Stock Assessment and Fishery Evaluation Report for the
KING AND TANNER CRAB FISHERIES
of the
Bering Sea and Aleutian Islands Regions

2025 Final Crab SAFE

Compiled by

The Plan Team for the King and Tanner Crab Fisheries of the
Bering Sea and Aleutian Islands

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Note: This Crab SAFE Introduction has been revised from the original version released on September 18, 2025:

- Minor changes to Table 4 footnote order to increase readability
- Updated values in Table 5 for Eastern Bering Sea snow crab, specifically MMB and MMB/BMSY

For definition of acronyms and abbreviations, see online list: https://www.npfmc.org/library/acronyms

Introduction

The annual stock assessment and fishery evaluation (SAFE) report is a requirement of the North Pacific Fishery Management Council's *Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs* (FMP), and a federal requirement [50 CFR Section 602.12(e)]. The SAFE report summarizes the current biological and economic status of fisheries, total allowable catch (TAC) or Guideline Harvest Level (GHL), and analytical information used for management decisions. Additional information on Bering Sea/Aleutian Islands (BSAI) king and Tanner crab is available on the National Marine Fisheries Service (NMFS) web page at https://www.fisheries.noaa.gov/about/alaska-regional-office and the Alaska Department of Fish and Game (ADF&G) Shellfish web page at: http://www.adfg.alaska.gov/index.cfm?adfg=CommercialByFisheryShellfish.main.

BSAI crab stocks covered in this SAFE Report include: *Paralithodes camtschaticus*, stocks (Bristol Bay, Pribilof Islands, Norton Sound and Adak), 2 blue king crab, *Paralithodes platypus,* stocks (Pribilof Islands and St Matthew Island), 2 golden (or brown) king crab, *Lithodes aequispinus,* stocks (Aleutian Islands and Pribilof Islands), southern Tanner crab *Chionoecetes bairdi* hereafter referred to as Tanner crab, and snow crab *Chionoecetes opilio*. All other crab stocks in the BSAI are exclusively managed by the State of Alaska (SOA).

The Crab Plan Team (CPT) annually assembles the SAFE report with contributions from ADF&G and NMFS. This SAFE report is presented to the North Pacific Fishery Management Council (NPFMC) and is available to the public on the NPFMC web page at: https://www.npfmc.org/fisheries/bsai-crab/. Due to a process to accommodate specific fishery and data availability needs to determine overfishing level (OFL) determinations, and annual catch limit (ACL) requirements, the CPT reviews assessments in a staggered time frame. Additionally, based upon 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 CPT reviews one assessment in November (Norton Sound red king crab), three assessments in May (Aleutian Islands golden king crab, Western Aleutian Islands (WAI) red king crab, and Pribilof Islands golden king crab) and the remaining assessments (Bristol Bay red king crab, EBS snow crab, EBS Tanner crab, Saint Matthew Island blue king crab, Pribilof Islands red king crab, and Pribilof Islands blue king crab) in September (Table 1). Pribilof Islands red king crab and Pribilof Islands blue king crab are assessed quadrennially, WAI red king crab and Pribilof Islands golden king crab are assessed triennially, while Saint Matthew Island blue king crab is assessed biennially. Stocks can be assessed more frequently on a case-by-case basis should data indicate that it is necessary.

Table 1 Ten BSAI crab stocks: Schedule for review by the CPT and SSC and Assessment frequency

Stock	CPT review and recommendations to SSC	SSC review and recommendations to Council	Assessment frequency	Year of next Assessment
Norton Sound red king crab (NSRKC)	November	December	Annual	2026
Aleutian Is. golden king crab (AIGKC)	May	June	Annual	2026
Pribilof Is. golden king crab (PIGKC)	May	June	Triennial	2026
Western Aleutian Is. red king crab (WAIRKC)	May	June	Triennial	2026
EBS snow crab	September	October	Annual	2026
Bristol Bay red king crab (BBRKC)	September	October	Annual	2026
EBS Tanner crab	September	October	Annual	2026
Pribilof Is. red king crab (PIRKC)	September	October	Quadrennial	2029
Pribilof Is. blue king crab (PIBKC)	September	October	Quadrennial	2029
Saint Matthew blue king crab (SMBKC)	September	October	Biennial	2026

Based upon the assessment frequency described in Table 1, the CPT provides recommendations on OFL, acceptable biological catch (ABC) and stock status specifications for review by the NPFMC Science and Statistical Committee (SSC) in December (NSRKC), June (WAIRKC, PIGKC, AIGKC), and October (BBRKC, EBS Snow crab, EBS Tanner crab, SMBKC, PIRKC, PIBKC). The rationale for this staggered review process is the following: The stocks with summer fisheries as well as those established on catch data only have specifications set in June. The stocks that employ data from the EBS NMFS trawl survey thus cannot be assessed until survey data are available in early September. Summer catch data for NSRKC, however, are not available in time for fall specifications, nor is assessing this stock with the June timing feasible as the CDQ fishery can open as early as May thus this stock is assessed in the winter. Additional information on the OFL and ABC determination process is contained in this report.

The CPT met from September 8-12, 2025, to review the final stock assessments as well as additional related issues, in order to provide the recommendations and status determinations contained in this SAFE report. This final 2025 Crab SAFE report contains recommendations for all 10 stocks including those whose OFL and ABC were previously determined in December 2024 and June 2025. This SAFE report will be presented to the NPFMC in October 2025 for their annual review of the status of BSAI Crab stocks.

These reviews were attended by almost the entire membership of the CPT: Mike Litzow (Co-Chair), Katie Palof (Co-Chair), Anita Kroska (Coordinator), William Bechtol, Ben Daly, Ginny Eckert, Erin Fedewa, Brian Garber-Yonts, Tyler Jackson, Ethan Nichols, Andrew Olson, Caitlin Stern, William Stockhausen, and Cody Szuwalski.

Stock Status Definitions

The FMP (incorporating all changes made following adoption of Amendment 24) contains the following stock status definitions:

Acceptable biological catch (ABC) is a level of annual catch of a stock that accounts for the scientific uncertainty in the estimate of OFL and any other specified scientific uncertainty and is set to prevent, with a greater than 50 percent probability, the OFL from being exceeded. The ABC is set below the OFL.

ABC Control Rule is the specified approach in the five-tier system for setting the maximum permissible ABC for each stock as a function of the scientific uncertainty in the estimate of OFL and any other specified scientific uncertainty.

Annual catch limit (ACL) is the level of annual catch of a stock that serves as the basis for invoking accountability measures. For EBS crab stocks, the ACL will be set at the ABC.

Total allowable catch (TAC) is the annual catch target for the directed fishery for a stock, set to prevent exceeding the ACL for that stock and in accordance with section 8.2.2 of the FMP.

Guideline harvest level (GHL) means the preseason estimated level of allowable fish harvest which will not jeopardize the sustained yield of the fish stocks. A GHL may be expressed as a range of allowable harvests for a species or species group of crab for each registration area, district, subdistrict, or section.

Maximum sustainable yield (MSY) is the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions. MSY is estimated from the best information available.

F_{MSY} control rule means a harvest strategy which, if implemented, would be expected to result in a long-term average catch approximating MSY.

B_{MSY} stock size is the biomass that results from fishing at constant F_{MSY} and is the minimum standard for a rebuilding target when a rebuilding plan is required.

Maximum fishing mortality threshold (MFMT) is defined by the F_{OFL} control rule and is expressed as the fishing mortality rate.

Minimum stock size threshold (MSST) is one half the B_{MSY} stock size.

Overfished is determined by comparing annual biomass estimates to the established MSST. For stocks where MSST (or proxies) are defined, if the biomass drops below the MSST (or proxy thereof) then the stock is considered to be overfished. For crab stocks, biomass for determining overfished status is estimated on February 15 of the completed fishing year and compared to the MSST from the most recent accepted assessment.

Overfishing is defined as any amount of catch in excess of the overfishing level (OFL). The OFL is calculated by applying abundance estimates to the F_{OFL} control rule which is annually estimated according to the tier system (see Chapter 6.0 in the FMP).

Status Determination Criteria

The FMP defines the following status determination criteria and the process by which these are defined following adoption of amendment 24 and 38.

Status determination criteria for crab stocks are calculated using a five-tier system that accommodates varying levels of uncertainty of information. The five-tier system incorporates new scientific information and provides a mechanism to continually improve the status determination criteria as new information becomes available. Under the five-tier system, overfishing and overfished criteria and ABC levels for most stocks are annually formulated. The ACL for each stock equals the ABC for that stock. Each crab stock is annually assessed to determine its status and whether (1) overfishing is occurring or the rate or level of fishing mortality for the stock is approaching overfishing, (2) the stock is overfished, or the stock is approaching an overfished condition, and (3) the catch has exceeded the ACL.

For crab stocks, the OFL equals the maximum sustainable yield (MSY) and is derived through the annual assessment process, under the framework of the tier system. Overfishing is determined by comparing the OFL with the estimated total catch mortality for the most recently completed crab fishing year. Catch includes all fishery removals, including retained catch and discard losses, for those stocks where non-target fishery removal data are available. Discard losses are determined by multiplying the appropriate handling mortality rate by observer estimates of bycatch discards. For stocks where only retained catch information is available, the OFL will be set for and compared to the retained catch.

Overfished status is determined using the MMB estimate at the time of mating in the previous fishing year and the Minimum Stock Size Threshold (MSST). These quantities are estimated from the current stock assessment. For stocks where MSST (or proxies) are defined, if the biomass drops below the MSST (or proxy thereof) then the stock is considered to be overfished. MSSTs or proxies are set for stocks in Tiers 1-4. For Tier 5 stocks, it is not possible to set an MSST because there are no reliable estimates of biomass.

If overfishing occurred or the stock is overfished, section 304(e)(3)(A) of the Magnuson-Stevens Act, as amended, requires the NPFMC to immediately end overfishing and rebuild affected stocks.

The Magnuson-Stevens Act requires that FMPs include accountability measures to prevent ACLs from being exceeded and to correct overages of the ACL if they do occur. Accountability measures to prevent TACs and GHLs from being exceeded have been used under this FMP for the management of the BSAI crab fisheries and will continue to be used to prevent ACLs from being exceeded. These include: individual fishing quotas and the measures to ensure that individual fishing quotas are not exceeded, measures to minimize crab bycatch in directed crab fisheries, and monitoring and catch accounting measures. Accountability measures in the harvest specification process include downward adjustments to the ACL and TAC in the fishing year after an ACL has been exceeded.

Annually, the NPFMC, SSC, and CPT will review (1) the stock assessment documents, (2) the OFLs and ABCs, and TACs or GHLs, (3) NMFS's determination of whether overfishing occurred in the previous crab fishing year, (4) NMFS's determination of whether any stocks are overfished and (5) NMFS's determination of whether catch exceeded the ACL in the previous crab fishing year.

Optimum yield is defined in Chapter 4 of the FMP. Information pertaining to economic, social and ecological factors relevant to the determination of optimum yield is provided in several sections of the FMP, including sections 7.2 (Management Objectives), Chapter 11, Appendix D (Biological and Environmental Characteristics of the Resource), and Appendix H (Community Profiles).

For each crab fishery, the optimum yield range is 0 to < OFL catch. For crab stocks, the OFL is the annualized MSY and is derived through the annual assessment process, under the framework of the tier system. Recognizing the relatively volatile reproductive potential of crab stocks, the cooperative management structure of the FMP, and the past practice of restricting or even prohibiting directed harvests of some stocks out of ecological considerations, this optimum yield range is intended to facilitate the achievement of the biological objectives and economic and social

objectives of the FMP (see sections 7.2.1 and 7.2.2) under a variety of future biological and ecological conditions. It enables the SOA to determine the appropriate TAC levels below the OFL to prevent overfishing or address other biological concerns that may affect the reproductive potential of a stock but that are not reflected in the OFL itself. Under FMP section 8.2.2, the SOA establishes TACs at levels that maximize harvests, and associated economic and social benefits, when biological and ecological conditions warrant doing so.

