

Virtual Summer Camp: River Rangers Week 2—Plankton Discoveries

This Week:

Watch live plankton at Hudson River Park,
test buoyancy, make plankton stamps and play charades!

Friday-Monday: **Review & Prep!** Read through the packet and gather your materials.

Tuesday: **Tune in!** Watch our educators lead a live demonstration at 1pm.

Wednesday: **Experiment & Craft!** Follow the activity instructions in your packet.

Thursday: **Share Your Results!** Submit a photo of your results to education@hrpt.ny.gov to be featured on our website. Then, download next week's packet!

Virtual Summer Camp: River Rangers

Week 2—Plankton Discoveries

Materials Check List

Learning About Plankton

- Learning About Plankton Worksheet
- Medium bowl of water
- Penny
- Aluminum foil

Plankton Charades

- Plankton Charades Cards
- Scissors

Plankton Stamps

- Construction or scrap paper
- Paint
- Markers or colored pencils
- 1-2 pieces of citrus fruit
- 3-4 string beans or popsicle sticks
- Scissors
- Paint brush

River Rangers Week 2

Plankton Discoveries

Theme: Plankton; Phytoplankton and Zooplankton

Age: 5-10 years old

Prep Time: 5 minutes

Activity Time: 15-20mins

Activity Summary:

Last week we learned about the different marine life that can be found within the Hudson River Estuary. This week we are focusing on plankton, the microscopic plants and animals that are the base of the Hudson River food web. Plankton provide food and oxygen to a vast majority of organisms within this biodiverse ecosystem. Create your own Plankton Diagram and get to know about the different types of plankton in the Estuary!

Part 1: Learning About Plankton

Lesson Materials:

- Learning About Plankton Worksheet (page 3 of this packet)
- Where do plankton live Worksheet (page 4 of this packet)

Buoyancy Experiment Materials:

- Mixing bowl or large transparent container
- Penny
- Aluminum Foil

Part 2: Plankton Stamps

Craft Materials:

- Medium to large size construction paper or scrap paper
- Paint
- Markers or colored pencils
- 1-2 pieces of citrus fruit (Lemons, limes, oranges or grapefruit all work)
- 3-4 string beans
- Tongue depressors (if string beans are not accessible)
- Scissors
- Paint brush

Part 3: Plankton Charades

Lesson Materials:

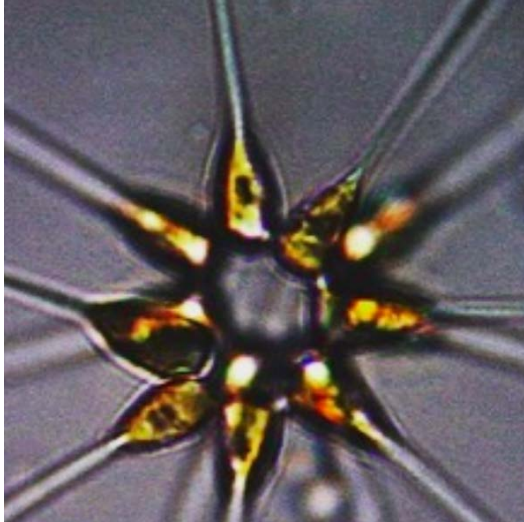
- Plankton Charade Cards
- Scissors

River Rangers Week 2

Part 1: Learning about Plankton

Below are two photographs of plankton found in the Hudson River. These photos had to be taken with a special microscope camera, because the actual size of these plankton is about as small as the period at the end of this sentence. Plankton are microscopic organisms that drift through the River.

A



This plankton is called a **diatom**.

B



This plankton is called a **copepod**.

1. Take a few minutes to observe plankton in the photographs above. What are 2 similarities between Photo A and Photo B? What are 2 differences?

2. Plankton can be categorized into two types: phytoplankton and zooplankton. **Phytoplankton** are **plants**, and **zooplankton** are **animals**. Identify each photo above as phytoplankton or zooplankton based on the observations you made in Question 1. Fill in the blanks and circle whether your identification is a plant or an animal.

Photo _____ is a **phytoplankton**. This means that it is a(n) plant / animal.

Photo _____ is a **zooplankton**. This means that it is a(n) plant / animal.

