

C3 Gulf of Alaska Groundfish September 2023 Plan Team Report

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October 2023
Presentation to the SSC



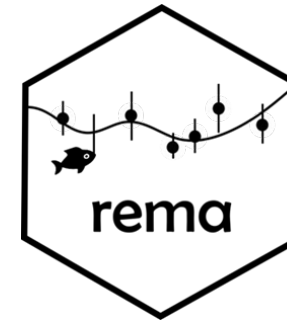
GOA Presentation Summary

Topic	Presenter	Type	Action
<u>Shortraker survey weighting</u>	Kevin Siwicke	Model update	Yes
<u>Other rockfish</u>	Kristen Omori	Model update	Yes
<u>Rougheye/blackspotted rockfish</u>	Jane Sullivan	Model update	Yes
<u>Pollock</u>	Cole Monnahan, Grant Adams	Model update	Yes
<u>Pacific cod</u>	Pete Hulson	Model update	Yes
<u>Pacific ocean perch</u>	Maia Kapur	Model update	Yes
<u>Halibut DMRs</u> and <u>Proposed Specifications</u>	Michael Fey, Abby Jahn, Sara Cleaver		Yes

Shortraker survey weighting

Highlights and **recommendations**:

1. Use the *rema* package (ADMB → TMB/corrected)
2. Remove 1984/87 BTS estimates
3. Use equal weights for BTS and longline (LLS = 1.0)
4. Estimate additional observation error for just LLS (Model 23.3)
5. Apportionment: use average of both surveys



Thanks to Kevin A. Siwicke, Katy B. Echave, and Jane Y. Sullivan



Other Rockfish: Spatial management ORO X/DSR

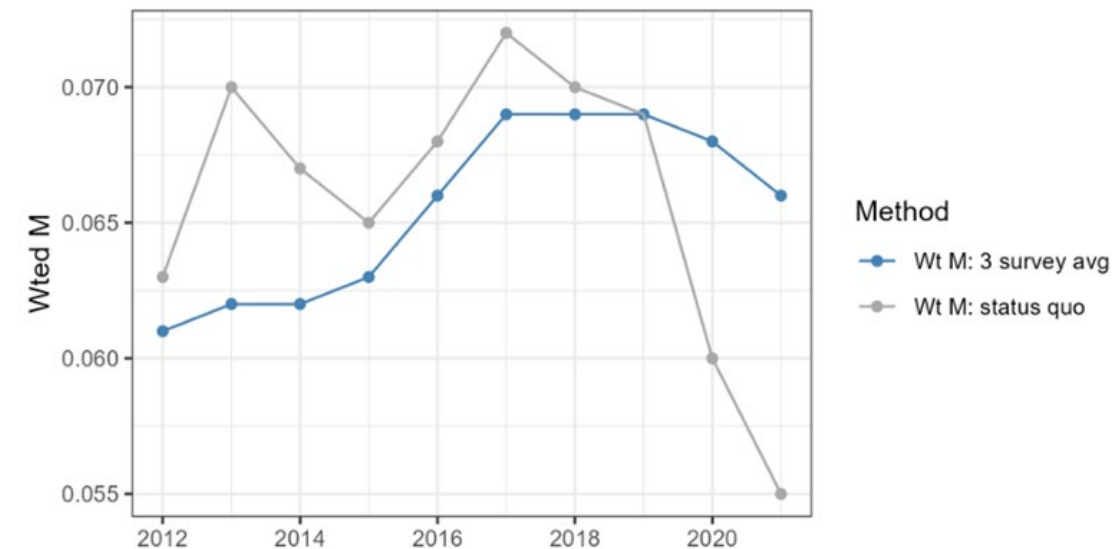


The Team and authors recommended to **move DSR subgroup out of Other rockfish complex**

- Gulf-wide DSR assessment (full) to be presented in 2024

Other Rockfish: model updates

1. Updating Random Effects model using the REMA model
2. Team recommended expanding Tier 6 catch time series from 4 years to 10 years
 - Results in ~2% overall increase in complex OFL
3. Eleven Tier 5 species in complex be moved to Tier 6
 - Based on evaluation of CVs and issues w/ “reliable biomass”
4. Update weighted natural mortality for Tier 5 species
 - Average of the 3 most recent surveys to reduce variability



