BSAI OTHER ROCKFISH

GROUNDFISH PLAN TEAM
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BIENNIAL ASSESSMENT IN EVEN YEARS (UPDATE IN 2026)

TIER 5 RANDOM EFFECTS MODEL (MODEL 22)

RECOMMENDATIONS FOR 2027/28:

- BIOMASS 42,899 t (+6% from 40,559 t in 2025/6)
- OFL 1,533 t (+9% from 1,406 t in 2025/6)
- ABC=maxABC 1,150 t (+9% from 1,054 t in 2025/6)

Photo courtesy of Andrea Munoz-Ledo

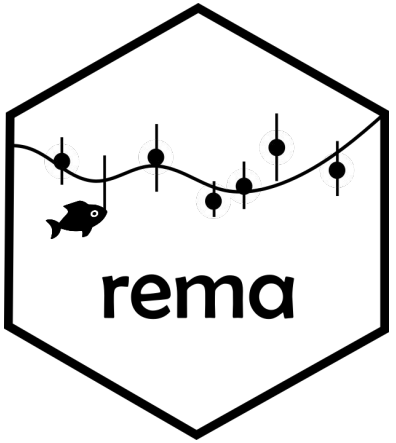
WHO ARE THE "OTHER" ROCKFISH?

- Everybody *except* POP, northern, shortraker, and rougheye/blackspotted rockfish
- Shortspine thornyhead (**SST**), dusky, and at least 11 other *Sebastes* and *Sebastolobus* spp. (**non-SST**)



Photos courtesy of Aaron Baldwin

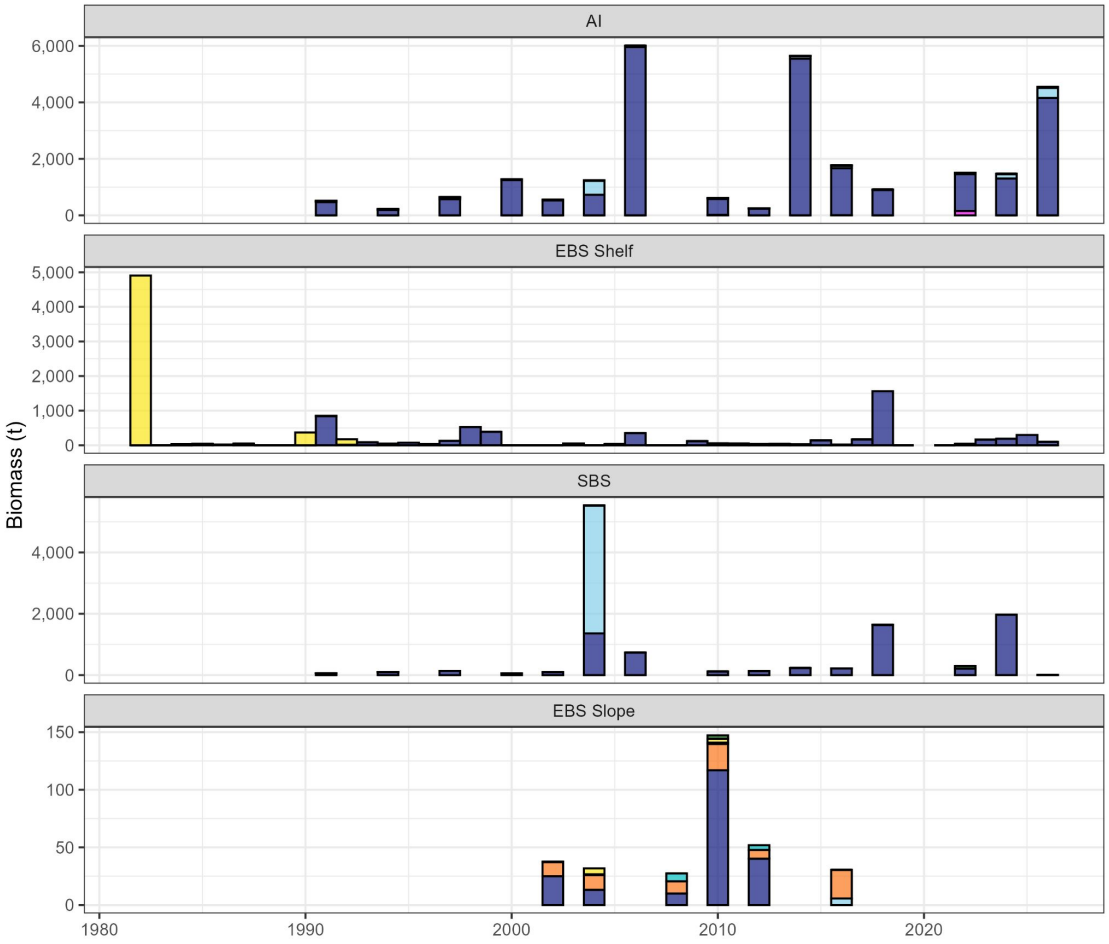
ANALYTICAL APPROACH



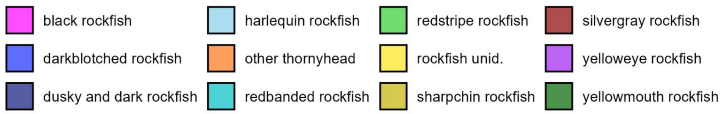
- Split into SST and non-SST
  - SST $M = 0.03$, non-SST $M = 0.09$

