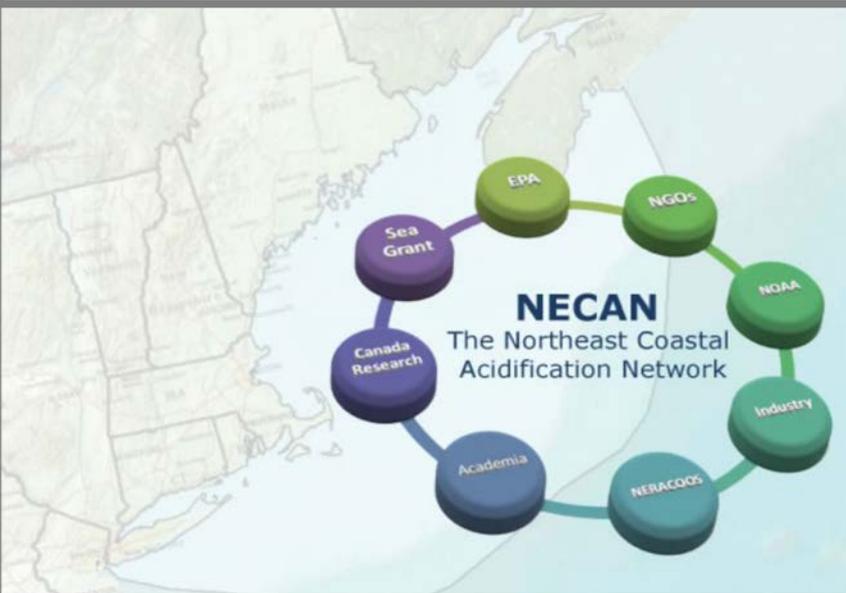


The Northeast Coastal Acidification Network (NECAN)

Social Coast 2016



NECAN Steering Committee

- Ru Morrison* (IOOS/NERACOOS)
- Cassie Stymiest (NERACOOS)
- **Esperanza Stancioff (UMaine Extension / ME Sea Grant)**
- Todd Capson (Independent Contractor)
- Dwight Gledhill (NOAA OAP)
- Bill Mook (Mook Sea Farm)
- Joe Salisbury (UNH)
- Elizabeth Turner (NOAA/NOS/NCCOS)
- Mel Cote (EPA)
- Helmuth Thomas (Dalhousie Univ.)
- Juliana Barrett (CT Sea Grant)

Diversity

Expertise

Dedication

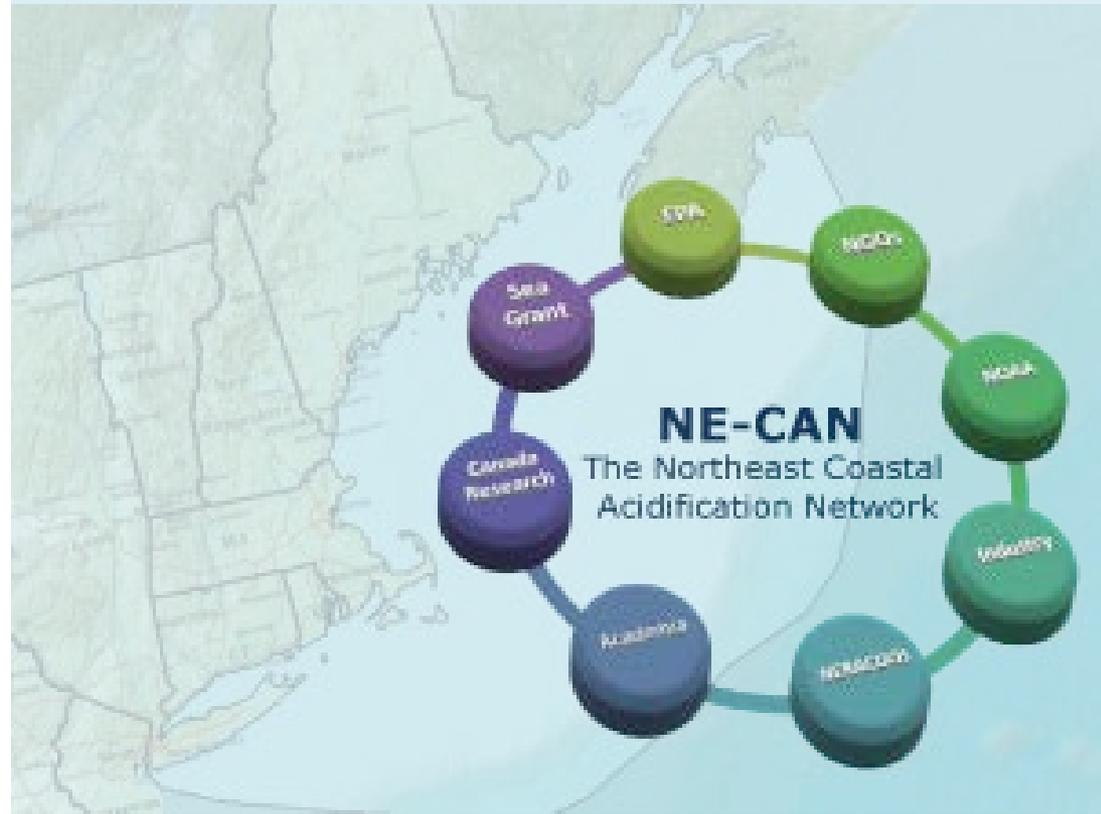
Perspective

Who is NECAN?