Rougheye/blackspotted rockfish

- Data Updates
 - Remove 1984 and 1987 bottom trawl surveys
 - Update Natural Mortality estimate using max age estimate
 - Update maturity using visual ID of specimens of both RE and BS (not genetic)
 - Update ageing error matrix, size-at-age matrix, weight-at-age
- Apportionment
 - Incorporate REMA model estimates of area-specific catchability
 - Single, shared process error
 - Starts in 1990
 - Averages proportions of both trawl survey biomass and LL survey RPW
 - Balances data conflict between the two surveys within areas

Thanks to Jane Sullivan



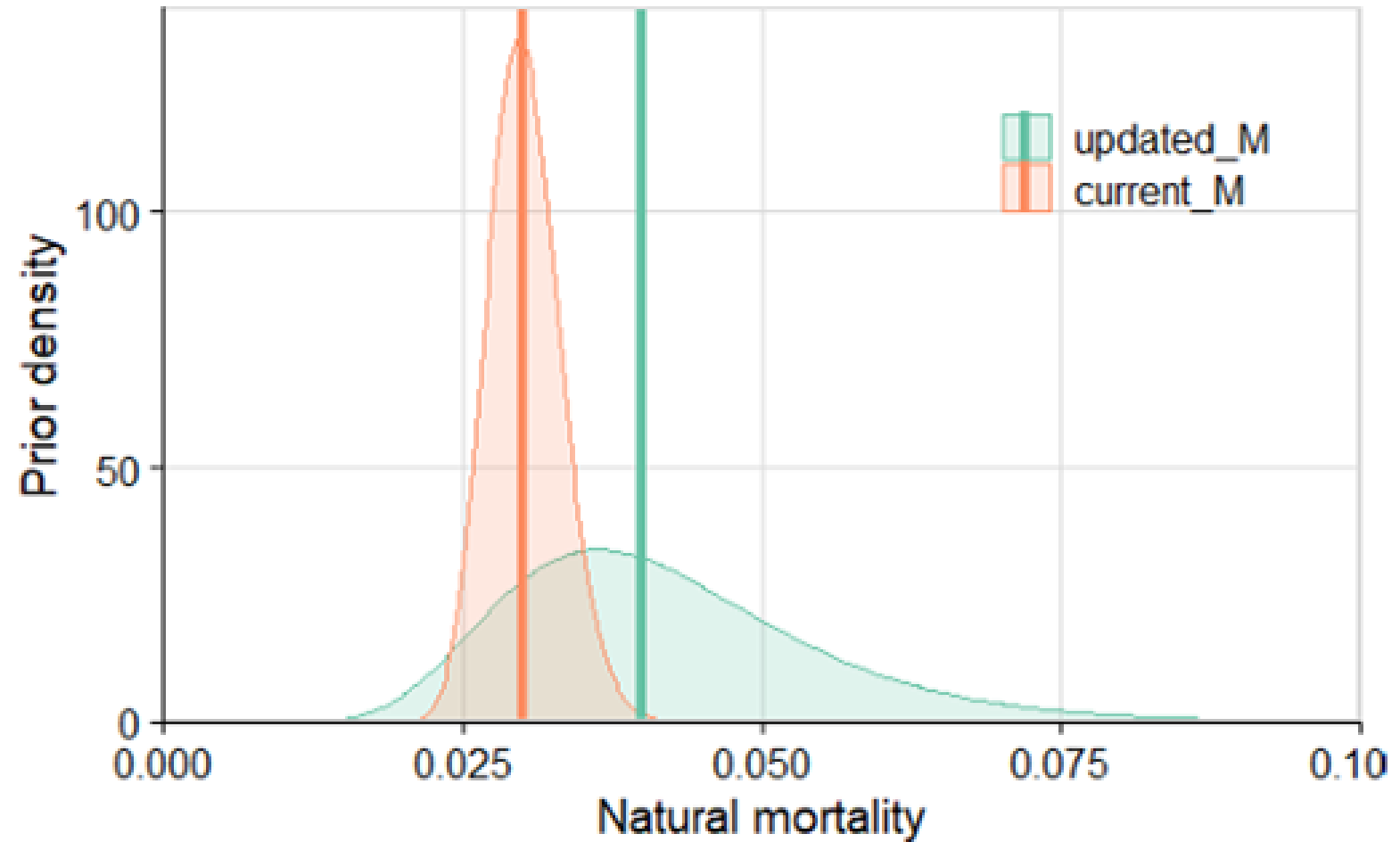
Rougheye/blackspotted rockfish

- Removing 1984/1987 surveys
 - **Team supported removing these data**
- Update ageing error, size-at-age, weight-at-age with new data
 - **Team supported these data update changes**
- Natural mortality
 - The Team was concerned about large increase in population scale
 - **Team recommended the author explore the application of the prior variance used for M**
- Maturity
 - The Team was concerned about not incorporating skip spawning in RE/BS maturity estimates
 - **Team recommended alternative methods be explored other than GLM to estimate A**
- Apportionment
 - **Team supported the use of both surveys with shared process error**
 - This approach is identical to that recommended for GOA shortraker



