

# INTRODUCTION TO ECOLOGY

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Ecology deals with the relationships living things have to each other and to their environments (surroundings). Scientists who specialize in studying these relationships are called ecologists.

No living thing—plant or animal—lives alone. Every living thing depends in some way on certain other living and nonliving things. Animals and plants that live in the same area, or community, depend on each other in some way. For example, an elephant must have plants for food. If the plants in its environment were destroyed, the elephant would have to move to another area that had plants, or it would starve to death. Plants depend on such animals as the elephants for the nutrients (nourishing substances) they need to survive. Animal wastes and the decaying bodies of dead animals and plants provide many of the nutrients that plants need.

The study of ecology increases people's understanding of the world and all its creatures. This is important because humanity's survival and well-being depend on relationships that exist on a worldwide basis. Change in distant parts of the world—even outer space—affect us and our environments.

One goal of ecologists is to intelligently manage and control the living and nonliving things in the world. Many ecologists study air and water pollution and how dirty air and water affect life. Ecologists try to foresee possible environmental problems, such as crop losses or losses in animal life that building a dam or straightening a river channel may cause. They study such things as insect pests, including the beetle that carried the Dutch elm disease from Europe to the United States where it killed millions of trees.

Ecologists are concerned about the rate at which people are using up such natural resources as coal, gas, and oil. Along with many other scientists, they are searching for ways to use sunlight and atomic energy for fuel and power. Ecologists also are concerned about the world's increasing population and its decreasing food supply. For example, along with marine biologists, they are trying to find new ways of producing food from the sea.

Ecologists use knowledge from many different fields of study including physics, chemistry, mathematics, and computer science. They also rely on other sciences, such as climatology, meteorology, geology, and oceanography, to learn about air, land, and water environments.

Adapted from *World Book Encyclopedia*



## OBJECTIVES:

The student will be able to:

1. Identify ways people use trees.
2. Recognize the parts of a tree and their functions.
3. Name living things that depend on trees.
4. Describe ways people can use trees and ensure we will continue to have them.

## BACKGROUND:

Trees are a valuable resource, both in terms of their environmental and economical benefits. Trees are used to produce many products in the economy as well as provide natural beauty, fresh air, and a means to prevent land erosion.

Many other animals and plants within the environment depend on trees to provide shelter and food. Trees also have various parts that serve many functions. The roots hold soil and take water and other nutrients into the tree. The leaves produce food and release oxygen into the environment. The trunk supports the tree while the bark provides a protective covering. Every part of a tree serves a purpose within the environment as well as in our economy.

## VOCABULARY:

**coniferous tree** - a tree that has cones and is mostly evergreen (A few conifers are deciduous, and some evergreens are not coniferous.)

**deciduous tree**- a tree that sheds leaves during a particular season

**dependent** - needing something else for support to live

## PROCEDURE:

### *Setting the Stage*

1. Display the wood products that have been gathered. Ask students what these objects have in common. Explain that these objects are similar because each has been made from trees.
2. Have the students make a brainstorm list of other objects they know are produced from trees. Record their responses.

### *Activities*

1. Read the book *The Giving Tree* by Shel Silverstein.
2. Identify the parts of the tree and discuss how the boy or man used them to help him live.
3. Have students do the activity "Who Needs a Tree?"
  - Have individual students name parts of a tree. As each student names a part of a tree, let him/her come up to hold the yarn and form a web. Parts of tree may include roots, trunk, bark, or leaves.
  - Using a second skein of yarn of a different color, have students name other organisms (animal or plant) that live off a tree. Use these students to string a second web over the tree web. Items in this category may include ladybugs, squirrels, moss, or beetles.
  - When every student has had an opportunity to be something that is part of the tree or needs a tree, use scissors to "cut down the tree." Symbolically, this will represent the loss of not only the tree but also the habitat for other organisms that need the tree to live.

## Subjects:

Science, Language Arts

## Time Needed:

45 minutes

## Materials:

*The Giving Tree* by Shel Silverstein  
two skeins of yarn in different colors  
construction paper  
markers  
tree products  
scissors

### *Follow-Up*

1. Discuss how cutting a tree affects other organisms in the environment.
2. Discuss ways people can use trees while continuing to ensure their existence is plentiful.
3. Have the class purchase and plant a tree on the school grounds or in a local park in an effort to replenish trees.
4. Refer to “Speakers for the Earth” in Learning Through Legacy (K-2).

### **EXTENSIONS:**

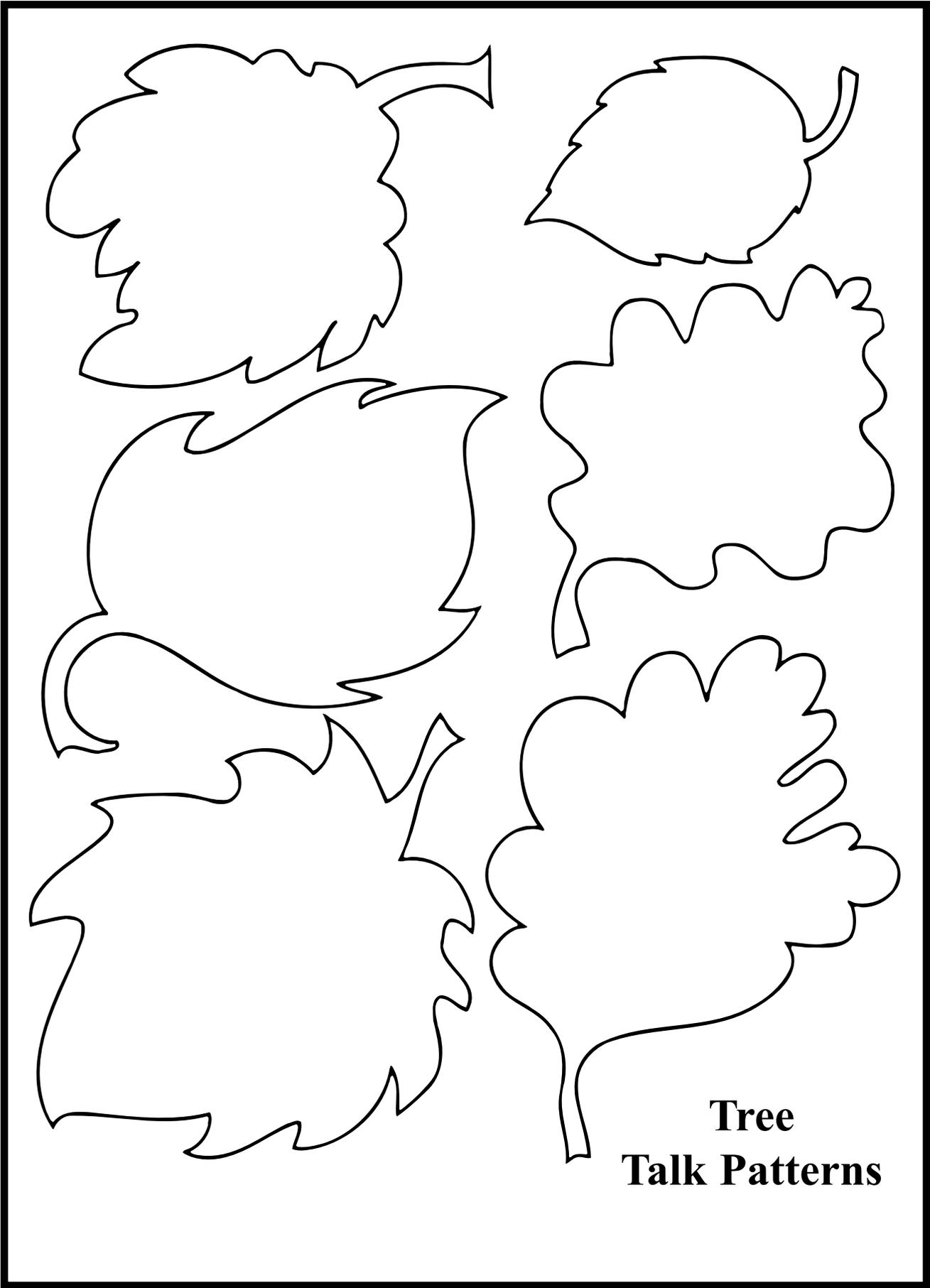
1. Make the “Tree Talk” activity leaves from construction paper. Write questions and tree facts based on the class activity to solicit responses from students. These might include questions concerning the parts of the tree and their function. Name things made from trees. Name things trees need to survive. Discuss why some types of trees may not be around very long. Talk about ways that we can be sure to have trees around for a long time. Count the trees in your yard or on your school ground. Place these in a science or writing center, or divide the class into groups to record and share responses.
2. Have students collect some leaves common to their community. Using a book from the school library, identify some of these common leaves.
3. Define the terms “coniferous” and “deciduous” to students and have them classify different types of trees according to these terms.
4. Ask a member of a local forestry agency to speak to your class.
5. Ask a paper industry representative to speak to your class.
6. Geography Extension: Where would different trees grow? Discuss why or why not. Have students find on a map or globe where trees grow or don’t grow.
7. Graph leaves by type, color, texture, and smell.
8. Refer to “The Gift of a Tree” in Learning Through Legacy (K-2).

### **ORIGINAL DEVELOPMENT RESOURCES:**

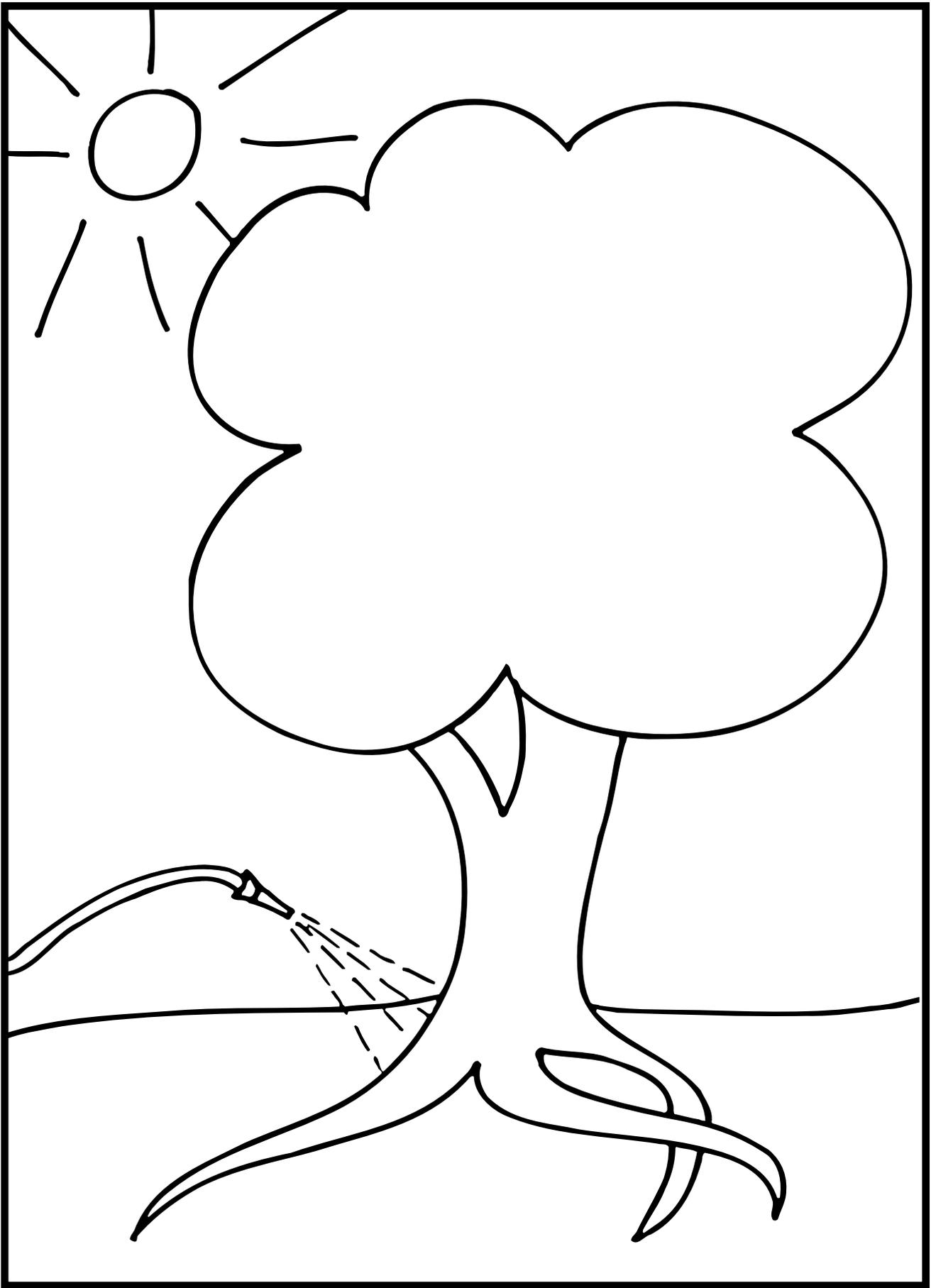
Silverstein, S. (1964). *The Giving Tree*. New York, NY: Harper & Row.