Five-Tier System

Fisheries specifications, OFL and ABC, are set using the fishing mortality rate associated with the OFL (F_{OFL}) as estimated from the current assessment, compared with MMB projected forward to the time of mating in the next fishing season. This approach was established in 2007 and was modeled after the groundfish assessment process. The OFL and ABC for each stock are estimated for the upcoming crab fishing year using the five-tier system, detailed in Table 2 and Table 3. First, a stock is assigned to one of the five tiers based on the availability of information for that stock and model parameter choices are made. Tier assignments and model parameter choices are recommended through the CPT process to the SSC. The SSC recommends tier assignments, stock assessment and model structure, and parameter choices, including whether information is "reliable," for the assessment authors to use for calculating the proposed OFLs and ABCs based on the five-tier system.

For Tiers 1 through 4, once a stock is assigned to a tier, the determination of stock status level is based on recent survey data and assessment models, as available. The stock status level determines the equation used in calculating the F_{OFL}. Three levels of stock status are specified and denoted by "a," "b," and "c" (see Table 2). The F_{MSY} control rule reduces the F_{OFL} as biomass declines by stock status level. At stock status level "a," current stock biomass exceeds the B_{MSY}. For stocks in status level "b," current biomass is less than B_{MSY} but greater than a level specified as the "critical biomass threshold" (β).

In stock status level "c," the ratio of current biomass to B_{MSY} (or a proxy for B_{MSY}) is below β. At stock status level "c," directed fishing is prohibited and an F_{OFL} at or below F_{MSY} would be determined for all other sources of fishing mortality in the development of the rebuilding plan. The Council will develop a rebuilding plan once a stock level falls below the MSST.

For Tiers 1 through 3, the coefficient α is set at a default value of 0.1, and β set at a default value of 0.25, with the understanding that the SSC may recommend different values for a specific stock or stock complex as merited by the best available scientific information.

In Tier 4, a default value of natural mortality rate (M) or an M proxy, and a scalar, γ, are used in the calculation of the F_{OFL}.

In Tier 5, the OFL is specified in terms of an average catch value over an historical time period, unless the SSC recommends an alternative value based on the best available scientific information.

First, the assessment author prepares the stock assessment and calculates the proposed OFLs by applying the F_{OFL} and using the most recent abundance estimates. The assessment authors calculate the proposed ABCs by applying the ABC control rule to the proposed OFL.

Stock assessment documents shall:
- use risk-neutral assumptions;
- specify how the probability distribution of the OFL used in the ABC control rule is calculated for each stock; and
- specify the factors influencing scientific uncertainty that are accounted for in calculation of the probability distribution of the OFL.

Second, the CPT annually reviews stock assessment documents, the most recent abundance estimates, the proposed OFLs and ABCs, and compiles the SAFE. The CPT then makes recommendations to the SSC on the OFLs, ABCs, and any other issues related to the crab stocks.

Third, the SSC annually reviews the SAFE report, including the stock assessment documents, recommendations from the CPT, and the methods to address scientific uncertainty.

In reviewing the SAFE, the CPT and the SSC shall evaluate and make recommendations, as necessary, on:
- the assumptions made for stock assessment models and estimation of OFLs;
- the specifications of the probability distribution of the OFL;
- the methods to appropriately quantify uncertainty in the ABC control rule; and
- the factors influencing scientific uncertainty that the SOA has accounted for and will account for on an annual basis in TAC setting.

The SSC will then set the final OFLs and ABCs for the upcoming crab fishing year. The SSC may set an ABC lower than the result of the ABC control rule, but it must provide an explanation for setting the ABC less than the maximum ABC.

As an accountability measure, the total catch estimate used in the stock assessment will include any amount of harvest that may have exceeded the ACL in the previous fishing season. For stocks managed under Tiers 1 through 4, this would result in a lower maximum ABC in the subsequent year, all else being equal, because maximum ABC varies directly with biomass. For Tier 5 stocks, the information used to establish the ABC is insufficient to reliably estimate abundance or discern the existence or extent of biological consequences caused by an overage in the preceding year. Consequently, the subsequent year's maximum ABC will not automatically decrease. However, when the ACL for a Tier 5 stock has been exceeded, the SSC may decrease the ABC for the subsequent fishing season as an accountability measure.

Tiers 1 through 3

For Tiers 1 through 3, reliable estimates of B, B_{MSY}, and F_{MSY}, or their respective proxy values, are available. Tiers 1 and 2 are for stocks with a reliable estimate of the spawner/recruit relationship, thereby enabling the estimation of the limit reference points B_{MSY} and F_{MSY}.

- Tier 1 is for stocks with assessment models in which the probability density function (pdf) of F_{MSY} is estimated.
- Tier 2 is for stocks with assessment models in which a reliable point estimate, but not the pdf, of F_{MSY} is made.
- Tier 3 is for stocks where reliable estimates of the spawner/recruit relationship are not available, but proxies for F_{MSY} and B_{MSY} can be estimated.

For Tier 3 stocks, maturity and other essential life-history information are available to estimate proxy limit reference points. For Tier 3, a designation of the form "F_X" refers to the fishing mortality rate associated with an equilibrium level of fertilized egg production (or its proxy such as mature male biomass at mating) per recruit equal to X% of the equilibrium level in the absence of any fishing.

The OFL and ABC calculation accounts for all losses to the stock not attributable to natural mortality. The OFL and ACL are total catch limits composed of three catch components: (1) non-directed fishery discard losses; (2) directed fishery discard losses; and (3) directed fishery retained catch. To determine the discard losses, the handling mortality rate is multiplied by bycatch discards in each fishery. Overfishing would occur if, in any year, the sum of all three catch components exceeds the OFL.

Tier 4

Tier 4 is for stocks where essential life-history, recruitment information, and understanding are insufficient to achieve Tier 3. Therefore, it is not possible to estimate the spawner-recruit relationship. However, there is sufficient information for simulation modeling that captures the essential population dynamics of the stock as well as the performance of the fisheries. The simulation modeling approach employed in the derivation of the annual OFLs captures the historical performance of the fisheries as seen in observer data from the early 1990s to present and thus borrows information from other stocks as necessary to estimate biological parameters such as γ.

In Tier 4, a default value of natural mortality rate (M) or an M proxy, and a scalar, γ, are used in the calculation of the F_{OFL}. Explicit to Tier 4 are reliable estimates of current survey biomass and the instantaneous M. The proxy B_{MSY} is the average biomass over a specified time period, with the understanding that the Council's Scientific and Statistical Committee may recommend a different value for a specific stock or stock complex as merited by the best available scientific information. A scalar, γ, is multiplied by M to estimate the F_{OFL} for stocks at status levels **"a"** and **"b,"** and γ is allowed to be less than or greater than unity. Use of the scalar γ is intended to allow adjustments in the overfishing definitions to account for differences in biomass measures. A default value of γ is set at 1.0, with the understanding that the Council's Scientific and Statistical Committee may recommend a different value for a specific stock or stock complex as merited by the best available scientific information.

If the information necessary to determine total catch OFLs and ACLs is available for a Tier 4 stock, then the OFL and ACL will be total catch limits comprised of three catch components: (1) non-directed fishery discard losses; (2) directed fishery discard losses; and (3) directed fishery retained catch. If the information necessary to determine total catch OFLs and ACLs is not available for a Tier 4 stock, then the OFL and ACL are determined for retained catch. In the future, as information improves, data would be available for some stocks to allow the formulation and use of selectivity curves for the discard fisheries (directed and non-directed losses) as well as the directed fishery (retained catch) in the models. The resulting OFL and ACL from this approach, therefore, would be the total catch OFL and ACL.

Tier 5

Tier 5 stocks have no reliable estimates of biomass and only historical catch data are available. For Tier 5 stocks, the OFL is set equal to the average catch from a time period determined to be representative of the production potential of the stock, unless the Scientific and Statistical Committee recommends an alternative value based on the best available scientific information. The ABC control rule sets the maximum ABC at less than or equal to 90 percent of the OFL and the ACL equals the ABC.

For Tier 5 stocks where only retained catch information is available, the OFL and ACL will be set for the retained catch portion only, with the corresponding limits applying to the retained catch only. For Tier 5 stocks where information on bycatch mortality is available, the OFL and ACL calculations could include discard losses, at which point the OFL and ACL would be applied to the retained catch plus the discard losses from directed and non-directed fisheries.
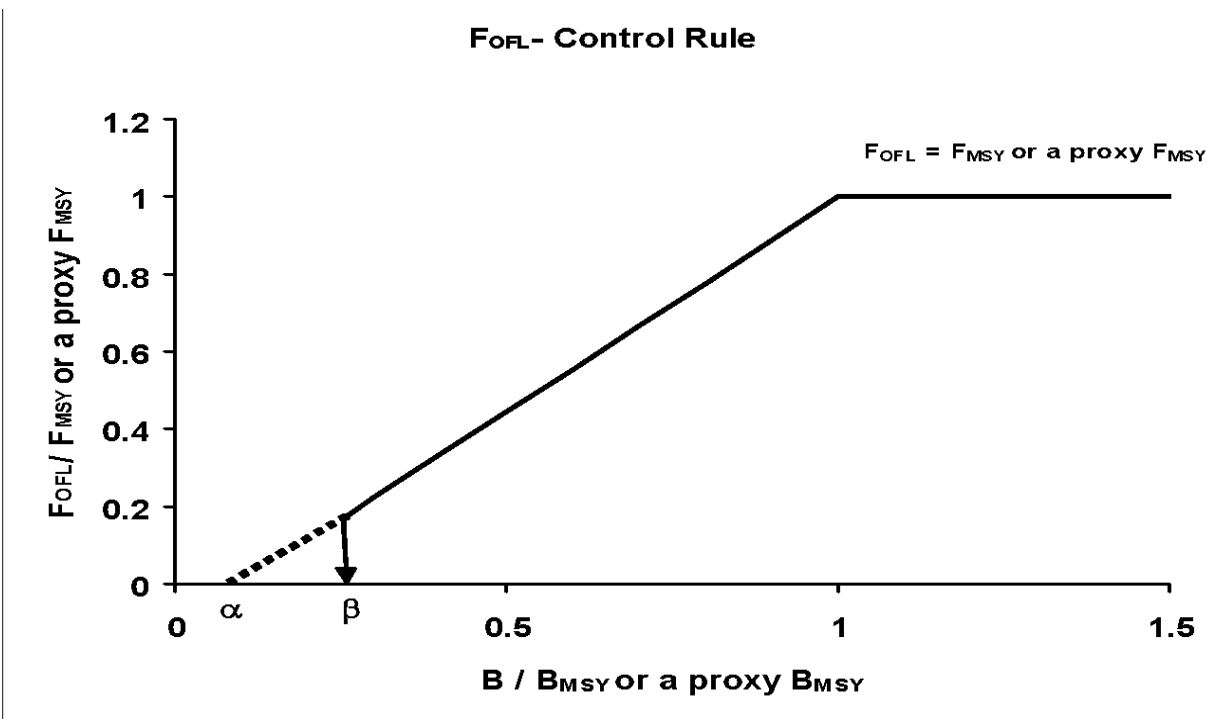
F_{OFL} - Control Rule

Figure 1 Overfishing control rule for Tiers 1 through 4. Directed fishing mortality is 0 below β.

Table 2 Five-Tier System for setting overfishing limits (OFLs) and Acceptable Biological Catches (ABCs) for crab stocks. The tiers are listed in descending order of information availability. Table 3 contains a guide for understanding the five-tier system.

