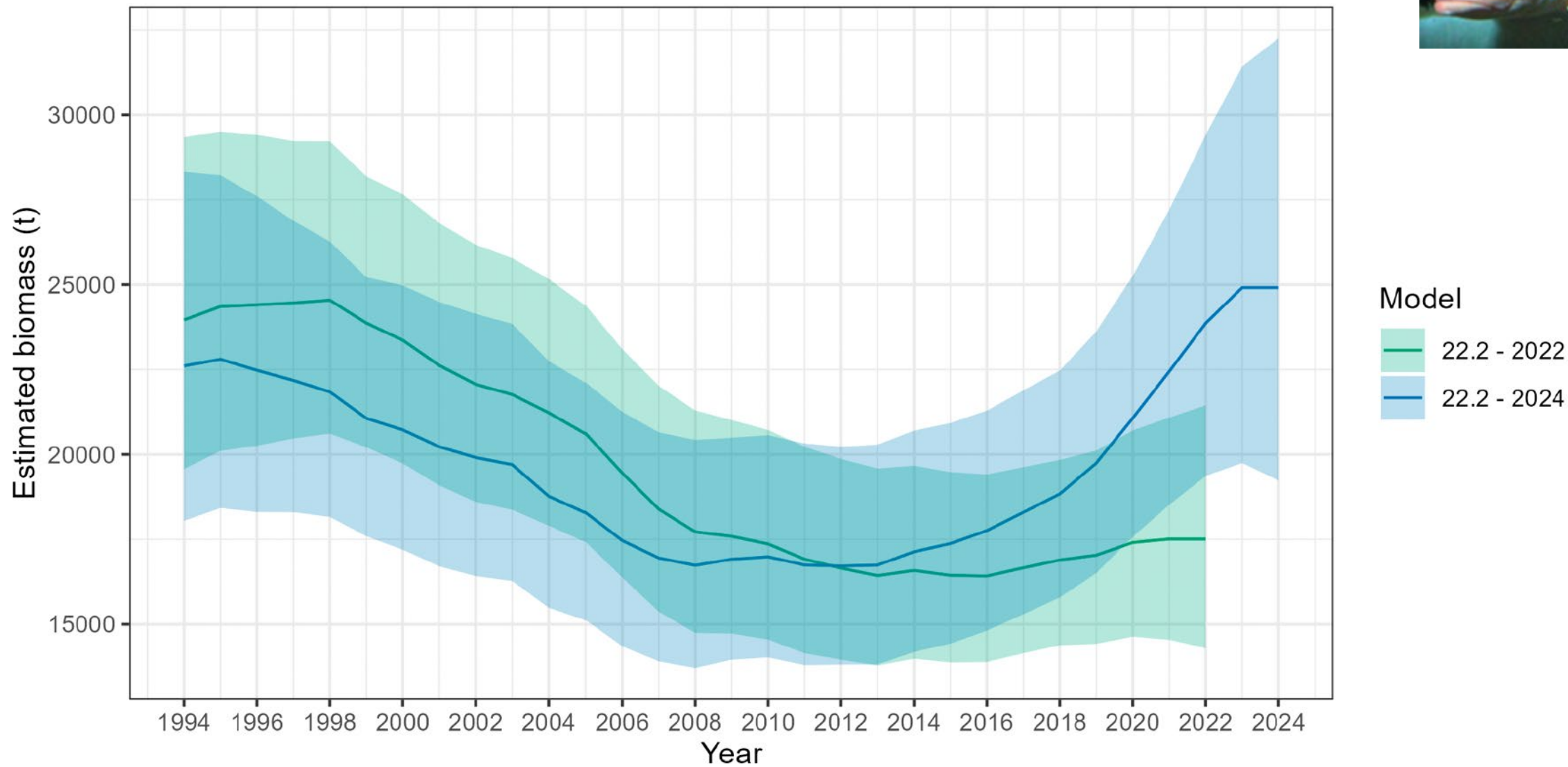
SEO DSR Assessment & Survey History



Status-quo method: Lower 90% confidence interval of biomass estimate to set targets

Thanks to Caitlin Stern

Demersal shelf rockfish (DSR) SEO (yelloweye)



