



Department of
Environmental
Conservation

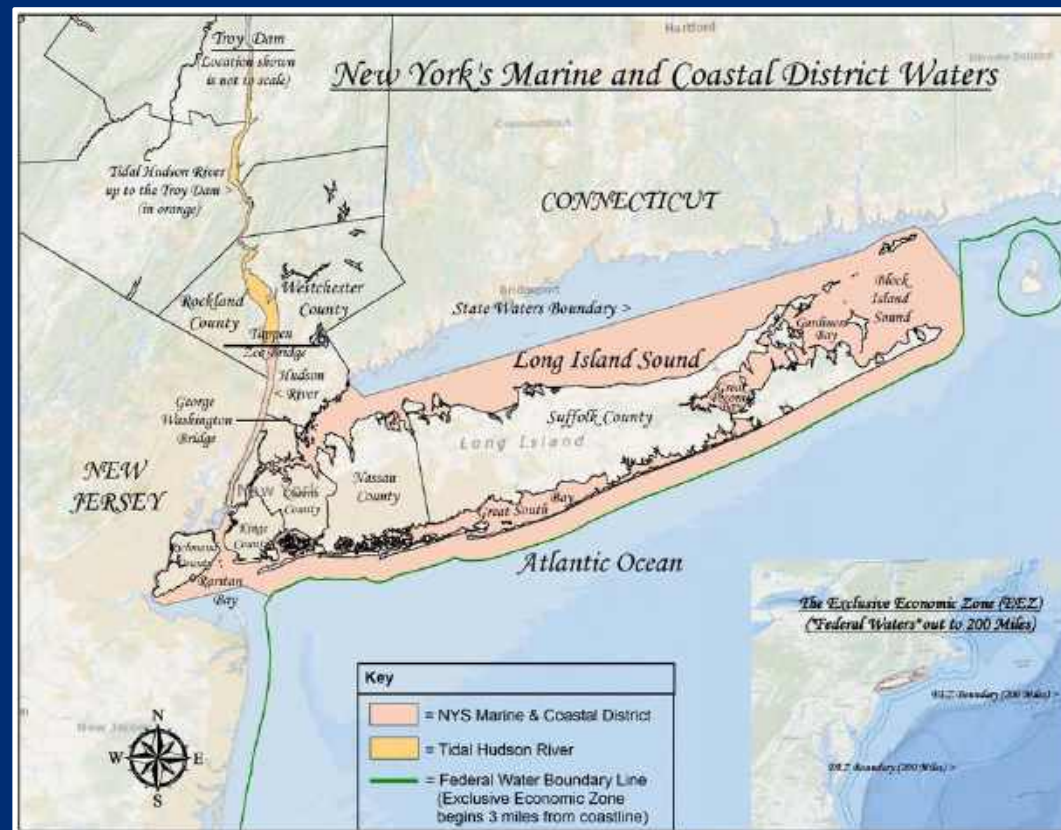
Ocean Acidification Initiatives in New York State

