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Water Quality

In this activity we are going to learn about the water of the great bay using four tests. These tests look at some basic aspects of water that have a big impact on the things that live in it. First, we will go over the tests and how to read them, then you can read the results for those tests that were done using samples of water that were collected at four different spots along the great bay.

Temperature

What is it?

Temperature is how hot or cold something is. The unit we are going to use is fahrenheit (°F).

How to read a thermometer?

Put the thermometer in the water for about a minute to let it fully acclimate to the sample, then look at where the line comes up to using the dashes and numbers on the side of the tube to read the temperature.

Salinity

What is it?

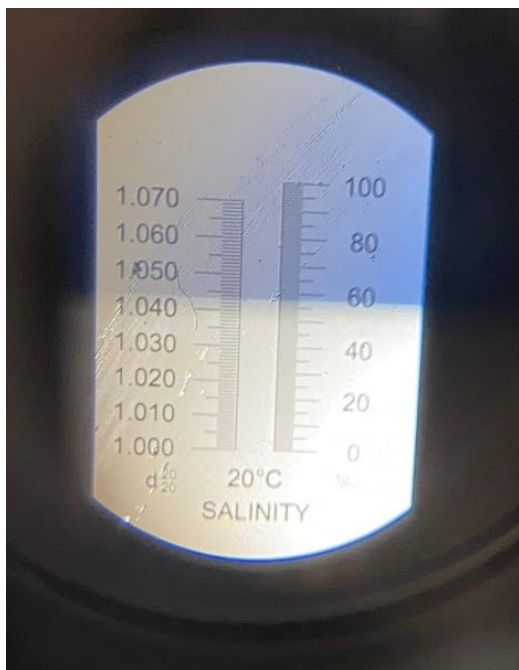
Salinity is the amount of salt in water. The unit we are going to measure salinity is parts per thousand (PPT). This means for every thousand things we are looking at, in this case particles of water, the number we get is the amount of what we are looking for.

How to read a refractometer?

Looking at the display, you see the blue section of the view and the white section. In the middle of the field, there are two scales. Using the scale that goes from 0 to 100 PPT, look at the line where the white and blue sections meet. The salinity in PPT is the number where that line is. Look at these two examples.



This is freshwater from a small stream. The line where the blue and white meet is close to 0. That means the salinity of this sample is 0 ppt.



This is a sample of water that had salt added to it. The line between the blue and white is at 60, which means the sample has a salinity of 60 ppt.

DO

What is it?

DO stands for dissolved oxygen. There is oxygen, like the kind we breathe, dissolved throughout the water. Without this, the fish and other water breathing animals wouldn't be able to breathe. The unit we use is parts per million (PPM). Similarly to ppt for salinity, this unit is just looking at one million particles rather than one thousand.

How to read the test?

The test uses a chemical reaction that turns the water a shade of blue depending on the levels of oxygen. Match the color of a sample with a set of known samples to get the result.



The color of the sample matches the vial with 8 ppm. This means that the oxygen level of the sample is 8 ppm.

pH

What is it?

pH is a scale ranging from 1 to 14. This scale determines if something is an acid, base or neutral. Things like citric acid or coffee fall on the acid side of the scale, while things like soap, bleach and soda fall on the base side of the scale. Pure water is neutral on the scale.

How to read the test?

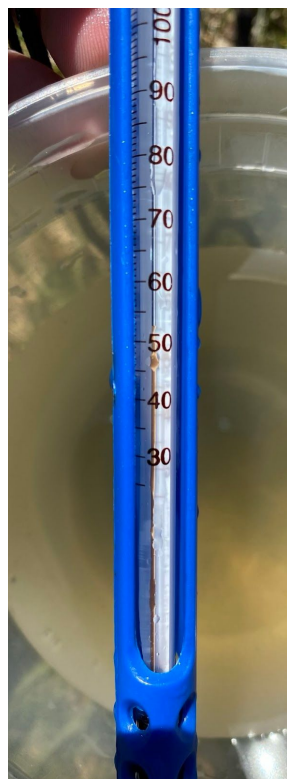
This test uses a chemical reaction to turn the water a color. Using a scale for reference, match the color of the sample to determine the pH of the sample.



