NOAA FISHERIES

State of the Ecosystem New England 2026

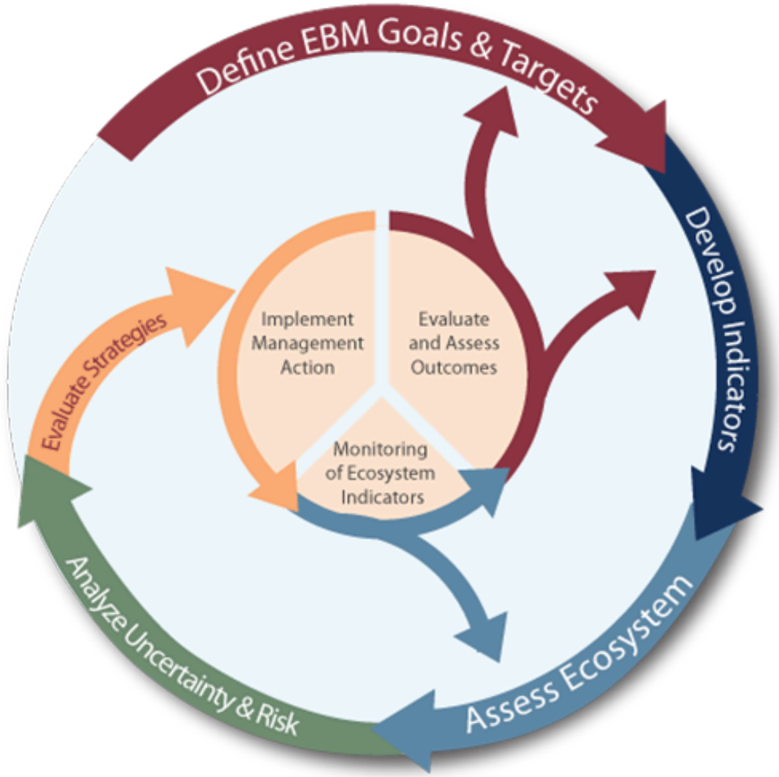
NEFMC CESC Update
March 27, 2026

Joe Caracappa, lead editor, NEFSC

State of the Ecosystem (SOE) reporting

Improving ecosystem information and synthesis for fishery managers

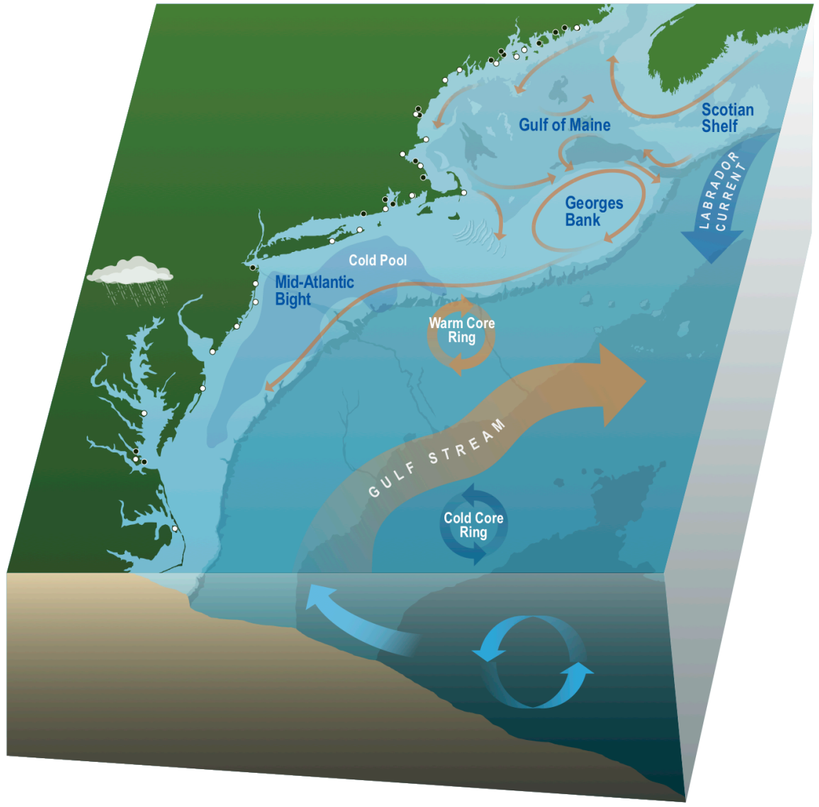
- Ecosystem indicators linked to management objectives (DePiper et al., 2017)
  - Contextual information
  - Report evolving since 2016
  - Fishery-relevant subset of full Ecosystem Status Reports
- Open science emphasis (Bastille et al., 2020)
- Used within Mid-Atlantic Fishery Management Council's Ecosystem Process (Muffley et al., 2020)



The IEA Loop[1]

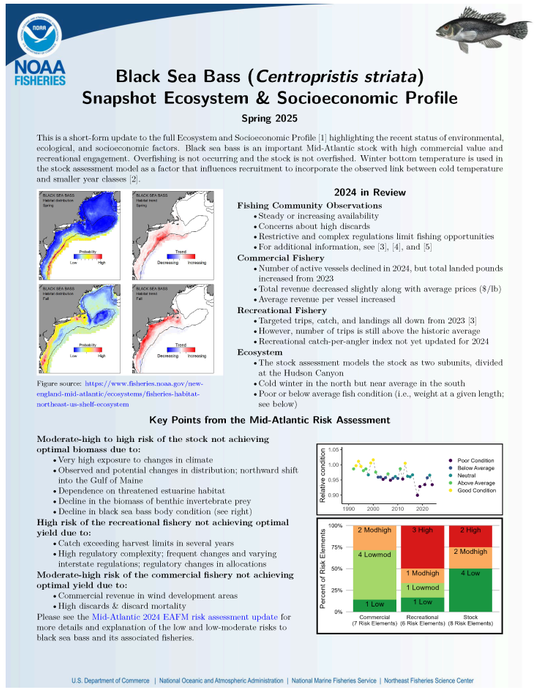
Ecosystem reporting at different levels of organization

The SOE provides information at the ecosystem level



Ecosystem and Socioeconomic Profiles (ESPs) provide information at the stock level

Ecosystem and Socioeconomic Profiles support fisheries science and management by providing additional context that can help inform the development of the stock assessment model, as well as by communicating contextual information to fisheries managers.



