Groundfish Risk Table Report: 2024 Update

History of Groundfish Risk Table Level Development

We collected risk table scores for groundfish stocks in the Bering Sea and Aleutian Islands (BSAI) and the Gulf of Alaska (GOA) fishery management plans from 2018 to present. During the first year of risk table implementation, 2018, only a handful of stocks completed their risk tables on a trial basis. Additionally, only three categories existed for the risk tables at that time, assessment, population dynamics, and ecosystem. The fourth category, fishery performance, was added in 2019. In 2021, the Scientific and Statistical Committee (SSC) requested that the four scoring levels be reduced to three (normal, increased, extreme). This reduction in levels did not occur until 2023, and using this reduced scoring, the levels 2 and 3 were approximately equivalent to the previous levels 3 and 4, respectively. In 2024, the text in the risk table categories was updated in response to an SSC request to revise the category descriptions to cover the range intended by the original table (SSC Minutes, December 2023). The new table descriptions are included in the 2024 BSAI and GOA SAFE Introduction. Because of these fluctuations in risk table levels and definitions, caution should be taken when comparing the 2018 trial year and recent reduced level years (2023 to present) with the interim years (2019-2022) of risk tables scores.

Risk Table Working Group

An AFSC working group was formed in early 2024 to review all the scores to date of the groundfish risk tables and summarize those results in one place. This effort created a living repository of the scores in a Google drive to serve as a reference for stock assessment authors as they deliberate over the risk tables. The collated information also allows documentation of the approaches authors have used to develop any reductions over time and identify any commonalities among risk tables. The summary table includes all the annual risk table scores by category (assessment-related considerations, population dynamics considerations, ecosystem considerations, and fishery-informed stock considerations), the maximum score across the categories, the author suggested reductions, the SSC recommended reduction, the method used to derive the reduction, and the reason (if any) for differing reduction recommendations between the authors, the Plan Team, or the SSC. The working group provided a presentation to the AFSC stock assessment authors of the initial summary table results (2018-2023) to gather feedback on the process. Following this presentation, the working group adjusted the summary graphics and tables for a more streamlined view and prepared the summary table for including the current year scores following the 2024 November Groundfish Plan Team.

Risk Table Summary

A total of 136 risk tables have been developed since 2018. Table 1 provides an overall summary of these risk tables, broken down by all Alaska, BSAI, and the GOA regions. Figures 1-3 provide a graphical representation of this summary table. There have been 77 risk tables for stocks with at least one elevated score, 59 risk tables for stocks without elevated scores, 25 stocks with author recommended reductions from maximum ABC, and 28 stocks with final reductions following review from the Groundfish Plan Team and SSC.

Table 2 provides a detailed look at the scores by risk table category for each stock over time along with the author recommended reduction and the SSC recommended reduction. A series of notes following Table 2 provides more details on the method used to derive the reduction and the reason for the adjustment by the Plan Team or SSC. A blank cell in this table means there was no score or risk table for the stock that year because it was an off-cycle year. However, a reduction may still occur in an off-cycle year due to a previous risk table decision.

Generally, the total number of stocks with reductions from maximum permissible ABC is relatively low compared to the total number of risk tables produced. Stocks with elevated scores seem to be stabilizing, although this fluctuates more in the BSAI during on and off-cycle years. The number of stocks with author recommended reductions had been increasing in the BSAI but started decreasing in 2023 and more so in 2024. In the GOA, the initial trial year had more stocks with author recommended reductions and has been decreasing ever since and stabilized in the last three years.

A variety of methods have been used to develop the recommended percent reduction from maximum ABC.
- Author deferred to SSC to provide a reduction if warranted
- Tier 3 advice used for tier 1 stock (EBS pollock and yellowfin sole)
- Previous projection results (e.g., BSAI blackspotted/ rougheye used the 2021 projections for 2023 ABC)
- Grant Thompson method (Appendix 2.6) - joint probability of max ABC exceeding true OFL and any elevated score leading to maxABC exceeding true OFL
- Thompson (2018) tabulated the mode of buffers for the period 2003-2017 as 10-20%, author used this as a guideline to set recommended buffer
- Author identified level of ABC required to maintain the stock above B20%
- ABC from alternative model run that resulted in better retrospective pattern, fit to data, and lower OFL and ABC
- Stair-step approach - split difference between this year's estimate of ABC and the previous year's projected estimate
- Reductions in recent recruitment estimates or reference period (e.g., sablefish, BSAI blackspotted/rougheye rockfish)

In most cases, if an author recommends a reduction, the SSC has generally agreed with the proposal, although there have been exceptions as with sablefish in 2019 and 2020 when a stairstep was used instead, or when they disagreed with the author recommendation as with

Greenland turbot in 2023 and did not put forward a reduction. There have also been a few cases when the author did not propose a reduction, but the SSC did in response to elevated risk table scores such as with GOA dusky rockfish in 2020, Aleutian Islands Pacific cod, and GOA pollock in 2023. A few times in 2019, some authors provided a complete risk table evaluation and suggested that a reduction from maximum permissible ABC was justified, and did not provide a recommended reduction amount. Instead, the authors deferred to the SSC following discussion on this topic in the 2018 SSC minutes on the risk table (December 2018, SSC, pg. 2). The SSC did not reduce in two of the deferred cases and in one case used the ensemble model for EBS Pacific cod as a reduction from the single model ABC.

