

## Where do the critters live?

### Objective

Participants will determine where marine organisms might be found off the east coast of the USA based on current ocean temperatures.

### Correlations

National Science Education Standards

Grades 5-8: A, C

Grades 9-12: A, C

California State Science Education Standards

Grade 6: 5b, e, 6b

Grade 7: 2a, d, e, 7b

Grades 9-12: Life Sciences 6a-g, 7d

Ocean Literacy Principles and Fundamental Concepts: 1 & 5

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### Introduction

Any aspect of the physical environment that affects living organisms is called a “physical factor”. Aquatic organisms are greatly affected by various physical factors such as temperature, salinity, dissolved oxygen, depth, and several others. In the open coastal ocean, temperature can be a strong determinate of animal distribution. This is a web-based activity that uses ocean temperatures to understand where various ocean organisms could be found. Students are asked to answer a series of questions about the potential location of organisms. They will use links that provide water monitoring data for various locations. The real-time data will then be compared to the optimal temperature of each organism. From this comparison, students can determine the potential location of each organism.

**Note:** The data reported from the buoys are surface temperatures, and some of these species are found in midwater or near the bottom, so this exercise is only a general guide. However, students should find significant differences in the surface temperatures at different locations.

### Materials

- Computer
- Internet access

### Procedure

1. Study the below table to determine the optimal water temperature ranges for these ocean organisms.

<b>Critter name</b>	<b>Critter optimal water temperature (°C)</b>	<b>Predicted Location</b>
Tarpon	20-35	_____
Winter flounder	10-12	_____
Striped bass	18-23	_____
American Lobster	8-14	_____
Florida (spiny) Lobster	22-26	_____
Eelgrass	0-25	_____
Turtle Grass	15-35	_____

2. Go to the NOAA National Buoy Data Center website: <http://www.ndbc.noaa.gov>

3. Retrieve water temperatures at several offshore sites from Maine to Florida and record below. Place the correct location by state beside the organism in the above chart.

<b>Location</b>	<b>Water Temperature Range (°F and °C)</b>
Maine	_____
New York	_____
Virginia	_____
South Carolina	_____
Florida (Miami)	_____

**Suggested questions**

1. Which organisms would you expect to find in South Carolina at this time?
  
2. Which organisms would you expect to find in Maine at this time?
  
3. Which organisms would you expect to find in Florida at this time?

4. Are there any organisms that might live anywhere from Maine to Florida?

Think about and discuss:

Animals are sometimes found outside of their optimal/normal temperature ranges. Why do you think this occurs? Do you think they can survive there for long?

Alternative suggestion:

You can have your students figure out what buoys are in your area (or an area chosen by students) rather than giving them a list of buoys. Make sure they include buoy names and buoy numbers and you can ask them to also provide the latitude and longitude of the buoys.

### References

Temperature ranges for fish

<http://home.cfl.rr.com/floridafishing/temp.htm>

Temperature ranges for American Lobster

[http://www.lobsters.unh.edu/offshore\\_fishery/faq/faq.html](http://www.lobsters.unh.edu/offshore_fishery/faq/faq.html)

Temperature optimal for Spiny Lobster

<http://www.ingentaconnect.com/content/els/01657836/1995/00000024/00000002/art0036>

Temperature optimal for seagrasses

L. Murray, personal observations