MACAN's Coastal and Ocean Acidification Workshop

September 2023
Casey Personius, NYS DEC

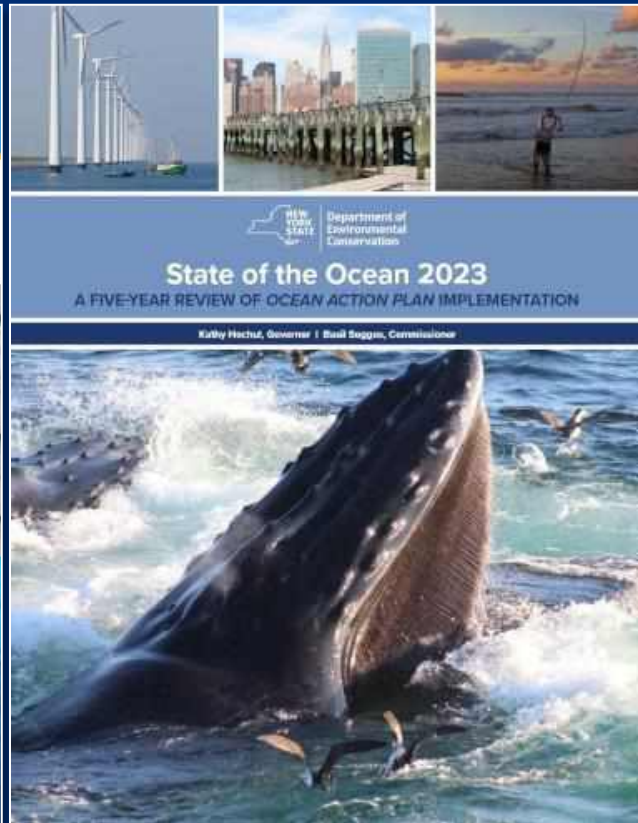
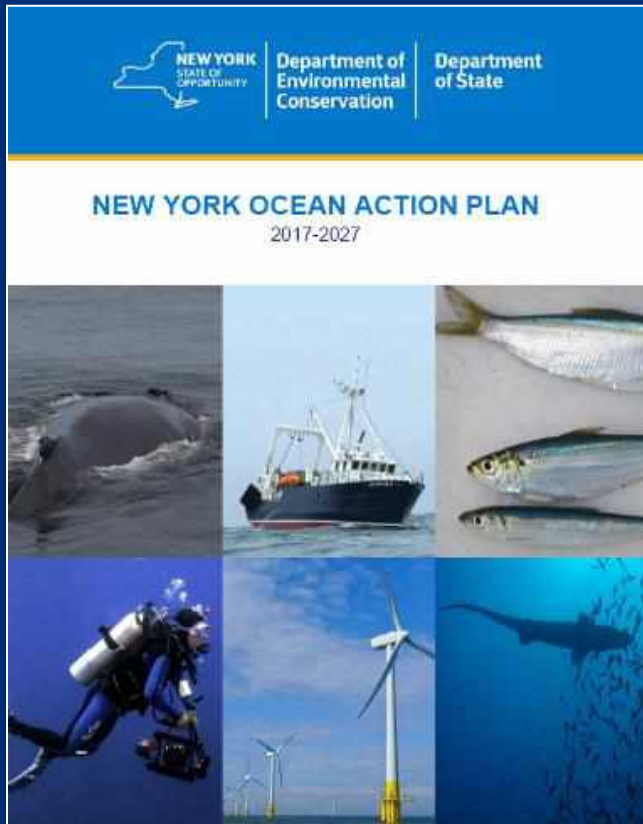
Outline:

- Ocean Acidification Task Force
- Project: Monitoring and Indicators of Ocean Health for the NYB
- Education & Outreach



New York Ocean Action Plan (OAP)

- Published in 2017
- 10-year plan
- 4 Goals
- State of the Ocean 2023



Ocean Acidification Task Force (OATF):

Background:

- OATF established by legislation in 2016 (formed in 2018) and tasked with:
 - Identifying causes of OA
 - Identify and evaluate mitigation
 - Assess potential impacts
 - Create **report** of recommendations to:
 - Identify potential mechanisms to provide protective standards
 - Identify and monitor effects
 - Integrate OA mitigation and adaptation into State plans
 - Increase public awareness
- DEC charged with administering the OATF



OATF Member Organizations:

- NYS Dept. of Environmental Conservation
- NYS Office of General Services
- The Nature Conservancy
- Cornell Cooperative Extension of Suffolk County
- Stony Brook University
- Janssen Pharmaceuticals
- Bayville Environmental Conservation Commission
- Nassau County Board of Elections
- NYC Dept. of Environmental Protection
- NYS Dept. of State
- Fishers Island Oyster Farm
- Safina Center
- Peconic Estuary Partnership
- Gaiergy Corp



Five Pillars of OATF Draft Report

I:
Mitigate

II:
Educate

III:
Research

IV:
Engage

V:
Legislate

Slide credit:
Kaitlin Willig Giglio

OATF Draft Report:

- Released for public comment in July 2023
- Public comment period recently closed
- Final revised report expected early 2024

Ocean Acidification
Its Causes, Impacts, and Mitigation;
A Report to the New York State Legislature
BY OCEAN ACIDIFICATION TASK FORCE, JULY 2023

For questions concerning ocean issues and the State's Ocean Action Plan, please contact NYSDEC's Division of Marine Resources at 518-464-0430.

