

# THE INTEGRATED SENTINEL MONITORING NETWORK

The Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS-Northeast IOOS) and the Northeast Regional Ocean Council (NROC) announce the initiation of the Integrated Sentinel Monitoring Network (ISMN).

The ISMN convenes the Northeast region's marine and estuarine monitoring projects together under one clearinghouse in order to accomplish three key tasks:

- find & fill gaps in present ecosystem observing activities
- facilitate integration and communication among monitoring efforts
- make findings more impactful through data sharing



## WHY WE NEED THE ISMN



A multitude of programs and projects supported by federal and state agencies, universities, research institutions, non-profit organizations and citizen science groups independently monitor attributes of the estuarine, coastal and shelf marine ecosystems in the U.S. Northeast region.

In its role as a clearinghouse, the ISMN fits together the puzzle pieces of these monitoring efforts and shares the progression of ecosystem changes with stakeholders via a new regional data hub. The ISMN was also selected as the Northeastern branch of the national Marine Biological Observation Network (MBON).

## THE ISMN'S ACTIVITIES

- The ISMN facilitates tracking responses of key species and ecosystem properties—collectively called *sentinel indicators*—to the Northeast's rapidly shifting marine environment. Sentinel indicators are the proverbial canary in the coal mine, and by facilitating the observation, synthesis and communication of the changes observed by monitoring activities, the ISMN provides decisionmakers with relevant analysis that can inform their actions.
- The ISMN is working to serve as a centralized hub for the area's diverse monitoring efforts, including collaborating with NROC's Ocean Data Portal to integrate data mapping projects, in order to increase the visibility and accessibility of data.
- The ISMN, through its Center for Analysis, Prediction and Evaluation (CAPE), convenes regional experts to synthesize data from multiple observing programs to provide focused analysis of ecosystem status and change for specific stakeholder needs.
- Results from the CAPE inform ISMN's communication of syntheses and predictions of ecosystem status, changes, vulnerabilities, and uncertainties to researchers, decisionmakers, and the concerned public, with the goal of informing future action.

