Integrating climate information into fisheries management

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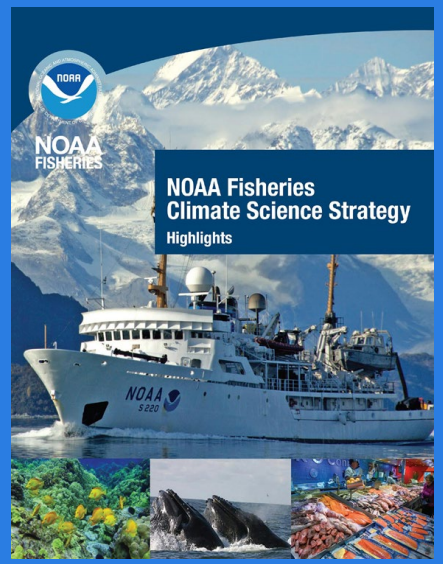
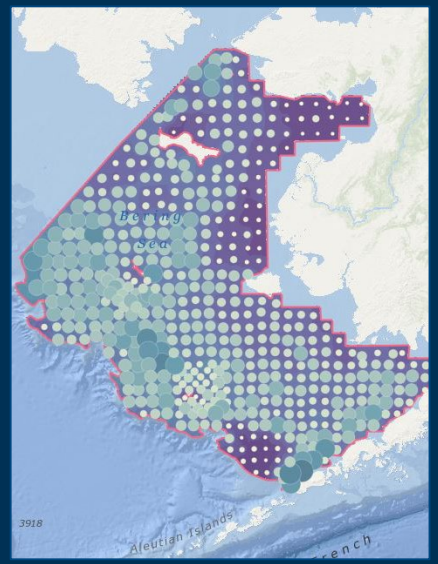
www.fisheries.noaa.gov/topic/climate-change

