GEORGIA
BURTON 4-H CENTER ON TYBEE ISLAND

Plankton
Pre-Post Trip Activities

Activity 1. Design your own Phytoplankton

Review phytoplankton with your students. Make sure to talk about how phytoplankton tend to stay near the surface of the water and close to their food source: the sun. To accomplish this task, phytoplankton has developed adaptations such as differences in size, shape, and the formation of chains. Also discuss that phytoplankton protect themselves with spines, bristles, and hard shells. After discussing these real-life adaptations, ask the students to use their imaginations to come up with new adaptations that would help phytoplankton survive. Examples of creative, fantastic adaptations (water wings, bubbles, inner tubes, and solar panels, etc.). Students can merge real-life adaptations with imaginary ones to create new species of phytoplankton adapted for survival in the ocean. Have students draw their ideas and name their phytoplankton. The name should consist of an imaginative element and a scientific component, example: *Thalassiosira tubey*.

Activity 2. Food Chains

Split students into groups with enough people in each group that everyone would be able to act out one species or thing on a food chain. Have students get into their group, act out a food chain, understand what happens when something in the food chain is missing, and then make their own food chains. First, give each group a different food chain to act out (the sun, producers (plankton), consumers, apex predator). Then, once the group has performed in front of the class, ask them what would happen if something disappeared (for example, if there were no plankton or fish or no sun - have each group act it out with something different missing). See what happens when they try to act out the new food chain. After each group has finished and acted out both food chains, discuss how everything in the ocean has its place and is important. Focus specifically on plankton and how important they are. Then, if you have time, you can have the students individually come up with their own food chain and share with the class.

Activity 3. Productive Plankton

Review plankton with students and then have them act out as jellies trying to eat zooplankton. Your classroom will turn into the ocean in this activity, with algal blooms, and other factors coming into play. The jellies (students) found next to blooms will catch more, grow bigger, and have more successful reproductive rates. (Additional instructions on page 3).

Activity 4. The Great Plankton Race

Plankton are not able to swim on their own in the water, so they rely on their own buoyancy to stay in sunlit ocean zones. Have your students create their own planktonic organism using different materials (pipe cleaners, weights, floats, beads, etc). They will test their organism in a bucket of water (a clear tub is best so you can see them as they sink) and adjust as they need. The goal is to make a plankton that will neither sink nor float at the top, but be suspended in the middle of the bucket!

Activity 5. Plankton Sensory Bottles

Split students into teams of two and have them create sensory bottles to represent the food chain inside the ocean. Teams should include at least one type of phytoplankton and zooplankton inside their bottle, the sun, and the animals that eat the plankton. Teams can present their bottles in front of the class, including something interesting they learned about the plankton they included in their bottle.

Activity 6. Create an Algal Bloom

Have students create their own micro ecosystem, either individually, in groups, or as a whole class. Each student/group should get an ecosystem container (soda bottle, clear cup, small aquarium, etc). Add water and fertilizer together into the bottle, deciding as a class as to how much of each should be added. Make sure to include a control of water with no fertilizer! If you do not have access to pond water with natural plankton samples, you can use fresh water and algal cultures (can be purchased at a store or online). Allow for the ecosystems to sit in the sun and develop. Take a drop of water from each sample and examine it under a microscope, counting each phytoplankton that is visible. Take these measurements every other day for two weeks and compare the samples!

Additional Instructions

Activity 3. Productive Plankton

Materials needed

- plankton pictures
- velcro
- party blowers
- laminator (optional)

Setup

Print the plankton pictures off, laminate, cut the pictures into squares, and place a piece of Velcro on the back of each picture. Make sure to use the same side of Velcro for all pictures. Then take the party blowers, stretch them out, and on the ends, place the opposite side of the Velcro so it will pick up the plankton cards.

Part 1

1. Review zooplankton/phytoplankton, holoplankton/meroplankton, food chains, and misconceptions about plankton (specifically jellies). Discuss the differences between the two types of jellies - Ctenophora and Cnidaria. Ctenophora do not have stinging cells (comb jellies, sea snot) and Cnidaria have stinging cells (stinging jellies, anemones, coral). Despite these differences, both of them feed on zooplankton. Make sure students understand how both of these jellies feed and the differences between their feeding structures.

Part 2

1. Spread all the plankton cards Velcro side up, on tables. Grouping some zooplankton pictures as blooms and spreading other pictures out.
2. Give each student their own party blower. Label students as a Cnidarian or a Ctenophore.
3. Place students around the room and give them a few minutes to feed. Students can compare how well they did if they were placed near a bloom or not. You can repeat this step as many times as you want.
4. Discuss the causes of a bloom (food availability, seasonal, etc.) and look at the type of plankton they caught. Have students list their catches. Did they catch something that is not a food item; i.e. a ctenophore catching a Portuguese Man-of-War?