3. Plants and animals on land and underwater get their energy in similar ways to those in the Hudson River. Identify the energy sources for each in the lines below.
 - a. What do plants need to grow? _____
 - b. What do animals need to grow? _____

River Rangers Week 2

Where Do Plankton Live?

Let's do a little experiment to explore **buoyancy**, which means an object's ability to float. This will help us understand where plankton live in the water.

1. Fill a medium sized mixing bowl with water.
2. Gently drop a small ball of aluminum foil into the bowl. Draw where it lands in the water on the image to the right.
3. Gently drop a penny into the bowl. Draw where it lands in the water on the image to the right.

Something that floats at the very surface of water is **Positively Buoyant**.

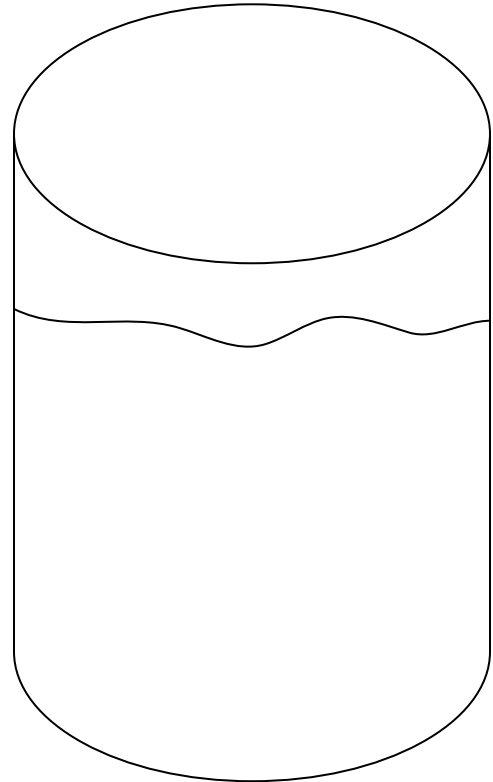
Something that sinks in water is **Negatively Buoyant**.

4. Label your drawings to indicate which item is positively buoyant and which is negatively buoyant.

Something that floats somewhere just under the surface of water is **Neutrally Buoyant**. That's what plankton are! Plankton must stay fully submerged in the water, but not sink too deep where there is no sunlight. If plankton float on the water's surface, the sunlight is too hot and they cannot survive.

5. Draw a little plankton in the image above, and label it neutrally buoyant. You can use the photos from Page 1 of this worksheet as a guide, or invent your own plankton. Feel free to also reference the Plankton Identification Guide.

The sweet spot where plankton float is called the **photic zone** (pronounced FOE-tick), which refers to the zone where sunlight can shine through. Just like plants on land, phytoplankton need sunlight to survive. Zooplankton can be found in the photic zone because they eat phytoplankton (and sometimes other zooplankton, too).



River Rangers Week 2

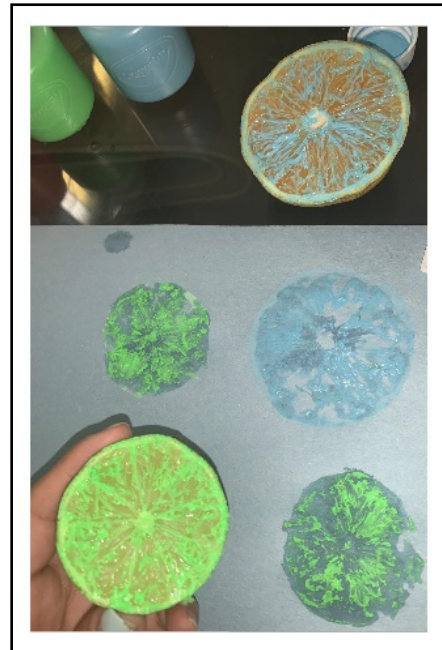
Part 2: Plankton Stamps

Recommended Craft Materials:

- Medium to large size construction paper or scrap paper
- Paint
- Markers or colored pencils
- 1-2 pieces of citrus fruit (Lemons, limes, oranges or grapefruit all work)
- 3-4 string beans
- Tongue depressors (if string beans are not accessible)
- Scissors
- Paint brush