Information available	Tier	Stock status level	F_{OFL}	ABC control rule
B, B_{MSY}, F_{MSY}, and pdf of F_{MSY}	1	a. $\dfrac{B}{B_{msy}} > 1$	$F_{OFL} = \mu_A$ = arithmetic mean of the pdf	
		b. $\beta < \dfrac{B}{B_{msy}} \leq 1$	$F_{OFL} = \mu_A \dfrac{B/B_{msy} - \alpha}{1 - \alpha}$	ABC≤(1-b$_y$) * OFL
		c. $\dfrac{B}{B_{msy}} \leq \beta$	Directed fishery F = 0 $F_{OFL} \leq F_{MSY}^{\dagger}$	
B, B_{MSY}, F_{MSY}	2	a. $\dfrac{B}{B_{msy}} > 1$	$F_{OFL} = F_{msy}$	
		b. $\beta < \dfrac{B}{B_{msy}} \leq 1$	$F_{OFL} = F_{msy} \dfrac{B/B_{msy} - \alpha}{1 - \alpha}$	ABC≤(1-b$_y$) * OFL
		c. $\dfrac{B}{B_{msy}} \leq \beta$	Directed fishery F = 0 $F_{OFL} \leq F_{MSY}^{\dagger}$	
B, $F_{35\%}^{*}$, $B_{35\%}^{*}$	3	a. $\dfrac{B}{B_{35\%*}} > 1$	$F_{OFL} = F_{35\%}^{*}$	
		b. $\beta < \dfrac{B}{B_{35\%}^{*}} \leq 1$	$F_{OFL} = F_{35\%}^{*} \dfrac{\frac{B}{B_{35\%}^{*}} - \alpha}{1 - \alpha}$	ABC≤(1-b$_y$) * OFL
		c. $\dfrac{B}{B_{35\%}^{*}} \leq \beta$	Directed fishery F = 0 $F_{OFL} \leq F_{MSY}^{\dagger}$	
B, M, $B_{msy^{prox}}$	4	a. $\dfrac{B}{B_{msy^{prox}}} > 1$	$F_{OFL} = \gamma M$	
		b. $\beta < \dfrac{B}{B_{msy^{prox}}} \leq 1$	$F_{OFL} = \gamma M \dfrac{B/B_{msy^{prox}} - \alpha}{1 - \alpha}$	ABC≤(1-b$_y$) * OFL
		c. $\dfrac{B}{B_{msy^{prox}}} \leq \beta$	Directed fishery F = 0 $F_{OFL} \leq F_{MSY}^{\dagger}$	
Stocks with no reliable estimates of biomass or M.	5		OFL = average catch from a time period to be determined, unless the SSC recommends an alternative value based on the best available scientific information.	ABC≤0.90 * OFL

*35% is the default value unless the SSC recommends a different value based on the best available scientific information.

† An $F_{OFL} \leq F_{MSY}$ will be determined in the development of the rebuilding plan for an overfished stock.

Table 3 A guide for understanding the five-tier system.

- F_{OFL} — the instantaneous fishing mortality (F) from the directed fishery that is used in the calculation of the overfishing limit (OFL). F_{OFL} is determined as a function of:
  - F_{MSY} — the instantaneous F that will produce MSY at the MSY-producing biomass
    - A proxy of F_{MSY} may be used; e.g., $F_{x\%}$, the instantaneous F that results in x% of the equilibrium spawning per recruit relative to the unfished value
  - B — a measure of the productive capacity of the stock, such as spawning biomass or fertilized egg production.
    - A proxy of B may be used; e.g., mature male biomass
  - B_{MSY} — the value of B at the MSY-producing level
    - A proxy of B_{MSY} may be used; e.g., mature male biomass at the MSY-producing level
  - ّ a parameter with restriction that 0 و <1.
  - ّ a parameter with restriction that 0 و .
- The maximum value of F_{OFL} is F_{MSY}. $F_{OFL} = F_{MSY}$ when $B > B_{MSY}$.
- F_{OFL} decreases linearly from F_{MSY} to $F_{MSY} \cdot (\beta-\alpha)/(1-\alpha)$ as B decreases from B_{MSY} to $\beta \cdot B_{MSY}$
- When $B \leq \beta \cdot B_{MSY}$, F = 0 for the directed fishery and $F_{OFL} \leq F_{MSY}$ for the non-directed fisheries, which will be determined in the development of the rebuilding plan.
- The parameter, β, determines the threshold level of B at or below which directed fishing is prohibited.
- The parameter, α, determines the value of F_{OFL} when B decreases to $\beta \cdot B_{MSY}$ and the rate at which F_{OFL} decreases with decreasing values of B when $\beta \cdot B_{MSY} < B \leq B_{MSY}$.
  - Larger values of α result in a smaller value of F_{OFL} when B decreases to $\beta \cdot B_{MSY}$.
  - Larger values of α result in F_{OFL} decreasing at a higher rate with decreasing values of B when $\beta \cdot B_{MSY} < B \leq B_{MSY}$.
- The parameter, b_y, is the value for the annual buffer calculated from a P* of 0.49 and a probability distribution for the OFL that accounts for scientific uncertainty in the estimate of OFL and provides the maximum permissible ABC.
- P* is the probability that the estimate of ABC, which is calculated from the estimate of OFL, exceeds the "true" OFL (noted as OFL') (P(ABC>OFL').

Crab Plan Team Recommendations

Table 4 contains status determination for the 2024/25 season. Status of stocks in relation to status determination criteria for stocks in Tiers 3 and 4 are shown in Figure 2. Table 5 contains the team's recommendations for 2025/2026 on tier assignments, model parameterizations, time periods for reference biomass estimation or appropriate catch averages, OFLs and ABCs. The team recommends four stocks be placed in Tier 3 (EBS snow crab, Bristol Bay red king crab, EBS Tanner crab, and Aleutian Islands golden king crab), four stocks in Tier 4 (St. Matthew Island blue king crab, Pribilof Islands blue king crab, Pribilof Islands red king crab, and Norton Sound red king crab) and two stocks in Tier 5 (Pribilof Islands golden king crab, and Western Aleutian Islands red king crab). Table 5 lists those stocks for which the team recommends an ABC less than the maximum permissible ABC for 2025/26.

The CPT has general recommendations for all assessments and specific comments related to individual assessments. All recommendations are for consideration for the next scheduled assessment. The general comments are listed below while the comments related to individual assessments are contained within the summary of CPT deliberations and recommendations contained in the stock specific summary section. Additional details regarding recommendations are contained in the Crab Plan Team Report (September 2025 CPT Report).

General Recommendations for all Assessments

1. The CPT recommends that all assessment authors document assumptions and simulate data under those assumptions to test the ability of the model to estimate key parameters in an unbiased manner. These simulations would be used to demonstrate precision and bias in estimated model parameters.

2. The CPT recommends that weighting factors be expressed as sigmas or CVs or effective sample sizes. The team requests all authors to follow the Guidelines for SAFE preparation and to follow the Terms of Reference as listed therein as applicable by individual assessment for both content and diagnostics.

3. Authors should focus on displaying information on revised models as compared to last year's model rather than focusing on aspects of the assessment that have not changed from the previous year.

4. The current approach for fitting length-composition data accounts for sampling error but ignores the fact that selectivity among size classes is not constant within years; a small change in the selectivity on small animals could lead to a very large change in the catch of such animals. Authors are encouraged to develop approaches for accounting for this source of process error. This issue is generic to assessments of crab and groundfish stocks.

5. Authors are reminded that assessments should include the time series of stock estimates at the time of survey for at least the author's recommended model in that year.

6. Consider stepwise changes to data as individual model runs instead of changing multiple parameters at once so that changes in model performance may be attributed to specific data.

By convention the CPT used the following conversions to include tables in both pounds (lb) and metric tons (t) in the status summary sections:

- million lb to 1000 t [/2.204624]
- 1000 t to million lb [/0.453592]

Stock Status Summaries

1   Eastern Bering Sea Snow crab

Fishery information relative to OFL setting

The 2024/2025 directed fishery was open, following two years of closures, with a retained catch of 2.1 kt. Non-directed crab and groundfish fisheries resulted in a bycatch mortality of 0.09 kt (with handling mortality rates applied). Because the total catch mortality for this stock was below the 2024/25 OFL of 19.6 kt, overfishing did not occur.

Data and assessment methodology

The stock assessment uses a size- and sex-structured model in which crabs are categorized as immature or mature, and growth ends with terminal molt. The model is fit to biomass and size frequency data from the NMFS trawl survey, total catch data from the directed fishery, and bycatch data from the non-directed crab and groundfish fisheries. Updated data in the 2025 assessment include 2025 eastern Bering Sea survey biomass and length composition data and non-directed discard length frequency and discard biomass from 2024. Results from the 2025 NMFS bottom trawl survey indicated an increase in male abundance relative to the 2024 survey. The estimated abundance in 2025 of commercially-preferred male crab (≥101 mm carapace width, CW) was the seventh lowest in the time series.

This assessment has used GMACS since 2022. The assessment author compared last year's accepted model (model 24.1) with one alternative. Model 25.3 was model 24.1 with updated data and GMACS version 2.20.22 The assessment author compared two scenarios for model 25.3 that differed in how maturity was defined: the first retained morphometric maturity as the definition, while the second used an estimate of size at functional maturity (≥ 95mm CW) as the definition. The author also brought forward a Tier 4 "fallback" option based on survey estimates of the biomass of males >95mm CW.

The CPT recommended model 25.3 with the maturity defined using ≥ 95 mm CW. Survey observations show a long-term decline in the biomass of large males in the population along with a decline in the size at which males complete their terminal molt (Zacher et al. 2025; Fedewa et al. 2025). In 2025, 96% of males terminally molted before reaching industry-preferred size, and the size at which 50% of the male snow crab population had undergone terminal molt declined approximately 3 mm from 2024 to 79.0 mm CW. The declines in the biomass of large males and the size at terminal molt raise concern for the reproductive potential of the stock for the reasons that follow. First, smaller adult males have smaller sperm reserves than do larger adult males (Sainte-Marie et al. 1995), suggesting that a population with a reduced proportion of large mature males is at increased risk of sperm limitation (Baker et al. 2022). Second, the size at which males undergo the terminal molt to maturity is density-dependent and inversely related to the abundance of large males in the population (Mullowney and Baker 2021). This suggests that populations with lower densities of large males suffer an increased risk of depressed large male biomass in future years, perpetuating the associated risks of sperm limitation and reduced reproductive potential. Finally, recent work showed that 59% of EBS snow crab females had sperm from only one male in their sperm reserves, indicating that mating opportunities may be limited and females may be at risk of sperm depletion (Slater et al. 2024). The CPT noted that, while additional research on size at functional maturity for male EBS snow crab is needed, using ≥ 95mm CW to define functional maturity is the recommended option given concerns about stock reproductive potential and the best scientific evidence available at this time.

Stock biomass and recruitment trends

Observed mature male biomass (MMB ≥ 95 mm CW) at the time of the survey was at a historical high in the 1990s (observed MMB during 1990, 1991, and 1997 were 347.75, 347.98, and 232.39 kt, respectively). The stock was declared overfished in 1999 in response to the total mature biomass dropping below the 1999 minimum stock size threshold. Observed MMB slowly increased after 1999, and the stock was declared rebuilt in 2011. However, after 2011, the stock declined and the observed MMB at the time of survey dropped to a low in 2016 of 30.34 kt.

Recently, MMB was increasing as a large recruitment event moved through the size classes, but that recruitment has since disappeared, and the observed MMB reached an all-time low (15.69 kt) in the 2023 survey. The 2024 survey estimate of MMB increased to 23.49 kt, the third-lowest value in the time series. The 2025 survey estimate of MMB was 33.17 kt, the highest value since 2019.

Estimated recruitment shifted from a period of high recruitment to a period of low recruitment in the mid-1990s (late 1980s when lagged to fertilization). A large year class recruited to the survey gear in 2015 and was tracked until 2019, but was not present in subsequent surveys, and disappeared from the eastern Bering Sea shelf before reaching commercial size.

Tier determination/Plan Team discussion and resulting OFL/ABC determination, status, and catch specifications

Snow crab was declared overfished in 2021 on the basis that the 2021 assessment indicated MMB was below the MSST and is still under a rebuilding plan. EBS snow crab is a Tier 3 stock, with the OFL determined by the F_{OFL} control rule using $F_{35\%}$ as the proxy for F_{MSY}. The Tier 3 proxy for B_{MSY} ($B_{35\%}$) is the MMB at mating based on average recruitment from 1982 to present. The CPT recommends an ABC buffer of 20%, the same value recommended by the CPT in 2024.

