Draft SSC Report
December 2022

C4 & C5 ESRs and JGPT Report
C4 BSAI Groundfish Harvest Specifications

SSC Administrative Discussion

- The SSC received administrative updates from Diana Evans (NPFMC)
- Ms. Evans noted the February 2023 SSC workshop
  - Flyer with guiding questions for written testimony
  - Written testimony can be submitted on workshop E-agenda until February meeting deadline

SSC General Comments

- The SSC ***recognizes*** the outstanding service of George Hunt
  - Served on SSC from 2001 – 2022
  - Greatly advanced system-level thinking about Alaska's marine ecosystems
  - Broad vision to the SSC critical for continued development of ecosystem-based fisheries management
  - Fostered camaraderie on the SSC
- The SSC is ***extremely grateful*** for his service

B2 Plan Team Nominations

- The SSC reviewed the nomination of Skylar Bayer to the Scallop plan team
- The SSC ***finds*** this nominee to be well qualified and ***recommends*** the Council approve their nomination.

General Stock Assessment Comments

Ecosystem and Socioeconomic Profiles

- The SSC reviewed the ESPs for EBS Pacific cod, GOA pollock and GOA Pacific cod.
- The SSC ***commends*** the analysts on effort to develop and improve the ESPs
- Indicators contextualize fisheries with
  - Scale (# vessels, # processors, level of landings and revenue)
  - Structure (harvest/processing tech, major product forms/markets)
  - Dependence (share of vessel/processing activity associated with fishery for substantially engaged or dependent communities)
- Factors only factor directly in ABC as far as they inform stock status and risk tables, but info also informs Council action as it indicates who will be affected by fishery policy change, changes in economic conditions/stock status

General Stock Assessment Comments

Ecosystem and Socioeconomic Profiles

- The SSC ***suggests*** the following suggestions for all ESPs:
  - Separate subsections for “Ecosystem” and “Socioeconomic” processes within Assessment section
  - Indicators should move to the main document as they mature
  - Only use traffic light for indicators that reflect performance and on which higher scores are “good”
  - Include an LK/TK statement, even if no known LK/TK information available
  - Consider how much predictive covariate analysis appropriate for dashboard or profile since not updated annually

Ecosystem Status Reports (1 of 3)

- In 2022, oceanographic conditions across much of the Alaska region returned to more ‘average’ conditions
  - Return to near-average temperatures
  - Sufficient prey (plankton & forage fish) to support groundfish growth
  - Most fish populations at or above average and in good body condition
  - Reproductive success of seabirds mostly higher than average
  - Outlook for continued cooler conditions

- Two regions remain of concern due to unusual conditions: the Western Aleutian Islands and the Northern Bering Sea

Ecosystem Status Reports (2 of 3)

- In the western Aleutian Islands unusually warm conditions persist, condition indices of groundfishes are low, Steller sea lions remain low, and other mammals and seabird populations are declining
  - Possible competition with increasing Kamchatka pink salmon and the recovering Pacific ocean perch stock
  - The ***SSC encourages*** research on mechanistic understanding
- A couple other highlights in Aleutians:
  - HABs still in evidence in eastern Aleutians (3x the legal limit)
  - School attendance dropping- impact on community stability and affect logistic support for processors

Ecosystem Status Reports (3 of 3)

- In the Northern Bering Sea, low forage availability, poor body condition of fish and seabird reproductive failures persist
  - Ongoing concern over weak returns of Chinook, chum and coho salmon to the Arctic/Yukon/Kuskokwim region, which use the northern Bering Sea as juveniles (smolts)
  - Some evidence to suggest that NBS may have been at carrying capacity for pelagic fish eaters in 2022

C4 BSAI & C5 GOA Groundfish Harvest Specifications

Overview

- BSAI - 17 full assessments; 5 partial assessments
- GOA - 10 full assessments; 7 partial assessments
- Alaska wide - 1 full assessment (sablefish)
- No assessments for:
    - BSAI Other flatfish, GOA Shortraker rockfish, GOA Other rockfish, GOA Atka Mackerel, GOA Octopus and GOA Skates
- **No stocks were subject to overfishing and, for Tier 1 - 3 stocks, none are overfished or approaching an overfished state**