Demersal shelf rockfish (DSR) SEO (yelloweye)



Quantity	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2024	2025	2025	2026
M (natural mortality rate)	0.02	0.02	0.044	0.044
Tier	5	5	5	5
Yelloweye biomass (t)	17,511	17,511	24,912	24,912
F_{OFL}	$F = M = 0.02$	$F = M = 0.02$	$F = M = 0.044$	$F = M = 0.044$
$maxF_{ABC}$	$0.75M = 0.015$	$0.75M = 0.015$	$0.75M = 0.033$	$0.75M = 0.033$
F_{ABC}	0.01275	0.01275	0.0264	0.0264
OFL (t)	350	350	1,096	1,096
maxABC (t)	263	263	822	822
ABC (t)	263	263	658	658
Status	As determined <i>last year for:</i>		As determined <i>this year for:</i>	
	2022	2023	2023	2024
Overfishing	No	n/a	No	n/a

DSR SEO (yelloweye): Team discussion



- The Team discussed the IPHC CPUE standardization and noted that issues related to hook competition could be improved. Consequently, the Team recommended
 - **that this could be addressed by treating the data as compositional data and using information about total catch of other species and examining empty hooks for target and non target species. Also..**
 - examining the effect of this survey effort reduction on the catch estimates and compositions.

DSR: Team discussion



SEO: Authors suggested 20% reduction in maxABC based on risk table analysis (with 0.04 natural mortality)

- **Instead, Team recommended using $M = 0.02$ applied to new standardized IPHC CPUE index for determining maxABC/OFL for 2025.**
 - **No reduction from maxABC**
- A change in the value of M has a large impact on reference points; more exploration of estimating M needed
- The Team agreed with the author's recommended ABC/OFLs for the remaining Tier 6 Southeast Outside and W/C/WY species.

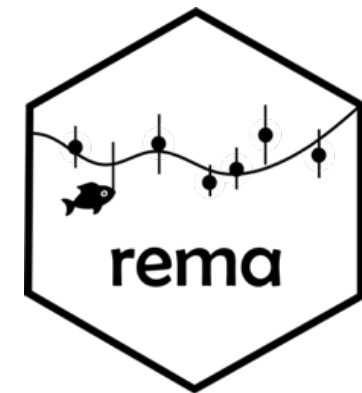
Thornyhead Rockfish

Species	ABC 2024	ABC 2025	Change
POP	39,719	38,962	down 757 (2%)
northern rockfish	4,815	5,076	up 261 (5%)
Shortraker Rockfish	647	647	same (0%)
Dusky	7,624	6,338	down 1,286 (17%)
Rougheye and Blackspotted Rockfish	1,037	1,180	up 143 (14%)
Demersal shelf rockfish	283	394	up 111 (39%)
Thornyhead	1,628	1,338	down 290 (18%)
Other rock	3,774	3,505	down 269 (7%)
Sub Total	59,527	57,440	down 2,087 (4%)

GOA Thornyhead Stock Complex model updates

Tier 5 complex – represented by shortspine thornyhead *Sebastolobus alascanus* (longspine thornyhead *S. altivelis* in complex but not model)

- Changes in the input data
 - Bottom trawl survey biomass and errors from the 1990 to 2023 updated.
 - Longline survey RPWs and errors from 1992 to 2023 updated.
- Changes in assessment methodology
 - Common process-error instead of area-specific values