- **Model 22**: Two-survey multivariate version of the random effects (REMA) model
  - Bottom trawl surveys in the Aleutians (AI), S. Bering Sea (SBS), eastern Bering Sea (EBS) slope (ended in 2016), and EBS shelf (non-SST only)
  - AFSC longline survey (LLS) relative population weights (RPW) for SST on the EBS slope (~65% of total biomass)

DETAILED NON-SST SURVEY BIOMASS

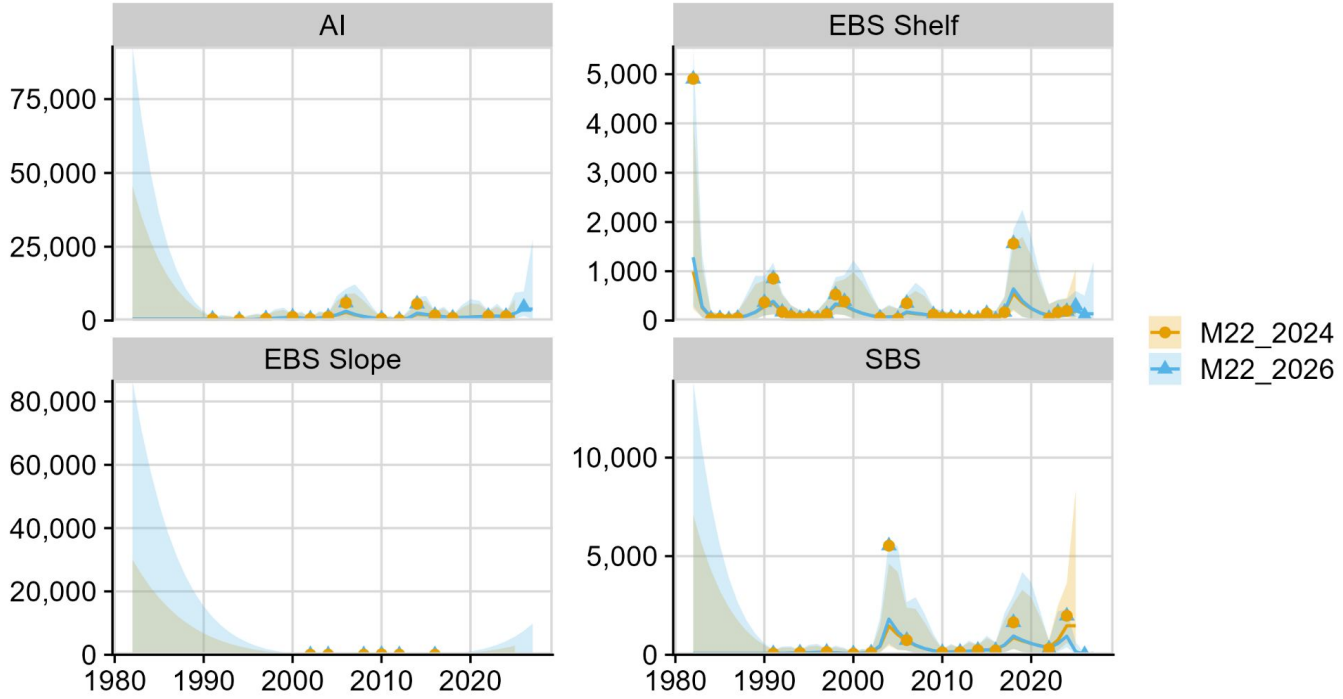


Mostly dusky rockfish, some harlequin and "other thornyhead"