This risk table summary serves as a living comprehensive documentation of the scoring for all groundfish risk tables and characterizes how risk tables have been used for proposed and final reductions following Plan Team and SSC review. Reductions have occurred for 14 stocks over the tenure of the risk tables. This includes one Alaska-wide stock (sablefish), eight stocks from the BSAI (EBS pollock, EBS Pacific cod, AI Pacific cod, BSAI yellowfin sole, BSAI Northern rock sole, BSAI blackspotted/rougheye rockfish, BSAI Greenland turbot, and BSAI sharks) and five stocks from the GOA (GOA pollock, GOA Pacific cod, GOA dusky rockfish, GOA demersal shelf rockfish, and GOA rougheye/blackspotted rockfish). Authors and reviewers of the risk tables may use this report as reference of the groundfish risk table development over time and to identify any commonalities among the stocks for use in future risk tables.

Please contact Kalei Shotwell (kalei.shotwell@noaa.gov) and Meaghan Bryan (meaghan.bryan@noaa.gov) for any questions on this report.

Tables

Table 1. Summary of risk table scores by region from 2018 to present.

Year	Region	Total # risk tables	Stocks with elevated scores	Stocks without elevated scores	Stocks with author recommended reductions	Stocks with reductions
2018	Alaska	5	4	1	4	4
2019	Alaska	18	10	8	3	4
2020	Alaska	28	14	14	2	3
2021	Alaska	18	11	7	2	5
2022	Alaska	25	14	11	6	5
2023	Alaska	16	11	5	5	7
2024	Alaska	26	13	13	3	
2018	BSAI	2	1	1	1	1
2019	BSAI	7	4	3	1	2
2020	BSAI	20	9	11	1	1
2021	BSAI	7	5	2	2	2
2022	BSAI	16	9	7	5	4
2023	BSAI	7	5	2	4	5
2024	BSAI	17	9	8	2	
2018	GOA	3	3	0	3	3
2019	GOA	11	6	5	2	2
2020	GOA	8	5	3	1	2
2021	GOA	11	6	5	0	3
2022	GOA	9	5	4	1	1
2023	GOA	9	6	3	1	2
2024	GOA	9	4	5	1	

Table 2. Risk table scores by category for all groundfish stocks for assessment years 2018 to present. NA means no score because the risk table was not completed that year. "Author suggested reduction" is the recommendation to reduce from maximum ABC provided in the stock assessment and fishery evaluation (SAFE) report. "SSC recommended reduction" is the recommendation from the Scientific and Statistical Committee (SSC) either in agreement with the author's recommendation or a new recommendation following deliberation (current year is not yet completed and therefore blank).

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	AI Pcod	2018							
BSAI	AI Pcod	2019	1	2	1	1	2	Deferred	
BSAI	AI Pcod	2020	1	2	1	1	2		
BSAI	AI Pcod	2021	2	2	1	1	2		
BSAI	AI Pcod	2022	1	2	1	2	2		
BSAI	AI Pcod	2023	1	2	1	2	2		0.1
BSAI	AI Pcod	2024	1	2	1	2	2		
BSAI	AI pollock	2018							
BSAI	AI pollock	2019							
BSAI	AI pollock	2020	1	1	1	1	1		
BSAI	AI pollock	2021							
BSAI	AI pollock	2022	1	1	1	1	1		
BSAI	AI pollock	2023							
BSAI	AI pollock	2024	1	1	1	1	1		
BSAI	Bogoslof pollock	2018							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	Bogoslof pollock	2019							
BSAI	Bogoslof pollock	2020	1	1	1	1	1		
BSAI	Bogoslof pollock	2021							
BSAI	Bogoslof pollock	2022	1	1	1	1	1		
BSAI	Bogoslof pollock	2023							
BSAI	Bogoslof pollock	2024	1	1	1	1	1		
BSAI	BSAI Alaska Plaice	2018							
BSAI	BSAI Alaska Plaice	2019							
BSAI	BSAI Alaska Plaice	2020							
BSAI	BSAI Alaska Plaice	2021	1	1	1	1	1		
BSAI	BSAI Alaska Plaice	2022							
BSAI	BSAI Alaska Plaice	2023							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Alaska Plaice	2024	1	1	1	1	1		
BSAI	BSAI Arrowtooth flounder	2018							
BSAI	BSAI Arrowtooth flounder	2019							
BSAI	BSAI Arrowtooth flounder	2020	1	1	1	1	1		
BSAI	BSAI Arrowtooth flounder	2021							
BSAI	BSAI Arrowtooth flounder	2022	1	1	1	1	1		
BSAI	BSAI Arrowtooth flounder	2023							
BSAI	BSAI Arrowtooth flounder	2024							
BSAI	BSAI Atka Mackerel	2018	1	1		1	1		
BSAI	BSAI Atka Mackerel	2019	1	1	1	1	1		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Atka Mackerel	2020	1	1	1	1	1		
BSAI	BSAI Atka Mackerel	2021	1	1	1	1	1		
BSAI	BSAI Atka Mackerel	2022	2	2	1	1	2		
BSAI	BSAI Atka Mackerel	2023							
BSAI	BSAI Atka Mackerel	2024	1	2	1	1	2		
BSAI	BSAI Blackspotted / Rougheye	2018							
BSAI	BSAI Blackspotted / Rougheye	2019							
BSAI	BSAI Blackspotted / Rougheye	2020	3	1	2	2	3		
BSAI	BSAI Blackspotted / Rougheye	2021							
BSAI	BSAI Blackspotted / Rougheye	2022	3	1	2	2	3	0.11	0.11

