CIE Review of the Alaska-wide Sablefish Stock Assessment

Performance Work Statement (PWS)
National Oceanic and Atmospheric Administration (NOAA)
NOAA Fisheries
Center for Independent Experts (CIE) Program
External Independent Peer Review

June 16 - 18, 2026

Background

NOAA Fisheries is mandated by the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, and Marine Mammal Protection Act to conserve, protect, and manage our nation's marine living resources based upon the best scientific information available (BSIA). NOAA Fisheries science products, including scientific advice, are often controversial and may require timely scientific peer reviews that are strictly independent of all outside influences. A formal external process for independent expert reviews of the agency's scientific products and programs ensures their credibility. Therefore, external scientific peer reviews have been and continue to be essential to strengthening scientific quality assurance for fishery conservation and management actions.

Scientific peer review is defined as the organized review process where one or more qualified experts review scientific information to ensure quality and credibility. These expert(s) must conduct their peer review impartially, objectively, and without conflicts of interest. Each reviewer must also be independent from the development of the science, without influence from any position that the agency or constituent groups may have. Furthermore, the Office of Management and Budget (OMB), authorized by the Information Quality Act, requires all federal agencies to conduct peer reviews of highly influential and controversial science before dissemination, and that peer reviewers must be deemed qualified based on the OMB Peer Review Bulletin standards[1].

Sablefish (*Anoplopoma fimbria*) are a long-lived (90+ years), highly mobile, sexually dimorphic demersal species that live at depths greater than 200m, and which demonstrate highly spasmodic and cyclic recruitment events. In Alaska Federal waters, sablefish are assessed and managed as a single population with the total quota apportioned across 6 management regions (Aleutian Islands, Bering Sea, Western Gulf of Alaska, Central Gulf of Alaska, Western Yakutat, and Southeast Outside) and among two fishing sectors (i.e., fixed gear and trawl gear). Since rationalization (i.e., implementation of individual fishing quotas, IFQs) occurred in the 1990s, sablefish have been one of the most valuable finfish resources in Alaska ($124 million in ex-vessel value in 2022). Catch advice for sablefish is based on a statistical catch-at-age integrated stock assessment model fit to fishery-independent survey data and fishery-dependent catch-age data, which is implemented using the RTMB programming language and the SPoRC (Stochastic Population Over Regional Components) assessment package. The sablefish assessment is

[1] https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/memoranda/2005/m05-03.pdf

reviewed annually by the North Pacific Fishery Management Council's (NPFMC) Science and Statistical Committee (SSC) as part of the quota specification process, and last underwent a CIE review in 2016.

Scope

Within the yearly NPFMC assessment cycle, any sablefish assessment model changes from the previously approved model must be reviewed and approved at the September groundfish Joint Plan Team (JPT) and subsequent October SSC meeting. Final model review and acceptance then occur during the November JPT and December SSC meetings when sablefish catch advice for the following two years is produced. Recommendations for model updates as provided by the JPT and SSC are addressed during the year, as time permits. In addition to these yearly review cycles, Alaska Fisheries Science Center (AFSC) stock assessment products undergo periodic external, independent review through the CIE process, typically on a ~5-year cycle for high profile assessments. Despite a ten-year gap between CIE reviews, improvements to the sablefish stock assessment model have still been made annually with yearly review by the NPFMC scientific review bodies.

Since the last CIE review (i.e., in 2016), major changes have occurred in the sablefish resource, fishery, longline survey, and assessment model. Specifically, a series of extreme, above average recruitment events has led to rapid rebuilding of the resource, leading to increasing quotas. Resultant landings of predominantly small, lower value fish have led to market saturation, strong reductions in landed value, and exploration of management options that loosen full retention requirements. Concomitantly, the primary directed fixed gear fleet has undergone rapid gear changes, where a predominantly hook-and-line fishery has transitioned to a longline pot fishery since 2017 (i.e., >85% of sablefish catch in the fixed gear fishery is now taken by pot gear), which has helped to reduce whale depredation.

