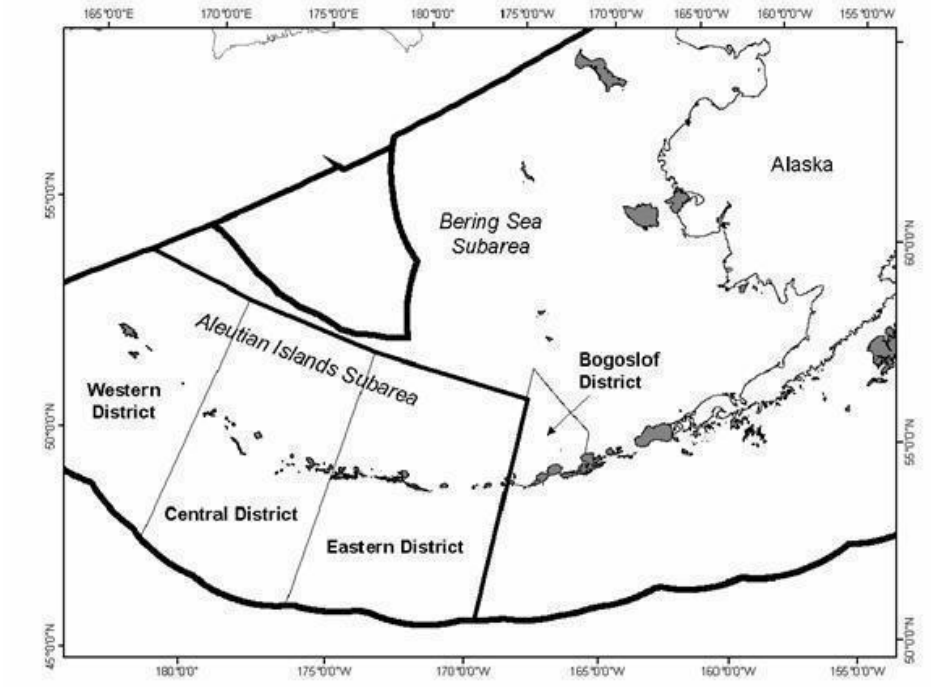
STOCK ASSESSMENT AND FISHERY EVALUATION REPORT

FOR THE GROUNDFISH RESOURCES

OF THE BERING SEA/ALEUTIAN ISLANDS REGIONS

Compiled by:

The Plan Team for the Groundfish Fisheries
of the Bering Sea and Aleutian Islands



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Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Region

BSAI Introduction Contents

Summary 3
Introduction 3
Background Information 3
Historical Catch Statistics 5
Recent Total Allowable Catches 5
Definition of Acceptable Biological Catch and the Overfishing Level 6
Standard Harvest and Recruitment Scenarios and Projection Methodology 7
Overview of "Stock Assessment" Section 8
Summary and Use of Terms 10
Two-Year OFL and ABC Projections 11
Stock Assessment Frequency 12
Economic Summary of the BSAI commercial groundfish fisheries in 2024-2025 13
Ecosystem Status Reports for the EBS and AI (2026) 16
Bering Sea Conditions 16
Aleutian Islands 17
Multi-species model 17
Stock Status Summaries 18
1. Walleye Pollock 18
Eastern Bering Sea pollock 18
Aleutian Islands pollock 19
Bogoslof pollock 20
2. Pacific cod 21
Eastern Bering Sea Pacific cod 21
Aleutian Islands Pacific cod 22
3. Sablefish 23
4. Yellowfin sole 25
5. Greenland turbot 27
6. Arrowtooth flounder 28
7. Kamchatka flounder 29
8. Northern rock sole 30
9. Flathead sole 32
10. Alaska plaice 33
11. Other Flatfish Complex 34
12. Pacific ocean perch 35
13. Northern rockfish 37
14. Blackspotted and rougheye rockfish 39
15. Shortraker rockfish 40
16. Other rockfish complex 41
17. Atka mackerel 42
18. Skates 44
19. Sharks 45
20. Octopus 46
Appendix 1. Forage Fish 48
Appendix 2. Grenadiers 48
Tables 49

NOTE: full chapters are available through links within each summary and via website HERE

Summary

By

The Plan Team for the Groundfish Fisheries
of the Bering Sea and Aleutian Islands

Introduction

The Stock Assessment and Fishery Evaluation (SAFE) report summarizes the best available scientific information concerning the past, present, and possible future condition of the stocks, marine ecosystems, and fisheries that are managed under Federal regulation. It provides information to the Councils for determining annual harvest levels from each stock, documenting significant trends or changes in the resource, marine ecosystems, and fishery over time, and assessing the relative success of existing state and Federal fishery management programs. For the FMP for the Groundfish Fishery of the Bering Sea and Aleutian Islands (BSAI) Area, the SAFE report is published in three reports: a "Stock Assessment" report, the "Economic Status of Groundfish Fisheries off Alaska" (i.e., the "Economic SAFE report") and the "Ecosystem Status Report" (by Area between the Eastern Bering Sea (EBS) and Aleutian Islands (AI)).

The BSAI Groundfish FMP requires that a draft of the SAFE report be produced each year in time for the December meeting of the North Pacific Fishery Management Council. Each stock or stock complex is represented in the SAFE report by a chapter containing the latest stock assessment. New or revised stock assessment models are usually previewed at the September Plan Team meeting and considered again by the Team at its November meeting for recommending final specifications for the following two fishing years. This process is repeated annually.

This Stock Assessment section of the SAFE report for the BSAI groundfish fisheries is compiled by the BSAI Groundfish Plan Team from chapters contributed by scientists at NMFS Alaska Fisheries Science Center (AFSC). These chapters include a recommendation by the author(s) for the overfishing level (OFL) and acceptable biological catch (ABC) for each stock and stock complex managed under the FMP for the next two fishing years. This introductory section includes the recommendations of the Team (Table 1), along with a summary of each chapter, including the Ecosystem Status Report and the Economic SAFE report.

The OFL and ABC recommendations by the Plan Team are reviewed by the Scientific and Statistical Committee (SSC), which may confirm the Team recommendations or develop its own. The Team and SSC recommendations, together with social and economic factors, are considered by the Council in determining total allowable catches (TACs) and other measures used to manage the fisheries. Neither the author(s), Team, nor SSC typically recommends TACs.

The BSAI Groundfish Plan Team met in Seattle on November 12-15, 2024 to review the status of stocks of twenty-three species or species groups that are managed under the FMP. The Plan Team review was based on presentations by ADF&G and NMFS AFSC scientists with opportunity for public comment and input. Members of the BSAI Groundfish Plan Team who compiled this SAFE report were: Steve Barbeaux (Co-chair), Kalei Shotwell (Co-Chair), Cindy Tribuzio (Vice Chair), Diana Stram (BSAI Groundfish PT coordinator), Andrew Olson, Allan Hicks, Kirstin Holsman, Andy Kingham, Andrew Seitz, Beth Matta, Jane Sullivan, Andrew Whetten, and Lukas DeFillipo.

Background Information

The BSAI management area lies within the 200-mile U.S. Exclusive Economic Zone (EEZ) of the US (Figure 1). International North Pacific Fisheries Commission (INPFC) statistical areas 1 and 2 comprise the EBS. The Aleutian Islands (AI) region is INPFC Area 5.

Amendment 95 to the BSAI Groundfish FMP, which was implemented in 2010 for the start of the 2011 fishing year, defined three categories of species or species groups that are likely to be taken in the groundfish fishery. Species may be split or combined within the "target species" category according to

procedures set forth in the FMP. The three categories of finfishes and invertebrates that have been designated for management purposes under two management classifications are listed below.

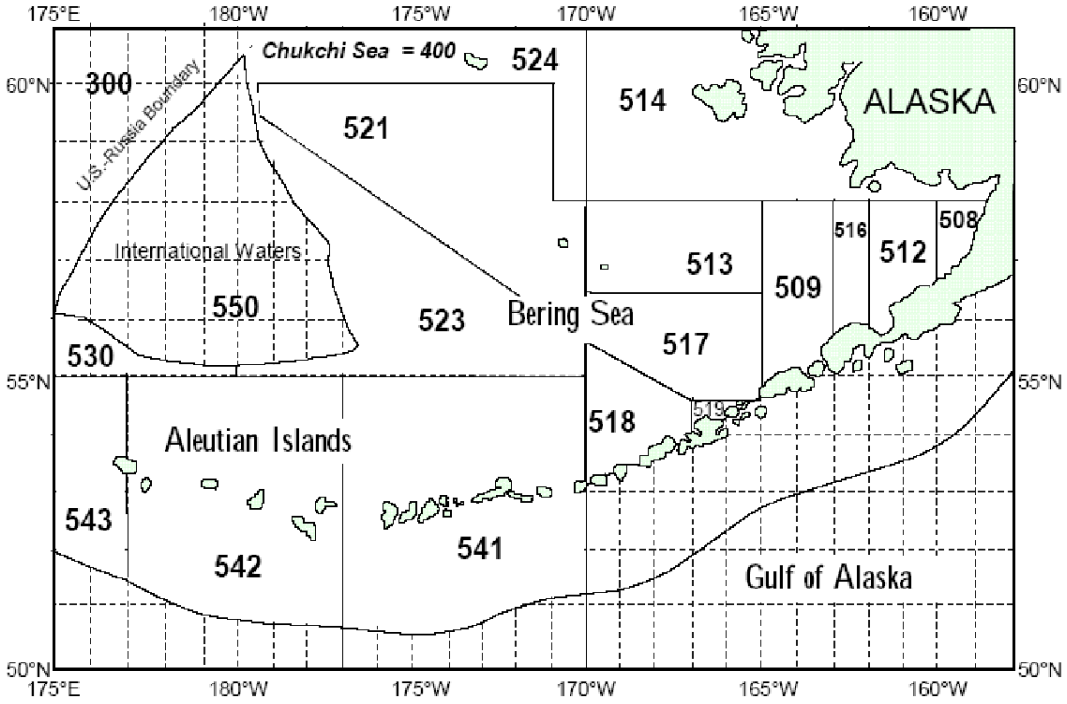

Figure 1. Bering Sea/Aleutian Islands statistical and reporting areas.

In the Fishery:

Target species–are those species that support either a single species or mixed species target fishery, are commercially important, and for which a sufficient database exists that allows each to be managed on its own biological merits. Accordingly, a specific TAC is established annually for each target species or species assemblage. Catch of each species must be recorded and reported. Stocks/assemblages in the target category are listed below.

Ecosystem Component:

Prohibited Species–are those species and species groups the catch of which must be avoided while fishing for groundfish, and which must be immediately returned to sea with a minimum of injury except when their retention is authorized by other applicable law. Groundfish species and species groups under the FMP for which the ABCs have been achieved shall be treated in the same manner as prohibited species.

Forage fish species–are those species listed below, which are a critical food source for many marine mammal, seabird and fish species. The forage fish species category is established to allow for the management of these species in a manner that prevents the development of a commercial directed fishery for forage fish. Management measures for this species category will be specified in regulations and may include such measures as prohibitions on directed fishing, limitations on allowable bycatch retention amounts, or limitations on the sale, barter, trade or any other commercial exchange, as well as the processing of forage fish in a commercial processing facility.

In the fishery	Ecosystem component	
Target species[1]	**Prohibited species**[2]	**Forage fish species**[3]
Walleye Pollock	Pacific halibut	Osmeridae family (eulachon, capelin,and other smelts)
Pacific cod	Pacific herring	Myctophidae family (laternfishes)
Sablefish	Pacific salmon	Bathylagidae (deep-sea smelts)
Yellowfin sole	Steelhead trout	Ammodytidae family (Pacific sandlance)
Greenland turbot	King crab	Trichodontidae family (Pacific sand fish)
Arrowtooth flounder	Tanner crab	Pholidae family (gunnels)
Kamchatka flounder		Stichaeidae family (pricklebacks warbonnets, eelblennys, cockscombs, shannys)
Northern rock sole		Gonostomatidae family (bristlemouths, lightfishes and anglemouths)
Flathead sole		Other euphausiacea (krill)
Alaska plaice		Squid
Other flatfish		Sculpins
Pacific Ocean perch		
Northern rockfish		
Blackspotted/Rougheye		
Shortraker rockfish		
Other rockfish		
Atka mackerel		
Skates		
Sharks		
Octopus		

[1] TAC for each listing. Species and species groups may or may not be targets of directed fisheries.
[2] Must be immediately returned to the sea, except when retention is required or authorized.
[3] Management measures for forage fish are established in regulations implementing the FMP.

In 2019, the NPFMC took final action to amend the FMPs for the BSAI (Amendment 121) and GOA (Amendment 110) and moved the sculpin stock complex into the ecosystem component category and establish an MRA of 20% for sculpins for all basis species in both the BSAI and GOA. Amendments 121/110 and their implementing regulations were approved by the Secretary of Commerce in August 2020 (85 FR 133,41427). Sculpins are, therefore, categorized as an ecosystem component species and information on sculpins will be contained in a report produced every four years.

Historical Catch Statistics

The initial target species in the BSAI commercial fisheries was yellowfin sole. During this period, total catches of groundfish peaked at 674,000 t in 1961. Following a decline in abundance of yellowfin sole, other species (principally walleye pollock) were targeted, and total catches peaked at 2.2 million t in 1972. Pollock is now the principal fishery, with catches peaking at approximately 1.4-1.5 million t due to years of high recruitment. After the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) was adopted in 1976, catch restrictions and other management measures were placed on the fishery and total groundfish catches have since varied from one to two million t. In 2005, Congress implemented a statutory cap on TACs for BSAI groundfish of 2 million t, which had previously been a policy adopted by the Council. Total groundfish catches in the BSAI in 2023 totaled 1,776,469 (89% of OY). Catches in 2026 through November 11, 2026, totaled 1,673,260 t (84% of OY).

Recent Total Allowable Catches

Amendment 1 to the BSAI Groundfish FMP provided the framework to manage the groundfish resources as a complex. Maximum sustainable yield (MSY) for the BSAI groundfish complex was estimated at 1.8 to 2.4 million t. The OY range was set at 85% of the MSY range, or 1.4 to 2.0 million t. The sum of the TACs equals OY for the groundfish complex, which is constrained by the 2.0 million t cap on OY. Recent total TACs have been set equal to the OY cap.

Establishment of the Western Alaska Community Development Quota (CDQ) Program annual groundfish reserves is concurrent with the annual BSAI groundfish harvest specifications. Once annual BSAI groundfish TACs are established, the CDQ Program is allocated set portions of the TACs for certain species and species assemblages. This includes 10% of the BS and AI pollock TACs, 20% of the fixed gear sablefish TAC, and 7.5% of the sablefish trawl gear allocation. It also receives 10.7% of the TACs

for Pacific cod, yellowfin sole, rock sole, flathead sole, Atka mackerel, AI Pacific ocean perch, arrowtooth flounder, and BS Greenland turbot. The program also receives allocations of PSC limits.

The TAC specifications for the primary allocated species, and PSC limit specifications, are recommended by the Council at its December meetings. The State of Alaska (State) manages separate Pacific cod guideline harvest level (GHL) fisheries in the Bering Sea subarea (starting in 2006) and Aleutian Islands subarea (starting in 2014). The State's Pacific cod GHL fisheries are conducted independently of the Federal groundfish fisheries under direct regulation of the State. The GHL amounts for 2024 for each subarea are derived as 13% of the Bering Sea ABC (and an additional 45 t to the State jig fishery) and 39% of the Aleutian Islands subarea ABC to a maximum of 15 million pounds (6804 t). The Council is expected to set the TAC for each subarea to account for the two State GHL fisheries. This is necessary to prevent harvest levels, GHL plus TAC, from exceeding the ABCs.

For the BSAI reserves, 15% of the TAC for each target species, except for pollock, the hook-and-line and pot gear allocation of sablefish, and the Amendment 80 species (Pacific cod, Atka mackerel, flathead sole, rock sole, yellowfin sole, and Aleutian Islands Pacific ocean perch), are automatically apportioned to a non-specified reserve. Apportionments to the non-specified reserve range from 4.3% to 15% of the TAC for each species or species group. The non-specified reserve is used to (1) correct operational problems in the fishing fleets, (2) promote full and efficient use of groundfish resources, (3) adjust species TACs according to changing conditions of stocks during the fishing year, and (4) make apportionments and Community Development Quota allocations. The initial TAC (ITAC) for each species is the remainder of the TAC after the subtraction of the reserve.