Thanks to Kevin Siwicke and Katy Echave

Thornyhead catch – 2024



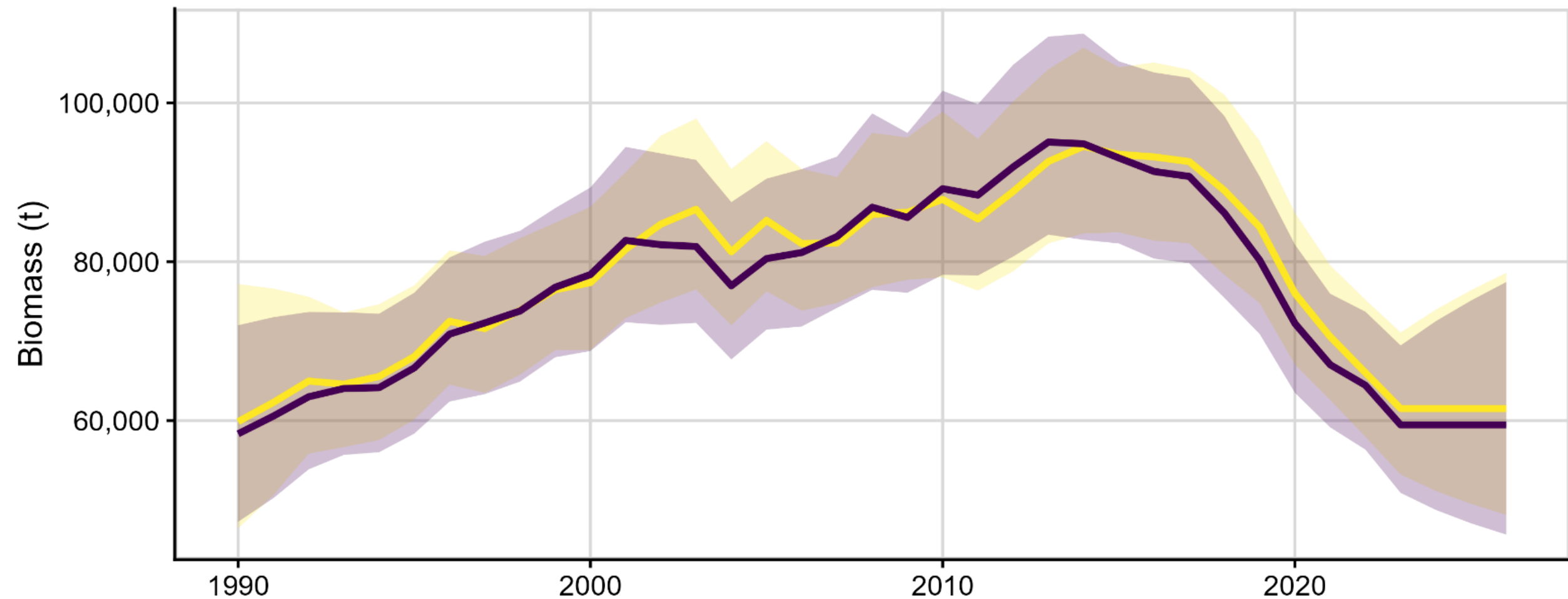
Area	OFL	ABC	TAC	Catch
W	n/a	314	314	34
C	n/a	693	693	62
E	n/a	621	621	61
Total	2,170	1,628	1,628	157*

*Catch as of Oct. 7, 2024

- 2024 catch is 25% below 2023 Total
- Catch is at 10% of GOA-wide ABC

Thornyhead common vs area-split process errors

Model 22a base Model 24.2



Thornyhead rockfish

Model	Process Error(s)	Scaling (q)	Add'l Obs. Err.
22a	WGOA: 0.306 CGOA: 0.130 EGOA: 0.106	0.600	BTS: 0.161 LLS: 0.151
24.2	Shared: 0.149	0.603	BTS: 0.249 LLS: 0.141

Thornyhead rockfish

Quantity	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2024	2025	2025	2026
M (natural mortality rate)	0.03	0.03	0.03	0.03
Tier	5	5	5	5
Biomass (t)	72,349	72,349	59,459	59,459
F_{OFL}	$F = M = 0.03$	$F = M = 0.03$	$F = M = 0.03$	$F = M = 0.03$
$maxF_{ABC}$	$0.75M = 0.0225$	$0.75M = 0.0225$	$0.75M = 0.0225$	$0.75M = 0.0225$
F_{ABC}	0.0225	0.0225	0.0225	0.0225
OFL (t)	2,170	2,170	1,784	1,784
maxABC (t)	1,628	1,628	1,338	1,338
ABC (t)	1,628	1,628	1,338	1,338
Status	As determined <i>last year for:</i>		As determined <i>this year for:</i>	
	2022	2023	2023	2024
Overfishing	No	n/a	No	n/a