Additionally, the fishery-independent, cooperative research-based NOAA longline survey, which targets sablefish and serves as the primary index of abundance for the assessment, underwent major survey design changes starting in 2025. Because the survey has traditionally used a cost-recovery approach, whereby survey catch is sold by the fishing company that owns the vessel performing the survey, the decline in sablefish markets prevented the survey from being undertaken in 2024 for the first time in its 30+ year history. Historically, the fixed station survey has sampled the entire Gulf of Alaska (GOA) annually, as well as either the Bering Sea (BS, odd years) or Aleutian Islands (AI, even years). Starting in 2025 a new survey design was enacted to reduce overhead and ensure a fishing company would accept the survey contract, wherein the Gulf of Alaska is now surveyed in odd years (starting in 2025), and the BS and AI are surveyed in even years (starting in 2026). Although the new survey design ensures the ability to continue the longline survey, it results in only ~50% of total stock abundance being surveyed in a given year. Moreover, it raises important challenges for the panmictic assessment in terms of how to integrate survey data that only partially samples the population being assessed.

Given the rapid changes in the resource, fishery, and data inputs along with concomitant changes in the computer programming and computing power, there have subsequently also been major

changes to the assessment model since the last CIE review. Most importantly, a new R-TMB based software, SPoRC, has been adopted, which replaces the previous Automatic Differentiation Model Builder (ADMB) based assessment model. Additionally, a number of research-oriented assessment models have been developed exploring alternative spatial structures (e.g., spatially-explicit 3 and 5 region models that estimate movement among regions, as well as a spatially-implicit single region fleets-as-areas, FAA, model), all of which demonstrate promise for dealing with spatial complexities and data gaps that are not well resolved in the existing single region panmictic assessment.

Therefore, the goals of this review process are to:

1. Ensure that the proposed stock assessment represents an appropriate interpretation of the scientific information available for use in management by the North Pacific Fishery Management Council;
2. Provide an independent external review of this stock assessment that meets the mandates of the Magnuson-Stevens Fisheries Conservation and Management Reauthorization Act (MSRA) and other legal requirements;
3. Understand and identify appropriate model structure and fits to key data sources (indices, landings, and age compositions), particularly whether the proposed FAA model provides a more robust basis for management advice compared to the current single region panmictic model;
4. Identify research needed to improve the assessment and advice for fishery managers, particularly regarding spatial dynamics.

The specified format and contents of the individual peer review report are found in **Annex 1**. The Terms of Reference (ToRs) of the peer review are included in **Annex 2**. The tentative agenda of this in-person panel review meeting is included in **Annex 3**.

Requirements

NOAA Fisheries requires 3 reviewers to conduct an impartial and independent peer review in accordance with this Performance Work Statement (PWS), OMB Guidelines, and the ToRs below. Modifications to this Performance Work Statement (PWS) and ToRs cannot be made during the peer review, and the Contracting Officer's Representative (COR) and the CIE contractor shall approve any modifications prior to the peer review. All ToRs must be addressed in each reviewer's report.

The CIE reviewers should have expertise in statistical sex- and age-structured integrated stock assessment models. In particular, experience developing spatially explicit and spatially implicit (i.e., fleets-as-areas) assessment models is imperative. Moreover, understanding of stock assessment good practices, such as for parametrizing selectivity and data weighting, are required. Working knowledge of the RTMB programming language, a basic understanding of management strategy evaluation (MSE), and a background in survey design and/or the use of fishery-independent survey data in stock assessments would all be beneficial.

The chair for this meeting, who is in addition to the CIE reviewer, will not be provided by the CIE. Although the chair will be participating in this review, the chair's participation (e.g., labor and travel) is not covered by this contract.

Tasks for Reviewers

The CIE reviewer shall complete the following tasks in accordance with the PWS and Schedule of Milestones and Deliverables herein.

Pre-review Background Documents: A minimum of two weeks before the peer review, the NOAA Fisheries Project Contact will send (by electronic mail or make available at an FTP site/GitHub Repository) to the CIE reviewers the necessary background information and reports for the peer review. In the case where the documents need to be mailed, the NOAA Fisheries Project Contact will consult with the CIE on where to send documents. The CIE reviewers are responsible only for the pre-review documents that are delivered to the reviewer in accordance with the PWS scheduled deadlines specified herein. The CIE reviewers shall read all documents in preparation for the peer review.