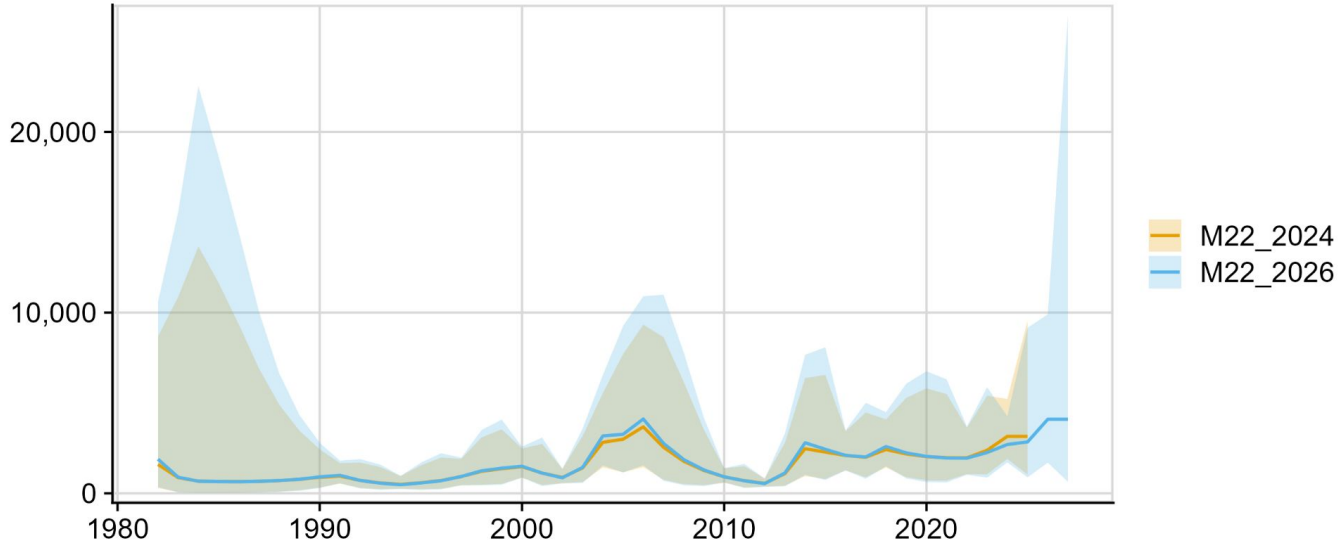


Other non-SST rockfish

Model fits to bottom trawl survey biomass (t) by region



Total predicted biomass (t)



Indices for non-SST are highly variable and uncertain

Process error: 0.88 (SE=0.12) (0.76 in 2024)

