# **Build a Plankton Net**

Background Information: Plankton are the tiny plants and animals that drift in water. They can be classified as **phytoplankton** or zooplankton. Phytoplankton are microscopic plant-like organisms that form the base of the food web in the ocean and other aquatic ecosystems. Like plants, they use the sun's energy to convert carbon dioxide to carbohydrates and generate oxygen through photosynthesis. In fact, phytoplankton are responsible for about 90% of the oxygen in the Earth's atmosphere. Most phytoplankton are found on the surface of the water where they can get the sunlight and nutrients they need for growth. **Zooplankton** are tiny animals that eat phytoplankton. They form an important link in the food web to transfer carbon from phytoplankton to larger organisms, such as fish. In this project you will make a plankton net. The net is constructed from wire and a nylon stocking to form a funnel-shaped net that is towed through the water. Scientists use plankton nets to trap and concentrate plankton for study.

#### **Materials and Equipment:**

Thin wire, 50 cm (20 in) in length Duct tape Electrical tape (optional) Nylon stocking or a leg cut from panty hose Heavy thread and needle Top half of a plastic water bottle with cap String Scissors Key ring (optional)



### Methods:

1. Bend the wire into a circle. Use the tape to fasten the loose ends together.

2. Roll the mouth of the stocking around the wire ring. Sew the stocking to the wire using the heavy thread and needle. Alternatively, use duct tape to secure the stocking all the way around the wire.

3. Cut off the foot of the stocking, and then place the end of the stocking around the opening of the water bottle, with the cap of the bottle pointed down. Tie the stocking securely to the bottle and use duct tape to reinforce the connection.

4. Use scissors to make 3 tiny holes near the top of the net, close to the wire. Cut three pieces of string, each about 50 cm long, to make the "bridle" to tow your net. Thread them through the holes in the net and tie them around your ring (see figure above). Tie the three strings to a key ring, or tie them together if not using a key ring. Your plankton net is complete.

5. To tow for plankton, tie a length of rope to your bridle and pull your net through the water. Remove your sample by unscrewing the cap of the bottle and drain the concentrated plankton into another container. Collect a second sample of water using a cup or bucket for comparison to the net tow. View your plankton through a microscope.

**Analysis:** Compare the number of plankton collected by the plankton net to the number of plankton collected by dipping a cup or bucket into the water. Draw a picture of the most abundant plankton you see in your concentrated sample.

#### Questions:

- 1. Why did we use nylon stockings as part of the net? The holes in the stocking are about 0.2 mm across. Are the plankton you collected in your net larger or smaller than 0.2 mm?
- 2. What would happen if you made a plankton net out of burlap? Would you collect more or less plankton with burlap mesh than you would collect with the stocking?

- 3. How did the number of plankton collected in the plankton net compare to the number collected in the cup or bucket?
- 4. Why do you think scientists use plankton nets?

5. Draw a picture here of the most abundant plankton in your sample.

## **Extra Reading:**

"Sea Soup: Phytoplankton" by Mary M. Cerullo <u>Online videos:</u> http://www.youtube.com/watch?v=81hLA14zyc8 http://www.youtube.com/watch?feature=endscreen&NR=1&v=9N9K7Melyts

Plankton Net - a data base of plankton with images (http://planktonnet.awi.de/)