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Black Sea Bass (*Centropristis striata*)
Snapshot Ecosystem & Socioeconomic Profile
Spring 2025

This is a short-form update to the full Ecosystem and Socioeconomic Profile [1] highlighting the recent status of environmental, ecological, and socioeconomic factors. Black sea bass is an important Mid-Atlantic stock with high commercial value and recreational engagement. Overfishing is not occurring and the stock is not overfished. Winter bottom temperature is used in the stock assessment model as a factor that influences recruitment to incorporate the observed link between cold temperature and smaller year classes [2].

Figure source: https://www.fisheries.noaa.gov/new-england-mid-atlantic/ecosystems/fisheries-habitat-northeast-us-shelf-ecosystem

2024 in Review

Fishing Community Observations
- Steady or increasing availability
- Concerns about high discards
- Restrictive and complex regulations limit fishing opportunities
- For additional information, see [3], [4], and [5]

Commercial Fishery
- Number of active vessels declined in 2024, but total landed pounds increased from 2023
- Total revenue decreased slightly along with average prices ($/lb)
- Average revenue per vessel increased

Recreational Fishery
- Targeted trips, catch, and landings all down from 2023 [3]
- However, number of trips is still above the historic average
- Recreational catch-per-angler index not yet updated for 2024

Ecosystem
- The stock assessment models the stock as two subunits, divided at the Hudson Canyon
- Cold winter in the north but near average in the south
- Poor or below average fish condition (i.e., weight at a given length; see below)

Key Points from the Mid-Atlantic Risk Assessment

Moderate-high to high risk of the stock not achieving optimal biomass due to:
- Very high exposure to changes in climate
- Observed and potential changes in distribution; northward shift into the Gulf of Maine
- Dependence on threatened estuarine habitat
- Decline in the biomass of benthic invertebrate prey
- Decline in black sea bass body condition (see right)

High risk of the recreational fishery not achieving optimal yield due to:
- Catch exceeding harvest limits in several years
- High regulatory complexity; frequent changes and varying interstate regulations; regulatory changes in allocations

Moderate-high risk of the commercial fishery not achieving optimal yield due to:
- Commercial revenue in wind development areas
- High discards & discard mortality

Please see the Mid-Atlantic 2024 EAFM risk assessment update for more details and explanation of the low and low-moderate risks to black sea bass and its associated fisheries.

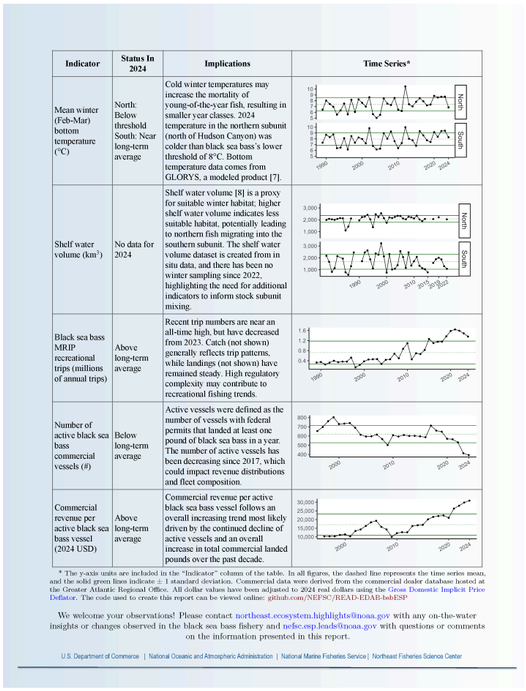
Relative condition

Poor Condition
Below Average
Neutral
Above Average
Good Condition

Percent of Risk Elements

Commercial (7 Risk Elements) | Recreational (6 Risk Elements) | Stock (8 Risk Elements)

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



Indicator	Status In 2024	Implications	Time Series*
Mean winter (Feb-Mar) bottom temperature (°C)	North: Below threshold South: Near long-term average	Cold winter temperatures may increase the mortality of young-of-the-year fish, resulting in smaller year classes. 2024 temperature in the northern subunit (north of Hudson Canyon) was colder than black sea bass's lower threshold of 8°C. Bottom temperature data comes from GLORYS, a modeled product [7].	
Shelf water volume (km³)	No data for 2024	Shelf water volume [8] is a proxy for suitable winter habitat; higher shelf water volume indicates less suitable habitat, potentially leading to northern fish migrating into the southern subunit. The shelf water volume dataset is created from in situ data, and there has been no winter sampling since 2022, highlighting the need for additional indicators to inform stock subunit mixing.	
Black sea bass MRIP recreational trips (millions of annual trips)	Above long-term average	Recent trip numbers are near an all-time high, but have decreased from 2023. Catch (not shown) generally reflects trip patterns, while landings (not shown) have remained steady. High regulatory complexity may contribute to recreational fishing trends.	
Number of active black sea bass commercial vessels (#)	Below long-term average	Active vessels were defined as the number of vessels with federal permits that landed at least one pound of black sea bass in a year. The number of active vessels has been decreasing since 2017, which could impact revenue distributions and fleet composition.	
Commercial revenue per active black sea bass vessel (2024 USD)	Above long-term average	Commercial revenue per active black sea bass vessel follows an overall increasing trend most likely driven by the continued decline of active vessels and an overall increase in total commercial landed pounds over the past decade.	

