



# ADAPTING FISHERIES MANAGEMENT TO A CHANGING ECOSYSTEM

The North Pacific Fishery Management Council hosted the 7th national meeting of the Scientific Coordination Subcommittee (SCS7) in Sitka, Alaska August 15-17th. The meeting addressed challenging and timely fishery management issues and was well attended by SSC delegates and staff from all eight Regional Fishery Management Council SSCs, as well as NMFS Headquarters.

Proceedings available at  
<https://www.npfmc.org/SCS7/>

# **SCS7** **ADAPTING FISHERIES** **MANAGEMENT TO A** **CHANGING ECOSYSTEM**

*Seventh National Meeting of the  
Scientific Coordination Subcommittee  
of the Council Coordination Committee*

**Dr. Anne Hollowed, SCS7 Chair**



# Focus Sessions

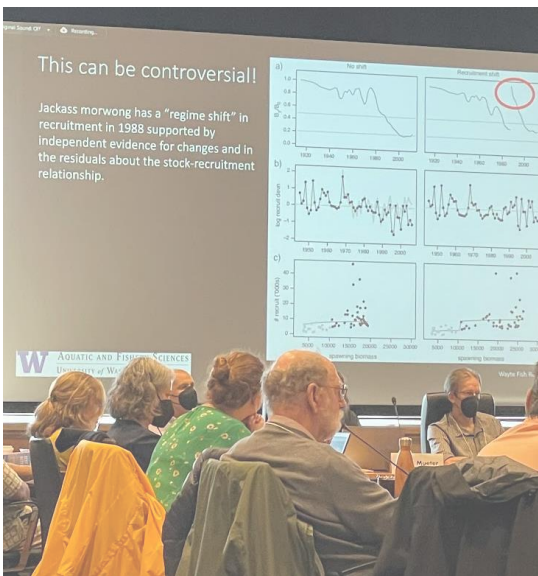
**1** How to incorporate ecosystem indicators into the stock assessment process?

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**2** Developing information to support management of interacting species in consideration of ecosystem-based fishery management (EBFM).

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**3** How to assess and develop fishing level recommendations for species exhibiting distributional changes?

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# SESSION 1 KEY DISCUSSION POINTS

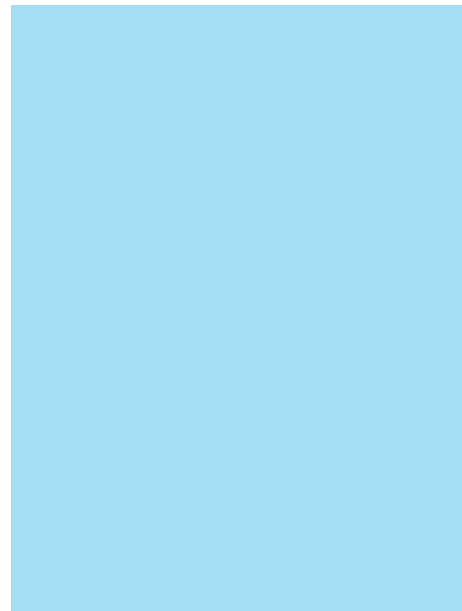
What criteria and diagnostics are needed for acceptance of an indicator into an assessment?

Responsiveness/ability to address environmental anomalies

Adaptivity of management framework

What to do under non-stationarity?

How to account for time-varying catchability in multi-species fisheries if/when CPUE of the dominant or indicator species declines even if combined abundance is unaffected





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Use of ecosystem models to inform ecosystem-based fishery management (EBFM)

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Non-target considerations in harvest control rules (HCR)

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Management framework and system-level considerations



SESSION 2 KEY DISCUSSION POINTS



## SESSION 3 KEY DISCUSSION POINTS

Addressing changing fish distributions in stock assessments and survey implications

Accounting for uncertainties in shifting distributions

Adaptivity of management framework to address changing distributions

**RECOMMENDATIONS  
FOR FUTURE SCS  
MEETINGS AND  
PLANNING**

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**Council member participation**

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**In-person meetings**

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**Time for discussion**

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**Biennial workshops**

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**Off-year communication**



# KEY FINDINGS

## 1 Councils need to start preparing now for increasingly complex management decisions due to climate change

- **Profound fishery implications** expected in next 20 years
- Need pathways to sustain fisheries in a **future non-stationary marine environment**
  - competing use of marine systems
  - abrupt shifts in distribution or abundance
  - changes in ecosystem structure and function
  - impacts on sectors and communities and data collection methodologies
- Finding **equitable management adaptation pathways** will be challenging





## ② Investment is needed in the development of new data collection and analysis tools that are responsive to changing conditions

- RFMCs need to consider **adaptation options** tailored to regional differences
  - Models with ecosystem linkages
  - Climate-informed risk assessments
  - Performance of management strategies
- **Suites of models** of different levels of complexity will be needed
- Data management to strengthen regional collaboration:
  - streamline data management
  - allow more 'open source' type data flows and interoperability
- Need interdisciplinary research teams, and more **student training** in this field



### 3 SSCs and Councils need to be prepared to transition toward a more sophisticated toolbox

- SSCs need to **prepare to transition**
  - from reliance on indicators derived from observations
  - to informed dynamic simulations of marine ecosystem change, tuned to observations
- **Begin scenario planning now** to avoid reactive responses
- Consider **additional flexibility** in the management process
- **Diversification** of fishing portfolios
- Create more **opportunities for strategic and creative thinking** at the regional and national levels