*A Friend in the Backyard*. Georgia Power, A Southern Company. Environmental Teachers Corps.  
[www.southernco.com/site/community/web.teachercorp.asp](http://www.southernco.com/site/community/web.teachercorp.asp)

Smokey Bear resources: Alabama Forestry Commission, PO Box 302550., Montgomery, Alabama 36130 (334-240-9355) USDA Forest Service, 2946 Chestnut, Montgomery, Alabama 36107 (334-832-4470)  
[www.smokeybear.com](http://www.smokeybear.com)



**Tree  
Talk Patterns**



## OBJECTIVES:

The student will be able to:

1. Exhibit an understanding that every plant and every animal has a unique place in nature.
2. Identify ways they can help protect or provide for things in nature.

## BACKGROUND:

Every plant and every animal has a unique place in nature. There are ways of appreciating plants and animals without taking them from their natural habitats. This helps to protect our environment. Some examples are planting trees, making birdhouses, planting flower gardens, making nestboxes for squirrels, and making bat boxes.

## VOCABULARY:

**habitat** - the place in nature where plants and animals live

## ADVANCE PREPARATION:

Cut a large leaf from bulletin board paper.

## PROCEDURE:

### *Setting the Stage*

Discuss with the class that every plant and every animal has a special place in nature. Talk about what happens when we catch an animal, bird, or insect in the woods and bring it home with us. Do we know how to take care of it, and can we provide what it needs to live?

### *Activities*

Read *The Salamander Room* by Ann Mazer. Discuss what the boy in the story discovered about caring for his salamander. Help students understand that plants and animals should be left in their own habitat. We can still appreciate animals and plants without taking them from their homes.

### *Follow-Up*

Ask students to think of ways that they can most likely or least likely help protect or provide for things in nature. (Make bird feeders, birdbaths, nestboxes for squirrels; plant trees; plant a flower garden; pick up litter.) Write or draw students' suggestions on a large leaf shape from bulletin board paper. Encourage them to choose a project to complete at home.

## EXTENSIONS:

1. Borrow or buy a real salamander for observation. Be sure to ask for care and feeding instructions. Have students help prepare a special tank with leaves, moss, and branches. After the project is completed, return the salamander to its home or natural habitat.
2. Have students create a salamander home using a large box, scissors, glue, and construction paper. Provide clay for the students to create 3-D salamanders.
3. Write salamander poems. They should each contain one fact about salamanders. Provide a reading center with books about salamanders.

## Grades:

K-2

## Subjects:

Science, Environmental Awareness, Literature

## Time Needed:

30 minutes

## Materials:

*The Salamander Room* by Ann Mazer  
one large leaf-shaped piece of paper  
bulletin board paper

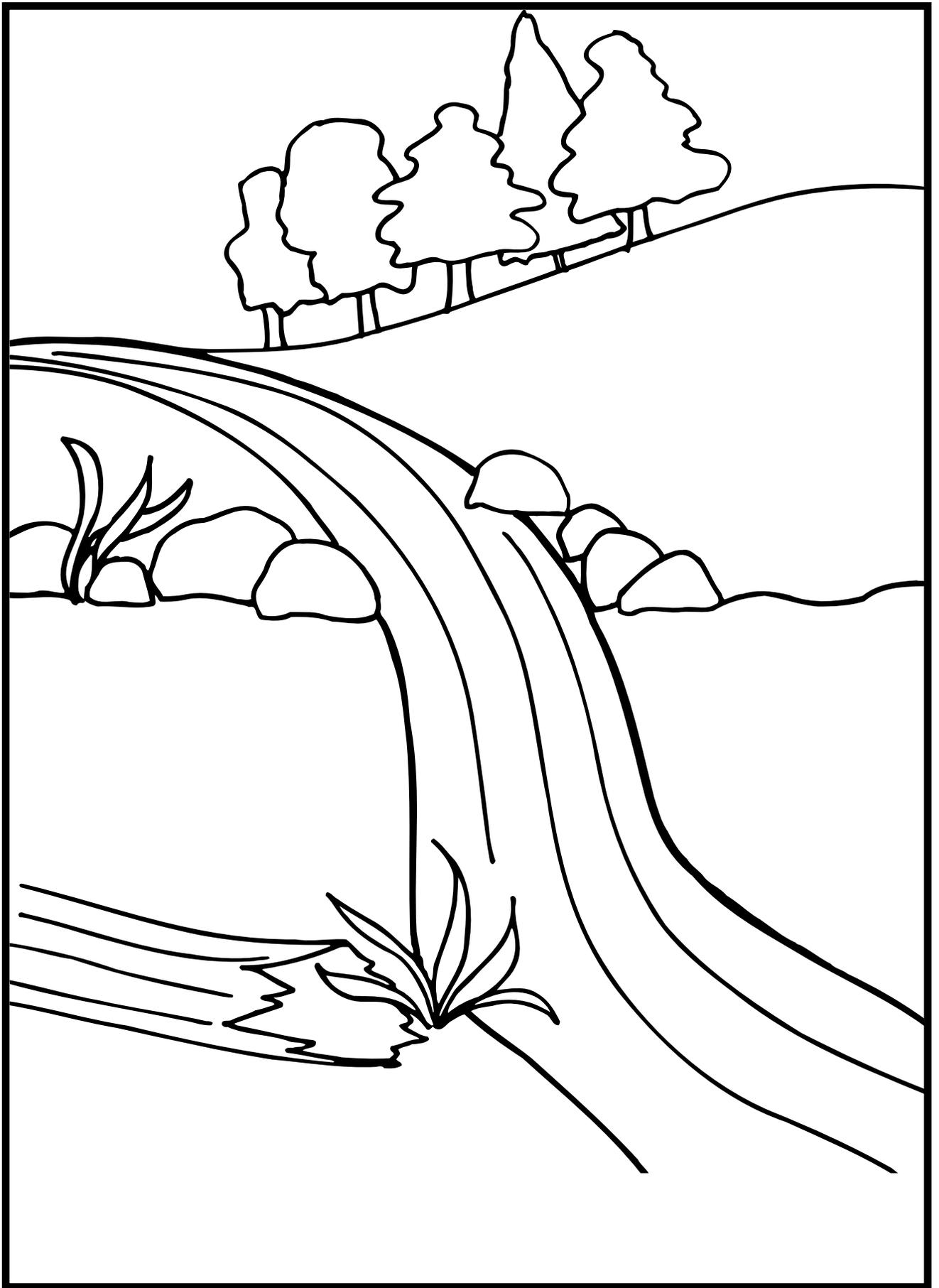
4. Show on a map where salamanders can and cannot be found.
5. Color the habitat coloring page and draw the salamanders where they might live.

**ORIGINAL DEVELOPMENT RESOURCES:**

Mayberry, S. (1994). *Linking science with literature*. Greensboro, NC: Carson-Dellosa.

Mazer, A. (1991). *The salamander room*. New York, NY: Alfred A. Knopf, Inc.

Spring, K. (1993, April/May). *The primary mailbox magazine*.



# Notes

## OBJECTIVES:

The student will be able to:

1. Recognize how the colors of different seasons hide insects and animals.
2. Define camouflage.
3. Identify several species of sea life that hide among their surroundings.
4. Display an understanding of how some sea animals protect themselves by blending in with their surroundings.
5. Predict what would happen if animals could not camouflage themselves.

## BACKGROUND:

Animals adapt to their environment in order to survive. Coloration patterns protect a species from predators by allowing it to blend with the plants and natural formations found in its habitat. When environmental conditions change, many animals can alter their color.

There are many different species of sea life that hide among their surroundings. By blending in, they avoid their enemies while sneaking up on their prey. Many of these animals use special patterns or colors. A few of these sea creatures are cuttlefish, shrimp, and octopus. Some fish even change colors and patterns to fit their surroundings.

## VOCABULARY:

**camouflage** - the means or result of disguising things to deceive an enemy

**environment** - the aggregate of surrounding things, conditions, or influences

**predator** - habitually preying upon other animals

**prey** - an animal hunted or seized for food

## ADVANCE PREPARATION:

1. Gather materials, including paper fish, and cut pieces of different patterns of wallpaper.
2. Place some small red toys on a piece of red construction paper against some red fabric in the storytime area.
3. Cut out chameleon patterns on tagboard for each student.

## PROCEDURE:

### *Setting the Stage I*

Have students notice the red objects. Place white objects against the red and let the children compare how easy or difficult they are to see. Use the word "camouflage" in the discussion. Read *Who's Hiding Here?* by Yoshi. Discuss what camouflage means. Discuss how all the illustrations in the story show pairs of animals except for the first and last illustration.

## Grades:

K-2

## Subjects:

Science, Art

## Time Needed:

40 - 50 minutes

## Materials:

*Who's Hiding Here?* by Yoshi

small red toys

red fabric

white objects

variety of colored construction paper

pictures of animals who use

camouflage

chameleon patterns

tagboard

water colors

brushes

*How to Hide an Octopus and Other*

*Sea Creatures* by Ruth Heller

eight-inch squares of wallpaper per

student

light blue construction paper per

student

small fish pattern per student

crayons

scissors

glue

### *Setting the Stage II*

Ask the class if they have ever played the game hide-and-seek. Discuss how many ocean animals' safety and supply of food depend on the ability to hide-and-seek. Explain that many of them use special patterns and colors to blend in with their surroundings, this way they can avoid their enemies.

### *Activities I*

Spread out different colors of construction paper on a table. Ask several students to select a color. Instruct them to look around the room and find a pair of objects the same, or nearly the same, color as the paper. Display the camouflage pairs. Also use printed fabrics and let the students try to find pairs of things they could hide on the material such as pieces of yarn, broken crayons, and chalk. Help the students see that the camouflage works because of the distraction of the pattern.

### *Activities II*

Read the book *How to Hide an Octopus and Other Sea Creatures* by Ruth Heller. Have the students name some of the sea animals in the story and name one way they hide. List these on the chalkboard or a chart.

### *Follow-Up I*

1. Discuss with the students how the colors of the seasons hide insects and animals.
2. Discuss and show pictures of some animals or insects that use camouflage. Discuss the chameleon whose color changes with its surroundings.
3. Distribute pre-cut chameleon patterns on white tagboard. Have students watercolor them green. Blend other colors over the green to show camouflage.

### *Follow-Up II*

1. Students will use their knowledge of ocean hide-and-seek by creating a fish that can hide in the environment.
2. Have each student glue an eight-inch square of wallpaper near the top of a 9" x 12" sheet of light blue construction paper.
3. Give each student a white construction paper copy of a fish pattern, and explain that the fish must live in this wallpaper environment that they have created. Tell them that before they glue their fish in its new home, they should decorate it in a way that would make it safe from its enemies.
4. Have the students share their fish with the class.

## **EXTENSIONS:**

1. Take a nature walk and carefully look to see any insects that might be hiding. Collect material that could be displayed as good camouflage materials. Display in a nature center. On the next day, hide some items from the classroom among the camouflage materials. Instruct students to find them.
2. Using butcher paper and crayons, create background scenery for a mural that includes flowers, plants, and trees. Select and draw outlines of animals from the story that could hide among the bright colors of the mural. Cut out and hide these animals on the mural.
3. Discuss what predators and prey are.
4. Play "Predators and Prey." This is a form of hide-and-seek. The student chosen to be the predator is blindfolded. He or she counts to 15 while everyone else hides. The students hiding must be able to see the predator at all times. After counting, the predator removes the blindfold and looks for "prey." The predator can turn around, squat, or stand on tiptoes but cannot change locations. The predator should see how many students he or she can find and identify out loud where they are. When identified, they have been "eaten." They then become predators. When the original predator cannot see any more students, all the predators now put on blindfolds. All remaining prey move in closer. Repeat the process if several students are hidden. Discuss what would have made it easier to be the last one caught. (From *Project WILD*)
5. Students can name their fish and write two facts about it at the bottom of the project.
6. Students can choose one of the sea creatures to learn more about. They can collect pictures or write a

report to share with the class.

