

**SCIENTIFIC AND STATISTICAL COMMITTEE
FINAL REPORT TO THE
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
March 31st – April 1st, 2025**

The SSC met from March 31st to April 1st 2025, remotely. Members present were:

Jason Gasper – Co-chair
NOAA Fisheries—AKRO

Ian Stewart – Co-Chair
Intl. Pacific Halibut Commission

Sherri Dressel, Co-Chair
Alaska Dept. of Fish and Game

Alison Whitman, Vice Chair
*Oregon Dept. of Fish and
Wildlife*

Chris Anderson
University of Washington

Jennifer Burns
Texas Tech University

Fabio Caltabellotta
*Washington Dept. of Fish and
Wildlife*

Curry Cunningham
University of Alaska Fairbanks

Martin Dorn
University of Washington

Mike Downs
Wislow Research

Robert Foy
NOAA Fisheries—AFSC

Dana Hanselman
NOAA Fisheries—AFSC

Kailin Kroetz
Arizona State University

Franz Mueter
University of Alaska Fairbanks

Andrew Munro
Alaska Dept. of Fish and Game

Chris Siddon
Alaska Dept. of Fish and Game

Patrick Sullivan
Cornell University

Robert Suryan
NOAA Fisheries—AFSC

Sarah Wise
NOAA Fisheries—AFSC

SSC members that were absent:

Brad Harris
Alaska Pacific University

SSC Administrative Discussion

The SSC received administrative updates from Diana Evans (NPFMC), including a brief update on the Council's B agenda items, an overview of minor changes to the SSC handbook, an update on planning for a potential workshop to support the Cook Inlet salmon assessments, and an update on agenda items for future SSC meetings.

SSC Handbook

Ms. Evans presented draft changes to the SSC handbook and received feedback from SSC members. An SSC member asked about the removal of the Economic SAFE reports from the Annual Cycle of Council Issues. Ms. Evans clarified that the table only summarized items for which scheduling was held constant from year to year and did not indicate that unlisted items would be cut from SSC review. Ms. Evans indicated that further discussions regarding the scheduling of review for the Economic SAFE would occur in June 2025. Two edits to the Annual Cycle of Council Issues were suggested: moving the Crab Modeling Workshop report from October to June and adding Groundfish Harvest Projections to the October meeting. An SSC member asked if there would continue to be an option for SSC workshops in February, given the additions to the handbook that specified there would be no meeting in February but that the SSC may have additional meetings or subgroup meetings in the summer. Ms. Evans clarified that SSC workshops or subgroup meetings were not constrained to summer and indicated that the handbook language would be clarified. Finally, an SSC member suggested that the handbook describe the current SSC practice of allowing public testifiers to state their name and affiliation outside of the five-minute testimony time limit.

SCS9 Proposed Themes

Diana Stram (NPFMC) provided a brief presentation on Science Coordination Subcommittee (SCS) national meetings. Dr. Stram shared the SCS8 proceedings, summarized outcomes of the SCS8 meeting, shared the NPFMC SSC plans stemming from SCS8 and the Climate Change Task Force final report, and welcomed ideas for potential overarching themes for SCS9 in 2026. The SSC suggested the following themes and requested that Dr. Stram work with SSC members by email after this meeting to choose two of those listed below to submit to the Gulf Council for consideration.

- How can survey data used for stock assessments be supplemented by non-survey data, such as local and traditional knowledge, fishery-dependent data, cooperative surveys, and other data types?
- How should the SSC and Council address dynamic and increased stock assessment uncertainty and management risks due to potential decreases in survey funding, changing data availability, and a rapidly changing marine environment?
- Recognizing the recent global and local economic challenges facing U.S. fisheries, how should economic data be collected and presented to most effectively support Regional Fishery Management Council decision-making?
- Given changes in distributions and abundance of species in a changing environment, under what circumstances should SSC's recommend changes in status (e.g., ecosystem component or target species), addition or removal of stocks from Fishery Management Plans (FMPs) (e.g. shifts of species distributions into or out of FMP areas), or other processes to address stocks unlikely to rebuild due to environmental change?