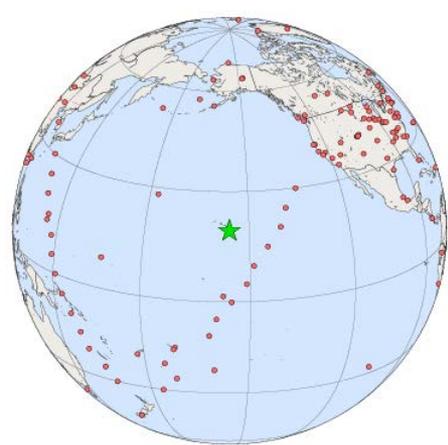
A collaborative network of partners including:

- Scientists
- Federal and state agency reps.
- Resource managers
- Industry partners
- Water quality groups
- Educators

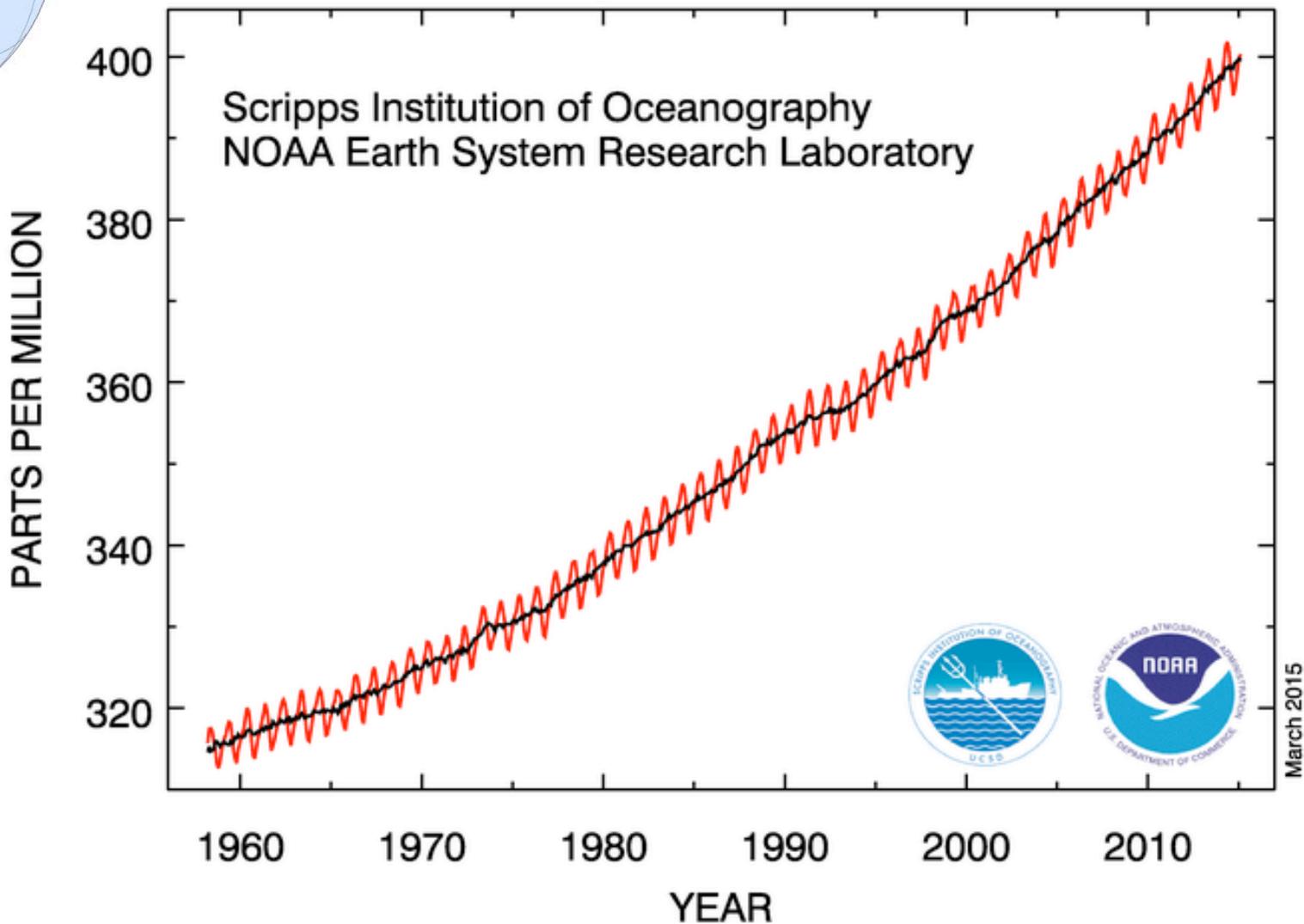
Who are: dedicated towards coordinating and guiding regional observing, research, and modeling endeavors



NE-CAN is all of us!

