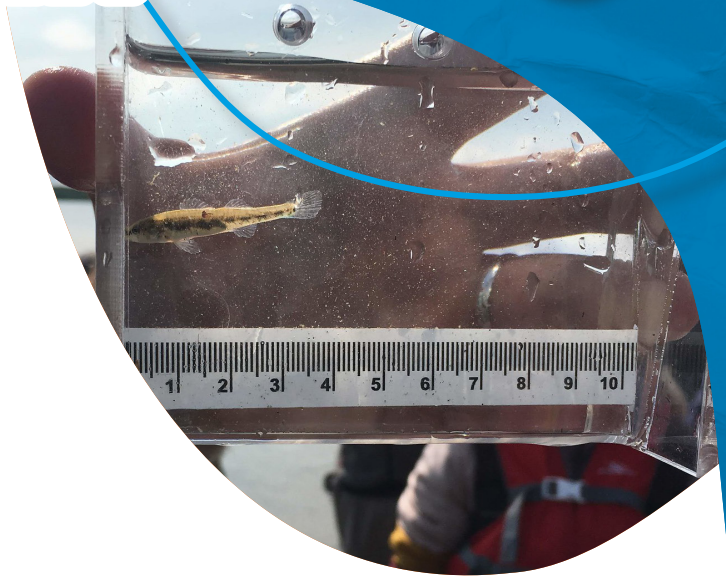


# AQUATIC ECOSYSTEM

## TOOL KIT

# 3

## WATER CHEMISTRY



### GUIDING QUESTIONS

- *What are the chemical and physical properties of the water in this aquatic ecosystem?*
- *What do these properties tell us about the health of the ecosystem?*
- *How do these properties impact what can survive in this ecosystem?*

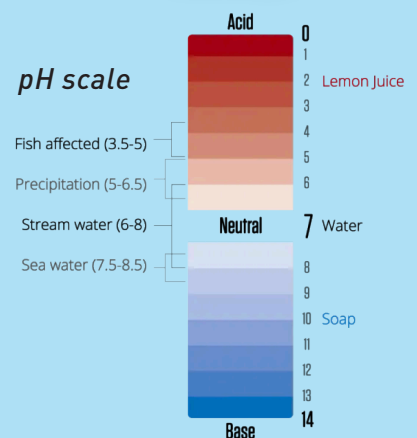
### INTRODUCTION

We can learn a lot about an aquatic ecosystem from examining the water, but we can't see everything with our naked eye. In this station we will do some common tests to give us clues about the health of the ecosystem.

- **Temperature** - impacts the survival and growth of plants and animals.
- **Conductivity Test** - measures how much electricity moves through the water to indicate dissolved salts and other minerals (*sodium, iron etc.*) Freshwater is typically 100-100 $\mu$ s ; the higher the number the more dissolved minerals are present.
- **Nutrient Test** - Measures phosphates and nitrates which at high concentration can lead to the eutrophication - the overproduction of plant material algae that uses up all the oxygen. Natural levels of nitrates are usually less than 1 mg/L.
- **pH Test** - measures the acidity/alkalinity of the water. A neutral pH of 7 is ideal to support aquatic life.

### MATERIALS FROM KIT

- **5-in1 Test Strips and Colour Chart**
- **Plastic Measuring Cup**
- **Conductivity Meter**
- **Thermometer**



# INSTRUCTIONS

1. Select one person from your group to gather a sample of water using the **Plastic Measuring Cup**.
2. Observe the water with your group.
  - *Is the water clear or cloudy?*
  - *Does it have a colour or is it colourless?*
  - *Does it have a smell?*
3. Measure the temperature of your sample using the **Thermometer**.
4. Measure the conductivity of your sample using the **TDS Water Tester**.
  - Press the On/Off button to turn the probe on, and then press the “mode” button until it shows “**µs/cm**”. Take the cap off, and then place the end into the water and gently stir for 5 seconds. Read the conductivity off the probe.
5. Measure the nutrient levels and pH in the water using the **5-1 Test Strips and Colour Chart**.
  - Take one test strip out of the tube and then close the tube.
  - Dip the end of the strip into the water so that all the square pads are in the water.
  - Hold the strip in the water for 5 seconds and then remove.
  - Hold the strip next to the colour chart and compare the colours on your strip against the pictures on the tube.
  - Match your test strips for each of the first three measurements -  $\text{NO}_3^-$ ,  $\text{NO}_2^-$ , and pH.

## GRADE 4-6 EXPLORATION

## GRADE 7+ EXPLORATION

- Based on your water quality tests do you think that this is a healthy aquatic ecosystem?
- What other water quality tests could you do to gain more information?
- Look around, is there anything in the surrounding area that might be influencing the quality of the water?