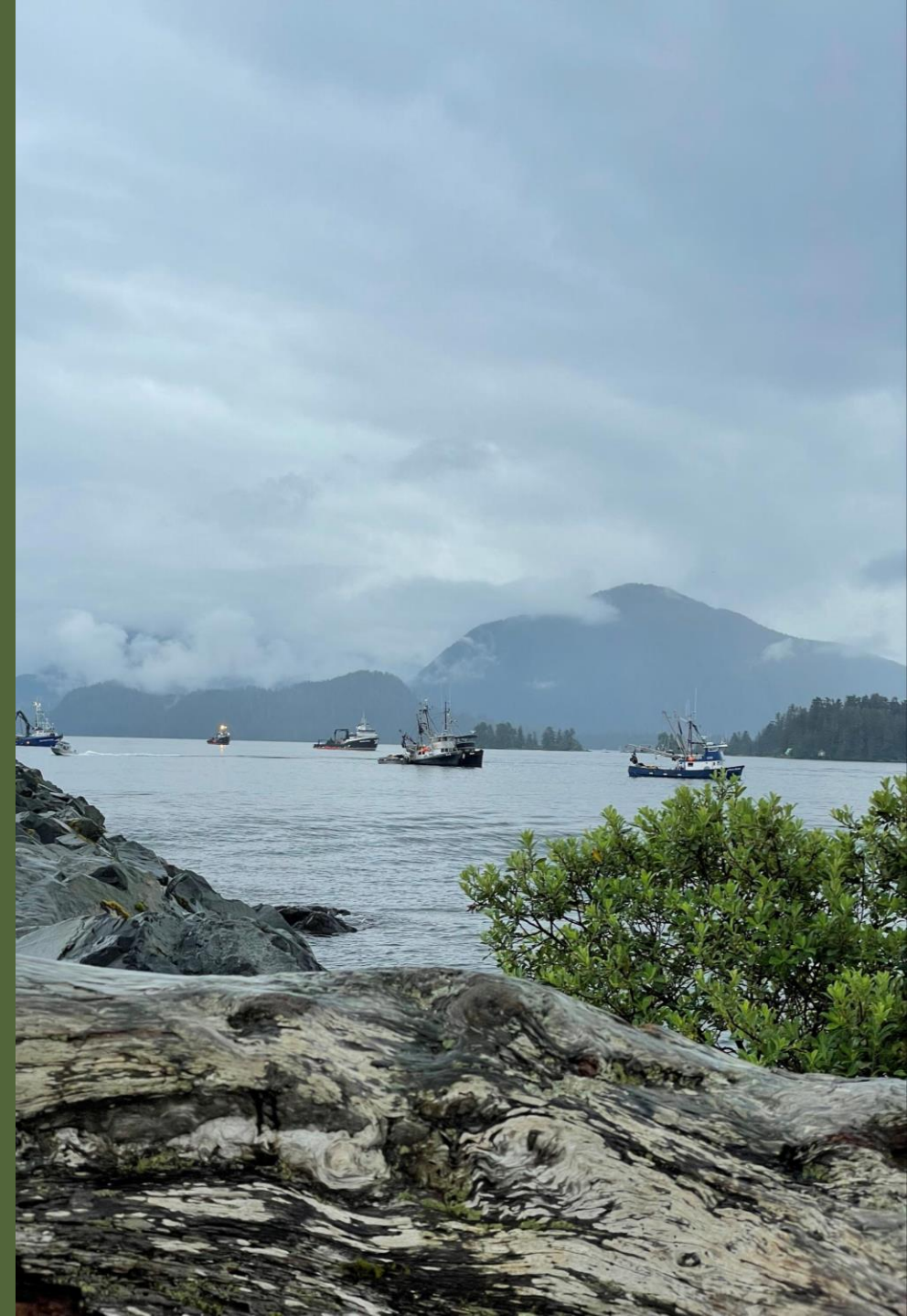
## 4 Stakeholder engagement will be critical for adaptive management to be successful

- Adaptive fisheries management will require **engagement from all stakeholders**
- **New understanding needed** of increasingly complex models and uncertainty due to environmental variability
- Science-based recommendations and management risks need to be **clearly communicated** to build stakeholder confidence in new models or tools that provide tradeoffs given increased uncertainty
- An **inclusive process** for increased public engagement will benefit both stakeholder education as well as informing ecosystem-based management approaches



# MOVING FORWARD: THINGS TO CONSIDER

- Cataloguing regional efforts in addressing climate change and non-stationary conditions
- How to begin scenario planning now to avoid reactive responses and how can we learn from other regions to expand our individual toolboxes
- How best to coordinate and communicate amongst Councils (SSC)
- How to increase effective communication with stakeholders across all regions
- What are the most important messages that the CCC sees in the SCS7 findings?
- Is there a need for a roadmap and timeline for integrating the various aspects of climate change work and implementing changes?



# Adapting Fisheries Management to a Changing Ecosystem

## 7th National Scientific Coordination Subcommittee Meeting



Proceedings available at:  
<https://www.npfmc.org/SCS7/>

Meeting [SCS7 eAgenda\\*](#)

- meeting agenda
- all presentations
- plenary recordings

# Thank you!



SCS7 Delegates in front of Crescent Harbor, Sitka, Alaska

SCS7, August 15-17th, Sitka, Alaska

\*<https://meetings.npfmc.org/Meeting/Details/2945>