

Our Warming Oceans

Background

Climate change is making our oceans warmer and warmer. Although this might make swimming more fun for humans, it means big changes for our neighbors who live in the ocean. Some animals can only live in certain water temperatures, while others thrive in a range of temperatures.

How will our marine communities change over the coming years and decades as our oceans warm more and more?

Supplies

- Trifold display felt board, or three pieces of large paper that can be spread out on a flat surface
 - If making a felt board, you'll also need Velcro strips to attach to the animal cards
- Printed animal info sheet and cut-out animals
- Written or printed labels: 55, 65, and 70

Guiding Questions

- Which animals will struggle in warming oceans?
- Which animals will thrive in or arrive with warming oceans?
- How will these changes affect humans?

Our Warming Oceans

Instructions

- Using a trifold display or pieces of paper, label three vertical spaces with 55, 65, and 75.
- These three spaces represent summer ocean temperatures in Boston Harbor as the oceans warm due to climate change.
- Shuffle the printed animal cards and put them in a pile in front of your display.
- Sort the animal cards into the different ocean temperatures that they can live in.
- Discuss with friends and family what you've found. Which animals prefer which temperatures? What might this mean as the oceans continue to warm? How could this affect humans?
- For an even deeper discussion, explore the different predator and prey relationships between these marine animals. How might one animal's changing population affect another's?

Resources

- Climate Change in the Northeast U.S. Shelf Ecosystem fisheries.noaa.gov
- Ocean data including water temperature from NOAA Buoy in Massachusetts Bay ndbc.noaa.gov
- Know Your Ocean: Ocean Warming from Woods Hole Oceanographic Institute whoi.edu



Warming Waters

Frequently Asked Questions

What is causing our oceans to warm?

- Greenhouse gases trap heat from the sun in our atmosphere, causing the air and the ocean to warm. The warming climate is also melting ancient glaciers, causing sea level rise and changing the course of ocean currents.

How long will it take for Boston Harbor to reach 70° F?

- Boston Harbor is a part of the Gulf of Maine, which is the fastest warming body of water on the plane. We don't know exactly when the harbor will average 70°, but we do know that the Gulf is warming at a rate 4 times faster than the global average.

How does ocean and atmospheric warming effect our region?

- It's impossible to predict all the ways in which our environment will change, but based on what we know about our environment we can make some predictions:
 - Native species that have called Boston Harbor home for thousands of years, like American Lobsters, will move north, in search of comfort.
 - Invasive species, such as red filamentous algae, will increasingly move north into Boston Harbor, displacing native species.
 - Increasing frequency and severity of extreme weather events.

How can I learn more and help build resilience against warming atmosphere and oceans?

Scan the QR code to visit our website, and subscribe to our newsletter to stay updated on ways to get involved with our research and programs.



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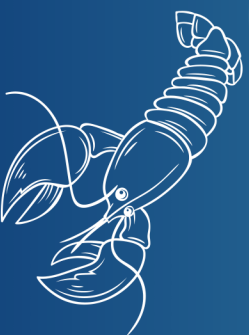
Explore how local species will respond to warming water!

Which animals will struggle in warming oceans?

Which animals will thrive in or arrive with warming

oceans?

How will these changes affect humans?





Match the species to the water temperatures it can survive in!

Humpback whale

La Yubarta



- Size: 11 - 20 feet long
- Favorite food: krill and small fish
- Conservation status: Endangered
- Water temperature: 54 - 74 F

Common Octopus

El pulpo común



- Size: 3 foot long tentacles
- Favorite food: crabs and fish
- Conservation status: Least Concern
- Water temperature: 59 - 61 F

Horseshoe Crab

El cangrejo cacerola



- Size: 15 - 20 inches long
- Favorite food: clams and mussels
- Conservation status: Endangered
- Water temperature: 59 - 68 F

Atlantic Bay Scallop

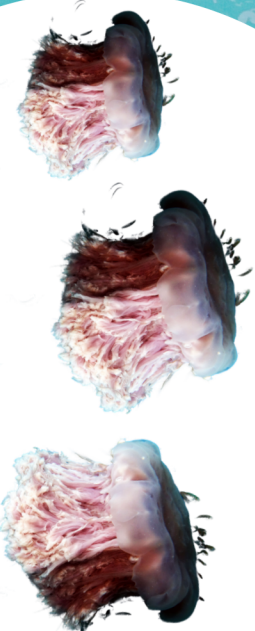
La vieira del atlántico



- Size: 6 inches wide
- Favorite food: phytoplankton
- Conservation status: Least Concern
- Water temperature: 30 - 65 F

Lion's Mane Jellyfish

La medusa melena de león ártica



- Size: 100 foot long tentacles
- Favorite food: small fish and eggs
- Conservation status: Least Concern
- Water temperature: 50 - 68 F

Harbor Seal

La foca común



- Size: 6 feet long
- Favorite food: alewife, striped bass
- Conservation status: Least Concern
- Water temperature: 50-70 F



Stone
Living Lab



White Shark

El tiburón blanco

- 📏 Size: 11 - 20 feet long
- 🍷 Favorite food: fish and seals
- 🌍 Conservation status: Vulnerable
- 🌊 Water temperature: 54 - 75 F



Green Turtle

La tortuga verde

- 📏 Size: 5 feet long
- 🍷 Favorite food: seagrass and algae
- 🌍 Conservation status: Threatened
- 🌊 Water temperature: 68 - 80 F



Alewife

La Pinchgua

- 📏 Size: 10 - 16 inches long
- 🍷 Favorite food: plankton and shrimp
- 🌍 Conservation status: Vulnerable
- 🌊 Water temperature: 60 - 68 F



American Lobster

La langosta

- 📏 Size: 1 - 2 feet long
- 🍷 Favorite food: crabs and mollusks
- 🌍 Conservation status: Least Concern
- 🌊 Water temperature: 54 - 64 F



Blue Crab

La jaiba azul

- 📏 Size: 5 - 9 inches across
- 🍷 Favorite food: clams and dead fish
- 🌍 Conservation status: Least Concern
- 🌊 Water temperature: 59 - 68 F



Striped Bass

La lubina rayada atlántica

- 📏 Size: 20 - 35 inches long
- 🍷 Favorite food: small fish and crabs
- 🌍 Conservation status: Least Concern
- 🌊 Water temperature: 55 - 68 F

Match the species to the water temperatures it can survive in!