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Blackspotted / Rougheye	2023						0.11	0.11
BSAI	BSAI Blackspotted / Rougheye	2024	2	1	2	2	2		
BSAI	BSAI Flathead sole	2018							
BSAI	BSAI Flathead sole	2019							
BSAI	BSAI Flathead sole	2020	1	1	1	1	1		
BSAI	BSAI Flathead sole	2021							
BSAI	BSAI Flathead sole	2022							
BSAI	BSAI Flathead sole	2023							
BSAI	BSAI Flathead sole	2024	1	1	1	1	1		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Greenland turbot	2018							
BSAI	BSAI Greenland turbot	2019							
BSAI	BSAI Greenland turbot	2020	1	2	1	1	2		
BSAI	BSAI Greenland turbot	2021							
BSAI	BSAI Greenland turbot	2022	2	1	1	2	2	0.06	
BSAI	BSAI Greenland turbot	2023							
BSAI	BSAI Greenland turbot	2024	3	1	2	2	3	0.1	
BSAI	BSAI Kamchatka	2018							
BSAI	BSAI Kamchatka	2019							
BSAI	BSAI Kamchatka	2020	1	1	1	1	1		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Kamchatka	2021							
BSAI	BSAI Kamchatka	2022	2	1	1	1	2		
BSAI	BSAI Kamchatka	2023							
BSAI	BSAI Kamchatka	2024	2	1	1	1	2		
BSAI	BSAI Northern rockfish	2018							
BSAI	BSAI Northern rockfish	2019	2	2	1	1	2		
BSAI	BSAI Northern rockfish	2020							
BSAI	BSAI Northern rockfish	2021	2	1	1	1	2		
BSAI	BSAI Northern rockfish	2022							
BSAI	BSAI Northern rockfish	2023	2	1	1	2	2		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Northern rockfish	2024							
BSAI	BSAI NRS	2018							
BSAI	BSAI NRS	2019							
BSAI	BSAI NRS	2020	2	1	1	1	2		
BSAI	BSAI NRS	2021							
BSAI	BSAI NRS	2022	3	1	1	1	3	0.23	0.23
BSAI	BSAI NRS	2023						0.36	0.36
BSAI	BSAI NRS	2024	1	1	1	1	1		
BSAI	BSAI Octopus	2018							
BSAI	BSAI Octopus	2019	1	1	1	1	1		
BSAI	BSAI Octopus	2020	1	1	1	1	1		
BSAI	BSAI Octopus	2021							
BSAI	BSAI Octopus	2022							
BSAI	BSAI Octopus	2023	1	1	1	1	1		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Octopus	2024							
BSAI	BSAI Other Flatfish	2018							
BSAI	BSAI Other Flatfish	2019							
BSAI	BSAI Other Flatfish	2020	1	1	1	1	1		
BSAI	BSAI Other Flatfish	2021							
BSAI	BSAI Other Flatfish	2022							
BSAI	BSAI Other Flatfish	2023							
BSAI	BSAI Other Flatfish	2024	1	1	1	1	1		
BSAI	BSAI Other rockfish	2018							
BSAI	BSAI Other rockfish	2019							
BSAI	BSAI Other rockfish	2020	2	1	1	1	2		
BSAI	BSAI Other rockfish	2021							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Other rockfish	2022	1	1	1	1	1		
BSAI	BSAI Other rockfish	2023							
BSAI	BSAI Other rockfish	2024	2	1	2	2	2		
BSAI	BSAI POP	2018							
BSAI	BSAI POP	2019							
BSAI	BSAI POP	2020	2	1	1	1	2		
BSAI	BSAI POP	2021							
BSAI	BSAI POP	2022	2	1	1	1	2		
BSAI	BSAI POP	2023							
BSAI	BSAI POP	2024	2	1	1	1	2		
BSAI	BSAI Sculpins	2018							
BSAI	BSAI Sculpins	2019							
BSAI	BSAI Sculpins	2020							
BSAI	BSAI Sculpins	2021							
BSAI	BSAI Sculpins	2022							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Sculpins	2023							
BSAI	BSAI Sculpins	2024							
BSAI	BSAI sharks	2018							
BSAI	BSAI sharks	2019							
BSAI	BSAI sharks	2020	2	1	1	2	2		
BSAI	BSAI sharks	2021							
BSAI	BSAI sharks	2022	3	1	1	2	3	0.13	0.13
BSAI	BSAI sharks	2023						0.13	0.13
BSAI	BSAI sharks	2024						0.13	
BSAI	BSAI Shortraker rockfish	2018							
BSAI	BSAI Shortraker rockfish	2019							
BSAI	BSAI Shortraker rockfish	2020	1	1	1	1	1		
BSAI	BSAI Shortraker rockfish	2021							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI Shortraker rockfish	2022	1	1	1	1	1		
BSAI	BSAI Shortraker rockfish	2023							
BSAI	BSAI Shortraker rockfish	2024	2	1	1	1	2		
BSAI	BSAI skates	2018							
BSAI	BSAI skates	2019							
BSAI	BSAI skates	2020	1	1	1	1	1		
BSAI	BSAI skates	2021							
BSAI	BSAI skates	2022							
BSAI	BSAI skates	2023	2	1	1	1	2		
BSAI	BSAI skates	2024							
BSAI	BSAI YFS	2018							
BSAI	BSAI YFS	2019	1	1	1	1	1		
BSAI	BSAI YFS	2020	1	1	1	1	1		
BSAI	BSAI YFS	2021	1	2	1	2	2	0.24	0.24
BSAI	BSAI YFS	2022	1	1	1	1	1		
BSAI	BSAI YFS	2023	1	2	1	2	2		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
BSAI	BSAI YFS	2024	1	1	1	1	1		
BSAI	EBS Pcod	2018							
BSAI	EBS Pcod	2019	1	2	1	1	2	Deferred	Ensemble
BSAI	EBS Pcod	2020	1	2	1	1	2		
BSAI	EBS Pcod	2021	1	2	1	1	2		
BSAI	EBS Pcod	2022	1	1	1	1	1		
BSAI	EBS Pcod	2023	1	1	1	1	1		
BSAI	EBS Pcod	2024	1	2	1	1	2		
BSAI	EBS pollock	2018	1	2		2	2	0.3	0.3
BSAI	EBS pollock	2019	1	2	2	2	2	0.43	0.43
BSAI	EBS pollock	2020	1	2	2	1	2	0.3	0.3
BSAI	EBS pollock	2021	2	2	2	2	2	0.11	0.11
BSAI	EBS pollock	2022	2	1	1	1	2	0.43	0.43
BSAI	EBS pollock	2023	1	2	1	1	2	0.18	0.18
BSAI	EBS pollock	2024	1	1	1	1	2		
GOA	GOA Arrowtooth	2018							
GOA	GOA Arrowtooth	2019	1	2	1	1	2		
GOA	GOA Arrowtooth	2020							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA Arrowtooth	2021	1	1	1	1	1		
GOA	GOA Arrowtooth	2022							
GOA	GOA Arrowtooth	2023							
GOA	GOA Arrowtooth	2024							
GOA	GOA Deepwater Flatfish	2018							
GOA	GOA Deepwater Flatfish	2019	2	1	1	1	2		
GOA	GOA Deepwater Flatfish	2020							
GOA	GOA Deepwater Flatfish	2021							
GOA	GOA Deepwater Flatfish	2022							
GOA	GOA Deepwater Flatfish	2023	2	1	1	1	2		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA Deepwater Flatfish	2024							
GOA	GOA Demersal rockfish	2018							
GOA	GOA Demersal rockfish	2019							
GOA	GOA Demersal rockfish	2020							
GOA	GOA Demersal rockfish	2021	2	1	2	2	2		0.22
GOA	GOA Demersal rockfish	2022	2	1	2	2	2	0.15	0.15
GOA	GOA Demersal rockfish	2023							
GOA	GOA demersal rockfish SEO	2024	2	1	2	3	3	0.2	

