

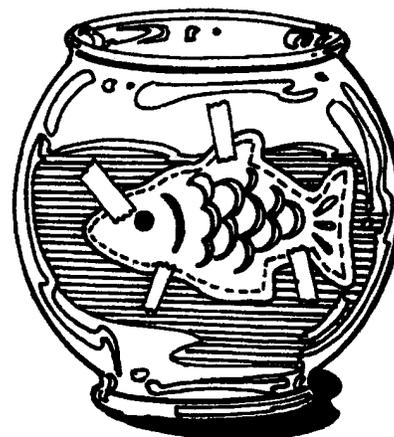
Life In A Fish Bowl

Overview:

This activity is designed to show students the journey of a fish making his way down a river heading towards the estuary. While the fish is traveling, he encounters many pollutants that affect the water quality along the way. This lesson represents what our coastal waters would be like if North Carolina did not have rules, regulations and monitoring in place to protect our water quality.

Materials:

- fish bowl or similar container
- fish cut-out (provided)
- tape
- 9 small containers or bowls
- spoon
- small amount of the following:
soil, sand, liquid dish detergent,
chocolate syrup, salt, paper
confetti, powdered detergent, hot
water, and red food coloring



Background:

Poor water quality can harm fish and other wildlife and their habitats. Many things are known to cause poor water quality, including stormwater and agricultural runoff, erosion, sedimentation, decayed organic material, pesticides, and toxic hazardous substances. For example, the water that drains off of agricultural sites may contain fertilizers and pesticides. These toxins build up in the water which results in reproductive and developmental problems in shorebirds, waterfowl, and fish. Almost half of the species listed on the endangered or threatened species lists are water-dependent.

Activity:

Fill each of the small containers with one of the following: soil, sand, liquid dish detergent, chocolate syrup, salt, paper confetti, powdered detergent, hot water and red food coloring. Tape fish cut-out to the outside of the fish bowl and fill the bowl half way with water. Have students name the fish and use this name through the narrative. Read the narrative aloud and ask individual students to add the ingredients in the containers as indicated within the narrative to represent pollution.

Grade Level

Pre-K – 4th

Objectives

* To understand the effects of poor water quality on living things.

* To identify different forms of pollutants.

* To become familiar with ways to reduce pollution in our waterways.

N.C. Standard Course of Study

Kindergarten
(1.02, 1.03)

Grade 1
(1.01, 1.02)

Grade 3
(1.01, 1.02)

Grade 4
(1.01)

Note: The narrative should be read in advance and adapted to the students' level. Look for ways to personalize the story by including the name of your fish and the name of a nearby river.

Narrative:

Imagine a river as it meanders through the countryside, past a farmer's field, widening into a lake, but narrowing again as it passes through the city on its way to the estuary and oceans. In this river, named _____, lives a fish. Its name is _____. (*Point to the fish in the clear water in the fish bowl.*) **Ask: How does it feel to be this fish?** (*This question should be asked repeatedly throughout the story and should generate an enthusiastic response from your students. Let students respond aloud.*)

The fish swims down river past an eroding bank. An eroding bank is where soil sometimes washes into the river. When it rains, what will happen to the bank? What if it rains a great deal? (*Have students pour soil from the container into the water.*) **Ask: How does it feel to be the fish?**

Suppose part of the soil eroding into the water came from a farm. The farmer has just put fertilizer onto the field. Fertilizers are used to help plants grow. Instead of staying on the field to help the crops grow, some of the fertilizer may ride "piggy-back" on the eroding soil and go into the river. (*Have students pour sand from the container into the water to simulate fertilizer.*) What effect will the fertilizer have on the plants in the river? (*It will make plants grow.*) If the plants grow too abundantly and too fast, the river can't continue to support them and they die and fall to the bottom and start to decompose. Decomposing things use oxygen in the water. What else in the river needs oxygen? (*The fish.*) **Ask: How does it feel to be the fish if all the oxygen in the water is being used by decomposing plants?**

Farm fields aren't the only source of pollution that can flow into a river. Homes may also be a source of pollution. Where the river has widened into a lake, several families have built their homes.

Sometimes people pollute our waters by not picking up trash from their yards and by using fertilizers that get washed away by the rain. (*Add liquid dish detergent to represent pollution from homes.*)

As the lake narrows back into the river, our fish continues downstream past the city. Have you ever seen a car leaking oil? Where does the rain wash this oil? (*Add chocolate syrup representing oil.*) **Ask: How does this feel to the fish?**

In the winter, when it gets icy and snows, what do we put on our roads to make it easier to drive? (*Salt or sand. Add salt into the water.*) When you eat something salty, what do you do? (*You get something to drink.*) Can this fish get fresh water to drink? (*No.*) **Ask: How does it feel to be this fish?**

The city also has a big park near the river. People litter in the park and some of it blows into the water. (*Put pieces of paper into the fish bowl.*) **Ask: How does it feel to be this fish?**

As the river leaves the city, there are several factories that are located along it. Although the regulations are strict, some chemicals or heated water may flow into the river. *(Add powdered detergent and hot water into the fish bowl and stir for effect.)* **Ask: How does it feel to be this fish?**

The waste water treatment plant for the city is also located along this section of the river. The plant does its best to clean out impurities, but some polluted water gets into the river. The river has a large volume of water though and the plant only puts a small amount of pollution into it. It shouldn't cause too much of a problem. Right? *(Put in two drops of food coloring and stir for effect.)* **Ask: How does it feel to be this fish?**

Ask the following questions:

1. Have you ever seen a river, lake or beach closed for swimming? Why do you think those areas were closed?
2. Would you want to swim in a river like the one in our story?
3. What are some ways you can help prevent pollution?