Strategies



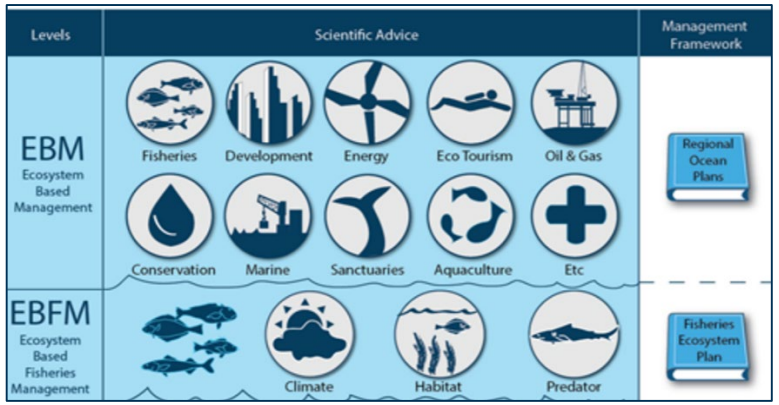
Tools

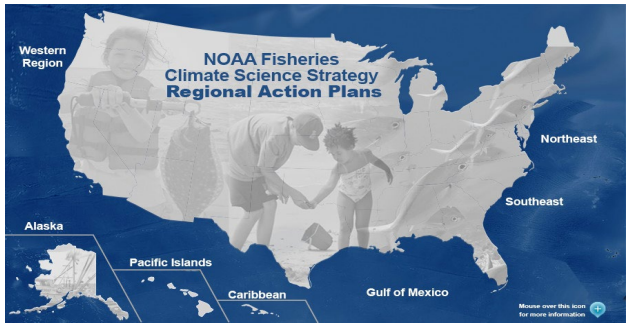


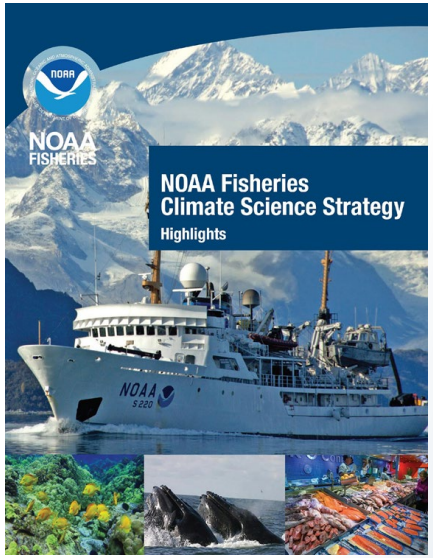
Initiatives

Strategies help prioritize climate and fisheries research

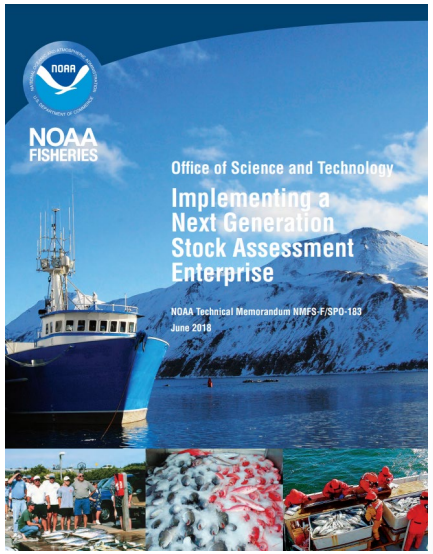
- NOAA Fisheries Climate Science Strategy (2015)
  - 7 key objectives and 6 Regional Action Plans (updated 2023)





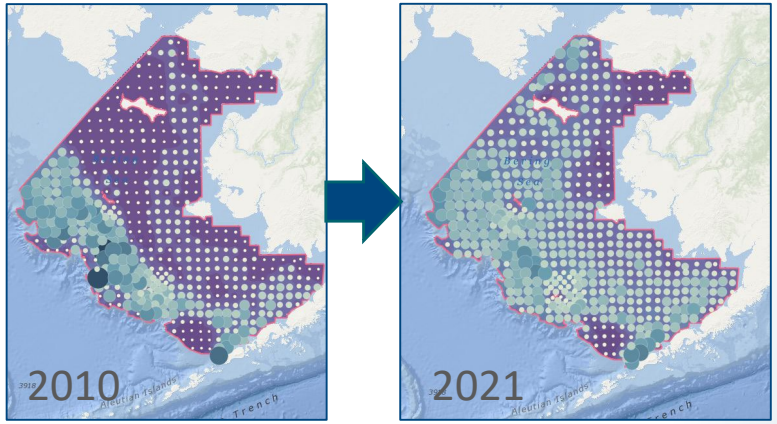


- Ecosystem-based Fisheries Management Policy (2016) & Roadmap (2017)
- Next Generation Stock Assessment Enterprise (2018)



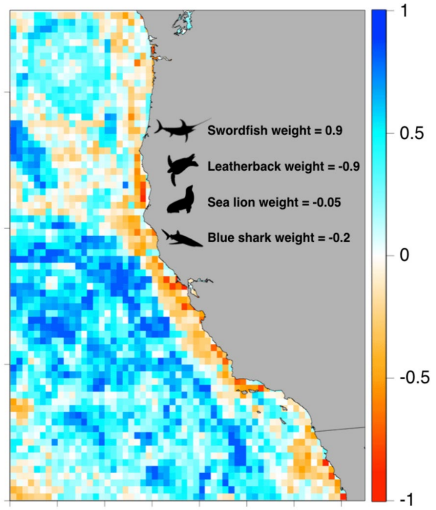
Tools track climate-induced distributional shifts, forecast species movements, and evaluate vulnerability

- NOAA Fisheries Distribution Mapping and Analysis Portal (DisMAP)



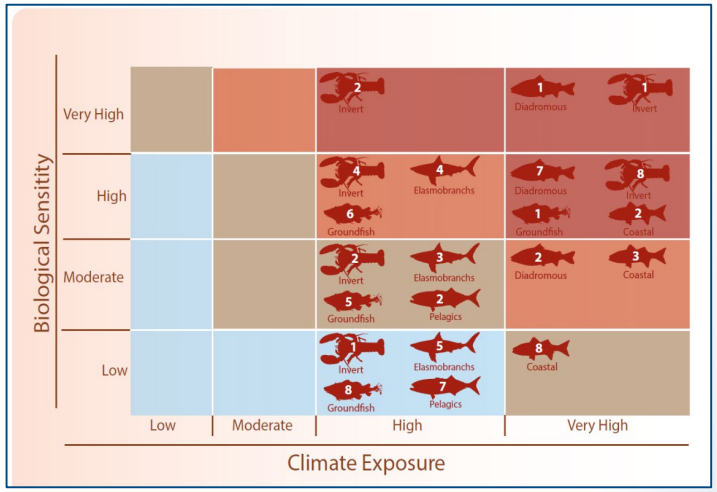
Pollock distribution in the Bering Sea

- EcoCast
  An Eco-informatic Tool for Fisheries Sustainability



- Climate vulnerability assessment (CVA)

