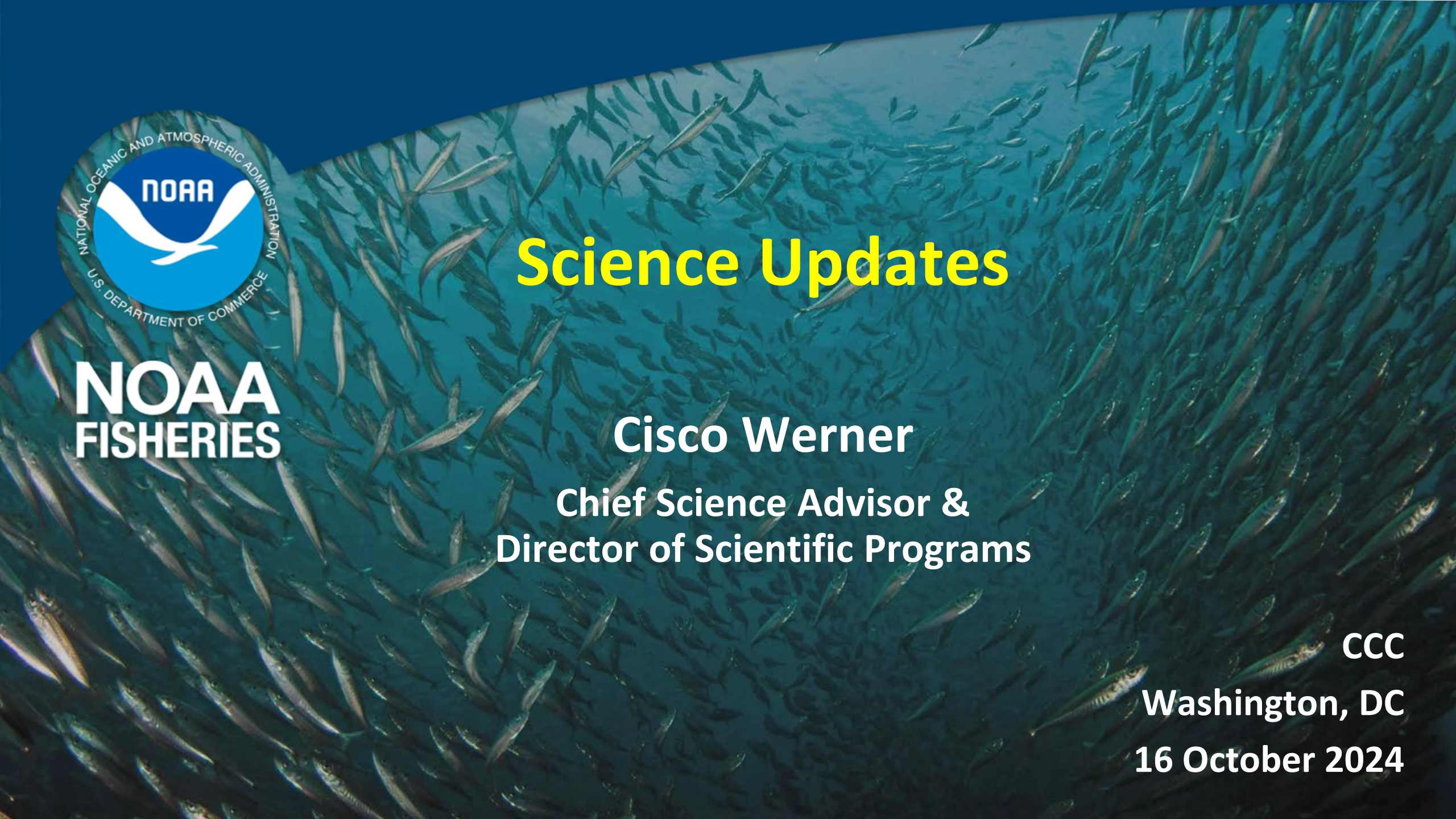


Science Updates

Cisco Werner

Chief Science Advisor &
Director of Scientific Programs

CCC
Washington, DC
16 October 2024

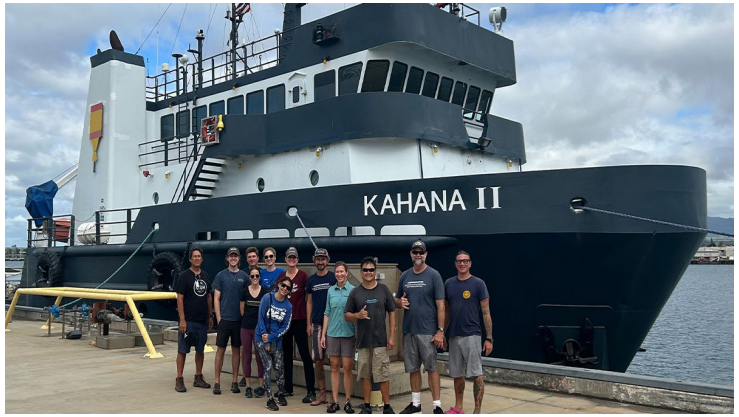
Outline

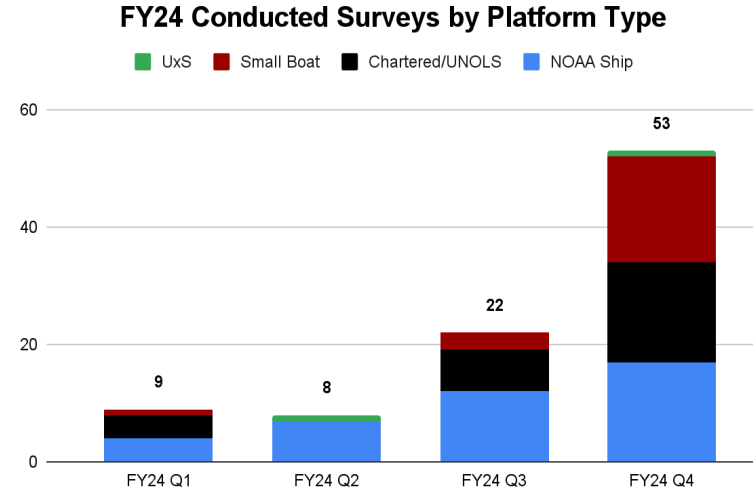
- **Fishery-Independent Surveys:** summary of FY24
- **Climate Ready Fisheries:** steps underway
- **FIMS:** the Fisheries Integrated Modeling System
- **MRIP/FES:** Fishing Effort Survey updates

NOAA FISHERIES

Survey Status (Total)	FY24 Survey Execution (9/30/2024)			
	NOAA Ship	Chartered & UNOLS	Small Boat	UxS
Planned* (114)	42	41	29	2
