

# Catching Plankton

## Estuary Concept

Estuaries support an abundance of life, and a diversity of habitat types.

## Learning Objectives

- Practice one method for how plankton are collected
- Explain why certain materials are used to construct a plankton net

## Teacher Background

Plankton are very small and often difficult to see. Scientists usually use a plankton net made of very fine mesh to collect plankton. Scientists generally drag a plankton net behind a boat for collection. The mesh used in a plankton net has holes that are large enough to allow water to pass through but small enough so that plankton cannot pass through.

## Teacher Preparation

1. Follow the instructions on the Student Master: *Catching Plankton* to make a plankton net that students can look at as an example. This will also help you know what difficulties students might encounter during the process and will help you determine the right materials for the job.
2. Decide ahead of time whether you want to have your students work in groups, pairs, or alone when building their plankton nets.



## Activity Information

### Grade Level

6-8

### Time Required

45 minutes for construction, additional time for collection

### Topic

Monitoring Data

## Overview

In this activity, students will construct plankton nets. If possible, students will test out their nets to practice one method of collecting plankton.

## Procedure or Activity Steps

1. Show students the first 1:15 of the video "[Plankton Parade](#)" before they start constructing their plankton nets. This will give them a general introduction to phytoplankton, why they are important to the estuary ecosystem and how to capture them for observation or study.
2. Explain to the students that generally scientists drag a plankton net behind a boat for collection like was shared in the video. The mesh used in a plankton net has holes that are large enough to allow water to pass through, but small enough so that plankton cannot pass through. Today you are going to get a chance to make your own plankton net.
3. If desired, divide students into small groups or pairs. Handout the Student Master: Catching Plankton. Share with them the example plankton net that you created. Allow time to construct their nets.
4. Arrange to take your students to a pond, lake, stream, river, estuary, or the ocean to gather plankton with their plankton nets. You may want students to bring notebooks or journals to the field so that they can sketch what they see and record their observations of the body of water where the plankton were collected, what they saw when they magnified samples, etc.
5. After they have used their nets to collect samples have students complete the discussion questions on the student master and capture sketches and observations in their notebooks. Have students share their responses and experiences.



## Materials Needed

- Student Master: *Catching Plankton*
- Observation Notebook
- Wire (one per net, long enough to go around the wide opening of the stocking)
- Duct tape
- Stockings (one per net)
- Small bottle (one per net, small enough to fit in small opening of stocking)
- String (one shorter piece to tie around bottle and 3 ~50 cm long pieces for the handle per net)
- Key ring (one per net)
- Hand lens
- Microscope

## Catching Plankton

Q1. Why did you use a nylon stocking as part of the plankton net? What would happen if you made a plankton net using flexible window screen? Why is it important to use a fine mesh fabric when constructing a plankton net?

**Potential answer:** *The homemade plankton net was made from a nylon stocking because the nylon material would allow water to pass through, but was a fine enough mesh that the holes would not allow the plankton to pass through. A net only works when the holes in the mesh are small enough to trap the target organisms.*

Q2. What difficulties did you encounter in collecting plankton using your plankton net? Could you make the plankton net differently to solve the problem?

**Potential answer:** (Answers to this question are related to each student's personal experience.) Without a boat to pull the plankton net through the water or a current to flow through the net, a student's biggest challenge is likely to be moving enough water through the net in the amount of time available to collect sufficient plankton. One possible change might be to use a net with a wider mouth that would filter a larger volume of water.

Q3. What method did you use to move water through your plankton net? How successful was that? Do you think another method might have been more successful?

