NPFMC climate-related scientific initiatives and outcomes of SCS8 discussions

D2 SSC October 2024

Diana Stram Council staff

Recent NPFMC climate-related activities

NPFMC

- BS FEP Climate Change Task Force (CCTF)
- Climate Scenario Workshop
- SSC workshops

National

- NOAA Climate, Ecosystems and Fisheries initiative (CEFI)
- National SSC meetings (SCS)

Recent NPFMC climate-related activities

- **BS FEP Climate Change Task Force (CCTF): November 6-7, 2024**
  - Recap workshop,
  - Workplan, process, progress, and outcomes
  - Develop recommendations for moving forward and for a Council climate workplan
  - Draft a final report
- **Climate Scenario Workshop**
  - Report in October, action TBD
- **SSC workshops**
  - Consideration of additional workshops?

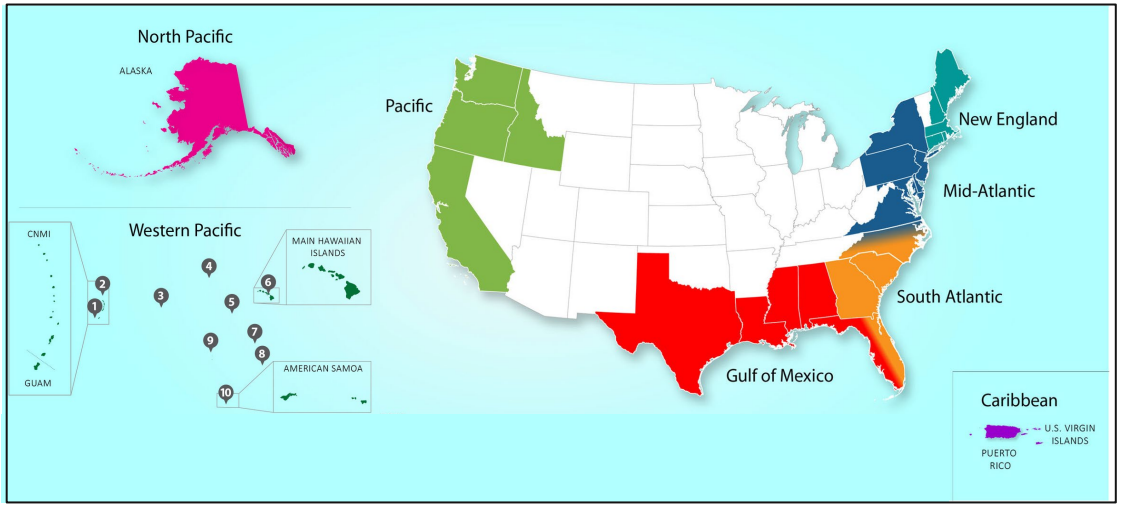
Recent NPFMC climate-related activities

National

- **NOAA Climate, Ecosystems and Fisheries initiative (CEFI)**
  - NPFMC staff and NMFS RO staff added to Alaska Climate/CEFI Team (ACT)
- **National SSC meetings (SCS)**
  - SCS8 outcomes and NPFMC related focus

Goals of SCS Meetings

Primary purpose of Scientific Coordination Subcommittee (SCS) meetings is to provide coordination across Fishery Management Council Scientific and Statistical Committees (SSCs) in addressing scientific issues of national importance.



U.S. Regional Fishery Management Councils

Previous SCS meetings and topics

Year	Host	Focus
2008	WPFMC	Developing Best Practices for SSCs
2009	CFMC	Establishing a Basis for Annual Catch Limits
2010	SAFMC	ABC Control Rule Implementation and Peer Review Procedures
2011	MAFMC	Ecosystem and Social Science Considerations in U.S. Fishery Management
2015	WPFMC	Providing Scientific Advice in the Face of Uncertainty
2018	PFMC	The Use of Management strategy evaluation to Inform Decisions Made by the Regional Fishery Management Councils
2022	NPFMC	Adapting Fisheries Management to a Changing Ecosystem
2024	NEFMC	Applying Acceptable Biological Catch (ABC) Control Rules in a Changing Environment