OBSERVE



ANALYZE



COMMUNICATE



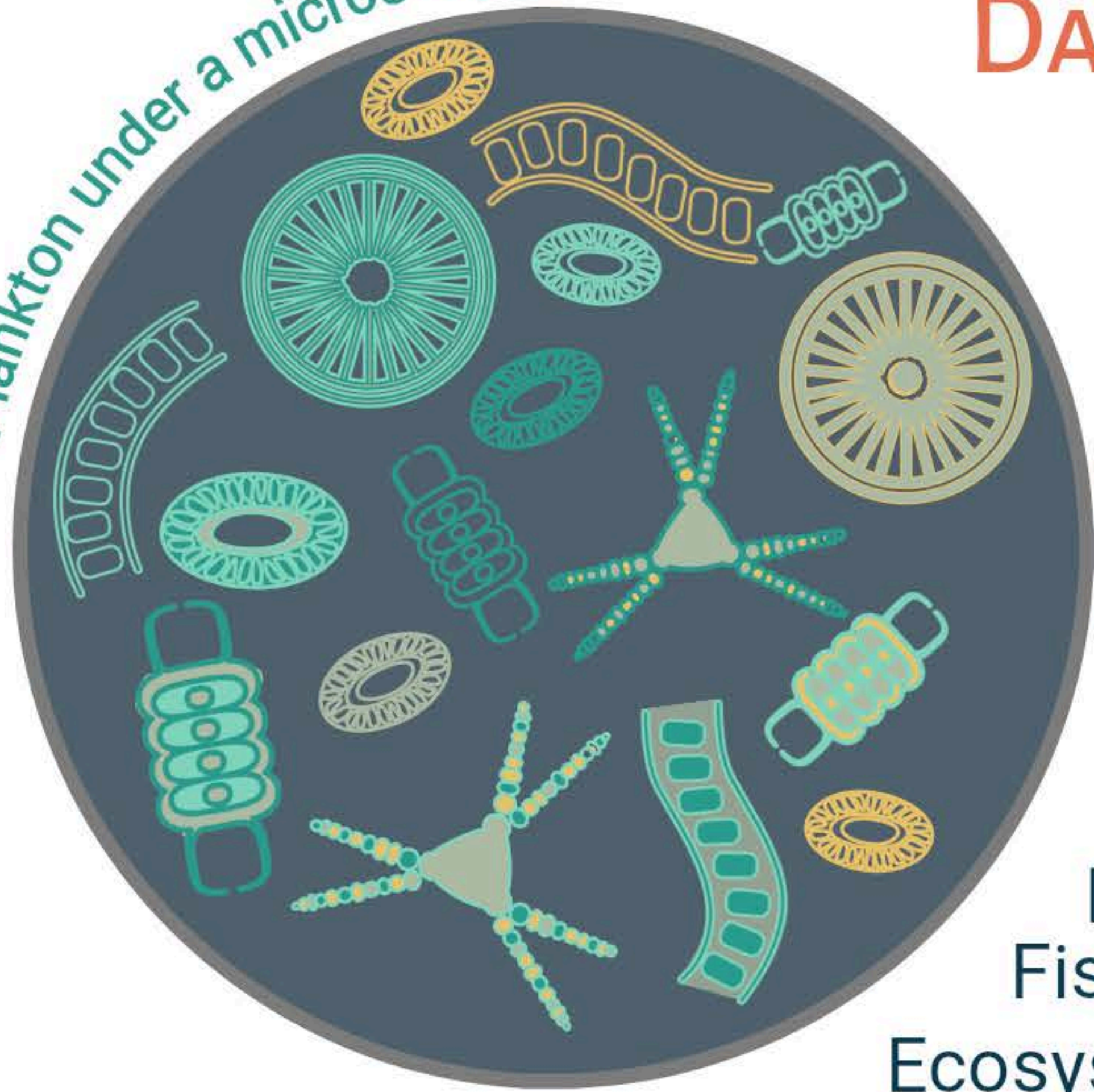


## — THE ISMN IN ACTION —

### OBSERVATION & ANALYSIS OF PLANKTON BIODIVERSITY & ITS EFFECT ON ECOSYSTEM SERVICES

In the coastal and shelf waters of the Gulf of Maine, the ISMN facilitates and integrates across observing programs to provide critical information about marine ecosystem change.

Plankton under a microscope



### DATA COLLECTION & MANAGEMENT

- With funding from NOAA, U.S. IOOS, and the Bureau of Ocean Energy Management, the ISMN is expanding the national Marine Biodiversity Observation Network (MBON) into the Gulf of Maine.
- The ISMN has re-established collection of oceanographic biodiversity data at two strategically located time series stations, filling a gap in observing the phenology of change in plankton production cycles. The time series stations supplement existing planktonic biodiversity observing conducted by the National Marine Fisheries Service and the National Science Foundation, Long Term Ecosystem Research Northeast Shelf Project in the Northeast U.S. coastal and shelf waters, and the Canada Department of Fisheries and Oceans in Canadian waters.

### DATA SYNTHESIS

- The Center for Analysis, Prediction and Evaluation (CAPE), a key part of ISMN's role centralized hub for information, synthesizes observing data indicating change in lipid-rich zooplankton, which is a key sentinel variable supporting the Gulf of Maine pelagic food web. Existing data and models of zooplankton abundance and distribution are both combined with observations of foraging patterns of the endangered, plankton-feeding North Atlantic right whale for use by federal and state agencies in decisions about actions to save the North Atlantic right whale from extinction.
- The ISMN-MBON and the Northeast Shelf Long Term Ecosystem Research program, supported by the National Science Foundation in partnership with the NOAA National Marine Fisheries Service oceanographic survey, are developing a collaboration to understand planktonic diversity and how the rapidly warming U.S. Northeast shelf affects the abundance and distribution of forage fish, such as herring and sand lance, which are foundational to Northeastern U.S. fisheries, and populations of marine mammals and seabirds.

Visit [www.sentinelmonitoring.org](http://www.sentinelmonitoring.org) for more information

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