

# Making Field Sampling Equipment

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**Grade Level:** lower elementary, upper elementary/middle school

**Duration:** a total of 60 minutes to plan and build the equipment; another 30 minutes for presentations

**Skills:** application, communication, presentation, and team building

**Subjects:** science and language arts

## Concepts

- Bridge the classroom and the local environment.
- Gain firsthand knowledge through an outdoor experience (with follow-up on-site activity).
- Discover the ecosystem through multi-sensory experiences (with follow-up on-site activity).

## Vocabulary

- invertebrate
- sample
- bottom sampler
- core sampler
- bottom dredge
- underwater viewer

## Overview

Students work in teams to create any of the four types of sampling equipment shown in the information sheets. They research how these tools are used by field biologists and then make presentations to the rest of the class.

## Objectives

After this activity, students will be able to:

- Name four pieces of field sampling equipment that collect invertebrate populations
- Describe how to construct a simple Bottom Sampler, Core Sampler, Bottom Dredge, and Underwater Viewer
- Demonstrate how to use properly each piece of sampling equipment

## Materials

- One copy of the handout Making Sampling Equipment for every team
- Items listed for each type of equipment to be built

### Bottom Sampler

- Coat hanger
- Needle and thread
- Wire
- Twelve-inch wooden dowel, broom handle, or three-foot long wooden dowel
- Nylon stocking or lightweight nylon (1mm mesh or less)

### Core Sampler

- Juice can

### Bottom Dredge

- Coffee can
- Heavy string
- Heavy fishing weight

### Underwater Viewer

- Large can or plastic container
- Clear, heavy-duty kitchen wrap or other clear plastic
- Large rubber band

### Sorting tray

- Jar lid or flat piece of wood

## Introduction

There is no introductory information for this activity.

## Activity Preparation

1. Make one copy of Making Sampling Equipment for each team.
2. Divide the class into four teams. Let each team determine how it will collect the materials it needs by the designated “building date.”

## Procedure

1. Assign each team the task of making four of one type of sampling equipment so that every team in the class will have one.
2. Provide the teams with time in class to build their samplers. Have them research what the sampler is used for and practice (in class) how to use it properly.
3. When all the teams are done, have team members take turns explaining their equipment, how it was built, and what biologists use it for. Have them demonstrate how to use it properly before passing one out to each team.

## Additional Activity

### *Research Other Sampling Techniques*

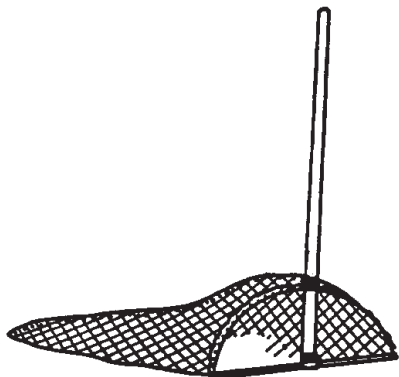
Have the students work in teams to research what other sampling equipment and techniques biologists use in the field. Are any of these appropriate to this field trip? If so, have students plan how they can use what they learned during their upcoming field trip.

### *Mud Creature Study*

Follow up with this on-site activity in which students sample the invertebrate population at their field trip site.



## HOW TO MAKE A BOTTOM SAMPLER

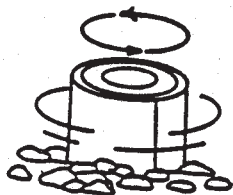


## INFORMATION SHEET

Materials: coat hanger, needle and thread, wire, 12-inch wooden dowel, broom handle or 3-foot long wooden dowel, nylon stocking or lightweight nylon (1 mm mesh or less).

1. Constructing a net: cut off the top hook of a coat hanger and shape the triangle into a half circle, leaving the bottom wire flat.
2. Use a nylon stocking or a square of lightweight nylon material. Fold the square in half diagonally, then stitch up one of the open sides of the triangle forming a cone. Wrap the open end of this cone (or the nylon stocking) around the half circle of wire, then stitch in place.
3. Strengthen the straight edge of the half circle by wiring a 12-inch wooden dowel along it. Attach a wooden broom handle or long dowel to the center of this dowel and across the opening of the net.

## HOW TO MAKE A CORE SAMPLER

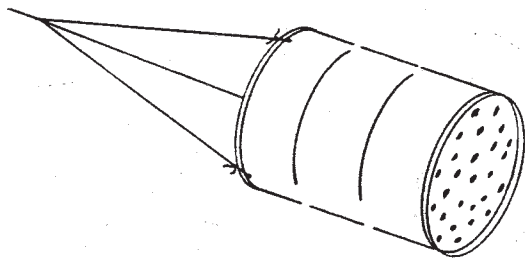


## INFORMATION SHEET

Materials: juice or coffee can, jar lid or flat piece of wood, sorting tray.

Cut one end completely out of a tin can, then punch a hole in the other end with a large nail.

## HOW TO MAKE A BOTTOM DREDGE



## INFORMATION SHEET

Materials: coffee can, heavy string, heavy fishing weight.

1. Poke holes in the bottom of the coffee can with a nail and hammer.
2. Use the same method to poke holes at the rim of the can to attach a bridle with which to drag the can through the water.
3. Put a heavy fishing weight on the bridle and attach the bridle to a tow line.

## HOW TO MAKE AN UNDERWATER VIEWER



## INFORMATION SHEET

Materials: large can or plastic container, clear heavy-duty kitchen wrap or other clear plastic, large rubber band.

1. Cut out completely the top and bottom of a large round can or plastic container. Be sure there are no sharp edges.
2. Stretch a sheet of clear plastic across the bottom and hold tightly in place with one or more large rubber bands.