Definition of Acceptable Biological Catch and the Overfishing Level

Amendment 56 to the BSAI Groundfish FMP, which was implemented in 1999, defines ABC and OFL for the BSAI groundfish fisheries. The definitions are shown below, where the fishing mortality rate is denoted F, stock biomass (or spawning stock biomass, as appropriate) is denoted B, and the F and B levels corresponding to MSY are denoted F_{MSY} and B_{MSY} respectively.

Acceptable Biological Catch is a preliminary description of the acceptable harvest (or range of harvests) for a given stock or complex. Its derivation focuses on the status and dynamics of the stock, environmental conditions, other ecological factors, and prevailing technological characteristics of the fishery. The fishing mortality rate used to calculate ABC is capped as described as shown in the text box below.

Overfishing is defined as any amount of fishing in excess of a prescribed maximum allowable rate. This maximum allowable rate is prescribed through a set of six tiers which are listed below in descending order of preference, corresponding to descending order of information availability. The SSC will have final authority for determining whether a given item of information is reliable for the purpose of this definition and may use either objective or subjective criteria in making such determinations. For determination, a pdf refers to a probability density function. For Tiers (1-2), if a reliable pdf of B_{MSY} is available, the preferred point estimate of B_{MSY} is the geometric mean of its pdf. For Tiers (1-5), if a reliable pdf of B is available, the preferred point estimate is the geometric mean of its pdf. For Tiers (1-3), the coefficient 'α' is set at a default value of 0.05, with the understanding that the SSC may establish a different value for a specific stock or stock complex as merited by the best available scientific information. For Tiers (2-4), a designation of the form "$F_{X\%}$" refers to the F associated with an equilibrium level of spawning per recruit (SPR) equal to X percent of the equilibrium level of spawning per recruit in the absence of any fishing. If reliable information sufficient to characterize the entire maturity schedule of a species is not available, the SSC may choose to view SPR calculations based on a knife-edge maturity assumption as reliable. For Tier (3), the term $B_{40\%}$ refers to the long-term average biomass that would be expected under average recruitment and $F=F_{40\%}$.

Tier

1) Information available: *Reliable point estimates of B and B_{MSY} and reliable pdf of F_{MSY}.*
   - 1a) Stock status: $B/B_{MSY} > 1$
     - $F_{OFL} = \mu_A$, *the arithmetic mean of the pdf*
     - $F_{ABC} \leq \mu_H$, *the harmonic mean of the pdf*
   - 1b) Stock status: $\alpha < B/B_{MSY} \leq 1$
     - $F_{OFL} = \mu_A \times (B/B_{MSY} - \alpha)/(1 - \alpha)$
     - $F_{ABC} \leq \mu_H \times (B/B_{MSY} - \alpha)/(1 - \alpha)$
   - 1c) Stock status: $B/B_{MSY} \leq \alpha$
     - $F_{OFL} = 0$
     - $F_{ABC} = 0$
2) Information available: *Reliable point estimates of B, B_{MSY}, F_{MSY}, $F_{35\%}$, and $F_{40\%}$.*
   - 2a) Stock status: $B/B_{MSY} > 1$
     - $F_{OFL} = F_{MSY}$
     - $F_{ABC} \leq F_{MSY} \times (F_{40\%}/F_{35\%})$
   - 2b) Stock status: $\alpha < B/B_{MSY} \leq 1$
     - $F_{OFL} = F_{MSY} \times (B/B_{MSY} - \alpha)/(1 - \alpha)$
     - $F_{ABC} \leq F_{MSY} \times (F_{40\%}/F_{35\%}) \times (B/B_{MSY} - \alpha)/(1 - \alpha)$
   - 2c) Stock status: $B/B_{MSY} < \alpha$
     - $F_{OFL} = 0$
     - $F_{ABC} = 0$
3) Information available: *Reliable point estimates of B, $B_{40\%}$, $F_{35\%}$, and $F_{40\%}$.*
   - *3a) Stock status: $B/B_{40\%} > 1$*
     - $F_{OFL} = F_{35\%}$
     - $F_{ABC} \leq F_{40\%}$
   - *3b) Stock status: $\alpha < B/B_{40\%} < 1$*
     - $F_{OFL} = F_{35\%} \times (B/B_{40\%} - \alpha)/(1 - \alpha)$
     - $F_{ABC} \leq F_{40\%} \times (B/B_{40\%} - \alpha)/(1 - \alpha)$
   - *3c) Stock status: $B/B_{40\%} < \alpha$*
     - $F_{OFL} = 0$
     - $F_{ABC} = 0$
4) Information available: *Reliable point estimates of B, $F_{35\%}$, and $F_{40\%}$.*
   - $F_{OFL} = F_{35\%}$
   - $F_{ABC} \leq F_{40\%}$
5) Information available: *Reliable point estimates of B and natural mortality rate M.*
   - $F_{OFL} = M$
   - $F_{ABC} < 0.75 \times M$
6) Information available: *Reliable catch history from 1978 through 1995.*
   - *OFL = the average catch from 1978 through 1995, unless an alternative value is established by the SSC on the basis of the best available scientific information*
   - $ABC \leq 0.75 \times OFL$

Overfished or approaching an overfished condition is determined for all age-structured stock assessments by comparison of the stock level in relation to its MSY level according to harvest scenarios 6 and 7 described in the next section (for Tier 3 stocks, the MSY level is defined as $B_{35\%}$). For stocks in Tiers 4-6, no determination can be made of overfished status or approaching an overfished condition as information is insufficient to estimate the MSY stock level.

Standard Harvest and Recruitment Scenarios and Projection Methodology

A standard set of projections is required for each stock managed under Tiers 1, 2, or 3 of Amendment 56. This set of projections encompasses seven harvest scenarios designed to satisfy the requirements of Amendment 56, the National Environmental Policy Act, and the MSFCMA.

For each scenario, authors have the option of making projections using either Stock Synthesis or the standard AFSC projection model. For the AFSC projection model the projections begin with an estimated vector of 2019 numbers at age. In each subsequent year, the fishing mortality rate is prescribed on the basis of the spawning biomass in that year and the respective harvest scenario.

For assessments using the standard AFSC projection model, recruitment in each year is drawn from an inverse Gaussian distribution whose parameters consist of maximum likelihood estimates determined from recruitments estimated in the assessment. Spawning biomass is computed in each year based on the time of peak spawning and the maturity and weight schedules described in the assessment. Total catch is assumed to equal the catch associated with the respective harvest scenario in all years, except that in the first two years of the projection, a lower catch may be specified for stocks where catch is typically below

ABC. This projection scheme is run 1000 times to obtain distributions of possible future stock sizes, fishing mortality rates, and catches.

Five of the seven standard scenarios are designed to provide a range of harvest alternatives that are likely to bracket the final TACs for 2024 and 2025, are as follows ("*max* F_{ABC}" refers to the maximum permissible value of F_{ABC} under Amendment 56):

Scenario 1: In all future years, *F* is set equal to *max* F_{ABC}. (Rationale: Historically, TAC has been constrained by ABC, so this scenario provides a likely upper limit on future TACs.)

Scenario 2: In all future years, *F* is set equal to a constant fraction of *max* F_{ABC}, where this fraction is equal to the ratio of the F_{ABC} value for 20267recommended in the assessment to the *max* F_{ABC} for 2026, and where catches for 2026 and 20257are estimated at their most likely values given the 2026 and 2027 maximum permissible ABCs under this scenario. (Rationale: When F_{ABC} is set at a value below *max* F_{ABC}, it is often set at the value recommended in the stock assessment.)

Scenario 3: In all future years, *F* is set equal to the average of the five most recent years. (Rationale: For some stocks, TAC can be well below ABC, and recent average *F* may provide a better indicator of F_{TAC} than F_{ABC}.)

Scenario 4: In all future years, the upper bound on F_{ABC} is set at $F_{60\%}$. (Rationale: This scenario provides a likely lower bound on F_{ABC} that still allows future harvest rates to be adjusted downward when stocks fall below reference levels.)

Scenario 5: In all future years, *F* is set equal to zero. (Rationale: In extreme cases, TAC may be set at a level close to zero.)

Two other scenarios are needed to satisfy the MSFCMA's requirement to determine whether a stock is currently in an overfished condition or is approaching an overfished condition. These two scenarios are as follow (for Tier 3 stocks, the MSY level is defined as $B_{35\%}$):

Scenario 6: In all future years, *F* is set equal to F_{OFL}. (Rationale: This scenario determines whether a stock is overfished. If the stock is 1) above its MSY level in 20247or 2) above 1/2 of its MSY level in 2027 and expected to be above its MSY level in 2033 under this scenario, then the stock is not overfished.)

Scenario 7: In 2027 and 2028, *F* is set equal to *max* F_{ABC}, and in all subsequent years, *F* is set equal to F_{OFL}. (Rationale: This scenario determines whether a stock is approaching an overfished condition. If the stock is 1) above its MSY level in 2027 or 2) above 1/2 of its MSY level in 2027 and expected to be above its MSY level in 2037 under this scenario, then the stock is not approaching an overfished condition.)

Overview of "Stock Assessment" Section

The current status of individual groundfish stocks managed under the FMP is summarized in this section. Plan Team recommendations for 2027 and 2028 ABCs and OFLs are summarized in Table 1.

Risk Tables

A general description of guidance and the risk table template that applies to all risk tables in the assessment chapters, is provided here. The risk tables are intended to account for uncertainty not directly captured in the stock assessments. The risk tables can be used to justify recommendations of ABC below maximum permissible ABC.

Risk Table Levels of Concern

	Assessment-related considerations	*Population dynamics considerations*	*Ecosystem considerations*	*Fishery-informed stock considerations*
Level 1: Normal	Typical to moderately increased uncertainty/minor unresolved issues in assessment.	Stock population dynamics (e.g., recruitment, growth, natural mortality) are typical for the stock and recent trends are within normal range.	No apparent ecosystem concerns related to biological status (e.g., environment, prey, competition, predation), or minor concerns with uncertain impacts on the stock.	No apparent concerns related to biological status (e.g., stock abundance, distribution, fish condition), or few minor concerns with uncertain impacts on the stock.
Level 2: Increased concern	Substantially increased assessment uncertainty/ unresolved issues, such as residual patterns and substantial retrospective patterns, especially positive ones.	Stock population dynamics (e.g., recruitment, growth, natural mortality) are unusual; trends increasing or decreasing faster than has been seen recently, or patterns are atypical.	Indicator(s) with adverse signals related to biological status (e.g., environment, prey, competition, predation).	Several indicators with adverse signals related to biological status (e.g., stock abundance, distribution, fish condition).
Level 3: Extreme Concern	Severe assessment problems; very poor fits to important data; high level of uncertainty; very strong retrospective patterns, especially positive ones.	Stock population dynamics (e.g., recruitment, growth, natural mortality) are extremely unusual; very rapid changes in trends, or highly atypical patterns compared to previous patterns.	Indicator(s) showing a combined frequency (low/high) and magnitude(low/high) to cause severe adverse signals a) across the same trophic level as the stock, and/or b) up or down trophic levels (i.e., predators and prey of the stock) that are likely to impact the stock.	Multiple indicators with strong adverse signals related to biological status (e.g., stock abundance, distribution, fish condition), a) across different sectors, and/or b) different gear types.

The table is applied by evaluating the severity of four types of considerations that could be used to support a scientific recommendation to reduce the ABC from the maximum permissible. These considerations are stock assessment considerations, population dynamics considerations, ecosystem considerations, and fishery performance. Examples of the types of concerns that might be relevant include the following:

1. "Assessment-related considerations—data-inputs: biased ages, skipped surveys, lack of fishery-independent trend data; model fits: poor fits to fits to fishery or survey data, inability to simultaneously fit multiple data inputs; model performance: poor model convergence, multiple minima in the likelihood surface, parameters hitting bounds; estimation uncertainty: poorly-estimated but influential year classes; retrospective bias in biomass estimates.

2. "Population dynamics considerations—decreasing biomass trend, poor recent recruitment, inability of the stock to rebuild, abrupt increase or decrease in stock abundance.

3. "Ecosystem considerations—adverse trends in environmental/ecosystem indicators, ecosystem model results, decreases in ecosystem productivity, decreases in prey abundance or availability, increases or increases in predator abundance or productivity.

4. "Fishery-informed stock considerations—fishery CPUE is showing a contrasting pattern from the stock biomass trend, unusual spatial pattern of fishing, changes in the percent of TAC taken, changes in the duration of fishery openings."

Overall, the status of the stocks continues to appear favorable. All stocks are above B_{MSY} or the B_{MSY} proxy of $B_{35\%}$ (Figure 2).

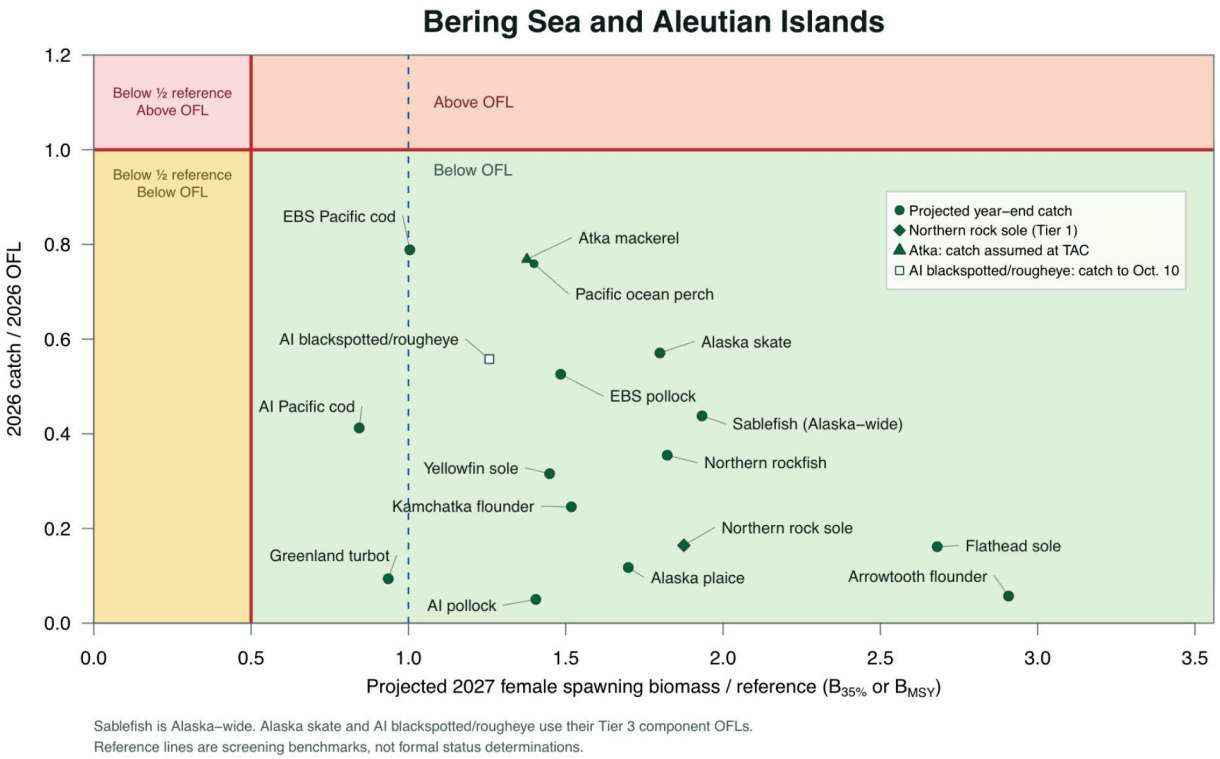

Figure 2. Summary of Bering Sea stock status next year (spawning biomass relative to B_{msy}; horizontal axis) and current year catch relative to fishing at F_{msy} (vertical axis) where F_{OFL} is taken to equal F_{msy}..

Summary and Use of Terms

Stock status is summarized and OFL and ABC recommendations are presented on a stock-by-stock basis in the remainder of this section, with the following conventions observed:

"Fishing mortality rate" refers to the full-selection F (i.e., the rate that applies to fish of fully selected sizes or ages), except in the cases of stocks managed under Tier 1 (EBS pollock, yellowfin sole, and northern rock sole). For these stocks, the fishing mortality rate consists of the ratio between catch (in biomass) and biomass at the start of the year. EBS pollock uses "fishable biomass," whereas yellowfin sole and northern rock sole use age 6+ biomass for this calculation.