Thornyhead rockfish

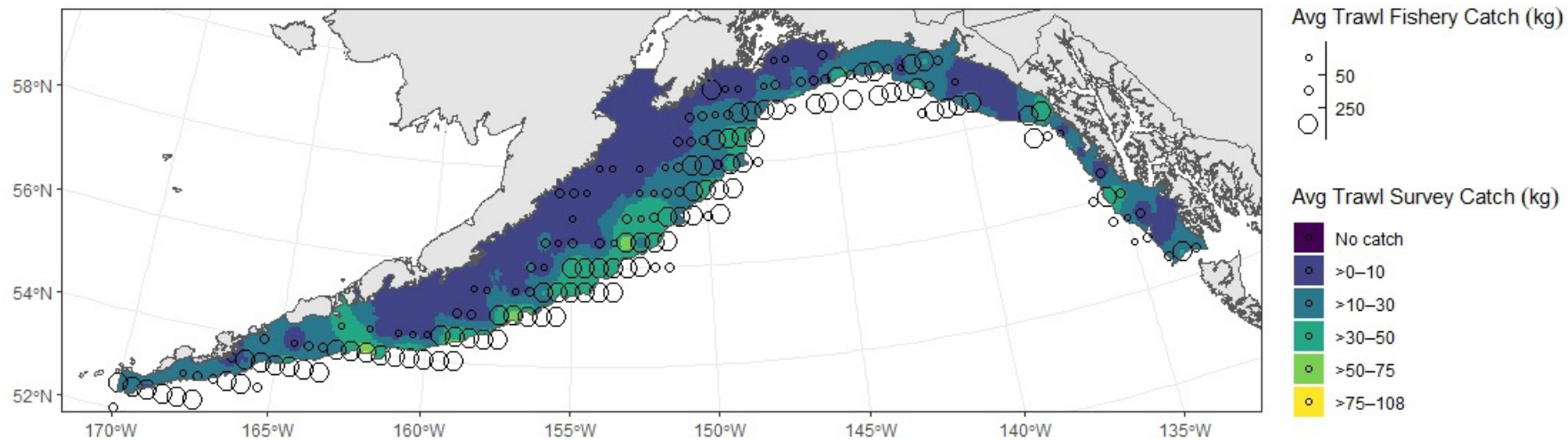
Area	2025 Biomass (t)	% of Biomass	ABC (t)	% Change from 2024
Western GOA	10,514	15%	206	-34%
Central GOA	25,643	44%	590	-17%
Eastern GOA	23,302	41%	542	-13%
GOA-wide	59,459	100%	1,338	-18%

- ~84% of decline from new/updated survey data
- ~16% related to the model change

Thornyhead: Stock Structure Summary (Echave)

Data suggest current practice ok

- But data limited...
- Genetic differentiation lacking
- Growth similar
- Movement limited based on tags
- Fishing distribution consistent with abundance



Thornyhead Recommendations

- Author recommendations:
 - Use Model 24.2 with single process error, single scaling coefficient, and additional observation error for both surveys.
 - Note the low catches following sablefish transition to pots.
- Plan Team agreed with the author's recommendation
 - Noted decrease in RPN/RPW in the longline survey in all three regions, and a similar (but less definitive) decline in the bottom trawl survey (primarily evident in the western GOA).
 - The Team cautioned this could indicate a concerning trend considering catches are low and recommended tracking further changes in thornyhead population levels over the coming cycles.



Catch reports

	Year	OFL	ABC	TAC	Catch
Atka mackerel	2023	6,200	4,700	3,000	925
	2024	6,200	4,700	4,700	760
Shortraker	2023	940	705	705	494
	2024	863	647	647	343
Sharks	2023	6,521	4,891	4,891	1,963
	2024	6,521	4,891	4,891	1,288
Octopus	2023	1,307	980	980	191
	2024	1,307	980	980	197
Skates	2023	1,311	984	984	611
	2024	887	665	665	547

PT OFL/ABC Recommendations for catch report stocks for 2025/2026 shown in Table 1 (all are rolled over)

GOA Stocks with Harvest Projections (reviewed in Sept/Oct)