Status and catch specifications (1000 t) for snow crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	91.6	41.3	2.5	2.5	3.6	7.5	5.6
2022/23	136.9	92.4	Closed	0	0.06	10.3	7.7
2023/24	95.9	155.91	Closed	0	0.11	15.4	7.7
2024/25	46.75*	19.0*	2.1	2.1	2.81	19.6	6.86
2025/26		31.1*				3.26*	2.6*

Status and catch specifications (million lb) for snow crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	201.9	91.1	5.5	5.5	7.9	16.5	12.4
2022/23	301.8	203.7	Closed	0	0.13	22.7	17.0
2023/24	211.4	343.72	Closed	0	0.24	34.0	17.0
2024/25	103.07*	41.9*	4.63	4.63	6.19	43.2	15.2
2025/26		68.6*				7.19*	5.73*

*Values reflect ≥95mm carapace width definition of male maturity

Below is the summarized risk table reviewed by the CPT (See Snow Crab SAFE Appendix B).

Assessment-related considerations	Population dynamics considerations	Environmental / Ecosystem considerations	Fishery Performance
Level 2: Increased concern	Level 2: Increased concern	Level 1: Normal	Level 1: Normal
Instability in the model seen through jittering analyses increases uncertainty in output.	Stock-specific indicators related to natural mortality, growth and recruitment suggest no apparent population dynamics concerns. Directional downward shifts in male snow crab size at terminal molt have large implications for the fate of the medium-sized crab in the population.	Ecosystem indicators show current and projected warm conditions and reduced ice extent in the EBS, but warming is not yet approaching critical thresholds for highly stenothermic juvenile snow crab. Overall, ecosystem concerns are minor with uncertain impacts on the stock.	Fishery-informed indicators generally support improved stock condition relative to the most recent (2021/22) fishery. Despite continued extreme northerly shift in the center of distribution of fishing activity, no considerations observed in the most recent fishery suggest greater than normal risk of overfishing, independent of other considerations captured in the assessment and risk table.

2 Bristol Bay Red King Crab

Fishery information relative to OFL setting

The 2024/25 directed fishery was open for a second year following two years of closures, with a retained catch of 1.05 kt. Non-directed crab and groundfish fisheries resulted in a bycatch mortality of 1.20 kt (with handling mortality rates applied). Because the total catch mortality for this stock was below the 2024/25 OFL of 5.02 kt, overfishing did not occur.

Data and assessment methodology

The stock assessment uses a sex- and size-structured population dynamics model incorporating data from the NMFS eastern Bering Sea trawl survey, the Bering Sea Fisheries Research Foundation (BSFRF) trawl survey, catch and discards in the directed fishery, bycatch in the non-directed crab and groundfish fisheries. Annual stock abundance was estimated for male and female crab $\geq$ 65 mm CL from 1975 to 2025, and mature male (males $\geq$120 mm CL) biomass was projected to 15 February 2026. The assessment was updated with 2024/25 fishery data on retained and total catch in the directed fishery, bycatch in the non-directed crab and groundfish fisheries, as well as data from the 2025 NMFS trawl survey.

Two model scenarios were evaluated using GMACS (version 2.20.20, 2025-01-30) for the 2025 assessment: model 24.0c and model 24.0c.2. Model 24.0c.2 is identical to model 24.0c, except it drops a placeholder for shell condition and uses an updated version of GMACS. These actions resulted in almost no change to model fits and estimated management quantities. The CPT endorsed adoption of model 24.0c.2 based on these small changes to model fit.

Stock biomass and recruitment trends

Based on model 24.0c.2, the MMB at the time of mating is estimated to have been highest in the late 1970s, with secondary peaks in 1989 and 2002-2003, followed by a gradual decline. The estimated MMB at time of mating in 2024/25 was 19.74 kt. The projection for MMB at the 2025/26 time of mating, which assumes the fishing mortality in 2025/26 matches that corresponding to the OFL, is 16.84 kt. Estimates of recruitment since 1985 have been generally low relative to those estimated for the period prior to 1985 with intermittent peaks in 1995, 2002, and 2005. The estimate for 2025 was one of the smallest on record, but it is highly uncertain because it is based only on 2025 NMFS EBS survey data.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

Based on the information available, BBRKC is categorized as a Tier 3 stock. The CPT recommends computing average recruitment as in recent assessments (i.e., based on model recruitment using the time period from 1984 (corresponding to fertilization in 1977) to the penultimate year of the assessment. The estimated $B_{35\%}$ is 18.52 kt. MMB projected for 2025/26 is 16.84 kt, 91% of $B_{35\%}$. Consequently, the BBRKC stock is in Tier 3b for 2025/26. The corresponding OFL is 5.85 kt.

The CPT recommends continuing to use a 20% buffer because the level of uncertainty expressed in previous years remains, although the basis for those concerns has changed slightly. These include:

- Continued lack of recent recruitment
- Poor and variable environmental conditions (e.g., wind stress, corrosive bottom waters)
- The lack of fit to 2018-2024 NMFS female survey biomass
- The retrospective patterns exhibited by the recommended model

MMB for 2024/25 was estimated to be 19.74 kt and above MSST (9.26 kt), hence the stock was not overfished in 2024/25. The total catch mortality in 2024/25 (1.20 kt) was less than the 2024/25 OFL (5.02 kt); hence overfishing did not occur in 2024/25. Based on MCMC projections, the probability of MMB in 2025/26 dropping below the MSST when fishing at F_{OFL} was less than 0.5, so the stock is not approaching an overfished condition.

Status and catch specifications (1000 t) for Bristol Bay red king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	12.01	16.64	0	0.02	0.10	2.23	1.78
2022/23	9.68	18.34	0	0.02	0.07	3.04	2.43
2023/24	9.35	18.65	0.975	0.96	1.34	4.42	3.54
2024/25	9.26	19.74	1.05	1.05	1.20	5.02	4.02
2025/26		16.84				5.85	4.68

Status and catch specifications (million lb) for Bristol Bay red king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	26.5	36.7	0	2.65	3.47	4.91	3.92
2022/23	21.3	40.4	0	0.05	0.16	6.70	5.35
2023/24	20.6	41.1	2.15	2.12	2.96	9.75	7.8
2024/25	20.42	43.51	2.31	2.31	2.64	11.07	8.87
2025/26		37.12				12.9	10.32

Below is the summarized risk table reviewed by the CPT (See BBRKC SAFE Appendix D).

Assessment-related considerations	Population dynamics considerations	Environmental / Ecosystem considerations	Fishery Performance
Level 1: Minimal concern	Level 2: Substantial concern	Level 2: Substantial concern	Level 1: Minimal concern
- Retrospective pattern in MMB (high Mohn's rho). This has been present for the last few years - Stable GMACS reference model since 2018 - Historic natural mortality event (early 80s)	- Unknown reasons behind recruitment failure - Potential shifting spatial distributions - Weak to no stock-recruit relationship - Low levels of abundance compared to historic levels (shifting baselines, non-stationary concerns)	- Corrosive bottom waters and increased wind stress in Bristol Bay remain a concern for growth and survival of larval and juvenile BBRKC - BB bottom waters were warm in 2025 but there is uncertainty in what impacts this has on the stock	- Recent year fishery CPUE was higher than last 10 year average - Total potlifts and number of active vessels at or near historic lows - Skipper survey reported high CPUE and majority saw an increase in legal males

3   Eastern Bering Sea Tanner crab

Fishery information relative to OFL setting

The State of Alaska sets separate TACs for directed fisheries east and west of 166°W longitude. A single OFL is set for Tanner crab in the EBS. Retained catch was 2,049 t west of 166°W longitude, and 803 t east of 166°W longitude. Non-directed crab and groundfish fisheries resulted in a bycatch mortality of 3.09 kt (with handling mortality rates applied). Because the total catch mortality for this stock was below the 2024/25 OFL of 41.29 kt, overfishing did not occur.

Data and assessment methodology

The stock assessment uses a size- and sex-structured model in which crabs are categorized as immature or mature, and growth ends with terminal molt. The model is fit to biomass and size frequency data from the NMFS trawl survey, total catch data from the directed fishery, and bycatch data from the non-directed crab and groundfish fisheries. Updated data in the 2025 assessment include 2025 eastern Bering Sea survey biomass and length composition data, retained and total catch data from the directed fishery, and bycatch data from the non-directed crab and groundfish fisheries. The CPT reviewed only the 2024 accepted model (22.03d5) with updated data to allow the author more time for GMACS model development.

Stock biomass and recruitment trends

The MMB at the time of mating was estimated to have been highest in the early 1970s (close to 400 kt), with secondary peaks in 1989 (108 kt), 2008 (122 kt), and 2014 (117 kt). The estimated MMB on 15 February 2025 was 99.5 kt and the projection for 15 February 2026 was 75.96 kt under the assumption that the OFL is taken. Estimates of recruitment since 1999 have been generally low relative to the peaks estimated for the period prior to 1990. Lack of cohort progression subsequent to recruitment pulses has been a concerning source of uncertainty, though the most recent strong recruitment signal in 2023 appears to be propagating to larger size classes over the last two years.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

The CPT recommends the OFL for this stock be based on the Tier 3 control rule. Application of the Tier 3 control rule requires a set of years for defining average recruitment corresponding to B_{MSY} under prevailing environmental conditions. This recommended time period is 1982 – 2024, based on the approach used to select the time period from the last few assessments, which excludes the most recent estimate of recruitment given its uncertainty.

Based on the projected biomass on 15 February 2026, the stock is at 176% of B_{MSY}, and therefore is in Tier 3a. The F_{MSY} proxy ($F_{35\%}$) is 1.47 yr^{-1}, and the 2025/26 F_{OFL} is 1.47 yr^{-1} under the Tier 3a OFL control rule, which results in a total OFL of 51.02 kt. The CPT recommended a 20% buffer to account for model uncertainty and stock productivity uncertainty be applied to the OFL to set ABC = 40.81 kt. The 20% buffer is consistent with previous years' concerns, but the CPT wishes to highlight its increasing concerns regarding the appropriateness of $B_{35\%}$ and $F_{35\%}$ as proxies for MSY-related management quantities due to uncertainty related to MMB as the appropriate currency of management, similar to concerns expressed for snow crab.

Status and catch specifications (1000 t) for Tanner crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	17.37	62.05	0.50	0.49	0.78	27.17	21.74
2022/23	18.19	74.17	0.91	0.91	1.19	32.81	26.25
2023/24	20.00	88.21	0.94	0.94	1.09	36.20	27.15
2024/25	21.61	99.53	2.84	2.85	3.09	41.29	33.03
2025/26		75.96				51.02	40.81

Status and catch specifications (million lb) for Tanner crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	38.29	136.79	1.10	1.09	1.73	59.89	47.91
2022/23	40.11	163.52	2.02	2.01	2.62	72.34	54.25
2023/24	44.10	194.46	2.08	2.07	2.39	79.82	63.85
2024/25	47.64	219.43	6.27	6.29	6.82	91.03	72.82
2025/26		167.45				112.47	89.98

Below is the summarized risk table reviewed by the CPT.