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA demersal rockfish WG/CG/Y	2024	1	1	1	1	1		
GOA	GOA Dusky rockfish	2018							
GOA	GOA Dusky rockfish	2019							
GOA	GOA Dusky rockfish	2020	2	1	1	1	2		0.24
GOA	GOA Dusky rockfish	2021							0.22
GOA	GOA Dusky rockfish	2022	2	1	1	2	2		
GOA	GOA Dusky rockfish	2023							
GOA	GOA Dusky rockfish	2024	2	1	1	1	2		
GOA	GOA Flathead sole	2018							
GOA	GOA Flathead sole	2019							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA Flathead sole	2020							
GOA	GOA Flathead sole	2021							
GOA	GOA Flathead sole	2022	1	1	1	1	1		
GOA	GOA Flathead sole	2023							
GOA	GOA Flathead sole	2024							
GOA	GOA Northern Rockfish	2018							
GOA	GOA Northern Rockfish	2019							
GOA	GOA Northern Rockfish	2020	1	1	1	1	1		
GOA	GOA Northern Rockfish	2021							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA Northern Rockfish	2022	1	1	1	2	2		
GOA	GOA Northern Rockfish	2023							
GOA	GOA Northern Rockfish	2024	1	1	1	2	2		
GOA	GOA Octopus	2018							
GOA	GOA Octopus	2019	1	1	1	1	1		
GOA	GOA Octopus	2020							
GOA	GOA Octopus	2021							
GOA	GOA Octopus	2022							
GOA	GOA Octopus	2023							
GOA	GOA Octopus	2024							
GOA	GOA other rockfish	2018							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA other rockfish	2019	1	1	1	1	1		
GOA	GOA other rockfish	2020							
GOA	GOA other rockfish	2021							
GOA	GOA other rockfish	2022							
GOA	GOA other rockfish	2023	1	1	1	1	1		
GOA	GOA other rockfish	2024	1	1	1	1	1		
GOA	GOA Pcod	2018	2	2		4	4	0.14	0.14
GOA	GOA Pcod	2019	2	2	1	2	2	Deferred	
GOA	GOA Pcod	2020	2	1	1	2	2		
GOA	GOA Pcod	2021	1	1	1	1	1		2021 ABC set to 2020 ABC
GOA	GOA Pcod	2022	2	1	1	2	2		
GOA	GOA Pcod	2023	1	1	1	2	2		
GOA	GOA Pcod	2024	1	1	1	2	2		
GOA	GOA pollock	2018	2	2		2	2	0.15	0.15
GOA	GOA pollock	2019	2	1	1	1	2	0.1	0.1
GOA	GOA pollock	2020	1	1	1	1	1		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA pollock	2021	1	1	1	1	1		
GOA	GOA pollock	2022	1	1	1	1	1		
GOA	GOA pollock	2023	2	1	1	1	2		0.18
GOA	GOA pollock	2024	1	1	1	1	1		
GOA	GOA POP	2018							
GOA	GOA POP	2019	2	1	1	2	2		
GOA	GOA POP	2020	2	1	1	2	2		
GOA	GOA POP	2021	2	1	1	2	2		
GOA	GOA POP	2022							
GOA	GOA POP	2023	2	1	1	2	2		
GOA	GOA POP	2024							
GOA	GOA Rex sole	2018							
GOA	GOA Rex sole	2019							
GOA	GOA Rex sole	2020							
GOA	GOA Rex sole	2021	2	1	1	2	2		
GOA	GOA Rex sole	2022							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA Rex sole	2023							
GOA	GOA Rex sole	2024							
GOA	GOA Rougheye / Blackspotted	2018							
GOA	GOA Rougheye / Blackspotted	2019	1	1	1	1	1		
GOA	GOA Rougheye / Blackspotted	2020							
GOA	GOA Rougheye / Blackspotted	2021	2	1	1	1	2		
GOA	GOA Rougheye / Blackspotted	2022							
GOA	GOA Rougheye / Blackspotted	2023	2	1	1	2	2	0.2	0.2
GOA	GOA Rougheye / Blackspotted	2024							
GOA	GOA sculpin	2018							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA sculpin	2019							
GOA	GOA sculpin	2020							
GOA	GOA sculpin	2021							
GOA	GOA sculpin	2022							
GOA	GOA sculpin	2023							
GOA	GOA sculpin	2024							
GOA	GOA Northern and Southern Rock Sole	2018							
GOA	GOA Northern and Southern Rock Sole	2019							
GOA	GOA Northern and Southern Rock Sole	2020							
GOA	GOA Northern and Southern Rock Sole	2021	2	1	1	1	2		
GOA	GOA Northern and Southern Rock Sole	2022							