8th National Workshop of the Scientific Coordination Subcommittee

August 26-28, 2024

Boston, Massachusetts

***DRAFT* Outcomes**

U.S. Regional Fishery Management Councils

New England Fishery Management Council

SCS8 Workshop Theme:
Applying ABC Control Rules in a Changing Environment

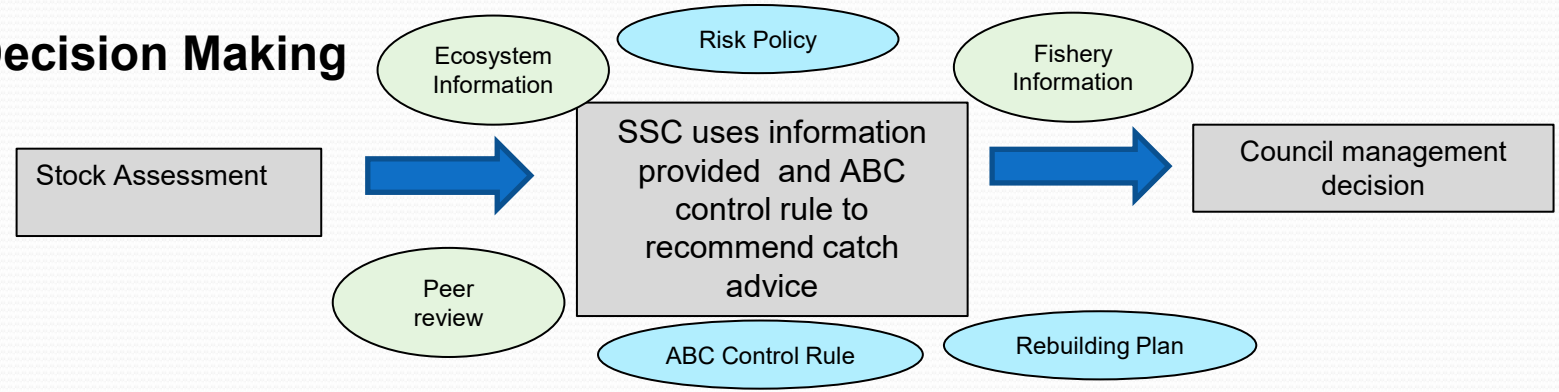
Goal: Provide actionable guidance on how to best support Councils in the management of fisheries, specifically the application of ABC control rules, in a changing environment.

Motivation: SSCs have been challenged in applying ABC control rules in a manner that reliably achieves management goals given the degree of ecosystem change and scientific uncertainty that Council regions are experiencing.

SSC Role in Fisheries Management

Strategic Guidance

Tactical Decision Making



A core function of a Council's SSC is to provide recommendations for tactical decision making on acceptable biological catch (ABC) and to support strategic decision making on ABC control rules.

Ecosystem information is increasingly being integrated into the tactical application and strategic decision making on ABC control rules.

Social science can provide critical insight on the potential for control rules to achieve management goals and how fisheries and communities can adapt to dynamic conditions.

U.S. Regional Fishery Management Councils

Agenda-at-a-Glance

Monday

- Context setting: Current approaches to defining ABC control rules and challenges in their application
- Sub-Theme 1: Advances in ecosystem science and assessment to inform ABC control rules in a dynamic environment

Tuesday

- Sub-Theme 2: Application of social science to achieve management goals under dynamic conditions
- Sub-Theme 3: Adaptation of reference points, control rules, and rebuilding plans to changing environment

Wednesday

- Synthesis, actionable outcomes, next steps

U.S. Regional Fishery Management Councils

Context Setting:

Current approaches to defining ABC control rules and challenges in their applications