Exposure ✖ **Sensitivity** = **Climate Vulnerability**



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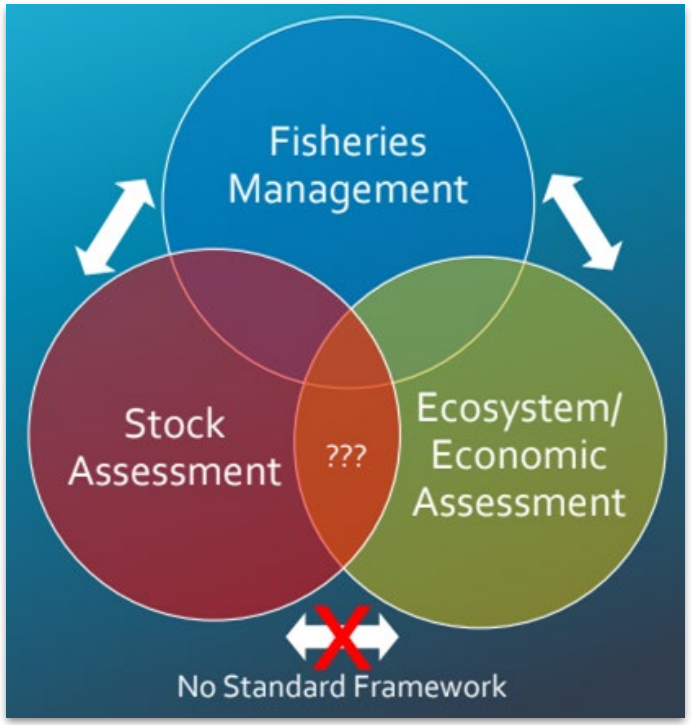
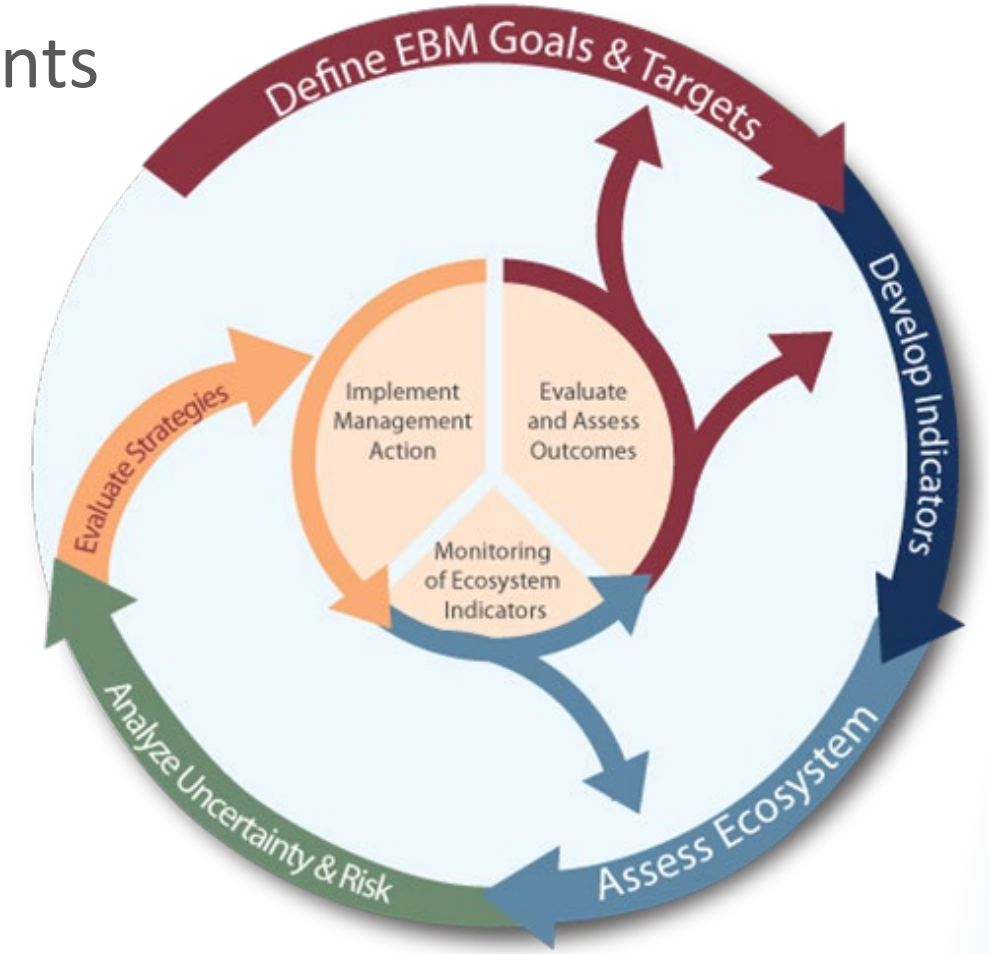
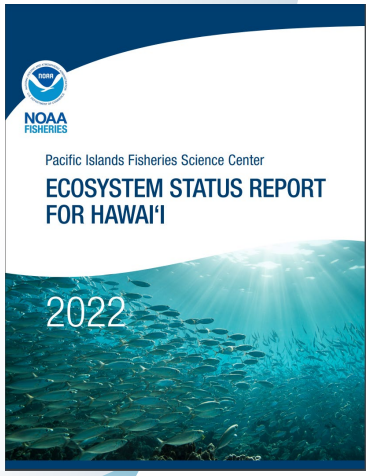
Ecosystem **tools** can connect climate change information to decision-making