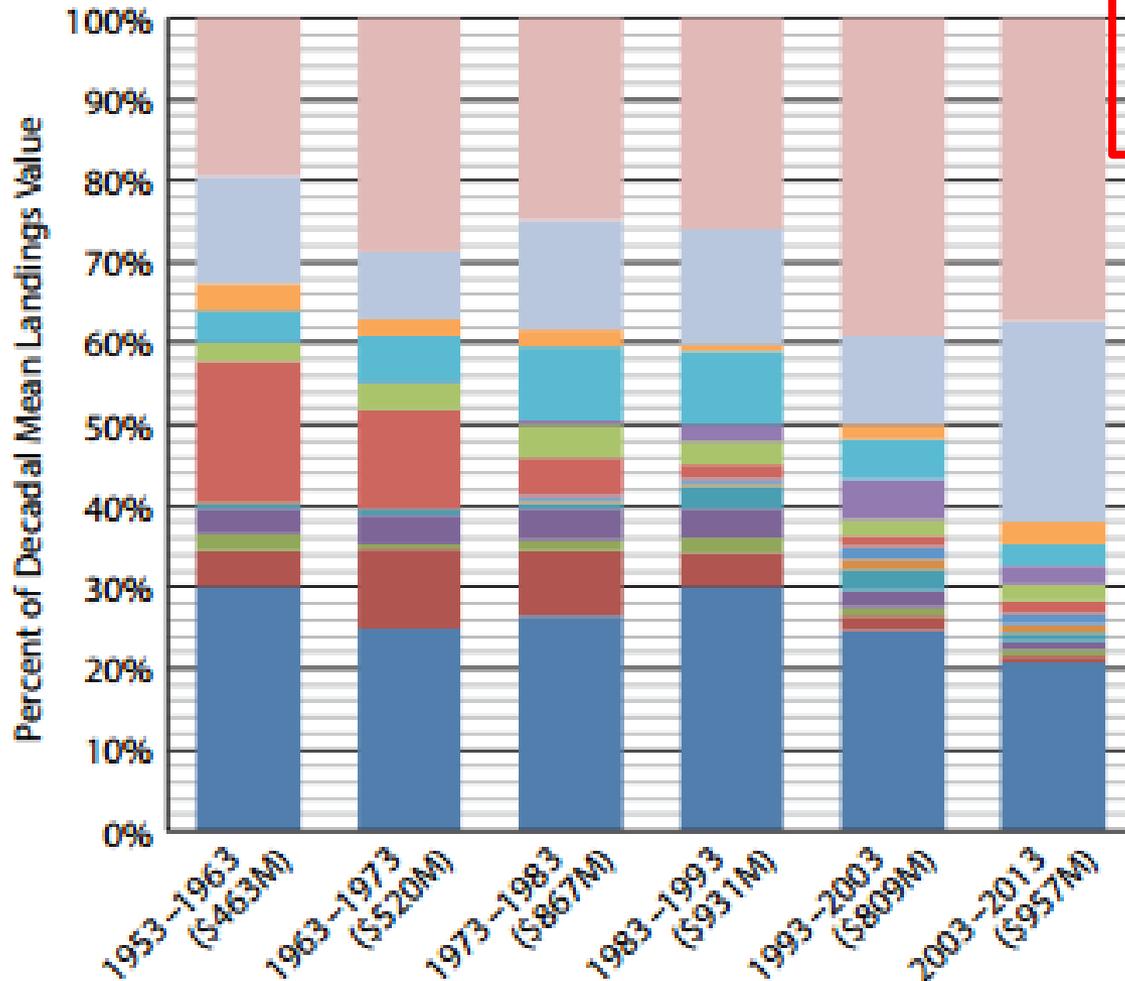


Atmospheric CO₂ at Mauna Loa Observatory



Why care about OCA?

We are dependent on our ocean resources



Calcifying Species

- Lobster, American
- Scallop, Sea

- Herring, Atlantic
- Cod, Atlantic
- Goosefish
- Clam, Softshell
- Haddock
- Squid, Longfin
- Clam, Ocean Quahog
- Oyster, Eastern
- Flounder, Winter
- Flounder, Summer
- Flounder, Yellowtail
- Other



Decadal Mean Landings Values (Inflation Corrected to 2008)

NECAN's role:

- **Review and assess** the most recent scientific, technical and socio-economic information relevant to the economically important marine organisms potentially impacted by ocean and coastal acidification;
- **Communicate** state of knowledge and critical knowledge gaps identified by stakeholders to relevant state and federal agencies;
- Help to **coordinate and set regional priorities** for monitoring and research designed to further our understanding of coastal acidification;
- Understand and Respond to **user and stakeholder needs.**



Review and assess Communicate Respond Set priorities



2013



2016

The NECAN Strategy

Review and assess

Communicate

Respond

Set priorities

Webinars



Synthesis



Translation



**Stakeholder
Input**



**Implementation
Plan**

Develop

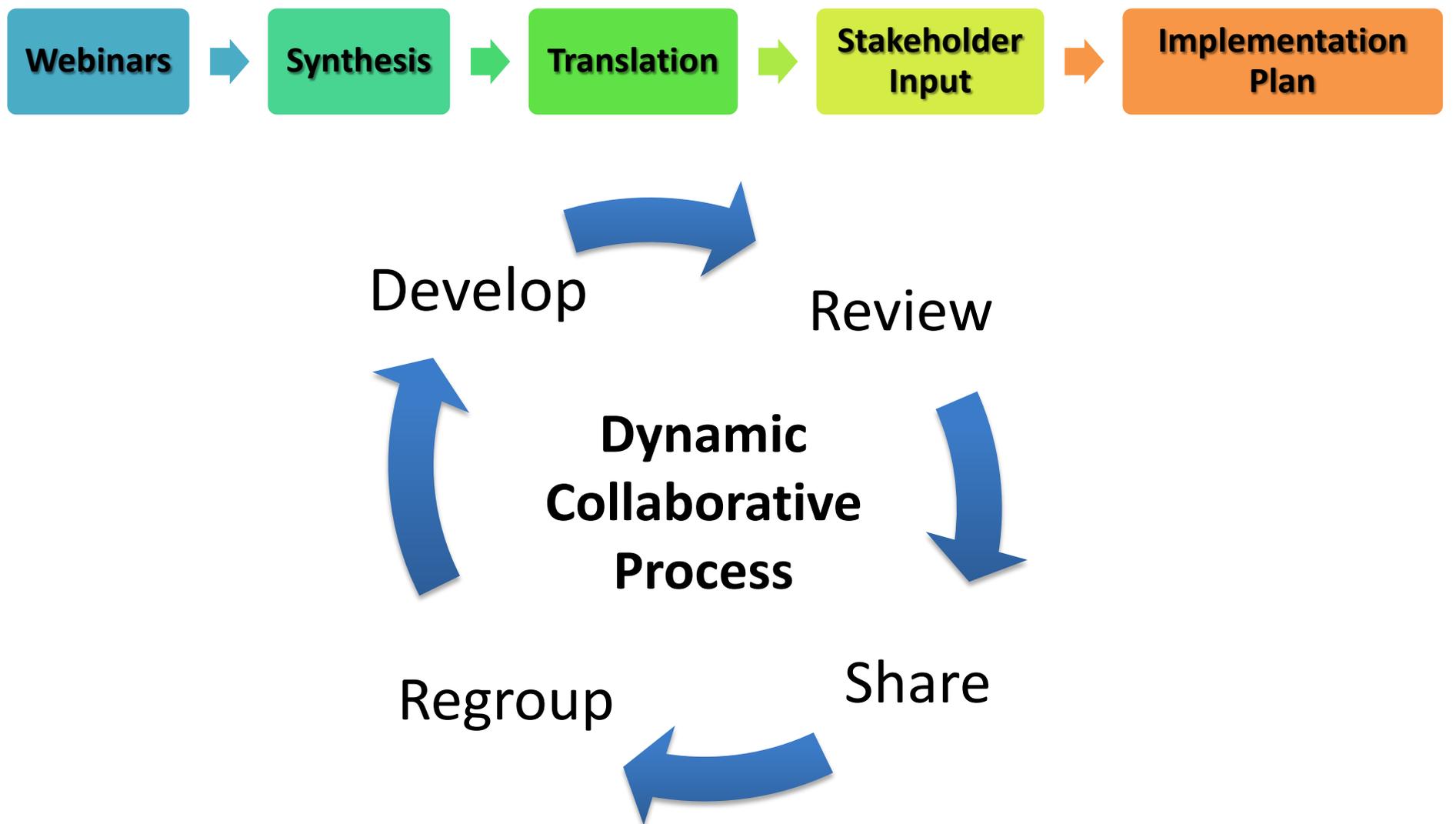
Review

**Dynamic
Collaborative
Process**

Regroup

Share

The NECAN Process



Step 1: Review and Assess Science



- ✓ 16 research presentations/webinars
- ✓ 2-day state of the science workshop
- ✓ Article for special issue of Oceanography