7. Newspaper or magazine camouflage -- Using two identical pages, cut animal shapes from one of the sheets. Glue the shapes on the identical page in the same spot to hide or camouflage the animal. Have students count how many shapes they see. Raise the page to the light. Your students will be surprised what they see. Let them make their own camouflage pages.

### **GEOGRAPHY EXTENSION:**

Using a globe or flat map, have students point to where species of sea life would live or not live and tell why according to climate.

### **ORIGINAL DEVELOPMENT RESOURCES:**

Flagg, A. (1994, June/July). *The primary mailbox magazine*, pp. 3-5.

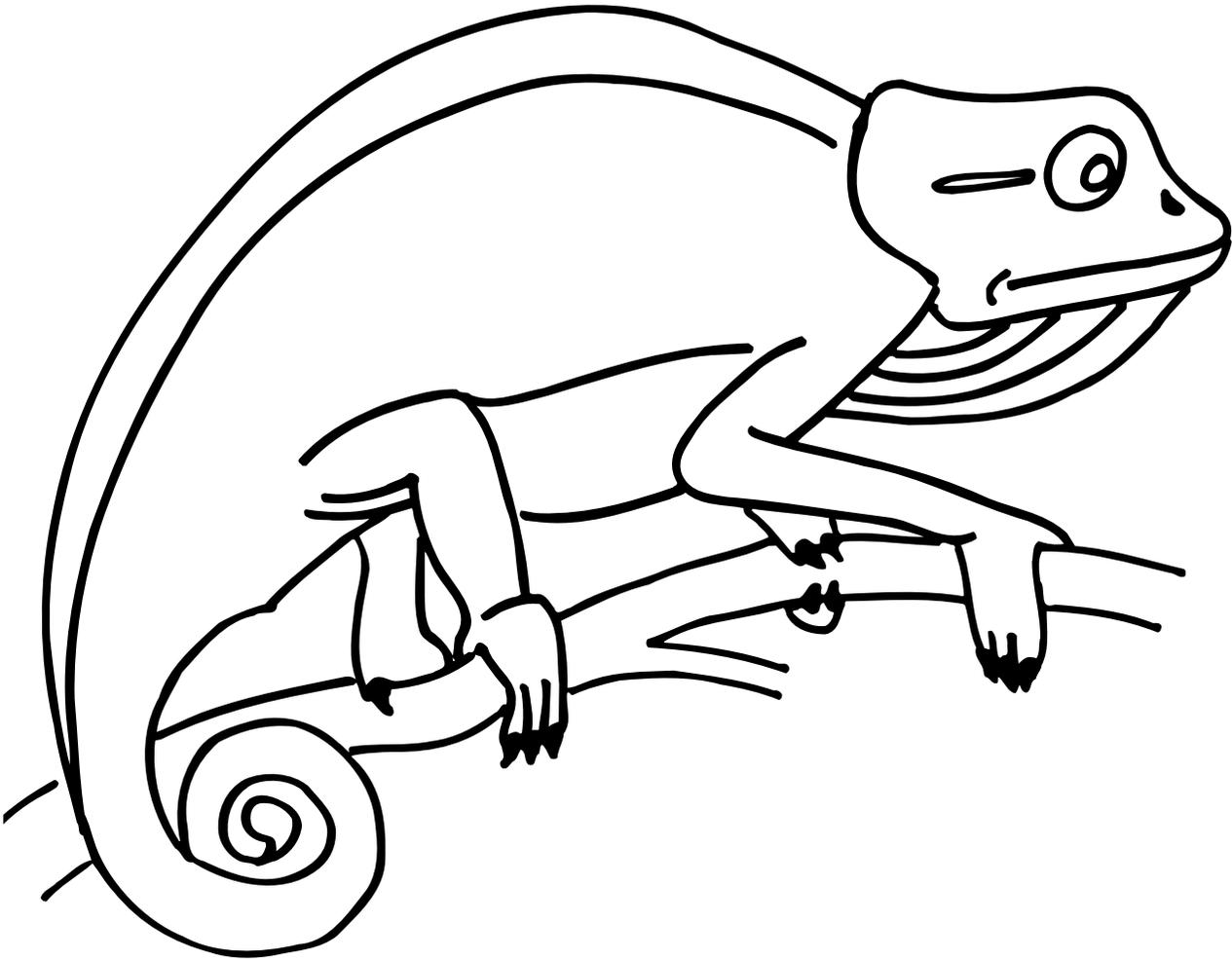
Heller, R. (1985). *How to hide an octopus and other sea creatures*. New York, NY: Grossett and Dunlap.

Raines, S.C. & Canady, R.J. (1989). *Story stretchers: Activities to expand children's favorite books*. Mt. Ranier, MD: Gryphon House.

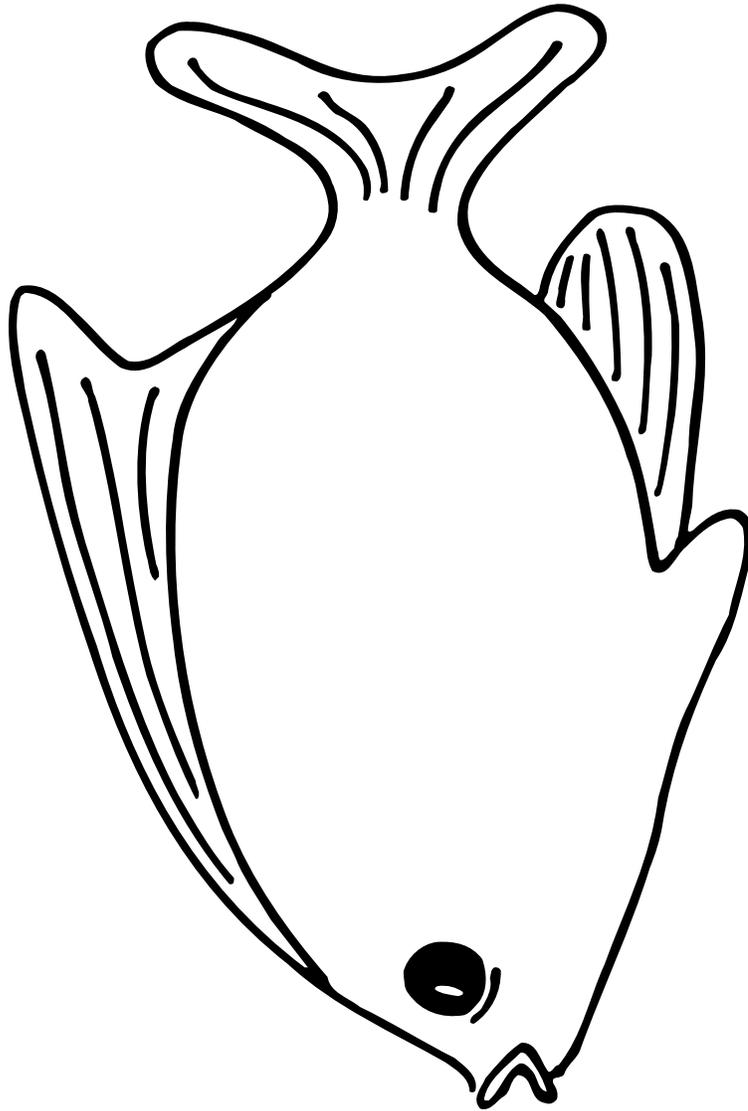
Western Regional Environmental Education Council. (1986). *Project WILD - Elementary activity guide*.

Yoshi. (1992). *Who's hiding here?* Englewood Cliffs, NJ: Simon & Schuster

# Camouflage the Chameleon



# Camouflage the Fish



# Notes

## OBJECTIVES:

The student will be able to:

1. Name several different facts about ladybugs.
2. Identify ways that ladybugs and some other insects are beneficial to the environment.

## BACKGROUND:

The ladybug is an interesting insect with some beneficial characteristics. The insect saves plants by eating aphids and other insects. The ladybug puts out bad smells for its protection. Its life-cycle is in four stages: (1) Clusters of eggs are laid on leaves. (2) Larva hatches from eggs. (3) The larva sheds its skin several times and then emerges as a pupa that will attach itself to a stem or leaf. (4) One week later, the new adult beetle emerges.

## VOCABULARY:

**aphid** - a small insect that sucks the juice of plants

**beneficial insect** - one that eats harmful insects (Examples: ladybugs and praying mantis.)

**larva** - the immature, wingless, feeding stage of an insect that undergoes complete metamorphosis

**metamorphosis** - a change in form, structure, or function as a result of development

**pupa** - an insect in the nonfeeding, usually immobile, transformation stage between the larva and the adult stage

## ADVANCE PREPARATION:

1. Gather materials.
2. Prepare chart or cards with clues for guessing game (optional).

## PROCEDURE:

### *Setting the Stage*

Play a guessing game with clues before introducing the topic of ladybugs. Use some of these clues: (a) I am thinking of a tiny insect, (b) The insect has six legs, (c) The insect has feelers to touch, taste, and smell, (d) The insect has two kinds of wings, (e) The insect helps plants by eating aphids, (f) The insect puts out bad smells for its protection, (g) The insect is red, (h) The insect has spots. Students can take turns guessing the insect. Older students can help read the clues from a chart or cards. When there is a correct guess, show a picture of a ladybug.

### *Activity*

Read the story *The Grouchy Ladybug* by Eric Carle. Have the students name the different animals the ladybug met and discuss how each one was larger than the other.

### *Follow-Up*

Discuss how the ladybug helped in some way, even though she was grouchy. Talk about what she eats and how it helps us. See how many other insects the class can name that help us in some way. Give clues if needed. (Another insect that eats harmful insects is a praying mantis. Bees and butterflies pollinate flowers that produce grains, fruit, and vegetables.)

## Grades:

K-2

## Subjects:

Science, Math, Literature

## Time Needed:

30 minutes

## Materials:

*The Grouchy Ladybug* by Eric Carle  
clues for guessing game  
picture of ladybug  
chart paper

## **EXTENSIONS:**

1. Discuss what helpful and harmful mean. Complete “Helpful or Harmful” worksheet.
2. Provide each student with a moveable clock face. Go back through the book *The Grouchy Ladybug* and talk about the clocks on each page that show the passage of time. Have students find the time on their clocks and tell what time it is.
3. Keep a class booklet of activities by the hour. If possible, cut the pages in the shape of ladybug. With a stamp pad and clock stamp, stamp a clock face on each page to draw in the time. Have different groups of students illustrate the book.
4. Draw the life cycle of a beetle.
5. Compare/Contrast insects using comparison charts.
6. Use with “Spring Surprise” in Learning Through Legacy (K-2).

## **ORIGINAL DEVELOPMENT RESOURCES:**

Carle, E. (1977). *The grouchy ladybug*. New York, NY: T. Y. Crowell Co.

Main, E. A. (1994, April/May). *The primary mailbox magazine*. p. 39.

Mayberry, S. C., Ed.D. (1994). *Linking science with literature*. Greensboro, NC: Carson-Dellosa.