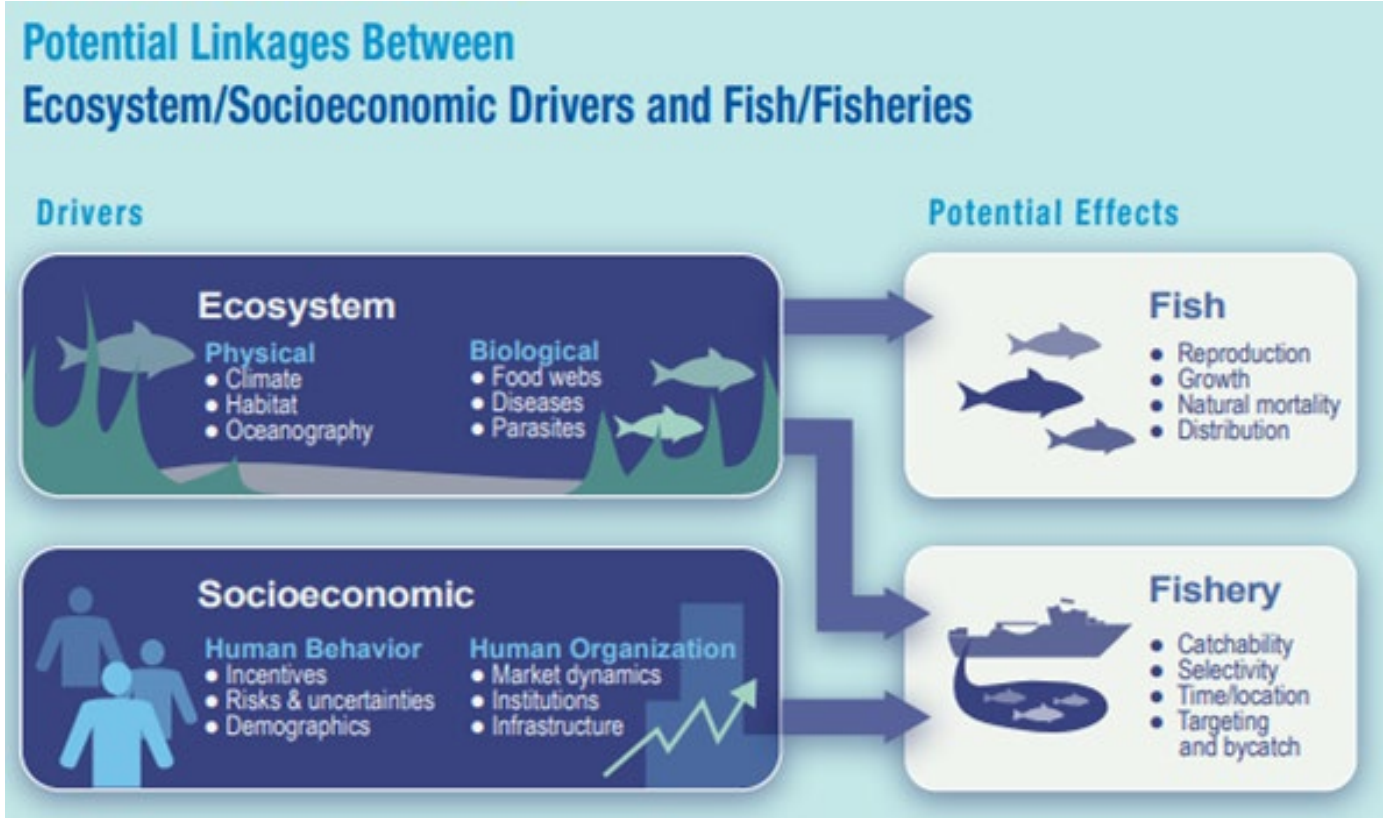
- Integrated Ecosystem Assessments
- Ecosystem Status Reports