Extension:

- Have students draw pictures that go along with the story.
- Have students think of ways to reduce pollution at their school.
- Have students write their own short story about the effects of pollution.

Vocabulary:

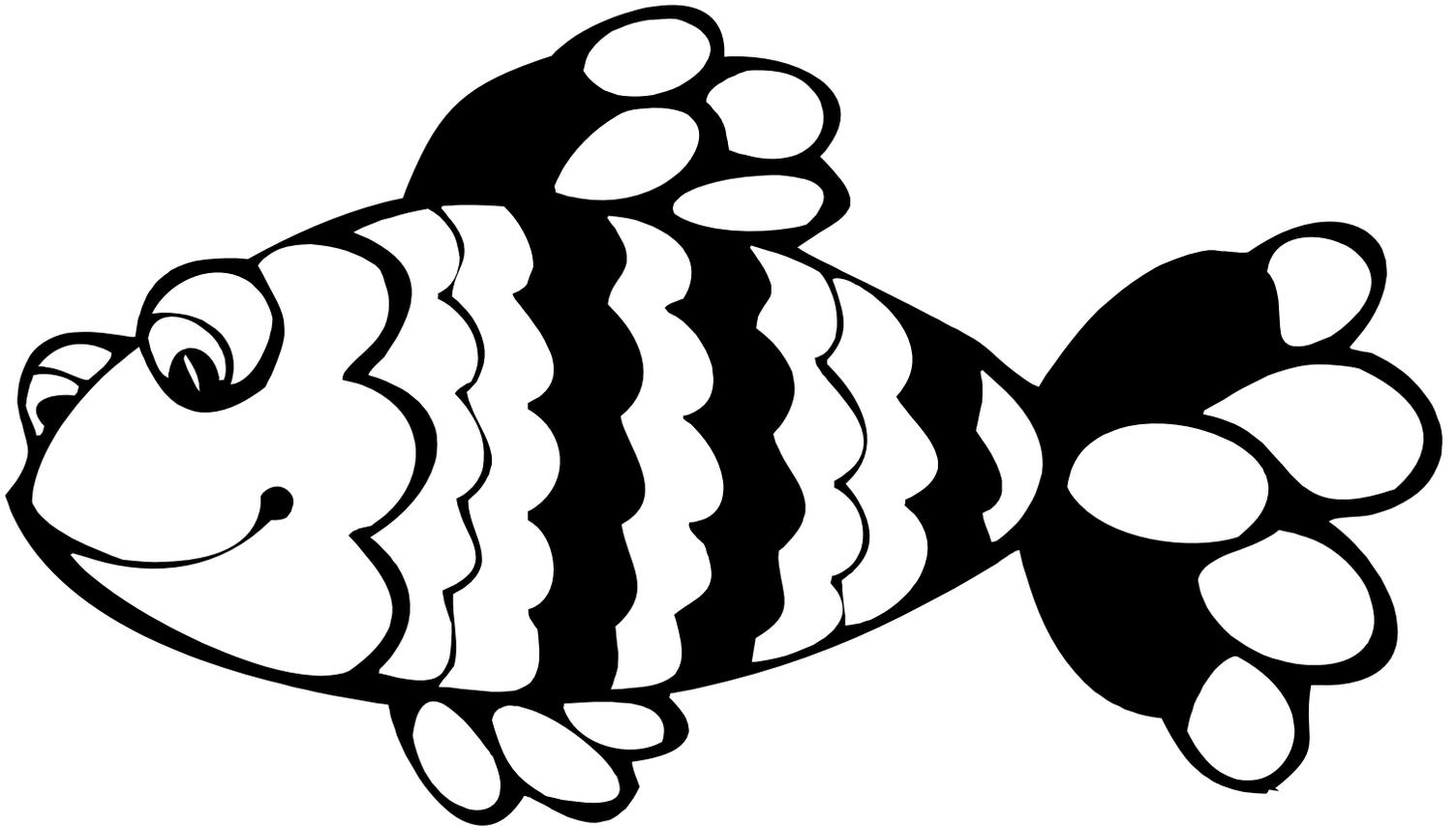
- pollution
- runoff
- erosion
- river
- lake
- estuary
- ocean
- fertilizer

National Science Standards:

Content Standards *Life science. [K-4]*

Ocean Literacy Principles:

Essential Principle #5 *The Earth has one big ocean with many features.*
(Fundamental concepts-g)



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