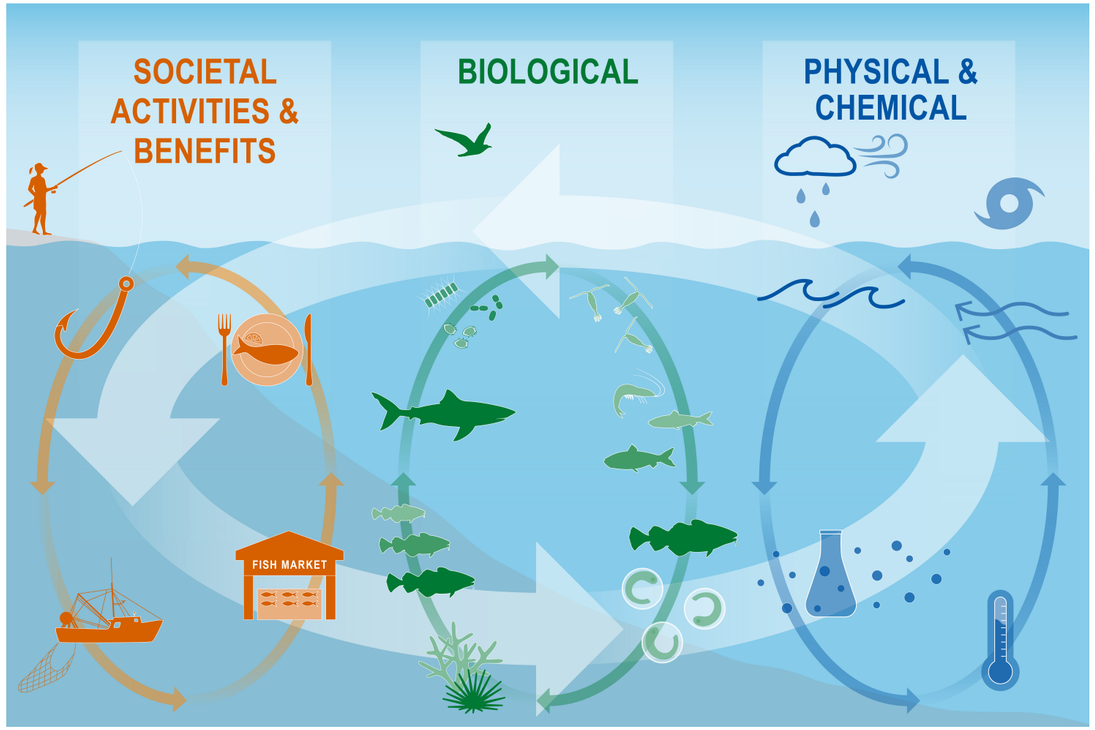
*The y-axis units are included in the "Indicator" column of the table. In all figures, the dashed line represents the time series mean, and the solid green lines indicate ± 1 standard deviation. Commercial data were derived from the commercial dealer database hosted at the Greater Atlantic Regional Office. All dollar values have been adjusted to 2024 real dollars using the Gross Domestic Implicit Price Deflator. The code used to create this report can be viewed online: github.com/NEFSC/READ-EDAB-bsbESP

We welcome your observations! Please contact northeast.ecosystem.highlights@noaa.gov with any on-the-water insights or changes observed in the black sea bass fishery and ne6c.esp.leads@noaa.gov with questions or comments on the information presented in this report.

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

2026 Report Structure

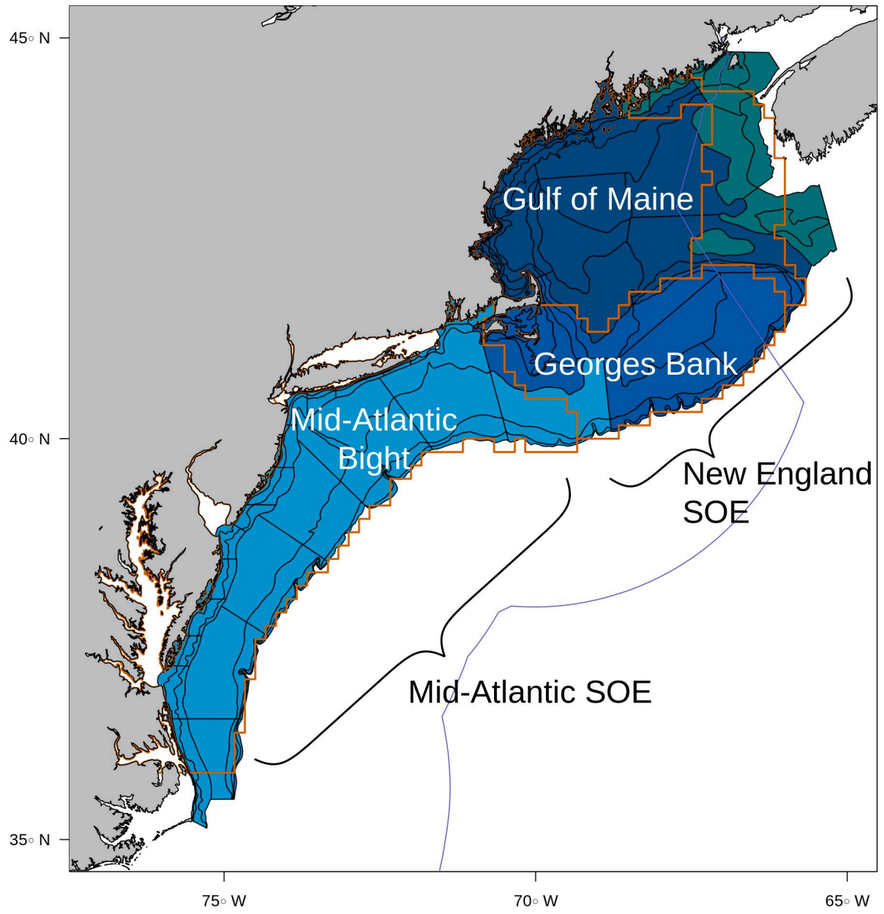
1. Graphical summary
    - Page 1 report card re: performance metrics
    - Page 2 risk summary bullets
    - Page 3 2025 snapshot
2. Performance relative to management objectives
    - *What* does the indicator say–up, down, stable?
    - *Why* do we think it is changing: explore drivers
3. Risks to meeting management objectives
    - Same *What* and *Why* as Performance Section
4. 2025 Highlights