"Projected age+ biomass" refers to the total biomass of all cohorts of ages greater than or equal to some minimum age, as projected for January 1 of the coming year. The minimum age varies from species to species. When possible, the minimum age corresponds to the age of recruitment listed in the respective stock assessment. Otherwise, the minimum age corresponds to the minimum age included in the assessment model, or to some other early age traditionally used for a particular species. When a biomass estimate from the trawl survey is used as a proxy for projected age+ biomass, the minimum age

is assumed to correspond with the age of recruitment, even though the survey may not select that age fully and undoubtedly selects fish of younger ages to some extent.

The reported ABCs and OFLs for past years correspond to the values approved by the Council. Projected ABCs and OFLs listed for the next two years are the Team's recommendations.

Reported catches are as of November 11, 2026.

Two-Year OFL and ABC Projections

Proposed and final harvest specifications are adopted annually for a two-year period. This requires the Team to provide OFLs and ABCs for the next two years in this cycle (Table 1). The 2026 harvest specifications (from Council recommendations in December 2025) are in place to start the fishery on January 1, 2027, but these will be replaced by final harvest specifications that will be recommended by the Council in December 2026. The final 2027 and 2028 harvest specifications will become effective when final rulemaking occurs in February or March 2027. This process allows the Council to use the most current survey and fishery data in stock assessment models for setting quotas for the next two years, while having no gap in harvest specifications.

Stock Assessment Frequency

Based on consideration of stock prioritization including assessment methods and data availability, some stocks are assessed on an annual basis while others are assessed less frequently. The following table provides an overview of the level of assessment presented in this year's SAFE report, the Tier level and the Alaska Fisheries Science Center's stock assessment frequency schedule for 2026-2029. Here the type of assessment is indicated by year with OP indicating operational full or update, HP indicating harvest projection, CR indicating catch report, and NA indicating no assessment.

Stock	Tier	Frequency	Last Full	2026	2027	2028	2029
Yellowfin sole	1	1	2024	Full	OP	OP	OP
Pacific cod	3	1	2024	Full	OP	OP	OP
Pacific cod	3	1	2024	Full	OP	OP	OP
Pollock	3	1	2024	Full	OP	OP	OP
Sablefish	3	1	2024	Full	OP	OP	OP
Northern rock sole	1	2	2024	HP	OP	CR	OP
Pollock	3	2	2024	HP	OP	CR	OP
Atka mackerel	3	2	2024	Update	CR	OP	CR
Greenland turbot	3	2	2024	Full	CR	OP	CR
Kamchatka flounder	3	2	2024	HP	OP	CR	OP
Northern rockfish	3	2	2023	HP	OP	CR	OP
Pacific ocean perch	3	2	2024	Update	CR	OP	CR
Rougheye & blackspotted rockfish	3	2	2024	Update	CR	OP	CR
Skates	3, 5	2	2023	Full	CR	CR	OP
Pollock	5	2	2024	Update	CR	OP	CR
Other rockfish	5	2	2024	Update	CR	OP	CR
Shortraker rockfish	5	2	2024	Update	CR	OP	CR
Forage species (including Squid)	Eco Report	2	2024	Report	NA	Report	NA
Alaska plaice	3	4	2024	HP	CR	OP	CR
Arrowtooth flounder	3	4	2022	HP	OP	CR	HP
Flathead sole	3	4	2024	HP	CR	OP	CR
Other flatfish	5	4	2024	CR	CR	OP	CR
Octopus	6	4	2023	CR	CR	OP	CR
Sharks	6	4	2022	CR	OP	CR	CR
Grenadiers	Eco Report	4	2024	NA	NA	NA	Report
Sculpins	Eco Report	4	2023	NA	NA	Report	NA

Economic Summary of the BSAI commercial groundfish fisheries in 2024-2025

The Economic SAFE report contains detailed information about economic aspects of the groundfish fisheries, including figures and tables that report historical catch, finished production, and ex-vessel and wholesale value, for harvesting and processing sectors for a range of factors (gear, species, management area, product type), and a set of economic performance indices. The report includes a section summarizing in-season catch and ex-vessel revenue estimates for groundfish and halibut, and wholesale market profiles for the most commercially valuable species. Data tables in the Economic SAFE report are organized into four sections: (1) All Alaska, (2) BSAI, (3) GOA, and (4) Pacific halibut. The figures and tables in the report provide estimates of: total groundfish catch; groundfish discards and discard rates; prohibited species catch (PSC) and PSC rates; the ex-vessel value of the groundfish catch; the ex-vessel value of the catch in other Alaska fisheries; the gross product value of the resulting groundfish seafood products; the number and sizes of vessels that participated in the groundfish fisheries off Alaska; fishing effort; and, crew employment. The data behind the tables from this and past Economic SAFE reports are publicly available online at https://akhd.psmfc.org.

Summary of ex-vessel, and first wholesale, changes in Alaska, and the BSAI

The ex-vessel value of all Alaska domestic fish and shellfish catch (state and federal), which represents the amount paid to harvesters for fish caught, and the estimated value of pre-processed fish species that are caught by catcher/processors, increased from $1,382 million in 2024 to $1,848 million in 2025 (real 2025). The first wholesale value of 2025 groundfish catch after primary processing was $2,602 million, an increase from the 2024 value of $2,476 million. The 2025 total quantity of retained groundfish catch increased by 1.6%, primarily driven by increased pollock (*Gadus chalcogrammus*) harvest in the BSAI and GOA, and the total first wholesale volume of processed groundfish increased by 2.5%, relative to 2024. The increase in wholesale prices for pollock, cod, and sablefish, compounded with the increase in catch and production volume, explains the increased 2025 first wholesale value over 2024.

The groundfish fisheries collectively accounted for the largest share (42%) of the ex-vessel value of all commercial fisheries off Alaska in 2025, with $782 million in revenue, while the Pacific salmon (*Oncorhynchus spp.*) fishery closely followed with $701 million, or 38% of the total Alaska ex-vessel value. The ex-vessel value of the shellfish fishery amounted to $254 million, or 14% of the total for Alaska. The ex-vessel value of Pacific halibut (*Hippoglossus stenolepis*) was $98 million, or 5% of the total for Alaska in 2025.

According to data reported in the current Groundfish Economic SAFE report, the total real (i.e., inflation-adjusted) ex-vessel value of catch in federal and state waters of the Bering Sea and Aleutian Islands (BSAI) groundfish increased by 1.5% from $626 million in 2024 to 635 million in 2025 (Figure3), and real first-wholesale revenues from the processing and production of groundfish in the BSAI increased by 2% between 2024 (2,180 million) and 2025 ($2,227 million) (Figure 4). The total quantity of groundfish products from the BSAI increased by 1.7% from 2024 (726 thousand metric tons) to 2025 (739 thousand metric tons).

Decomposition of the change in first-wholesale revenues from 2024-2025 in the BSAI

The following analysis summarizes the overall nominal revenue changes that occurred from 2024 to 2025 and the quantity produced, and revenue generated from BSAI groundfish and how revenues have been affected by changes in quantity or prices of each species and product group (Figure 5). Unlike the numbers cited above, these values are not adjusted for inflation, to enable a simple comparison of how changes in the price and quantity for each group contribute to the overall change in first-wholesale revenues for groundfish from 2024 to 2025 in the BSAI.

In results presented by species group, a large quantity effect was much stronger than a negative price effect for pollock, which resulted in a positive net effect of $5 million (Figure 5, top panel). For Pacific cod, positive price effects outweighed smaller negative quantity effects contributing to a positive net

effect of 73 million. Positive price effects were smaller than negative quantity effects for sablefish and rockfish, resulting in a net negative effect of-1 and -$0.7 million, respectively. Atka mackerel and flatfish exhibited a positive price and quantity effect resulting in a positive net effect of $12 and 23million, respectively. The “Other” species group experienced small and positive price effects that were outweighed by negative quantity effects resulting in a net revenue decrease of -1 million.

In results presented by product group, a positive quantity and price effect for surimi, resulted in a positive net effect of $58 million in the BSAI from 2024 to 2025 (Figure 5, bottom panel). A positive price effect for whole head & gut outweighed a negative quantity effect, resulting in a positive net effect of $78 million. For fillets, a small negative price effect partially offset a positive quantity effect for a net increase of $34 million. For roe, a negative price effect coupled with a positive quantity effect resulted in a relatively stable net effect of 0.1 million. For “Other” products, a negative price effect and quantity effect, resulted in a negative net effect of -60 million.

In summary, the changes in first-wholesale revenues from the BSAI groundfish fisheries increased by $111 million from 2024 to 2025 due to positive quantity effects that combined were worth $42 million, which was compounded by a positive price effect of $69 million that primarily affected Pacific cod and whole head & gut, surimi, and fillet product groups.

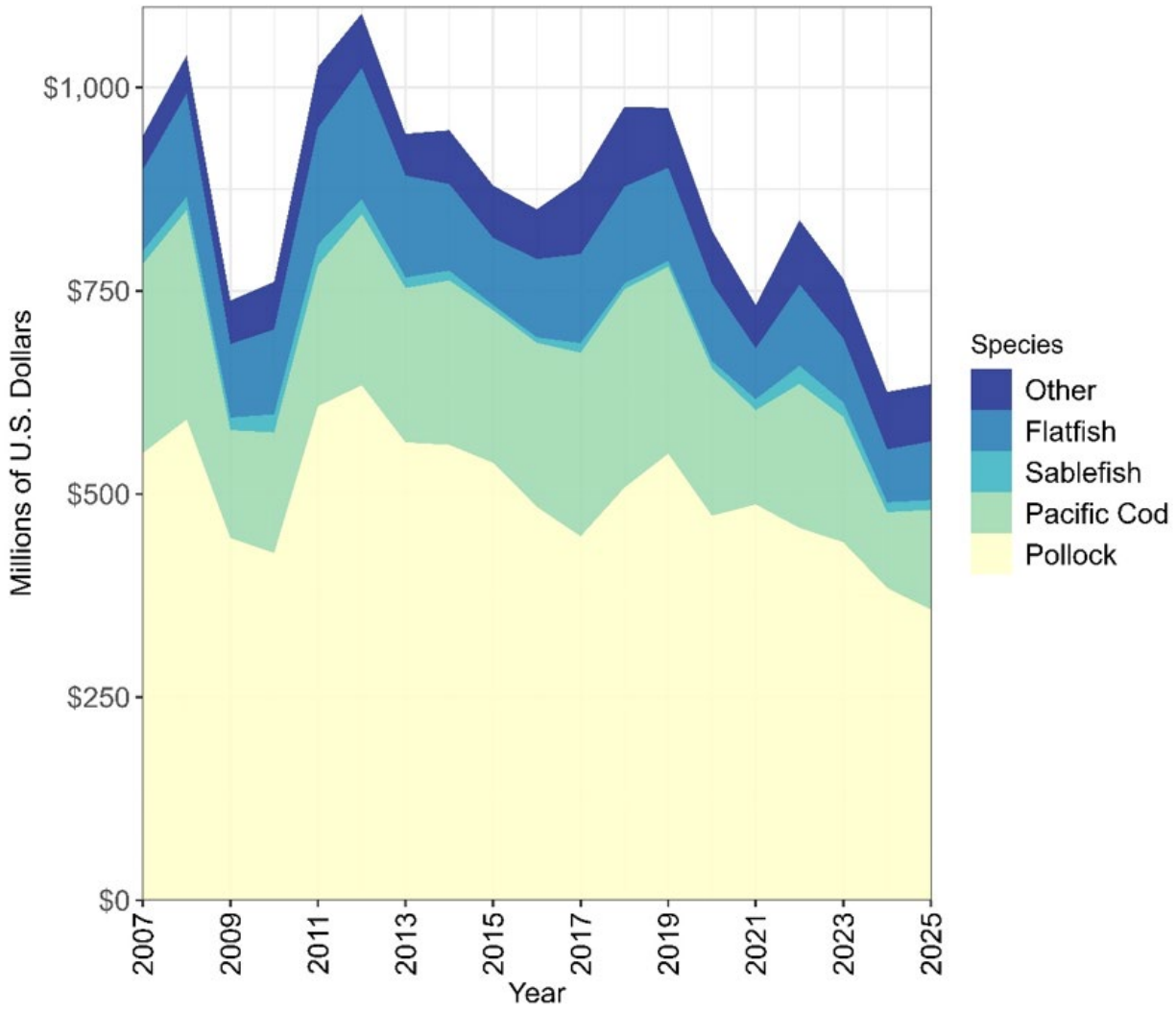

Figure 3. Real (2025 dollars) ex-vessel value of the groundfish catch in the domestic commercial fisheries in the BSAI area by species, 2007-2025.

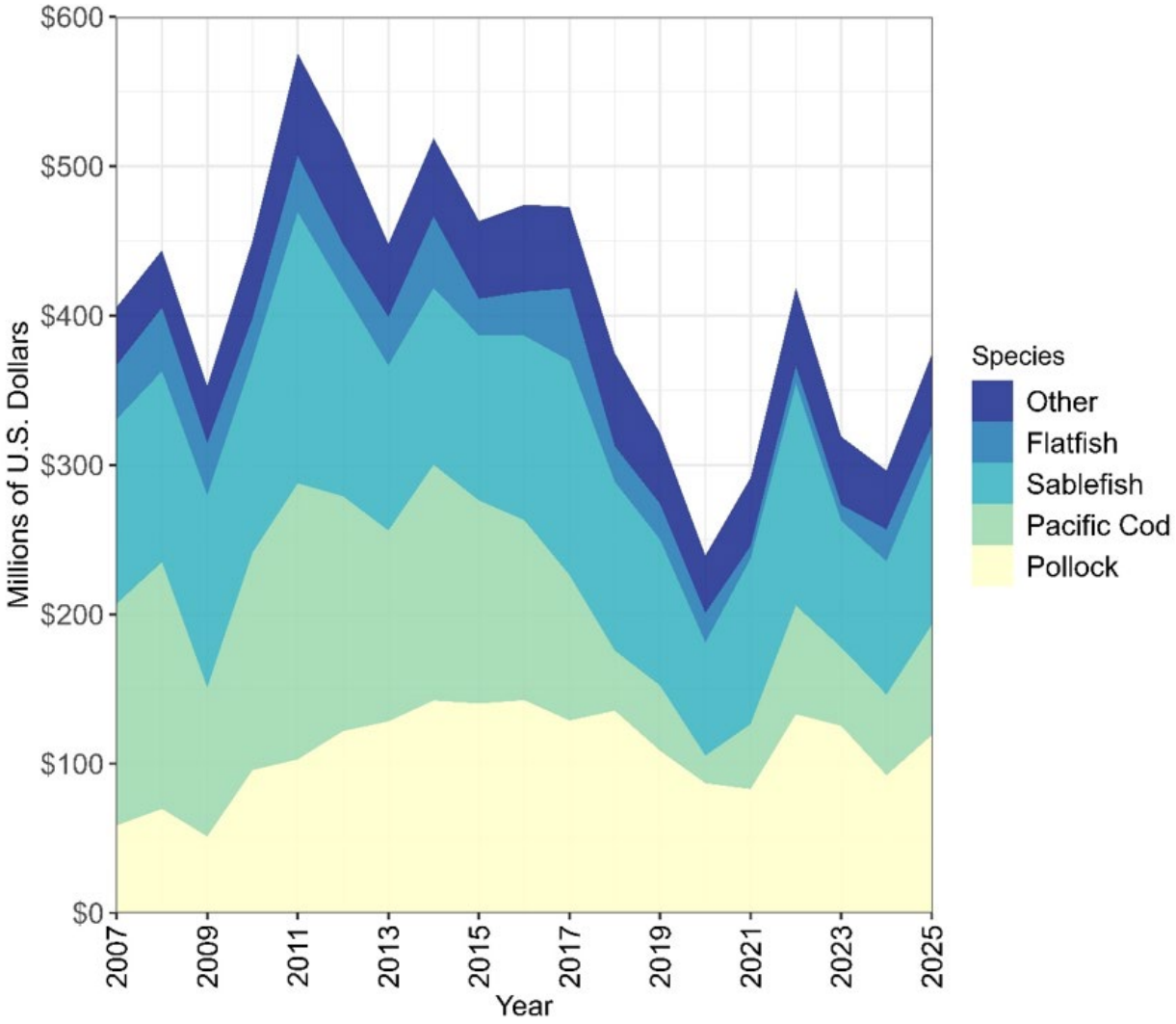

Figure 4. Real (2025 dollars) gross product value of the groundfish catch in the BSAI area by species, 2007-2025.