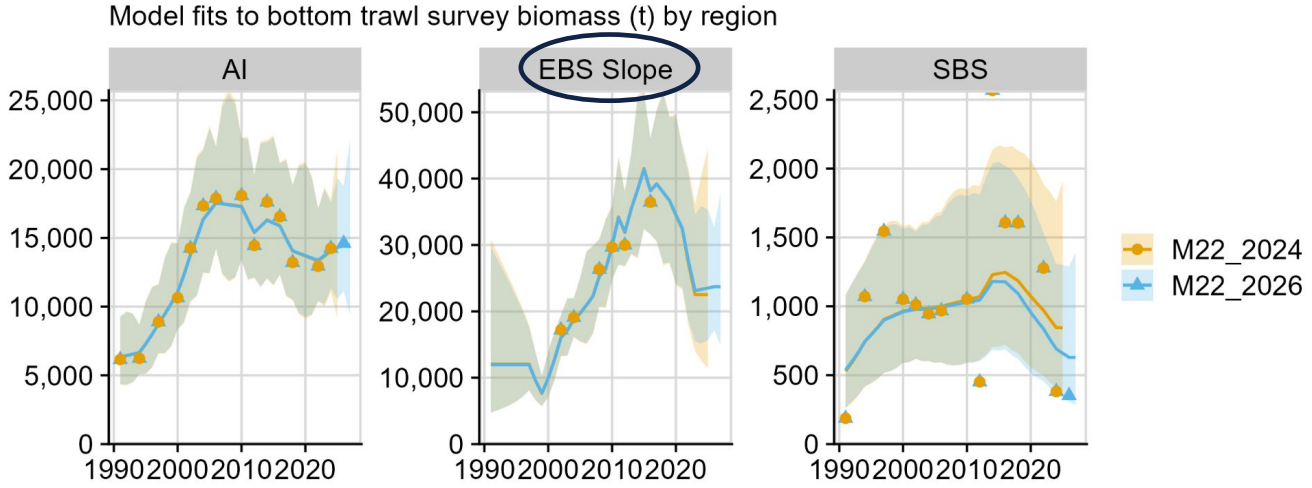
<u>Terminal year estimate:</u>

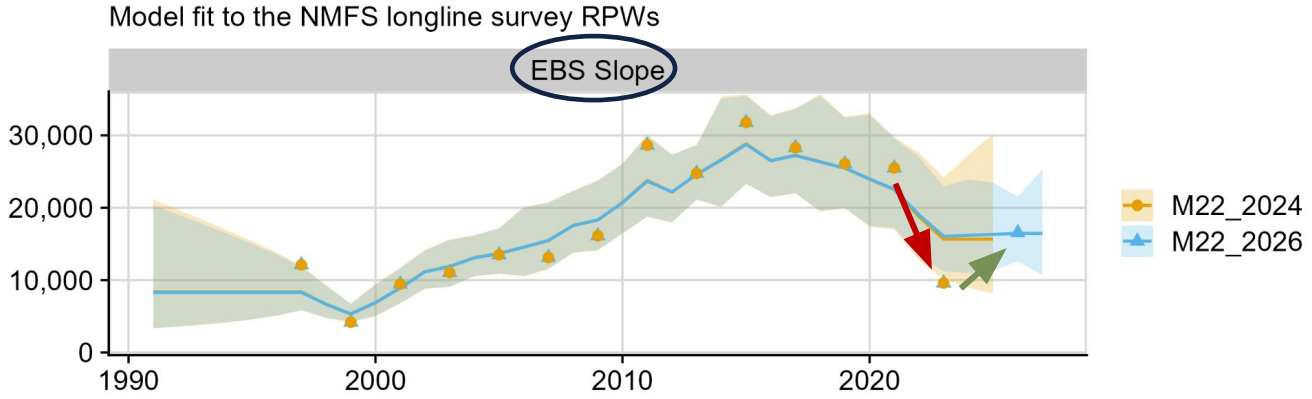
M22_2026=4,098 t

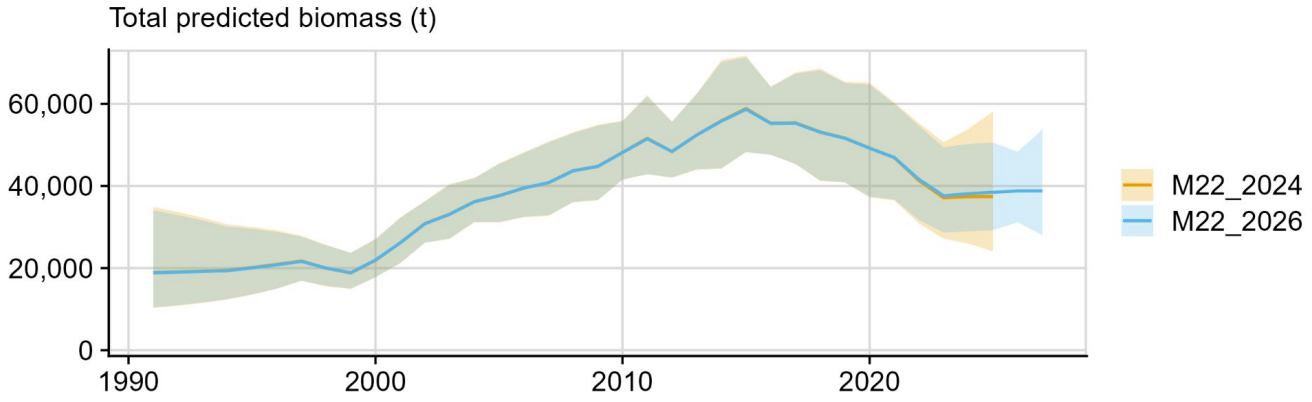
M22_2024=3,151 t

30% increase

Shortspine thornyhead (SST)





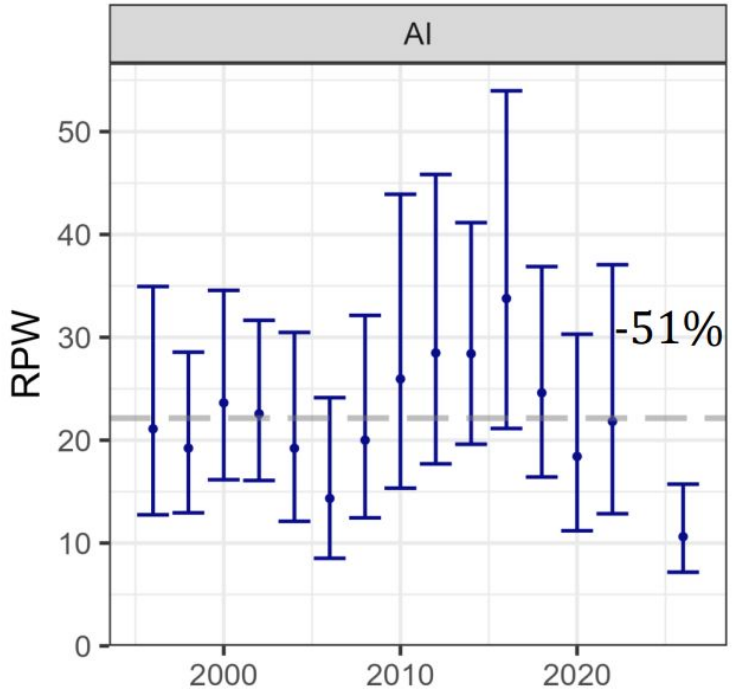


In 2024, SST decreased by 26% due to large drop in the EBS slope Longline survey RPW

RPW increased in 2026, model fits current data

Process error: 0.17 (SE=0.03) (0.18 in 2024)