- GOA flathead sole- Maia Kapur
- GOA POP- Ben Williams, Maia Kapur
- GOA RE/BS rockfish- Jane Sullivan
- GOA rock sole- Meaghan Bryan
- GOA shallow-water flatfish (SWF)- Meaghan Bryan
- GOA rex sole- Carey McGilliard
- GOA deepwater flatfish- Carey McGilliard
- GOA arrowtooth flounder (ATF)- Kalei Shotwell

Final OFL/ABC Recommendations for harvest projections for 2025/2026 shown in Table 1

Species	Area	2024			Catch	Plan Team Recommended 2025		Plan Team Recommended 2026	
		OFL	ABC	TAC	11/1/2024	OFL	ABC	OFL	ABC
Pollock	State GHL	n/a	4,769		3,640	n/a	4,526	n/a	3,326
	W (610)	n/a	38,882	38,882	31,457	n/a	37,344	n/a	27,453
	C (620)	n/a	90,937	90,937	71,571	n/a	82,265	n/a	60,477
	C (630)	n/a	50,587	50,587	20,534	n/a	51,605	n/a	37,936
	WYAK	n/a	5,565	5,565	1,382	n/a	5,282	n/a	3,883
	Subtotal	269,916	190,740	185,971	124,944	210,111	181,022	153,971	133,075
	SEO	12,998	9,749	9,749	-	12,998	9,749	12,998	9,749
Total	282,914	200,489	195,720	124,944	223,109	190,771	166,969	142,824	
Pacific Cod	W	n/a	8,745	6,121	4,216	n/a	8,710	n/a	8,182
	C	n/a	20,590	15,442	14,401	n/a	20,506	n/a	19,263
	E	n/a	2,937	2,203	489	n/a	2,925	n/a	2,748
	Total	38,712	32,272	23,766	19,106	38,688	32,141	36,459	30,193
Sablefish	W	n/a	4,699	4,699	2,620	n/a	4,996	n/a	4,934
	C	n/a	9,651	9,651	6,698	n/a	10,257	n/a	10,128
	WYAK	n/a	2,926	2,926	2,295	n/a	3,125	n/a	3,086
	SEO	n/a	5,320	5,320	4,073	n/a	5,660	n/a	5,589
	GOA Total	n/a	n/a	22,596	15,686	n/a	24,038	n/a	23,737
	AK Total	55,084	47,146	n/a	21,758	58,532	50,111	57,797	49,482
Shallow-Water Flatfish	W	n/a	23,337	13,250	63	n/a	23,755	n/a	23,902
	C	n/a	27,783	27,783	2,742	n/a	28,279	n/a	28,455
	WYAK	n/a	2,778	2,778	1	n/a	2,828	n/a	2,846
	SEO	n/a	1,667	1,667	1	n/a	1,697	n/a	1,707
	Total	68,121	55,565	45,478	2,807	69,277	56,559	69,610	56,910
Deep-Water Flatfish	W	n/a	237	237	8	n/a	234	n/a	231
	C	n/a	2,655	2,655	78	n/a	2,616	n/a	2,568
	WYAK	n/a	1,856	1,856	3	n/a	1,828	n/a	1,795
	SEO	n/a	2,314	2,314	2	n/a	2,280	n/a	2,238
	Total	8,387	7,062	7,062	91	8,263	6,958	8,114	6,832
Rex Sole	W	n/a	3,367	3,367	23	n/a	3,382	n/a	3,353
	C	n/a	13,639	13,639	474	n/a	13,698	n/a	13,582
	WYAK	n/a	1,453	1,453	1	n/a	1,436	n/a	1,413
	SEO	n/a	2,905	2,905	-	n/a	2,871	n/a	2,825
	Total	25,978	21,364	21,364	498	26,002	21,387	25,743	21,173
Arrowtooth Flounder	W	n/a	30,409	14,500	486	n/a	33,593	n/a	33,716
	C	n/a	64,871	64,871	16,329	n/a	68,261	n/a	68,511
	WYAK	n/a	7,870	7,870	29	n/a	6,695	n/a	6,719
	SEO	n/a	16,099	6,900	22	n/a	10,998	n/a	11,039
	Total	142,485	119,249	94,141	16,866	142,832	119,547	143,347	119,985
Flathead Sole	W	n/a	13,273	8,650	145	n/a	13,592	n/a	13,757
	C	n/a	21,307	21,307	763	n/a	21,817	n/a	22,083
	WYAK	n/a	3,876	3,876	0	n/a	3,970	n/a	4,018
	SEO	n/a	2,047	2,047	0	n/a	2,097	n/a	2,122
	Total	49,414	40,503	35,880	908	50,587	41,476	51,176	41,980