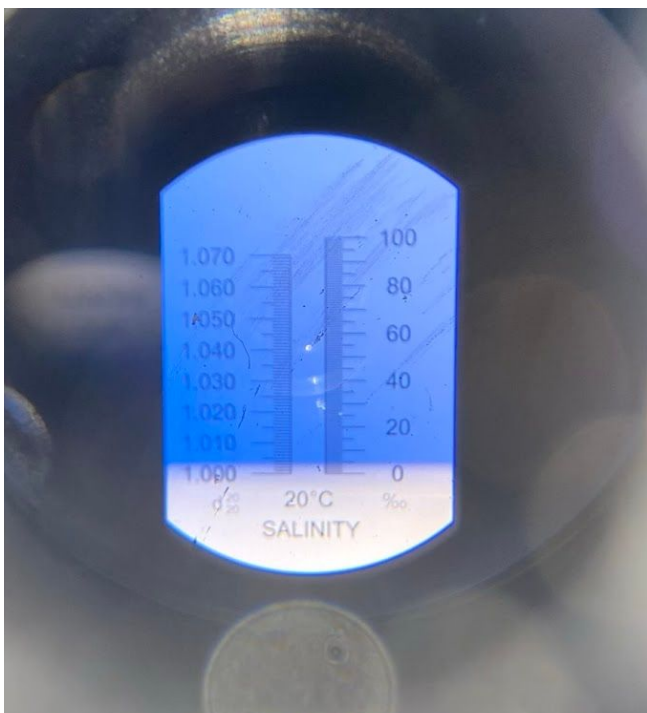
Comparing the color of the sample to the scale shows that the pH of the sample is closest to 7.0 on the scale.