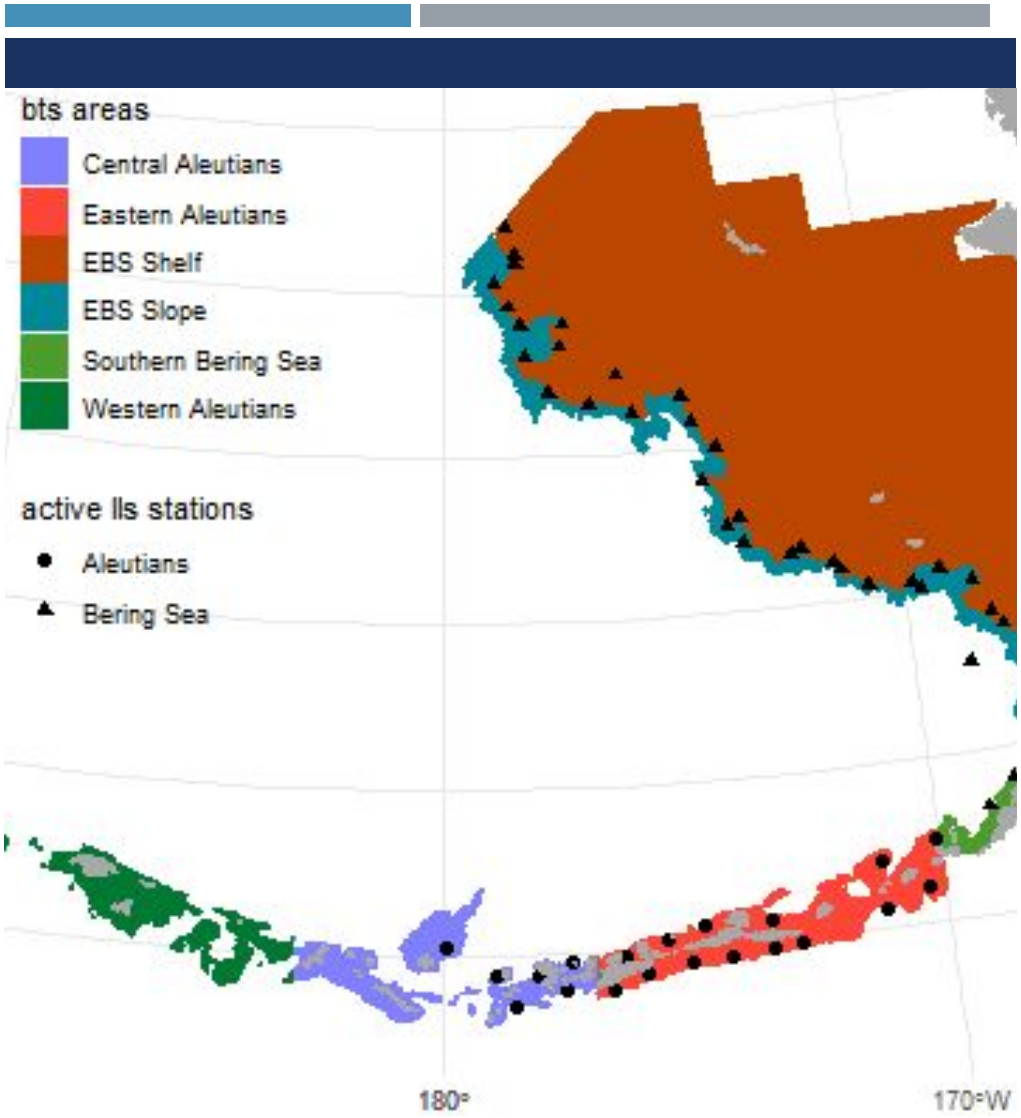
<u>Terminal year estimate:</u>
M22_2026=38,801 t
M22_2024=37,408 t
3.7% increase



51% decline in the SST LLS RPWs

Why don't we use LLS RPWs in the AI?

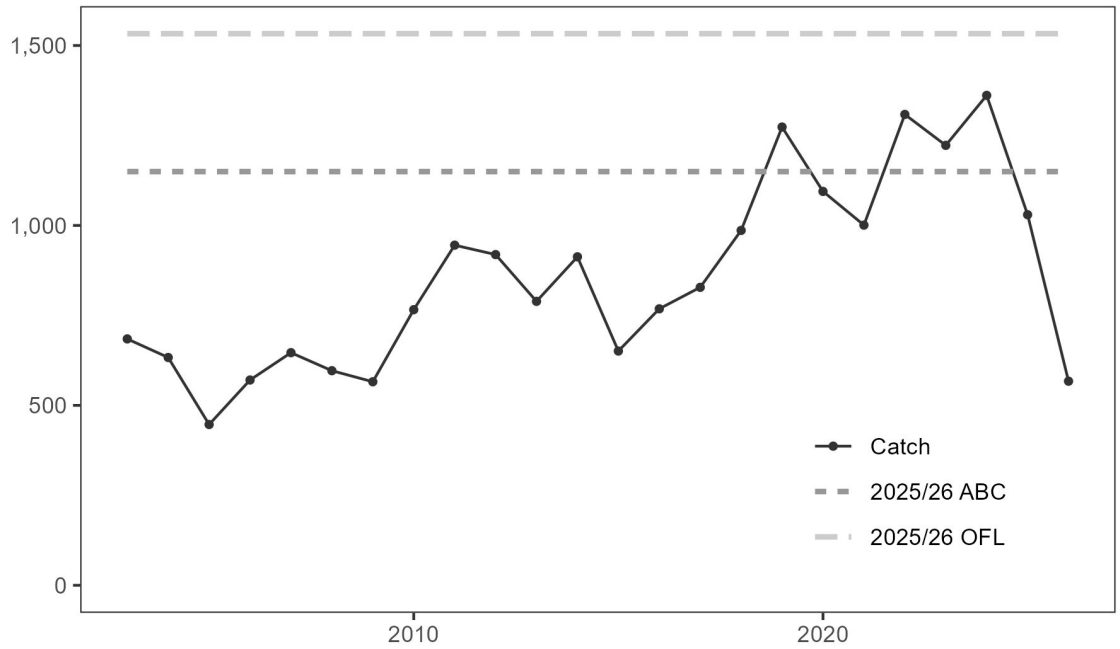
> Recommendation from PT not to use them due to spatial mismatch in the survey indices