B4 AFSC Report

The SSC received presentations from Robert Foy (NOAA-AFSC) and Diana Stram (NPFMC) reviewing the existing AFSC organizational structure, current fishery resource and ecosystem surveys and their spatial coverage and frequency, and the current AFSC prioritization of surveys. The presentations also highlighted ongoing AFSC research to advance data collection and processing workflows to support both stock assessment and ecosystem research. The SSC received oral testimony from Brenden Raymond-Yakoubian and Lauren Divine (Kawerak, Inc. and Aleut Community of St. Paul), and written testimony from George Hunt (self).

The SSC highlights the expansive and important task with which AFSC is charged, in quantifying changes in both marine species and ecosystem processes across five Large Marine Ecosystems. **The SSC acknowledges the high degree of uncertainty in future federal funding and the loss of staff and expertise that has already occurred in 2025 and emphasizes that both will have substantive impacts on the information and data produced from the AFSC surveys that inform federal fisheries management in the North Pacific.** The SSC further notes that such staff reductions not only limit operational capacity in the short term but also risk eroding critical expertise that can be difficult to rebuild.

The presentation described the current AFSC rankings for surveys operating in the BSAI and GOA regions. Extensive SSC discussion surrounded the criteria used by AFSC to rank the priority of individual surveys. Dr. Foy highlighted that the criteria are complex, but at minimum include the history of each survey and its role in informing stock assessments and Council actions, specific Congressional mandates, survey coverage area, species diversity, ecosystem information collected, and the biomass and value of species indexed. **The SSC generally supports AFSC survey priorities and notes that there are a core set of surveys, including bottom trawl surveys in the EBS, GOA, and the AI, acoustic surveys in the EBS and Shelikof Strait, and the longline survey, that are essential to support the stock assessments that underpin sustainable fisheries management in the North Pacific.**

The SSC suggests that an approach that focuses on how data availability and quality can alter decisions that impact the benefits to the nation could be useful. Benefits, or value, can be considered in an economic, community, social, and ecological context - such as those related to vulnerable species and species of concern. A key aspect of such an approach is the comparison of benefits or values that can be obtained with better data to the benefits or values expected under the next best alternative. The SSC notes that while quantifying or monetizing the value of data provided by individual surveys is difficult given the full utility of data collected for current and future analyses is not always known, frameworks that focus on the value of data could be useful in qualitatively characterizing and communicating how improved (or reduced) data can impact tangible outcomes of interest to stakeholders and communities. There may be useful examples, such as the process used by NASA (VALUABLES Consortium; <https://www.rff.org/valuablestools-resources/>), to describe and communicate the value of data to non-technical audiences. **The SSC highlights that focusing on the value of data can and should include consideration of vulnerable species and species of concern in survey prioritization processes, and relying on the risk tables could be one way to identify which species are most dependent on specific data streams.**

Concerning the prioritization of AFSC data collection efforts, the SSC highlights that the most important data streams informing stock assessments will always include reliable catch information (including tracking prohibited species catch), accurate survey abundance indices obtained with actionable levels of precision, and the foundational age and length compositions necessary to describe variation in cohort strength. The relative priority of these three data streams for a particular species may differ based on their tier and life history. While electronic monitoring and autonomous systems have and will continue to play key roles in data acquisition, the collection of representative biological samples is crucial for understanding stock dynamics. These samples must be able to adequately track changes in average length and age. Particularly for species with episodic recruitment (e.g. sablefish, pollock), it is important to collect these data to understand the population dynamics by assessing the magnitude of important year classes and be able to track them over time.

The SSC also noted that in the context of a potential decrease in the availability of survey data there may be additional opportunities to utilize fishery-dependent data, local knowledge contributed by direct fishery participants, and other types of socioeconomic data, including data initially produced for other purposes, to augment Council decision-informing analyses.