General Groundfish Stock Assessment Comments

- For future Tier 1 – 3 assessments, the SSC ***recommends*** some consideration of how best to represent biomass in the Executive Summary table to clarify the relationship between biomass and OFL/ABC
- The SSC ***requests*** full documentation of the justification for weighting schemes for subarea processes in random effects modeling
- For assessments using VAST, the SSC requests a figure comparing VAST estimates for the previous and current assessment (if new data are added)

General Groundfish Stock Assessment Comments

- The SSC ***requests*** that the GPTs consider common methods among partial assessment projections for estimating catch through the end of the year
- The SSC ***reminds*** authors to bring forward and respond to SSC comments from previous assessments
- The SSC highlights that ad hoc adjustments to recruitment events are less than ideal and model-based approaches are preferred. Where this occurs, the SSC ***requests***:
  - Include a footnote in projection summary table that describes the adjustment
  - Include a figure showing how previous recruitment estimates have change or revised from past years with the addition of new data

C4 BSAI & C5 GOA Groundfish Harvest Specifications

Joint Plan Team Report

- The SSC received a report and presentation on a range of JGPT topics, most of which were informational.
- The SSC discussed the ongoing challenges of data availability, and adequate time for modeling, public comment and review.
- The SSC ***recommends*** further consideration of moving analyses and review to the spring and minimizing model changes in the fall, per it's recommendation at the February 2022 meeting.
- The SSC notes that it has not reviewed a full observer program report in several years and recommends that such a report is needed in order to better understand the performance of the previous year(s) before reviewing proposed changes and deployment plans for upcoming years.

C4 BSAI & C5 GOA Groundfish Harvest Specifications

Joint Plan Team Report

- The SSC expresses concern over staffing challenges in the AFSC age and growth program and highlights the critical importance of timely age information to the stock assessment process.
- SSC ***recommends*** that the PTs review previous risk scores, as well as GPT and SSC recommended reductions from maxABC across stocks, from previous years prior to beginning the process each year.

C4 BSAI & C5 GOA Groundfish Harvest Specifications

Joint Plan Team Report

- The SSC received a request from the JGPTs for two working groups focused on:

  1) Data limited /Tier 6 analyses

  2) Harvest control rules, ecosystem change and recruitment considerations

- The SSC recognizes that it is important to prioritize recommendations and consider the workload across both groundfish and crab
- The SSC ***suggests*** the proposed work on data limited stocks and Tier 6 analyses, but suggests this work may be conducted internally by the AFSC

C4 BSAI & C5 GOA Groundfish Harvest Specifications

Joint Plan Team Report

- The SSC identified additional relevant topics related to the application of harvest control rules, including:
  - Use of Tier 1 vs. Tier 3 calculations and appropriate ABC buffers
  - Interaction between recruitment variability and control rules
  - Effects of truncated age structure on control rule performance
  - Concepts that could relate to both control rules and TAC considerations, including maximum economic yield, catch stability, future value.
- The SSC ***recommends*** further scoping and prioritization of these topics following it's upcoming February workshop, which may help to focus on specific questions appropriate for a working group

C4 BSAI & C5 GOA Groundfish Harvest Specifications

Sablefish

- Update assessment; stock continues to increase following large recruitments in 2014, 206 and 2017-2019
- Spawning biomass projected to be at 52% in 2023
- Tier 3a
- The SSC ***recommends*** the author and PT's recommended model 21.12; no model changes were made for the 2022 assessment
  - Support adjusting ABC for whale depredation, no further reduction from the maximum ABC was recommended

C4 Groundfish Harvest Specifications

Sablefish

- The SSC ***recommends*** continuing with the 3rd step in the 4-year apportionment stairstep toward use of a 5-year moving average of biomass among regions
  - The SSC notes that this approach results in decreases in eastern region ABCs despite increases in the total ABC in 2023 and 2024
- The SSC ***recommends*** that the authors address recommendations from the 2021 assessment, and also:
  - additional analysis to support improved modelling of the rapid shift from longline to pot gear
  - consideration of state waters catch and other sources of mortality in the assessment
  - routine collection of data on escape ring use in pots

C4 Groundfish Harvest Specifications

Sablefish

- The SSC ***highlights*** there are statistical and economic analyses that could be relevant for the TAC setting process for sablefish (e.g., the relative value of catch stability versus variable catch, economic impacts of spatial apportionment, maximum sustainable yield vs. maximum economic yield reference points, economically optimal fish size/age considerations) if the Council wants analysts to consider these type of approaches

