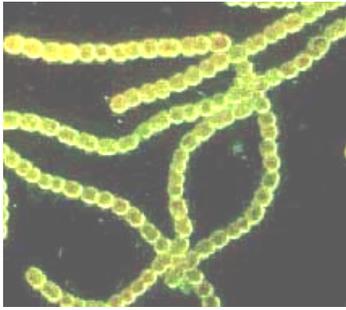


Microfishing



Topic: Marine Biology

Grade Level: 4-12

Summary: Students use a simple method to collect living microorganisms from natural and/or artificial environments and develop skills in microscopy, observation, drawing, speculation, hypothesizing, oral presentation, and raising questions. This activity arouses curiosity and provides a fascinating look at a world we rarely get to see.

Key Words: Microscope, invertebrate, algae, sampling, diversity

Introduction: This activity can be used as an introduction to the world of aquatic organisms or as an investigation into ways of assessing diversity. Most of the life forms in fresh and salt water are microscopic, or at least small enough to benefit from being magnified for observation. The source of the creatures can be any nearby body of water or a classroom aquarium, though there will be fewer types of creatures there. If using the aquarium, consider sampling from a local body of water later to offer students a chance to compare the results.

If you are unfamiliar with small aquatic life, you are in for a treat! You can enjoy learning right alongside your students. Take time to just look at some of the different creatures for a while before you try to identify them. There are some good identification guides available (Reid and Zim, *Pond Life*, New York: Golden Press, 1967 and Klots, *The New Fieldbook of Freshwater Life*, New York, G.P. Putnam's sons, 1966; an excellent general introduction to pond life is Caduto, *Pond and Brook* Englewood Cliffs, N.J.: Prentice-Hall 1985); start with a general one to get a feeling for the range of types, then move on to more careful and systematic classification.

One important concept students can learn is the idea of diversity and how it strengthens an ecological community. For advice on how to create a diversity index, see Mitchell and Stapp, *Field Manual for Water Quality Monitoring* Dexter, MI: Thomson-Shore 1992.

What to Expect:

- Setting up slides on day 1 takes a few minutes (5-10). Allow one class period for each of the following: (1) observation and drawing; (2) construction of the organism; (3) group presentations. Conclusions and new questions can be done as a homework assignment.
- If you don't collect enough organisms, leave the slide in longer or change its location. If there are too many, collect a drop at a time and place on a fresh slide with a cover slip.
- If an organism swims out of view too quickly, reduce the size of the pool by placing the creature in a small drop of water on a new slide.
- Make every effort to keep the creatures alive and return them to the pond or stream if possible. If you are keeping the sample overnight, the water should be kept cool and aerated with an aquarium air pump.

Materials:

- A salt or fresh water environment (classroom aquarium and/or jars containing water samples from different sources)
- Microscope

- String
- Glass Slides
- Stick (ruler/meter stick)
- Cover Slips

Procedure:

1. Clean and dry a microscope slide.
2. Secure a piece of string (length can vary but recommend at least 8 inches) to one end of the slide, then tie the other end of the string to the other end of the slide.
3. Place the stick through the loop in the string and place the stick across the opening of the container holding your water sample so that the slide hangs beneath the water surface. If an aquarium is being used, a meter stick can be laid across its length and support many slides.
4. Leave the slide under water for as little as 24 hours or for as long as several weeks - both produce equally successful results. Choose a time frame which suits your class schedule.
5. Once slide has remained under water for at least 24 hours, gently remove it from the water and carefully slip the string off the ends of the slide.
6. Dry the bottom of the slide.
7. Apply one or two cover slips (side by side) to the top of the slide.
8. Observe slide with a microscope.



Record data: Record the source of your specimen (the water environment it came from). Make a sketch of the different organisms you observe. Try to determine the number of different kinds of organisms present and which are the most abundant in your sample. Select your favorite organism and make as detailed a drawing of it as possible. Record other details that describe your organism (colors, behaviors, activities, and movements - both internal and external). Create a page for a class catalogue describing the organisms found. Include a labeled drawing, description of appearance and behavior, and information you have found out about this organism. List your sources.

Evaluation:

1. Successful construction and hanging of the collecting slide.
2. Labeled diagrams of observations.
3. Clear, informative page contributed to class catalogue.

Source: Adapted from Geoff Goodenow, SEA Experience 1997. The MICROFISHING activity is a modification of one taken from the Microcosmos Curriculum Guide to Exploring Microbial Space by the Microcosmos Team. Copyright 1998-2008 by Sea Education Association, all rights reserved.
Compiled and edited by Pat Harcourt & Teri Stanley.