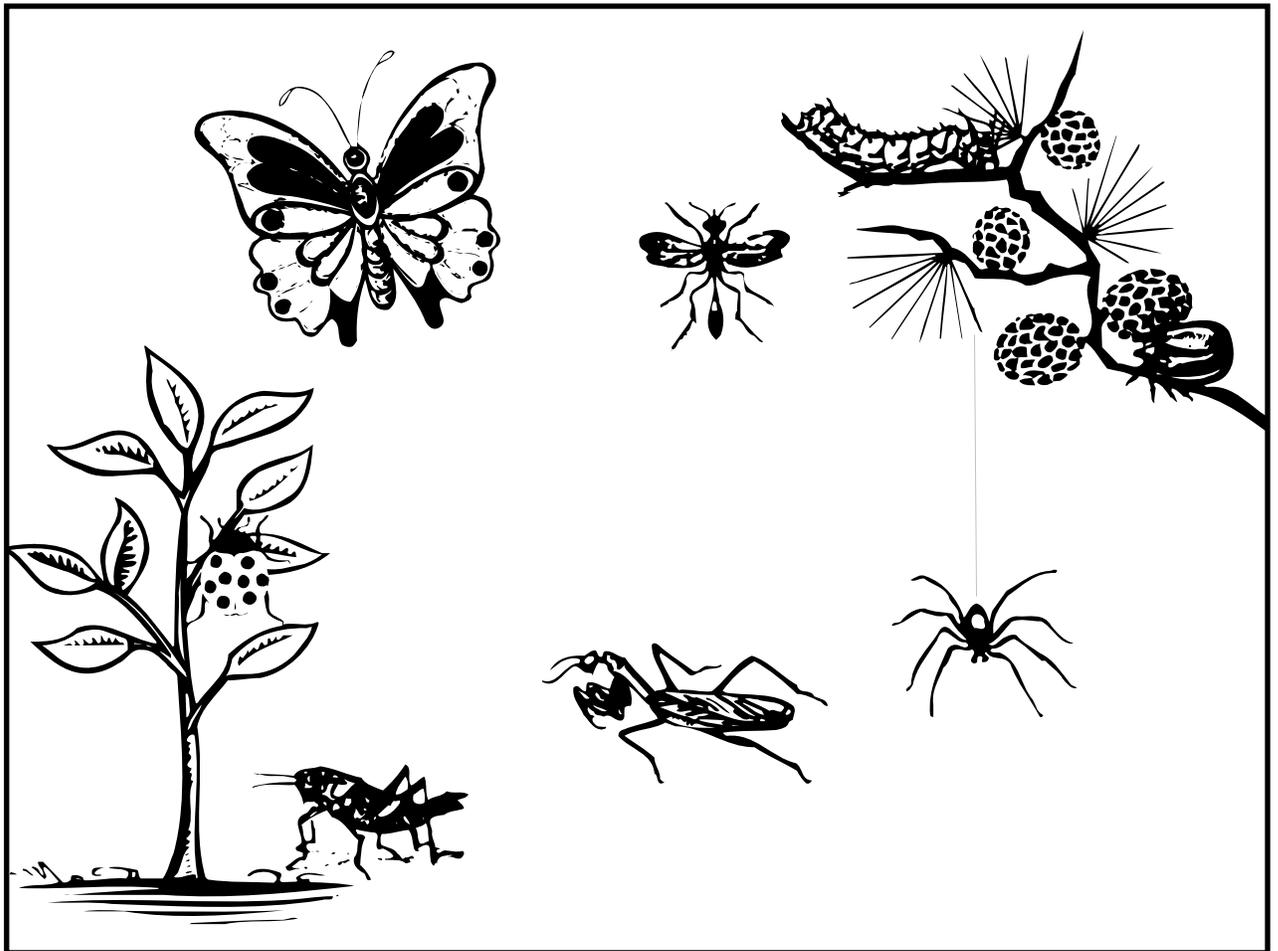
[www.marchbiological.com/L/ladybug.html](http://www.marchbiological.com/L/ladybug.html)

<http://berkeleyhort.com/ladybug.htm>

[www.geocities.com/Athens/Parthenon/5719/ladybug](http://www.geocities.com/Athens/Parthenon/5719/ladybug)

# A Plant's Friend? Helpful or Harmful?

Insects may be helpful or harmful to plants, people, and other animals. Some insects carry pollen which helps plants grow or eat other insects that may harm plants. Other insects may bite people or destroy plants. (Note: the spider is an arachnid not an insect.) Point out examples of insect relatives and how they are alike or different.



Draw a red X on the harmful insects. Color the insects that are helpful.

## Word Bank:

caterpillar

ladybug

tick

grasshopper

butterfly

spider

wasp

praying  
mantis

Brainwork: Is a spider helpful or harmful?



## OBJECTIVES:

The student will be able to:

1. Identify and label the four developmental stages of the butterfly.
2. Explain the usefulness of butterflies in the pollination process.

## BACKGROUND:

Butterflies have a unique life cycle. This lesson will illustrate the transformation of this insect's life. This transformation is known as metamorphosis. The four stages of metamorphosis are (1) egg, (2) caterpillar, (3) pupa, and (4) adult.

## VOCABULARY:

**metamorphosis** - a change in form, structure, or function as a result of development

**nectar** - the saccharin secretion of a plant, which attracts the insects or birds that pollinate the flower

**pollen** - the fertilizing element of flowering plants consisting of fine, powdery, yellowish grains or spores

**pupa** - an insect in the nonfeeding, usually immobile, transformation stage between the larva and the adult stage

## ADVANCE PREPARATION:

1. Gather required materials.
2. Prepare "Caterpillar Snacks" with sliced apples, pears, plums, strawberries, and oranges. Cut egg cartons so that two six-section strips result. Mix fruit yogurt and whipped topping.

## PROCEDURE:

### *Setting the Stage*

Read *The Very Hungry Caterpillar* by Eric Carle. Discuss the stages of a butterfly's life.

### *Activities*

1. Have students draw a picture to represent each stage on the "Spring Surprise" art sheet. They may use the life cycle sheet for reference and for labeling the stages.
2. Discuss how the butterfly helps spread the pollen when he feeds on the nectar in flowers. Also discuss how this helps plants to grow.
3. Predict what might happen if insects did not pollinate flowers.

### *Follow-Up*

Serve "Caterpillar Snacks": sliced apples, pears, oranges, plums, and strawberries. Use half of a styrofoam egg carton for every two students as a serving dish. Be sure to wash styrofoam egg cartons. Cut so that two six-section strips result. Each student places a small amount of fruit in each section. In another bowl, mix equal parts fruit yogurt and whipped topping. Spoon this into the space remaining in the sections and top it with raisin eyes and pretzel antennae. Spoon it out and eat it up!

## Grades:

K-2

## Subjects:

Science, Math, Language Arts

## Time Needed:

45 minutes

## Materials:

*The Very Hungry Caterpillar* by Eric Carle

"Spring Surprise Street" life cycle reference sheet

crayons

sliced fruit (apples, pears, plums, strawberries, oranges)

styrofoam egg cartons (one per student)

fruit yogurt

whipped topping

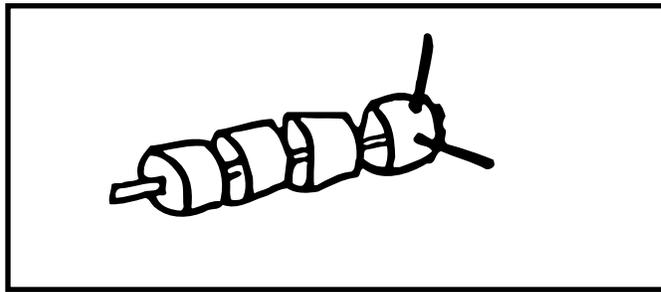
plastic spoons

raisins

pretzels

## EXTENSIONS:

1. Create a class graph with the topic, “Would you let a caterpillar crawl on your hand?”. Have students trace their hands. Draw and cut out a caterpillar and glue on the hand for “yes.” Place each student’s cutout on the chart.
2. Observe caterpillars in a terrarium or natural habitat. Specimens for each life cycle can also be obtained from companies such as Carolina Biological Supply Company or Insect Lore.(See [www.carolina.com](http://www.carolina.com))
3. Make an egg carton caterpillar. Cut egg carton into sections of three. Paint the egg carton section with green tempera paint. After the paint has dried, glue a green cotton ball to the top of each section. (Color the cotton balls by shaking them in green powdered tempera paint.) Draw eyes or use gummed paper. Poke two holes in the caterpillar’s head; attach a section of pipe cleaner to each hole.
4. Use “A Plant’s Friend” in Learning Through Legacy (K-2).
5. Create a time line of how long it takes an egg to change to an adult butterfly.
6. Make a marshmallow caterpillar using large marshmallows/pretzels (see drawing below).



## ORIGINAL DEVELOPMENT RESOURCES:

Carle, E. (1979). *The very hungry caterpillar*. New York, NY: Collins Publishers.

Patten, L. & Kaplan, E. (1994, April/May). *The primary mailbox magazine*. p.35.

Raines, S.C. & Canady, R.J. (1989). *Story stretchers - Activities to expand children’s favorite books*. Mt. Ranier, MD: Gryphon House.

Sterling, M.E. (1990). *Thematic unit - Creepy crawlers*. Teacher Created Materials, Inc.

<http://insected.arizona.edu>

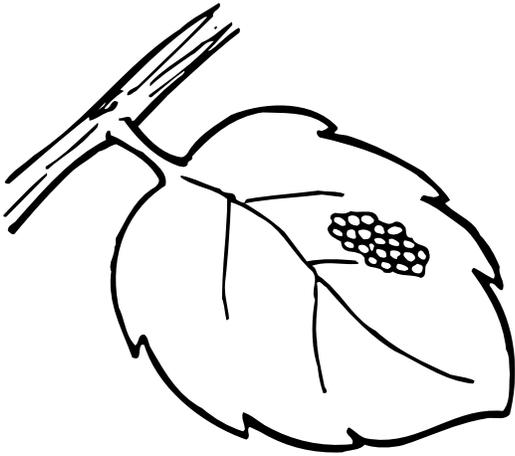
# Spring Surprise

Draw each stage.

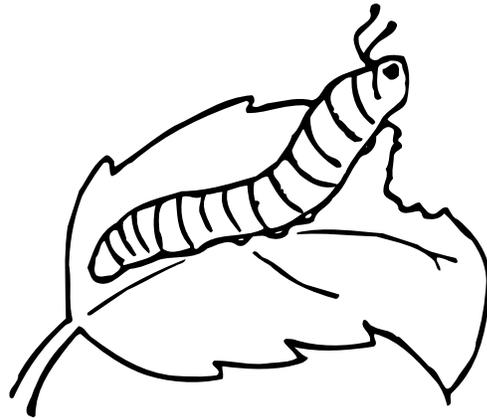
<b>Egg</b>	<b>Caterpillar</b>
<b>Pupa</b>	<b>Adult</b>

# The Life Cycle of a Butterfly

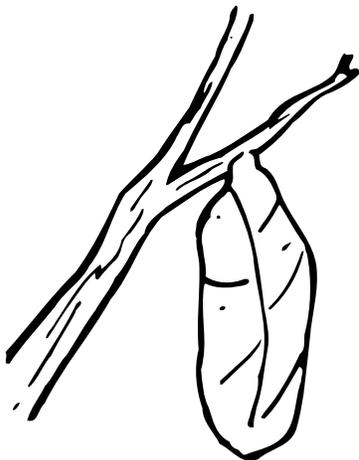
Color and cut out the butterfly life cycle patterns.



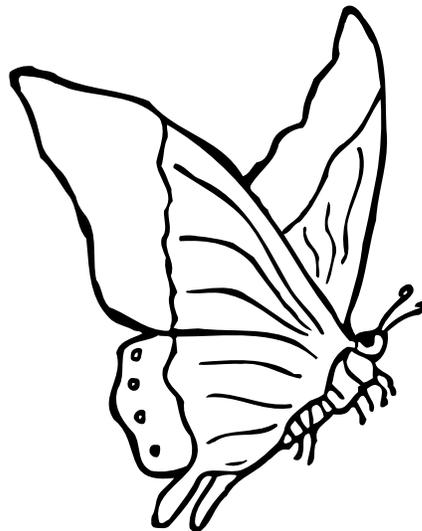
Butterfly lays eggs on the tips of leaves.



Caterpillar hatches and begins to eat and grow.



Pupa hangs from a silken pad.



Adult butterfly emerges from chrysalis.

## OBJECTIVES:

The student will be able to:

1. Identify three different habitats of birds.
2. Explain why birds build nests.
3. Identify materials used for building nests.
4. Explain how birds build nests.

## BACKGROUND:

Birds build nests of different sizes, shapes, and materials to house and protect their eggs. Most build their nests close to where they find their food. There are several bird habitats that include water, trees, and ground. Birds' feet and legs give a clue to where they live. Long legs usually wade in water, webbed feet swim, broad feet walk on ground, and curved feet perch on branches.

## VOCABULARY:

**nest** - a structure of twigs, grass, and mud formed by a bird as a place in which to lay and incubate its eggs and raise its young

## ADVANCE PREPARATION:

1. Cut out pictures of birds from magazines such as *Your Big Backyard*, *Ranger Rick*, *National Geographic*, *National and International Wildlife*. Make sure to have clear views of the birds' feet. Mount them on tagboard. Make simple drawings of three bird habitats: water, trees, and ground.
2. Have parents collect several abandoned bird nests and send to school in a container, or the teacher could collect them. Have children wear food handling gloves when working with the nests.
3. Write choral reading "Five Little Birds" on chart paper. (See follow-up activities.)