Conducted (92)	41	28	22	2
Postponed/Cancelled (9)	2	5	2	0
Underway (15)	1	8	6	0
Final Totals (117)	44*	41*	30*	2

*Starting FY planned surveys may differ from the end FY count (e.g., a survey was not planned in Oct, but was able to be conducted mid-year; a survey changed platforms mid-year, etc.)





NMFS Climate Ready Fisheries (CRF) efforts

Steps toward implementing CRF

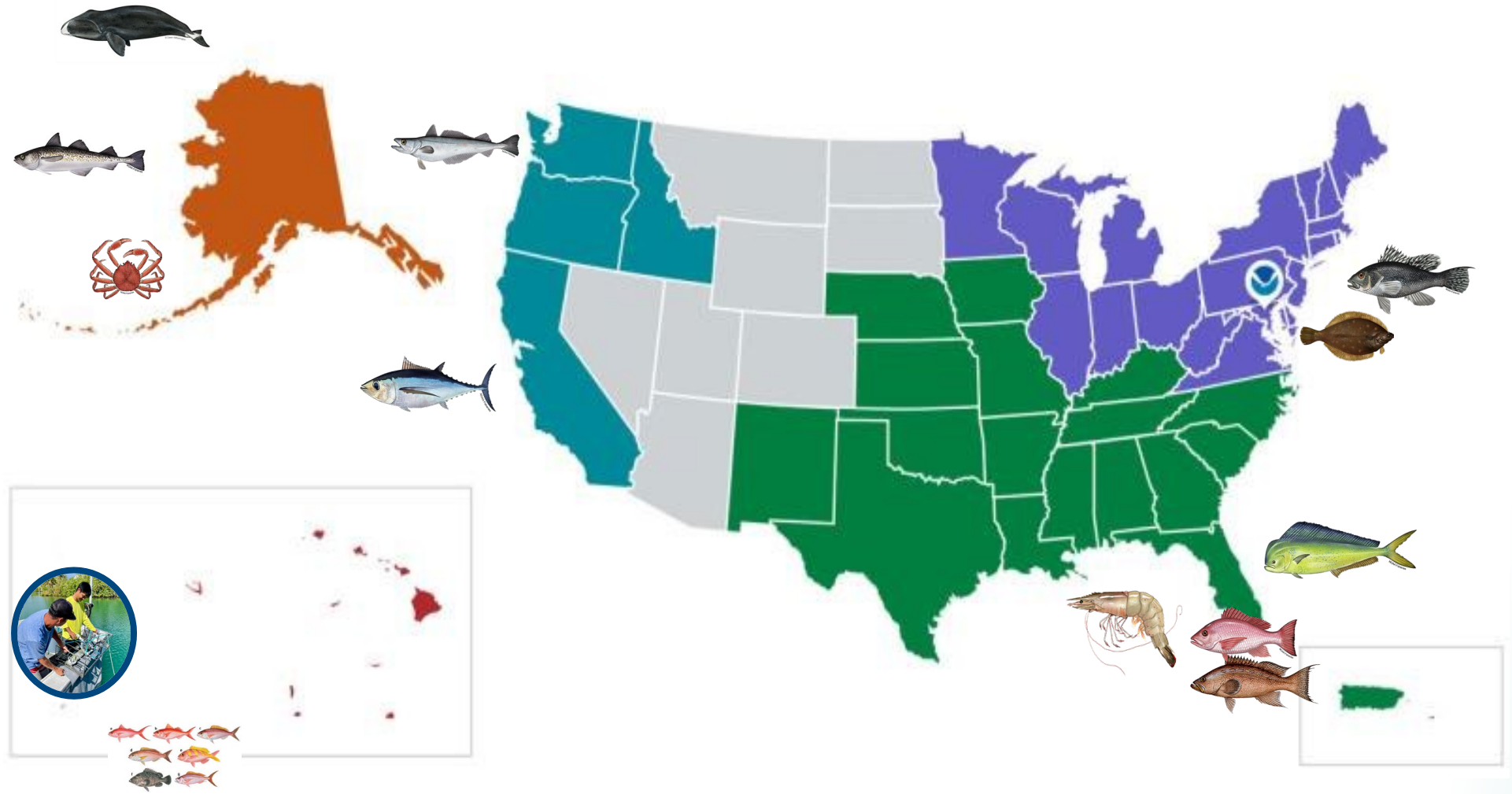
- **Scenario Planning and Climate Vulnerability Analyses** have identified clear stocks, species groups and habitats that need particular attention as Climate Change (CC) impact the LMRs