C4 BSAI Groundfish Harvest Specifications

EBS pollock

- Full assessment based on last year's model (20.0c) updated with new data
- The SSC ***concurs*** with author and BSAI GPT to use model 20.0c to determine the OFL
- 2023 projected spawning biomass above B_{MSY}, placing pollock in Tier 1a
- Risk level reduced from last year but considerable stock assessment concerns remain (level 2 in risk table)
  - unexpected magnitude of increase in estimated 2021 & 2022 biomass due to very high, but uncertain magnitude of 2018 year class

C4 BSAI Groundfish Harvest Specifications

EBS pollock

- Therefore, the SSC ***concurs*** with the author and Plan Team to use a Tier 3 calculation to reduce ABC from maximum ABC
  - The SSC ***does not support*** a further reduction from ABC (Table 1)
  - 2023/2024 OFL: 3,381,000 mt / 4,639,000 mt
  - OFL in agreement with BSAI GPT
  - 2023/2024 ABC: 1,910,000 mt / 2,275,00 mt
  - ABC not in agreement with BSAI GPT

C4 BSAI Groundfish Harvest Specifications

EBS pollock

- The SSC ***suggests*** that EBS pollock is a good candidate for considering the impacts of highly variable recruitment on reference points in the context of the Council's Harvest Control Rules
  - See SSC ***consideration*** of a working group on HCRs.
- The SSC ***highlights*** importance of further genetics work across walleye pollock stocks.

C4 BSAI Groundfish Harvest Specifications

Bogoslof pollock

- Full assessment with data updates, but no new survey since 2020
- The **SSC *supports*** the authors' and BSAI GPT's recommended Tier 5 estimates of the OFL and maxABC

Aleutian Islands pollock

- Full assessment with data updates, but no new survey since 2020
- The **SSC *supports*** the authors' and BSAI GPT's recommendation to continue using model 15.1 and the associated OFL and maxABC

C4 BSAI Groundfish Harvest Specifications

EBS Pacific Cod

- Full assessment (last full in 2021), comprised of an ensemble of four individual assessment models
- Current estimate of SSB is above $B_{35\%}$, but below $B_{40\%}$
- Tier 3b
- The SSC ***recommends*** current model ensemble (22.1, 22.2, 22.3, 22.4), consistent with author and PT recommendations
  - Ensemble addresses competing hypotheses about the time-varying nature of survey catchability, the shape of survey selectivity, and the incorporation of fishery-dependent CPUE
  - Ensemble provides stability in estimated stock trends and reference points

C4 BSAI Groundfish Harvest Specifications

EBS Pacific Cod

- The SSC ***supports*** the author and PT recommendation for no reduction from maxABC
- The SSC appreciates the authors' efforts to increase the transparency and readability of the SAFE chapter, and for providing all data and model files to facilitate easy review by the public
- The SSC ***recommends*** authors explore: (1) incorporation of fishery age compositions, linkages between time-varying survey catchability (M 22.1) and plausible environmental processes that may be regulating stock movement in space, (3) inclusion of empirical weight-at-length relationships

C4 BSAI Groundfish Harvest Specifications

EBS Pacific Cod

- The SSC continues to encourage the authors to work with the PT to define a process for how ensemble member weights will be reviewed and updated, given concern that the 5-year CIE review cycle may limit potential progress in development of model(s)
- Given recent evidence for Pacific cod movement in and out of the EBS+NBS regions and stock structure considerations, the SSC encourages collaboration with other Pacific cod assessment authors to explore the feasibility and utility of a more spatially comprehensive assessment model for Alaska that considers connectivity with the GOA

C4 BSAI Groundfish Harvest Specifications

AI Pacific Cod

- Full assessment (last full in 2021)
- Tier 5 random effects model (used since 2013), and two Tier 3 age-structured models presented (aggregated and separated fleets)
- Current estimate of SSB is above $B_{35\%}$, but below $B_{40\%}$
- Tier 5
- The SSC ***recommends*** the Tier 5 random effects model (13.4), consistent with author and PT recommendations
  - Strong positive retrospective pattern in both age structured models (22.0, 22.1), indicating overly-optimistic projections for increasing abundance
  - Consistent positive bias in fits to trawl survey index early in the timeseries

C4 BSAI Groundfish Harvest Specifications

AI Pacific Cod

- The SSC ***supports*** the author and PT recommendation for no reduction from maxABC
- The SSC is encouraged by the authors' progress in development of age-structured models for this stock, and suggests
  - If fleet disaggregated models are pursued in the future, consideration of dome-shaped selectivity for the HAL fleet
  - If fleet aggregated models are pursued in the future, exploration of time-varying fishery selectivity as an option for addressing the retrospective pattern and changes in gear use over time
  - Given the uncertainty in the AI BTS, consideration of age structured models that fit to the AFSC longline survey or IPHC survey data