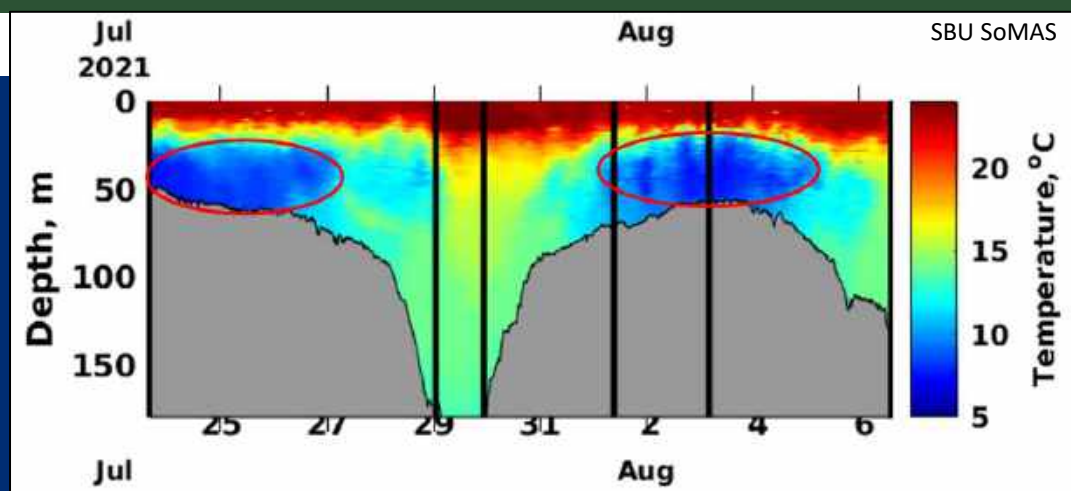
Cite as:
New York State Ocean Acidification Task Force. 2022. Ocean Acidification: Its Causes, Impacts, and Mitigation: A Report to the New York State Legislature. Complete.

This report represents the views and opinions of the Ocean Acidification Task Force and does not necessarily represent NYSDEC's views and opinions.