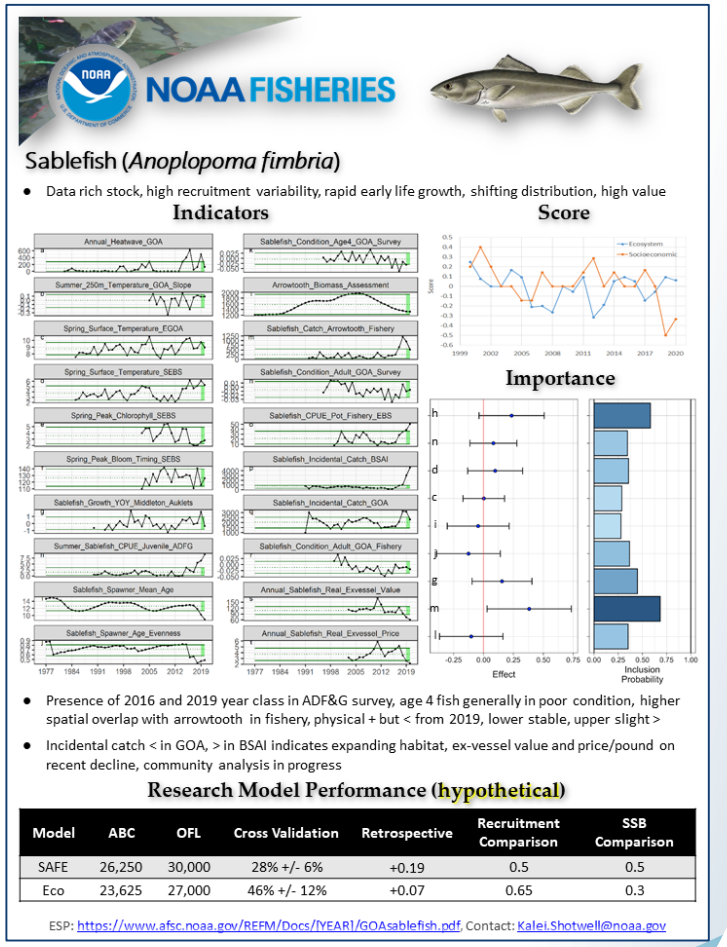






Ecosystem Socioeconomic Profiles identify ecosystem and economic information for use in decision-making





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Sablefish (*Anoplopoma fimbria*)

- Data rich stock, high recruitment variability, rapid early life growth, shifting distribution, high value