**GOA Groundfish
Final Harvest
Specifications- PT
Recs Table 1 (1 of 2)**

**Different SSC
recommendation for
sablefish**

Species	Area	2024			Catch	Plan Team Recommended 2025		Plan Team Recommended 2026	
		OFL	ABC	TAC	11/1/2024	OFL	ABC	OFL	ABC
Pacific ocean perch	W	n/a	1,787	1,787	1,667	n/a	1,753	n/a	1,688
	C	n/a	28,757	28,757	21,294	n/a	28,209	n/a	27,156
	WYAK	n/a	2,110	2,110	1,946	n/a	2,070	n/a	1,993
	SEO	n/a	7,065	7,065	-	n/a	6,930	n/a	6,672
	Total	47,466	39,719	39,719	24,907	46,562	38,962	44,826	37,509
Northern Rockfish	W	n/a	2,535	2,535	315	n/a	1,396	n/a	1,346
	C	n/a	2,280	2,280	817	n/a	3,680	n/a	3,549
	E	n/a	-	-	NA	n/a	-	n/a	-
	Total	5,750	4,815	4,815	1,132	6,064	5,076	5,848	4,895
Shortraker Rockfish	W	n/a	34	34	15	n/a	34	n/a	34
	C	n/a	189	189	137	n/a	189	n/a	189
	E	n/a	424	424	191	n/a	424	n/a	424
	Total	863	647	647	343	863	647	863	647
Dusky Rockfish	W	n/a	145	145	71	n/a	209	n/a	199
	C	n/a	7,365	7,365	2,122	n/a	5,818	n/a	5,527
	WYAK	n/a	84	84	5	n/a	215	n/a	204
	SEO	n/a	30	30	-	n/a	96	n/a	91
	Total	9,281	7,624	7,624	2,198	7,705	6,338	7,319	6,021
Rougheye and Blackspotted Rockfish	W	n/a	197	197	51	n/a	224	n/a	229
	C	n/a	315	315	140	n/a	359	n/a	366
	E	n/a	525	525	98	n/a	597	n/a	608
	Total	1,555	1,037	1,037	289	1,576	1,180	1,631	1,203
Demersal shelf rockfish	W/C/WYAK	n/a	n/a	n/a	n/a	361	271	361	271
	SEO	376	283	283	153	524	394	524	394
Thornyhead Rockfish	W	n/a	314	314	35	n/a	206	n/a	206
	C	n/a	693	693	65	n/a	590	n/a	590
	E	n/a	621	621	64	n/a	542	n/a	542
	Total	2,170	1,628	1,628	164	1,784	1,338	1,784	1,338
Other Rockfish	W/C/WYAK	n/a	1,353	1,353	511	n/a	1,084	n/a	1,084
	SEO	n/a	2,421	300	30	n/a	2,421	n/a	2,421
	Total	4,977	3,774	1,653	541	4,618	3,505	4,618	3,505
Atka mackerel	Total	6,200	4,700	4,700	380	6,200	4,700	6,200	4,700
Big Skate	W	n/a	745	745	163	n/a	745	n/a	745
	C	n/a	1,749	1,749	815	n/a	1,749	n/a	1,749
	E	n/a	341	341	140	n/a	341	n/a	341
	Total	3,780	2,835	2,835	1,118	3,780	2,835	3,780	2,835
Longnose Skate	W	n/a	104	104	35	n/a	104	n/a	104
	C	n/a	1,894	1,894	461	n/a	1,894	n/a	1,894
	E	n/a	538	538	220	n/a	538	n/a	538
	Total	3,380	2,536	2,536	716	3,380	2,536	3,380	2,536
Other Skates	GOA-wide	887	665	665	547	887	665	887	665
Sharks	GOA-wide	6,521	4,891	4,891	1,288	6,521	4,891	6,521	4,891
Octopuses	GOA-wide	1,307	980	980	197	1,307	980	1,307	980
TOTAL		765,608	599,784	520,020	214,879	709,422	593,268	649,064	541,769

**GOA Groundfish
Final Harvest
Specifications- PT
Recs Table 1 (2 of 2)**

GOA Groundfish Final Harvest Specifications

Table 2--GOA TAC and GHL for State Waters Pacific Cod based on Plan Team recommendations for ABC/OFLs.