Project: Indicators

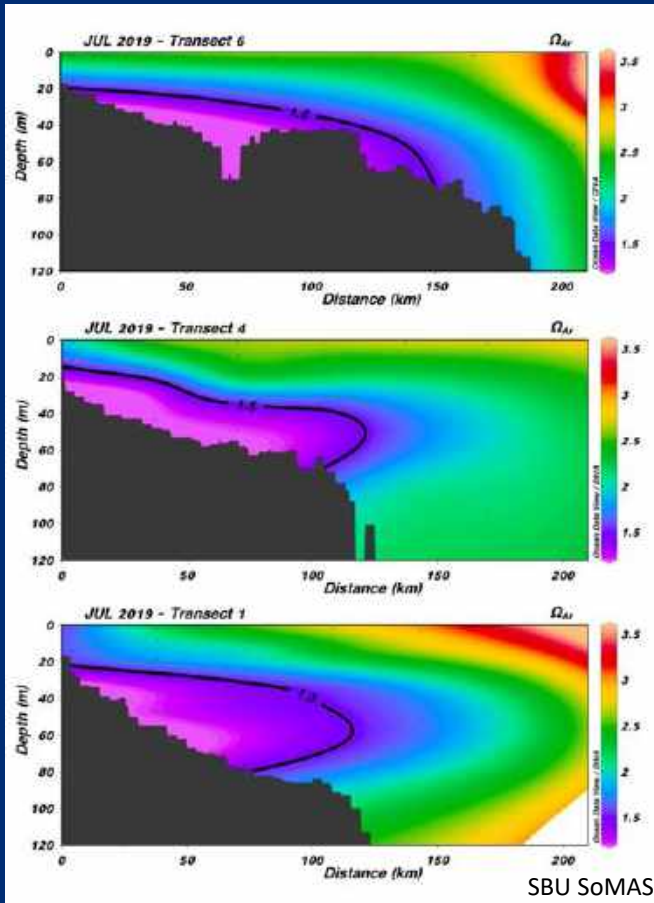
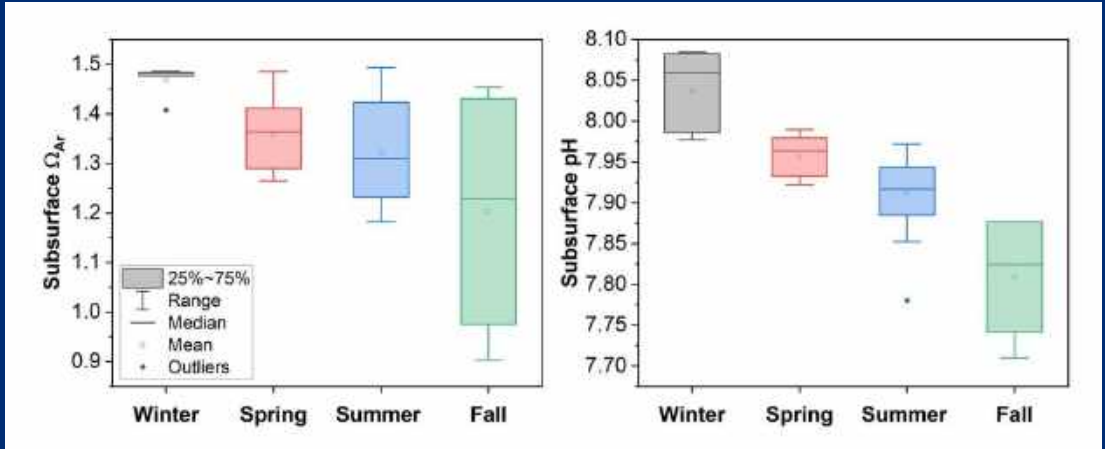
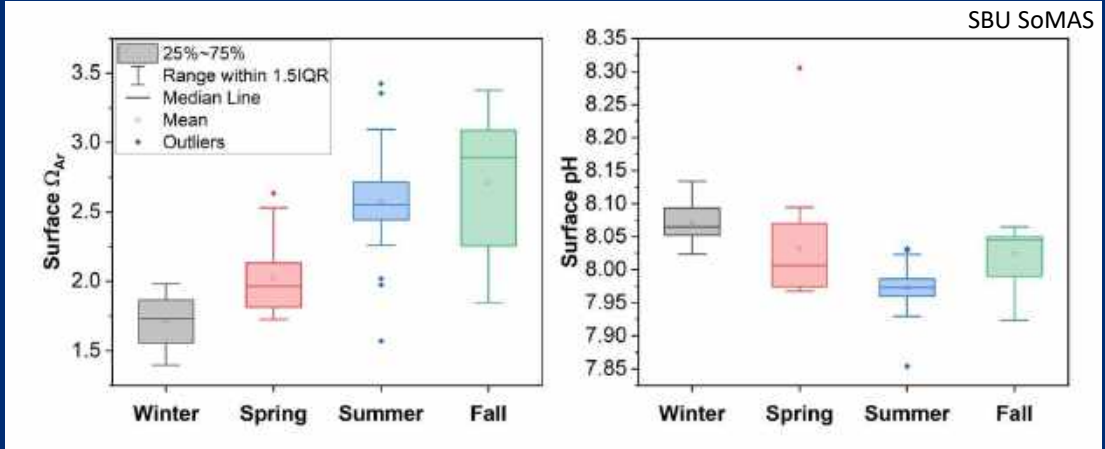
Monitoring:

- Cruises:
 - Surface
 - Water Column
- Glider
- Bottom Mounted Arrays

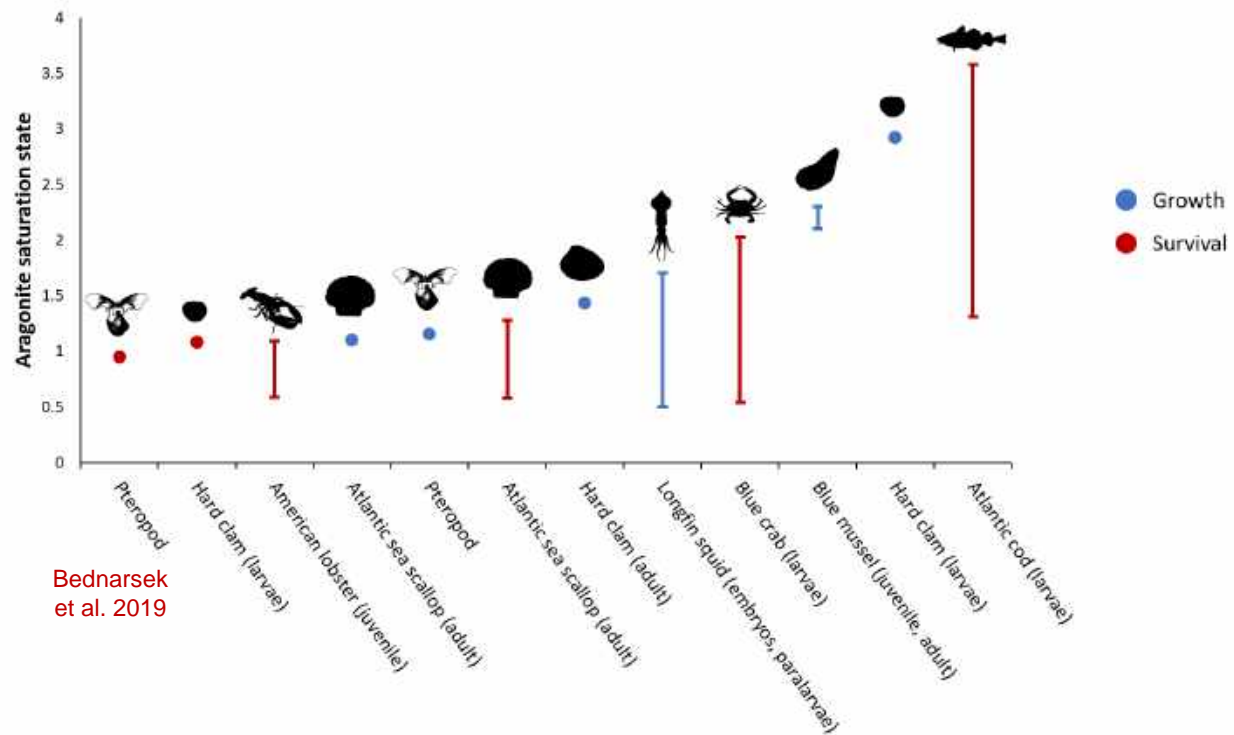


Project: Indicators