## PROCEDURE:

### *Setting the Stage*

1. As the children come to the circle, play tape of bird sounds to set the stage.
2. Look at the prepared pictures with the children to identify clues that will help them predict where a particular bird lives most of the time. Ask "How long do you think it takes a bird to build a nest?"

### *Activities*

1. Discuss how birds build nests of different sizes, shapes, and materials to house and protect their eggs.
2. Divide into pre-arranged groups. (Groups can have bird names with a picture of that bird in the group work area). Each work area will have an abandoned bird nest, magnifying glass, and recording sheet. The group will determine and record what materials the birds used to build the nests. The groups can share their findings with the class. A graphing activity, on which items were found the most, can also be done.
3. Make a timeline of how long it takes a bird to build a nest.
4. Discuss the time of year (month/season) birds build nests.

## Grades:

K-2

## Subjects:

Science, Math, Language Arts

## Time Needed:

40 minutes

## Materials:

bird pictures cut from magazines and mounted on tagboard  
several abandoned bird nests  
several magnifying glasses (optional)  
recording sheets  
bird sounds tape  
tape recorder  
chart with choral reading "Five Little Birds"

*Follow-Up*

Introduce choral reading “Five Little Birds” written on chart. Read as a choral reading.

Five baby birds sitting in a tree  
The first one said, “We will fly so free.”  
The second one said, “We will sing a song.”  
the third one said, “We eat all day long.”  
The fourth one said, “Where is our nest?”  
The fifth one said, “Let’s go home to rest.”  
Then “boom!” went the thunder, down came the rain  
And the five baby birds flew home again.

**EXTENSIONS:**

1. Make bird feeders or bird houses and hang them from trees in the school yard. Bird feeders can be made by spreading pine cones with peanut butter and rolling in bird seed.
2. Take a collecting walk for items with which to build nests. Give them shallow paper soup bowls and let them assemble their nests in them. Make “eggs” by rolling modeling clay or play dough in balls.

**ORIGINAL DEVELOPMENT RESOURCES:**

Greeko, M. (1993). *Birds, early years thematic notes*. Pala Verdes Estates, CA: Frank Schaffer Publications.

# Nest Sweet Nest

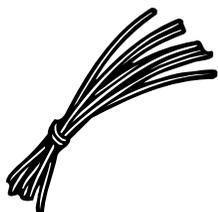
\_\_\_ grass



\_\_\_ mud



\_\_\_ straw



\_\_\_ feathers



\_\_\_ leaves



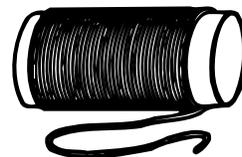
\_\_\_ plastic



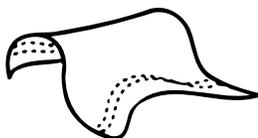
\_\_\_ twigs



\_\_\_ string



\_\_\_ cloth



\_\_\_ weeds



\_\_\_ paper



\_\_\_ flower



# Notes

## OBJECTIVES:

The student will be able to:

1. Define habitat.
2. Identify the things that plants and animals need to survive.
3. Understand the concept of endangered and extinct animals.
4. Identify several endangered species.
5. Identify the main reasons species become endangered.

## BACKGROUND:

Since the year 1600, about 300 species of wildlife have become extinct either directly or indirectly as a result of human activities. In 1985, 254 plants and animals were listed as being endangered. In 2000 there were 1,244. Loss of habitat is the biggest cause. Other major causes of endangerment include change of habitat, illegal or unregulated use of the plant or animal, disruption of migration routes, pollution, and natural causes.

Within their habitat, plants and animals must find everything they need to live. All living things need food, water, space, and shelter as well as sunlight and air. Some species of animals are endangered because their habitat is disappearing or changing.

## VOCABULARY:

**endangered** - in danger of extinction

**extinct** - complete disappearance of a species

**habitat** - the place where plants and animals live

## ADVANCE PREPARATION:

1. Review the list of endangered plants and animals.
2. Write to or visit the website of the U.S. Department of the Interior ([www.doi.gov](http://www.doi.gov)) for a list on the national level.
3. Gather required materials.

## PROCEDURE:

### *Setting the Stage I*

Illustrate the meaning of endangered and extinct by playing the game “Going, Going, Gone.” Choose a helper and have the remaining students form a circle. Each student in the circle represents an imaginary animal group that can be named. The helper is a person. The helper goes around the circle tapping each student on the head repeating “going, going, gone.” Those tapped on “gone” leave the circle and sit out. When about one -quarter are left, stop and explain that the group is now endangered. Continue to play until one is left; then inform the students that their species is now extinct.

### *Setting the Stage II*

Ask each student to draw a picture of where he or she lives. Ask the students to include pictures in their drawing of the things they need to live where they do, for example, a place to cook food, a place to sleep. Discuss with students what they drew and have them point out the things they need to live. Show pictures of different types of animal habitats and discuss why different animals have different habitat requirements.

## Grades:

K-2

## Subjects:

Science, Social Studies, Art, Language Arts

## Time Needed:

30-45 minutes

## Materials:

pictures of endangered animals

endangered species lists

hard boiled egg

glass bowl

oil

red and blue food coloring

large sheets of paper for each group

crayons or markers

*Farewell to Shady Glade* by Bill Peet

drawing paper

pictures of different types of habitats

### *Activities I*

1. Discuss the main reasons animals and plants are endangered. Discuss and show pictures of some animals that are endangered.
2. Conduct this experiment to show how man has affected some animal habitats. Fill a small glass bowl half full of vegetable oil. Then create an “oil spill” by stirring in a generous amount of purple food coloring (made by mixing red and blue food coloring). To demonstrate the harmful effects of the “oil,” place a hard-boiled egg in the mixture. Spoon repeatedly the mixture over the egg; then let the egg float for thirty minutes. Next remove the egg and let it dry. Have students discuss or record their observations of the egg. Then peel the shell from the egg. Share additional observations. Help students understand that oils and other dangerous poisons can be life-threatening to the animal inside.

### *Activities II*

1. Show pictures of where some animals live.
2. Talk about the things every animal needs in its home. Talk about the idea that home is bigger than a house. In some ways, it’s like a neighborhood. For animals, that neighborhood where all survival needs are met, is a habitat.
3. Tell the students that some animals are in trouble because their habitat is being changed.
4. Read *Farewell to Shady Glade* by Bill Peet and discuss that the animals in the story needed to survive.

### *Follow-Up I*

While the “oil spill” experiment is proceeding, divide the class into groups. Challenge each group to create a mural that features three or more endangered animals. Provide the students with pictures of different endangered animals.

### *Follow-Up II*

Divide the class into groups. Provide each group with a large piece of white paper and crayons or markers. Have the students talk about and then illustrate suggestions to help animals in trouble. Have each group share its ideas with the class.

## **EXTENSIONS:**

1. Have students research animals in the area that are endangered and explore reasons they are endangered.
2. Have each student choose an endangered animal to study, and make a shoe box diorama to illustrate what was learned. Have each make a suitable habitat for the animal.
3. Prepare a word search puzzle for the class using Alabama Endangered Species.
4. Have each student make an endangered animal picture dictionary.
5. Go outside and look for animal homes. Be sure not to bother the animals in the home. (See *Life Under a Log*, Learning Through (K-2))
6. Draw animal homes. Compare them to places where people live.
7. Take a colored ball of yarn. Each student is labeled food, water, shelter, and space. Connect the food, water, shelter, and space by having each one take hold of part of one long string of yarn. The students all connected represent a suitable arrangement of food, water, shelter, and space to meet an animal’s needs.
8. Geography Connections: (1) Show on an Alabama map where some of the endangered species live. (2) Make a timeline of the disappearance of species.

## **ORIGINAL DEVELOPMENT RESOURCES:**

- Christensen, C. (1992, April/May). *The primary mailbox magazine*, pp.3-4.
- Peet, B. (1992). *Farewell to shady glade*. Boston, MA: Houghton Mifflin.
- Western Regional Environmental Education Council. (1986). *Project WILD - elementary activity guide*.
- U.S. Fish and Wildlife Service, (1999). *Threatened and endangered species of Alabama: A guide to assist with forestry activities*.
- [http://ecos.fws.gov/tess\\_public/pub/stateListingAndOccurrenceIndividual.jsp?state=AL](http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=AL)

## OBJECTIVES:

The student will be able to:

1. Observe the animals living under a log or rock.
2. Identify several different species of animals.
3. Classify the animals according to size, shape, color, and number of legs.

## BACKGROUND:

There is a whole community living underneath large rocks, dead leaves, or logs that are lying on the ground. These special habitats are perfect for many species of animals that thrive in dark, damp places. These animals might be discovered under a log or rock: centipedes or millipedes, cockroaches, earthworms, slugs, sowbugs, pillbugs, ants, and termites.

## VOCABULARY:

**habitat** - the place where plants and animals live

## ADVANCE PREPARATION:

Place several logs or pieces of board in a shaded area of the school yard or in a landscaped area with protected shrubs, or identify previously naturally fallen logs or branches. Leave for several weeks before starting activity. Make sure the logs are not in an area cut by mowers.

## PROCEDURE:

### *Setting the Stage*

Tell the students that they are going to visit a community that nobody has visited before. It is a secret place right in the school yard. Show pictures of some different animals they might see, and discuss the different characteristics of these community members.

### *Activities*

1. Take the students to the area where the logs are placed. Ask them if they can see a place where animals live. Explain that we will see a place where animals live. Explain that we have to be polite visitors and try not to disturb the animals more than necessary.
2. Turn the logs over and put the students in groups around the logs. A few students at a time can observe the logs and collect specimens. (Some specimens will move quickly into burrows.) Others can study the area where the logs had been. Show students how to move specimens gently to the box top for studying. (Caution - Students should not touch the specimens with their hands. Be sure to use brushes or long tweezers for this.)
3. Explain that this area under the log is the animals' habitat or home. This is just the right place for these animals to live.
4. Notice how different animals move.
5. Notice how the area is cool and damp. Observe what plants live around the area.

### *Follow-Up*

Try to determine how many different kinds of animals live under the logs. Group them by number of legs, size, shape, and color. Provide a reference check for any identification or questions. (*The Hidden World - Life Under a Rock* by Lawrence Pringle is suggested.) Return animals carefully after study.

## Grades:

K-2

## Subjects:

Science, Math, Social Studies

## Time Needed:

45 minutes

## Materials:

logs, boards, or rocks  
cardboard box for studying specimens  
magnifying glasses  
paper for recording and classifying  
brushes or tweezers

## **EXTENSIONS:**

1. Draw pictures and try to identify some of the animals seen.
2. Make a class graph of the animals that were the most often identified.
3. Repeat this activity using a bush as a habitat. Classify the specimens. Note how the animals on a bush are different from animal life under a log.

## **ORIGINAL DEVELOPMENT RESOURCES**

Nickelsburg, J. (1976). *Nature activities for early childhood*. Menlo Park, CA: Addison-Wesley.

Pringle, L. (1977). *The hidden world - Life under a rock*. New York, NY: Macmillan Publishing Co.

Richards, R. (1990). *An early start to nature*. Englewood Cliffs, NJ: Simon and Schuster.

<http://insected.arizona.edu/lessons.htm>

## OBJECTIVES:

The student will be able to:

1. Define what a pond is.
2. Identify some of the plant and animal life that can live in or near a pond.
3. Explain why many species can't live outside of their habitat.

## BACKGROUND:

A pond is a small body of water, either natural or made by people. Many animals depend on the pond for survival. Animals live around, on, and under the water. Many water birds, such as ducks, make their homes on ponds. Insects live in or around the water. Frogs, toads, and salamanders lay their eggs under water and crayfish settle along the bottom. A pond also contains an underwater forest. Plants cover most of the pond's bottom. The plants provide oxygen, food, and shelter for aquatic animals.

## VOCABULARY:

**aquatic** - growing or living in or upon water

**habitat** - the area or environment in which an organism normally lives

**pond** - a small body of still water, either made by people or natural.

## ADVANCE PREPARATION:

Gather some pictures of insects, plants, and animals that might be in and around a pond.

## PROCEDURE:

### *Setting the Stage*

Question the students to determine what they know about ponds and what plants and animals live in and around ponds. Point out the pictures gathered of some of these species. Talk about three different pond habitats: around the water, in the water, and on the pond's bottom.