Indicators

Score

Importance

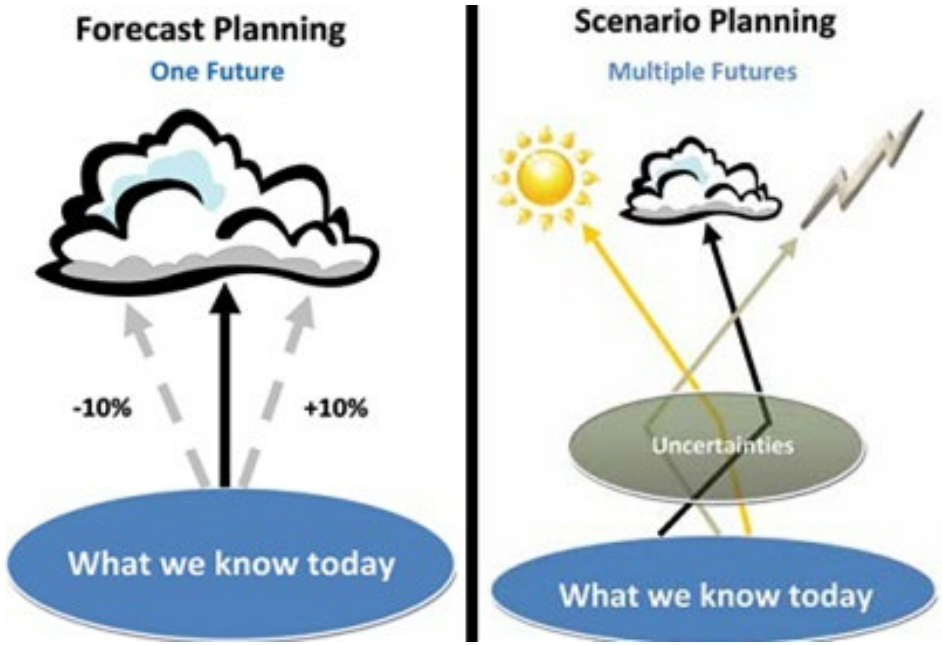
- Presence of 2016 and 2019 year class in ADF&G survey, age 4 fish generally in poor condition, higher spatial overlap with arrowtooth in fishery, physical + but < from 2019, lower stable, upper slight >
- Incidental catch < in GOA, > in BSAI indicates expanding habitat, ex-vessel value and price/pound on recent decline, community analysis in progress

Research Model Performance (hypothetical)

Model	ABC	OFL	Cross Validation	Retrospective	Recruitment Comparison	SSB Comparison
SAFE	26,250	30,000	28% +/- 6%	+0.19	0.5	0.5
Eco	23,625	27,000	46% +/- 12%	+0.07	0.65	0.3

ESP: https://www.afsc.noaa.gov/REFM/Docs/[YEAR]/GOAsablefish.pdf, Contact: Kalei.Shotwell@noaa.gov

Scenario planning is a framework to support decisions under uncertain or uncontrolled conditions



Scenario Insight; Weeks et al. 2011, Park Science

New England Fishery Management Council

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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The East Coast scenario planning process identified key themes and potential actions

1. **Cross-jurisdictional governance**
2. **Managing under increased uncertainty**
3. Data sources and partnerships

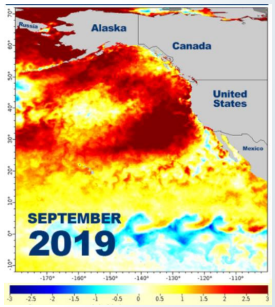
Potential actions were evaluated, organized, and prioritized into a “Potential Action Menu”

Cross-jurisdictional governance

Potential actions:

- Develop joint management agreements with the aim of clarifying roles and increasing efficiency (specific focus on shared stocks)
- Identify guidelines for when management responsibility should change

Managing under increased uncertainty



Potential actions:

- Develop qualitative information and ecosystem indicators
- Improve and increase the use of risk policies
  - If/then management rules
  - Increased buffers between acceptable biological catch and annual catch limits

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Initiatives drive innovation in fisheries science

Climate, Ecosystems, and Fisheries Initiative (CEFI) – Decision support system

Inflation Reduction Act Funding for Climate-Ready Fisheries = $349 million

→ Climate, Ecosystems, and Fisheries Initiative = $40 million

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Initiatives drive innovation in fisheries science

Climate, Ecosystems, and Fisheries Initiative (CEFI) – Decision support system

SUstainability, Predictability, and Resilience of Marine Ecosystems (SUPREME) UN Ocean Decade Program

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

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Linking climate change tools and data to management decisions is an ongoing challenge

Thank you! Questions?

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