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA Northern and Southern Rock Sole	2023							
GOA	GOA Northern and Southern Rock Sole	2024							
GOA	GOA Sharks	2018							
GOA	GOA Sharks	2019							
GOA	GOA Sharks	2020	2	1	1	2	2		
GOA	GOA Sharks	2021							
GOA	GOA Sharks	2022	3	1	1	2	3		
GOA	GOA Sharks	2023							
GOA	GOA Sharks	2024							
GOA	GOA Shortraker	2018							
GOA	GOA Shortraker	2019	1	1	1	1	1		
GOA	GOA Shortraker	2020							
GOA	GOA Shortraker	2021	1	1	1	1	1		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA Shortraker	2022							
GOA	GOA Shortraker	2023	1	1	1	1	1		
GOA	GOA Shortraker	2024							
GOA	GOA Skates	2018							
GOA	GOA Skates	2019	1	1	1	1	1		
GOA	GOA Skates	2020							
GOA	GOA Skates	2021	1	1	1	1	1		
GOA	GOA Skates	2022							
GOA	GOA Skates	2023	1	1	1	1	1		
GOA	GOA Skates	2024							
GOA	GOA Thornyheads	2018							
GOA	GOA Thornyheads	2019							
GOA	GOA Thornyheads	2020	1	1	1	1	1		
GOA	GOA Thornyheads	2021							
GOA	GOA Thornyheads	2022	1	1	1	1	1		

Region	Stock	Year	Assessment related considerations	Ecosystem considerations	Fishery informed stock consideration	Population dynamics considerations	Max score	Author suggested reduction	SSC recommended reduction
GOA	GOA Thornyheads	2023							
GOA	GOA Thornyheads	2024	1	1	1	1	1		
GOA	Sablefish	2018	2	2		4	4	0.45	0.45
GOA	Sablefish	2019	2	2	3	3	3	0.57	0.5
GOA	Sablefish	2020	3	2	3	3	3	0.57	0.44
GOA	Sablefish	2021	1	1	2	2	2		
GOA	Sablefish	2022	1	1	1	1	1		
GOA	Sablefish	2023	1	1	2	1	2		
GOA	Sablefish	2024	1	1	1	1	1		

Notes on PT or SSC Adjustment

- 2018:
  - EBS Pollock: Overall risk table score was 2 (max of the categories). The buffer was developed using the tier 3 mgmt advice, which the SSC had agreed with in the past given the uncertainties outlined by the author.
  - Sablefish: Lots of reasons for uncertainty (12 points see SAFE for details); ABC equal to previous year ABC = 45% reduction from maxABC
  - GOA Pollock: Contrasting survey trends, reliance on one strong recruitment year class in 2012, and mixed ecosystem signals (with no ESP yet) resulted in scores of 2 across the categories. The SSC recommended against using a table to show example alternatives to select buffers based on that risk level. Thompson (Sept 2018 document) tabulated the mode of buffers for the period of 2003-2017 as 10-20 percent. The authors took this as a guideline and recommended a 15% buffer to obtain the author's recommended ABC
  - GOA Pacific Cod: Recommended ABC of 17,000 to maintain the stock above B20% in 2020
- 2019
  - EBS Pollock: Overall score is level 2 (max of individual scores). Buffer developed from the tier 3 advice
  - EBS Pacific Cod: author deferred to SSC, the SSC used the single model for OFL, and the ensemble for a reduced ABC from the single model.
  - Sablefish: Still lots of uncertainty; 25% increase from previous year ABC was the largest increase since 1996, and a 25% increases = 57% reduction from maxABC, SSC recommends calculating the ABC based on a 25% stairstep whereby the 2019 ABC is increased by 25% of the projected step between the 2019 ABC and the 2020 maxABC, and then that estimate is corrected for whale depredation to provide the final 2020 ABC. This process was repeated to estimate the 2021 ABC. The 2020 ABC represented a 50% reduction from the 2020 maxABC.
  - GOA Pollock: Contrasting trends of survey indices continued to persist kept assessment concerns at level 2, but presence of 2018 year class, ESP now available and more indicators evaluated (author noted on the fence between 1 and 2 and important to keep evaluating these indicators), and evaluation of fishery performance in the ESP kept the remaining three categories at 1. Overall score was 2 suggesting that still appropriate to set the ABC below max permissible. The authors stated that a buffer of 10% to address the substantially increased concerns is slightly lower than the buffer applied last year to address slightly more elevated concerns and a useful starting point for PT/SSC deliberations
- 2020
  - EBS Pollock: Overall score is level 2 (max of individual scores). Buffer developed from the tier 3 advice