### *Activities*

1. Make a chart with the class, listing plants and animals in each habitat. Discuss why they must live in their particular habitat.
2. Pond Food Chain  
This activity will have students look at various food chains. It will help students understand that if one part of the food chain is affected, it can drastically affect the other animals of the food chain.
  - The pond is an ecosystem that shows all animals are interdependent upon each other.
  - Give each student a copy of the pond animals. Students color the animals. Read the names of the animals and plants together, then have students cut out the different animals.
  - The children put the animal squares together in the form of a pyramid beginning with the following sequence:
    - a. sunlight
    - b. plankton
    - c. tadpoles, insects, wrigglers and fish

## Grades:

K-2

## Subjects:

Science

## Time Needed:

45 minutes

## Materials:

pictures of species of plants and animals that live in and around ponds  
chart paper  
markers  
*Fish is Fish* by Leo Lionni  
cut and paste worksheets for each student  
scissors  
glue

- d. frogs, turtles, and larger fish
- e. snakes, raccoons, and birds
- Give the students time to form the food chain pyramid. Then use the pyramid as a springboard for discussion.
- Ask:
  - a .Does your food chain begin on land or in the pond?
  - b. How do you know?
  - c. What would happen to your food chain if the plankton all died off?
  - d. What happens when animals' food becomes scarce?

### 3. Pond Animals

- Give cooperative groups a decorated lunch bag. Tell the groups that they are each responsible for a specific part of the pond life. The students must write the appropriate title on their lunch snack.
- Children do research to find animals and plants that belong under their assigned title.
- The children must find pictures or draw plants and animals that fit under their headings.
- Hang the bags onto a bulletin board or designated area. Encourage a discussion about the plants and animals chosen.
- Graph the results and discuss.
  - The titles are: insects, fish, and plants
  - They include: water strider, diving beetles, whirligigs, dragonflies, mosquitoes, carp, sunfish, minnows, shiner, bass, trout, skunk cabbage, sedges, rushes, reeds, lily pads.

### *Follow-Up*

1. Read *Fish is Fish* by Leo Lionni. Talk about how different characters in the story were made to live in a certain habitat. Talk about what would happen if the fish tried to live on land.
2. On the attached cut-and-paste worksheet, determine where each square will fit best. (Answers: frog on the leaf, fish in pondwater, insect in the air, and turtle beside the cattails.) Talk about directions. Use a compass rose as you decide which animal is in the N, S, E, or W.

### **EXTENSIONS:**

1. Take a field trip to a pond. Carefully bring back pond creatures and plants to make a homemade pond or aquarium. (Instructions are attached.) Be sure to return these safely to their habitat when the study is complete.
2. Prepare a pond life scavenger hunt to complete on a field trip.
3. Sing the song "Little Tadpole" to the tune of Are You Sleeping?

Little tadpole, little tadpole  
 Lost his tail, lost his tail  
 Now he has two feet  
 Now he has two feet  
 Look, a frog! Look, a frog!

This can be copied and used as a handwriting lesson.

### 4. Read the Turtle Poem: The Little Turtle

There was a little turtle,  
 He lived in a box,  
 He swam in a puddle,  
 He climbed on the rocks

He snapped at a mosquito,

He snapped at a flea,  
He snapped at a minnow,  
He snapped at me.

He caught the mosquito,  
He caught the flea,  
He caught the minnow,  
But he didn't catch me.

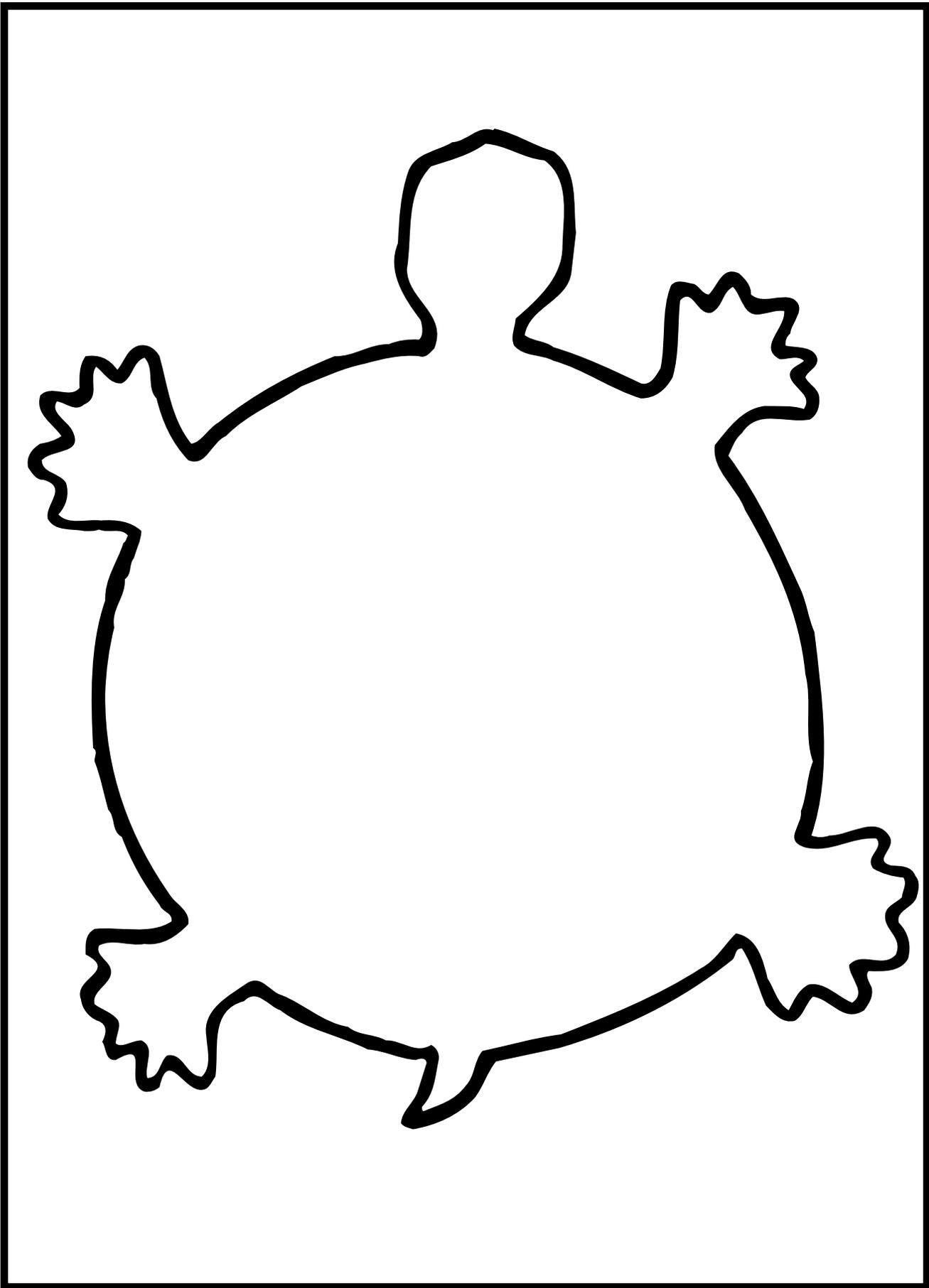
5. Art activity: Glue a green plastic bowl onto the turtle bottom pattern on the following page. Copy the poem above and glue it onto the top of the bowl. Children recite the poem while reading their turtle.

### **ORIGINAL DEVELOPMENT RESOURCES:**

Lioni, L. (1970). *Fish is fish*. New York, NY: Scholastic, Inc.

Nordjman, N. (1991). *The living pond*. Ossining, NY: Young Discovery Library.

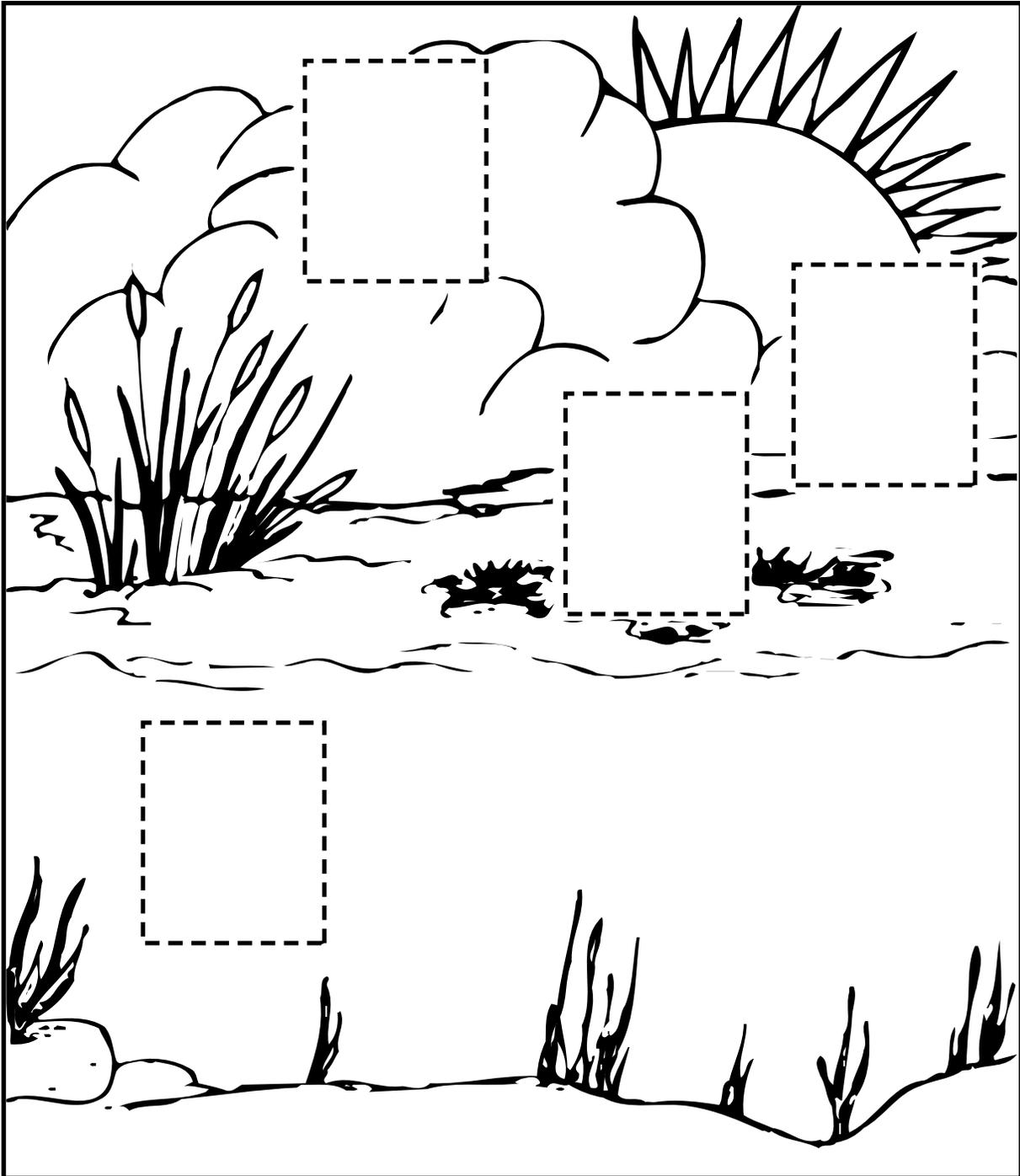
Webster, D. (1990). *Exploring nature around the year - Spring*. Englewood Cliffs, NJ: Julian Messner.