- **Risk tables** have directly informed Status Determination Criteria (SDCs), Harvest Control Rules (HCRs) and related criteria in a couple of regions, to the point that ACLs, etc. were adjusted

- **Species distribution models,** as informed by dynamic oceanography, have helped to minimize real-time or in-season bycatch, even of PR in a couple of regions,
  - As well as predicting taxa moving into/out of a region, such that we know probabilistically which species mixes will be in the short term (1-5 yrs)

- **Multispecies and ecosystem models** have already shown the potential “winners & losers” of CC scenarios in many regions that could mitigate depletion of some stocks in multiple regions

Climate Ready Fisheries Regional Implementation



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Climate Informed Stock Assessments (NEFSC/GARFO)

NOW - Include climate variables in stock assessment models

- Increased precision of biomass and fishing mortality estimates; improved Overfished & Overfishing determinations
- Completed - Black sea bass, yellowtail flounder
- Ongoing - American lobster, Atlantic scallops, longfin squid

2025-2027 - Include climate variables in stock assessment model projections

- Increase accuracy of catch advice and rebuilding plans

2025-2029 - Include climate variables in reference point determinations

- Develop science & management to support dynamic reference points

Fishery Management Council's Risk Assessments (NEFSC/GARFO)

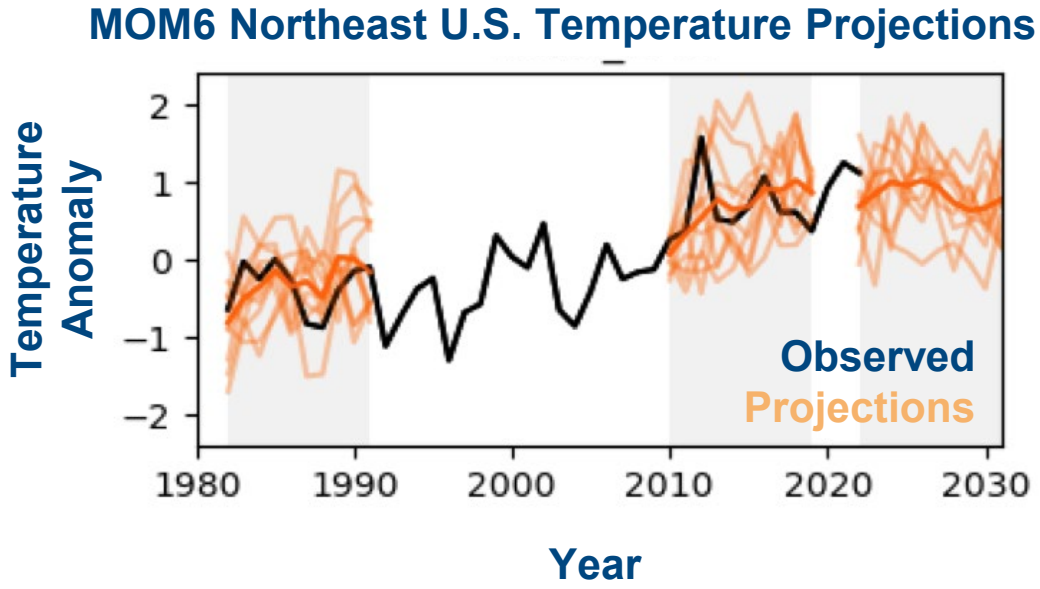
2025 - CEFI Products will be integrated into State of the Ecosystem (SOE) Reports