C4 BSAI Groundfish Harvest Specifications

AI Pacific Cod

- The SSC ***supports*** the PT recommendation to consider a hybrid approach where natural mortality estimated by a Tier 3 model is used for Tier 5 harvest specification
- The SSC ***encourages*** the authors and PT to consider this stock for reduced assessment frequency

C4 BSAI Groundfish Harvest Specifications

Yellowfin sole

- Full assessment, total biomass increasing, but female spawning biomass continues a general decline since early 1990's
- However, female spawning biomass is 1.86 times Bmsy
- Tier 3a
- The SSC ***recommends*** Model 22.1 in agreement with author and PT with its associated OFL and ABC
  - no reduction from maxABC
  - Selected model includes VAST estimates and includes both EBS and NBS.

C4 BSAI Groundfish Harvest Specifications

Yellowfin sole

- The SSC ***recommends*** a more detailed examination of the role of including the NBS with and without VAST estimates.
- The SSC ***supports*** the GPT recommendation to continue examination of temperature (especially with the addition of NBS survey data) for model improvement and to improve understanding of climate change impacts
- The SSC ***recommends*** the examination of the large 2017 recruitment through a retrospective analysis.

C4 BSAI Groundfish Harvest Specifications

Greenland turbot

- Full assessment, total biomass spawning biomass and total biomass slight decline, recent recruitment low
- SSB above $B_{40\%}$;Tier 3a
- The SSC ***recommends*** Model 16.4 in agreement with authors and PT
  - Performs similarly to previous model
  - Uses ASFC longline data to estimate selectivity and all available data to model growth
- ***Agree*** with BSAI GPT on 2023 / 2024 OFL (4,645 mt / 3,947 mt)
- ***Disagree*** with BSAI GPT 2023 /2024 ABC (3,960 mt / 3,364 mt)
- SSC ***supports*** area apportionment for AI and EBS

C4 BSAI Groundfish Harvest Specifications

Greenland turbot

- The author and BSAI GPT recommended a 6% reduction from maxABC
  - below average recruitment
  - 6% reduction based on uncertainty in estimated length of maturity from sensitivity analysis
- The SSC ***recommends*** no reduction from maxABC
  - below average recruitment captured in assessment model
  - authors have been hesitant to use that sensitivity analysis to inform stock assessment model

C4 BSAI Groundfish Harvest Specifications

Greenland turbot

- The SSC ***supports*** authors' plans
  - update maturity curves as a priority through new data collection or comprehensive meta-analysis
  - Revisit trawl survey catchability and impact of selectivity curves
- The SSC ***supports*** PT's recommendations
  - revise interpolation method combining BS and AI longline survey RPNs
  - explore of killer whale depredation impact on longline survey abundance estimates
  - present newly available sex-structured length composition data from longline survey

C4 BSAI Groundfish Harvest Specifications

Arrowtooth flounder

- A full assessment
- There were no changes to assessment methodology
- The SSC ***supports*** Model 18.9
- Tier 3a
- The SSC ***supports*** authors' and BSAI GPT's OFL and ABC and no reduction from the maxABC
- SSC ***supports*** the author's proposed future work on selectivity, growth, age-length conversion matrices, and estimates of predation mortality.
- SSC looks forward to seeing a more detailed follow-up on parameterization of selectivity

C4 BSAI Groundfish Harvest Specifications

Kamchatka flounder

- Full assessment
- Small projected decrease in total biomass and spawning biomass
- Tier 3a
- The SSC ***recommends*** Model 16.0b in agreement with author and PT
- The SSC ***supports*** author and PT OFL and ABC, no reduction from max
- The SSC ***encourages*** examination of relationship between catchability and temperate/ cold pool extent
- The SSC ***supports*** authors' plans to
  - evaluate formal data weighting given fits to EBS shelf survey
  - incorporate aging error into assessment
  - explore age- and length-composition data between BS and AI subareas