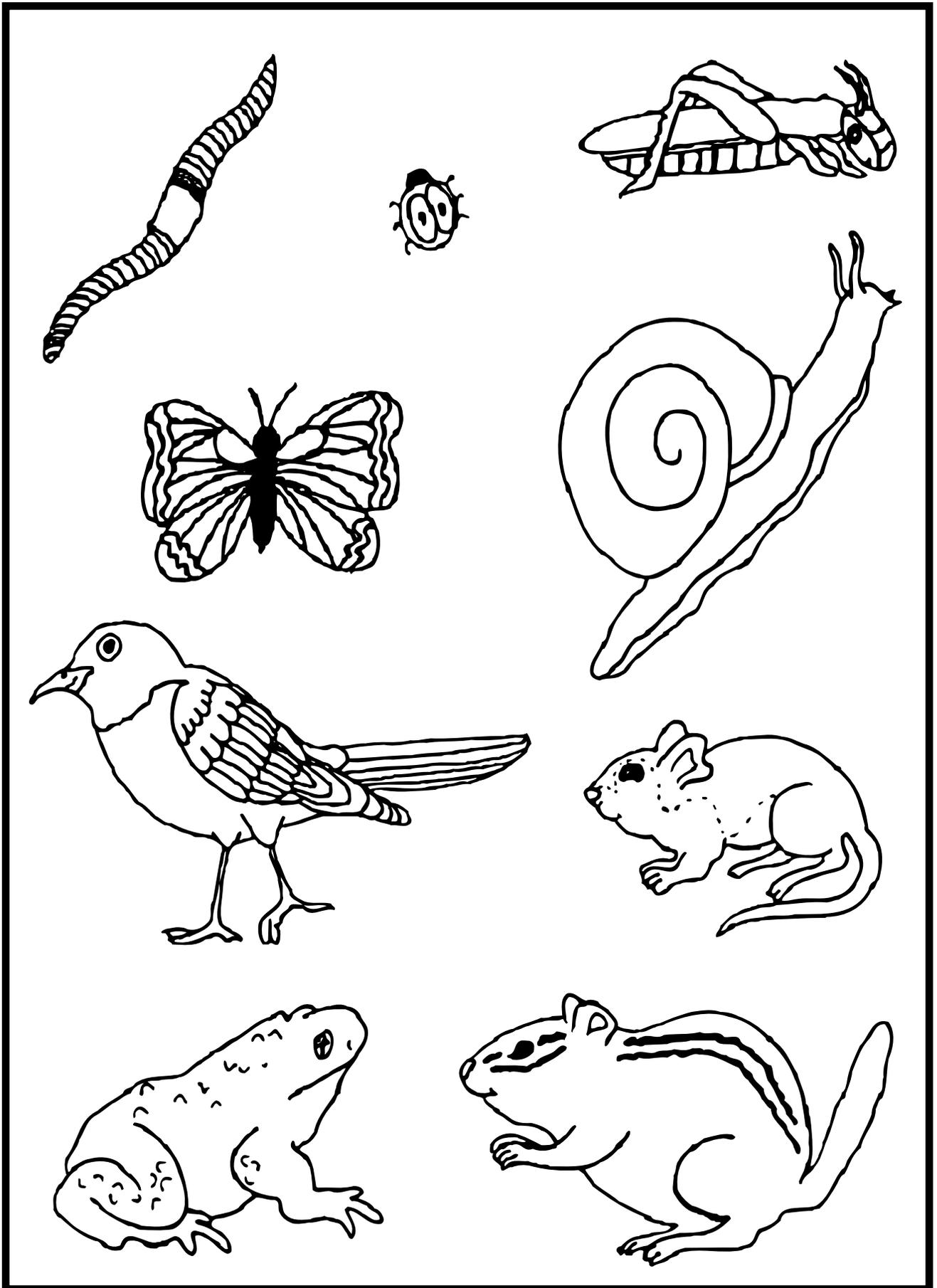


# MAKE A POND

You can make a pond for water animals in a plastic wading pool. This should be placed in the shade or on an open porch.

1. Cover the bottom of the pool with clean gravel.
2. Place a few large rocks in the pool to serve as hiding places and resting spots for animals.
3. Fill the pond about halfway with water from a hose or buckets. Let the water sit for a few days to allow any harmful chemicals to escape into the air.
4. Some water plants will make the homemade pond look more real. Dig up a few small plants from the shallow water.
5. Catch pond creatures with a dip net or a kitchen strainer attached to a pole. Many pond animals are almost too small to see. Sort through a net full of leaves or muck from the pond bottom. Look for tiny insects or water fleas. For carrying home, use a plastic container with a top. Keep larger animals in the pool for only a few days. Then let them go free where you found them.





# Notes

## OBJECTIVES:

The student will be able to:

1. Investigate the concept of habitat by building a worm farm.
2. Observe earthworms in their habitat.
3. Identify earthworms' importance in the environment.

## BACKGROUND:

Worms are a very important part of the food chain. They serve as food for birds and some reptiles and can be used as bait by Alabama fishers. Worms aerate the soil, which keeps the soil loose around the roots of the plants. They also help break down materials in the soil into simpler materials so that plants can use them. The worm habitat can be artificially created in the classroom to allow students a closer look at an animal that is vitally important to the environment.

## VOCABULARY:

**aerate** - to cause air to circulate through

**habitat** - the place where plants and animals live

**homebuilder** - someone who builds houses

## ADVANCE PREPARATION:

Obtain a large mayonnaise jar and lid per child for this project. Parents could save these. Punch several holes in the lid with a hammer and nail.

## PROCEDURE:

### *Setting the Stage*

Ask the children what kinds of houses they live in. Ask if they can tell about any other kinds of homes, for example, tree houses, dog houses, bird houses, caves, and snail shells.

### *Activity 1*

1. Read the book *A House for Me* by Mary Ann Heberman.
2. Discuss the various houses and what other houses some animals might use.
3. Ask what might affect the kind of home an animal chooses. For example, snakes have no legs or hands, birds can fly, bears need a safe place to sleep for winter.
4. Ask what someone is called who builds houses? (a homebuilder or carpenter)  
What tools and supplies are needed to build a house? (wood, nails, bricks)
5. Tell students they will build a home for earthworms called a worm farm. Ask what supplies they think they will need.

To build a worm farm:

- Place a layer of gravel in the bottom of the mayonnaise jar.
- Add potting soil until the jar is 3/4 full.
- Punch several air holes in the jar lid using the hammer and nail. (The teacher can do this ahead of time.)
- Add four or five earthworms dug from the school yard or purchased from a bait shop.
- Keep the soil moist but not wet. (Caution! -- Too much water is a sure way to kill worms!)
- Feed the worms small amounts of crushed dry dog food or cornmeal - about 1/2 teaspoon. (Worms can

## Grades:

K-2

## Subjects:

Science, Music, Language Arts

## Time Needed:

60 minutes

## Materials:

worms and worm food

crushed dog food or cornmeal

mayonnaise jars and lids for each

student

potting soil

gravel

water

construction paper

marbles

tempera paint

hammer and nails

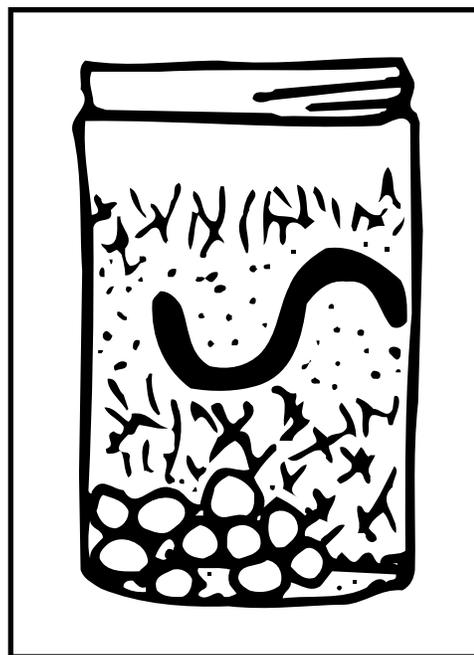
record "Walter the Waltzing Worm"

*A House for Me* by Mary Ann

Haberman

also be fed nonfat food scraps that would be suitable for composting.)

- Make a cover for the worm farm. Paint “worm tracks” on construction paper by rolling a marble in tempera paint and then rolling the marble across construction paper. Tape the paper cover around the worm farm to keep it dark.
- Pull the covers off quickly to observe the worms. Replace covers between observations.



#### *Activity 2*

**Worms Have a Mystery Habitat.** Have the children guess what is in your jar. Explain the care of the worms. Let the students dig into your container for worms. Allow the children to rinse off the worms. Guide the students as they make observations. Look for features of the worm (eyes, nose, mouth) . Watch and observe the movements of the worm. Count the rings on the worms (segments). Look at the variation in the segments of the worm. Which end is the top? Which is the bottom? Place barriers to block the worms’ path. Observe reactions. Compare segments size. Measure the worms and compare lengths. Use two different types of worms (red worms/night crawlers). Observe the burrows. Watch the sand and soil for mixing by the worms.

#### *Activity 3*

**Worm Cake.** This will put the icing on the cake for our worm activities. Put cupcakes in a line as you might observe a worm crawling. Put icing in between each cupcake to fill in the gaps. Ice the whole cake. Be sure and show the segments between each cake. Use coconut at each segment to stimulate the “setae” or bristles of the worm. You may want to show the pharynx and castings of the worm as well. Upon completion, using the overhead, discuss where on the worm cake the different body parts would be located. Discuss why the bristles are important for anchoring the worm in the ground when a predator comes along. Why do we need worms? What purpose do they play in our ecology? Why does the soil need to be aerated?

#### *Activity 4*

**Worm Model.** It’s time to make a worm model. Using toilet and paper towel rolls, construction paper, tape, staples, glue, and scissors, you can make your own worm for dissection. Simply cut a paper tube down the middle long ways as shown on the completed model. Using the worm diagram on the overhead, or at your table, make worm parts and glue inside the paper tube. (Remember that a worm has five hearts.) Cover with one layer of paper so that it looks like the skin of the worm. Use a different color of paper to make the saddle or clitellum. For dissection, simply find the open seam of the tube with your fingers and cut the paper along the seam. This will simulate cutting the layer of skin away from worm’s body. Fold the flaps back on the tube and you will be able to observe the worm’s parts as though it were a real worm. Make it as simple or as complex as your grade level may need.

#### *Activity 5*

**Worm Tracks.** Worms can make tracks on soft soil and sand. You can make worm tracks of your own. Simply put a large marble in a cup of paint. Roll the marble around in the paint and coat it very well. Take out the marble. Put the marble on the paper in the box. Tilt the box back and forth. Watch your worm tracks form before your very eyes. Make all the tracks you want on your paper. Save the worm tracks for when you make a worm habitat. Cut it to fit the outside of your habitat. Tape it on. When you are ready to observe your worms take it off quickly. Worms may not have eyes, but they do not like the light. It dries out their slimy skin. Be kind. Replace the paper as soon as you finish. Don’t leave them in the light too long. Have fun. Make some worm tracks today.

### *Activity 6*

**Worm Diagram.** Using the worm diagram on the overhead, take a piece of poster or tag board and make a worm diagram to use with your classroom. Use this as an opportunity to make a really nice poster for your students to use when you are discussing worms in your classrooms. Students can use your diagram to create their own diagram at their desks.

### *Activity 7*

**Worm Observations.** Using the magnifiers provided, observe worms as they move and react. Watch the pharynx as it moves in and out of the mouth. Find the saddle, otherwise known as the clitellum. Use the worm diagram on the overhead to locate the different body parts. Pile up a small mound of soil. Watch as the worm tunnels into the soil. It aerates the soil as it burrows down into the soil. Using the paper provided, journal the worm's movements and habits. Draw your worm. Share what you observe with your team members.

### *Activity 8*

**Tunnel of Worms.** You are hereby commissioned to enter the "Tunnel of Worms". On this fact-finding mission you will have 30 seconds to retrieve worm information. Be careful. If you choose correctly, you will be considered one of many worms that have escaped their infamous predators. Beware of moles, birds, frogs, and fish. They will send you back to home base as another worm statistic; eaten, before your life span was complete. If you pass through the "Tunnel of Worms" unscathed, you may consider yourself as one of the million of worms per acre that survive each day.

Directions:

- Choose a member of your worm team to count to 30 as each member enters the tunnel one at a time. The counter may also initiate a rainstorm at any time as you leave the tunnel.
- You have 30 seconds to enter the tunnel, find your worm fact, and leave before the rainstorm begins. Remember, if your tunnel is flooded you can be drowned.
- Each worm team member should open the envelope as soon as he leaves the tunnel. Share your worm fact with your worm team.
- If your card has the word bird, mole, fish, or frog on it you have encountered a predator and your time is over. You become the counter and rainmaker and the counter becomes a member of the worm team.
- Continue playing until all worm facts have been read aloud.

If you cannot read your worm fact, your teacher or friend may help you read it.

### *Activity 9*

**The Incredible Edible Worm Habitat.** Wash hands or use sanitizer before you begin. Simply take a cup and crush cookies of your choice into the cup. Put in a few edible ingredients to represent the soil your worm might live in, such as roots, decaying leaves, etc. Explain to your team what you are doing. After you have prepared your tasty soil, don't forget to add your gummi worm and bury him down inside the soil. You don't want a bird or frog to find him. You also do not want him to stay in the light too long. Don't forget the moles that can find the worm underground. After you have created your incredible edible worm habitat, explain to your team why worms are important for plants. How do worms "eat"? What are castings? What does it mean to aerate the soil? If you are hungry, you may want to eat your worm habitat. Bon-Apetit!