- ○ Sablefish: ABC equal to previous year ABC = 57% reduction from maxABC, SSC did not continue with stairstep to the 50%, but opted to again increase from 2020 ABC by 25% the range to the maxABC and results in 44% reduction from maxABC
- ○ GOA Dusky Rockfish: large increase in the retrospective pattern, resulting primarily from two additional years of data but also potentially arising from new VAST parameterization, the SSC recommends a stair step approach for setting the ABC. Under this approach, the 2021 ABC would be set halfway between the 2020 ABC (3,676t) and the 2021 maximum ABC from the recommended model (Model 15.5a). This would amount to a 24% decrease from the maximum ABC for 2021. The 2022 ABC would be set similarly, at halfway between the 2020 ABC and the 2022 maximum ABC, resulting in a 23% decrease from the 2022 maximum ABC. The SSC recommends continuing with the 50% stair step methodology (applying a 50% stairstep between the 2020 ABC and the updated 2022 maximum ABC and the same for the estimated 2023 maximum ABC) when setting specifications until a new full assessment is presented for 2023

- 2021
  - ○ EBS Pollock: The SSC requested examining Tier 2 values as an alternative. Unlike Tier 3, using Tier 2 would have a constant buffer relative to the Tier 1 value (at about 11%).
  - ○ BSAI Yellowfin Sole: YFS is a tier 1 stock. Given concerns about population dynamics (Level 2: Stock trends are declining at a slow but steady pace; survey estimate in 2021 was the third lowest since 1982) and environmental/ecosystem concerns (Level 2: Recent data suggest concerns of thermal exposure and fish conditions in the NBS) the author suggested using the mean of the Tier 1 and Tier 3 ABCs as the maximum ABC. The reasoning for this is that the Tier 3 reference points are more precautionary than Tier 1 because Tier 3 methodology does not assume a known spawning-recruitment relationship. This resulted in a 24% reduction.
  - ○ GOA Pacific Cod: SSC set 2021 ABC the same as the 2020 ABC
  - ○ GOA Dusky Rockfish: Same from above, per the assessment cycle
  - ○ GOA Demersal Shelf Rockfish: The maximum allowable ABC for DSR for 2022 is 342 t (322 t yelloweye + 20 t non-yelloweye DSR), which is 14 t higher than the maximum allowable ABC for 2021. The DSR complex is particularly vulnerable to overfishing given their longevity, late maturation, and habitat-specific residency. In addition, there is increased concern for Southeast Outside (SEO) Subdistrict yelloweye rockfish, as described in the risk table. Therefore, as in previous years, we recommend a harvest rate lower than the maximum allowed under Tier 4; F=M=0.02.

- 2022
  - ○ EBS Pollock: Author recommend reducing the ABC to the value provided under Tier 3 projections.

- ○ BSAI Northern Rock Sole: ABC was reduced from the max ABC from the base model to the OFL of an alternative model that had an improved retrospective pattern and better fit to the survey data. A general feature of the base model was a strong retrospective pattern in the estimates of recent recruitment and SSB. Two alternative models that were not considered for management, had improved retrospective patterns and fit to the survey data due to the incorporation of data weighting methods. The OFL and ABC from the two alternative models were lower than the base model. Another reason for the suggested reduction is that the probability of max ABC exceeding the true, unknown OFL was high.
- ○ BSAI Blackspotted/Rougheye Rockfish: Our recommended ABC for the AI portion of the stock is 467 t, which was obtained from the 2021 projection for 2023. This is a slight increase from the value of 453 t for the AI portion of the stock for 2022, and a 12% decline from the maximum ABC for the AI portion and an overal BSAI reduction of 11%.
- ○ BSAI Sharks: BSAI sharks are a Tier 6 assessment. The 2023 assessment used a qualitative Only Reliable Catch Stocks (ORCS) alternative method similar to the Restrepo et al.1998 guidance, but fit to the modern OFL/ABC framework. The assessment also used the 90th percentile of the catch time series instead of the maximum historical values to avoid undue influence from large or misreported hauls. The alternative 90th percent method was applied to other/unidentified sharks and spiny dogfish in the BSAI. The ORCS method was applied to BSAI Pacific Sleeper shark.
- ○ GOA Demersal Shelf Rockfish: 15% reduction in the maximum permissible ABC of yelloweye rockfish to which the maximum permissible ABC of the Tier 6 species are added
- 2023
  - ○ EBS Pollock: Author recommended reducing the ABC to the value provided under Tier 3 projections.
  - ○ AI Pacific Cod: PT reduced maximum ABC by 8% based on setting the ABC equal to OFL from Model 23.2. SSC recommended a 10% reduction based on elevated levels in the ecosystem (higher temperatures in AI) and population dynamics (suitability of longline survey to index Pcod, continued decline of stock, no new survey data) categories.
  - ○ BSAI Northern Rock Sole: 2023 was a harvest projection year and the 2022 method to reduce ABC from the maximum ABC was used.
  - ○ BSAI Blackspotted/Rougheye Rockfish: The recommended 2023 ABC for the AI portion of the stock was 467 t, which was the projected 2023 value from the 2021 projection model. This ABC was 87.6% of the maximum 2023 ABC of 533 t, and this ratio between recommended ABC and max ABC is also applied for this harvest projection. This represents an overall BSAI reduction of 11% from max.
  - ○ BSAI Sharks: Catch report. 2022 ABC/OFL used.
  - ○ GOA Pollock: Contrasting trends in surveys have returned and the Shelikof abundance estimate was unexpectedly low, outlying areas higher, but not abnormally higher and so not well explained by spatial shifts, could be a mismatch

in spawn timing and survey timing, but covariate values only moderately explain lower catchability and not explain poor fit to the new data point, also significant retrospective pattern, led to increase to level 2. Authors chose not to reduce from maximum ABC given the overall lack of elevated scores. The SSC was concerned about the dramatic increase in ABC that is expected to drop 56% in 2025. They noted the elevated level 2 stock assessment category and that the recent mix of very low and near average recruitments do not indicate that much biomass entering the system. Increase in ABC seems extreme and SSC concerned about discrepancies between model predicted and survey trends. SSC recommended setting 2024 ABC halfway between the 2023 ABC and the recommended 2024 ABC.