Sample #1 - Squamscott River, Exeter

Temperature



Salinity



pH

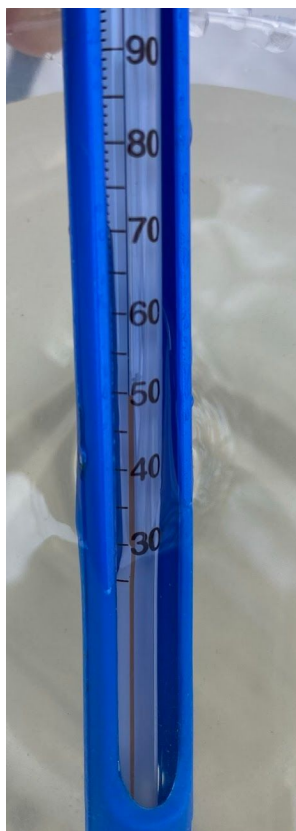


DO



Sample #2 - Adams Point, Durham

Temperature



Salinity



pH



DO

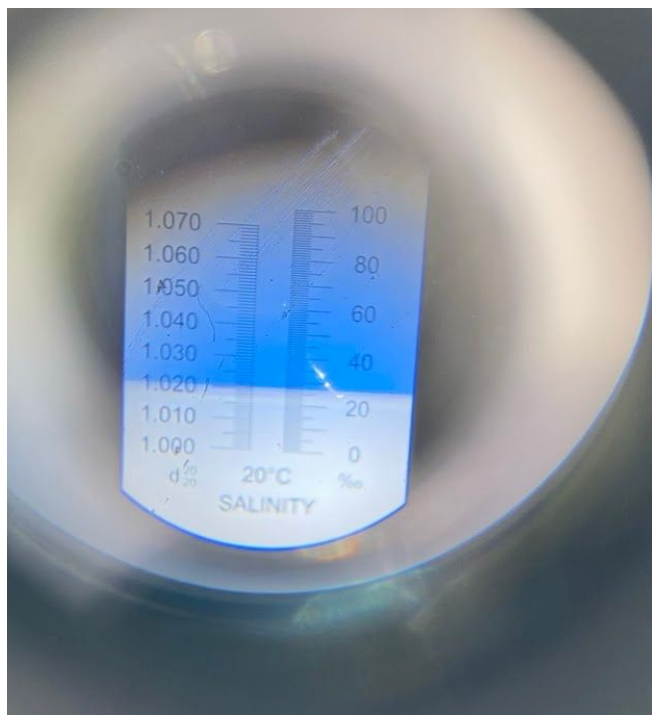


Sample #3 - Dover Point, Dover

Temperature



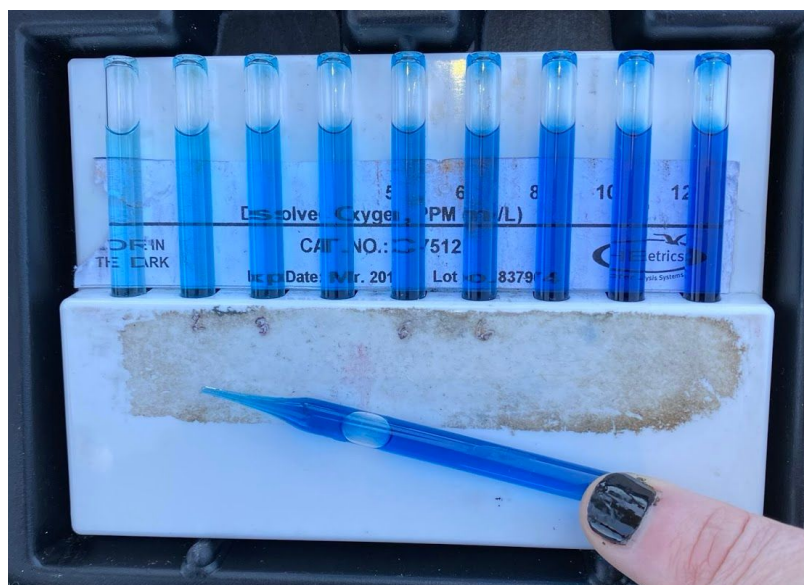
Salinity



pH

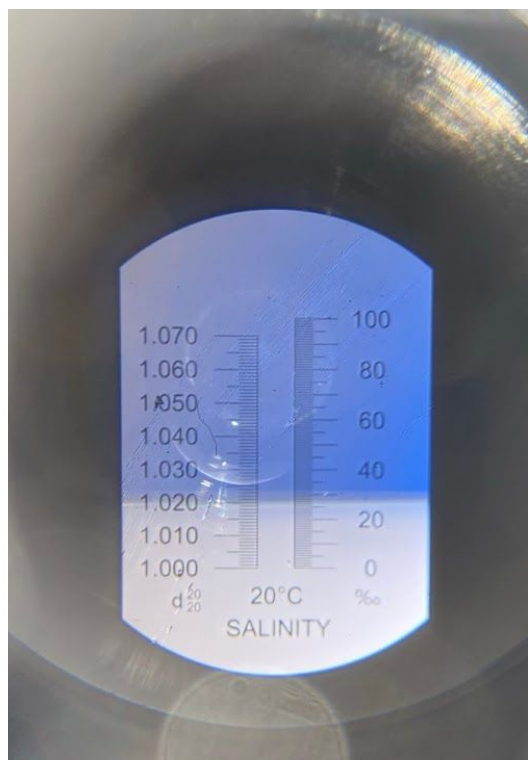


DO

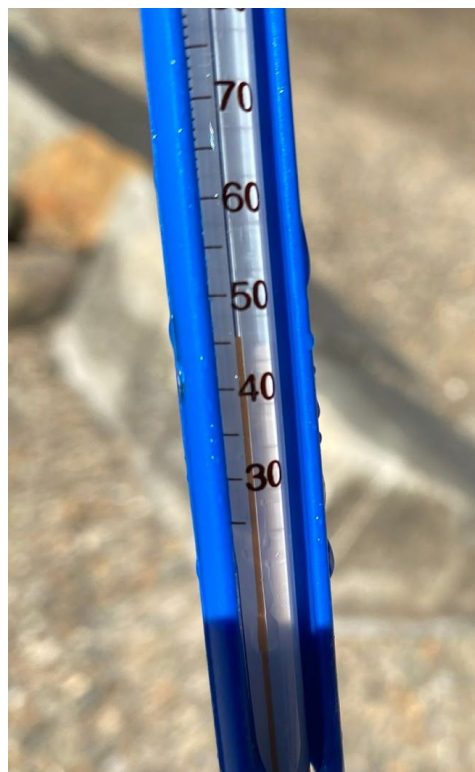


Sample #4 - Prescott Park, Portsmouth

Temperature



Salinity



pH



DO



Data Collection

Remember to include the units in your answers! There is a map showing where the different stations are compared to each other on the next page.

Station #1 - Squamscott River, Exeter

Temp _____ Salinity _____ pH _____ DO _____

Station #2 - Adams Point, Durham

Temp _____ Salinity _____ pH _____ DO _____

Station #3 - Dover Point, Dover

Temp _____ Salinity _____ pH _____ DO _____

Station #4 - Prescott Park, Portsmouth

Temp _____ Salinity _____ pH _____ DO _____

Follow Up Questions

Do you notice any trends in the data?

What do you think impacts these aspects of the water?

Do you think these results would be different if the samples were taken during a different season (winter, summer or fall)?

Station Locations