During AFSC strategic planning on balancing survey frequency, spatial coverage, and sampling intensity, it is important to consider not only the accuracy and precision of resulting data products, but also how

increased uncertainty in survey abundance indices and compositional samples may impact stock assessments. Since this type of strategic planning will likely become more necessary, developing robust analytic tools to explore these tradeoffs is a priority. The SSC supports using Management Strategy Evaluation (MSE) to quantify how changes in survey design and frequency impact the reliability of stock assessment estimates. At the same time, the SSC also supports the use of simulations or subsampling of existing data to examine how survey changes influence standard output metrics such as the coefficients of variation on biomass indices, average length or age at maturity, and sex ratio. Quantifying changes in uncertainty metrics derived from raw survey data can allow insights that can complement the valuable more integrative methods. However, the SSC cautions that simulations are only informative for processes that are already well understood, and that recent rapid changes due to unexpected mortality events are important to detect and would not have been predicted by simulation or MSE analyses.

When considering the continuing efforts to prioritize surveys and the frequency at which they are prosecuted, the SSC notes that reduced frequency of sampling will always come at the cost of reduced ability to detect rapid changes in abundance. When considering sampling frequency within the Bering Sea region, the SSC recommends that AFSC staff consider the benefits that may be provided by synoptic sampling of the EBS, NBS and slope in the same year, given the ongoing and increasing movement of species between these regions. The SSC recommends that greater consideration be given to expanding the types of information that are collected during routine resource assessment surveys, for example, by increasing the capacity to collect ecosystem information during bottom trawl surveys. The SSC also recommends considering whether it is possible to combine surveys to meet multiple objectives, such as the collaboration of the EcoFOCI ichthyoplankton survey and the PMEL moorings survey.

The AFSC presentation highlighted an impressive diversity of new and ongoing research efforts including genomic research on stock structure and the use of environmental DNA to quantify species distribution and ecosystem change, efforts to advance genetic stock identification of prohibited species, and the use of FT-NIRS to improve efficiency in otolith aging workflows, among other initiatives. The SSC requested additional information on the recent Center for Independent Experts (CIE) review of the AFSC FT-NIRS aging methods and is pleased by the CIE's support for advancing the methods for production aging using FT-NIRS for feasible species. The SSC highlights the need to maintain expertise in traditional aging methods, to ensure validation sets of otoliths can be aged if there is potential for relationships between absorbance spectra and ages to shift over time, and retraining or updating of predictive models over time is required. Similarly, the SSC stressed that these research efforts are needed alongside, not instead of, core surveys in the GOA and BSAI (see [Council Research Priorities](#): Critical Ongoing Monitoring (e.g., surveys) are of the highest priority for the Council).

As one potential criterion to be used during survey prioritization, NPFMC staff presented a description of realized catch for BSAI and GOA species, relative to both TAC and ABC, for a range of years. Although these comparisons are possible within the species-specific tables included in the respective SAFE Introduction, the SSC recommends that the combined Catch/TAC and Catch/ABC percentages be presented by species in this combined format at the beginning of each SAFE Introduction, including as many years as is practicable.

C3 Initial Review of MRA Adjustments Analysis

The SSC received a presentation from Taylor Holman (NPFMC), Josh Keaton (NOAA-AKRO), and Jon McCracken (McCracken & Associates). Oral public comment was provided by Todd Loomis (self), Ruth Christiansen (Groundfish Forum), and Glenn Merrill (Glacier Fish Company and Northstar Fishing Company).