Rougheye/blackspotted rockfish

Updating the M prior



GOA Pollock

Highlights:

- Model converted from ADMB to TMB
- Exploration of fisheries selectivity within TMB

Thanks to Cole Monnahan and Grant Adams

Recommendations:

- Supported TMB change (model 23.0)
- Explore alternative 3-d selectivity models (using Cheng et al. 2023 approach)



Cheng, M. L. H., J. T. Thorson, J. N. Ianelli, and C. J. Cunningham. 2023. Unlocking the triad of age, year, and cohort effects for stock assessment: Demonstration of a computationally efficient and reproducible framework using weight-at-age. *Fisheries Research* **266**:106755.

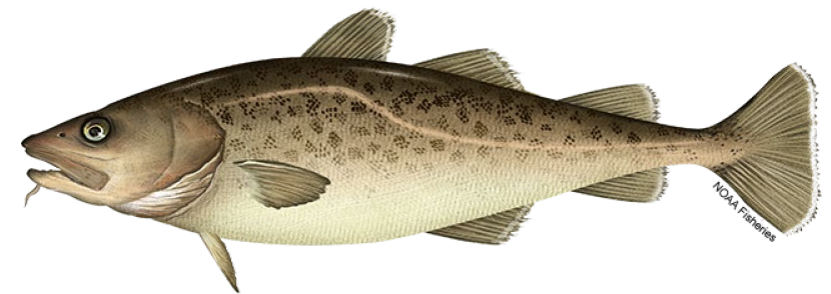
GOA Pacific cod

Highlights:

- Modified setting that affected application of CAAL data
- Explored how temperature time series are related to the LLS selectivity and growth parameters

Recommendations:

- Change setting to ensure CAAL data appropriately used
- Environmental links for LLS catchability be continued
 - Suggestion for randomization testing
- Environmental links to growth parameters be deferred



Comment

- WHAM model configured and available



GOA Pacific ocean perch

Operational Update planned for November

- No modeling framework changes
- Update data only

Work underway

- Adopting SS as a tool for further data explorations

Specifically:

- Selectivity forms/time varying etc
- Natural mortality



Thanks to Maia Kapur, Pete Hulson, Ben Williams



GOA Halibut discard mortality rates (DMRs)

Thanks to Michael Fey (AKFIN) and other Halibut DMR Working Group members: Jen Cahalan (PSMFC), Jennifer Ferdinand (NMFS AFSC), Mary Furuness (NMFS AKRO), Jason Gasper (NMFS AKRO), Ian Stewart (IPHC)

Area	Gear	Operation	2023 DMRs (specified)	2024/25 DMRs (recommended)
BSAI	Pot	All	26%	26% ^b
	Hook-and-line	CP	9%	7%
	Hook-and-line	CV	9% ^a	7% ^a
	Non-pelagic trawl	Mothership / CP	85%	85%
	Non-pelagic trawl	CV	62%	63%
GOA	Pot	All	27%	26% ^b
	Hook-and-line	CP	13%	11%
	Hook-and-line	CV	9%	10% ^b
	Non-pelagic trawl	Mothership / CP	83%	83%
	Non-pelagic trawl	CV	74%	69%
Non-pelagic trawl	CV-Rockfish Prog	55%	56% ^b	
All	Pelagic trawl	All	100%*	100%*

^a Based on BSAI HAL CP

^b 4-year average

*Fixed, not estimated

GOA Proposed harvest specifications (1 of 2) [\(link\)](#)

Table 1. Plan Team proposed OFL and ABC for Groundfish in the Gulf of Alaska (metric tons) for 2024 and 2025