Documents for review (available from the public sablefish CIE GitHub repository, as they become available) include:

1. The 2024 Alaskan sablefish Stock Assessment and Fishery Evaluation (SAFE) report (Goethel and Cheng, 2024) and presentation;
2. The 2024 December SSC (p. 14-16) and November Joint Plan Team (p. 2-3) reports;
3. The 2025 Alaskan sablefish stock assessment proposed model changes report (Goethel and Cheng, 2025) produced for the September 2025 Joint Plan Team meeting, presentation, and GitHub repository;
4. The spatial sablefish model publication and model updates (Cheng et al., 2025a) for the September 2025 Joint Plan Team meeting;
5. The 2025 AFSC Longline Survey Cruise Report (Siwicke et al., 2026) and presentation;
6. The 2025 October SSC (pp. 21-23) and September Joint Plan Team (p. 5-6) reports;
7. The SPoRC assessment platform publication (Cheng et al., 2026) and GitHub documentation;
8. Research papers on integrating density-dependent growth (Cheng et al., 2025b) and a pot gear fleet (Cheng et al., 2024a) into the sablefish assessment, simulation studies on selectivity (Cheng et al., 2024b) and sex-specific parametrization (Cheng et al., 2025c) for the sablefish assessment, and considerations for fitting sex-specific composition data (Cheng et al., 2025d) in stock assessments;
9. A summary document of proposed changes to the model for the CIE review, including the full model description and results of the fleets-as-areas proposed model, as well as summary results for all sensitivity model runs;

10. A document summarizing the results of the spatially explicit simulation experiment and MSE;
11. Additional supporting documents and presentations as they become available;
12. Outputs of all analyses used as part of the CIE review, including input data, simulation outputs, final proposed assessment models, and all sensitivity assessment models, as made available on the sablefish CIE GitHub repository.

Panel Review Meeting: The CIE reviewers shall conduct the independent peer review in accordance with the PWS and ToRs and shall not serve in any other role unless specified herein. The CIE reviewers shall actively participate in a professional and respectful manner as members of the meeting review panel, and their peer review tasks shall be focused on the ToRs as specified herein. The NOAA Fisheries Project Contact is responsible for any meeting arrangements (e.g., conference room reservations, video conferencing logistics, etc.).

Contract Deliverables - Independent CIE Peer Review Report: Each CIE reviewer shall complete an independent peer review report in accordance with this PWS. Reviewers are not required to reach a consensus, and a summary report *will not* be produced. Each CIE reviewer shall complete their independent peer review according to the required format and content as described in **Annex 1**. Each CIE reviewer shall complete the independent peer review addressing each ToR as described in **Annex 2**. The tentative agenda of the panel review meeting is in **Annex 3**. Each CIE reviewer will deliver their reports according to the specified milestone dates.

Foreign National Security Clearance

When reviewers participate during a panel review meeting at a government facility, the NOAA Fisheries Project Contact is responsible for obtaining the Foreign National Security Clearance approval for reviewers who are non-US citizens. For this reason, the reviewers shall provide requested information (e.g., first and last name, contact information, gender, birth date, passport number, country of passport, travel dates, country of citizenship, country of current residence, and home country) to the Project Contact for the purpose of their security clearance, and this information shall be submitted at least two weeks in advance. For additional information, please see the following link: https://www.commerce.gov/osy/programs/foreign-access-management. All CIE reviewers must have a REAL ID-compliant form of identification to access Federally owned or leased facilities. The contractor is required to use all appropriate methods to safeguard Personally Identifiable Information (PII).

Place of Performance

The place of performance shall be Juneau, AK.

Period of Performance

The period of performance shall be from the time of award through July 2026. The CIE reviewers' duties shall not exceed **14** days to complete all required tasks.