Metrics, risks, drivers, and indicators

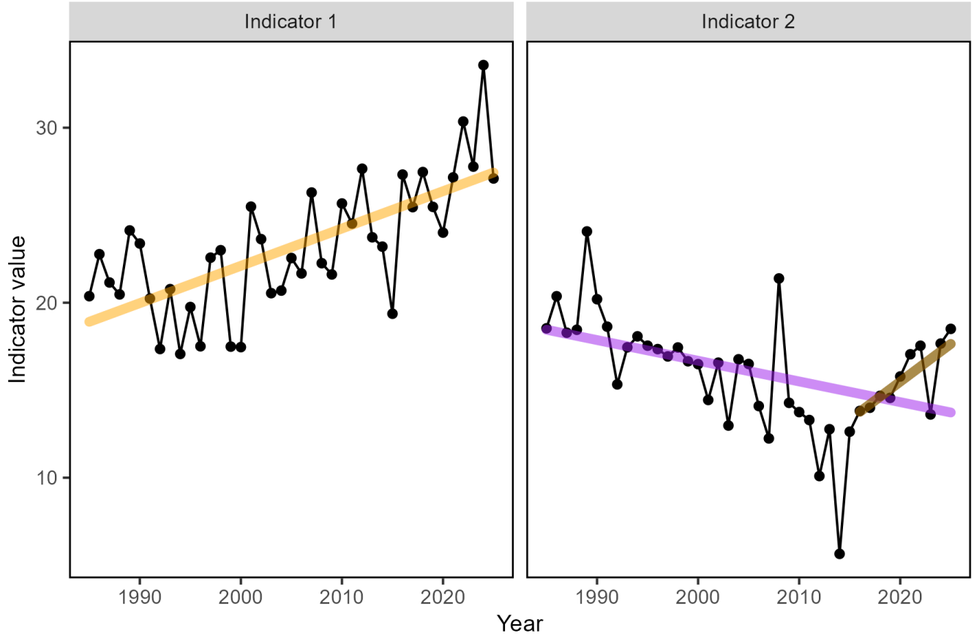
Objective Categories	Indicators reported
Performance Metrics	
Seafood Production	Landings; commercial total and by feeding guild; recreational harvest
Profits	Revenue decomposed to price and volume, profitability
Recreation	Angler trips; recreational fleet diversity; recreational catch diversity
Stability	Fishery and ecosystem volatility, adaptive capacity, and shifts from baseline
Social & Cultural	Community commercial fishing activity and risk factors
Protected Species	Bycatch; population (adult and juvenile) numbers, mortalities
Drivers of Performance	
Management	Stock status; catch compared with catch limits
Biomass	Biomass or abundance by feeding guild from surveys
Environment	Climate and ecosystem risk indicators listed below
Risks to Meeting Objectives	
Risks to Managing Spatially	Fish and cetacean distribution shifts
Risks to Managing Seasonally	Spawning and migration timing
Risks to Setting Catch Limits	Fish condition and recruitment
Other Ocean Uses	Fishery revenue and landings from wind lease areas by species and port
Drivers of Risks	
Habitat and prey quality	Benthic and pelagic forage distribution; ocean temperature; changes in currents and Cold Pool
Phenology	Habitat timing: length of ocean summer, cold pool seasonal persistence
Drivers of productivity	Benthic and pelagic forage quality and abundance; ocean temperature and acidification
Other Ocean Uses	Wind development map; protected species presence and hotspots

State of the Ecosystem report scale and figures



A glossary of terms (2021 Memo 5), detailed technical methods documentation and indicator data are available online.

Key to figures



Long-term trends assessed only for 30+ years: more information

Short-term trends assessed for last 10 years of data OR a full time series <30 years

Orange line = significant increase

Purple line = significant decrease

No color line = not significant or < 30 years

Grey background = last 10 years

Georges Bank: Summary of Performance relative to management objectives

OBJECTIVE (indicator)		TREND	CURRENT STATUS
Seafood production (Total and NEFMC managed landings)	TOTAL	↘	–
	MANAGED	↘	–
	RECREATIONAL	↘	–
Commercial profits (Total revenue and NEFMC managed revenue/profitability)	TOTAL REVENUE	↔	–
	MANAGED REVENUE	↔	–
	PROFITABILITY	↔	–
Recreational opportunities (Effort and fleet and catch diversity)	EFFORT	↔	–
	DIVERSITY	⇄	≈

