

### Make a Plankton Net

In this project you will make a plankton net. Since most plankton are barely visible to the unaided eye, scientists must use a special net to gather these small creatures for study. A plankton net is a funnel-shaped, fine-meshed net that is towed through the water. The net concentrates the plankton from the large quantity of water that passes through it. Plankton nets can be expensive to purchase but are easy and inexpensive to make, using simple materials.

A fascinating microscopic world of plankton awaits you!

#### Approximate time needed:

1 hour to build the net. An additional 2 hours to tow for plankton and study sample under microscopes.

#### Background Information:

Plankton are microscopic plant-like algae and animals that drift in water, moving through currents and tides. Plankton means wanderer or drifter in Greek. They can be classified as phytoplankton or zooplankton.

- Phytoplankton are microscopic algae 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 energy (carbohydrates) and generate oxygen through photosynthesis. In fact, phytoplankton are responsible for producing more of the Earth's atmospheric oxygen than land-based trees and plants. Most phytoplankton are found on the surface of the water where they can get the sunlight and nutrients they need for growth.
- Zooplankton are microscopic animals that eat phytoplankton. Many familiar animals in the ocean, including many crustaceans (crabs, barnacles, shrimp, krill), molluscs (mussels, clams, snails) and echinoderms (sea stars, urchins, sand dollars), and even some fish begin their lives as tiny zooplankton that look entirely different than their adult forms. These are "temporary plankton". Other zooplankton,

such as copepods, are "permanent plankton", spending their entire life cycle as plankton. Zooplankton form an important link in the food web to transfer energy from phytoplankton to larger organisms, such as fish- and even to the largest animal that has ever existed, the blue whale.

#### Preparation:

Locate images of plankton on the internet or in books to give the students an idea of the different shapes and sizes of plankton. Discussion topics include photosynthesis, food webs, and life cycles of some familiar zooplankton, such as barnacles or crabs.

#### Materials and Equipment:

- Thin, flexible wire (jewelry wire works well), 50cm in length needed for each net
- Duct tape
- Electrical tape
- Glue
- 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)



## Method:

Students should work in pairs to make the construction of the net easier, but may need some assistance from an adult.

1. Bend the wire into a circle. Before taping the ends, make sure that the wire circle is the right dimensions that will fit the stocking over top. Use electrical tape to fasten the loose ends together. The tape will prevent the sharp ends of the wire from causing damage.
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. Secure the stocking to the bottle with glue or string. 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, at equal intervals. Cut three pieces of string, each about 50 cm long, to make the "bridle" to tow your net.
5. Thread the string through the holes in the net and tie them around the wire. Tie the three strings to a key ring, or tie them together if not using a key ring.

Your plankton net is complete!