Figure 5. Decomposition of the change in first-wholesale revenues from 2024 to 2025 in the BSAI management area. The first decomposition is by the species groups used in the Economic SAFE report, and the second decomposition is by product group. The price effect refers to the change in revenues due to the change in the first-wholesale price index (current dollars per metric ton) for each group. The quantity effect refers to the change in revenues due to the change in production (in metric tons) for each group. The net effect is the sum of price and quantity effects. Year-to-year changes in the total quantity of first-wholesale groundfish products include changes in total catch and the mix of product types (e.g., fillet vs. surimi).

Ecosystem Status Reports for the EBS and AI (2026)

Bering Sea Conditions

In 2026, the EBS ecosystem transitioned from near-average to cool thermal conditions with a significantly expanded cold pool. Pelagic prey quantity and quality improved which resulted in increased condition of groundfish, and indicators of good reproductive success for seabirds and fur seals at the Pribilof Islands. Based on improved prey availability and reduced predation pressure, Pacific cod's risk level was lowered from Level 2 to Level 1, while EBS pollock, yellowfin sole, Greenland turbot, skates, and sablefish remained at Level 1. Despite these positive biological indicators, ocean acidification (OA) metrics continued a multi-decadal decline and a dense *Alexandrium* bloom persisted for the third consecutive year with mortality events due to HABs in 2024 (fur seals) and 2025 (seabirds and fur seals).

Aleutian Islands

Warm winters continue in the Aleutian Islands. An early bloom centered on the eastern/ central Aleutians declined quickly past mid May with widespread areas with below average phytoplankton biomass. Mostly cooler summer temperatures close to baseline average, but bottom temperatures in the west remained warm. Benthic prey (shrimp, eelpouts) and structural epifauna increased, which may have supported the improved fish condition of some fish such as Pacific cod, whose risk level was lowered from Level 2 to Level 1. The fish condition of Atka mackerel did not improve, and continued competition from high rockfish abundance among other factors kept the risk level at Level 2. Bogoslof pollock, Pacific ocean perch, rougheye and blackspotted rockfish, shortraker rockfish, and other rockfish remained at Level 1. The west to east productivity gradient of piscivorous predators was less pronounced than in 2024 but continues based on trends in seabird reproductive success, fish apex predator biomass and 2024 Steller sea lion non-pup counts.

Multi-species model

The climate enhanced multispecies assessment for walleye pollock (*Gadus chalcogrammus*), Pacific cod (*Gadus macrocephalus*) and arrowtooth flounder (*Atheresthes stomias*), from the Eastern Bering Sea (EBS), Alaska is updated and included annually. Beginning in 2023 the multi-species model has been presented as a standalone document, where previously it was an appendix in the Pollock assessment. The assessment quantitatively incorporates climate effects on growth, mortality (via predation) and recruitment. Results are presented from catch at age stock assessment models estimated, forecasted and projected (multidecadal) with climate effects on recruitment and growth and with trophic interactions (multispecies mode, MSM) or without trophic interactions (single-species mode, SSM). Outputs of the assessment include, as a reference (not for harvest recommendation), climate-informed single- and multispecies Tier-3 reference points, ABC, and OFL. This year's assessment is based on updated survey, fishery, and MOM6 high resolution ocean model climate information, the latter of which includes historical bottom temperature, 12 month forecasts, as well as multidecadal projected changes in temperature, oceanographic conditions, and lower trophic level productivity linked to recruitment, growth, and future ABC. The sensitivity of population dynamics to forecasted conditions over the next 12 months was included this year to provide context for perturbations that scale with the magnitude and duration of forecasted El niño conditions. Time to return to baseline (SSB, ABC) ranges from 5-10 years if conditions persist for 1-2. Climate-specific risk assessments for near term (1-2 years), medium term (+10yr) and long-term (+30y) are also provided for reference based on ABC harvest rates (and assuming no climate adaptation in the fish, fishery, or management system). Additional information presented includes estimates of predation pressure on key prey species of pollock, Pacific cod and arrowtooth flounder which provide context for historical or potential future ecological shifts in Bering Sea carrying capacity and biomass estimates of key prey species (e.g., "*Opilio*").

Stock Status Summaries

Except as otherwise noted, the Team's recommended ABCs are set at the maximum permissible levels under their respective tiers.

1. Walleye Pollock

Status and catch specifications (t) of walleye pollock in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The biomass is reported as age 3+ for eastern Bering Sea, age 1+ for the Aleutian Islands, and the survey biomass for Bogoslof, as reported in the respective assessments. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Biomass	OFL	ABC	TAC	Catch
Eastern Bering Sea	2025	8,526,000	2,957,000	2,417,000	1,375,000	1,326,216
	2026*	8,075,000	2,496,000	2,036,000	1,375,000	1,322,160
	2027	11,270,000	2,328,000	1,896,000		
	2028	12,367,000	2,422,000	1,968,000		
Aleutian Islands	2025	288,407	55,728	46,051	5,000	4,528
	2026*	305,528	56,231	46,437	19,000	2,821
	2027	331,314	59,090	48,763		
	2028	356,554	62,952	51,917		
Bogoslof	2025	247,137	77,354	58,015	250	63
	2026*	247,137	77,354	58,015	250	290
	2027	247,137	77,354	58,015		
	2028	247,137	77,354	58,015		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Eastern Bering Sea pollock

Changes from previous assessment

The 2026 assessment updates the bottom-trawl and acoustic survey series and the fishery age and weight data. The preliminary acoustic-trawl age composition uses the bottom-trawl survey age–length key. Fishery FT-NIRS ages were converted to the traditional age scale before fitting the assessment so that the recent age compositions could be used with the historical series.

Changes in input data

1. Updated annual catch inputs from 1991 onward.
2. Updated the 2024 and 2025 fishery age compositions. Year-specific conversion keys put FT NIRS age predictions on a traditional microscopic-ageing basis. The likelihood input sample sizes are 578 and 530, respectively.
3. Added 2025 and 2026 bottom trawl survey indices and age compositions and revised historical estimates. The spatiotemporal biomass and abundance-at-age products use sdmTMB and tinyVAST, respectively.
4. Added the 2026 acoustic-trawl survey index and provisional age composition. The provisional composition uses the bottom trawl survey age–length key applied to acoustic-trawl survey lengths.
5. Updated acoustic-vessel-of-opportunity indices through 2026.

6. Retained the fixed 1964–1990 fishery weight-at-age schedule and annual observation means for 1991–2025. The separate random-effects fit supplies 2026 predictions and 2027–2028 forecasts using fishery and bottom trawl survey weights through 2025.
7. Updated population weights using bottom trawl survey means through 2026, including revisions to historical weights. Spawning weights for ages 3 through 15+ use fitted 2024–2025 A-season weights and a 2026 projection. The age-1 and age-2 spawning weight schedules were retained.

Changes in assessment methodology

1. Moved the age-structured assessment from the ADMB implementation of Model 23.0 to Rceattle Model 26.0. Model 26.0 uses fixed weight schedules from the separate random-effects fit, so its uncertainty estimates condition on those weights.
2. Retained the previous natural mortality and catchability assumptions. The assessment compares Model 26.0 with the accepted 2024 ADMB model and evaluates model configurations and data sensitivities.

The authors present Rceattle Model 26.0 as the primary basis for 2027 and 2028 advice. Model 23.0 provides continuity with the previous assessment.

Spawning biomass and stock trends

Female spawning biomass was relatively low in the late 1970s and increased to a high in the mid-1980s. It fell into the early 1990s, recovered briefly in the mid-1990s, and fell again to a low in 2008. Biomass generally increased through the 2010s and was higher in 2022 and 2023 than in 2020, before falling to 3.057 million t in 2026. Total biomass increased between 2024 and 2026 as spawning biomass fell. Recruitment per spawner was particularly high for the 1978, 2008, and 2018 year classes. It declined from the 2018 through the 2022 year class. The estimates for the 2023–2025 year classes are higher but less certain. Projections indicate an increase in female spawning biomass in 2027 and 2028.

Age-3+ biomass shows several periods of high abundance, including the mid-1980s, mid-1990s, and 2010s. It fell to 4.826 million t in 2008 and recovered to 12.325 million t in 2016. The strong 2018 year class was estimated at 87.831 billion age-1 fish in 2019. Estimated age-3+ biomass increased from 10.767 million t in 2024 to 12.162 million t in 2026, while the female spawning biomass estimate declined over the same period. Projections indicate age-3+ biomass of 11.270 million t in 2027 and 12.367 million t in 2028.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

Model 26.0 estimates $B_{40\%}$ at 2.463 million t and $B_{35\%}$ at 2.155 million t. Projected female spawning biomass of 3.198 million t in 2027 and 3.394 million t in 2028 exceeds B_{40}% in both years. The maximum FABC is 0.513 and FOFL is 0.658.

The Team concurred with the authors' recommendation to use the maximum permissible ABCs of 1,896,000 t in 2027 and 1,968,000 t in 2028. The corresponding OFLs are 2,328,000 t and 2,422,000 t. All four risk categories were rated Level 1.

Status determination

The assessment found no overfishing in 2025 and concluded that the stock is neither overfished nor approaching an overfished condition.

Aleutian Islands pollock

Aleutian Islands pollock are assessed biennially according to the stock assessment prioritization schedule. A forward projecting age structured model is the primary assessment tool for Aleutian Islands pollock which qualifies as a Tier 3 stock. The assessment model is not run during an off-cycle year. During off-cycle years, a harvest projection is presented with recommendations of harvest levels for the next two years for this species, using updated catch information in the projection model. The most recent full

assessment was conducted in 2024 (Barbeaux 2022). A full stock assessment document with updated assessment and projection model results is scheduled for November, 2027.

Status and catch specifications (t) of Aleutian Islands pollock in recent years are in the above table. The grayed-out text below summarizes the 2024 assessment and the status and catch specifications (t) of Aleutian Islands pollock in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Changes from previous assessment

There were no changes to the recommended model. Catches for 1978 to 2024 were updated to latest estimates from the catch accounting system (CAS). The 2024 Aleutian Islands survey index was added. Survey age data from 2022 and 2024 were not yet available.

There was no directed fishery catch of pollock in 2023, but there was a small, directed fishery in 2024 (5.7 t as of November 11, 2024). As of November 11, 2024, the total catch of pollock across the Aleutian Islands was 4,878 t.

Spawning biomass and stock trends

This year's assessment estimates that spawning biomass reached a minimum level of about $B_{26\%}$ in 2010 but has generally increased since; the estimates from the authors' preferred model showed a slight decline in female spawning stock biomass from 2021 (92,891 t) to 2024 (84,781 t), with another slight decline (82,793) projected for 2025. The status of AI pollock in 2023 and 2024 was assessed to be well above $B_{40\%}$. Mean recruitment was high in the late 1970s and mid-1980s, with the 1978 year class having a strong influence on the model. Mean recruitment of age-1 pollock from 1978-1989 was almost six times higher than that from 1998-2022; only one year class since the 1989 year class has exceeded the overall 1978-2022 overall mean recruitment of 135 million age-1 recruits, that being the 2012 year class at 244.5 million age-1 fish. Lower year class strength since 1990 has led to lower abundance of pollock in the Aleutian Islands, despite the fact that exploitation rates have remained low since 1999.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The official total catch for 2023 was 3,744 t, which is a small fraction of the 2023 OFL of 52,383 t; therefore, the stock is not being subjected to overfishing. The projected spawning biomass for 2025 is 82,781 t and for 2026 is 80,639 t which are above the $B_{40\%}$ value of 63,709 t, placing the AI pollock stock in sub-tier "a" of Tier 3. The model estimated the values of $F_{40\%}$ as 0.325 and $F_{35\%}$ as 0.406. Under Tier 3a, the 2025 and 2026 maximum permissible ABCs 46,051 t and 46,437 t, respectively. The 2025 and 2026 OFLs are 55,728 t and 56,231 t, respectively. The Team recommended setting the 2025 and 2026 ABCs and OFLs at these values. Projections assumed catches of 5,106 t for 2024 and 5,156 t for 2025 based on the five-year average (2019-2023) F of 0.032.

Status determination

The walleye pollock stock in the Aleutian Islands is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

Bogoslof pollock

Changes from previous assessment

Estimated catches for 2025 and 2026 were updated.

There were no changes to the assessment model.

Spawning biomass and stock trends

NMFS acoustic-trawl survey biomass estimates are the primary data source used in this assessment. This survey has not been updated since the 2024 operational full assessment. Between 1997 and 2024, the values varied between a low of 67,063 t in 2012 and a high of 663,070 t in 2018. The most recent acoustic-trawl survey of the Bogoslof spawning stock was conducted in February 2024 and resulted in a

biomass estimate of 244,800 t and the random-effects method of survey averaging resulted in a biomass estimate of 247,137 t.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has determined that this stock qualifies for management under Tier 5. The assessment authors and the Team recommend that the maximum permissible ABC and OFL continue to be based on the random-effects survey averaging approach, and the previously accepted estimate of M at 0.313 as estimated by the Tier 3 research model.

The maximum permissible ABC value for 2027 is 58,015 t (assuming $M = 0.313$ and $F_{ABC} = 0.75 \times M = 0.235$ and the random effects survey estimate for biomass). The ABC for 2028 is the same. No elevated levels of risk were noted and therefore there is no recommended reduction from maximum permissible ABC.

The OFL for 2027 is 77,354 t (assuming $M = 0.313$ and $F_{OFL} = M$ and the random effects survey estimate for biomass). The OFL for 2028 is the same.

Status determination

The walleye pollock stock in the Bogoslof district is not being subjected to overfishing. It is not possible to determine whether this stock is overfished or whether it is approaching an overfished condition because it is managed under Tier 5.

2. Pacific cod

Status and catch specifications (t) of Pacific cod in recent years are shown below. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-0+ Biomass*	OFL	ABC	TAC	Catch
Eastern Bering Sea	2025	769,813	183,509	153,617	133,602	138,925
	2026*	762,206	169,243	141,520	123,077	115,772
	2027	676,864	148,179	123,787		
	2028	661,234	141,676	118,299		
Aleutian Islands	2025	73,679	16,782	13,376	8,694	4,612
	2026*	77,731	16,273	12,973	8,951	3,958
	2027	91,891	26,089	21,597**		
	2028	87,962	22,538	18,135		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.
**The Team recommended there be a reduction from the maximum ABC for Aleutian Islands Pacific cod, but left the amount to the discretion of the SSC.

Eastern Bering Sea Pacific cod

Changes from previous assessment

Two additional years of fishery and survey data were available for this assessment. The updated survey series revises the 2024 bottom-trawl biomass index downward and includes a low 2026 estimate. The only difference between the previously accepted model (24.1) and this year's model (26.1) was a reduction in the plus-age group from 20+ to 14+ years. Both models fitted to the 2026 data project lower spawning biomass and maximum ABC than the 2024 assessment, with relatively little difference attributable to the change in the plus group.

Changes in input data

1. Updated catches for 1991–2025 and added preliminary total catch for 2026. Fishery data used in the models were retrieved on September 18, 2026.
2. Updated commercial fishery size compositions for 1991–2026, including preliminary 2026 samples.
3. Re-estimated the combined Eastern and Northern Bering Sea AFSC bottom trawl survey abundance index using sdmTMB and extended it through 2026
4. Added the 2025 and 2026 size compositions from the combined survey.
5. Used tinyVAST to estimate age compositions for the combined survey series through 2025.

Changes in assessment methodology

1. Model 26.1 reduces the maximum modeled age from 20 to 14 and pools fish aged 14 and older in the plus group.

Spawning biomass and stock trends

Model 26.1 estimates that female spawning biomass rose rapidly in the early 1980s, reached a high in the mid-1980s, and declined through the late 1980s and early 1990s. Spawning biomass remained low through much of the 1990s and 2000s and reached a minimum in 2009 at about 19% of unfished spawning biomass. The 2006, 2008, 2010, 2011, and 2013 year classes contributed to the recovery to about 320,000 t in 2018. Spawning biomass has generally declined since 2018, and age-0+ biomass has generally declined since 2016. Recruitment has been mostly below average since 2013, although the 2018 year class remains strong after a downward revision. The updated assessment revised the 2022 year class upward and estimates below-average recruitment for 2023 and 2025. Projections indicate a modest increase in spawning biomass in 2027 followed by a decline in 2028. The 2027 projection is 5.8% below the 2024 assessment's projection for that year.