Assessment-related considerations	Population dynamics considerations	Environmental / Ecosystem considerations	Fishery Performance
Level 2: Substantial Uncertainty	Level 1: Minimal Uncertainty	Level 1: Minimal Uncertainty	Level 1: Minimal Uncertainty
Fails to achieve the dynamic range seen in survey biomass, concern regarding currency for reproductive potential, concern regarding proxies used for Fmsy and Bmsy	The majority of stock-specific ecosystem indicators related to natural mortality, growth, and recruitment suggest no additional concerns. While bitter crab disease prevalence was high, the magnitude of impact on the stock remains unknown. The abundance of Tanner/snow crab hybrids in all population categories was the largest seen in the survey time series (which starts in 1998).	Warm conditions with a reduced cold pool extent in 2024; forecast to be warm with delayed sea ice arrival in 2025. While bottom waters were warm in 2025, ecosystem concerns are minor with uncertain impacts on the stock. Corrosive bottom waters remain a concern for growth and survival. Competitive pressure may be low, while predation pressure may be increasing.	Fishery-informed indicators generally support stable stock condition relative to the most recent seasons and the post-2005 historical record. No considerations observed in the most recent fishery suggest greater than normal risk of overfishing, independent of other considerations captured in the assessment and risk table.

4   Pribilof Islands red king crab

The Pribilof Islands red king crab (PIRKC) assessment is on a four-year cycle to align with the Pribilof Islands blue king crab (PIBKC) assessment. A full assessment was conducted in 2025. The next full assessment will occur in 2029.

Fishery information relative to OFL setting

The Pribilof Islands red king crab fishery began in 1973 as bycatch during the blue king crab fishery. In 1993 and 1994 the red king crab fishery was open to directed fishing. From 1995 through 1998, combined guideline harvest levels (GHLs) were used for the Pribilof Islands red and blue king crab fishery. Declines in crab abundance of both red and blue king crab stocks from 1996 to 1998 resulted in poor fishery performance with annual harvests below the GHLs. The Pribilof Islands red king crab fishery has been closed since 1999 due to uncertainty in estimated red king crab abundance and concerns for bycatch mortality of blue king crab, which is overfished and severely depressed. Fishery closures near the Pribilof Islands have resulted in low bycatch, and recent bycatch has been well below the OFL, ranging from 1.0 to 17.0 t from 2012/13 to 2024/25.

Data and assessment methodology

In 2019 a GMACS model was accepted for this stock. The 2025 assessment is based on trends in male mature biomass (MMB) from NMFS bottom trawl survey and commercial catch and trawl bycatch data through 2025. The 2025 model also included historic ADF&G pot survey data from 2003, 2005, 2008, 2011. The GMACS integrated model was presented with two variations: 1) model 25.1: 2022 accepted model with updated survey/catch data and updated GMACS version, and 2) model 25.2: model 25.1 with the addition of the ADFG pot survey data.

Stock biomass and recruitment trends

The GMACS model fit to MMB identified three peaks in the timeseries. In recent years, observed MMB (>120 mm CL) peaked in 2015, then declined until 2019 when it began to increase until 2022, but it is once again on a downward trend. The MMB varied widely over the history of the survey time series and uncertainty around area-swept estimates of biomass were largely due to relatively low sample sizes. Recruitment estimated by the GMACS integrated model appeared to be episodic. Numbers at length vary dramatically among years; however, three cohorts can be seen moving through the length frequencies over time. The estimated MMB peaked during 1999 to 2003 and systematically declined until 2018, after which it increased until 2020 then declined.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

The CPT continues to recommend Tier 4 stock status determination and selected the GMACS model 25.2. This model was selected because it incorporates all available information for the stock, including the historic ADFG pot survey data. In 2019 the CPT recommended use of a modified method of B_{MSY} estimation, which is equal to 0.35*average MMB for 2000 to present minus 1 year, during which no directed fishery occurred. For 2025/26 the B_{MSY} = 1,283 t derived as the 0.35*mean MMB from 2000/01 to 2024/25 from the GMACS model 25.2 Male mature biomass at the time of mating for 2024/25 was estimated at 3,146 t. The B/B_{MSY} = 2.16 and F_{OFL} = 0.21. B/B_{MSY} is > 1, therefore the stock status level is Tier 4a. For the 2025/26 fishery, the OFL is 489.9 t. The CPT recommended a 25% buffer for an ABC from the OFL as in previous years.

No directed fishery occurred for PIRKC in 2024/2025. Bycatch mortality in non-directed fisheries was 0.87 t. Given that observed catches were lower than the OFL, overfishing did not occur in 2024/2025. The stock was above MSST in 2024/25 and is not overfished.

Status and catch specifications (t) for Pribilof Islands red king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	854	3,879	0	0	1.47	864	648
2022/23	641.7	4,061	0	0	3.92	685	514
2023/24	641.7	3,585	0	0	3.92	685	514
2024/25	641.7	3,146	0	0	0.87	685	514
2025/26		2,774				489.9	367.4
2026/27		2,774				489.9	367.4
2027/28		2,774				489.9	367.4
2028/29		2,774				489.9	367.4

Status and catch specifications (million lb) for Pribilof Islands red king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	1.88	8.55	0	0	0	1.9	1.43
2022/23	1.41	8.95	0	0	0.01	1.51	1.13
2023/24	1.41	7.9	0	0	0.01	1.51	1.13
2024/25	1.41	6.94			0	1.51	1.13
2025/26		6.12				1.08	0.81
2026/27		6.12				1.08	0.81
2027/28		6.12				1.08	0.81
2028/29		6.12				1.08	0.81

5   Pribilof Islands blue king crab

The Pribilof Islands blue king crab assessment has been conducted on a biennial basis. The next assessment will occur in 2029.

Fishery information relative to OFL setting.

The directed fishery has been closed since the 1999/2000 crab year. Non-directed crab and groundfish fisheries in 2024/25 resulted in a bycatch mortality of 0.029 t (with handling mortality rates applied). Because the total catch mortality for this stock was below the 2024/25 OFL of 1.16 t, overfishing did not occur. The stock was declared overfished in 2002, and a rebuilding plan was implemented in 2004. The rebuilding plan closed directed fishing for Pribilof blue king crab until the stock is rebuilt. In 2009, NMFS determined the stock would not meet its 10-year rebuilding horizon. The stock remains under a rebuilding plan, with no time specified to rebuild.

Data and assessment methodology

In May 2025, the CPT recommended using a spatiotemporal GLMM as implemented in the R package *sdmTMB* as opposed to the state space/random effects, random walk model used to smooth survey MMB in the 2023 assessment. A spatiotemporal GLMM makes better use of recent zero catch survey data as low abundance observations than does the state space model, which effectively treats them as missing data. In addition, a spatiotemporal GLMM is suited for estimating a standardized survey time series given sampling design changes around the Pribilof Islands.

The 2025 assessment evaluated a series of GLMM models that varied in the resolution of the spatial mesh, random effects structure, and covariate parameterization. The CPT-recommended model used a 80 knot barrier mesh constructed by k-means clustering, spatial random effects, temporal random effects following a first order autoregressive process, and log of depth as a covariate. MMB was projected to mating (Feb 15, 2026) as in previous assessments.

Stock biomass and recruitment trends

The 2025/26 MMB at mating is projected to be 162 t, which is approximately 4% of the proxy for B_{MSY}. The Pribilof Islands blue king crab stock biomass continues to be low with no indication of recruitment.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

The CPT recommends that stock status be evaluated using Tier 4 methods. B_{MSY} was estimated using the time periods 1980/81 -1984/85 and 1990/91-1997/98. This range was chosen as representative of the productive potential of the stock. B_{MSY} is estimated at 4,146 t for 2025/26. Because the projected 2025/26 estimate of MMB is less than 25% B_{MSY}, the stock is in stock status 'c' and the directed fishery F is 0.

The OFL prescribed as part of the rebuilding plan is based on average groundfish bycatch between 1999/2000 and 2005/06. The recommended OFL for 2025/26 - 2028/29 is 1.16 t.

The CPT continues to recommend setting the ABC less than the maximum permissible by employing a 25% buffer on the OFL. This recommendation is based upon continuing concerns with stock status and consistency with buffer levels for other stocks for which the OFL is based upon average catch. The CPT captured these concerns in a risk table but determined that scoring categories would provide little utility for this stock.

Handling mortality in non-directed crab fisheries and fixed gear groundfish fisheries present here and in assessments since 2016 has been 20%. The CPT recommended that handling mortality remain at 20% for non-directed crab fisheries for this assessment, but future assessment should assume 50% for fixed gear groundfish fisheries following other FMP king crab stocks.

Total catch mortality was below the OFL for 2025/26; therefore, overfishing did not occur.

Historical status and catch specifications for Pribilof Islands blue king crab (t). Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	2,098	235	Closed	0	0.102	1.16	0.87
2022/23	2,098	180	Closed	0	0.25	1.16	0.87
2023/24	2,073	61	Closed	0	0.0906	1.16	0.87
2024/25	2,073	75	Closed	0	0.03	1.16	0.87
2025/26		162				1.16	0.87
2026/27		162				1.16	0.87
2027/28		162				1.16	0.87
2028/29		162				1.16	0.87

Historical status and catch specifications for Pribilof Islands blue king crab (million lb). Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	4.625	0.518	Closed	0	0.0002	0.0026	0.0019
2022/23	4.625	0.397	Closed	0	0.0006	0.0026	0.0019
2023/24	4.571	0.135	Closed	0	0.0002	0.0026	0.0019
2024/25	4.571	0.165	Closed	0	0.000063	0.0026	0.0019
2025/26		0.358				0.0026	0.0019
2026/27		0.358				0.0026	0.0019
2027/28		0.358				0.0026	0.0019
2028/29		0.358				0.0026	0.0019

6   St. Matthew Island blue king crab

Fishery information relative to OFL setting

The fishery was prosecuted as a directed fishery from 1977 to 1998. Harvests peaked in 1983/84 when 4,288 t were landed by 164 vessels. Harvest was fairly stable from 1986/87 to 1990/91, averaging 568 t annually. Harvest increased to a mean catch of 1,496 t during the 1991/92 to 1998/99 seasons until the fishery was declared overfished and closed in 1999 when the stock size estimate was below the MSST. In November 2000, Amendment 15 to the FMP was approved to implement a rebuilding plan for the St. Matthew Island blue king crab stock. The rebuilding plan included a harvest strategy identified in regulation by the Alaska Board of Fisheries, an area closure to control bycatch, and gear modifications. In 2008/09 and 2009/10, the MMB was estimated to be above B_{MSY} for two years and the stock declared rebuilt in 2009.

The fishery re-opened in 2009/10 after a 10-year closure, closed in 2013/14 due to declining trawl survey biomass, and opened from 2014/15 to 2015/16 with a TAC of 300 t. Fishery performance was relatively poor with retained catches of 140 t in 2014/15 and 48 t in 2015/16; the fishery has been closed since 2016/17. Bycatch of non-retained blue king crab has occurred in the St. Matthew blue king crab fishery, the eastern Bering Sea snow crab fishery, and trawl and fixed-gear groundfish fisheries. The stock declined below the minimum stock size threshold in 2018 and was declared overfished. A rebuilding plan was implemented in October 2020.

Data and assessment methodology

This assessment uses a GMACS model, which was first accepted for use by the SSC in June 2016. The model incorporates the following data: (1) commercial catch; (2) NMFS annual trawl survey; (3) ADF&G triennial pot survey; (4) bycatch in the groundfish trawl and groundfish fixed-gear fisheries; and (5) ADF&G observer size compositions.