The SSC expresses its appreciation to the analysts for a comprehensive analysis of a large suite of adjustments to the Maximum Retainable Amount (MRA) regulations designed to reduce complexity and move incrementally closer to achieving optimum yield by reducing regulatory discards. The focus of the presentation on the rationale for existing, but no longer practicable, regulations was insightful. **The SSC finds this initial review analysis is sufficient to inform Council decision-making at final action, after some minor updates.**

The analysis considers the risk that changes to the MRA regulations may lead to increased mortality for MRA species, especially species representing important prey for Steller sea lions. Based on the information presented in the analysis, the SSC considered the likelihood for potential impacts to Steller sea lions was low and similar across the alternatives. While the SSC considered the information adequate for the Council to discern among alternatives, potential impacts could be better characterized. To the extent practicable, **the SSC recommends that the analysis be augmented with an evaluation of historical fishing patterns that have emerged from similar actions (e.g., offload-to-offload for BSAI pollock and BS Atka mackerel).** Information on how much fishing occurs in protected areas under the status quo, and how this might change under the alternatives should also be considered. The SSC also identified three areas where additional analysis would better support the conclusion that impacts would be weakly positive.

First, in the presentation the analysts offered several alternative interpretations of how proposed changes to the trip triggers for CPs and Motherships in alternatives 3 and 4 would interact with the minimum MRA on a trip rule in *50 CFR 679.20(e)(3)(ii)*. During the presentation, analysts presented several paths (A-D) that the Council could consider for future analysis. The analysts indicated that Path B was used for this analysis, thus the SSC did not review the other approaches. **The SSC recommends including clarification on the regulatory and analytical assumptions associated with Path B that is used in the analysis.** Council guidance on preferred interpretation among the paths considered during the presentation would help focus the analysis. The SSC notes that Path C represents current practice on a weekly basis and so is most straightforward to forecast impacts.

Second, the SSC recommends enhancing the fleet profiles in Section 3.4 to clarify how individual fleets and fishing communities are affected by MRA regulations and the proposed changes in the following way:

- To the extent possible, associate the information in the catch and discard tables with the fleet profiles themselves. Which MRA species is each fleet engaged with, and to what extent is there opportunity for increased retention or increased mortality within each fleet?
- Include fleet-based local knowledge, offered from several organizations in public testimony, to support qualitative descriptions of potential impacts and opportunities for behavioral change within each fleet.
- To the extent possible, characterize how fleets may be associated with particular communities or subfleets that may be identified by vessel size, gear or home port, to allow for a summary consideration of the potential differential distribution of impacts, if any, across the fishing communities engaged in or dependent upon the affected fisheries.

Third, the SSC finds the analysis of Alternative 5, emergency exemptions, could be greatly improved with additional clarification. The SSC understands the NOAA Office of Law Enforcement (OLE) needing to maintain discretion. However, the purpose of the alternative is to provide clarity to OLE for adjudication and to vessel operators for making safety-motivated decisions in cases of medical, mechanical or weather emergencies. **The SSC recommends further evaluation of this Alternative to provide clarification on how the exceptions would be enforced compared with status quo and to assess both the benefits to safety and risks of potentially higher misuse of emergency declarations by vessels.**

D4 Survey Modernization

The SSC received a presentation from Stan Kotwicki, Lewis Barnett, Sean Rohan, Shawn Russell, Nicole Charriere, and Paul Spencer (NOAA-AFSC) on the progress of the survey modernization project for the BSAI. Chris Lunsford (NOAA-AFSC) also presented an update on the changes to the longline survey. Oral public testimony was given by Cory Lescher (Alaska Bering Sea Crabbers), Sarah Webster (Alaska Seafood Cooperative and Groundfish Forum) and Jim Armstrong (Freezer Longline Coalition).

The SSC fully supports transitioning the Bering Sea trawl survey from the current fixed grid systematic sampling design to one that allows for optimized survey station allocations, variable survey station density over geographic areas, changes in the number of survey stations over time, and design-unbiased estimation, which is likely to be a stratified random sampling design. The SSC also supports reducing tow duration from 30 to 15 minutes and modernizing survey trawl gear to be more efficient and cost effective. The SSC acknowledges the magnitude of these changes and understands that this transition will pose challenges to stock assessments and management decisions in the coming years. However, the SSC also recognizes the long-term benefits that these improvements can provide. Once these methodological changes are implemented, maintaining consistency over the next several decades will be essential. The SSC commends AFSC staff for their research and development to date, appreciates the update, and welcomes the opportunity to provide recommendations for potential improvements during its ongoing development. To that end, the SSC provided constructive feedback on a number of topics as requested by the AFSC modernization “team”.