State of the Science Synthesis *Oceanography* 28(2):182–197



1. New England coastal and adjacent Nova Scotia shelf waters have a **low buffering capacity**

2. High dependence on **calcifying species**

1. The community currently **lacks the ability to confidently predict** how the region's ecosystems will respond to increasing acidification

EMERGING THEMES IN OCEAN ACIDIFICATION SCIENCE

Ocean and Coastal Acidification off New England and Nova Scotia

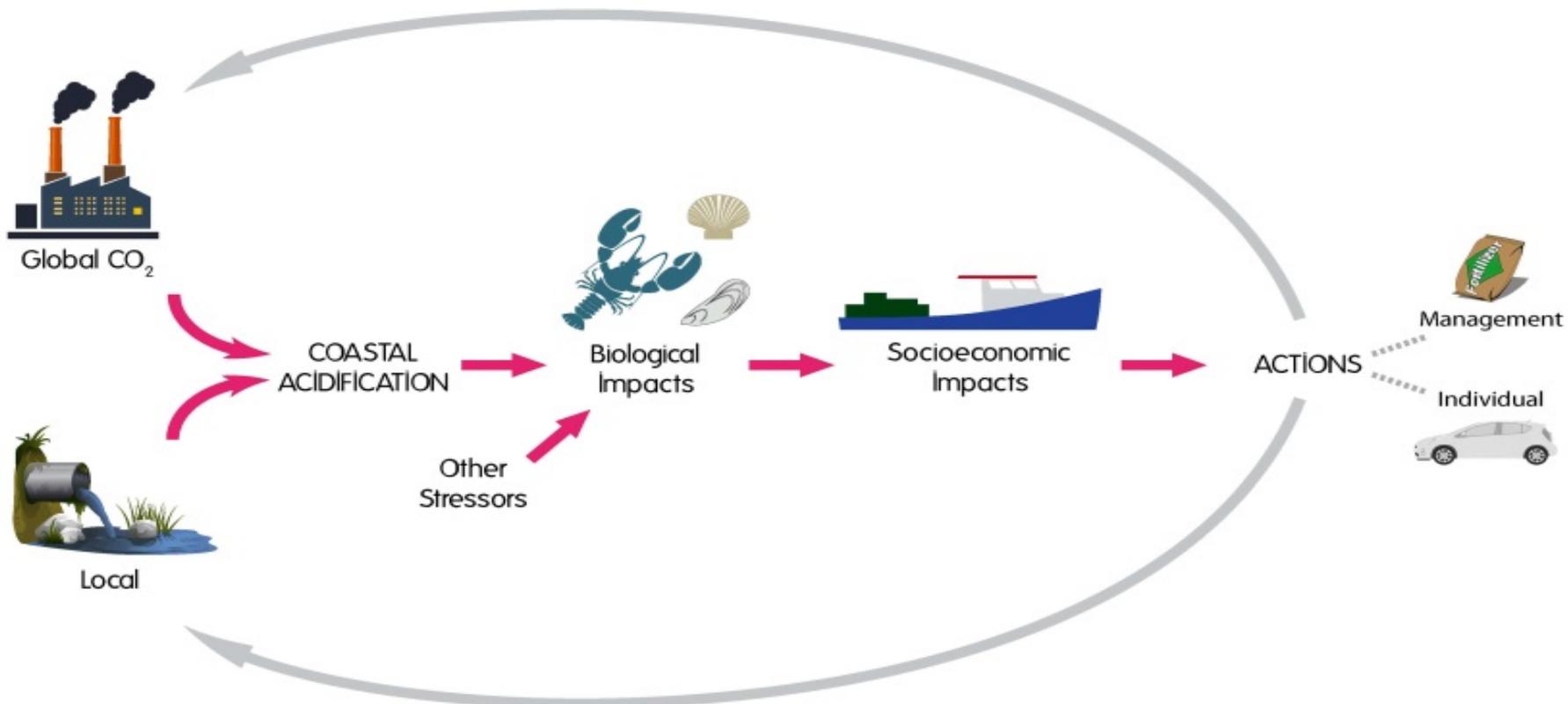
By Dwight K. Gledhill, Meredith M. White, Joseph Salisbury, Helmuth Thomas, Ivy Misna, Matthew Liebman, Bill Mook, Jason Grear, Allison C. Candelmo, R. Christopher Chambers, Christopher J. Gobler, Christopher W. Hunt, Andrew L. King, Nichole N. Price, Sergio R. Signorini, Esperanza Stancioff, Cassie Stymiest, Richard A. Wahle, Jessica D. Waller, Nathan D. Rebutck, Zhaohui A. Wang, Todd L. Capson, J. Ruairidh Morrison, Sarah R. Cooley, and Scott C. Doney

ABSTRACT. New England coastal and adjacent Nova Scotia shelf waters have a reduced buffering capacity because of significant freshwater input, making the region's waters potentially more vulnerable to coastal acidification. Nutrient loading and heavy precipitation events further acidify the region's poorly buffered coastal waters. Despite the apparent vulnerability of these waters, and fisheries' and mariculture's significant dependence on calcifying species, the community lacks the ability to confidently predict how the region's ecosystems will respond to continued ocean and coastal acidification. Here, we discuss ocean and coastal acidification processes specific to New England coastal and Nova Scotia shelf waters and review current understanding of the biological consequences most relevant to the region. We also identify key research and monitoring needs to be addressed and highlight existing capacities that should be leveraged to advance a regional understanding of ocean and coastal acidification.