Data: pH & Aragonite Saturation State



Ocean Indicators & Management

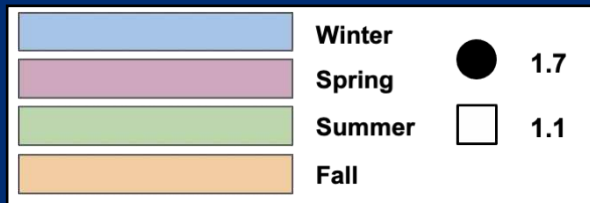
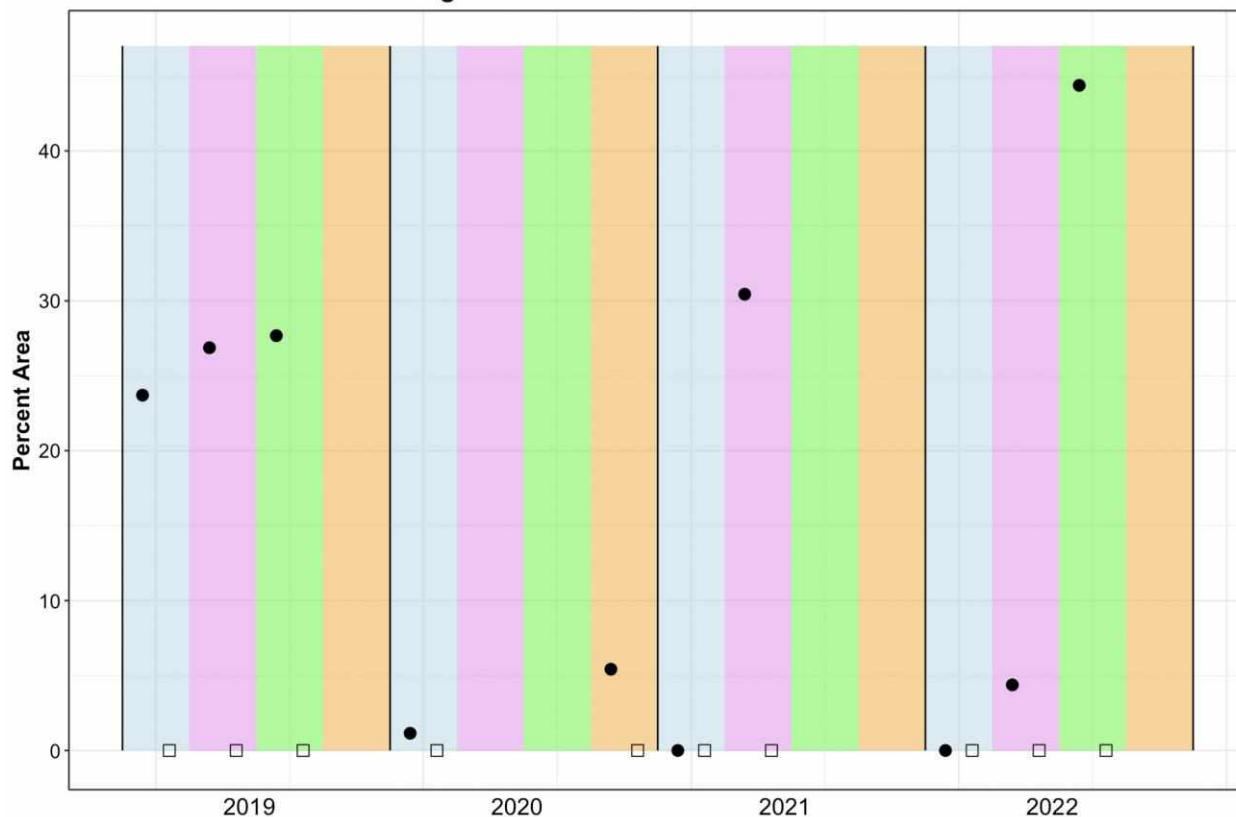