Schedule of Milestones and Deliverables

The contractor shall complete the tasks and deliverables in accordance with the following schedule:

Within two weeks of award	Contractor secures participation of the CIE reviewers.
At least two weeks prior to the panel review meeting	Pre-review documents are provided to the reviewers.
June 16 - 18, 2026	The reviewers participate and conduct an independent peer review during the panel review meeting.
Approximately 2 weeks later	Contractor receives draft reports.
Within 3 weeks of receiving draft reports	Contractor submits final reports to the US Government.

Applicable Performance Standards
The acceptance of the contract deliverables shall be based on three performance standards: (1) The reports shall be completed in accordance with the required formatting and content in **Annex 1**; (2) The reports shall address each ToR as specified **Annex 2**; and (3) The reports shall be delivered as specified in the schedule of milestones and deliverables.

Travel
All travel expenses shall be reimbursable in accordance with Federal Travel Regulations (Travel resources | GSA), and all contractor travel must be approved by the COR prior to the actual travel. Any travel conducted prior to the receipt of proper written authorization from the COR will be done at the Contractor's own risk and expense. International travel is authorized for this contract. Travel is not to exceed $13,000.00.

Confidentiality and Data Privacy
This contract may require that services contractors have access to Privacy Information. Services contractors are responsible for maintaining the confidentiality of all subjects and materials and may be required to sign and adhere to a Non-disclosure Agreement (NDA).

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Annex 1: Peer Review Report Requirements

1. The CIE independent report shall be prefaced with an Executive Summary providing a concise summary of the findings and recommendations as specified in the ToR and specify whether the science reviewed is the best scientific information available.

2. The main body of the reviewer report shall consist of the following sections: Background; Description of the Individual Reviewer's Role in the Review Activities; Summary of Findings for each ToR in which the weaknesses and strengths are described; and Conclusions and Recommendations in accordance with the ToRs.

    a. Each reviewer should describe in their own words the review activities completed during the panel review meeting, including providing a brief summary of findings as well as the science, conclusions, and recommendations.

    b. Each reviewer should discuss their independent views on each ToR even if these were consistent with those of other panelists, and especially where there were divergent views.

    c. Each reviewer should elaborate on any points that they feel might require further clarification.

    d. Each independent CIE report shall be a stand-alone document through which others can understand the weaknesses and strengths of the science reviewed and shall be an independent peer review of each ToRs.

3. The reviewer report shall include the following appendices:

    Appendix 1: Bibliography of materials provided for review.
    Appendix 2: A copy of the CIE Performance Work Statement.
    Appendix 3: Panel Membership or other pertinent information from the panel review meeting.

Annex 2: Terms of Reference (ToRs) for the Peer Review

Review of the Alaska-wide Sablefish Assessment

CIE reviewers are contracted to complete their independent peer review based on the ToRs. Therefore, the CIE-NOAA Fisheries review and approval process is based on whether the CIE independent reports addressed each of the ToRs.

1) Review the disseminated documents and analyses and provide recommendations on which proposed assessment model provides the most suitable basis for operational management advice:
   i) Model *26.1_Pan_2_Flts* (current single region panmictic assessment);
   ii) Model *26.2_FAA* (proposed fleets-as-areas spatially implicit assessment).

   b) What are the tradeoffs in using the FAA model for dealing with ontogenetic movement patterns and recent survey design changes compared to the current single region panmictic assessment?
      i) Provide recommendations on the most appropriate parametrization of fleet structure (number of fleets per fishery/survey, as a proxy for regions) and selectivity (asymptotic vs. domed, to address availability by region) in the FAA model.

2) Highlight potential strengths and weaknesses of the proposed assessments, including model assumptions, estimates, fits to data (survey indices and age compositions along with fishery catch-at-age data), model diagnostics, and major sources of uncertainty.
   a) Provide feedback on which model provides the best scientific information available for estimating current stock status, projecting future abundance, and determining Overfishing Levels (OFLs) and Acceptable Biological Catches (ABCs).
   b) Provide feedback on whether further model complexity (i.e., time-varying selectivity and/or growth) is warranted given model complexity/parsimony/sample size tradeoffs, particularly in the context of a highly parametrized sex-specific FAA model (if recommended). Are time-block approaches sufficient to address potentially time-varying processes?

