

# DCR Parks as Classrooms

## Virtual Edition



### Waquoit Bay Reserve

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#### What's happening to our coastal waters?

High School: Science and Engineering Practices, biology, chemistry

#### Overview:

Waquoit Bay National Estuarine Research Reserve (WBNERR), managed jointly by DCR and NOAA (National Oceanic and Atmospheric Administration) is one of twenty-nine Research Reserves in the U.S. studying estuaries and human impacts on them. In this activity students hear directly from a Reserve scientist about how they are monitoring the health of our bays. After watching the video, students use real data to answer their own questions looking for changes over time or comparing different sites across the US.

#### Format:

Video: (3 ½ minutes)

[https://www.youtube.com/watch?v=1x5kIdP\\_Bzk&list=PLuIztFkHStHVCcX4vXaCoKiuMwRQ4QNT&index=6](https://www.youtube.com/watch?v=1x5kIdP_Bzk&list=PLuIztFkHStHVCcX4vXaCoKiuMwRQ4QNT&index=6)

On-line application: <https://coast.noaa.gov/estuaries/science-data/>

#### Curriculum Connections:

##### Science and Engineering Practices:

1. Asking questions and defining problems
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanation and designing solutions
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

HS-LS2-1 Analyze data sets to support explanations that biotic and abiotic factors affect ecosystem carrying capacity. Data sets can be derived from ... or historical data.

#### Assessments:

##### Pre-Assessment Activity:

1. Have students locate WBNERR on a Google map and switch on satellite view. Have them note Waquoit Bay and the area surrounding it. Can they pick out development in the bay that could affect water quality in the bay?
2. What does it mean to monitor something? (observe changes over time). Why might the scientists at Waquoit Bay want to monitor changes in the bay?

3. What types of observations would be important to monitor or observe in the bay?

**Activity during video:** Ask students to look for the answers to these questions.

1. Why is the film called “Please Don’t Feed the Algae”?
2. What parameters (factors) are the researchers monitoring?
3. Why do they collect the data?
4. What have the Waquoit Bay NERR researchers found out?
5. Have students write down any additional questions.

### **Post Assessment Activity**

Go over the questions and any additional questions the students came up with.

### **Extend the Experience:**

1. Have the students make their own weather or water quality graphs using the data collected by the National Estuarine Research Reserve System which includes data collected at Waquoit Bay Reserve. Here’s the link to launch the graphing application as well as supporting tutorials and related resources.  
<https://coast.noaa.gov/estuaries/science-data/>

Once they learn how to make the graphs, have them develop their own questions and make graphs to answer their questions and use additional science practices.

2. If you have access to a water body, have the students conduct some water quality monitoring of their own. Temperature, pH, and salinity are easy to do and the instruments are fairly inexpensive. If you can’t bring them to water, bring water samples in for them and show them on a map where they were collected. To make it more engaging, bring samples from three very different areas and have them match the water with where it was collected on the map by taking measurements of the water.

### **Additional Educator Resources:**

#### **NOAA’s Data in the Classroom:**

This NOAA resource allows students to use real data to explore solve real world problems through on-line and classroom- ready activities with a scaled approach.

<https://datainthe classroom.noaa.gov/content/water-quality>

#### **Adopt-a-Wetland Activity:**

This resource has information on how to set up water quality monitoring with students at a local water body.

<http://waquoitbayreserve.org/research-monitoring/salt-marsh-carbon-project/phase1/teachers/>

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