The updated assessment projects female spawning biomass of 192,115 t in 2027 and 187,929 t in 2028. Age-0+ biomass is projected at 676,864 t and 661,234 t, respectively, in 2027 and 2028. The decline in the 2027 maximum ABC relative to the 2024 projection is proportionally larger than the decline in spawning biomass because the stock is on the declining portion of the Tier 3 harvest control rule.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

Projected female spawning biomass is below the Tier 3a threshold in both years, placing the stock in Tier 3b. The authors and Team recommend the maximum ABCs of 123,787 t for 2027 and 118,299 t for 2028. The corresponding OFLs are 148,179 t and 141,676 t. The 2027 maximum ABC is 11.7% below the 2024 assessment's projection for that year. All four risk categories were rated Level 1.

Status determination

The assessment concludes that the stock is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition

Aleutian Islands Pacific cod

Changes from previous assessment

The Aleutian Islands (AI) and eastern Bering Sea (EBS) Pacific cod stocks were first managed separately in 2014. Since 2014, age-structured models have been explored in assessments but harvest specifications for Aleutian Islands (AI) Pacific cod had been managed under Tier 5 through 2023. In 2024 a new age structured model was developed in Stock Synthesis for the Aleutian Islands Pacific cod stock. That model, Model 24.1, was carried forward for this Operational Update assessment.

Changes in input data

1. Added realized catches for 2025 and reported catch through October 1, 2026. The year-end estimate uses the preceding five years' average proportion of catch taken after October 1.

2. Added commercial fishery length compositions for 2025 and preliminary compositions through October 1, 2026.
3. Updated fishery length-composition input sample sizes using annual haul counts, weighted so that their mean matches the mean survey input sample size.
4. Added the 2026 survey index.
5. Added 2024 survey conditional age-at-length observations and extrapolated survey numbers at age.

Changes in assessment methodology

1. Retained Model 24.1 and extended its internally estimated recent natural mortality block from 2016–2024 through 2026.
2. Updated Stock Synthesis to version 3.30.25.00.

An appendix provides alternative recruitment, catchability, and environmental configurations as exploratory work for future review.

Spawning biomass and stock trends

Model 24.1 estimates that total biomass declined from an early-1990s high to a series low in 2021. Female spawning biomass followed a similar pattern and reached a low in 2022. The 2026 trawl survey biomass estimate was more than double the series low in 2024, although it was among the least precise estimates in the series. Recruitment deviations increased during 2015–2022, coinciding with the recent natural mortality block. Recent data were insufficient to estimate the 2024–2026 year classes. Projections indicate that female spawning biomass will decline from 2027 to 2028 and remain below the target in both years.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The stock qualifies for Tier 3b in both years. The Team supported the authors' maximum ABCs of 21,597 t in 2027 and 18,135 t in 2028 and OFLs of 26,089 t and 22,538 t, respectively. All four risk categories were rated Level 1. The Team disagreed with the authors' level of concern for the Assessment and Population Dynamics categories recommending they be set at Level 2. The Team also recommended the SSC consider a reduction from the maximum ABC for 2027, but did not specify a value.

Status determination

The authors conclude that the stock is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

3. Sablefish

Status and catch specifications (t) of sablefish in the Bering Sea and Aleutian Islands in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Teams. Beginning in the 2020 fishery year, the OFL was made Alaska-wide (i.e., for both BSAI and GOA FMPs combined). Catch data are current through November 12, 2026.

Area	Year	Age-2+ Biomass	OFL	ABC/BRD	TAC	Catch
Alaska (all areas)	2025	704,713	58,532	50,111		
	2026*	695,681	57,797	47,008		
	2027	588,629	44,333	37,436		
	2028	586,855	44,565	37,636		
Bering Sea	2025			13,898	8,496	3,909
	2026*			13,037	8,996	3,760
	2027			11,231		

Area	Year	Age-2+ Biomass	OFL	ABC/BRD	TAC	Catch
	2028			11,291		
Aleutian Islands	2025			11,566	7,940	948
	2026*			11,421	7,440	932
	2027			7,487		
	2028			7,527		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from the previous assessment

Changes in input data

1. Added trawl fishery length data and fixed-gear fishery age compositions for 2024 and 2025.
2. Longline fishery length data dropped.
3. Composition data were separated by sex.
4. Added final catch estimates for 2024 and 2025 and preliminary and imputed catch for 2026.
5. Added NOAA longline survey abundance indices for the Gulf of Alaska in 2025 and for the Bering Sea and Aleutian Islands in 2026.
6. Added Gulf of Alaska survey age compositions for 2025.
7. Updated length- and weight-at-age estimates using survey data through 2025.
8. Composition input sample sizes now reflect differences in sampling among years within each fishery or survey.
9. Removed the GOA trawl survey.
10. Removed the historical Japanese and domestic fixed-gear catch-per-unit-effort indices and the fixed-gear fishery and NOAA longline survey length compositions.
11. Removed extrapolated western Aleutian Islands stations from the survey index and apportionment calculations.

Changes in assessment methodology

The accepted model (26.2_FAA) contains a suite of changes beginning with changes made for Model 25.12, which was a bridging model from the previously accepted model (23.5) and was initially reviewed by the Plan Team in September 2025. No operational assessment was completed that year because of the federal shutdown. The accepted Model (26.2_FAA) is further built upon model 25.12 and was reviewed and accepted in November 2026.

1. The changes below were initially reviewed for Model 25.12:
    a. Transitioned to the SPoRC stock assessment package.
    b. Removed legacy coding errors and implemented appropriate likelihood functions.
    c. Removed all selectivity parameter linkages.
    d. Updated the M prior to be more biologically realistic: ~N(ln(0.085), sd=0.1).
2. The accepted Model (26.2_FAA) - built from Model 25.12 - is a “fleets-as-areas” model that fits the Bering Sea, Aleutian Islands, and Gulf of Alaska longline survey indices and age compositions separately. Each regional survey has its own catchability and selectivity parameters. With the revised survey design alternating between the Gulf of Alaska and the Bering Sea–Aleutian Islands, the model can fit the observations directly without interpolating indices for unsurveyed regions. The following changes to Model 25.12 were made to become Model 26.2_FAA.
    a. Longline survey data split retained as three regions: GOA, BS, and AI
    b. Selectivity parameter links removed.
    c. New priors for fishery and survey selectivity priors.
    d. Remove early fixed-gear selectivity block.
    e. Input index standard errors increased by 1.5 times instead of 2 times.
    f. Trawl fishery selectivity changed to asymptotic logistic.
    g. Estimates sex-specific natural mortality.

Spawning biomass and stock trends

Model 26.2_FAA estimates that Alaska-wide total biomass increased from a time-series low of 128,000 t in 2015 to 592,000 t in 2026, with little change from 2025 to 2026. Female spawning biomass continued to increase as strong cohorts matured. It rose from 45,000 t in 2014 to 214,000 t in 2026, an increase of 10% from 2025, and is now at 64% of unfished spawning biomass. Projections indicate further increases in female spawning biomass to near 230,000 t in 2028 while age-2+ biomass remains nearly steady or begins to decline, depending on the projected catches.

The strong 2014–2017 year classes continue to support the stock. The 2014 cohort is now fully mature, and the 2016 and 2017 cohorts are estimated to be 90% and 81% mature, respectively. Recruitment since 2019 has generally been lower than during 2014–2017, although the 2020 and possibly the 2022 year classes appear above average. Eastern Bering Sea trawl length data have yet to show evidence of large 2025 or 2026 year classes. The 2014–2022 cohorts account for about 90% of projected 2027 spawning biomass.

The regional longline survey indices diverged in recent years. The Aleutian Islands index increased 26% from 2022 to 2026, the Bering Sea index decreased 14% from 2023 to 2026, and the Gulf of Alaska index increased 4% from 2023 to 2025. Alaska-wide catch has been relatively steady, at about half of ABC in 2025 and 2026. Utilization differed substantially by area, generally running about 80–90% in the Gulf of Alaska and below 25% in the Bering Sea and Aleutian Islands. The canceled 2024 survey, reduced annual survey coverage under the new design and reduced fishery age sampling add uncertainty to recent recruitment and regional biomass estimates. The authors identified no elevated risk-table concerns.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

Projected Alaska-wide female spawning biomass in 2027 is 68% of unfished biomass, above $B_{40\%}$ of 133,965 t, placing sablefish in Tier 3a. The maximum permissible fishing mortality rate for ABC is 0.08, and the OFL fishing mortality rate is 0.09. The unadjusted maximum ABCs are 37,567 t for 2027 and 37,767 t for 2028, with corresponding OFLs of 44,464 t and 44,696 t. After deducting 131 t annually for whale depredation, the authors recommend Alaska-wide ABCs of 37,436 t and 37,636 t and OFLs of 44,333 t and 44,565 t for 2027 and 2028, respectively. The recommended 2027 ABC is about 20% below the 2026 ABC of 47,008 t. The fleets-as-areas model estimates lower recent spawning biomass and catch limits than the single-region alternative, but all models predict a large recent increase in spawning biomass due to some large recruitments in the last 12 years.

Status determination

The assessment concludes that Alaska sablefish is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

Spatial apportionment

The authors recommend retaining the five-year moving average of regional longline survey biomass proportions for the biologically-informed recommended distributions (BRDs). For apportionment, the most recent observed index is carried forward when a region is not surveyed, and the extrapolated western Aleutian Islands stations are excluded. The recommended 2027 BRDs are 11,231 t for the Bering Sea and 7,487 t for the Aleutian Islands, for a BSAI total of 18,718 t. For 2028, the recommended BRDs are 11,291 t and 7,527 t, respectively, for a BSAI total of 18,818 t. The OFL applies Alaska-wide.

4. Yellowfin sole

Status and catch specifications (t) of yellowfin sole in recent years are shown below. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-1+ Biomass	OFL	ABC	TAC	Catch
BSAI	2025	2,308,550	299,247	262,557	135,000	91,888

Area	Year	Age-1+ Biomass	OFL	ABC	TAC	Catch
	2026*	2,353,240	305,039	267,639	145,000	91,284
	2027	2,583,910	204,846	175,231		
	2028	2,533,910	201,766	172,592		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2025 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

The assessment moves the accepted ADMB framework to Stock Synthesis, formalizes the recommended change from a Tier 1 to a Tier 3, and evaluates alternative treatments of survey catchability and survey age-composition weights. The preferred model (25.0b) includes input sample size re-weighting for age compositions, time varying fishery selectivity, and a temperature covariate on survey catchability.

Changes in input data

1. Updated model-based survey age compositions through 2025 (not 2020) and added 2025 mean survey weight-at-age.
2. Updated realized catch through 2025. The 2026 year-end estimate uses catch through October 1 and the preceding five years' average proportion caught during the remainder of the year.
3. Incorporated the model-based biomass index and standard errors for the combined EBS and NBS bottom trawl survey series, 1982–2026 (not 2020).
4. Bottom temperature index from the EBS and NBS bottom trawl survey series, 1982–2026.
5. Changed the survey index model from VAST with 750 knots in 2024 to sdmTMB with 250 knots in 2026.

Changes in assessment methodology

1. Moved from ADMB to Stock Synthesis after model bridging and external CIE review.
2. Calculated reference points using the preferred model 25.0b and the Tier 3 harvest control rule. The 2024 assessment used Tier 1 for advice and also presented Tier 3 results.
3. Evaluated one covariate at a time for survey catchability. Models 25.0 and 25.0a use survey start-date anomalies, while Model 25.0b uses EBS bottom temperature in waters shallower than 100 m.
4. Model 25.0 uses haul counts to weight survey age compositions. Model 25.0a replaces these weights with input sample sizes estimated using sampleISS. Model 25.0b also uses sampleISS (similar but different weights than 25.0b) and uses bottom temperature as an additive log-scale link on survey catchability.

All three configurations are sex- and age-structured, fix female natural mortality at 0.12, and estimate male natural mortality. The authors prefer Model 25.0b because the improved fit, revised survey age-composition weights and temperature covariate improve fit, particularly to the survey index.

Spawning biomass and stock trends

Projections indicate a modest decline in female spawning biomass through 2028, with biomass remaining above the target.

The model-based 2026 EBS bottom trawl survey biomass estimate is 2,176,060 t, 7.63% above the 2025 estimate. Model 25.0b projects age-1+ biomass of 2,583,910 t in 2027 and 2,533,910 t in 2028. Projected female spawning biomass declines from 1,032,620 t to 993,225 t over those years.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The Team concurred with the authors' Tier 3a recommendation for maximum ABCs of 175,231 t in 2027 and 172,592 t in 2028. The corresponding OFLs are 204,846 t and 201,766 t. The lower harvest advice reflects the change from the Tier 1 to the Tier 3 harvest control rule. All four risk categories were rated Level 1.

Status determination

The assessment concludes that the stock was not subjected to overfishing in 2025 and is neither overfished nor approaching an overfished condition. Consequently, yellowfin sole qualifies for management under Tier 3a.

5. Greenland turbot

Status and catch specifications (t) of Greenland turbot in recent years are shown below. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-1+ Biomass	OFL	ABC*/BRD	TAC	Catch
BSAI	2025	37,615	2,598	1,678	1,678	618
	2026**	35,877	2,059	1,328	1,328	205
	2027	28,434	1,356	1,166		
	2028	27,604	1,107	952		
Eastern Bering Sea	2025			1,415	1,415	407
	2026**			1,120	1,120	148
	2027			1,061		
	2028			866		
Aleutian Islands	2025			263	263	212
	2026**			208	208	57
	2027			105		
	2028			86		

*The Team referred selection of a specific value to the SSC. The Model 25.0 maximum ABC of 1,165 t and 951 t for 2027 and 2028 and the Tier 5 ABC estimate of 500 t for both years were identified as upper and lower reference points for the discussion.

**These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

The accepted model (25.0) adds the updated longline index and incorporates a Tier 5 estimation method for biologically-informed recommended distributions (BRD's).

Changes in input data

1. Added design-based EBS shelf bottom trawl survey biomass estimates for 2025 and 2026.
2. Added EBS shelf bottom trawl survey size compositions for 2025 and 2026.
3. Added mean length-at-age data from the 2024 and 2025 EBS shelf bottom trawl surveys.
4. Added 2026 AFSC longline survey relative population numbers and size compositions.
5. Updated fishery catches, including a preliminary 2026 estimate, and added trawl fishery size compositions for 2024 and 2025.

Changes in assessment methodology

1. Model 25.0 retains the accepted Model 16.4c structure and updates the AFSC longline relative population numbers index.
2. The REMA model was used to generate Tier 5 management advice for BRD proportions.

The authors recommend Model 25.0. They identified large retrospective patterns and substantial downweighting of length compositions as drawbacks of the alternative models that were presented. The survey-based results inform consideration of an ABC reduction and the spatial distribution of advice.

Spawning biomass and stock trends

Spawning biomass declined steeply following the large early-1980s fishery and a period of weak recruitment through the 1990s. It recovered somewhat as the 2007–2009 year classes matured, then began to decline again around 2020. The EBS shelf survey size data suggest some recruitment in 2023, but there is little evidence of a comparably strong recruitment event after 2010, although some early signals of another weak recruitment may be starting to show. Projections indicate a further decline in spawning biomass through 2028. Reduced survey coverage in areas occupied by adults adds uncertainty to the recent biomass estimates.

The selected model projects age-1+ biomass of 28,434 t in 2027 and 27,604 t in 2028. Projected female spawning biomass is 18,414 t and 17,040 t, respectively, compared with $B_{40\%}$ of 22,485 t and $B_{35\%}$ of 19,674 t. Both projections remain above $B_{17.5\%}$ of 9,837 t.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The Level 3 Risk Table score for assessment-level concerns reflects uncertainty in initial biomass, retrospective declines in biomass estimates as new data are added, and instability in model diagnostics. The EBS slope bottom trawl survey has not been conducted since 2016, and killer whale depredation affects the CV's of the longline survey. The weak recruitment that followed the 2007–2009 cohorts contributes to the Level 2 population dynamics rating.