3) Provide advice on the primary limitations/uncertainties for using a spatial model as the basis of sablefish management in the future, as well as research recommendations for improving the spatial models.
   a) Do the results of the research-oriented spatially explicit model that estimates movement and integrates tagging data provide any further insight for parametrizing a single region assessment?

Reviewers must provide details for the basis of their responses to the review ToRs.

Annex 3: *Tentative* Agenda for the CIE Review of the Alaska-wide Sablefish Assessment

North Pacific Fishery Management Council
NOAA Alaska Fisheries Science Center, Auke Bay Laboratories
17109 Pt. Lena Loop Road
Juneau, AK 99801

June 16-18, 2026

Contact: Chris Lunsford (Chris.Lunsford@noaa.gov)

Schedule

(this agenda is *DRAFT* and subject to change)

All times below are Alaska Daylight Time
Daily breaks at ~10:30 and ~15:30, Lunch 12:30-14:00
Tuesday-Thursday, 09:00 – 17:00 AKDT

Tuesday, June 16, 2026

A. Welcome and Introductions

09:00 — 09:15: Welcoming Remarks, Introductions, Logistics — Chris Lunsford
09:15 — 09:30: Roll Call, Announcements, Agenda/ToRs — Chair

B. Sablefish Biology, Fishery, and Data Inputs (ToR 1)

09:30 — 10:00: Biology, Spatial Dynamics — Daniel Goethel
10:00 — 10:30: Fishery Development and Data — TBD

10:30 — 10:50: *BREAK*

10:50 — 11:30: Longline Survey History, Design, Recent Changes — Kevin Siwicke
11:30 — 12:30: Assessment History, Inputs, and Other Available Data — Daniel Goethel

12:30 — 14:00: *LUNCH BREAK*

C. Current Assessment Model (ToR 1)

14:00 — 14:30: Introduction to the SPoRC Assessment Package — Matt Cheng
14:30 — 15:30: Current Single Region Assessment Configuration/Outputs — Daniel Goethel

15:30 — 15:50: *BREAK*

15:50 — 17:00: Discussion

Wednesday, June 17, 2026

A. Reconvene

09:00 — 09:15: Announcements, Agenda/ToRs — Chair

B. Spatially Explicit and Spatially Implicit (Fleets-as-Areas) Models (ToRs 1/3)

09:15 — 10:00: Spatial Model Configuration/Outputs — Matt Cheng
10:00 — 10:30: Fleets-as-Areas Assessment Background/Need — Daniel Goethel

10:30 — 10:50: *BREAK*

10:50 — 12:00: Results of Spatial Simulations to Optimize FAA Structure — Matt Cheng
12:00 — 12:30: Final Fleets-as-Areas Assessment Configuration — Daniel Goethel

12:30 — 14:00: *LUNCH BREAK*

C. Comparing Assessment Performance and Diagnostics (ToR 1/3)

14:00 — 15:30: Comparison of Outputs from FAA and Panmictic Model — Daniel Goethel

15:30 — 15:50: BREAK

15:50 — 16:30: Results of a Spatial Management Strategy Evaluation (MSE) — Matt Cheng
16:30 — 17:00: Discussion

Thursday, June 18, 2026

A. Reconvene

09:00 — 09:15: Announcements, Agenda/ToRs — Chair

B. Comparing Assessment Performance and Diagnostics (ToR 1/3)

09:15 — 9:45: Summarize Day 2 Results (Sims, MSE, Assessment Outputs) — Daniel Goethel
09:45 — 10:30: Discussion (Continued)

10:30 — 10:50: *BREAK*

C. Explorations of Model Complexity (ToR 2)

10:50 — 12:00: Sensitivity Model Runs for Selectivity and Growth — Matt Cheng
12:00 — 12:30: Discussion

12:30 — 14:00: *LUNCH BREAK*

D. Projections and Apportionment (ToR 2)

14:00 — 14:30: Sablefish Management/NPFMC FMP Requirements — Sara Cleaver
14:30 — 15:30: Projection Methodology and Apportionment Strategy — Daniel Goethel

15:30 — 15:50: BREAK

15:50 — 17:00: Discussion and Report Writing

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