- CEFI decadal predictions indicate a pause of warming on the Northeast U.S. Shelf over the next decade (Koul et al. 2024)

2025-2026 - CEFI will update climate vulnerability assessment at Councils' request

SOE Reports contribute to risk policies

- MAFMC's annual risk assessment includes climate vulnerability and distribution shifts
- NEFMC is updating risk policy; planning to use climate vulnerability



Climate Vulnerability Risk Score

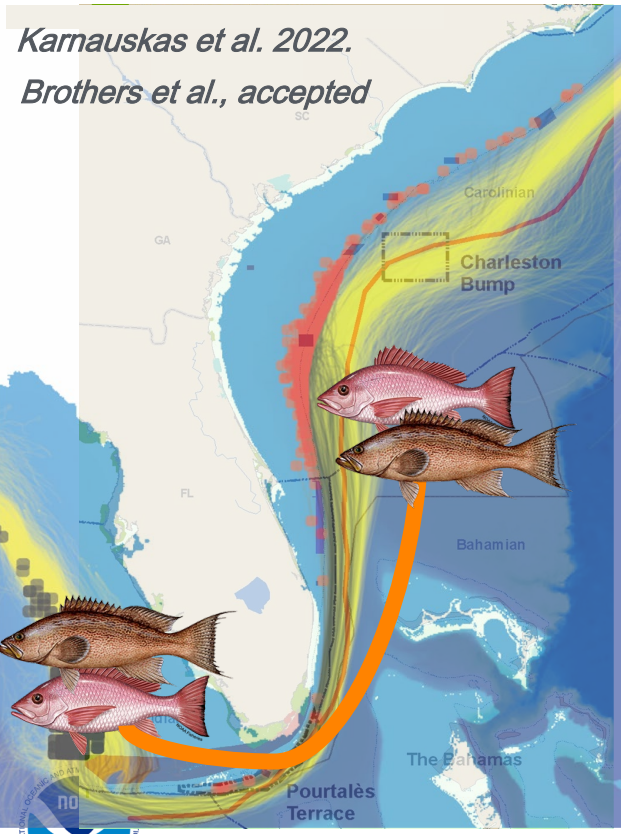
Score	0	1	2	3	4
	Low Vulnerability	Moderate Vulnerability	Moderate Vulnerability, Negative Direction	High Vulnerability	High Vulnerability, Negative Direction
Description	"Low" vulnerability score	"Moderate" vulnerability score **OR** "Low" vulnerability score and negative climate directional effect	"Moderate" vulnerability score and negative climate directional effect	"Very high" or "high" vulnerability score	"Very high" or "high" vulnerability score and negative climate directional effect

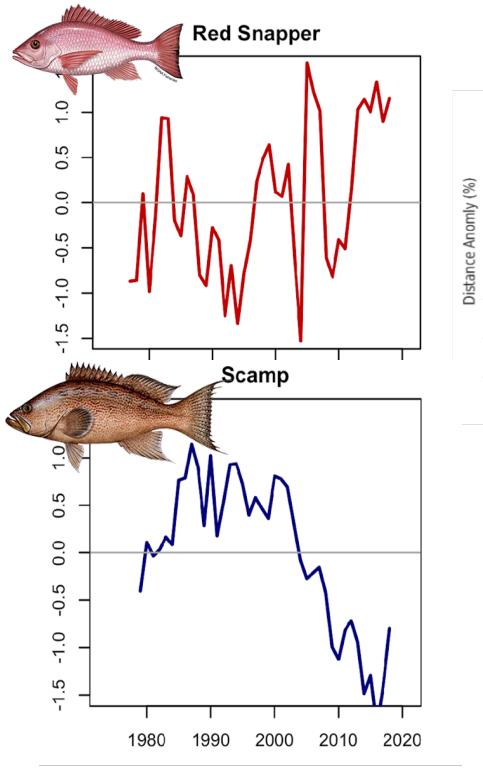
Climate & Fisheries (Southeast)

Oceanographic impacts on recruitment (snapper-grouper complex)

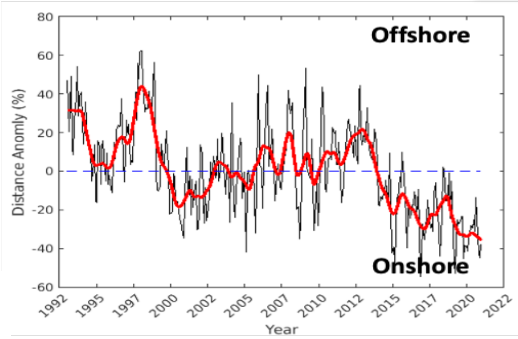
***Issue*:** Physical oceanography drives changes in recruitment in space and time

Overarching Goal: Assess the use of recruitment indicators to improve stock assessments and short-term forecasts.