- ○ GOA Rougheye/Blackspotted Rockfish: Due to major concerns in the assessment and population dynamics categories of the risk table, a reduction from the maximum permissible ABC of 1,302 t to 1,037 t was recommended for 2024. A "stair step" approach was used by splitting the difference between the 2024 ABC specified last year and the 2024 maximum ABC estimated this year. Due to retrospective patterns in the assessment, poor fits to the data overall, and high uncertainty in the scale and trend of the stock, the assessment section of the Risk Table was rated a "Level 2 – Major Concern." The downward trends in both survey indices warranted an increase to "Level 2 –Major Concern" in the population dynamics section of the Risk Table.

- ● 2024

  - ○ BSAI Greenland Turbot: The authors suggest a 10% reduction in ABC from maximum ABC may be warranted given the uncertainty about stock status, the loss of fishery-independent data in areas where the adult population is found, model structural uncertainty, uncertainty about future recruitment, and declining catch with a declining population.
  - ○ BSAI Sharks: Catch report. 2022 ABC/OFL used.
  - ○ GOA Demersal Shelf Rockfish SEO: The authors recommended a 20% reduction in max ABC due to extreme concern in the population dynamics category (rapid change in biomass and lack of ROV survey data) for DSR in SEO along with increased concerns in the assessment (uncertainty in ADFG survey biomass estimates remains a concern) and fishery performance categories (bycatch in commercial fishery has increasing trend from 2014 and 2024 is very high value although down from 2022 and 2023).
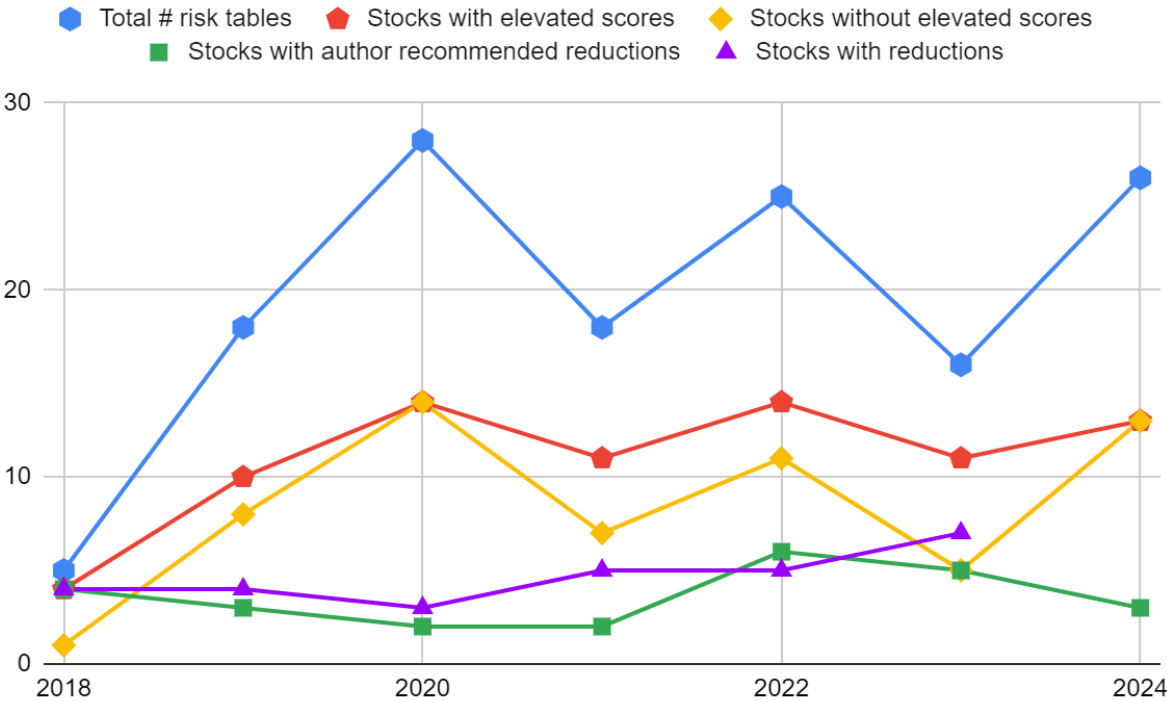
Figures
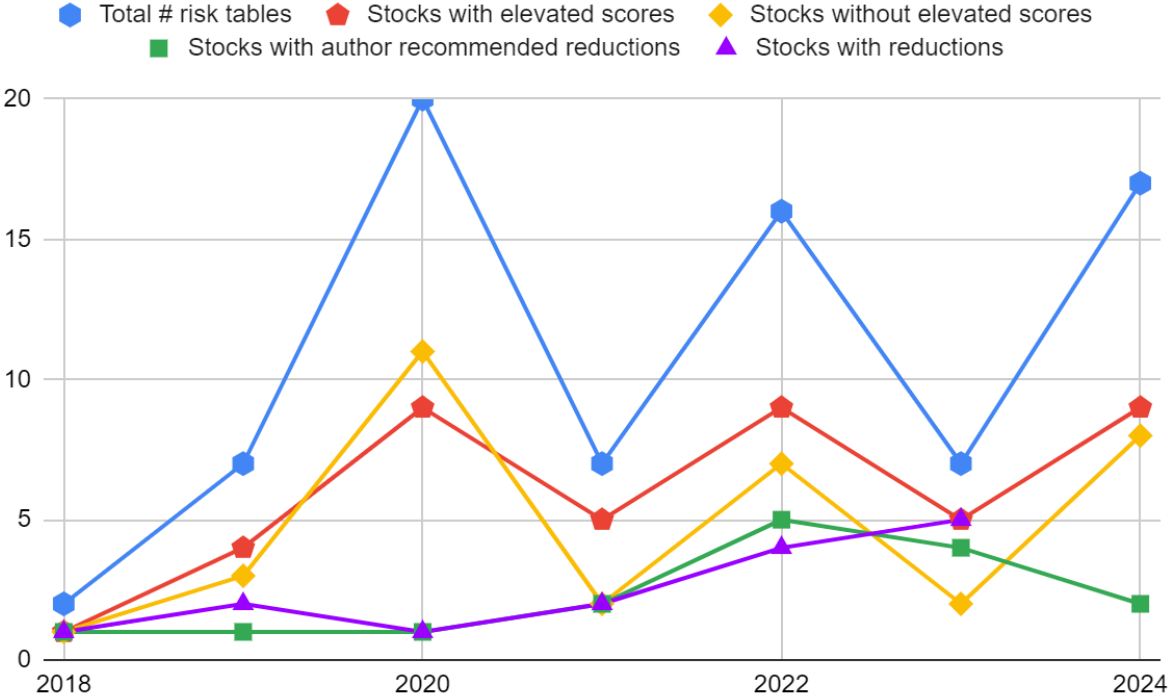