This true-color image of the Northeast United States and Canada was captured by the Moderate Resolution Imaging Spectroradiometer (MODIS) on August 11, 2007. Credit: Jacques Descloitres, MODIS Rapid Response Team, NASA/GSFC

182 *Oceanography* 1, Vol. 28, No. 2

Step 2: Communicate results of synthesis



Communication Framework

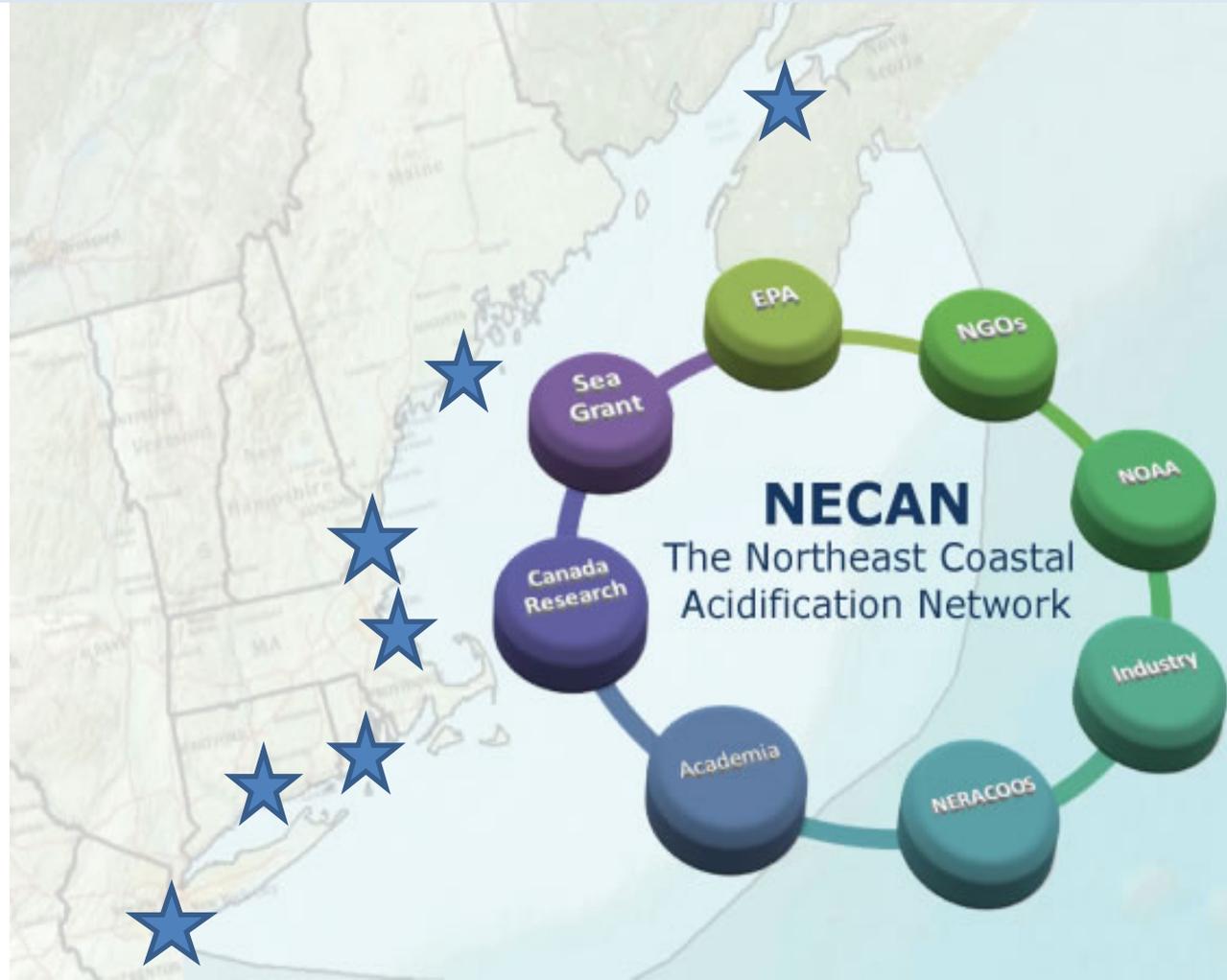
Example of Website page to be developed



Step 3: Stakeholder Engagement

Purpose: to inform and learn from fishermen, aquaculturists, and coastal water quality groups regarding Ocean and Coastal Acidification.