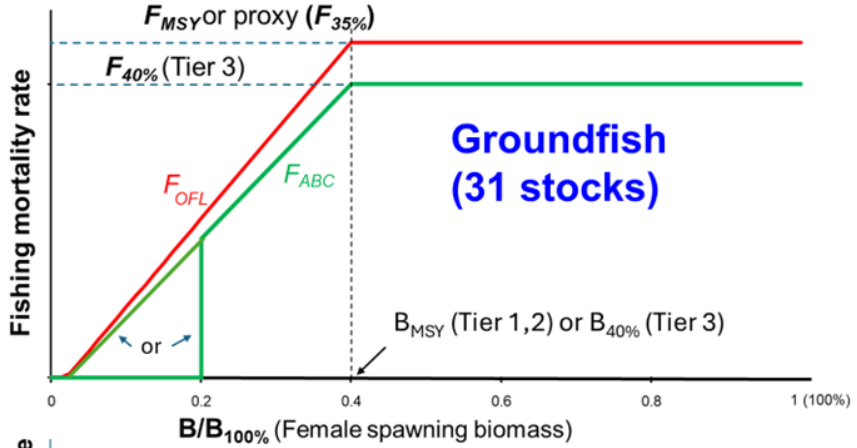
Overview

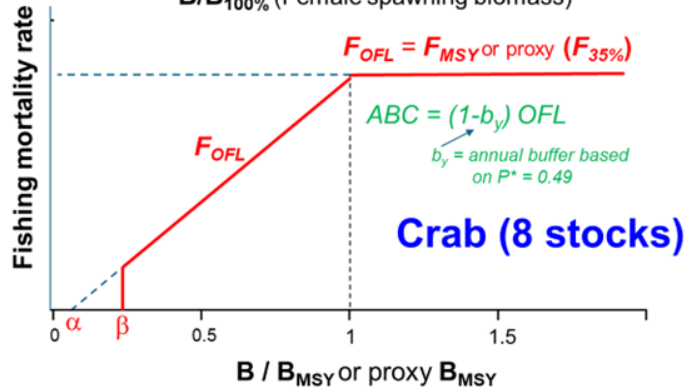
- Reviewed ABC control rules used across Councils
  - Tiered control rules (based on assessment type, uncertainty, stock status) are used across most regions.
  - Recent and ongoing revisions to ABC control rules underway in some Councils.
- Discussed challenges applying ABC control rules.
- Guidance and flexibility in specifying ABC control rules.
- Identification of biggest challenges within Council regions.

NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

ABC Control Rules Applied to NPFMC Stocks

Model-based Control Rules





Model-based Control Rules

- **Escapement-based HCR**
  - Salmon stocks (mostly delegated)

Empirical control rules

- **Biomass Index-based ($F = \gamma * M$)**
  - 8 groundfish stocks
  - 7 groundfish complexes
- **Catch based (Reference level)**
  - 4 groundfish stocks
  - 2 groundfish complexes
  - 2 crab stocks
- **Fixed in FMP**
  - scallop
  - 3 Arctic stocks (OFL = ABC = 0)

Challenges Identified by Council Region

- **Data limitations:** challenge in data availability and quality
- **Stock Assessment:** Non-stationarity in stock dynamics and shifts in species distribution. Limited integration in assessment.
- **Reference Points:** Challenge of defining reference points in a changing environment
- **ABC Control Rule Performance:** Performance of ABC control rules are not simulation tested for robustness to climate/ecosystem change.
- **Scale of Application of Control Rules:** Spatial scale of management, diversity and culture can be challenging
- **Flexible Application:** Desire for flexibility in ABC control rule. Interest in an adoption of phase-in and carry over approaches

NPFMC specific discussions and focus points

- Climate-resilient harvest control rules
- Compilation of socio-economic information to inform Council decision-making

Compilation of socio-economic information to inform Council decision-making

- Recommend SSC weigh in on the appropriate vehicle for providing concise relevant social, economic and community information to the Council at the time of TAC-setting
  - Possibly via combination of ESRs, ESPs, and SAFE reports
- Timing of information for groundfish should coincide with November Plan Team meetings to meet information needs as it relates to TAC-setting process
- Social and economic information not considered by the SSC in ABC setting rather the SSC should provide advice to the Council on the appropriate aggregation of information to best inform decision-making (including TAC setting)

Considerations on revising groundfish harvest control rules to be more climate resilient

- Identify available flexibility and/or lack thereof in current groundfish tier system
- Identify recent issues by stock with the application of current system
- Compile existing literature and ACLIM results to help inform sensitivity of stocks to HCR shapes compared with biological reference points and/or fishing rate modifications
  - Council would need to weigh in on policy objectives (including risk tolerance) in modification of HCRs or reference levels

NPFMC next steps following SCS8

- SSC to provide feedback on potential next steps regarding both HCRs and compilation of social and economic information in support of TAC setting.
- Options could include:
  - Future SSC workshop
  - Feedback to Council on priority actions related to HCRs and/or process to develop a workplan of priority actions to enhance climate resilient fisheries

Thank you!