Stock biomass and recruitment trends

The 2024 NMFS trawl survey biomass estimate is not comparable to the time series typically used for this assessment because the 2024 survey excluded the corner stations that have been sampled since 1983, and thus some decrease in biomass is expected: mean biomass for 1983-2023 with corner stations excluded is only 79% of the mean biomass for the same time period with corner stations included. Standardization using a spatiotemporal model is needed to produce a biomass index that is robust to changes in the set of stations surveyed over time, but this index is still under development. For that reason, the following comparisons use the 1978-2024 NMFS trawl survey time series with corner stations excluded from biomass estimates for all years. Using this time series without corner stations, the 2024 NMFS trawl survey biomass of ≥ 90 mm carapace length (CL) male crab is 1,833 t (47% CV), the 15th lowest in the 47 years of the survey and the 11th lowest since 2000. The 2024 biomass is 41% of the 1978-2024 NMFS trawl survey mean biomass with corner stations excluded (4,490 t), and a 3% increase from the 2023 biomass. The mean NMFS survey biomass over the most recent three years is 35% of the time series mean value, indicating a low biomass compared to historical survey estimates. The ADF&G pot survey last occurred in 2022, when the relative biomass index was the highest since 2013, and 70% of the mean from the 12 surveys conducted since 1995. The assessment model estimates do not fit either of the survey time series particularly well. For the NMFS trawl survey, estimates from model 16.1 suggest that the stock biomass is 48% of the mean model-predicted biomass, with a poor fit to the 2019 biomass observation; note that model 16.1 uses the NMFS trawl survey time series with corner stations included for those years in which they are available (1983-2023). For the ADF&G pot survey, estimates from model 16.1 suggest that the stock biomass in 2022 was 66% of the mean model-predicted biomass, with a poor fit to the 2016, 2017, and 2018 biomass observations. Model 24.1 is model 16.1 with natural mortality fixed at $M = 0.23$ for the entire time series (except for the 1998 natural mortality spike) based on the value estimated in the 2023 Bristol Bay Red King Crab model.

Recruitment is based on the estimated number of male crab in the 90-104 mm carapace length (CL) size class in each year. Using the NMFS trawl survey time series with corner stations excluded, the 2024 trawl survey area-swept estimate of 252,145 male crab in this size class is ranked 36th, near the lower end of the 47 years of the survey. Mean recruitment over the most recent six years (2018-2024) is 46% of the long-term mean. In the ADF&G pot survey, the abundance of male crab in the 90-104 mm CL size class in 2022 ranked 7th in the time series (56% of the mean for the 12 available years of pot survey data) and was the highest abundance observed for this size class since 2013.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

The stock assessment is based on Model 24.1, which uses a more recent version of GMACS (2.20.14), updated groundfish bycatch data for the 2023/24 crab season, updated survey data from the 2024 NMFS trawl survey and 2022 ADF&G pot survey, and a natural mortality value of 0.23 consistent with the most recent BBRKC assessment.

The CPT concurs with the author's recommendation to use Model 24.1 for the 2024/25 crab year. The stock is in Tier 4. The CPT recommends that the period 1978-2023 be used to define the proxy B_{MSY} in terms of average estimated MMB at mating. The projected MMB estimated for 2024/25 is 1,530 t, the F_{MSY} proxy is the natural mortality rate (0.23 year^{-1}), and the F_{OFL} is 0.108, resulting in a mature male biomass OFL of 129 t. The MMB/B_{MSY} ratio is 0.52. The author recommended and the CPT concurred with a 25% buffer on the OFL for the ABC. The ABC based on this buffer is 97 t.

Given that this is a biennial assessment, the CPT recommends the same OFL and ABC for 2025/2026. This stock will next be assessed in 2026.

The stock was found to be below the MSST in 2023/24 and thus remains in an overfished condition. However, the stock is projected to be above the MSST in 2024/25, and the status will be evaluated next during the upcoming full assessment in 2026. Total catch was less than the OFL in 2024/25 and as such, overfishing did not occur.

Historical status and catch specifications for St. Matthew Island blue king crab (kt). Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2020/21	1.65	1.14	0.00	0.00	0.001	0.05	0.04
2021/22	1.63	1.18	0.00	0.00	0.001	0.05	0.04
2022/23	1.50	1.31	0.00	0.00	0.002	0.066	0.050
2023/24	1.48	1.41	0.00	0.00	0.001	0.066	0.050
2024/25		1.53	0.00	0.00	0.001	0.129	0.097
2025/26		1.53				0.129	0.097

Historical status and catch specifications for St. Matthew Island blue king crab (million lb). Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2020/21	3.64	2.52	0.00	0.00	0.002	0.112	0.08
2021/22	3.59	2.59	0.00	0.00	0.001	0.112	0.08
2022/23	3.27	2.89	0.00	0.00	0.005	0.146	0.11
2023/24	3.23	3.10	0.00	0.00	0.001	0.146	0.11
2024/25		3.37	0.00	0.00	0.002	0.285	0.214
2025/26		3.37				0.285	0.214

7   Norton Sound red king crab

Fishery information relative to OFL setting

During the 2024 fishery, 4,834 crab (6.20 t) were harvested in the winter commercial fishery and 140,379 crab (196 t) were harvested in the summer commercial fishery. In the winter subsistence fishery, 5,681 crab (7.06 t) were caught, while 4,708 crab (6.04 t) were retained. Because the total catch mortality for this stock was below the 2024 OFL of 332 t, overfishing did not occur.

Data and assessment methodology

During the last three decades, information from summer trawl, summer pot, winter pot, and preseason summer pot surveys have been periodically collected for NSRKC. The summer trawl surveys provide data on annual abundance and size/shell condition compositions, while the others have contributed to life history knowledge. Time series of standardized CPUE from the summer commercial fishery provide additional indices of abundance. Tag return data provide information on growth. Retained catch data are available from fish tickets for the winter and summer commercial fisheries, as well as from subsistence catch reports. Retained catch size-composition data are generally available for the summer commercial fishery, but only limited data are available for the winter commercial fishery. Limited data on discards are available from summer commercial fishery observer data and subsistence catch reports.

The assessment has been updated to include the following new data for 2024: retained catch for the winter and summer commercial fisheries, length-shell compositions for the summer commercial fishery, total and retained catch for the winter subsistence fishery, standardized CPUE time series, and survey abundance and shell condition/size composition data from the 2024 ADF&G summer trawl survey.

The assessment is based on a length-based model of male crab abundance in the GMACS framework that combines these multiple sources of data. Logistic functions are used to describe fishery and survey selectivities, except that a dome-shaped function used for the winter pot fishery. The ADF&G trawl survey is assigned a catchability of 1, with catchabilities estimated for other surveys and the standardized CPUE indices. Molting and growth are combined into a size-transition matrix. The model allows for length-dependent natural mortality.

The assessment author presented results from two models (21.0 and 24.0) for consideration by the CPT for status determination and OFL/ABC calculation. Model 21.0 was the accepted model from the 2024 assessment (updated with 2024 data). It assumed a constant M of 0.18 yr-1 for all length classes except the largest (i.e., >123mm CL), for which M was estimated at 0.61 yr-1. Model 24.0 was implemented in the GMACS framework and parameterized as close to model 21.0 as possible, with M for the largest length class estimated at 0.58 yr-1. The most salient difference was that model 24.0 estimated values of F for each fishery, while 21.0 subtracted observed catches for each fishery from the model-estimated abundance. Overall, the two models are similar in terms of data fit and estimates of selectivity, natural mortality, and transition probability. The CPT recommended adopting model 24.0 for setting harvest specifications for this stock.

Stock biomass and recruitment trends

Estimated mature male biomass was low in 1982 following a sharp decline from the peak biomass in 1977. MMB increased from a historic low in 1996 to a peak in 2010, after which it fluctuated about the BMSY proxy. Estimated MMB increased to its highest level since the late 1980s in 2022 (2,880 t) after its lowest estimated level in 2019 (1,139 t). Estimated MMB has decreased over the past three years to 2,150 t for 2025. Estimated recruitment has generally been variable; recruitment in 2020 was the highest since the late 1970s, but it has since decreased. The ADF&G trawl survey showed a decrease in abundance from 2023 (3.4 million males) to 2024 (1.4 million males). Standardized CPUE from the 2024 summer commercial fishery, 2.63, was larger than that for 2023 (2.00). The NMFS Northern Bering Sea survey was not conducted in 2024.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

The CPT recommends that this stock remain in Tier 4. Using model 24.0, the Tier 4 BMSY proxy was calculated as the average of mature male biomass on February 1 during 1980-2025 and equaled 1,960 t. The estimated 2025 mature male biomass on February 1 was 2,370 t, which is above the BMSY proxy, placing Norton Sound red king crab in status category 4a. The corresponding FMSY proxy for NSRKC is M =0.18 yr-1 (using the default gamma =1.0), as is the associated FOFL because the 2025 mature male biomass is greater than the BMSY proxy. In 2023, the CPT recommended adopting a retained catch OFL due to the lack of new information on discard mortality; the SSC rejected this recommendation and based the OFL on total catch mortality as in 2022. To maintain consistency with recent practice, the CPT recommends a total catch OFL for 2025. Consequently, the 2025 Tier 4a total catch OFL is 284 t (0.628 million lb).

The CPT recommends that the ABC for 2025 be set below the maximum permissible ABC. In 2024, the SSC endorsed using a buffer of 30% for the ABC given concerns regarding the assessment. The sources of uncertainty identified in 2024 are still relevant. These include:
- uncertainty regarding biological characteristics:
  - M and size-at-maturity are borrowed from other stocks;
  - impact of seasonal movement on survey estimates;
  - uncertainty in stock vs. survey areas;
- shortage of discard data on which to base estimates of total catch mortality;
- estimates of total catch mortality rely on ad hoc methods to estimate discards;
- discrepancies between the ADF&G and NOAA NBS survey estimates that remain unresolved;
- a few parameters are at bounds;
- the model consistently overestimates the proportion of large crab; and
- whether the high estimate for M in the largest size class is reasonable remains unresolved.

The CPT recommends using the same ABC buffer as was endorsed by the SSC in 2024: 30%.

The resulting ABC is 199 t (0.440 million lb).

Status and catch specifications (million lb.) Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	GHL	Retained Catch Mortality[1]	Total Catch Mortality[2]	OFL[3]	ABC[3]
2020	2.28	3.67	0.17	Conf.	Conf.	0.29	0.20
2021	2.26	5.00	0.38	0.007	0.007	0.63	0.35
2022	2.08	5.33	0.34	0.34	0.36	0.67	0.40
2023	2.65	5.29	0.39	0.43	0.44	0.680	0.480
2024	2.20	5.52	0.48	0.46	0.47	0.733	0.513
2025	2.36	4.72				0.628	0.440

Status and catch specifications (1000 t)

Year	MSST	Biomass (MMB)	GHL	Retained Catch Mortality[1]	Total Catch Mortality[2]	OFL[3]	ABC[3]
2019	1.03	1.41	0.07	0.04	0.04	0.11	0.09
2020	1.04	1.66	0.08	Conf.	Conf.	0.13	0.09
2021	1.03	2.27	0.17	0.003	0.003	0.29	0.16
2022	0.95	2.42	0.15	0.15	0.16	0.30	0.18
2023	1.20	2.40	0.18	0.19	0.20	0.310	0.220
2024	1.00	2.50	0.22	0.21	0.215	0.332	0.233
2025	1.08	2.15				0.284	0.199

Notes:
[1]2019:2020: Refers to commercial fisheries only; 2021-2024: refers to all (commercial + subsistence) retained catch
[2]2019:2020: Do not include discard mortality (total retained catch only); 2021-2024 include estimated discard mortality
[3]OFL/ABC are total catch values in 2021-2025

8   Aleutian Islands Golden King Crab

Note: This SAFE chapter was revised from the original version released on May 5, 2025. Minor changes were made to figures and text to comply with confidentiality rules for the 2024 fishing year. Materials presented to the SSC and on which the SSC based their decisions were different from the revised version included here.

Fishery information relative to OFL setting

During the 2024/25 fishery, the estimated retained catch was 2,215 kt (4.9 million lb), while the estimated total catch mortality was 2.341 kt (5.2 million lb). At the time of the 2024/25 assessment, the fishery in EAG was still operating (~1 trip) remaining) and the groundfish fisheries had not been completed, so the retained and total catch mortalities are estimates. These mortalities will be updated in September 2025.

Data and assessment methodology

The assessment for AI golden king crab establishes a single OFL and ABC for the whole stock. However, separate models are evaluated for the EAG and the WAG owing to, inter alia, different abundance trends in each area. A Tier 3 modeling framework for AI golden king crab based on fisheries-only data was developed over several years starting in 2011 with model assumptions and data inputs refined by reviews by the SSC and CPT. This modeling framework was recommended for the assessment by the CPT in September 2016 and approved by the SSC in October 2016. The

CPT endorsed, and the SSC subsequently approved, the GMACS model for this stock in January 2023, and GMACS formed the basis for the 2023, 2024, and the current assessment.