The SSC is supportive of increasing the spatial extent of the “standard” trawl survey area to include the EBS, the NBS, and portions of the slope as one comprehensive survey, especially in light of the northward movement of some stocks into the NBS in warmer years. Additionally, the loss of the slope survey and the importance of data to assess population trends for slope associated species (e.g., rockfishes) makes including the slope area, including the middle slope depths of 400 to 600m (Greenland turbot, Kamchatka flounder), a reasonable priority. However, without knowing the associated costs, the SSC cannot assess the overall priority of this sampling. The SSC recognizes that the increased time and effort for deep water tows could potentially reduce sample sizes in other strata and limit the collection of ecosystem information. Therefore, the SSC suggests that the slope areas be included in future analyses to assess these trade-offs.

The SSC recognizes the complexity of considering multiple interrelated topics that require tradeoffs to be carefully considered. While the SSC generally agrees that optimizing the allocation of tows to maintain or achieve a given level of precision (i.e. CVs) across important species is a good approach, the SSC suggests that achieving acceptable CVs for stocks with known conservation concerns, or stocks that are close to management thresholds, should also be considered when allocating survey effort. Given logistical constraints on the total number of stations that can realistically be sampled, the SSC suggests that conditioning on a given sampling effort may be a more useful starting point for optimizing the allocation of stations, while considering a variety of criteria (e.g., conservation concerns, management thresholds, choke species) to balance precision goals across species. Additionally, during the B4 AFSC Report presentation, Dr. Foy emphasized the importance of having a “balanced portfolio” among assessment and ecosystem data collections. While the number of survey stations directly influences the time allocated for ecosystem data collection, so will the reduction of tow duration.

When considering strata layout and effort allocation among strata, the SSC recommends considering poststratification as a way to adapt the original stratified design for individual species. This would be one way to adapt the design for species with different management boundaries (e.g. crab) or species with changing distributions over time, while utilizing a design-unbiased estimator. It may be necessary to decrease the number of planned survey strata and increase the number of stations per survey strata to

optimize allocation with respect to both stratification in the original survey design and post-stratification for individual species during analysis. The SSC recommends focusing on survey designs that provide optimal allocation for the most species (e.g., stratification by depth), but considering fewer strata, and post-stratifying to account for management boundaries, recognizing that some management boundaries may change in the future.

Although reducing the tow duration by 50% (from 30 to 15 minutes) should increase efficiencies, vessel transit times among stations will only allow for a small “savings” in time to either add additional sampling stations to meet allocation criteria, or to add ecosystem sampling. If additional stations can be sampled, the reduction in tow duration may improve overall estimates of size or age-compositions by reducing the non-independence of catch during long tows, a well-known result in the literature and as done in the GOA and AI bottom trawl surveys. Currently, there is no good estimate of the number of total survey stations that could be added under the new methodology. The increased spatial extent, allocation scheme, and final strata layout will all influence the total number of possible stations that can be sampled in a given year. The reduction in effort of processing larger catches could lead to being able to conduct additional collections in each tow (e.g., eDNA or oceanography).