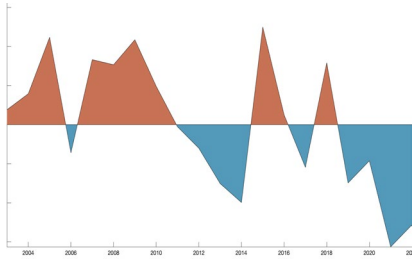




Gulf Stream subsurface intrusion



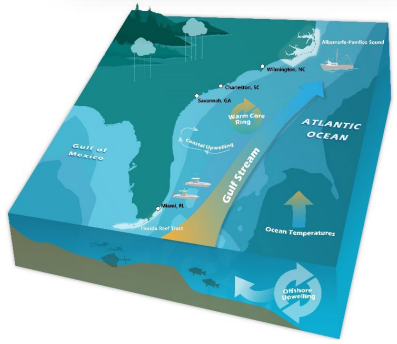
Winter Chl -a



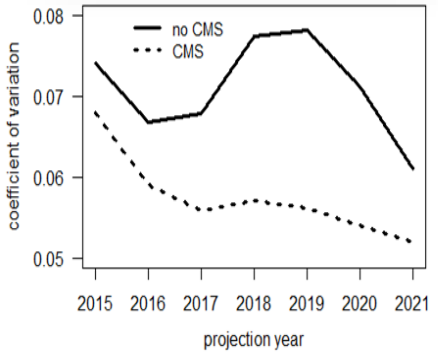
Indicators for Climate -informed advice

ESRs

Stock Assessments



Craig et al., 2022



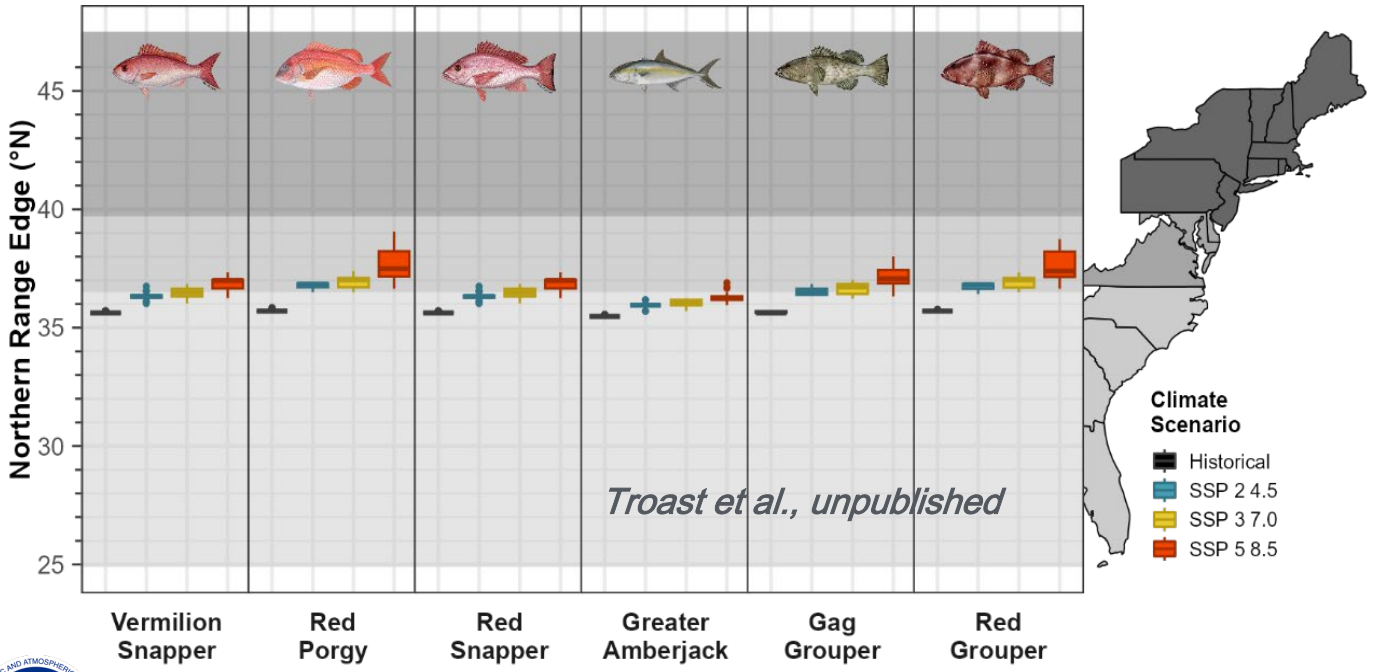
Karnauskas et al. 2017

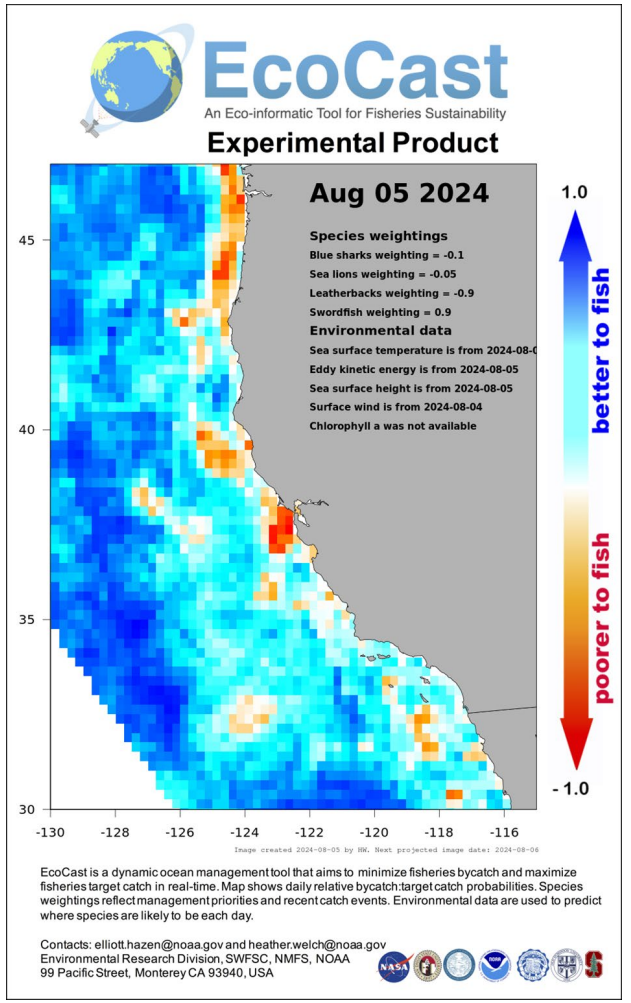
Climate & Fisheries (Southeast)

Shifting species distribution

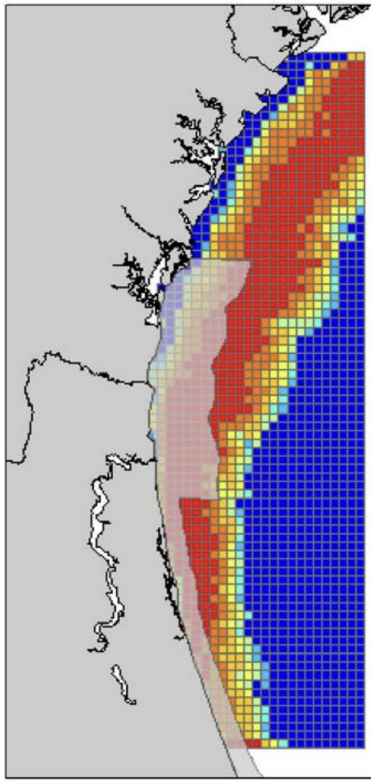