The model-based stock assessment involves fitting a male-only population dynamics model to data on catches and discards in the directed fishery, discards in the groundfish fishery, standardized indices of abundance based on observer and fish ticket data, length-frequency data for the directed fishery (landings and total catch), and mark-recapture data. The directed pot fishery in the EAG only and the groundfish fisheries in both areas were still operating when the assessment was conducted, but the difference in total catch mortality from that in the assessment is likely to be low. A cooperative survey was conducted by the Aleutian King Crab Research Foundation (an industry group) and ADF&G during the fishery in the EAG since 2016, and in the WAG during 2018 only. Indices based on the cooperative survey continue to not be included in the assessment.

The assessment author examined two models for the EAG and WAG this assessment cycle. Model 23.1c was the 2024 assessment model with updated catch and size-composition time series and a CPUE index based on fitting GAMs. This model started in 1960 in an equilibrium state, included three catchability periods, knife-edge male maturity size at 116 mm CL, M set to 0.22 yr-1, a fixed period (1987–2021; updated from 1987-2020 for the 2023/24 assessment) for reference points calculation. Model 25.0b was model 23.1a with non-equilibrium initial (1981) conditions, equal emphasis on all catch likelihood components, and bootstrap estimated stage-1 effective sample sizes.

For the EAG, the two models provided very similar results. Both models fit the retained catch, total catch, and groundfish bycatch data well. Both models fit the standardized CPUE indices similarly, but the overall fits were poor, even though an aim of model 25.0b was to allow the model more flexibility to fit the CPUE data better. The fits to the retained catch and total catch size compositions were good, with the fits to the retained catch size compositions better than to the total catch size compositions.

For the WAG, the two models fit the respective catch data and standardized CPUE indices equally well and produced similar estimates for the recruitment and MMB time series. The models followed the trends in C2 AIGKC SAFE Introduction June 2025 Aleutian Islands Golden King Crab SAFE Introduction May 2025 1 standardized CPUE much better than the EAG models. As for the EAG, the fits to the retained catch and total catch size compositions were good, with the fits to the retained catch size compositions better than to the total catch size compositions.

The author-preferred model was 23.1c for both areas. Model 23.1c was recommended by the assessment author because the derived quantities for model 25.0b were somewhat sensitive to data weighting, without improved model performance (i.e., reduced evidence for a retrospective pattern for the EAG). The assessment reported the time-series of historical estimates of legal male abundance, which show a pattern of decreasing projected abundance over time. The exploitation rate on legal males in the WAG has now been found to have exceeded the maximum under the state harvest strategy.

Stock biomass and recruitment trends

Estimated mature male biomass (MMB) for the EAG decreased from the 1980s to the 1990s, then increased during the 2000s, decreased marginally during the early 2010s, increased from 2014 to 2022 and declined from 2023. Estimated MMB for the WAG decreased substantially during the late 1980s and 1990s, increased somewhat during the 2000s, decreased for several years after 2008 and has since declined steadily to a low in 2021 followed by slight increase since 2022. Recruitment to the EAG has declined from a high in 2017 to low but stable recruitment since 2021. Recruitment to the WAG has declined slowly since 1985, although 2023 and 2024 recruitment are the highest since 2013, but remain uncertain as they are still relatively poorly selected by the fishery.

Summary of major changes

The assessment model recommended by the CPT, Model 23.1c, is identical to the model used in the previous assessment, except that it is based on revised (and new) catch, size-composition data, no bias correction of recruitment deviations in years preceding data, and updated standardized CPUE time series.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

The CPT recommends that this stock be managed as a Tier 3 stock in 2025/26. A single OFL and ABC is defined for AIGKC. However, separate models are available by area. During its May 2017 meeting, the CPT recommended that stock status be determined by adding the area-specific estimates of current MMB and BMSY to ensure that there would only be one stock status for the AIGKC stock. However, area-specific stock status is used to determine the ratio of FOFL to F35% by area, which is then used to calculate the OFLs by area, which are then summed to calculate an OFL for the entire stock. The SSC has concurred with this approach. The CPT recommends that the BMSY proxy for the Tier 3 harvest control rule be based on the average recruitment from 1987-2021, years for which recruitment estimates are relatively precise. This is the only crab assessment that relies solely on fishery CPUE as an index of abundance. The CPUE index standardization process, subject to past CPT and SSC review, is a key reason for the 25% buffer between the OFL and the ABC used in past years. Concerns raised in recent assessments are summarized in the following table:

Concern	year expressed	CPT 2024 concern?	Reason
Only crab assessment that relies entirely on fishery CPUE as an index of abundance	2020	Yes	No change.
Uncertainty in natural mortality	2020	Yes	No change.
The limited spatial coverage of the fishery with respect to the total stock distribution	2020	Yes	No change.
The small number of vessels on which CPUE is based	2020	Yes	No change.
Retrospective pattern for the EAG	2020	Yes	No change
CPUE standardization is still subject to some methodological concerns	2020	Less	The data on which the standardization is based have been checked and improved diagnostics are now available.
Catches from the WAG that were not included in the assessment	2021	Less	Only the total catch was not final at the time of the assessment
Model convergence concerns reflecting potential parameter confounding (jitter analysis resulted in multiple solutions for MMB and $B_{35\%}$ at same likelihood values)	2024	Yes	Some of the models converged to implausible but better fits to the data, which should be explored in future work.
Model does not fit the trend in the index for the EAG.	2024	Yes	The fit to the standardized CPUE index for the EAG remains poor – the retrospective pattern observed for the EAG is likely related to this poor fit.
Abundance trend in the WAG	2025	Yes	CPUE continues to decline in the WAG.
Catches from the EAG that were not included in the assessment	2025	New	The directed and the total catch were not final at the time of the assessment

In 2022/23, the CPT recommended, and the SSC concurred with, a buffer of 25%. For 2023/24 to 2025/26, the CPT found that several previously expressed concerns continued to exist, the principal one being the retrospective patterns for the recommended EAG model. Thus, the CPT recommends continuing to use a 25% buffer, its value for the last three years, on the OFL for the ABC.

Status and catch specifications (1000 t) for Aleutian Islands golden king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	5.859	12.592	2.690	2.699	3.056	4.817	3.372
2022/23	5.832	13.600	2.291	2.369	2.612	3.761	2.821
2023/24	5.772	12.716	2,508	2,578	2.761[a]	4.182	3.137
2024/25	5.632	11.087	2.214	2.287	2.426	3.725	2.794
2025/26		10.480				3.166	2.374

Status and catch specifications (million lb) for Aleutian Islands golden king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2021/22	12.917	27.760	5.930	5.951	6.737	10.620	7.434
2022/23	12.857	29.984	5.051	5.223	5.758	8.291	6.219
2023/24	12.725	28.034	5.530	5,684	6.087[a]	9.220	6.916
2024/25	12.417	24.443	4.881	5.042	5.348	8.212	6.519
2025/26		23.104				6.980	5.234

The total catch was 2.426 kt (5.348 million lb). The total fishery mortality in 2024/25 was below the OFL therefore overfishing is not occurring.

9   Pribilof District Golden King Crab

In accordance with the approved schedule, the Pribilof Islands golden king crab (PIGKC) assessment is conducted triennially with the previous assessment in 2020. Therefore, a full stock assessment was conducted in 2023 with results to be applied for the 2024–2026 specifications. The PIGKC stock is managed by calendar year, rather than a crab year, basis. Additional information listed below summarizes the 2023 assessment.

Fishery information relative to OFL setting

The PIGKC fishery began in the 1981/82 season. The directed fishery mainly occurs in Pribilof Canyon of the continental slope. Peak directed harvest was 388 t by 50 vessels during the 1983/84 season; fishery participation has since been sporadic and retained catches vary from 0 to 155 t. A guideline harvest level (GHL) was first established in 1999 at 91 t and the fishery was managed with a GHL of 68 t from 2000 to 2014, which was reduced to 59 t in 2015. Discarded (non-retained) catch has occurred in the directed golden king crab fishery, the eastern Bering Sea snow crab fishery, the Bering Sea grooved Tanner crab fishery, and in Bering Sea groundfish fisheries. Estimates of annual total fishery mortality during 2001–2021 due to crab fisheries range from 0 to 73 t. Estimates of annual fishery mortality during 1991/92–2022 due to groundfish fisheries range from negligible to 9 t.

Data and assessment methodology

There is no assessment model for this stock. Fish ticket and observer data are available, as are size-frequency data from samples of landed crabs, and pot lifts sampled during crab fisheries, and from the groundfish fisheries. Much of the directed fishery data are confidential due to low participation levels. A random effects model for moving toward a Tier 4 assessment was explored during the 2023 assessment; however, there is no indication that the slope survey will be conducted with any regularity in future years. The CPT recommends that the Tier 4 model not be adopted until updated survey data become available.

Stock biomass and recruitment trends

There are no stock biomass data used in this Tier 5 assessment.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

The CPT recommended in 2023 that this stock be managed under Tier 5 in 2024-2026. The CPT concurred with the author's recommended status quo OFL of 94.7 t and an ABC of 71.1 t; however, the SSC recommendation differed. The SSC recommended using the Tier 4/5 approach with a natural mortality multiplier of 0.22 on MMB, resulting in a recommended OFL to 114 t and the associated ABC (using the 25% buffer) of 85.3 t. The ABC was derived by applying a 25% buffer of the OFL, ABC = 0.75 * OFL, the same buffer used for other Tier 5 stocks with similar levels of concern.

Two vessels participated in the 2024 fishery, thus retained and total fishing mortality are confidential. There was no effort in bycatch crab fisheries (snow and grooved Tanner crab) and total bycatch mortality in groundfish fisheries was 2.3 t (5,048 lb). Overfishing did not occur in 2024.

Status and catch specifications (t) for Pribilof Islands golden king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	GHL	Retained Catch	Total Catch	OFL	ABC
2019			59	Conf.	Conf.	93	70
2020			59	49	52	93	70
2021			59	16	21	93	70
2022			59	Conf.	Conf.	93	70
2023			59	Conf.	Conf.	93	70
2024			59	Conf.	Conf.	114	85.3
2025						114	85.3
2026						114	85.3

Status and catch specifications (million lb) for Pribilof Islands golden king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Year	MSST	Biomass (MMB)	GHL	Retained Catch	Total Catch	OFL	ABC
2019			0.13	Conf.	Conf.	0.20	0.15
2020			0.13	0.11	0.12	0.20	0.15
2021			0.13	0.03	0.05	0.20	0.15
2022			0.13	Conf.	Conf.	0.20	0.15
2023			0.13	Conf.	Conf.	0.20	0.15
2024			0.13	Conf.	Conf.	0.25	0.19
2025						0.25	0.19
2026						0.25	0.19

10   Western Aleutian Islands red king crab

In accordance with the approved schedule, the Western Aleutian Islands king crab assessment is conducted triennially with the previous assessment in 2020. Therefore, a full stock assessment was conducted in 2023 with results to be applied for the 2023/24, 2024/25, and 2025/26 specifications. Additional information listed below summarizes the 2023 assessment.

Fishery information relative to OFL and ABC setting

After 1995/96, the fishery was opened only occasionally. There was an exploratory fishery in 1998/99, three commissioner's permit fisheries in limited areas during 2000/01–2002/03 to allow for ADF&G-Industry surveys, and two commercial fisheries with a GHL of 227 t in 2002/03 and 2003/04 in the Petrel Bank area. The fishery has been closed since 2003/04.

Bycatch of red king crabs occurs in both the directed red king crab fishery, the Aleutian Islands golden king crab fishery, and in groundfish fisheries. Estimated annual total fishing mortality from 1995/96 to 2022/23 averaged 27 t. The average retained catch during that period was 20 t. This fishery is rationalized under the Crab Rationalization Program only for the area west of 179° W longitude.