**Potential answer:** Answers will vary. Students should show some understanding that maximizing the amount of water moving through the net will have an impact on the net's ability to trap sufficient amounts of plankton

## STUDENTMASTER

# Catching Plankton

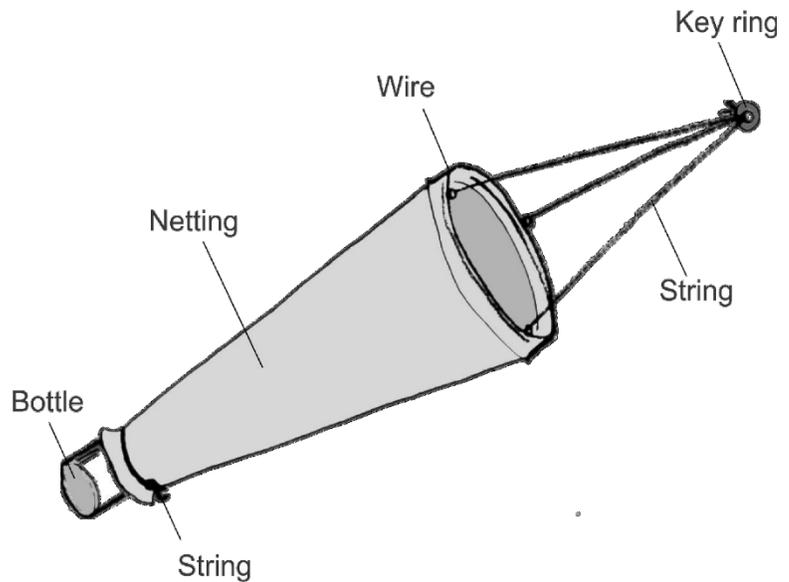
If you want to make first-hand observations of living plankton taken from your local river or estuary, you have to catch them! Plankton are usually very small and difficult to see. To catch (or collect) plankton, you'll need a specialized piece of scientific equipment called a plankton-net. This net is made of fine mesh that has holes large enough to allow water to pass through, but tiny enough so that plankton cannot pass through.

Let's start by making your own plankton net:

## Procedure

### Construct Your Plankton Net

1. As you construct your plankton net, you may want to refer to the diagram. Your teacher should also have one plankton net made ahead of time that you can look at as an example.
2. Bend the wire into a circle and wrap the ends around one another. Use duct tape to secure the wrapped ends and cover the sharp points.
3. Roll the largest opening of the stocking several times around the wire ring. Sew the stocking to the wire using the heavy thread and needle. Use duct tape to cover and protect the stocking.
4. Cut off the foot of the stocking and discard that piece. Now open the narrow foot end of the remaining stocking and insert the mouth of a small bottle. Wrap a piece of heavy string around the outside of the stocking and bottle mouth and tie the string tight to secure the stocking to the top of the bottle. Use duct tape to reinforce the connection between the bottle and string.
5. Cut three pieces of string, each about 50 cm long. These will become the "bridle" to tow your net. Tie the strings at equal intervals around the wire opening to the net. Tie the three loose ends of string to a key ring. This is the bridle ring. Your plankton net is now complete and ready to catch plankton!



## Use Your Plankton Net

6. You'll need to find a body of water and then devise a way to move the net through the water. Usually scientists tow a plankton net behind a boat. Since you probably don't have access to a boat, what are some other ways you might have to move water through the plankton net?
7. If you decide to tow your plankton net, tie a length of strong string to the bridal ring so that you can pull your net through the water. The plankton will become concentrated in the bottle.
8. When you have finished towing the plankton net, rinse the inside of the net with water so that plankton on the inside of the net get washed down into the collection bottle. When you are done, untie the string around the mouth of the bottle and carefully remove the bottle.
9. View the water contents in your collecting bottle. Do you observe particle motion even after the water has stopped moving? If you do, then those are your zooplankton!
10. If you've brought observation instruments to the collection site with you, then use an eye dropper to place a few drops of water from your collection jar into a viewing dish. View the plankton in the viewing dish through a hand lens or a microscope. What do you see?

## Discussion Questions

Q1. Why did you use a nylon stocking as part of the plankton net? What would happen if you made a plankton net using flexible window screen? Why is it important to use a fine mesh fabric when constructing a plankton net?

Q2. What difficulties did you encounter in collecting plankton using your plankton net? Could you make the plankton net differently to solve the problem?

Q3. What method did you use to move water through your plankton net? How successful was that? Do you think another method might have been more successful?