Additional summary slides of SCS8 draft findings

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Recommendations

- **Data Needs:** Funding and strategic planning to address existing data limitations.
- **Basic Research:** Need for more mechanistic studies/understanding of climate impacts. But possible to proceed….
- **Advances in Assessment:** Continue advances in integrating climate impacts into assessments (don’t forget empirical assessments!) and in determining reference points.
- **Performance testing/evaluation:** Need to understand how our ABC control rules are working in a dynamic environment and uncertainty (MSE, retrospective analyses)

Sub-theme 1:

Advances in ecosystem science and assessment to inform ABC control rules in a dynamic environment

Overview

- Overview of emerging products from Climate Ecosystem & Fisheries Initiative.
- Examples of operationalizing the use of ecosystem information in stock assessment and fisheries management decisions.

Information & Products that are Useful / Actionable

- Information products
  - State of the Ecosystem Report aka Ecosystem Status Reports
  - Ecosystem and Socioeconomic Profiles
  - Fisheries Ecosystem Plans
  - Climate Chapter in SAFE Report
- Modeling Platforms
  - Models that can take in ecosystem/climate info (e.g. WHAM, FIMs)
- Risk Tables
  - Approach to characterizing risk (e.g. ecosystem considerations)

Challenges

- Data and information products differ by region
- Assessment model types differ by region and data availability
- Capacity limitations (e.g. development of SOEs for all regions)
- How to use this information?
  - Some routine incorporation but often ad hoc use in decision making
  - Defining process and products to define scientific uncertainty buffer, level of risk

Recommendations

- **Data availability:**
  - Are there ways to expand data collection with partners?
  - Value of integration of local ecological knowledge
  - Forecasts with improved skill at fisheries relevant scales
- **Stock Assessment:**
  - Continued advances in stock assessment (climate informed analytical assessments and empirical approaches).
  - Develop guidance on revisions to reference points
- **Strategic guidance:**
  - Revisions to risk policies and use of risk tables
  - Use of phase in approaches
- **Process:** Define opportunities for on ramping ecosystem information- how to apply data/info
- **Performance Testing:** Evaluate effectiveness of control rules (simulation testing, hindcasting)
  - How to make more space/capacity for MSE testing

Sub-theme 2:

Application of social science to achieve management goals under dynamic conditions

Overview

- Review of how Councils are using their socioeconomic expertise and how they use socioeconomic information in decision making.
  - Several examples of using socioeconomic data and LEK to augment assessments.
- Risk Policy and Setting ABC: variation in the scope/flexibility for SSCs to use socioeconomic data, either:
  - No separate risk policy, using P* approaches without S&E metrics or only if it informs biological knowledge.
  - Risk and ABC setting narrowly focused on biological risk.
  - Risk policy and/or ABC control rules being revised, potentially to include socioeconomic data.
  - With empirical assessments or when less quantitative biological data is available, SSCs turn to socioeconomic information
- Use of socioeconomic data in setting ACL/TAC by Councils (e.g., SEEM process)
- Some SSC involved in reviewing economic models, impacts

Challenges

- **Data limitations:**
  - Fishery participation, landings, choices (some regions)
  - Fishery-dependent data (discards, life-history)
  - Descriptions/demographics of who is involved in the Council process
  - Crew, costs, shore-side support, etc….
  - Working within data confidentiality constraints
- **Capacity:**
  - Few scientists working on socioeconomics of fisheries.
  - Need more coordination of where to focus staff resources that are available.

Challenges

- **Incorporation:** Some routine incorporation but often ad hoc use in decision making, lack of consistent on-ramps.
  - **Scale:** data often at fishery or community level, not species/stock level or specific to options presented.
  - **Timing constraints:** when socioeconomic updates are available doesn't align with specification decision timing, where ABC and ACL are set at same mtg.
  - **Roles:** How SSCs can consider/review socioeconomic info without getting into policy considerations outside the purview of the SSC.