The stock falls in Tier 3b. The maximum permissible ABCs are 1,166 t in 2027 and 952 t in 2028, with OFLs of 1,356 t and 1,107 t, respectively. The assessment rated assessment risk at Level 3 and population dynamics risk at Level 2. The Team concurred with the authors' recommendation to consider a reduction using the Tier 5 result as a reference for reducing from maximum ABC. The Team referred selection of a specific value to the SSC. The Team identified the Model 25.0 maximum ABC and the Tier 5 ABC estimate of 500 t as upper and lower reference points for the discussion.

Spatial apportionment

The preferred REMA model assigns 91% of biomass to the EBS and 9% to the Aleutian Islands for the biologically-informed recommended distributions (BRD's).

Status determination

The assessment concludes that the stock is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

6. Arrowtooth flounder

Arrowtooth flounder are assessed quadrennially according to the stock assessment prioritization schedule. A forward projecting age structured model is the primary assessment tool for arrowtooth flounder, which qualifies as a Tier 3 stock. The assessment model is not run during an off-cycle year. For this off-cycle year, a harvest projection is presented with recommendations of harvest levels for the next two years for this species, using updated catch information in the projection model. The most recent full assessment was conducted in 2022 (Shotwell et. al, 2022). A full stock assessment document with updated assessment and projection model results is scheduled for November 2027.

Status and catch specifications (t) of arrowtooth flounder in recent years are below. The grayed-out text below the following table summarizes the 2022 assessment and the status and catch specifications (t) of arrowtooth flounder in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-1+ Biomass	OFL	ABC	TAC	Catch
BSAI	2025	908,977	104,428	88,683	14,000	9,312
	2026*	898,546	102,472	87,035	14,000	6,403
	2027	891,053	98,654	83,787		
	2028	882,551	95,130	80,779		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

There were no changes in the assessment methodology. Changes in the input data include:

1. Estimates of catch through October 14, 2022, for Bering Sea Aleutian Islands (BSAI).
2. Fishery size compositions for 2020 and 2021.
3. Biomass point-estimates and standard errors from the 2021 and 2022 eastern Bering Sea (EBS) shelf bottom trawl survey (BTS) and 2022 Aleutian Islands (AI) BTS.
4. Age data from the 2021 eastern Bering Sea shelf.
5. The recommended model did not include fishery size compositions prior to the start of the Observer Program (pre-1991), or fishery size compositions with fewer than 300 samples, or Aleutian Islands survey data prior to the standardization of the survey (pre-1991).

Spawning biomass and stock trends

The projected age 1+ total biomass for 2023 is 929,274 t, which is a slight decrease from the 914,915 t projected for 2023 in last year's assessment. The projected female spawning biomass for 2023 is 514,577 t, which is a slight decrease from last year's 2023 estimate of 528,725 t. Overall, this stock increased steadily from 1985 to 2009, dipped slightly until 2017 and then increased to current levels that are similar to the 2009 time series peak.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has determined that reliable estimates of $B_{40\%}$, $F_{40\%}$, and $F_{35\%}$ exist for this stock. Arrowtooth flounder therefore qualifies for management under Tier 3. The point estimates of $B_{40\%}$ and $F_{40\%}$ from this year's assessment are 224,487 t and 0.146. The projected 2023 spawning biomass is well above $B_{40\%}$, so ABC and OFL recommendations for 2023 were calculated under sub-tier "a" of Tier 3. The authors recommend setting F_{ABC} at the $F_{40\%}$ level, which is the maximum permissible level under Tier 3a, resulting in 2023 and 2024 ABCs of 83,852 t and 87,511 t, respectively. Projected harvesting at $F_{35\%}$ (0.174) gives 2023 and 2024 OFLs of 98,787 t and 103,070 t respectively.

Status determination

Arrowtooth flounder is a lightly exploited stock in the BSAI. Arrowtooth flounder is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

7. Kamchatka flounder

Kamchatka flounder are assessed biannually in even years. Due to staffing and reviewer capacity resulting from the 2025 government shutdown, instead of the full assessment model, a harvest projection using updated catch information in the projection model is presented for this species with recommendations of harvest levels for the next two years. The most recent full assessment was conducted in 2024 (Bryan et al. 2024). The next full stock assessment document with updated assessment and projection model results is scheduled for November 2027.

Status and catch specifications (t) of Kamchatka flounder in recent years are below. The grayed-out text below the following table summarizes the 2024 assessment and the status and catch specifications (t) of Kamchatka flounder in recent years. Biomass for each year corresponds to the projection given in the

SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-2+ Biomass	OFL	ABC	TAC	Catch
BSAI	2025	106,850	8,019	6,800	6,800	5,046
	2026*	104,888	7,790	6,606	6,606	2,129
	2027	106,999	7,988	6,770		
	2028	104,409	7,630	6,466		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

Changes to the input data include:

1. Estimates of catch were updated for all years.
2. The 2024 catch was estimated using an expansion factor of 1.03 that was derived from the 5-yr average proportion of Kamchatka flounder caught as of September 23rd.
3. The 2023 fishery length composition data were added to the assessment.
4. The 2023 and 2024 EBS shelf bottom trawl survey biomass and length composition estimates were added to the assessment.
5. The 2024 Aleutian Island bottom trawl survey biomass and length composition estimated were added to the assessment.

No changes were made to the assessment model methodology.

Spawning biomass and stock trends

The projected 2025 female spawning biomass is 44,883 t, above the $B_{40\%}$ level of 34,300 t, and spawning biomass is projected to remain above $B_{40\%}$ for the foreseeable future. The decreasing biomass and biomass trend scaling lower than the 2022 assessment correspond to fitting a lower survey biomass. The addition of the new survey data does result in an overall decrease in the spawning stock biomass, total biomass, numbers, and age-2 recruits trends through time, particularly after 2010.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

This stock was managed under Tier 3 for the first time in 2014. As noted above, projected spawning biomass for 2025 is above $B_{40\%}$, placing Kamchatka flounder in sub-tier "a" of Tier 3. For the 2025 fishery, the authors and Team recommend setting 2025 ABC at the maximum permissible value of 6,800 t from the projection model. This value is a decrease of 8% from the 2025 ABC currently specified (7,360 t). The recommended 2025 OFL is 8,019 t, a 8% decrease from the 8,687 t currently specified for 2025. The author listed the assessment-related considerations as a Level-2 area of concern due to degrading model fit to the survey biomass and higher retrospective pattern from the previous model. However, the Team did not recommend any reductions from the maximum permissible ABC.

Status Determination

Kamchatka flounder is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

8. Northern rock sole

The BSAI Northern rock sole stock is assessed biennially according to the stock assessment prioritization schedule. A forward projecting age structured model is the primary assessment tool for northern rock sole which qualifies as a Tier 1 stock. The assessment model is not run during an off-cycle year. During off-cycle years, a harvest projection is presented with recommendations of harvest levels for the next two

years for this species, using updated catch information in the projection model. The most recent full assessment was conducted in 2024 (McGilliard et al. 2024). A full stock assessment document with updated assessment and projection model results is scheduled for November 2027.

Status and catch specifications (t) of northern rock sole in recent years are in the below table. The grayed-out text below summarizes the 2024 assessment and the status and catch specifications (t) of northern rock sole in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-6+ Biomass	OFL	ABC	TAC	Catch
BSAI	2025	881,154	165,444	157,487	75,000	41,506
	2026*	885,284	166,220	158,225	75,000	48,965
	2027	855,290	160,588	152,865		
	2028	861,606	161,774	153,993		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

This stock assessment is on a two-year cycle, thus any data that became available after the 2022 full stock assessment was added to the models for consideration this September. New data include:

1. Catch biomass through October 1, 2024
2. 2023 catch biomass was updated to reflect October – December 2023 catches
3. 2022 and 2023 fishery age composition data
4. 2022 and 2023 survey age composition data
5. 2022 and 2023 survey weight-at-age estimates
6. 2023 and 2023 fishery weight-at-age estimates
7. 2023 and 2024 Eastern Bering Sea (EBS) shelf survey biomass

A new model (Model 24.2) was proposed that is a substantial change from the previously accepted model (Model 18.3). Model 24.2 is a minor modification of Model 22.2, which was brought forward in November 2022 and therefore, not available for review for harvest specifications. Model 22.2 was used for determining the reduction from maximum permissible ABC for the 2023 harvest specifications. Model 24.2 is similar to Model 22.2 except it uses input sample sizes for survey age compositions derived using the bootstrap approach, and subsequently applies Francis data weighting.

Spawning biomass and stock trends

Spawning biomass has an increasing trend from the model start in 1975 through 2003 when it peaked at 650,900 t and then dropped to a low of 399,977 in 2008 before increasing again to 619,715 t in 2015. The stock has been steadily decreasing from 2015 to 2023 down to 254,160 t, but shows a slight uptick to 271,988 t in 2024. Recruitment was maintained at near historic lows for several consecutive years from 2008 to 2014. More recently a pulse of recruits has begun to appear in the surveys including strong year classes from 2014 to 2020; however there is a lot of uncertainty regarding the true strength of these year classes. The stock assessment model projects a 2025 female spawning biomass of 301,051 t, an 13.4% decrease from the previous 2025 female spawning biomass estimate of 347,811t. The projected spawning biomass for 2026 is 330,774 t. Exploitation rates are relatively low and recent catches have typically been well below TACs.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has determined that northern rock sole qualifies for management under Tier 1. Spawning biomass for 2025 is projected to be well above the B_{MSY} estimate of 183,756 t, placing northern rock sole in sub-tier "a" of Tier 1. The Tier 1 2025 and 2026 maxABCs are 157,487 t and 158,225 t respectively.

Status determination

Northern rock sole is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

9. Flathead sole

Flathead sole is a Tier 3 assessment that uses an age-structured model. A harvest projection is presented with recommendations of harvest levels for the next two years for this species using updated catch information in the projection model instead of the full assessment model. Flathead sole are currently assessed on a four-year cycle; the most recent full assessment was conducted in 2024 (Kapur and Cronin-Fine 2024) and will be updated in 2028.

Status and catch specifications (t) of flathead sole in recent years are below. The grayed-out text below the following table summarizes the 2024 assessment and the status and catch specifications (t) of flathead sole in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-3+ Biomass	OFL	ABC	TAC	Catch
BSAI	2025	801,418	101,621	83,807	36,000	8,777
	2026*	832,021	106,283	87,700	36,000	18,393
	2027	872,126	108,596	89,655		
	2028	923,800	111,401	92,006		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

The following changes were made in the input data:

1. bottom trawl survey biomass for years 2021-2024;
2. survey length composition data for years 2021-2024;
3. conditional age-at-length data from the bottom trawl survey for years 2021-2023;
4. marginal fishery length compositions from 2020-2023 (though only 2022 and 2023 are included in the likelihood);
5. marginal fishery age compositions from 2020 and 2021. The Age and Growth program was not able to provide marginal fishery age compositions for more recent years due to staffing shortages;
6. replacement of the input sample sizes for survey compositional data with values obtained from the surveyISS package version 1.0.0 (previously, the number of hauls or the nominal sample size [number of otoliths] were used for marginal lengths and conditional age-at-length data respectively).

The proposed assessment methodology was the same as the most recent full assessment conducted in 2020 (Monnahan and Haehn 2020), with the small change that the projection model was updated to the latest version of spm and the recruitment time series passed to the projections now begins in 1977 for consistency with other assessment workflows (previously the entire time series from 1964 onwards had been used). The Team concurred with the authors' recommendation.

Spawning biomass and stock trends

Spawning biomass and Age 3+ biomass have followed decadal-scale fluctuations as they decreased from the beginning of the estimates in the the 1960s to the early 1980s, increased from the the early 1980s to the late 1990s, decreased from the late 1990s to the late 2010s, and have been increasing since then. Spawning biomass and age 3+ biomass are projected to increase slightly in 2025. Recruitment has been more variable than biomass with more frequent periods of increases and decreases, and is projected to increase slightly in 2025.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has determined that reliable estimates of $B_{40\%}$, $F_{40\%}$, and $F_{35\%}$ exist for this stock, thereby qualifying flathead sole for management under Tier 3. The current values of these reference points are $B_{40\%}$=97,315 t, $F_{40\%}$=0.40, and $F_{35\%}$=0.49. Because projected spawning biomass for 2025 (204,323 t) is above $B_{40\%}$, flathead sole is in Tier 3a. The authors and Team recommend setting ABCs for 2025 and 2026 at the maximum permissible values under Tier 3a, which are 83,807 t and 87,700 t, respectively. The 2025 and 2026 OFLs under Tier 3a are 101,621 t and 106,283 t, respectively.

Status determination

Flathead sole is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

10. Alaska plaice

Alaska plaice are managed under Tier 3 and are assessed on a four-year cycle, with a full assessment conducted every four years. The last full assessment was conducted in 2024. The assessment model is not run in off-cycle years; instead, a harvest projection is conducted on the off years. A harvest projection involves projecting the model, established in the last full assessment, forward to predict future population estimates and recommended harvest levels for the next two years.

Status and catch specifications (t) of Alaska plaice in recent years are shown below. The grayed-out text below the following table summarizes the 2024 assessment and the status and catch specifications (t) of Alaska plaice in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-3+ Biomass	OFL	ABC	TAC	Catch
BSAI	2025	406,051	34,576	28,745	15,903	7,113
	2026*	402,028	33,965	28,230	15,682	5,669
	2027	441,105	39,724	33,021		
	2028	428,560	38,264	32,522		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

In accordance with the approved schedule, a full assessment was conducted for Alaska plaice this year. Changes in the input data include:

1. Updated catch estimates from 2022-2024 (2024 catch data as of November 11, 2024, the remaining catch in 2024 is estimated by assuming the weekly catch in the remaining 12 weeks equals the average catch from the three weeks prior to November 11)
2. Included new biomass index estimates from the 2024 EBS shelf bottom trawl survey.
3. Included new length-composition data from 2022-2024 from the EBS shelf bottom trawl survey.
4. Updated length-composition data from 2000, 2002-2007 and 2021-2024 from the fishery.

Changes in the assessment methodology include:

1. Assessment model transitioned to Stock Synthesis versions 3.30.22.
2. Updated each year's input sample size for the survey age- and length- composition data using a general bootstrap framework implemented in the "surveyISS" Rpackage.
3. Included age-1 and age-2 fish in the fishery and survey age-composition data.
4. Adjusted the maximum age for linear growth from age-1 to age-3 and estimated all growth parameters except the coefficients of variances (CVs).
5. Updated the growth CVs for both males and females with new values determined through likelihood profiles.
6. Updated the length-weight relationship parameter values by estimating them externally using the fishery and survey length-weight data available to 2024.

7. Calculated weight-at-age relationship within SS3.
8. Tuned the variance for the recruitment deviations through SS3.

The survey biomass estimate for 2024 (338,621 t) was 5% lower than the 2023 estimate and is the second lowest value in the survey time series next to 2021 (327,810 t). Similarly, model estimates of female spawning biomass (147,511 t in 2024) continued their decline since 2013. In contrast, model estimates of total biomass (392,468 t in 2024) show an increasing trend since 2021. These results are likely due to estimates of relatively strong recruitment since 2014, a pattern which began to emerge in the 2019 assessment. The Alaska plaice stock is projected to remain above the $B_{35\%}$ level of female spawning biomass while declining over the next several years. Alaska plaice continue to be found in high abundance in the northern Bering Sea (NBS) and the 2021 NBS estimate (344,578 t) exceeded the EBS estimate for the first time. Note that there was no NBS survey in 2024.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

Reliable estimates of $B_{40\%}$, $F_{40\%}$, and $F_{35\%}$ exist for this stock, therefore qualifying it for management under Tier 3. The current estimates are $B_{40\%}$ = 118,563 t, $F_{40\%}$ = 0.140, and $F_{35\%}$ = 0.170. Given that the projected 2025 spawning biomass of 150,892 t exceeds $B_{40\%}$, the ABC and OFL recommendations for 2025 were calculated under sub-tier "a" of Tier 3. Projected harvesting at the $F_{40\%}$ level gives a 2025 ABC of 28,745 t and a 2026 ABC of 28,230 t. The recommended Tier 3a OFLs are 34,576 t and 33,965 t for 2025 and 2026, respectively.