Issue: **Management will need to adapt to species distribution and abundance driven by climate**

Approach: Forecast species range shifts/ expansions/ contractions under climate scenarios





Predicted Right Whale Relative Density

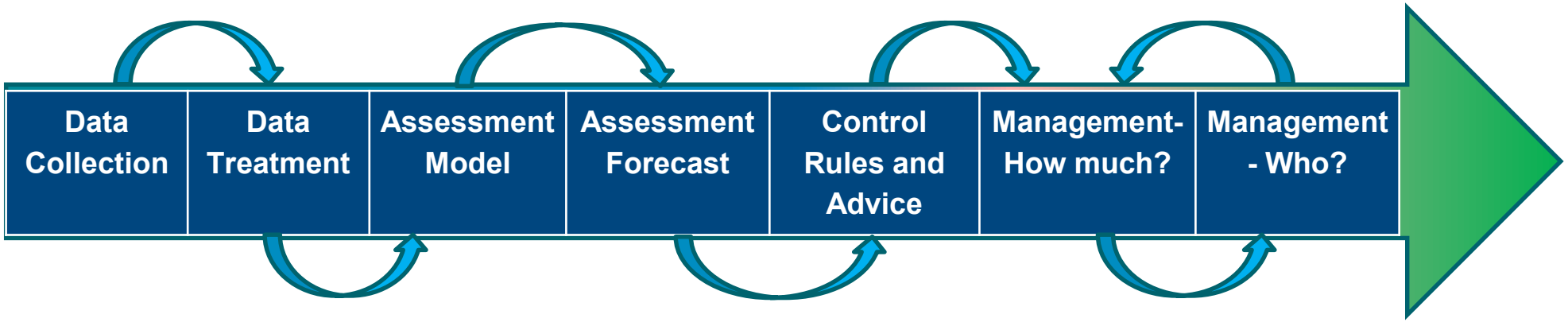


Garrison, 2007

Joint challenges as we manage fisheries in a changing climate

- **What outcomes do we need to prioritize?**
- **What specific taxa, species, or fishing community considerations should we focus on together?**
- **Questions we might jointly ask include:**