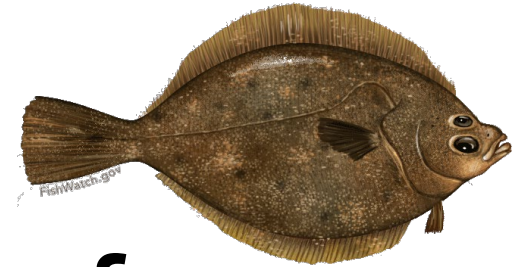
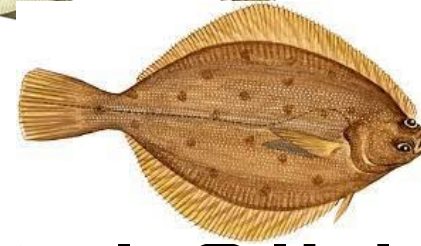
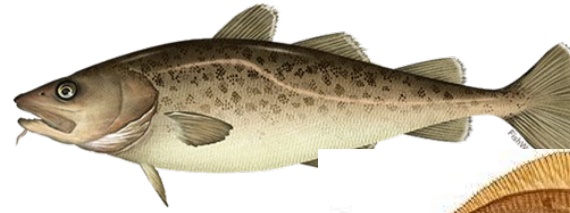
Species	Area	2022			Catch 12/31/2022	2023			Catch 9/14/2023	Plan Team Proposed 2024/25			
		OFL	ABC	TAC		OFL	ABC	TAC		OFL	ABC	TAC	
Pollock	State GHL	n/a	3,327	n/a		n/a	3,723	n/a	3,261	n/a	4,027	n/a	
	W (810)	n/a	23,714	23,714	23,815	n/a	26,958	26,958	6,033	n/a	29,156		
	C (820)	n/a	69,250	69,250	69,341	n/a	77,005	77,005	58,327	n/a	83,283		
	C (830)	n/a	30,068	30,068	30,505	n/a	33,729	33,729	13,052	n/a	36,478		
	WYAK	n/a	6,722	6,722	6,441	n/a	7,523	7,523	6,888	n/a	8,136		
	Subtotal		154,983	133,081	129,754	129,902	173,470	148,938	145,215	84,300	186,101	161,080	-
	EYAK/SEO		15,150	11,383	11,383	-	15,150	11,383	11,383	1	15,150	11,383	
Total		170,133	144,444	141,117	129,902	188,620	160,301	156,578	84,300	201,251	172,443	-	
Pacific Cod	W	n/a	9,942	9,959	5,320	n/a	7,464	5,225	3,233	n/a	6,873		
	C	n/a	19,752	14,814	13,195	n/a	14,830	11,123	8,501	n/a	13,655		
	E	n/a	3,117	2,338	298	n/a	2,340	1,755	510	n/a	2,155		
	Total		39,555	32,811	24,111	18,813	29,737	24,634	18,103	12,245	27,507	22,683	-
	GOA Total												
Sablefish	W	n/a	3,727	3,727	3,035	n/a	4,473	4,473	2,313	n/a	4,626		
	C	n/a	9,965	9,965	8,189	n/a	9,921	9,921	5,456	n/a	8,819		
	WYAK	n/a	3,437	3,437	2,746	n/a	3,205	3,205	2,043	n/a	2,669		
	SEO	n/a	5,665	5,665	5,237	n/a	5,802	5,802	3,596	n/a	4,981		
	GOA Total		n/a	22,794	22,794	19,207	n/a		23,201	13,409	n/a	n/a	-
Alaska-wide OFL and ABC	AK Total	40,432	34,521	n/a		47,390	40,502	n/a		48,561	41,539	n/a	
Shallow-Water Flatfish	W	n/a	21,256	13,250	33	n/a	22,485	13,250	33	n/a	23,299		
	C	n/a	25,305	25,305	1,264	n/a	26,769	26,769	589	n/a	27,737		
	WYAK	n/a	2,531	2,531	8	n/a	2,677	2,677	6	n/a	2,774		
	EYAK/SEO	n/a	1,518	1,518	2	n/a	1,606	1,606	1	n/a	1,664		