C4 BSAI Groundfish Harvest Specifications

Northern rock sole

- Full assessment in 2022
- Survey index increased 25%
- The SSC ***recommends*** authors' and Plan Team selected model (18.3)
- Stock is managed under Tier 1a
- The SSC ***supports*** author and Plan Team OFL
- The SSC ***supports*** author and Plan Team recommendation to reduce ABC by 23% due to assessment uncertainty not accounted for in the assessment
    - Model has consistent pattern of overestimating recruitment in recent years, leading to positive retrospective pattern

C4 BSAI Groundfish Harvest Specifications

Northern rock sole

- The 23% reduction from maxABC based on alternative model (22.1) that incorporated data weighting methods to better fit the more recent survey data
- The SSC ***recommends*** that the authors continue to examine data weight tools to address overestimates of survey biomass in recent years

C4 BSAI Groundfish Harvest Specifications

Flathead sole

- Partial assessment (last full assessment in 2020)
- Biomass is stable with small increases projected in 2024
- Spawning stock biomass is more than 2 times $B_{35\%}$
- This stock is managed under Tier 3a.
- The SSC ***concurs*** with the author and team recommended OFL and maxABC

C4 BSAI Groundfish Harvest Specifications

Alaska plaice

- Partial assessment (last full assessment in 2021)
- Biomass is stable with small increases projected in 2024
- Spawning stock biomass is 1.5 times $B_{35\%}$
- This stock is managed under Tier 3a
- The SSC ***concurs*** with the author and team recommended OFL and maxABC

C4 BSAI Groundfish Harvest Specifications

Pacific Ocean Perch

- Full assessment (last full in 2020)
- Survey biomass continues to increase (AI 2022 survey), as seen in other recent surveys (2012 – 2018; no survey in 2020)
- 2023 spawning biomass above B40%, Tier 3a
- The SSC ***recommends*** Model 16.3 (2022), in agreement with authors and the BSAI GPT
- The SSC ***concurs*** with the recommended OFL and the use of maxABC, in agreement with the authors and BSAI GPT
- The SSC ***supports*** BSAI GPT recommendation to explore time-varying survey selectivity for the AI BTS

C4 BSAI Groundfish Harvest Specifications

Northern Rockfish

- Partial assessment, slight increasing trend in biomass estimates
- Tier 3a stock
- 2022 spawning stock biomass is roughly 2 times $B_{35\%}$
- The SSC ***recommends*** the presented ABC and OFL in agreement with the authors and plan team, with no reduction from maxABC
- The SSC ***supports*** the author in updating the aging error matrix and re-evaluating the stock structure template in the next full assessment

C4 BSAI Groundfish Harvest Specifications

Blackspotted/Rougheye Rockfish

- Full assessment (last full in 2020); Tier 3 in AI, Tier 5 for EBS
- Survey biomass increased or stable in all subareas
- The SSC ***recommends*** Model 20 (2022) for AI portion of stock, in agreement with authors and BSAI GPT
  - Allowing for time-varying fishery selectivity (alternative Model 22) did not alleviate long-standing issues
  - Poor survey biomass fit in recent years; strong, positive retrospective pattern
- Large and highly uncertain estimated 2010 year class increased the estimate of B40% significantly from 2020, which was deemed implausible given the population dynamics of this complex

C4 BSAI Groundfish Harvest Specifications

Blackspotted/Rougheye Rockfish

- For purposes of calculating B40%, 2010 recruitment estimate was reduced to the next largest year class value (2002), stabilizing this reference point
- Results place this complex in Tier 3b
- The SSC ***recommends*** a reduction from maxABC (12.8%), in agreement with the authors and BSAI GPT
  - Risk table - assessment considerations (3), population dynamics (2) and fishery performance (2)
  - Persistent positive retrospective pattern; poor fit to survey; need for tight priors on M and survey Q; model unable to account for decline in larger fish in fishery and survey compositions

C4 BSAI Groundfish Harvest Specifications

Blackspotted/Rougheye Rockfish

- Per October 2022 Council motion, the SSC re-evaluated whether a spatial management concern exists and if the magnitude of that concern has changed at this full assessment
- The SSC ***continues to register*** strong concern with the disproportionate harvest in excess of the subarea ABCs and the WAI MSSCs in recent years
- The SSC reiterates that the available life history information for BS/RE rockfish suggest that this complex may be especially vulnerable to localized depletion
- Multiple items were noted with regard to whether the concern level has changed
  - Updated genetic study; increasing survey biomass
  - Subarea ABC (WAI/CAI) and MSSCs (WAI) consistently exceeded; magnitude of overages increasing