Stability (Change from baseline, adaptive capacity, and volatility)	FISHERY	✕
	ECOSYSTEM	✕
Social and cultural (Port activity, total community environmental variability risk indicators)	Total Community Environmental Variability	↗
	Varies by community	
Protected species (Coastwide bycatch, population numbers, mortalities)	BYCATCH	⇄
	Harbor Porpoise	✓
	Gray Seal	✓
	POPULATIONS	⇄
	NARW	–
	Gray Seal	+

Gulf of Maine: Summary of Performance relative to management objectives

OBJECTIVE (indicator)	TREND	CURRENT STATUS
Seafood production (Total and NEFMC managed landings)	↘ TOTAL	−
	↘ MANAGED	−
	↘ RECREATIONAL	−
Commercial profits (Total revenue and NEFMC managed revenue/profitability)	↗ TOTAL REVENUE	≈
	↘ MANAGED REVENUE	−
	↔ PROFITABILITY	≈
Recreational opportunities (Effort and fleet and catch diversity)	↔ EFFORT	−
	⤮ DIVERSITY	≈

Stability (Change from baseline, adaptive capacity, and volatility)	FISHERY	✕
	ECOSYSTEM	✕
Social and cultural (Port activity, total community environmental variability risk indicators)	Total Community Environmental Variability	↗ Varies by community
Protected species (Coastwide bycatch, population numbers, mortalities)	BYCATCH	⤮ ✓ Harbor Porpoise, ✓ Gray Seal
	POPULATIONS	⤮ − NARW, + Gray Seal

Summary of Risks to meeting fishery management objectives

Risks to Managing Spatially

- **Observations:** Species distributions are trending to the northeast and into deeper water.
- **Potential Impacts:** Spatial mis-allocation of quotas may lead to unmet quotas, increased discards, and/or miscalculated fishing targets.

Risks to Setting Catch Limits

- **Observations:** Productivity and fish condition have changed across the ecosystem because of ecological and environmental changes.
- **Potential Impacts:** Unaccounted for and unknown productivity changes may lead to misspecified quotas and rebuilding plans, especially if they are not considered in stock reference points and short-term stock projections.

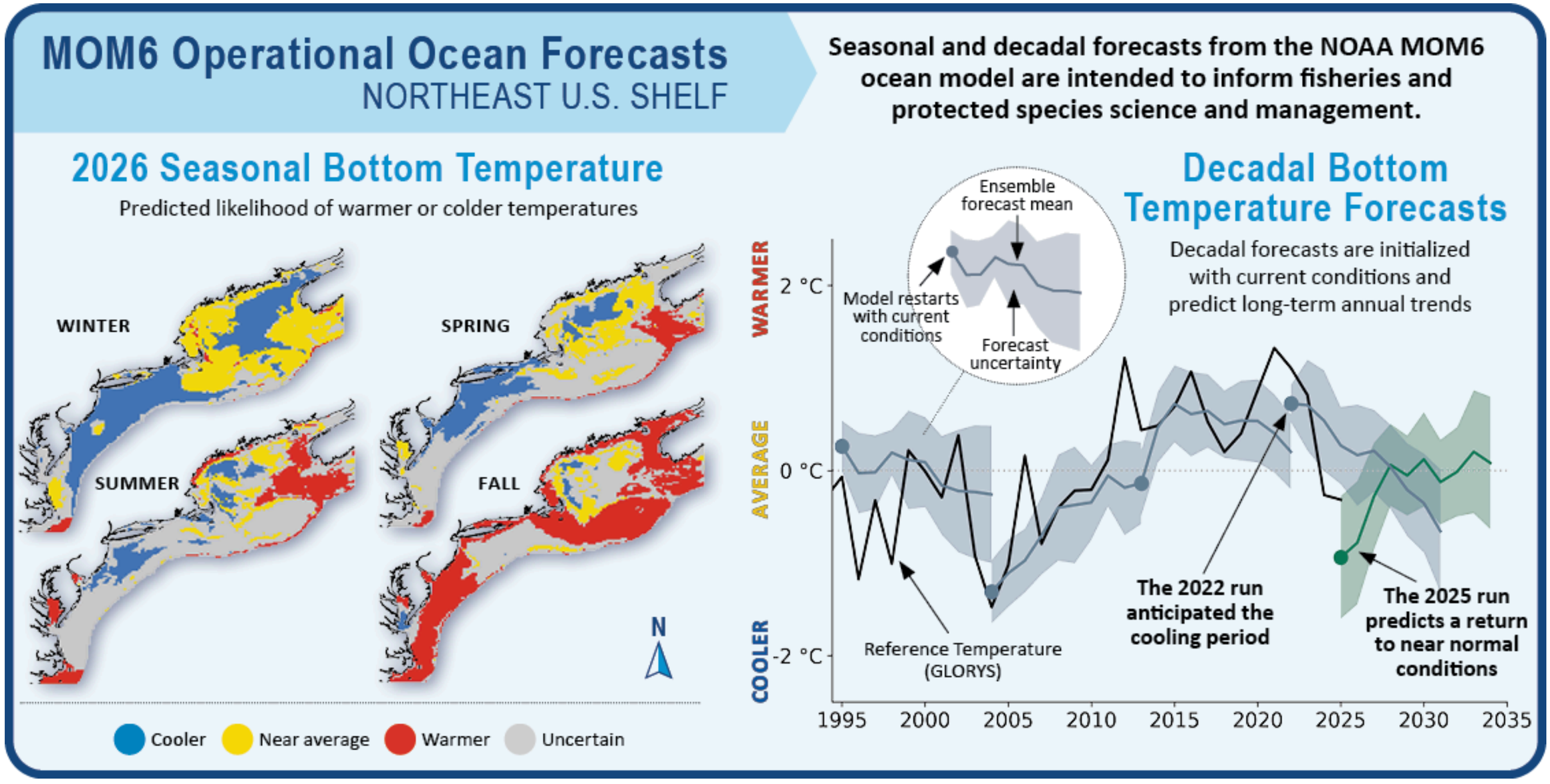
Risks to Managing Seasonally

- **Observations**: Seasonal spawning and migration timing has changed for some Council-managed species and whales.
- **Potential Impacts:** Spawning closures, seasonal openings, and seasonal quota allocations may be less effective if mis-timed with biological events, resulting in decreased seafood production.