	Total		62,273	50,610	42,604	1,307	65,736	53,537	44,302	630	68,015	55,474	-
Deep-Water Flatfish	W	n/a	256	256	3	n/a	256	256	11	n/a	255		
	C	n/a	2,139	2,139	117	n/a	2,105	2,105	68	n/a	2,068		
	WYAK	n/a	1,431	1,431	3	n/a	1,407	1,407	3	n/a	1,383		
	EYAK/SEO	n/a	2,082	2,082	8	n/a	2,048	2,048	2	n/a	2,013		
	Total		7,026	5,908	5,908	131	6,918	5,816	5,816	84	6,802	5,719	-
Rex Sole	W	n/a	2,981	2,981	40	n/a	3,236	3,236	21	n/a	3,314		
	C	n/a	12,076	12,076	655	n/a	13,110	13,110	355	n/a	13,425		
	WYAK	n/a	1,361	1,361	-	n/a	1,439	1,439	-	n/a	1,453		
	EYAK/SEO	n/a	2,723	2,723	-	n/a	2,879	2,879	-	n/a	2,905		
	Total		23,302	19,141	19,141	695	25,135	20,664	20,664	376	25,652	21,097	-
Arrowtooth Flounder	W	n/a	33,658	14,500	446	n/a	30,469	14,500	133	n/a	30,093		
	C	n/a	68,394	68,394	11,092	n/a	65,000	65,000	8,102	n/a	64,200		
	WYAK	n/a	6,707	6,707	38	n/a	7,886	7,886	28	n/a	7,789		
	EYAK/SEO	n/a	11,020	6,900	67	n/a	16,130	6,900	25	n/a	15,932		
	Total		143,100	119,779	96,501	11,643	142,749	119,485	94,286	8,287	141,008	118,014	-
Flathead Sole	W	n/a	14,755	8,650	43	n/a	12,793	8,650	12	n/a	13,033		
	C	n/a	22,033	15,400	521	n/a	21,487	21,487	364	n/a	21,892		
	WYAK	n/a	1,511	1,511	-	n/a	2,320	2,320	-	n/a	2,363		
	EYAK/SEO	n/a	1,876	1,876	-	n/a	2,880	2,880	-	n/a	2,934		
	Total		48,928	40,175	27,437	564	48,161	39,480	35,337	376	49,073	40,222	-
Pacific ocean perch	W	n/a	2,602	2,602	2,506	n/a	2,529	2,529	2,312	n/a	2,461		
	C	n/a	30,806	30,806	25,548	n/a	29,940	29,940	23,288	n/a	29,138		
	WYAK	n/a	1,409	1,409	1,398	n/a	1,370	1,370	1,366	n/a	1,333		
	W/C/WYAK		41,470	34,817	34,817	29,452	40,308	33,839	33,839	26,967	39,229	32,932	-
	SEO		4,110	3,451	3,451	-	3,994	3,354	3,354	-	3,888	3,264	
	Total		45,580	38,268	38,268	29,452	44,302	37,193	37,193	26,967	43,117	69,128	-