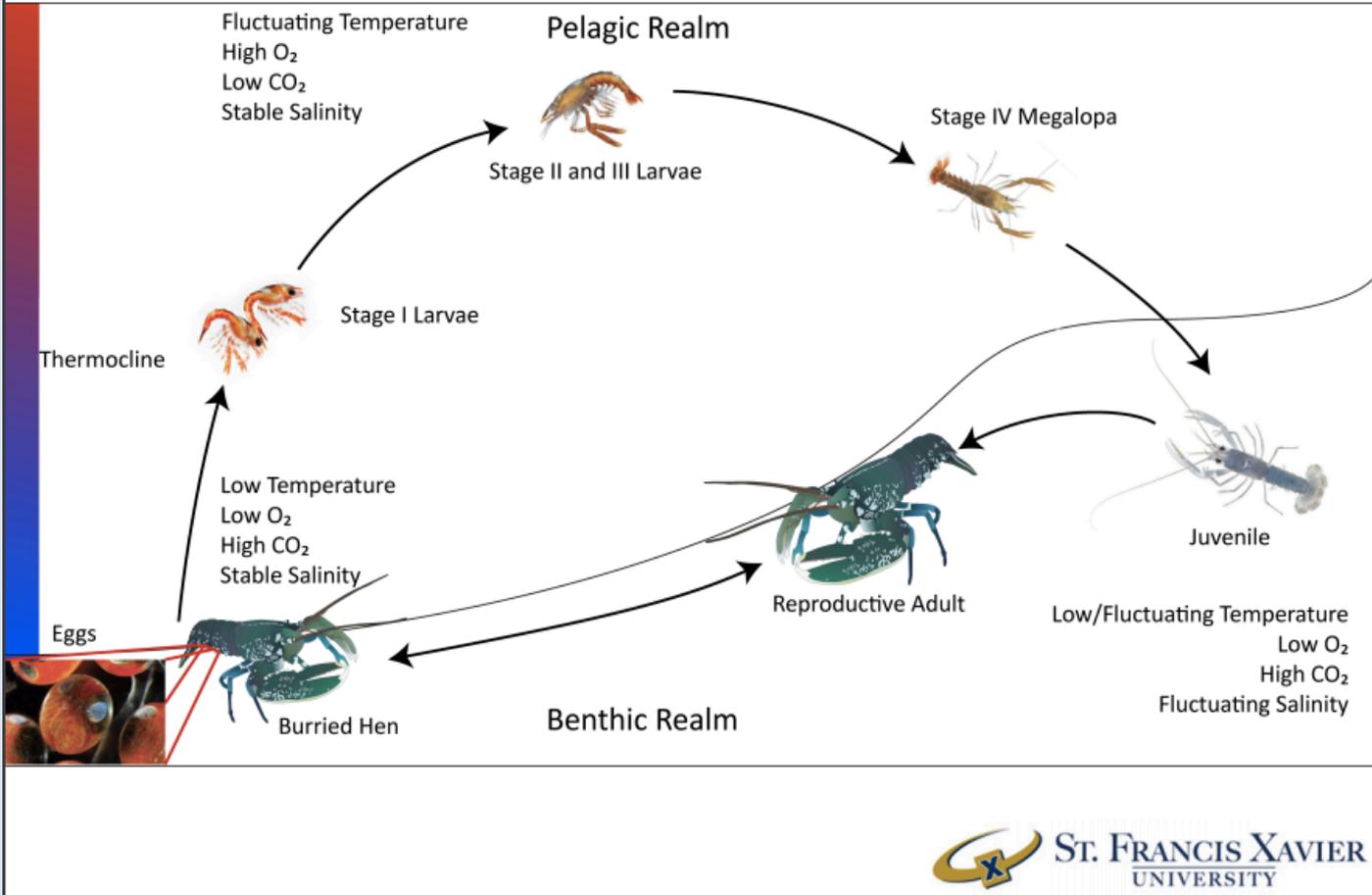
- **Maine** (Dec.)
- **South Shore MA** (April)
- **Rhode Island** (June)
- **North Shore MA** (June)
- **NJ/DE (not NECAN)** (Aug)
- **NS Canada** (Oct.)
- **Connecticut** (Jan)





Stakeholder Input

What does this mean for the American Lobster?



Dr. Daniel Small
St. Francis Xavier Univ.
Antigonish, Nova Scotia

We Need to:

- translate acidification in the context of climate change, and **multiple stressor** environment
- **identify risks and make recommendations** for each separate industry group
- improve and expand **monitoring** so we are collecting high quality (long term) data
- **research** targeted to regionally-important species

...all of which needs to be **coordinated** and made **relevant** for stakeholders and policy makers



Finding the local perspective on ocean acidification

Ocean acidification is not just a buzzword for the men and women who make their living harvesting shellfish off the coast of New England. The pH of coastal water directly affects the health of shellfish and that has a real and immediate impact on the livelihood of fishermen.

With the help of MIT Sea Grant and Woods Hole Sea Grant/Cape Cod Cooperative Extension, the Northeast Coastal Acidification Network coordinated an Ocean Acidification Stakeholder Workshop. The workshop brought together scientists, state and federal regulators, non-profit groups, and leaders in fishing communities across Cape Cod and The Islands to learn from one another about the local effects of coastal acidification.

[continue reading](#)



January 2015 Volume 20, No. 1

FISHERMEN'S VOICE

News and Comment for and by the Fishermen of Maine

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Ocean Acidification A Global Issue Gets Local

by Catherine Schmitt

The changing chemistry of the ocean threatens the state's most important fisheries. Yet ocean acidification seems diffuse and global, too overwhelming for any one person, or fisherman, to do much about. But, in fact, there's a lot of things people in Maine can do to address the problem, according to participants in a workshop hosted by the Northeast Coastal Acidification Network at the Darling Marine Center in December.



CONTENTS

- "Possibility Open" That Habitat Closures Could Impact Lobster Gear
- Scallop Bounties and Lovewell's War
- Editorial - In These Last Hours
- Maine and Massachusetts Rope Buybacks in January
- Scallop Fishermen Can Harvest, But Early Season End Expected
- Eastport Breakwater Collapse



Step 4: Implementation Plan



organisms:

Shellfish, lobster, finfish

different life stages:

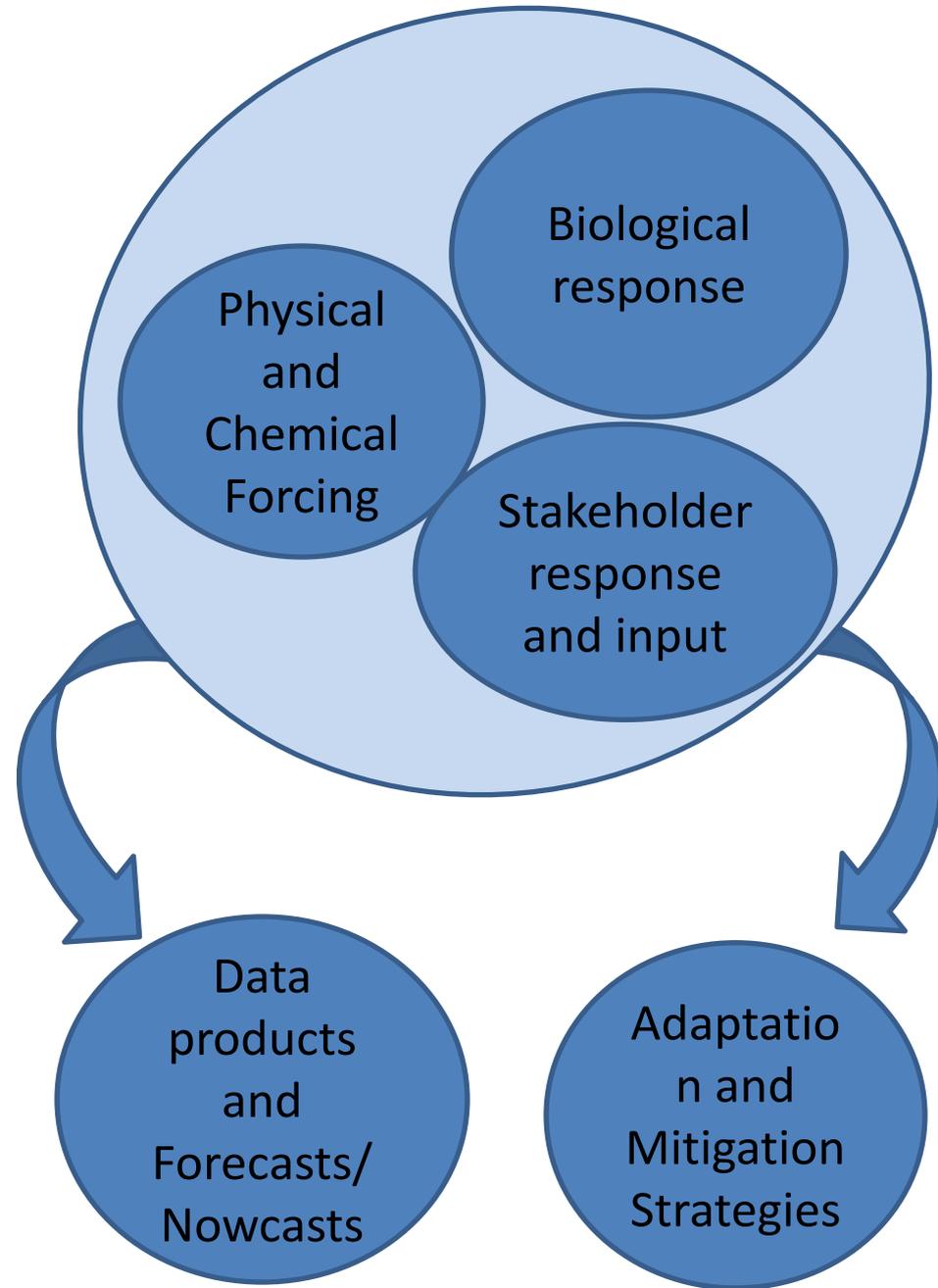
Larvae, juveniles, adults

in different habitats:

Nearshore

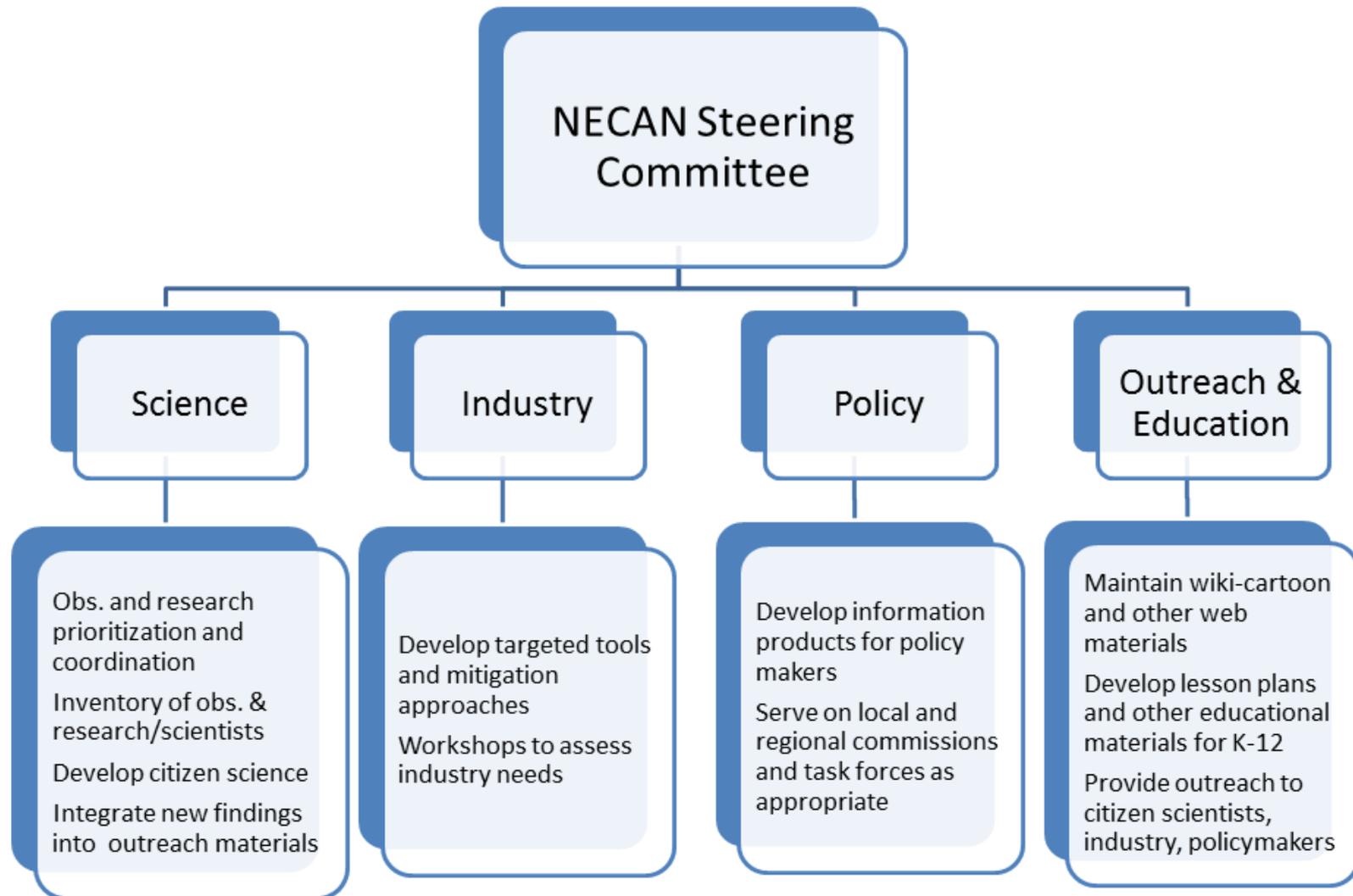
Open ocean/off shore

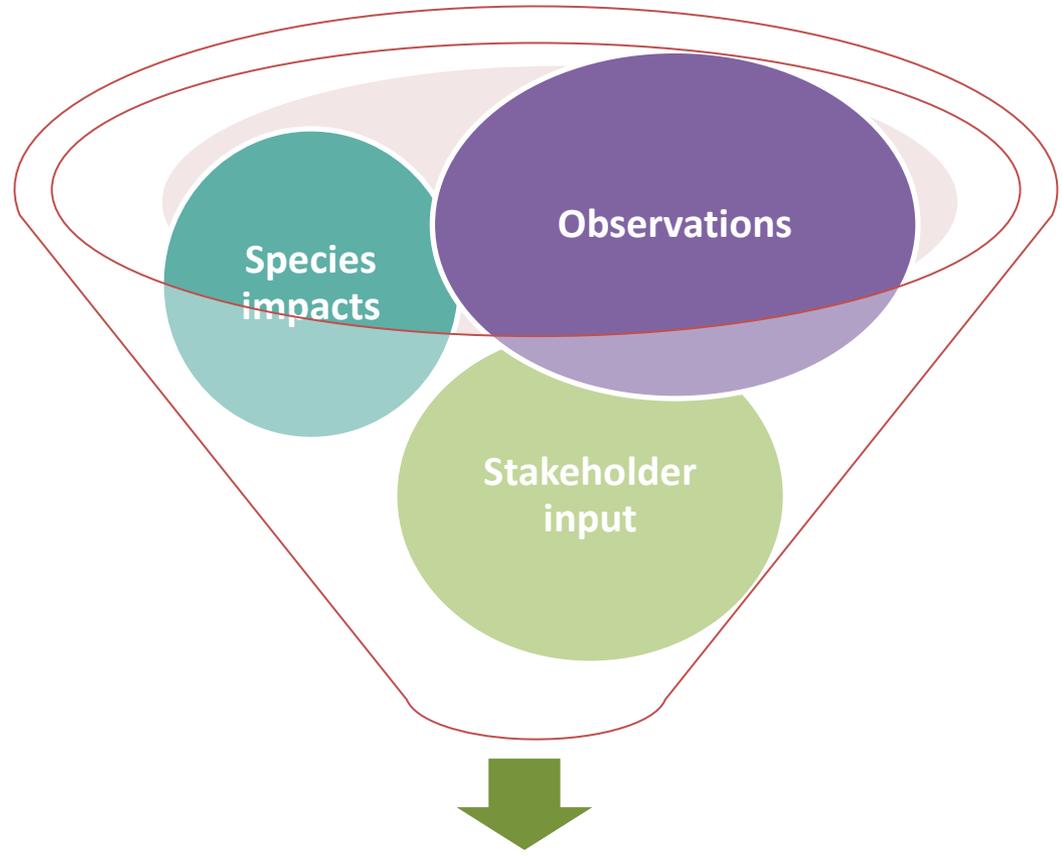
Mixed



Set priorities

NECAN Working Groups





State of the Science

**State of Maine Legislation OA
Commission and Report**

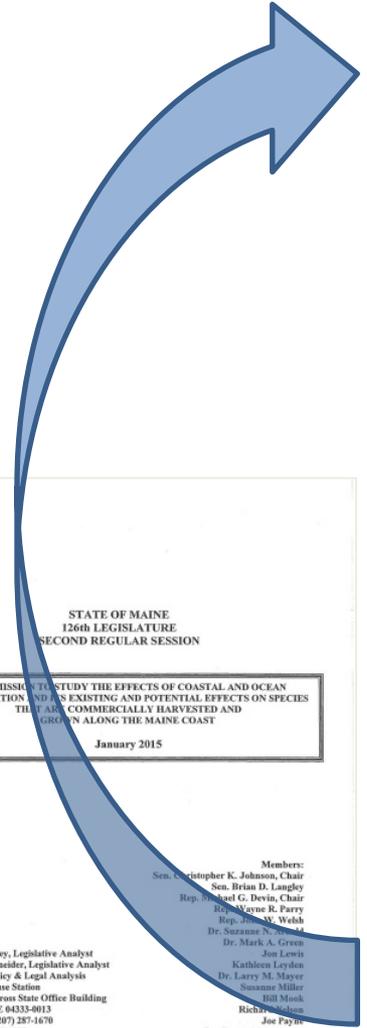
STATE OF MAINE
126th LEGISLATURE
SECOND REGULAR SESSION

COMMISSION TO STUDY THE EFFECTS OF COASTAL AND OCEAN ACIDIFICATION AND ITS EXISTING AND POTENTIAL EFFECTS ON SPECIES THAT ARE COMMERCIALY HARVESTED AND GROWN ALONG THE MAINE COAST

January 2015

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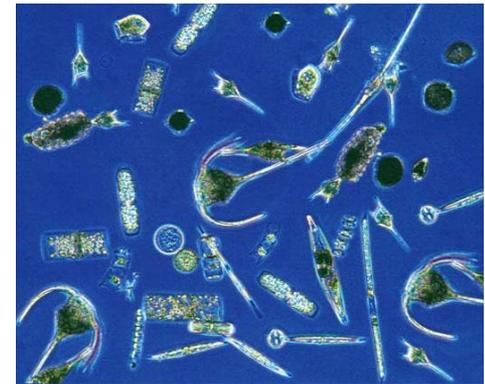


So what can we do about it?

- Gain a better understanding through increased technology, information, and research
- Legislative & political action both globally/locally (WA, now ME)
- Nutrient management
- Research and Monitoring



Reduce contributions of carbon, and therefore acidification, to marine environments



Acknowledgements:

- The NECAN Steering Committee and its members
- NOAA's Ocean Acidification Program
- NOAA's North Atlantic Regional Team
- EPA
- Partners!

www.neracoos.org/necan

Thank You!



Photo: University of Maine