Recommendations

- **Data:** Formalize uses of local ecological knowledge, cooperative research, citizen science for data collection and research.
- **Capacity:** Redirect capacity to where it might be more impactful, front loading for context setting.
- **Socioeconomic Indicators:** When there's poor biological data or delayed stock assessment, develop socioeconomic indicators that could signal stock abundance.
- **Use of Qualitative Info:** Be more engaged, responsive to public testimony received, foster relationships and trust.
- **Performance Review:** Formalize reporting of industry input on fishery performance.
- **Process:** Reconsider timing of science and management processes to allow for more socioeconmic information to be considered.

Sub-theme 3:

Adaptation of reference points, control rules, and rebuilding plans to a changing environment

Overview

- Examples of performance testing of Council control rules under climate change: Pacific sardine, bluefin tuna.
- Examples of reference points being adjusted to account for changes in climate and ecosystems are emerging.
  - Redefining recruitment stanzas for projections based on current understanding of species' productivity.
  - Reference point changes informed by observed ecosystem or stock life history changes.
  - Environmentally-explicit assessment models becoming available to inform reference point development.
- Mechanisms or perceived rate of climate influence on stocks varies across regions.

Challenges

- Information availability:
  - Various data streams (biological, climate, socioeconomic)
  - Assessment approaches capable of informing changes or infrequent timing of assessments.
- Understanding how complex ecosystem changes are influencing stocks.
- Criteria for determining when and how the ecosystem is changing.
- Current FMP or Council procedures may not be flexible to allow reference point changes.
- FMPs may not be at species-level required to appropriately adjust reference points.

Recommendations

- **Data:** What information is available to begin understanding ecosystem and productivity changes.
  - Scaling goals to information available (e.g. biology, LEK, socioeconomic).
- **Process flexibility:** Conversations with respective Councils.
  - Are current FMPs and Council procedures currently capable of allowing changes to reference points? If not, what is the path to achieve this?
- **Integration:** Can climate information be used as a basis for informing changes to control rules (e.g. increasing/decreasing buffers)? Can risk policies increasingly begin to include ecosystem change?

National Scale Recommendations

- Flexibility to use phase in approaches - can this requirement to be in FMP be loosened ?
- Is there flexibility in the time scale over which you calculate overfishing (annual? multi-annual?)
- Process timelines
- National standard guideline revisions…ongoing

Gaps….What are we Missing ?

- SSCs could contribute to processes other than ABC, provide expertise to facilitate decisions larger than single-species
- ABC is holding us back (also need clarity in roles), alternative quantitative methods to inform management that are not tied to ABC (other tools in the toolbox)
- Identify management constraints that limit ability to respond in a changing environment
- At what stage do you decide measures are not being effective at conservation? When to remove from harvest control rule? Depleting and emerging stocks

Gaps….What are we Missing ?

- Reauthorization - get involved
- How do we break status quo to look into these alternatives? (communication, increasing support…)
- Make space for discussions - science-management crossover groups
- Where is the input for information? Consider roles and responsibilities, not just the management process
- Role of commercial fishers in gathering data
- Recreational data and statistics
- See NS6 for contingencies
- Integration and importance of ALL social sciences

SCS8 Goal:

Provide actionable guidance on how to best support Councils in the management of fisheries, specifically the application of ABC control rules, in a changing environment.

Framing of Action Items

- **Audience:** Define audience for action item, who is recommendation going to? (Science center, regional offices, Councils, NOAA HQ)
- **Timeline:** Long term vs short term (1-3 years)
- **Scale:** National or regional level
- **Prioritization:** urgent (1-2 year), near-term (3-5 years), strategic (5+ years)
- **Process:** Does this require research, assessment improvements, management action?
- **Partners:** Who needs to be involved to make this happen?
- **Resources needed:** funding? capacity?
- **Next Steps…**

Council-specific Action Plans

- **Began work on Council-specific action plans.**
  - Consider challenges and recommendations discussed.
  - Focus on those important to your region and those that are actionable.
  - Plan for how your delegation will bring SCS8 recommendations home to continue the dialogue and take action on the recommendations.
- **Framing of action items**
  - Audience: Define audience for action item, who is recommendation going to? (Science center, regional offices, Councils, NOAA HQ)
  - Timeline/Priority: urgent (1-2 yr), near-term (3-5 yr), strategic (5+ yr)
  - Process: Require research, assessment improvements, Council action?
  - Partners and resources: Who to involve? Funding? Capacity?
  - Next Steps…