Thanks to Abby Jahn

GOA Proposed harvest specifications (2 of 2) ([link](#))

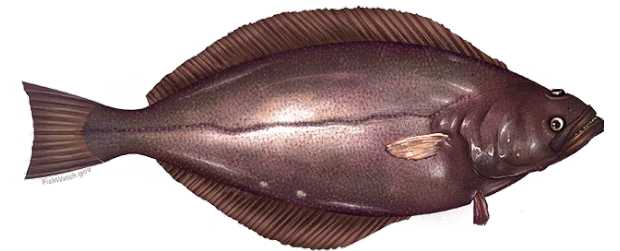
Northern Rockfish	W	n/a	1,944	1,944	474	n/a	2,614	2,614	360	n/a	2,497		
	C	n/a	3,202	3,202	1,424	n/a	2,350	2,350	934	n/a	2,244		
	E	n/a	-	-	-	n/a	-	-	-	n/a	-	-	
	Total		6,143	5,146	5,146	1,898	5,927	4,964	4,964	1,295	5,661	4,741	-
Shortraker Rockfish	W	n/a	51	51	7	n/a	51	51	6	n/a	51		
	C	n/a	280	280	294	n/a	280	280	133	n/a	280		
	E	n/a	374	374	171	n/a	374	374	186	n/a	374		
	Total		940	705	705	472	940	705	705	325	940	705	-
Dusky Rockfish	W	n/a	269	269	106	n/a	149	149	56	n/a	141		
	C	n/a	4,534	4,534	2,472	n/a	7,647	7,647	3,376	n/a	7,264		
	WYAK	n/a	427	427	6	n/a	90	90	1	n/a	85		
	EYAK/SEO	n/a	142	142	-	n/a	31	31	-	n/a	30		
	Total		8,614	5,372	5,372	2,584	9,638	7,917	7,917	3,433	9,154	7,520	-
Roughey and Blackspotted Rockfish	W	n/a	184	184	95	n/a	180	180	101	n/a	180		
	C	n/a	235	235	185	n/a	232	232	133	n/a	231		
	E	n/a	369	369	190	n/a	363	363	148	n/a	361		
	Total		947	788	788	470	930	775	775	381	927	772	-
Demersal shelf rockfish	Total		579	365	365	166	376	283	283	197	376	283	
Thornyhead Rockfish	W	n/a	352	352	110	n/a	314	314	49	n/a	314		
	C	n/a	910	910	173	n/a	693	693	87	n/a	693		
	E	n/a	691	691	76	n/a	621	621	44	n/a	621		
	Total		2,604	1,953	1,953	359	2,170	1,628	1,628	179	2,170	1,628	-
Other Rockfish	W/C	n/a	940	940	1,122	n/a	940	940	868	n/a	940		
	WYAK	n/a	370	370	78	n/a	370	370	46	n/a	370		
	EYAK/SEO	n/a	2,744	300	50	n/a	2,744	300	24	n/a	2,744		
	Total		5,320	4,054	1,610	1,250	5,320	4,054	1,610	938	5,320	4,054	-
Atka mackerel	Total		6,200	4,700	3,000	880	6,200	4,700	3,000	435	6,200	4,700	
Big Skate	W	n/a	591	591	174	n/a	591	591	47	n/a	591		
	C	n/a	1,482	1,482	735	n/a	1,482	1,482	619	n/a	1,482		
	E	n/a	794	794	116	n/a	794	794	117	n/a	794		
	Total		3,822	2,867	2,867	1,025	3,822	2,867	2,867	783	3,822	2,867	-
Longnose Skate	W	n/a	151	151	77	n/a	151	151	58	n/a	151		
	C	n/a	2,044	2,044	505	n/a	2,044	2,044	405	n/a	2,044		
	E	n/a	517	517	409	n/a	517	517	605	n/a	517		
	Total		3,616	2,712	2,712	991	3,616	2,712	2,712	1,068	3,616	2,712	-
Other Skates	GOA-wide		1,311	984	984	1,041	1,311	984	984	318	1,311	984	
Sharks	GOA-wide		5,006	3,755	3,755	2,160	6,521	4,891	4,891	1,344	6,521	4,891	
Octopuses	GOA-wide		1,307	980	980	155	1,307	980	980	139	1,307	980	
TOTAL			626,738	520,038	448,118	225,165	646,826	539,072	468,796	157,510	658,311	583,156	-
Sources: 2022 OFLs, ABCs, and TACs are from harvest specifications adopted by the Council in December 2021. 2022 catches through December 31, 2022, and 2023 catches through September 14, 2023 from AKR Catch Accounting.													





Supplemental Slides for GO A Groundfish Plan

Team



Other Rockfish: model updates

tier	species	Reliable survey biomass results		Proportion of hauls with positive catch		CV	Avg (WG+CG) GOA
		avg annual biomass (t)	REMA	propyrs	avg_pos	avg_CV	
3	<i>POP</i>	783,138	1	1	0.44	0.23	0.75
3	<i>Northern</i>	160,574	1	1	0.17	0.4	1
3	<i>Dusky</i>	71,074	1	1	0.17	0.35	0.84
4	<i>Sharpchin</i>	23,258	1	1	0.07	0.45	0.21
5	<i>Thornyheads</i>	66,513	1	1	0.25	0.07	0.63
5	<i>Shortraker</i>	36,578	1	1	0.08	0.25	0.52
5	<i>Silvergray</i>	29,898	1	1	0.07	0.38	0.11
5	<i>Redstripe</i>	14,734	1	1	0.03	0.55	0.27
5	<i>Harlequin</i>	12,639	1	1	0.07	0.52	0.71
5	<i>Redbanded</i>	4,988	1	1	0.11	0.27	0.27
5	<i>Yellowtail</i>	2,075	1	0.77	<0.01	0.66	0.08
5	<i>Yellowmouth</i>	1,067	1	0.82	<0.01	0.79	0.02
5	<i>Greenstriped</i>	477	1	0.94	0.01	0.43	0
5	<i>Darkblotched</i>	213	1	0.94	<0.01	0.57	0.03
5	<i>Widow</i>	165	1	0.77	<0.01	0.71	0.16
5	<i>Pygmy</i>	106	1	0.82	<0.01	0.79	0.35
5	<i>Bocaccio</i>	89	1	0.65	<0.01	0.83	0.09
5	<i>Splitnose</i>	47	1	0.77	<0.01	0.71	0.05
5	<i>Vermilion</i>	1	0	0.06	0	1	1