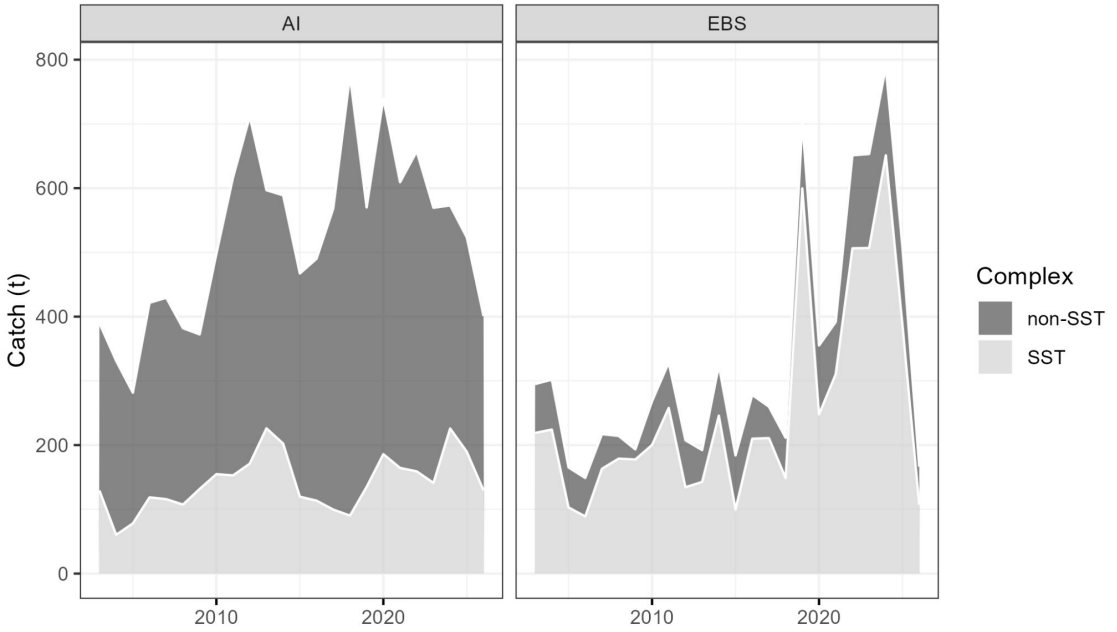


Catch trends

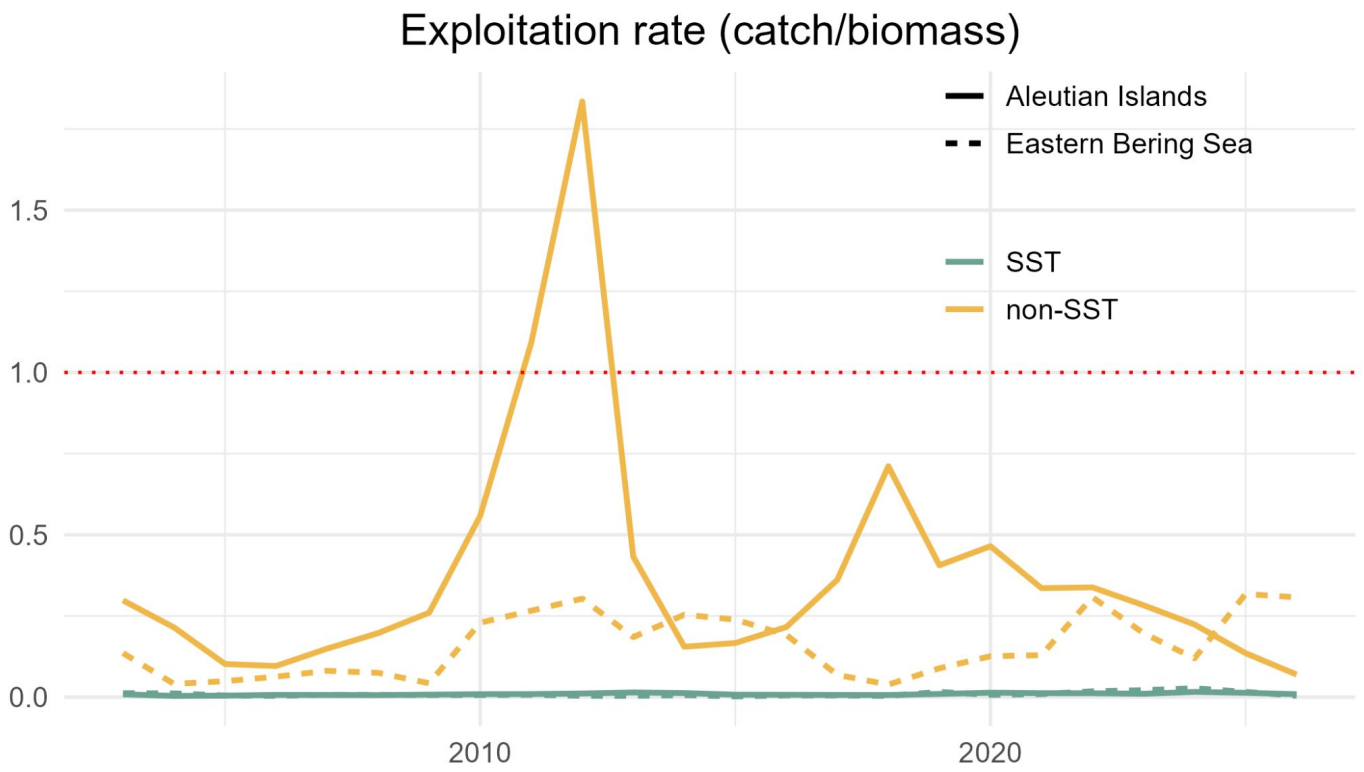
Successful effort by A80 to avoid SST bycatch in the EBS in 2025/6