Status determination

Alaska plaice is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

11. Other Flatfish Complex

The Bering Sea/Aleutian Islands other flatfish complex has typically included those flatfish besides northern rock sole, yellowfin sole, arrowtooth flounder, Kamchatka flounder, Greenland turbot, flathead sole, and Alaska plaice. The complex includes over a dozen species of flatfish. Status and catch specifications (t) of other flatfish complex in recent years are shown below. For 2026 a harvest projection was presented with recommendations of harvest levels for the next two years for this species, using updated catch information in the projection model. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Biomass	OFL	ABC	TAC	Catch
BSAI	2025	164,955	26,083	19,562	4,500	5,382
	2026		26,083	19,562	4,500	4,123
	2027		26,083	19,562		
	2028		26,083	19,562		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

The following changes were made to the input data:

1. The 2020 catch was updated, catches for 2021, 2022, and 2023 included, and 2024 catch which was pulled on 21 October 2024 was included in the assessment.
2. The 2021, 2022, 2023 and 2024 Eastern Bering Sea shelf survey and 2022 and 2024 Aleutian Islands survey biomass estimates for other flatfish species were added to the assessment.

The REMA modeling framework was adopted in 2024, which extends usage from the previous RE model in ADMB.

Spawning biomass and stock trends

EBS shelf survey biomass estimates for this complex are highly variable but were all below 100,000 t from 1983-2003, and ranged widely between 2004 to 2024 between 69,911 t in 2015 to a high of 212,920 t in 2017. The 2024 survey estimated the biomass to be at 135,788 t. Exploitation rates based on the REMA model estimates of biomass for the most abundant species in the other flatfish complex are generally low, between 0.2 and 7.5% Exploitation rates for Dover sole have increased in the last few years, but remain within historical bounds, while rates for rex sole and starry flounder have remained steady. The estimated exploitation rates for butter sole are higher, due to very low and variable survey biomass estimates. However, the biomass estimates for butter sole have large sampling variances, with coefficients of variation ranging from 0.26 to 0.83 in recent EBS trawl surveys, and large swings in estimates of biomass and thus exploitation rates. For instance, estimated biomass went from 283.2 t in 2016 to 19,507.5 t in 2019, and the corresponding exploitation rates were 25% and 1%. The actual amount of estimated butter sole caught is relatively consistent and averages 210 t from 2014-2024.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has classified other flatfish as a Tier 5 species complex with harvest recommendations calculated from estimates of biomass and natural mortality. Natural mortality rates for rex (0.17) and Dover sole (0.09) borrowed from the Gulf of Alaska are used, along with a value of 0.15 for all other species in the complex. The resultant 2025 and 2026 OFLs and ABCs are 26,083 t and 19,562 t respectively. The Team concurred with the Authors' recommended methods and use of the REMA model.

Status determination

This assemblage is not being subjected to overfishing. It is not possible to determine whether this assemblage is overfished or whether it is approaching an overfished condition because it is managed under Tier 5.

12. Pacific ocean perch

Status and catch specifications (t) of Pacific ocean perch in recent years are shown below. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-3+ Biomass	OFL	ABC/BRD	TAC	Catch
BSAI	2025	847,803	44,594	37,375	33,458	32,368
	2026*	832,388	43,084	36,578	33,490	32,210
	2027	786,919	39,897	33,640		
	2028	772,777	38,809	32,722		
Eastern Bering Sea	2025			10,121	10,121	10,085
	2026*			9,905	9,905	9,523
	2027			8,780		
	2028			8,540		
Eastern Aleutian Islands	2025			6,278	6,278	6,031
	2026*			6,144	6,144	5,646
	2027			6,997		
	2028			6,806		
Central Aleutian Islands	2025			5,559	5,559	4,889
	2026*			5,441	5,441	5,173
	2027			5,181		
	2028			5,039		
Western Aleutian Islands	2025			15,417	11,500	11,363
	2026*			15,088	12,000	11,869

Area	Year	Age-3+ Biomass	OFL	ABC/BRD	TAC	Catch
	2027			12,682		
	2028			12,337		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

Changes in input data

1. Updated catch through 2025 and estimated 2026 catch at 32,710 t using reported catch through September and the recent share of remaining TAC taken after September.
2. Added 2026 Aleutian Islands survey biomass and length composition and 2024 Aleutian Islands survey age composition.
3. Added fishery length compositions for 2024 and 2025.
4. Reweighted multinomial input sample sizes for age and length compositions using the McAllister–Ianelli iterative procedure.

Changes in assessment methodology

1. Retained the Model 24 assessment methodology for the operational update.

Spawning biomass and stock trends

Aleutian Islands survey biomass increased from the early 1990s to a high in 2013 and has since declined. Model estimates of age-3+ biomass show a similar pattern. Survey ages indicate strong year classes in the late 1970s and 1980s, the late 1990s, and 2014–2015. Estimates for many year classes after 2010 rose as more survey and fishery observations became available. Projections indicate that female spawning biomass will decline through 2028 while remaining above the target.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The stock qualifies for Tier 3a in both years. The authors and Team recommend maximum ABCs of 33,640 t for 2027 and 32,722 t for 2028, with OFLs of 39,897 t and 38,809 t, respectively. Assessment-related risk was rated Level 2, in part because of retrospective uncertainty. The other risk categories were rated Level 1.

Spatial apportionment

REMA-based biologically-informed recommended distributions (BRD's) for 2027 and 2028 are 8,780 t and 8,540 t in the EBS, 6,997 t and 6,806 t in the eastern Aleutian Islands, 5,181 t and 5,039 t in the central Aleutian Islands, and 12,682 t and 12,337 t in the western Aleutian Islands.

Status determination

The assessment concludes that the stock was not subject to overfishing in 2025, is not overfished, and is not approaching an overfished condition.

13. Northern rockfish

Northern rockfish are assessed biannually according to the stock assessment prioritization schedule. A forward projecting age structured model is the primary assessment tool for northern rockfish, which qualifies as a Tier 3 stock. The assessment model is not run during an off-cycle year. During even years, a harvest projection is presented with recommendations of harvest levels for the next two years for this species, using updated catch information in the projection model. The most recent full assessment was conducted in 2023 (Spencer and Laman 2023). The assessment scheduled for 2025 was not conducted due to the 2025 government shutdown. A full stock assessment document with updated assessment and projection model results is scheduled for November, 2027.

Status and catch specifications (t) of northern rockfish in recent years are below. The grayed-out text below the following table summarizes the 2023 assessment and the status and catch specifications (t) of northern rockfish in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-3+ Biomass	OFL	ABC	TAC	Catch
BSAI	2025	292,807	22,848	18,694	12,000	8,049
	2026*	289,639	22,284	18,232	12,000	9,770
	2027	285,933	21,739	17,784		
	2028	284,291	21,463	17,558		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

Changes in the input data:

1. Catch data was updated through 2022, and total catch for 2023 was projected.
2. The 2022 Aleutian Island survey age composition, the 2021 fishery age composition data, and the 2022 fishery length composition data were included in the assessment.
3. The 2022 Aleutian Island survey biomass estimate was included in the assessment.
4. The ageing error matrix was updated.

Changes in the Assessment Methodology:

1. There were no changes to the assessment methodology.

Spawning biomass and stock trends

The estimated survey biomass for Northern rockfish shows an increasing trend, starting at 91,159 t in 1977 and increasing to a peak of 256,819 t in 2014, and declining to 236,604 t in 2023. The estimated total biomass shows a similar trend, increasing to a peak value of 343,230 t in 2014, and the estimated spawning biomass increases from 55,180 in 1977 to its highest value of 151,130 in 2015.

A relatively high fishing mortality rate in 1977 is estimated to account for the relatively high catch in this year, followed by very low levels of fishing mortality during the 1980s when catch was small. Fishing mortality rates began to increase during the early 1990s, and declined from the late 1990s to 2014. Fishing mortality rates have increased since 2014, and the 2023 estimate of 0.034 is the largest F in the estimated time series beginning in 1977. The stock is currently below F35% and above B40%.

For recruitment, relatively strong year classes are observed in 1984-1985, 1989, 1993, 1995-1998, and 2005, reflecting several of the strong year classes observed in the age composition input data. Most of these estimated strong year classes are larger than their estimates in the 2021 assessment, and years adjacent to the strong year classes are often smaller than estimated in the 2021 assessment (for example, the 1985, 1989, and 2005 year classes). This reflects the influence of the updated ageing error matrix; the greater uncertainty in the observed ages allows stronger recruitments which will be distributed to a greater degree to adjacent observed ages. There is substantial variability in the relationship between recruitment and spawning stock size.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has determined that reliable estimates of $B_{40\%}$, $F_{40\%}$, and $F_{35\%}$ exist for this stock, thereby qualifying northern rockfish for management under Tier 3. The author recommended Model 21 with no reductions from maximum permissible ABC and the Team agreed with the author's recommendation.

Status determination

This stock is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

14. Blackspotted and rougheye rockfish

Status and catch specifications (t) of blackspotted and rougheye rockfish in recent years are shown below. Unless otherwise noted, biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	age-3+ Biomass*	OFL	ABC/BRD***	TAC	Catch
BSAI	2025	29,758	838	706	706	648
	2026**	30,258	902	766	766	560
	2027	31,364	1,005	766		
	2028	31,575	1,054	766		
Western/Central Aleutian Islands	2025			298	298	424
	2026**			325	325	413
Western Aleutian Islands	2027			113		
	2028			113		
Central Aleutian Islands	2027			370		
	2028			370		
Eastern AI/Eastern Bering Sea	2025			408	408	225
	2026**			441	441	147
	2027			283		
	2028			283		

*The total biomass is from an AI age-structured model and survey biomass estimates from the EBS.

**These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

*** Prior to 2026 Western and Central AI had a combined subarea ABC and TAC with a maximum subarea species catch (MSSC) specified for the Western AI. For 2026 the Team agreed to align the MSSC with the current BRD designation.

Changes from previous assessment

The assessment refits the Aleutian Islands age-structured model with updated survey and fishery compositions and updates the separate Tier 5 estimate for the EBS. The treatment of the unusually large estimated 2011 year class remains important because it affects mean recruitment and the biomass reference points used for Aleutian Islands harvest advice.

Changes in input data

1. Updated catches through 2025. Estimated total catch for the Aleutian Islands in 2026 adds the 2023–2025 average October–December catch to the catch reported through September 2026.
2. Added the 2026 Aleutian Islands survey biomass estimate and length composition.
3. Replaced the 2024 Aleutian Islands survey length composition with the 2024 survey age composition.
4. Added fishery length compositions for 2024 and 2025.
5. Reweighted multinomial input sample sizes for age and length compositions using the Francis iterative procedure.

Changes in assessment methodology

1. Retained the age-structured assessment for the Aleutian Islands and the survey-based REMA analysis for the EBS.

Spawning biomass and stock trends

The 2026 Aleutian Islands trawl survey biomass estimate declined approximately 40%, from 24,410 t in 2024 to 14,655 t in 2026, primarily reflecting a decrease in the eastern Aleutian Islands. In contrast, the age-structured model estimates an increase in total biomass since 2005. Modeled total biomass has increased much faster than spawning biomass because many fish in more recent year classes have yet to mature. The assessment retains the unusually large estimated 2011 year class in the starting population for projections and uses the estimated size of the 2002 year class in its place to calculate mean recruitment and biomass reference points. Projections indicate an increase in female spawning biomass through 2028. The model projects Aleutian Islands age-3+ biomass of 29,598 t in 2027 and 29,809 t in 2028. Female spawning biomass is projected to increase from 3,921 t to 4,194 t, above $B_{40\%}$ of 3,565 t in both years.

The separate survey-based biomass estimate for the EBS continues to increase with total exploitable biomass at 1,766 t.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The Aleutian Islands component qualifies for Tier 3a, and the EBS component is assessed under Tier 5. The assessment rated assessment, population dynamics, and fishery considerations at Level 2. Given uncertainty about stock age structure, the treatment of recruitment in setting reference points, and recent survey biomass, the Team concurred with the authors' recommendation to hold the combined ABC at the 2026 level of 766 t in both years. The combined OFLs are 1,005 t for 2027 and 1,054 t for 2028.

Spatial apportionment

For both years the authors recommend the biologically-informed recommended distributions (BRD's) of 113 t in the western Aleutian Islands, 370 t in the central Aleutian Islands, and 283 t in the eastern Aleutian Islands and EBS combined.

Status determination

The BSAI blackspotted and rougheye stock complex is not being subjected to overfishing. For the AI region, the blackspotted and rougheye rockfish complex is not overfished, and is not approaching an overfished condition. It is not possible to determine whether the complex in the EBS region is overfished or whether it is approaching an overfished condition because it is managed under Tier 5.

15. Shortraker rockfish

Status and catch specifications (t) of shortraker rockfish in recent years are shown below. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Biomass	OFL	ABC	TAC	Catch
BSAI	2025	21,018	631	473	473	310
	2026*	21,018	631	473	473	184
	2027	20,573	617	463		
	2028	20,573	617	463		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

Changes in input data

1. Revised and updated catch data through October 24, 2026.

2. Added the 2026 Aleutian Islands bottom trawl survey biomass estimate.
3. Updated the AFSC longline survey relative population weights used as auxiliary information for the EBS slope. The longline survey began sampling the slope in even years in 2026.

Changes in assessment methodology

1. This is an update assessment, and therefore there are no changes to the assessment methods. The recommended model is Model 22_2026

Spawning biomass and stock trends

The Aleutian Islands bottom trawl survey accounts for the largest observed shortraker biomass among the survey areas. Its index generally declined from 2000 through 2016, recovered to near average in 2018, and fell to a series low in 2026. The southern Bering Sea index has generally declined since 1991. Many Aleutian Islands observations come from the deepest survey stratum, and the survey does not sample below 500 m. The updated survey-based biomass estimate for harvest advice is slightly lower than in the previous assessment.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The Team concurred with the authors' Tier 5 recommendation for a BSAI-wide maximum ABC of 463 t and an OFL of 617 t in each year. All four risk categories were rated Level 1.

Status determination

Shortraker rockfish is not being subjected to overfishing. It is not possible to determine whether this stock is overfished or whether it is approaching an overfished condition because it is managed under Tier 5.

16. Other rockfish complex

Status and catch specifications (t) of the other rockfish complex in recent years are shown below. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Survey biomass	OFL	ABC/BRD	TAC	Catch
BSAI	2025	40,559	1,406	1,054	1,054	1,030
	2026*	40,559	1,406	1,054	1,054	830
	2027	42,899	1,533	1,150		
	2028	42,899	1,533	1,150		
Eastern Bering Sea	2025			639	639	507
	2026*			639	639	274
	2027			561		
	2028			561		
Aleutian Islands	2025			415	415	523
	2026*			415	415	556
	2027			589		
	2028			589		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

Changes in input data

1. Updated catch through September 12, 2026.
2. Added 2026 Aleutian Islands bottom trawl survey biomass for shortspine thornyhead (SST) and the remaining non-SST species.
3. Added 2025 and 2026 EBS shelf bottom trawl survey biomass for non-SST species.
4. Added 2026 NMFS longline survey relative population weights for SST on the EBS slope.

Changes in assessment methodology

1. This is an update assessment, and therefore there are no changes to the assessment methods. The recommended model is Model 22 (Sullivan et al. 2022a).

Spawning biomass and stock trends

This is a Tier 5 complex, thus trends in spawning biomass are unknown. Shortspine thornyhead accounts for most of the combined biomass. The random effects survey biomass estimates for SST in the Aleutian Islands and EBS slope have been variable. Estimated BSAI biomass increased from about 20,000 t in the early 1990s to about 61,000 t in 2015, then declined to about 40,000 t in 2023 before increasing slightly. The EBS slope longline index for shortspine thornyhead fell sharply between 2021 and 2023 and increased slightly between 2024 and 2026. The non-SST portion of the complex is lower and varies dramatically among surveys. Biomass estimates are frequently zero or very small for the non-SST portion of the complex in both the eastern Bering Sea slope and shelf surveys.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The Team agrees with the approach recommended by the author of setting F_{ABC} at the maximum allowable under Tier 5 ($F_{ABC} = 0.75M$). The accepted values of M for species in this complex are 0.03 for SST and 0.09 for all other species. Multiplying these rates by the best biomass estimates of SST and the non-SST portion of the complex yields 2027 and 2028 ABCs of 561 t in the eastern Bering Sea and 589 t in the Aleutian Islands. The Team recommends that OFL be set for the entire BSAI area, which under Tier 5 is calculated by multiplying the best estimates of total biomass for the area by the separate natural mortality values and adding the results, yielding an OFL of 1,533 t for 2027 and 2028. The risk table levels were decreased from 2 to 1 for the assessment, population, and fishery considerations categories and the ecosystem considerations level remained at level 1. There was no recommended reduction from the maximum ABC.