Figure 1: Summary counts of risk tables for all Alaska groundfish over the years 2018 to present based on Table 1. Blue line is the total number of risk tables completed for all stocks. Red line is the count of stocks with risk tables that had at least one elevated score (>=2). Yellow line is the count of stocks without any elevated scores. Green line is the count of stocks with an author recommended reduction from maximum ABC. Purple line is the final count of risk tables with a reduction following review from Plan Team and SSC.

Figure 2: Summary counts of risk tables for the Bering Sea and Aleutian Islands (BSAI) groundfish over the years 2018 to present based on Table 1. Blue line is the total number of risk tables completed for all stocks. Red line is the count of stocks with risk tables that had at least one elevated score (>=2). Yellow line is the count of stocks without any elevated scores. Green line is the count of stocks with an author recommended reduction from maximum ABC. Purple line is the final count of risk tables with a reduction following review from Plan Team and SSC.
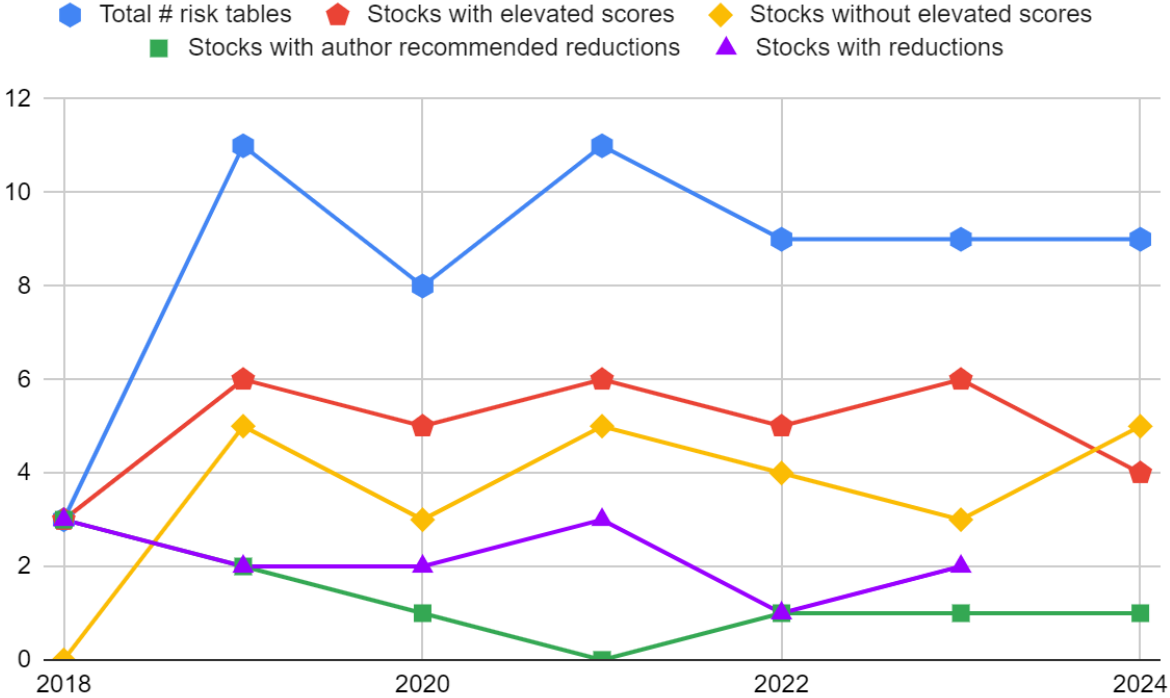
Figure 3: Summary counts of risk tables for the Gulf of Alaska (GOA) groundfish over the years 2018 to present based on Table 1. Blue line is the total number of risk tables completed for all stocks. Red line is the count of stocks with risk tables that had at least one elevated score (>=2). Yellow line is the count of stocks without any elevated scores. Green line is the count of stocks with an author recommended reduction from maximum ABC. Purple line is the final count of risk tables with a reduction following review from Plan Team and SSC.