C4 BSAI Groundfish Harvest Specifications

Blackspotted/Rougheye Rockfish

- Lengthy discussion of whether to recommend reconstitute spatial management working group or split the WAI/CAI subarea ABC into WAI and CAI components; did not recommend either at this time
- The SSC ***concurs*** with the author and BSAI GPT recommended ABC apportionments and ***continues*** to recommend use of MSSC as catch limit
- The SSC ***suggests*** that future applications of the spatial management policy should include clearly defined performance metrics to provide information on whether a particular tool is effective

C4 BSAI Groundfish Harvest Specifications

Blackspotted/Rougheye Rockfish

- Selected recommendations for assessment:
  - Author continue to provide opinion on spatial management concerns
  - Highlight importance of AI survey for 2010 year class estimation
  - Separate survey trends by species, as data allows
  - Untrawlable habitat research in GOA may inform future apportionment (long-term)
  - Spatially-explicit model (long-term; large time required of author)

C4 BSAI Groundfish Harvest Specifications

Shortraker Rockfish

- Full assessment; biennial cycle
- Managed in Tier 5
- The SSC ***recommends*** the use of Model 22, in agreement with authors and the BSAI GPT
  - New model incorporates the AFSC slope longline survey RPWs from the EBS slope and the multivariate version of the RE model
- The SSC ***concurs*** with the author and BSAI GPT recommended OFL and ABCs, with no reduction from maxABC
- The SSC ***recommends*** a re-evaluation of natural mortality for the next full assessment

C4 BSAI Groundfish Harvest Specifications

Other Rockfish

- Full assessment (last full in 2020),
- Biomass exhibits slight decrease in recent years but above long-term mean
- Tier 5, with shortspine thornyhead (SST) and non-SST rockfish species assessed separately due to different assumed M and combined for complex-level harvest specifications
- The SSC ***recommends*** Model 22, in agreement with authors and BSAI GPT
  - Bridged to REMA modeling framework
  - Includes NMFS longline survey data from the EBS slope for SST

C4 Groundfish Harvest Specifications

Other Rockfish

- The SSC ***concurs*** with the recommended ABC and OFL, with no reductions from maxABC
- The SSC ***recommends*** the stock author continue to closely monitor trends in the non-SST component of the stock complex in the AI and revisit the assumed M for non-SST rockfish in the next full assessment.

C4 Atka mackerel Harvest Specifications

Atka mackerel

- Full assessment
- SSC supports author and BSAI recommended Model 16.0b
- Tier 3a
- The SSC ***supports*** the authors' and CPT's recommendations of OFL and ABC, with no reduction maxABC
- The SSC ***supports*** ABC area apportionments.
- The SSC encourages continued development of the assessment including follow up on previous SSC recommendations

C4 BSAI Groundfish Harvest Specifications

BSAI Sharks

- New assessment format - single, streamlined document for the shark complex with separate OFLs and ABCs for the BSAI and GOA.
- The SSC ***concurs*** with the BSAI GPT to use status quo approach
  - SSC ***supports*** the BSAI GPT OFL (517 mt, max catch 2003-2015)
  - SSC ***acknowledges*** conservation concerns for Pacific sleeper shark
  - SSC ***supports*** BSAI GPT recommended 13% reduction from maxABC for Pacific sleeper shark component (ABC = 450 mt) using new method (ORCS model)
- The SSC ***supports*** efforts to consider alternative approaches for the shark complex and other data-limited stocks

C4 BSAI Groundfish Harvest Specifications

BSAI Octopus

- Partial assessment; biennial assessment with last full in 2020
- Tier 6 stock, managed using consumption model based on Pacific cod consumption
- The SSC ***accepts*** the author and BSAI GPT's recommended OFL and ABCs
  - Same since 2016 assessment
  - No reduction from maxABC
- The SSC ***supports*** the BSAI GPT recommendation to review the consumption model

C4 BSAI Groundfish Harvest Specifications

Skate Complex

- Partial assessment, biomass remains stable
- Complex comprised of Alaska Skate - Tier 3a stock and the remaining skate species – Tier 5, summed to complex-level
- For Tier 3 (Alaska skate), spawning stock biomass is just under 2x $B_{35\%}$
- The SSC ***recommends*** the ABC and OFL in agreement with the authors and plan team, with no reduction from maxABC
- The SSC ***recommends*** transitioning the RE model to the REMA framework and consider whether updating the stock structure template is warranted for the next full assessment