The SSC had a lively discussion on the timeline for implementing the reduction in tow duration and gear modifications. The AFSC modernization team described a phased approach to help understand incremental changes. A number of SSC members suggested that a condensed timeline where the survey changes are implemented all at once may be beneficial as it would likely provide a larger effect (instead of multiple small ones) and that it may not be necessary to fully understand the effects of incremental or individual changes to estimate the overall effects of the new survey on estimates of critical quantities and their uncertainty. This condensed timeline could also reduce the number of years needed for transition or may allow needed research for additional years prior to the transition. The SSC noted that changing tow duration separately from gear and design changes could create the need for multiple calibration factors to get from the current survey methods to the fully updated approach. In this regard, the SSC had a general recommendation to examine other documented examples of survey design changes, such as changes in the AIGKC assessment due to the crab rationalization program and the change in vessels from the R/V Freeman to the NOAA vessel Oscar Dyson in 2005-2007, and examples from the NWFSC and NEFSC.

The SSC had extensive discussion regarding moving from 30 to 15-minute tows, including full parallel surveys, extensive paired tows and the ‘phased in’ approach as recommended as most feasible by the analysts. Although recognizing that making the transition to shorter tows will allow for more effort to be dedicated to other aspects of the survey gear and design calibration, the SSC was concerned that the change in tow duration may have larger effects than anticipated for both catchability and selectivity. The SSC was also concerned that without further calibration via paired tows, the spatial variability associated with introducing increasing proportions of shorter tows over a period of years may result in low power to detect potential differences in size and species-specific catch rates. The SSC recommended analysis of existing calibration data for tow duration and consideration of further paired experiments instead of randomly allocated shorter tows.

The SSC supports and encourages the AFSC modernization team to continue working with stakeholders and relevant experts when designing the new gear and consulting with local communities and stakeholders in developing the new survey design. Consistent with public testimony, the SSC also encourages the AFSC to explore other opportunities for innovative collaborations, such as cooperative surveys (e.g., AIGKC, GOA untrawlable habitat) or using fishing vessels as platforms for obtaining biological samples, particularly when funds are constrained.

The SSC also received an update on efforts to reconfigure the longline survey. This overview highlighted changes in the number of contract days for 2025 and 2026, small changes in the core abundance index areas,

dropping experimental and gully stations, and evaluating changing the survey to alternate years between the BSAI and GOA (rather than doing the BS and AI in alternating years and the GOA annually). The SSC appreciated the presentation and looks forward to further updates in September 2025, in particular how information from alternate year partial surveys of the sablefish stock would be used in the stock assessment. The SSC highlights that in the absence of the EBS slope bottom trawl survey and given the loss of the deeper strata within the GOA bottom trawl survey, the longline survey represents the only survey indexing species with deeper distributions within both regions.

The SSC reiterates its gratitude to all the AFSC staff working on this large, complicated, and exceptionally important project. The SSC looks forward to future updates and the opportunity to provide additional feedback as plans for survey changes develop.

SSC Member Associations

At the beginning of each meeting, members of the SSC publicly acknowledge any direct associations with SSC agenda items. If an SSC member has a financial conflict of interest (defined in the 2003 Policy of the National Academies and discussed in Section 3) with an SSC agenda item, the member should recuse themselves from participating in SSC discussions on that subject, and such recusal should be documented in the SSC report. In cases where an SSC member is an author or coauthor of a report considered by the SSC, that individual should recuse themselves from discussion about SSC recommendations on that agenda item. However, that SSC member may provide clarifications about the report to the SSC as necessary. If, on the other hand, a report is prepared by individuals under the immediate line of supervision by an SSC member, then that member should recuse themselves from leading the SSC recommendations for that agenda item, though they may otherwise participate fully in the SSC discussion after disclosing their associations with the authors. The SSC notes that there are no financial conflicts of interest between any SSC members and items on this meeting's agenda.

At this April 2025 meeting, a number of SSC members acknowledged associations with specific agenda items under SSC review. Robert Foy is the third or greater level supervisor for Chris Lunsford, Stan Kotwicki and the AFSC project leads and EBS Modernization Steering Committee (D4 Survey Modernization). Dana Hanselman is the first level supervisor of Chris Lunsford (D4 Survey Modernization) and Dr. Foy is his second-level supervisor (B4 AFSC Report).