Risks of Marine Development

- **Observations:** Wind lease areas have historically been used for fishing and as habitat for North Atlantic right whales. Only 6 of 38 offshore wind leases in the Northeast are operational and/or under construction.
- **Potential Impacts:** Average annual revenue in active project areas is <5% for most ports and for most Council-managed species. Project areas overlap with North Atlantic right whale habitat.

New this year: Ocean Forecasts



2025 Highlights

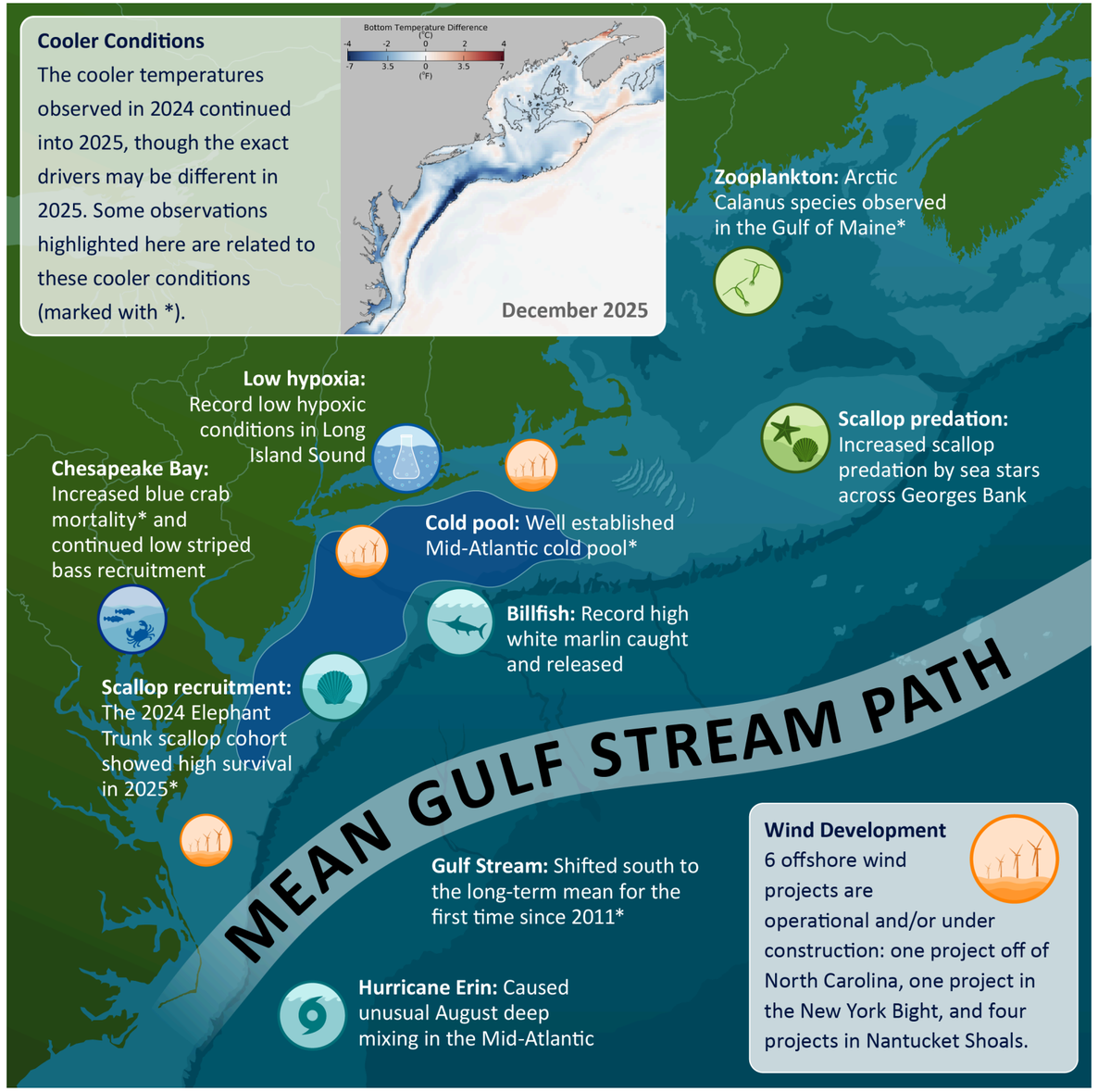
Ecosystem observations

Cooler conditions in the Northeast persisted despite another record warm year globally.

Fishing observations

- Reports of record levels of white marlin, and higher abundance of billfish, sandlance, Illex squid and Atlantic mackerel than in recent years.
- Observations of some species (Atlantic mackerel, striped bass, red drum, bluefish, and other gamefish) showed shifting distributions and unpredictable timing.
- Good hook and line fishing near the wind turbines.