1. How are we adjusting the permitting process now to take into account shifted/shifting stocks?
2. How are we going to change ACLs/SDCs now to address present and future changes?
3. What are present mitigation options to account for Climate Change effects on the full suite of fished taxa in a region? (e.g., winners & losers)



EBFM Roadmap

October 2024

Department of Commerce · National Oceanic & Atmospheric Administration · National Marine Fisheries Service

NATIONAL MARINE FISHERIES SERVICE PROCEDURE 01-120-01
Effective on: November 17, 2016

To be reviewed on: October 1, 2029

Fisheries Management

Ecosystem-Based Fisheries Management Road Map

NOTICE: This publication is available at: https://www.fisheries.noaa.gov/national/laws-policies/fisheries-management-policy-directives

Authors names: Jason Link and Yvonne deReynier **Certified by: Kelly Denit**
Offices: F and SF **Office: SF**

Type of Issuance: Revision, September 2024

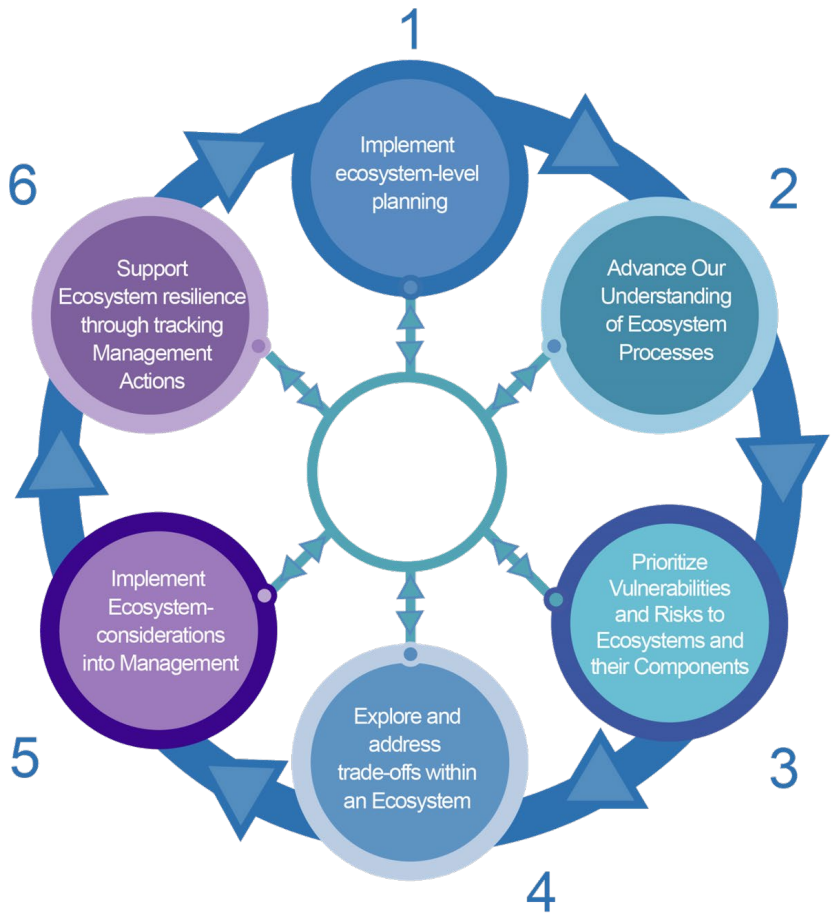
SUMMARY OF REVISIONS:

- Clarify the links between EBFM and other NOAA Fisheries policies, guidance documents, efforts, programs and initiatives, including efforts that address the need for climate-ready fisheries.
- Better articulate the management aspect of EBFM and the need to approach EBFM as an adaptive process where science and management will always need to be updated, improved, iterated, etc. for better integration of its science and management programs.
- Better integrate socio-economic, habitat, climate change, ecological, ocean-use, and ocean condition information and needs throughout all EBFM Guidelines, particularly clarifying the need for climate-ready fisheries.

Signed Kelly Denit

A special thank you to those who contributed to this document:

Y. deReynier, C. Harvey, J. Link, W. Morrison (eds.), J. Cudney, D. Dick, T. Ford, K. Gore, J. Gove, E. Hazen, J. Hermsen, M. Karnauskas, S. Lewis, S. Large, T. Loughran, S. Lucey, M. McPherson, S. Oakes, J. Peterson, J. Pirtle, T. Rankin, J. Samhouri, H. Sagar, E. Siddon, H. Takade-Heumacher, B. Vogt, K. Zanowicz



https://www.fisheries.noaa.gov/s3/2024-10/01-120-01_revision_final.pdf

Fisheries Integrated Modeling System

A flexible suite of software tools to support sustainable fishery management

What is FIMS?