Final 2025 GOA Pacific cod ABCs, TACs, and State GHLs (mt)

Specifications	Western	Central	Eastern	Total
ABC	8,710	20,506	2,925	32,141
State GHL	2,613	5,127	731	8,471
(%)	30%	25%	25%	
Federal TAC	6,097	15,379	2,194	23,670

Note: The Federal TAC is designated for Federal fisheries only and does not include the State GHL.

Final 2026 GOA Pacific cod ABCs, TACs, and State GHLs (mt)

Specifications	Western	Central	Eastern	Total
ABC	8,182	19,263	2,748	30,193
State GHL	2,455	4,816	687	7,957
(%)	30%	25%	25%	
Federal TAC	5,727	14,447	2,061	22,236

Note: The Federal TAC is designated for Federal fisheries only and does not include the State GHL.

GOA Groundfish Final Harvest Specifications

Table 3--Final 2025 and 2026 Pacific Halibut PSC Limits, Allowances, and Apportionments [Values are in metric tons]

Trawl gear			Hook-and-line gear ¹				
			Other than DSR			DSR	
Season	Percent	Amount	Season	Percent	Amount	Season	Amount
January 20 - April 1	30.5	520	January 1 - June 10	86%	220	January 1 - December 31	9
April 1 - July 1	20	341	June 10 - September 1	2%	5		
July 1 - August 1	27	460	September 1 - December 31	12%	31		
August 1 - October 1	7.5	128					
October 1 - December 31	15	256					
Total		1,705			256		9

GOA Groundfish Final Harvest Specifications

Table 4--Final 2025 and 2026 Apportionment of the Pacific Halibut PSC Limits Apportioned Between the Trawl Gear Shallow-Water and Deep-Water Species Fisheries [Values are in metric tons]

Season	Shallow-water	Deep-water ¹	Total
January 20 - April 1	385	135	520
April 1 - July 1	85	256	341
July 1 - August 1	120	340	460
August 1 - October 1	53	75	128
Subtotal January 20 - October 1	643	806	1,449
October 1 - December 31 ²	n/a	n/a	256
Total	n/a	n/a	1,705

¹ Vessels participating in cooperatives in the Rockfish Program will receive 191 mt of the third season (July 1 – August 1) deep-water species fishery Halibut PSC apportionment.

² There is no apportionment between trawl shallow-water and deep-water species fisheries during the fifth season (October 1 through December 31).

GOA Groundfish Final Harvest Specifications

Table 5--Final 2025 and 2026 Apportionments of the “Other Hook and Line Fisheries” Halibut PSC Allowance Between the Hook-and-Line Gear Catcher Vessel and Catcher/Processor Sectors

[Values are in metric tons]

Hook-and-Line gear (Other than DSR) Annual PSC Amount	Hook-and-line Sector	Annual Amount	Season	Seasonal Percentage	Seasonal Amount
256	Catcher Vessel	149	A	86	128
			B	2	3
			C	12	18
	Catcher/Processor	107	A	86	92
			B	2	2
			C	12	13

GOA Groundfish Final Harvest Specifications

Table 6--Final 2025 and 2026 Discard Mortality Rates for Vessels Fishing in the Gulf of Alaska [Values are percent of halibut assumed to be dead]

Gear	Sector	Groundfish fishery	Halibut discard mortality rate (percent)
Pelagic trawl	Catcher vessel	All	100
	Catcher/processor	All	100
Non-pelagic trawl	Catcher vessel	Rockfish Program	56
	Catcher vessel	All others	74
	Mothership and catcher/processor	All	76
Hook-and-line	Catcher/processor	All	10
	Catcher vessel	All	19
Pot	Catcher vessel and catcher/processor	All	32



Thanks to all
assessment authors,
contributors, and
Plan Team members