We welcome your observations!
northeast.ecosystem.highlights@noaa.gov



Request tracking memo: Completed requests

Request	Year	Priority
SOE admin		
Include estimates of inclusion years in request memo	2022	Lowest
System level thresholds/ ref pts		
Trend Analysis	2019 - 2024	Highest
Multiple system drivers		
Profits vs Revenue: net revenue indicator incomplete and different trend from gross	2023-2024	Highest
Clarify objectives, terminology and presentation for fishing community engagement/reliance/social indicators	2022, 2024	Highest
Time series of social indicators	2023-2024	Highest
Consider appropriate scale for social and economic indicators	2024	Highest
Add social and economic considerations in the Climate and Ecosystem risks section	2024	Highest
Clarify community definitions and consider indicators beyond landings to employment, subsistence	2024	Highest
Include community affordability in port level vulnerability	2024	High
Report changes in small fish and large fish biomass along with production anomalies	2024	Moderate
Relate OA to nutrient input; are there "dead zones" (hypoxia)?	2021	Low
Estuarine Water Quality	2020	Low
What determines a "risk"? Include aquaculture as a risk?	2022	Unranked

Request tracking memo: Highest priority requests

Request	Year	Status	Priority
Short term forecasts			
Short term forecasting from CEFI (water temp, productivity); Characterize current conditions in context of expected short term change	2022, 2024, 2025	In progress	Highest
Stock level indicators			
Include cross references to stock specific products (ECSA/ESP), ensure consistent approaches; Establish more links between events and consequences (e.g. temp ranges for more species)	2024	In progress	Highest
SOE admin			
Present relevant MA information in NE report	2025	In progress	Highest
Improve context and definitions of Management Objectives	2025	Not started	Highest
System level thresholds/ ref pts			
Ecosystem Overfishing Indicators: compare to empirical thresholds; assess informativeness of indicators using simulation analysis; assess impact of phytoplankton size composition on EOF thresholds; determine optimum yield	2021-2024	In progress	Highest
Develop regime shift analysis methods (e.g., inflection point analysis, influence statistics, break point analysis, early warning variance)	2019-2025	Not started	Highest
Conduct regime shift analysis of relevant indicators (e.g., zooplankton, forage fish, socioeconomic, etc). Use influence statistics to identify whether we are approaching tipping points.	2019-2025	Not started	Highest
Use community and port level information to inform fleet stability indicator	2025	In progress	Highest
Update CVA and explore trend changes when a new CVA is applied	2025	In progress	Highest
Include standardized language about uncertainty from e.g. IPCC or NCA applicable to each indicator or data input	2024	Not started	Highest

Highlights Methods

Observations solicited from:

- SOE contributors
- NEFSC colleagues
- Academic colleagues
- Management partners
- Fishing industry

Observations included if:

- Record high or low observations
- Different from recent conditions
- Reported by multiple sources
- Affecting fishery operations
- Newsworthy

Not exhaustive list; Full impacts remain to be seen

Please send observations to: northeast.ecosystem.highlights@noaa.gov

Fishing Industry Input Needed for Annual State of the Ecosystem Report

NOAA's Northeast Fisheries Science Center is preparing its annual State of the Ecosystem reports for the Mid-Atlantic and New England Fishery Management Councils. These reports are designed to give managers a complete picture of current ecosystem conditions in the Greater Atlantic.

Captain Sonny Gwin fishes onboard his boat, *F/V Skilligalee*

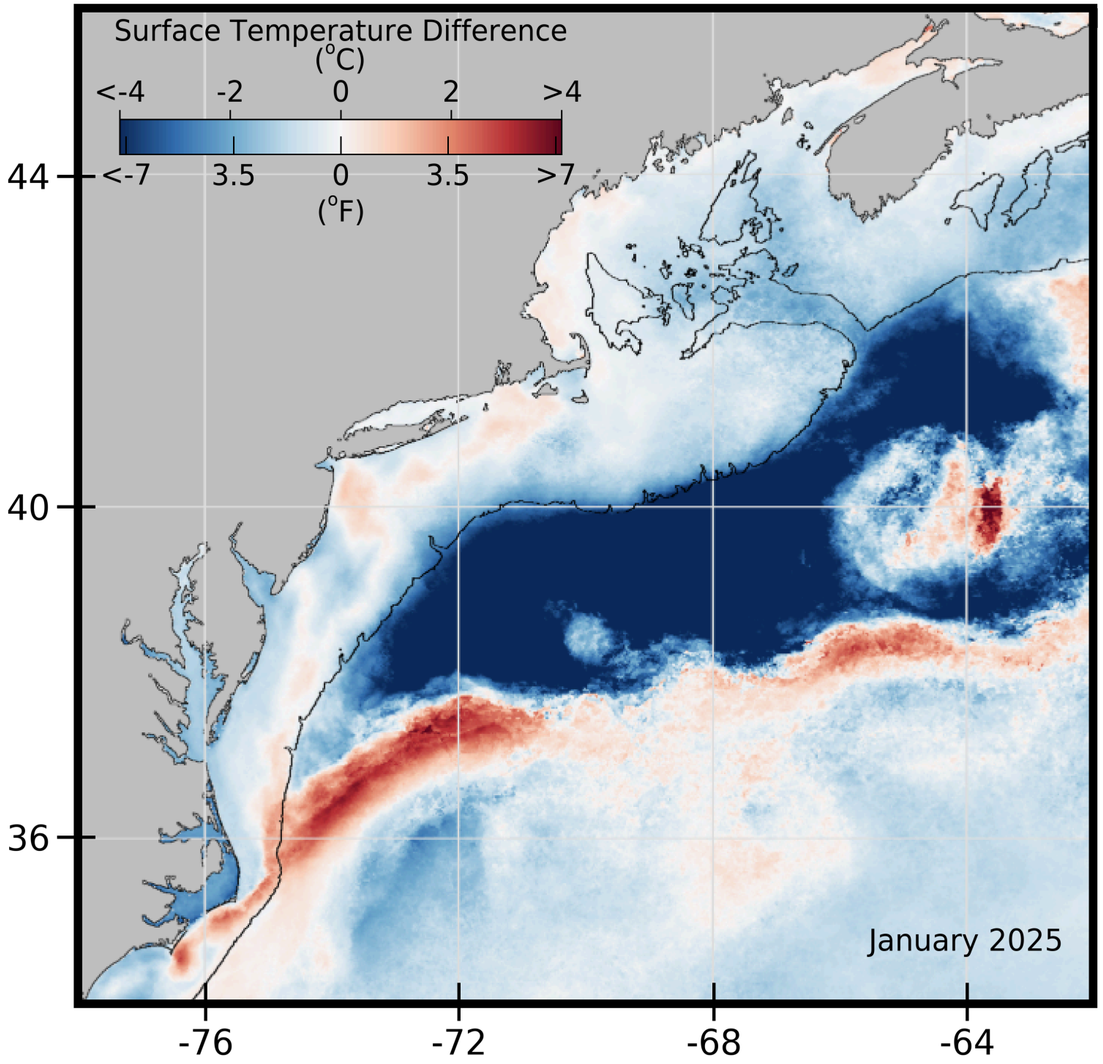
The Center is looking for industry input for the 2025 Highlights section, with a focus on unusual or unexpected conditions observed during the 2025 fishing season. Examples of helpful observations include:

- Did you see species in different places or at different times of the year than you normally see them?
- Were water temperatures warmer/colder than normal, or were there any other unusual conditions on the water that you observed?
- Are you catching anything unusual?

Last year, members of the fishing community reported a number of unusual conditions, including low abundance of some species (such as longfin squid) in traditional fishing areas, observations of some species (such as Atlantic mackerel) outside of typical fishing grounds, and delayed fishing activity due to later-than-usual seasonal migrations.

See the call here

Highlights: Generally cooler, fresher Northeast Shelf

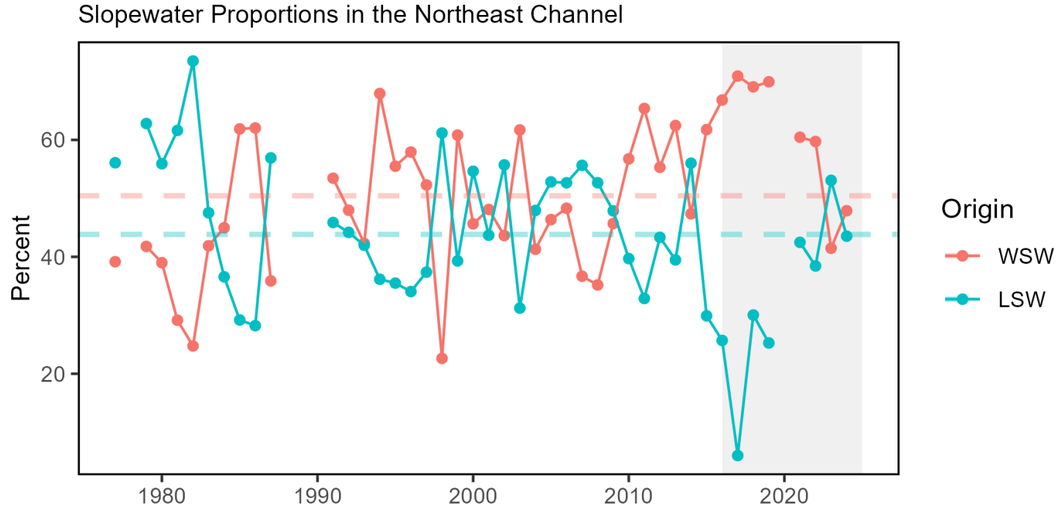


Globally, 2025 was the third warmest year on record

BUT, nearly all NE shelf seasonal surface and bottom temperatures were more similar to or cooler than the longer term average

The Cold Pool was well-developed and more similar to the long-term average in terms of extent and persistence

In 2024, relative contributions of Labrador Slope Water and Warm Slope Water more similar to the long-term averages



Highlights

Images from this NOAA webstory

Observations on timing, location, and abundance:

- Fishers reported delayed migration of black sea bass and the absence of bluefish off of Rhode Island
- Good year for billfish, with >23,000 white marlin caught and released
- Fishers reported low catch and cold stunned red drum and spotted sea trout
- Fishers reported higher abundance and wider distributions of Atlantic mackerel, Illex squid, and sandlance
- Good scallop survival in the Elephant Trunk region according to the scallop survey
- Arctic copepods in GOM observed in the EcoMon survey

CESC Discussion Questions

1. Which MOM6 forecast products are useful for the NEFMC? What is the appropriate scope and scale for decisions?

2. When considering probabilistic forecasts, what are the “events” we’re interested in predicting?

3. How do the SOE’s “management objectives” actually align with the NEFMC’s strategic planning? Should we redefine objectives?

4. How does the CESC recommend the SOE incorporate public/industry observations if no formal data is available?

THANK YOU! SOEs made possible by (at least) 88 contributors from 20+ institutions

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National Oceanic and Atmospheric Administration

IEA
INTEGRATED ECOSYSTEM ASSESSMENT

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Bastille, K. et al. (2020). “Improving the IEA Approach Using Principles of Open Data Science”. In: *Coastal Management* 0.0. Publisher: Taylor & Francis _eprint: https://doi.org/10.1080/08920753.2021.1846155, pp. 1-18. ISSN: 0892-0753. DOI: 10.1080/08920753.2021.1846155. URL: https://doi.org/10.1080/08920753.2021.1846155 (visited on Dec. 09, 2020).

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Additional resources

- ecodata R package
- Indicator catalog
- SOE Technical Documentation
- SOE Reports on the web
- Slides available at https://nefsc.github.io/READ-EDAB-SOE_reports/
- Contact: joseph.caracappa@noaa.gov