Bednarsek
et al. 2019

Figure 1. Aragonite saturation state levels or ranges at which either growth (blue) or survival (red) responses begin to be impacted, based on a literature review of experimental work on these species. Growth metrics include somatic growth rates, calcification rates, body sizes at a time point, and shell thickness or diameter at a time point. Points represent a single threshold and bars represent a range in which sensitivity begins (when a more specific threshold could not be estimated from the data available, e.g. for experiments in which only two treatments are used we can assume a threshold may exist somewhere within this range).

Credit:
Teresa Schwemmer

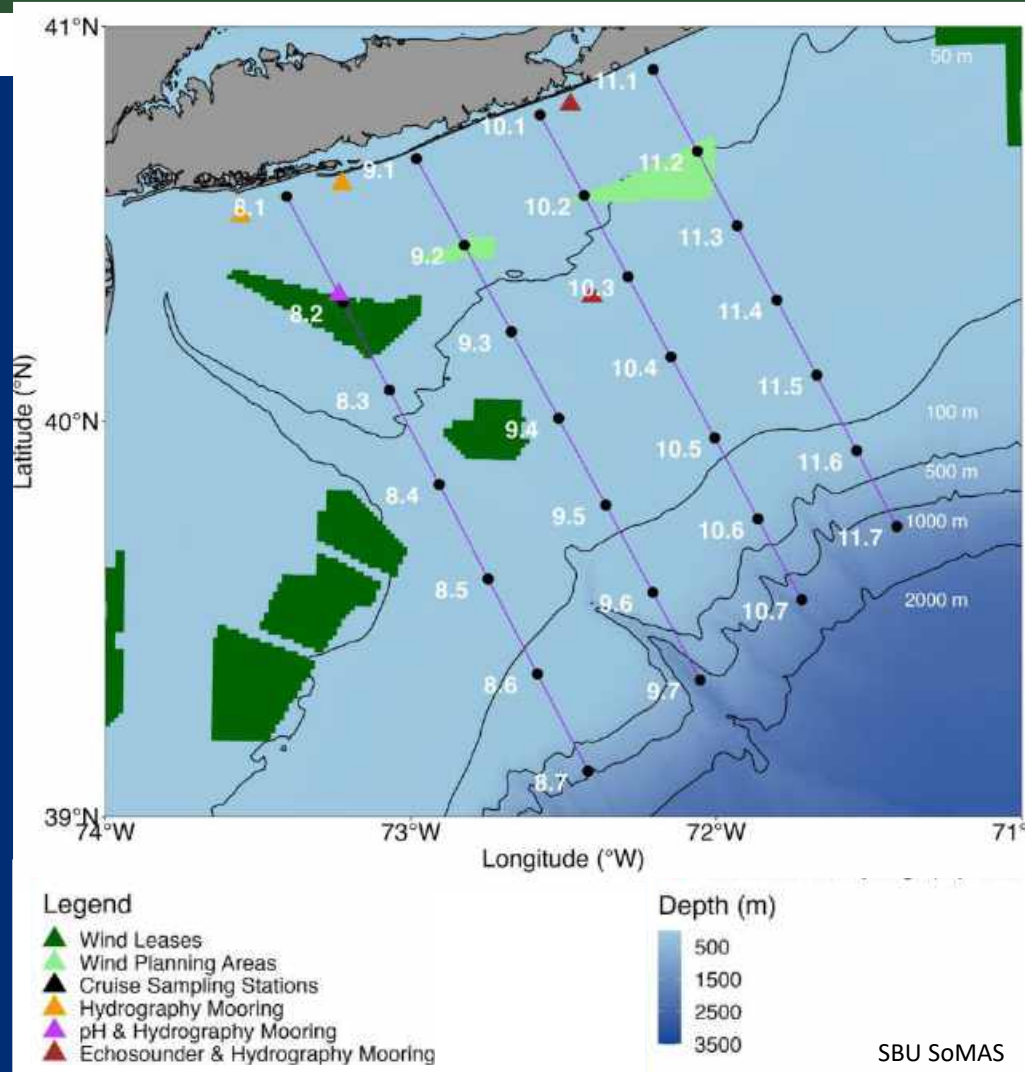
Figure 7. Regions of Ocean Acidification Concern are shown as portions of transect six that are below various aragonite saturation state thresholds. Aragonite saturation state lower than 1.7 (solid circle) may be detrimental to the growth of longfin squid. Aragonite saturation state lower than 1.1 (square) may inhibit growth of pteropods (marine snails). In winter and spring of 2022 transect six was not completed, data from transect seven is presented during those seasons.



Project: Indicators

Adaptive:

- Reduced number of Seawolf survey transects
- Purchased a second glider
- Added 5 bottom-mounted arrays



Professional Development Days:



Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration



Lesson Plan

Help Nemo Find His Home!



Photo: Claire Fedler, NOAA



Photo: Claire Fedler, NOAA

Grade Level

4-8

Timeframe

30-45 minutes

Materials

- Cardstock boards
- Cardstock sheets
- Cardstock markers
- Staple/switches/Timers
- Paper and markers for data graphs

Activity Summary

This lesson focuses on understanding the impacts of ocean acidification on the olfactory senses of clownfish.

Learning Objectives

Students will be able to define ocean acidification and understand how specific species such as the clownfish may be affected by the increasing acidity of the ocean.

Background Information

In their ocean habitat, clownfish use an exceptional sense of smell as a mechanism to help determine which direction to swim, called "olfactory homing". When given a choice between two water currents, one with the scent of an anemone and the other with the scent of the open ocean, clownfish will choose the anemone scent nearly every time! They can also tell the difference between the scent of a predator and the scent of a friendly non-predator...like Dory...choosing the non-predator nearly every time! However, recent research in Australia has

Thanks to our partners!!

Larry Swanson

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Amanda Higgs

Sherryl Huber-Jones

Joe Warren

Laura Gruenburg

Tyler Menz

Fran McParland

Kaitlin Willig Giglio

Baoshan Chen

Numerous Technical Staff



Stony Brook University
School of Marine and
Atmospheric Sciences



Cornell University



Department of
Environmental
Conservation



COLLEGE OF ARTS AND SCIENCES

Earth, Marine and Environmental Sciences

NOAA OCEAN ACIDIFICATION PROGRAM

Thank You!!

Contact:

Casey Personius

NYS Department of
Environmental Conservation
Casey.Personius@dec.ny.gov

Indicators Contacts:

Janet Nye

UNC Chapel Hill
jnye@nyelab.org

Baoshan Chen

Stony Brook University
baoshan.chen@stonybrook.edu

OATF Contact:

Kaitlin Giglio Willig

Stony Brook University
Kaitlin.Giglio@stonybrook.edu