Spatial apportionment

REMA-based biologically-informed recommended distributions (BRDs) for 2027 and 2028 are 561 and 589 t for the EBS and AI, respectively.

Status determination

The assessment concludes that the stock is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

17. Atka mackerel

Status and catch specifications (t) for Atka mackerel in recent years are shown below. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2026 and 2027 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age 1+ Biomass	OFL	ABC/BRD	TAC	Catch
BSAI	2025	627,115	122,622	103,247	82,000	80,613
	2026*	605,644	107,889	92,361	82,941	79,621
	2027	585,881	106,757	90,502		
	2028	570,826	96,414	81,709		
E Aleutian Islands/EBS	2025			46,650	39,000	37,876
	2026*			41,731	41,731	39,121
	2027			48,010		
	2028			43,345		
Central Aleutian Islands	2025			26,511	24,443	24,289
	2026*			23,716	23,716	23,076
	2027			20,233		
	2028			18,268		
Western Aleutian Islands	2025			30,087	18,557	18,449
	2026*			26,914	17,494	17,425
	2027			22,259		
	2028			20,096		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

The following new data were included in this year's assessment:

1. Updated catch through 2025 and assumed full-year 2026 catch equal to the TAC of 82,941 t.
2. The 2026 AI bottom trawl survey biomass estimate was added.
3. The 2024 AI bottom trawl survey age composition data were added.
4. The 2024 and 2025 fishery age composition data were added.
5. The estimated average selectivity for 2021-2025 was used for projections.
6. Projected catches for 2027 and 2028 are 76,927 t and 69,453 t, respectively. It was assumed that approximately 85% of the BSAI-wide ABC is likely to be taken under the revised Steller Sea Lion Reasonable and Prudent Alternatives (SSL RPAs) implemented in 2015. This percentage was applied to the 2027 and 2028 maximum permissible ABCs, and those reduced amounts were assumed to be caught in order to estimate the 2027 and 2028 ABCs and OFL values.

There were no changes in the model configuration.

Spawning biomass and stock trends

Female spawning biomass has generally declined since the historical peak in 2005, reflecting the influence of several exceptionally strong year classes in the late 1990s and early 2000s. More recently, spawning biomass is estimated to have increased from approximately 116,000 t in 2021-2022 to 169,261 t in 2025, slightly above the 1977-2026 model average of 165,111 t, before declining to 159,275 t in 2026, approximately 3.5% below the long-term average. Recruitment remains highly variable, with recent estimates revised relative to the 2024 assessment. In particular, the estimated strength of the 2021 year class increased by 95%, while the 2022 year class decreased by 39%. Despite these revisions, the overall spawning biomass trajectory remains broadly consistent with the 2024 assessment.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The projected female spawning biomass under the recommended harvest strategy is estimated to be above $B_{40\%}$, thereby placing BSAI Atka mackerel in Tier 3a. The projected female spawning biomass is projected to decline to 130,354 t in 2027 and 117,795 t in 2028, but remain above B40% (108,221 t). Therefore, maximum permissible ABCs of 90,502 t for 2027 and 81,709 t for 2028, with corresponding OFLs of 106,757 t and 96,414 t.

A risk table was completed for this stock with Level 1 ratings for assessment-related considerations, population dynamics considerations, and fishery performance considerations, and Level 2 for ecosystem considerations. No adjustment to maximum permissible ABC was proposed.

Spatial apportionment

A random effects model method was used to apportion biologically-informed recommended distributions (BRD's) among areas. The recommended ABC apportionments by subarea for 2027 and 2028 are 48,010 t and 43,345 t for Area 541 and the EBS region, 20,233 t and 18,268 t for Area 542, and 22,259 t and 20,096 t for Area 543.

Status determination

Atka mackerel is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

18. Skates

The Bering Sea and Aleutian Islands (BSAI) skate stock complex is managed in aggregate, with a single set of harvest specifications applied to the entire complex. However, to generate the harvest recommendations the stock is divided into two units. Harvest recommendations for Alaska skate *Bathyraja parmifera*, the most abundant skate species in the BSAI, are made using the results of an age-structured model and are managed under Tier 3. The remaining species (Other skates) are managed under Tier 5 due to a lack of data. The Tier 3 and Tier 5 recommendations are combined to generate recommendations for the complex as a whole.

BSAI skates are assessed on a biennial stock assessment schedule. An operational assessment is conducted in even years, and in odd years a harvest projection is produced.

Status and catch specifications (t) of skates in recent years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Age-0+ Biomass	OFL	ABC	TAC	Catch
BSAI	2025	584,499	44,086	36,523	27,646	21,735
	2026*	569,197	43,285	35,833	27,646	17,651
	2027	507,612	40,137	33,163		
	2028	498,855	39,696	33,164		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

The full assessment added new data to the Tier 3 Alaska skate model, estimated the growth parameter outside of the model, and fixed the selectivities of the fleets at values that allowed the model to converge.

Changes in input data

1. Catch data has been updated through October 5, 2026. Total catch for 2026 was estimated by the mean proportion of catch occurring after October 5 over the previous 5 years.

2. The 2024 and 2026 Aleutian Islands and 2024-2026 EBS bottom trawl survey biomass data were included.
3. Survey length compositions from the 2024-2026 EBS shelf bottom trawl survey and fishery length compositions from 2024-2026 were included in the Alaska skate Tier 3 model.

Changes in assessment methodology

For Tier 3 model:

1. Model 14.2d1 bridges the accepted Alaska skate Model 14.2d to Stock Synthesis 3.30.23.2.
2. Growth was estimated outside of the assessment model (compared to Model 14.2d1 where growth is estimated internally).
3. Selectivities of all three fleets were modified by fixing parameters that created non-convergence issues.

There were no changes to the previously accepted Tier 5 model for Other Skates (Model 23.0 (rema)).

Spawning biomass and stock trends

Alaska skate biomass declined from the 1960s through the 1970s and recovered through the mid-1990s. It declined modestly before increasing again beginning in 2007. Total biomass has declined since 2015 and spawning biomass since 2020. Recruitment was strong in the early 1980s and again in 2006, then declined through 2015. Recent estimates are slightly below the long-term mean, although length data suggest a potentially strong incoming year class. Other skates survey biomass has increased on the EBS shelf and in the Aleutian Islands, where several individual species have declined. The Tier 5 component does not estimate recruitment.

Projections are based on estimated catches of 17,205 t for 2026 and 24,266 t (5-yr mean total catch) used in place of maximum permissible ABC for 2027 and 2028. The catch estimates for the full complex are used in projections because ABCs are not set for the Alaska skate separately. Model 25.3 projects Alaska skate age-0+ biomass of 376,985 t in 2027 and 368,228 t in 2028. Female spawning biomass is projected at 98,154 t and 92,882 t, respectively, above $B_{40\%}$ of 62,344 t. The survey-based estimate for the Other Skates component is 130,627 t in both years.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The combined harvest limits include the Tier 3a Alaska skate and Tier 5 Other Skates components. Risk table determination for Assessment was Level 2 for both Alaska skates and Other skates and population dynamics was rated Level 2 for Other Skates. No adjustment to maximum permissible ABC was proposed. The Team concurs with the authors recommended BSAI skate complex maximum permissible ABCs of 33,163 t in 2027 and 33,164 t in 2028, with OFLs of 40,137 t and 39,696 t.

Status determination

The BSAI skate complex is not being subjected to overfishing, is not overfished, and is not approaching an overfished condition.

19. Sharks

In accordance with the approved schedule, a catch report was provided for the BSAI shark complex this year. However, a full stock assessment will be conducted in 2027. Until then, the values generated from the previous stock assessment (below) will be used for 2027-2028 specifications. Please refer to the previous stock assessment for details regarding the assessment model and trends. The grayed-out text below the following table summarizes the 2023 assessment and the status and catch specifications (t) of the BSAI shark complex in recent years. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Biomass	OFL	ABC	TAC	Catch
BSAI	2025	n/a	689	450	400	198
	2026*		689	450	400	226
	2027		689	450		
	2028		689	450		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

This assessment was changed to a biennial cycle beginning with the 2014 assessment; this is a full assessment.

Changes to the input data in this analysis include:

1. Total catch for BSAI sharks is updated for 2003-2022 (as of Oct 8, 2022)

The authors presented alternative models for Pacific sleeper shark, other/unidentified sharks and spiny dogfish this year. However, these models were not accepted for management by the Team. Therefore, no changes were made to the methodology used for recommending harvest specifications.

Spawning biomass and stock trends

The main shark species taken in the BSAI fisheries (mainly pollock and Pacific cod) are Pacific sleeper sharks and salmon sharks. Beginning around 2000, catch rates of sleeper sharks in both the IPHC longline survey and the bycatch fisheries declined steeply for several years, causing possible concern about depletion. All sleeper sharks taken in the survey and fisheries are likely juveniles, so it is impossible to know what effect those catches have on spawning stock biomass. Bycatch of salmon sharks has generally increased since 2010. Recent catch levels have been well below the ABC.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The SSC has placed sharks in Tier 6, where OFL and ABC are typically based on historical catches. The OFL is fixed at the maximum catch during 2003–2015 (689 t) and ABC at 75% of OFL, 517 t. The author and PT recommended a reduction from the maximum ABC due to concerns regarding the Pacific sleeper shark stock as highlighted in the risk table. The recommended ABC is 450 t.

Status determination

The shark complex is not being subjected to overfishing. It is not possible to determine whether this species complex is overfished or whether it is approaching an overfished condition because it is managed under Tier 6.

20. Octopus

Through 2010, octopuses were managed as part of the Bering Sea/Aleutian Islands (BSAI) "other species" complex, along with sharks, skates, and sculpins. Historically, catches of the other species complexes were well below TAC. Due to increasing market values, retention of species within the other species complex increased. Beginning in 2011, an amendment to the BSAI fisheries management plan provided separate management for sharks, skates, sculpins, and octopus and set catch limits for each species group. Initially, catch limits for octopus were set using Tier 6 methods based on the maximum historical incidental catch rate. Since 2012, a methodology based on consumption of octopus by Pacific cod (*Gadus macrocephalus*) has been used to set catch limits (see Conners et al. (2016) for methodological details).

This year's assessment is a roll-over from the previous assessment. At least eight species of octopus are found in the BSAI though in this update assessment, all octopus species are grouped into a single assemblage. The species composition of the octopus community is not well documented, but data indicate that the giant Pacific octopus (*Enteroctopus dofleini*) is the most common. Octopuses are taken as

incidental catch in trawl, longline, and pot fisheries with a portion retained and sold for human consumption or bait. The BSAI trawl surveys produce highly variable biomass estimates for octopus

Status and catch specifications (t) of the octopus complex in recent years. The octopus stock complex is made up of at least nine distinct species and is assessed on even years. Biomass for each year corresponds to the projection given in the SAFE report issued in the preceding year. The OFL and ABC for 2027 and 2028 are those recommended by the Team. Catch data are current through November 12, 2026.

Area	Year	Biomass	OFL	ABC	TAC	Catch
BSAI	2025		6,080	4,560	400	315
	2026*		6,080	4,560	400	197
	2027		6,080	4,560		
	2028		6,080	4,560		

*These values are based on the 2024 assessment. Groundfish Plan Team did not review assessments for 2026 due to the lapse in Congressional appropriations during October - November 2025.

Changes from previous assessment

Changes in data input:

1. The calculation of annual and long-term average consumption rates has been updated using 13,614 additional Pacific cod stomach samples collected from 2012-2013 and 2016-2023.

Changes in Assessment Methodology:

There have been no changes to the assessment methodology

Spawning biomass and stock trends

Species composition and size frequencies from the surveys were similar to previous years. Survey biomass estimates decreased substantially from 2019 through 2023 (-54%) for the EBS shelf survey. A similar decline from 2018 to 2022 was observed in the AI survey (-32%). However, trawl surveys sample octopus poorly, and biomass estimates from trawl surveys are not considered reliable as they are highly variable between years.

At least eight species of octopus are found in the BSAI though in this update assessment, all octopus species are grouped into a single assemblage. The species composition of the octopus community is not well documented, but data indicate that the giant Pacific octopus (*Enteroctopus dofleini*) is the most common. Octopuses are taken as incidental catch in trawl, longline, and pot fisheries with a portion retained and sold for human consumption or bait. The highest catch occuring in the Pacific cod fishery.

Tier determination/Plan Team discussion and resulting ABCs and OFLs

The ABC and OFL values were determined under Tier 6. Usually, Tier 6 specifications are based on average catch, but starting in 2011, the assessment authors recommended setting harvest specifications using an alternative mortality estimate based on species composition of Bering Sea Pacific cod diet from 1984-2008 survey data and weight-at-age data. This method was also recommended for 2017 and 2018 with additional years from 1984-2015 of Pacific cod diet data based on the requested five-year review of Pacific cod diet estimates. This year's assessment is an operational update, meaning new consumption data was provided through 2023 to determine catch limits using the previous assessment's model/methodology.

A risk table was completed for this stock with Level 1 ratings for all four categories and no adjustment to maxABC was proposed.

Status determination

The octopus complex is not being subjected to overfishing. It is not possible to determine whether the octopus complex is overfished or whether it is approaching an overfished condition because it is managed under Tier 6.

Appendix 1. Forage Fish

The 2026 Alaska forage report summarizes survey trends and incidental catch for forage species in the Bering Sea and Aleutian Islands and the Gulf of Alaska. In the BSAI, bottom-trawl survey densities and occurrence of Pacific capelin and eulachon rebounded in 2026 from near-record lows. Pacific sand lance had recovered to about its long-term average following a low in 2016. Pacific herring density and occurrence were also near their long-term averages. Pacific sandfish remained below average despite becoming more frequent in survey tows over the past five years, and squid densities declined to levels last observed in the 2000s.

The late-summer BASIS surface-trawl survey showed a weaker forage signal. Pelagic forage fish biomass in the northeastern Bering Sea dropped sharply from 2025 to slightly below average in 2026. In the southeastern Bering Sea, it was near the lowest level in the series, which began in 2003. Incidental catch of the fishery management plan forage group remained low relative to historical levels, and squid catch fell sharply from the elevated catches observed in 2019–2025.

For ecosystem and fishery planning, the 2026 results show that improvements for some prey species can coincide with low pelagic forage biomass in the same region. Surface and bottom trawls sample different habitats and species, and survey coverage affects some indices, particularly for rainbow smelt in the northern Bering Sea and squid in the Aleutian Islands. Reading the survey series alongside predator diets and other indicators in the Ecosystem Status Reports provides context for evaluating where prey availability may be limited and which trends warrant continued monitoring.

Appendix 2. Grenadiers

Grenadiers are managed as non-target species in the GOA and are taken only as bycatch when directed fishing for other species. In 2015, a final rule was issued adding the grenadier stock complex as an Ecosystem Component to the GOA and BSAI Fishery Management Plans (FMPs) under Amendments 100/91. No ABCs or OFLs are adopted in the annual groundfish harvest specifications. However, the abbreviated SAFE report for the BSAI was presented for tracking trends in abundance and catch. The new data for the BSAI grenadier report include 1) updated catch data through October 7, 2024, 2) survey biomass estimates from the 2022 and 2024 AI trawl survey, 3) survey index estimates from the 2022 AI longline survey, and 4) survey index estimates from the 2021 and 2023 EBS longline survey. Since the last grenadier complex assessment in 2020, there have been downward trends in the EBS and AI bottom trawl and longline surveys. In the EBS, a REMA model was used to estimate exploitable biomass from the slope bottom trawl survey and the longline survey. Biomass predicted for 2025 was the lowest in the time series. Catch levels in recent years were quite small relative to this biomass and do not cause any concern.

Tables

Table 1. BSAI Groundfish Plan Team Recommended OFLs and ABCs for 2027 and 2028 (metric tons); OFL, ABC, TAC and catch through November 11, 2026.