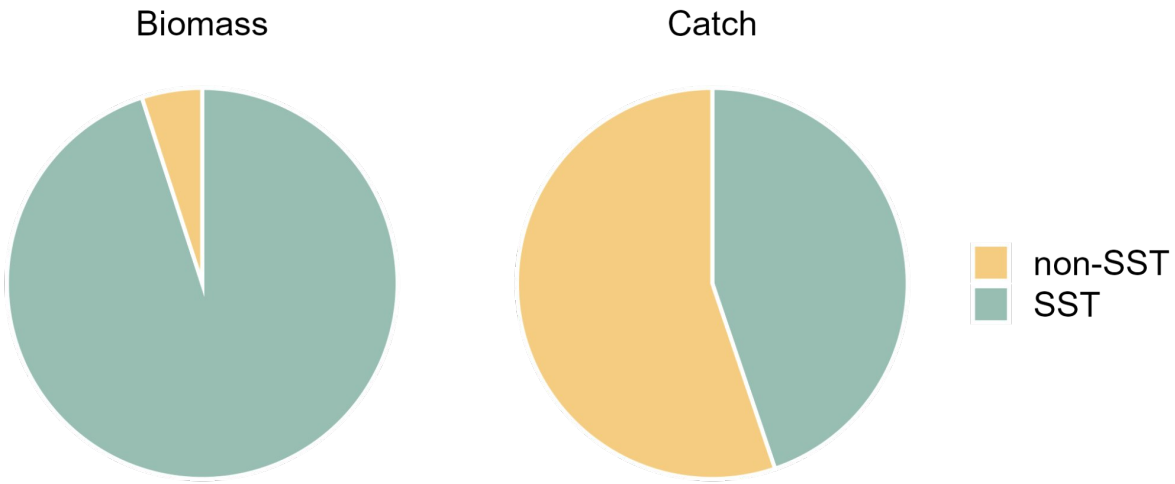


EXPLOITATION RATE (CATCH / BIOMASS)



High catch/biomass for non-SST, though its decreased in the AI

OTHER ROCKFISH SUMMARY



Mismatch between biomass and catch species composition

This matters because ABC and OFL are for all species are combined

$F_{OFL} = M, F_{ABC} = 0.75 \times M$

BSAI-wide ABC and OFL = SST + non-SST



	SST	non-SST	Total Other Rockfish
M	0.03	0.09	-
Biomass	38,801	4,098	42,899
F_{OFL}	0.03	0.09	-
F_{ABC}	0.0225	0.0675	-
OFL	1,164	369	**1,533**
ABC	873	277	**1,150**

RISK TABLE

Assessment-related considerations	*Population dynamics considerations*	*Environmental/ ecosystem considerations*	*Fishery Performance considerations*
Level 1 SST index increased Highly variable non-SST biomass is "normal"	**Level 1** Total biomass increased High exploitation rates for non-SST are "normal" AI longline survey RPW decrease but unclear about representativeness	**Level 1**: No apparent concern AI: temperatures cooling from marine heatwave conditions, but still above average EBS slope: above average temperatures since 2015	**Level 1** Bycatch only Laudable SST bycatch reduction efforts

Quantity	As estimated or specified in 2024 for: 2025	2026	As estimated or recommended this year for: 2027	2028
M (natural mortality rate) for	0.03		0.03	
M for non-SST	0.09		0.09	
Tier	5		5	
RE Model Combined Biomass	40,559		42,899	
F_{OFL} (*F=M*) for SST	0.03		0.03	
F_{OFL} (*F=M*) for non-SST	0.09		0.09	
$maxF_{ABC}$ for SST	0.0225		0.0225	
$maxF_{ABC}$ for non-SST	0.0675		0.0675	
F_{ABC} for SST	0.0225		0.0225	
F_{ABC} for non-SST	0.0675		0.0675	
OFL (t)	1,406		**1,533**	
maxABC (t)	1,054		1,150	
ABC (t)	1,054		**1,150**	
Status	As determined *in 2024* for: 2023	2024	As determined *this* year for: 2025	2026
Overfishing	No	n/a	No	n/a

Recommend max ABC
+9% in ABC from 2026

Biologically-informed Recommended Distributions (BRDs)

Apportioned to AI and EBS using ratio of estimated biomass in BS and AI



	SST	non-SST	Total Other Rockfish
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Biomass	38,801	4,098	42,899
F_{OFL}	0.03	0.09	-
F_{ABC}	0.0225	0.0675	-
OFL	1,164	369	1,533
ABC	873	277	1,150
AI BRD	325	264	**589**
BS BRD	548	13	**561**

	BSAI				AI			BS		
Year	OFL	ABC	TAC	Catch	Subarea ABC/ BRD	TAC	Catch	Subarea ABC/ BRD	TAC	Catch
2016	1,667	1,250	875	768	555	550	490	695	325	278
2017	1,816	1,362	875	828	571	550	568	791	325	260
2018	1,816	1,362	845	986	571	570	775	791	275	211
2019	1,793	1,345	663	1,274	388	388	570	956	275	704
2020	1,793	1,345	1,088	1,095	388	388	740	956	700	355
2021	1,751	1,313	916	1,001	394	394	609	919	522	392
2022	1,751	1,313	1,144	1,308	394	394	657	919	750	651
2023	1,680	1,260	1,260	1,223	380	380	569	880	880	653
2024	1,680	1,260	1,260	1,361	380	380	573	880	880	788
2025	1,406	1,054	1,054	1,030	415	415	523	639	639	507
2026	1,406	1,054	1,054	786	415	415	550	639	639	236

- Shading highlights years when catch exceeded TAC, ABC, or subarea ABC/BRD
- 2026 catch updated 11/14/2026

Data Gaps and Research Priorities

- Update *M* and other life history information
- Assess non-SST biomass reliability (precedent w/ GOA orox)



QUESTIONS?