- A suite of software tools.
- Stock assessment at core.
- Connects to ecosystem, climate, and economic models/data.
- Flexible for innovative future data types and methods.
- Collaborative community effort.
- Addresses numerous priorities.

FIMS landing page | FIMS development repository

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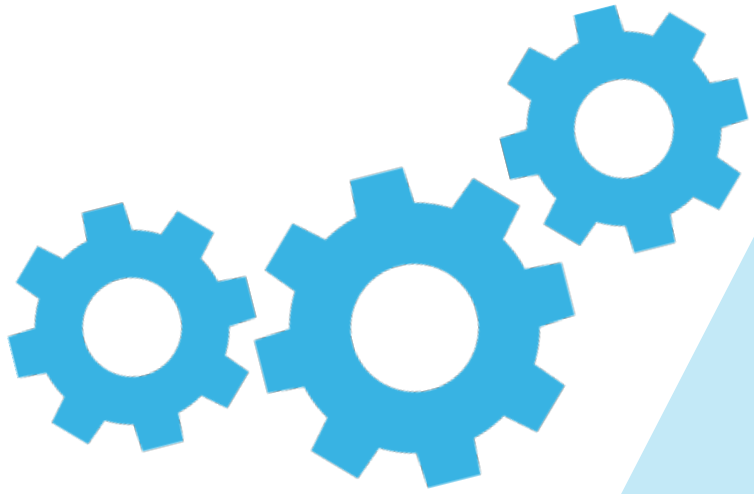
Key Benefits of FIMS

*Helps move toward a more **integrated** and **interdisciplinary** approach to modeling and management.*



Very flexible and simple to use for innovative work.

Scales information from simple (data-limited) to complex (data-rich).

Helps scientists develop integrated models that connect components.

Developed and maintained by the community.

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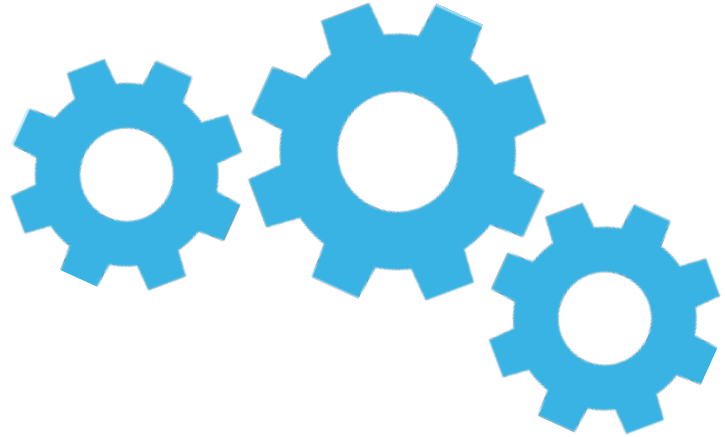
Timeline



- **2024:** Add key features to FIMS
  - Fit to catches, indices, ages, and lengths
  - Allow for time-varying processes
- **2025+:** Implement key features including discards, reference points and forecasts
- **2026+:** Outreach, training, and start the process of transitioning to operations

Output is a more consistent, transparent, and reproducible stock assessment report

Status of the Dover sole stock in U.S. waters off the coast of West Coast in 2010

John Snow[1], Danny Phantom[2] and Patrick Star[3]

1. NOAA Fisheries Alaska Fisheries Science Center, 17109 Point Lena Loop Road
2. NOAA Fisheries Northeast Fisheries Science Center, 166 Water Street
3. NOAA Fisheries Southeast Fisheries Science Center, 75 Virginia Beach Drive

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northwest Fisheries Science Center

Table of contents

List of Figures

Stock Assessment Workflows

- 2024: Summary of current stock assessment workflows across regions
- 2024 - 2025: Development of standard tools
  - Support functions for standardizing output
  - A standard set of tables and figures
- 2025+: Training for users on workflows and tools

Recreational fishing (updates)

Katherine Papacostas
Richard Cody

- Re-envisioning the recreational fishing data partnership
- Fishing Effort Survey

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Re-envisioning the recreational fishing data partnership

- Joint initiative to re-evaluate partnership/program approaches
- Goal: Transition to a new, collaboratively developed vision for the state-federal partnership in 2026 that better meets regional needs
- In information-gathering phase (Council rounds/listening sessions); regional workshops in summer 2025

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Fishing Effort Survey

- **Testing revised design in 2024**
  - Switches ordering of questionnaires' 2 and 12-month fishing activity questions
  - Distributed monthly (as opposed to every 2 months)
  - Goal: To improve response accuracy and allow for more frequent production of estimates
- **Revised design producing improved data quality in alignment with pilot studies**
  - Reduction in reporting errors, illogical responses
- **Summer 2025** - Publish study report
- **Spring 2026** - Produce historical calibrated estimates*
- **2026** - Earliest new design can be implemented

*pending study results, peer review

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Thank you

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