



## PROJECT OCEANOLOGY



### Where did the seals go?

Imagine that you are headed out for a seal watch aboard the R/V Envirolab. You are excited - when your friend went out on the same trip last week, she saw more than 200 seals! But on your trip, you see only about 20. What could have happened?



*Caption: Students aboard the Envirolab looking for seals*



*Caption: Seals 'hauled out' on the rocks in Fisher's Island Sound*



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## Where did the seals go?

We know the seals are around here somewhere. From the deck of Project Oceanology's Envirolab, we often see hundreds of them 'hauled out' on the rocks of Fisher's Island Sound! On other days, however, we only see a few. In this online activity, you will use your scientific skills to help us figure out why we see more seals on some days compared to other days. In order to complete this activity you will need some pieces of paper, and something to write with.

### **A Little Bit of Background:**

Every year, harbor seals migrate into Long Island Sound to spend the winter. These fascinating animals are mammals (like us!). This means they have to keep their bodies at a constant (warm) temperature, they breathe air, they have hair or fur, they give live birth, and they feed their babies with milk. But unlike most mammals, they have to do all of these things while spending most of their time in the water.

### **Step 1: Watch the Video**

Watch the video of seals [Link to Project O video of seals] and write answers to the questions on your sheet of paper.

Question 1: Where did you see seals in the video? Were they on the rocks, in the water, or both? Where did you see the most seals?

Question 2: Why do you think seals 'haul out' on the rocks?

### **Step 2: Choose a Research Question**

How do you think seals are affected by their environment? For more than twenty years, student scientists at Project Oceanology have been investigating this question by collecting data on seals and their environment. Today, you will take a look at our data and use it to help us understand seal behavior.

Select a specific research question that interests you (or, find the research question that was assigned to you by your teacher). Click the link, and follow the instructions to start your investigation!

### **Research Questions about seals and their environment:**

1. How does the tide affect the number of seals observed?
2. How does location in Fishers Island Sound affect the number of seals observed?
3. How does air temperature affect the number of seals observed?
4. How does water temperature affect the number of seals observed?
5. How does wind speed affect the number of seals observed?



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6. How does weather affect the number of seals observed?
7. How does Beaufort Scale affect the number of seals observed?

#### **Research Questions about how the seal population changes:**

8. How does the seal population in Fishers Island Sound change of the course of a year?
9. How has the seal population in Fishers Island Sound changed over time?



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### Research Question: How does the tide affect the number of seals observed?

If you live near the seashore, you probably know that the water level goes up and down, depending on the time of day. These are known as tides, and they are caused by the gravitational pull of the moon! To learn more about tides, click [here](#).

### Part A: Prediction and Reasoning

Write answers to the following prompts on your sheet of paper.

1. Make a prediction. What time of tide would you expect to see the most seals hauled out on the rocks?
2. Explain your reasoning. **WHY** do you think that tides would affect seals in this way?

### Part B: Examine the Data

Look at the dataset below. On your piece of paper, illustrate the data by making a graph. Your graph should have clear labels on both the x-axis and the y-axis. The type of graph (scatterplot, column graph, etc) is up to you.

This table shows the mean number of seals we observed at different times of tide. High and low tide are approximately six hours apart.

<i>Time from Low Tide (hrs)</i>	<i>Mean number of seals</i>
<i>0 to 1 (low tide)</i>	<i>105</i>
<i>1 to 2 (low/mid tide)</i>	<i>103</i>
<i>2 to 3 (mid tide)</i>	<i>87</i>
<i>3 to 4 (mid tide)</i>	<i>93</i>
<i>4 to 5 (mid/high tide)</i>	<i>82</i>
<i>5 to 6 (high tide)</i>	<i>69</i>



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Pick a specific research question from the list below (or, find the research question that was assigned to you by your teacher). Click the link, and you will be

For each of the environmental factors below, make a **prediction** about how it will affect the number of seals we see hauled out on the rocks. For each factor, write the factor followed by your prediction and your reasoning on your sheet of paper.

Factor 1: Month of the Year

Prediction: *Write the month of year when you think we would see the most seals*

Reasoning: *Give one reason that supports your prediction*

Factor 2: Time of Tide

Prediction: *Write the time of tide (high or low) when you think we would see the most seals*

Reasoning: *Give one reason that supports your prediction*

Factor 3: Air Temperature

Prediction: *From the list below, pick the temperature range when you think we would see the most seals.*

Below freezing,  $<0^{\circ}\text{C}$  ( $<32^{\circ}\text{F}$ )

Just above freezing,  $0-5^{\circ}\text{C}$  ( $32-41^{\circ}\text{F}$ )

Cold,  $5-10^{\circ}\text{C}$  ( $41-50^{\circ}\text{F}$ )

Cool,  $10-15^{\circ}\text{C}$  ( $50-60^{\circ}\text{F}$ )

Warm,  $>15^{\circ}\text{C}$  ( $>60^{\circ}\text{F}$ )

Reasoning: *Give one reason that supports your prediction*

Factor 4: Water Temperature

Prediction: *From the list below, pick the temperature range when you think we would see the most seals.*

Just above freezing,  $0-5^{\circ}\text{C}$  ( $32-41^{\circ}\text{F}$ )



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Cold, 5-10°C (41-50°F)

Cool, 10-15°C (50-60°F)

Warm, >15°C (>60°F)

Reasoning: *Give one reason that supports your prediction*

Factor 5: Wind Speed

Prediction: Prediction: *From the list below, pick the wind speed when you think we would see the most seals.*

Calm

Reasoning: *Give one reason that supports your prediction*