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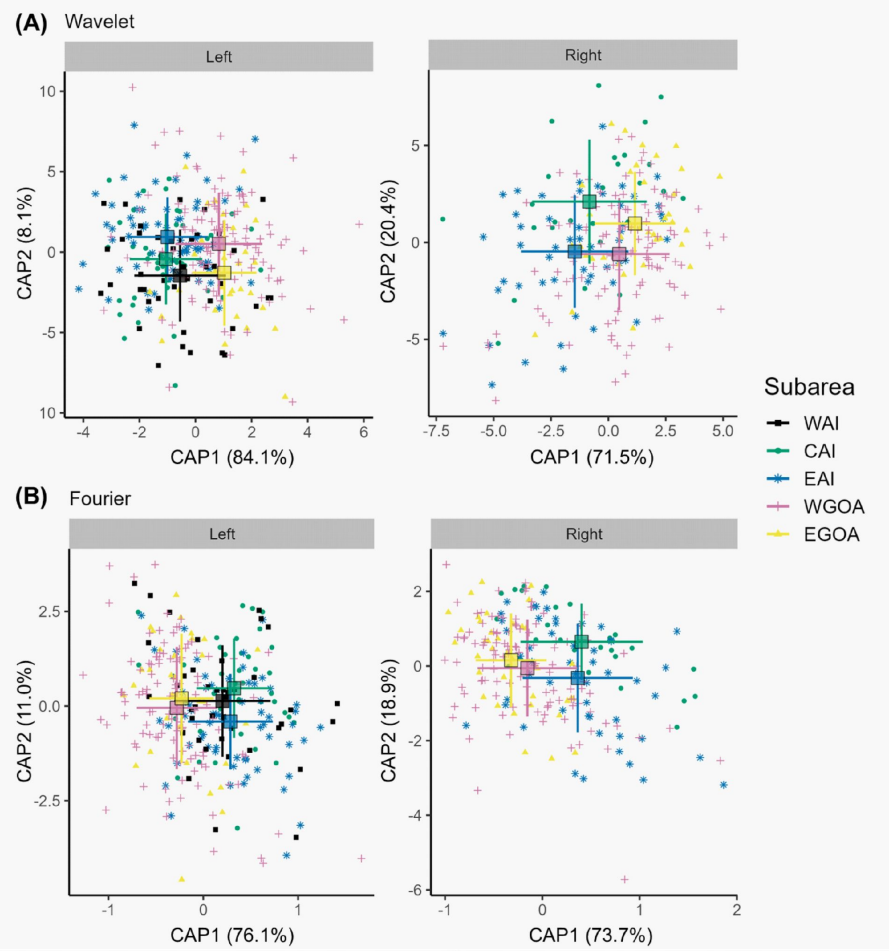
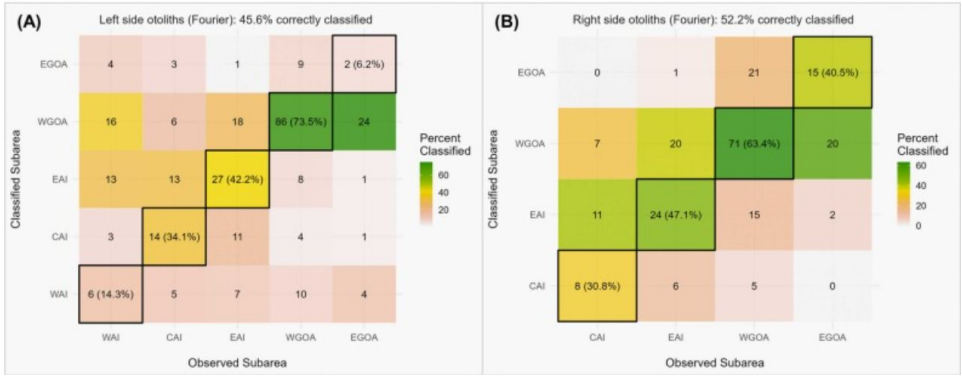
EXTRA SLIDES

TenBrink et al. 2024 - Otolith shape analysis to exmine dusky stock structure

- Otolith shape varied, but the highest classification rates provided some support for current management paradigms
- Discriminatory power was variable, but generally low, suggesting minimal stock structure for dusky rockfish
- The subareas with the highest catches and biomass in each management region (subarea 541 in the EAI and subareas 630, 620, and 610 in the WGOA) have a low to moderate level of population connectivity, with a relatively high number of samples being classified in the other subarea if not correctly classified.
- If dusky rockfish in these subareas are connected, either through larval dispersal or adult migration, this could imply reduced management concern for subareas like EAI with high exploitation rates.





FLOW CHART OF ASSESSMENT AND APPORTIONMENT:
SPLIT-SPLIT-SPLIT-LUMP-LUMP-LUMP-SPLIT