Data and assessment methodology

The 1960/61 to 2022/23 time series of retained catch (number and pounds of crabs), effort (vessels, landings, and pot lifts), average weight and average carapace length of landed crabs, and catch-per-unit effort (number of crabs per pot lift) are available. Bycatch from crab fisheries from 1995/96 to 2022/23 and from groundfish fisheries from 1993/94 to 2022/23 are available. There is no assessment model for this stock. The standardized surveys of the Petrel Bank area conducted by ADF&G in 2006 and 2009, and the ADF&G-Industry Petrel Bank surveys conducted in 2001 were too limited in geographic scope and too infrequent for reliable estimation of abundance for the entire western Aleutian Islands area.

Stock biomass and recruitment trends

Estimates of stock biomass, recruitment trends, and current levels relative to virgin or historical levels are not available for this stock. The fishery has been closed since 2003/04 due to apparent poor recruitment. A 2009 survey conducted by ADF&G in the Petrel Bank area encountered an aging population of legal male crab occurring in a more limited area and at lower densities than were found in a 2006 survey and provided no expectations for recruitment. A test fishery conducted by a commercial vessel during October-December 2009 in the area west of Petrel Bank yielded only one legal male red king crab. A cooperative red king crab survey was performed by the Aleutian King Crab Research Foundation and ADF&G in the Adak area in 2015 and the Petrel Bank area in 2016, which averaged less than one crab per pot lift suggesting that the stock is in poor condition.

Tier determination/Plan Team discussion and resulting OFL and ABC determination

The CPT recommends that this stock be managed under Tier 5 for the 2023/24, 2024/25, and 2025/26 seasons. The CPT concurs with the assessment author's recommendation of an OFL based on the 1995/96–2007/08 average total catch following the recommendation of the SSC in June 2010 to set the time period for computing the OFL at 1995/96–2007/08. The CPT recommends an OFL for 2023/24, 2024/25, and 2025/26 of 56 t.

The CPT continues to have concerns regarding the depleted condition of this stock. Groundfish bycatch in recent years has accounted for the majority of the total catch. The CPT recommends an ABC of 14 t for 2023/24, 2024/25, and 2025/26 which is equivalent to a 75% buffer on OFL. The recommended ABC of 14 t is the same as that recommended by the CPT in 2017 and 2020. The ABC was lowered in 2017 because 1) the industry has not expressed interest in a small test fishery, and 2) because the stock is severely depressed as indicated by the most recent industry-cooperative surveys. This logic still applies for this assessment cycle. The total catch in 202/21, 2021/22, 2022/23, 2023/24, and 2024/25 was less than the OFL therefore overfishing did not occur.

Status and catch specifications (t) for Western Aleutian Islands red king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Fishing Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2018/19			Closed	0	<1	56	14
2019/20			Closed	0	<1	56	14
2020/21			Closed	0	<1	56	14
2021/22			Closed	0	<1	56	14
2022/23			Closed	0	<1	56	14
2023/24			Closed	0	<1	56	14
2024/25			Closed	0	<1	56	14
2025/26						56	14

Status and catch specifications (million lb) for Western Aleutian Islands red king crab. Shaded values are new estimates or projections based on the current assessment. Other table entries are based on historical assessments and are not updated except for total and retained catch.

Fishing Year	MSST	Biomass (MMB)	TAC	Retained Catch	Total Catch	OFL	ABC
2018/19			Closed	0	0.00146	0.12387	0.07432
2019/20			Closed	0	0.00166	0.12387	0.03097
2020/21			Closed	0	0.00075	0.12387	0.03097
2021/22			Closed	0	0.00016	0.12387	0.03097
2022/23			Closed	0	0.00028	0.12387	0.03097
2023/24			Closed	0	0.00028	0.12387	0.03097
2024/25			Closed	0	0.00002	0.12387	0.03097
2025/26						0.12387	0.03097

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Figures and Tables
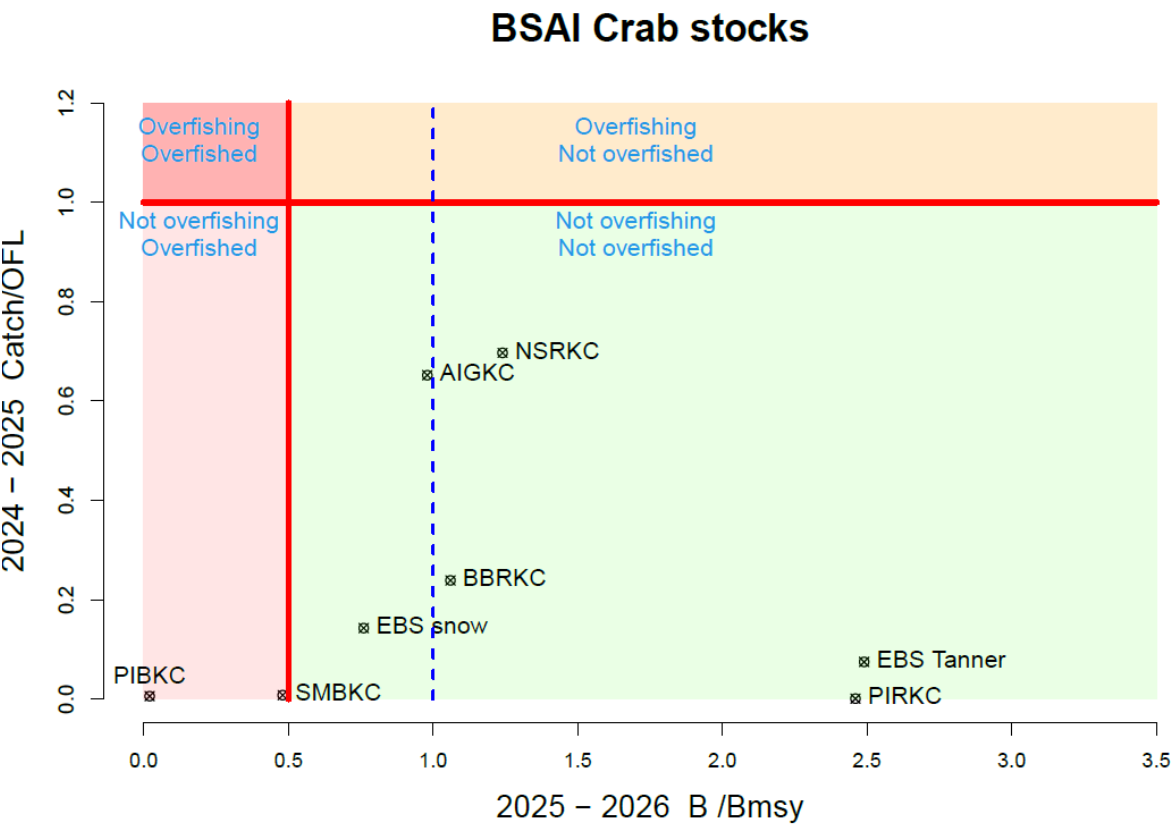
BSAI Crab stocks

Figure 2 **Status of eight Bering Sea and Aleutian Islands crab stocks in relation to status determination criteria (B_{MSY}, MSST, overfishing) for 2024/25. Note that information is insufficient to assess Tier 5 stocks according to these criteria (WAIRKC, PIGKC).**

Table 4 **Stock status in relation to status determination criteria for 2024/25 as estimated by the most recent assessment. Hatched areas indicate parameters not applicable for that tier. Values are in thousands of metric tons (kt).**

Chapter	Stock	Tier	MSST[1]	BMSY or BMSYproxy	2024/25[1] MMB	2024/25 MMB/ MMBMSY	2024/25 OFL	2024/25 Total Catch	Rebuilding Status
1	EBS snow crab	3	90.05	180.1	137.50	0.76	19.6	2.81	**Not overfished[2]**
2	BB red king crab	3	9.26	18.69	19.74	1.06	5.02	1.20	
3	EBS Tanner crab	3	21.61	40.01	99.53	2.49	41.29	3.09	
4	Pribilof Islands red king crab	4	0.64	1.283	3.15	2.46	0.685	<0.001	
5	Pribilof Islands blue king crab	4	2.07	4.15	0.075	0.018	0.00116	<0.001	**overfished**
6	St. Matthew Island blue king crab	4	1.48	2.93	1.41	0.48	0.129	0.001	**overfished**
7	Norton Sound red king crab	4	1.00	2.02[3]	2.50	1.24	0.33	0.23	
8	AI golden king crab	3	5.632	11.264	11.09	0.98	3.725	2.43	
9	Pribilof Islands golden king crab[4]	5					0.114	Conf	
10	Western AI red king crab	5					0.056	0.01	

[1] MMB on 2/1/2025 for Norton Sound red king crab as estimated in the 2024 assessment and on 2/15/2025 for all other Tier 1-4 stocks using the 2025 assessments.
[2] Snow crab MMB was greater than MSST, so the stock was not overfished in 2024/25. However, the stock remains under a rebuilding plan until MMB ≥ BMSY.
[3] BMSY proxy basis years for NSRKC are 1980 – 2024.
[4] PIGKC specifications are set on a calendar year basis.

Table 5 **CPT recommendations for Eastern Bering Sea crab stocks. Stocks for which specifications are rolled over between assessments (St. Matthew blue king crab, Pribilof Islands golden king crab and Western Aleutian Islands red king crab) or were set in December (Norton Sound red king crab) are also included. Biomass values are in thousand metric tons (kt). Tier designations in this table are based on the projected stock status in 2024/2025. Chapters 1 – 6 are set in October and 8 – 10 are set in June, in the year according to the assessment frequency cycle (see current SAFE Introduction for assessment cycle). Chapter 7 was set in December (for 2025).**

Chapter	Stock	Tier	FOFL	BMSY or BMSYproxy	BMSY basis years[1]	2025/2026[2] MMB	2025/26 MMB / BMSY	Natural Mortality (M)	2025/26 OFL	2025/26 ABC	ABC Buffer
1	E. Bering Sea snow crab	3b	0.18	93.5	1982-2024	31.05	0.33	0.28	3.26	2.6	20%
2	Bristol Bay red king crab	3b	0.37	18.52	1984-2024	16.84	0.91	0.23	5.85	4.68	20%
3	E. Bering Sea Tanner crab	3a	1.47	43.22	1982-2024	75.96	1.76	0.23	51.02	40.81	20%
4	Pribilof Is. red king crab	4a	0.21	1.283	2000-2024	2.586	2.02	0.21	0.4899	0.3674	25%
5	Pribilof Is. blue king crab[3]	4c	0	4.15	1980/81-1984/85; 1990/91-1997/98	0.162	0.04	0.18	0.00116	0.00087	25%
6	St. Matthew blue king crab	4b	0.11	2.93	1978-2023	1.53	0.52	0.23	0.129	0.097	25%
7	Norton Sound red king crab	4a	0.18	1.96	1980-2025	2.15	1.10	0.18	0.284	0.199	30%
8	Aleutian Is. golden king crab [4]	3	0.52 (EAG), 0.39 (WAG)	11.264	1987-2021	10.48	0.93	0.22	3.166	2.374	25%
9	Pribilof Is. golden king crab[5]	5	-	-	-	-	-	-	0.114	0.085	25%
10	W. Aleutian Is. red king crab	5	-	-	-	-	-	-	0.056	0.014	75%

[1] For Tiers 3, 4 where BMSY proxy is estimable, the years refer to the time period over which the estimate is made. For Tier 5 stocks it is the years from which the catch average for OFL is estimated.
[2] MMB is estimated on 2/1/2025 for Norton Sound red king crab and on 2/15/2025 for all other Tier 1-4 stocks, using the current assessments.
[3] The FOFL of 0 for PIBKC is indicative of a closed directed fishery due to stock status per the crab FMP guidelines.
[4] AIGKC OFL and ABC are calculated by combining two separate assessment models for the EAG and WAG, as presented in the current assessment. Sub-tiers are set separately for each model and are detailed in the assessment document.
[5] PIGKC specifications are set on a calendar year basis.