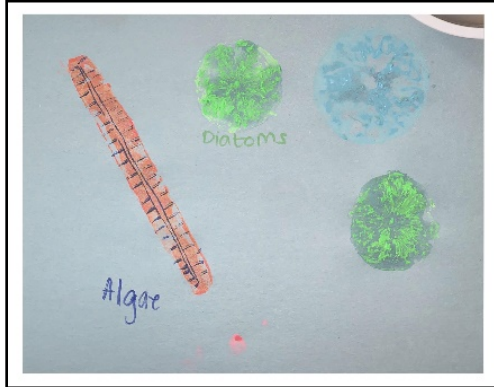
Instructions:

1. **Safety Note:** To prepare your plankton materials, have an adult cut the citrus fruit in half carefully. Then, have an adult a string bean lengthwise.
2. Color your Hudson River! Create the signature greenish hue of the Hudson River using paint, colored pencils, markers or crayons.
3. It's time to make some plankton next. Using the items that have been cut in half, take a paint brush and lightly paint the cut surface of the fruits and string beans.
4. Stamp the painted surface of the fruit on your construction/scratch paper.
5. Repeat this stamping process as many times necessary to fill up the paper with various plankton shapes!
6. Let the paint dry for ~5-10 mins.
7. After the paint dries, make sure to label each of your plankton as algae, diatoms, zooplankton, etc.
8. Complete your underwater scene by adding in other Hudson River creatures! If you're looking for inspiration, check out our [Pile Poster](#).

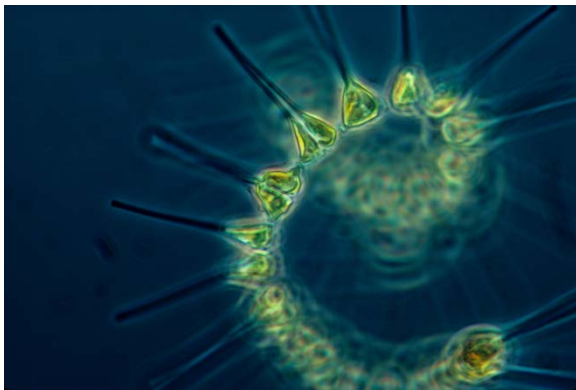
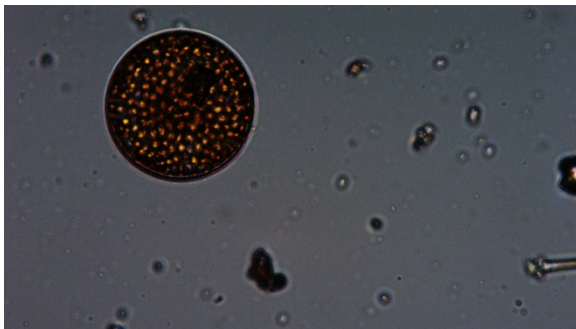


River Rangers Week 2

Craft Examples:







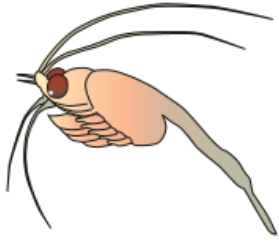
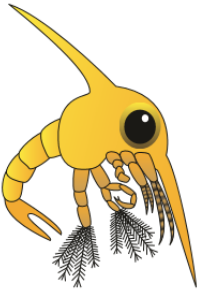
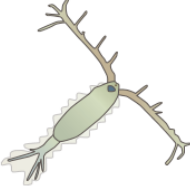
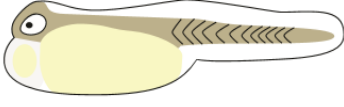
Examples of Real Hudson River Plankton



Part 3: Plankton Charades

Print two copies of the plankton charades page. Keep one copy for guessing and then cut out the other cards. As a group, review the name of each plankton, and discuss some of the key features that might indicate whether it is phytoplankton or zooplankton. Players from each team take turns picking up a card and miming the plankton while their teammates guess the name within an allotted time to win a point. Once you have gone through the entire deck, the team with the most points wins!

River Rangers Week 2

 <p>Diatom <i>Pseudo-nitzschia</i></p>	 <p>Copepod nauplii</p>
 <p>Dinoflagellate <i>Ceratium</i></p>	 <p>Diatom <i>Chaetoceros</i></p>
 <p>Mysid shrimp</p>	 <p>Crab zoea</p>
 <p>Copepod <i>Acartia</i></p>	 <p>Fish Larvae</p>