### *Follow-Up*

After observation, discuss how worms benefit the environment. Determine what the students learned from the exercise by comparing the type of things needed to build their home with the ones needed to build a home for worms.

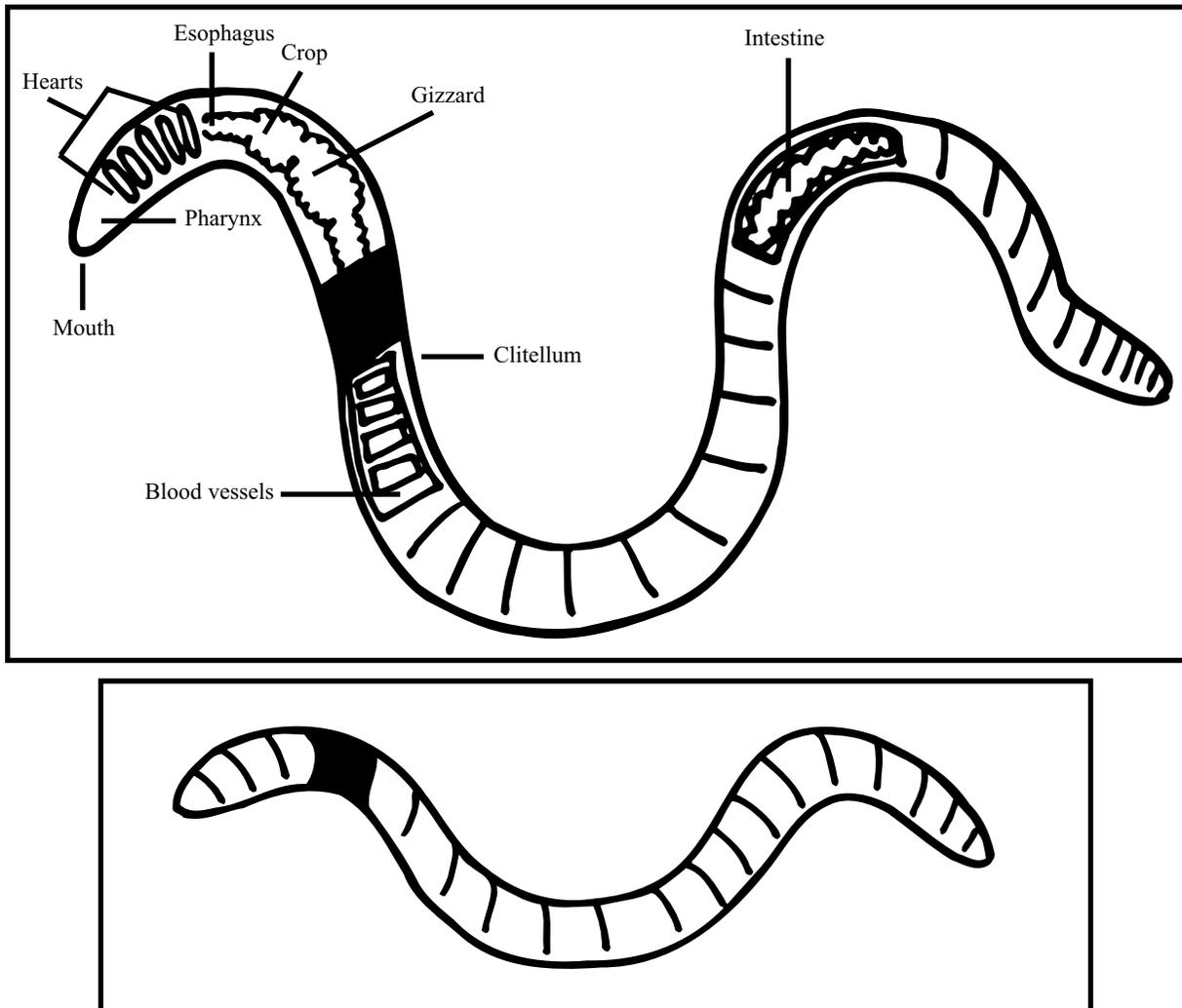
## EXTENSIONS:

1. Play the record, "Walter the Waltzing Worm." (See Resources.) Have students imitate the worm's movement.
2. Develop an experience chart with the class about building worm farms and the habitat needs of the worms.
3. Complete "Whose Home Is This?" worksheet to identify animal habitats.

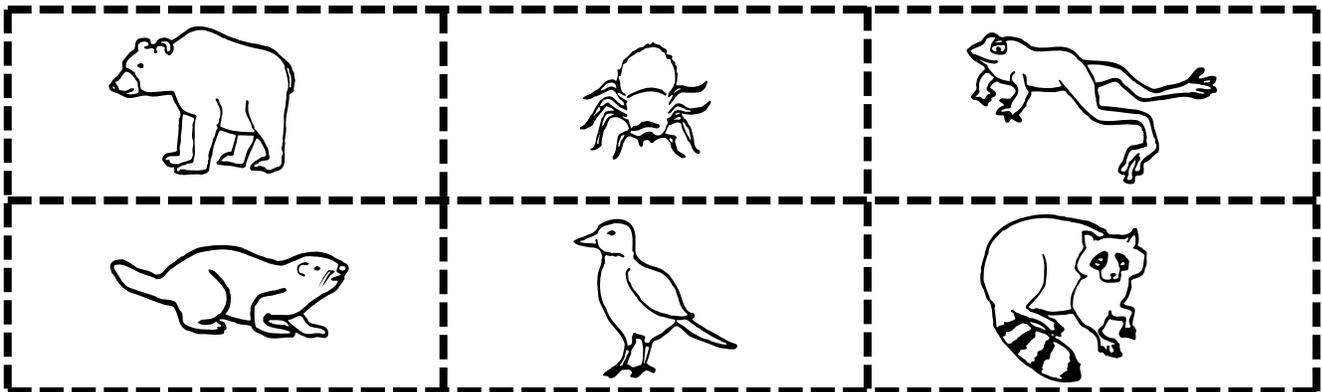
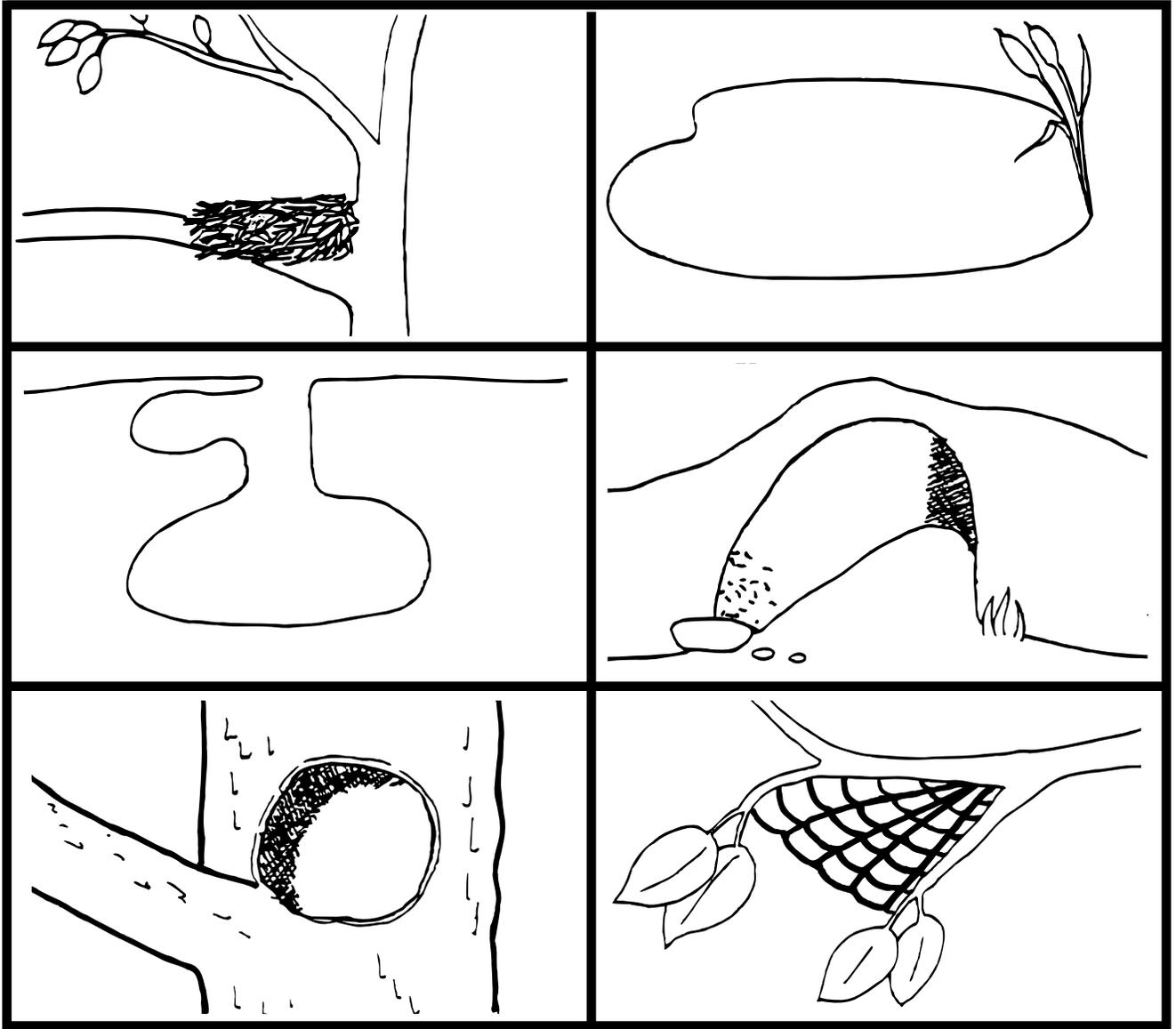
## ORIGINAL DEVELOPMENT RESOURCES:

Haberman, M.A. (1978). *A house is a house for me*. New York, NY: Viking Press.

Palmer, H. (1982). *Walter the waltzing worm*. Freeport, NY: Activity Records, Inc. Educational Activities, Inc.



# Whose Home Is This



# Notes

## OBJECTIVES:

The student will be able to:

1. Name several different facts about bats.
2. Identify two ways bats are beneficial to the environment.

## BACKGROUND:

Bats are found all over the world. There are several species that live in Alabama, some of which are endangered. About 40 percent of American bats are on the endangered species list. Bats are vulnerable to extinction because they give birth to only one baby per year.

Bats are an important part of our ecosystem. Most feed on insects, while others eat fruit and nectar. One little brown bat can eat 600 mosquitoes in just one hour. Fruit-eating bats help pollinate flowers and disperse tree seeds.

Bats sleep hanging upside down in out of the way places during the day and come out at dusk to hunt for food. Bats use sound waves (echolocation) to locate objects in the dark.

## VOCABULARY:

**echolocation** - the process of locating objects with sound waves

**endangered** - in danger of extinction

**extinct** - complete disappearance of a species

**fact** - something known to be true

**opinion** - what someone thinks or feels about something

**roosts** - groups bats live in

## ADVANCE PREPARATION:

1. Gather materials.
2. Hang up pictures of bats.
3. Reproduce bat patterns on white paper.

## PROCEDURE:

### *Setting the Stage*

Survey the students' attitudes about bats. Find out how many students fear bats, have seen bats, or heard stories about bats. Tally these on a board. Stress that people should never touch wild bats because some can have rabies which will make them sick. Have some pictures of bats displayed.

- Discuss in depth the concept of echolocation (the way bats navigate and catch their prey).
- Discuss the diverse habitats of bats. Ex: caves, barns, attics, treetops, hollow logs, and even underground.

### *Activities*

#### Activity 1

1. Draw three large bat shapes onto poster board and turn them into puzzles. Make each bat a different color. (light brown, dark brown, and black)
2. Children get into cooperative groups by their color and assemble puzzles. The group studies their bat facts,

## Grades:

K-2

## Subjects:

Science

## Time Needed:

50 minutes

## Materials:

patterns for little brown bat  
string or fishing line  
fact and opinion worksheets  
scissors  
sandwich bag for each student  
photographs of bats  
bat costume  
black, light brown, or dark brown  
posterboard

approximately 20 min, and then teach the rest of the class what they have learned.

3. After the group lesson allow for questions and answers.
4. Display the puzzles and their related facts for children to examine and review.

## Activity 2

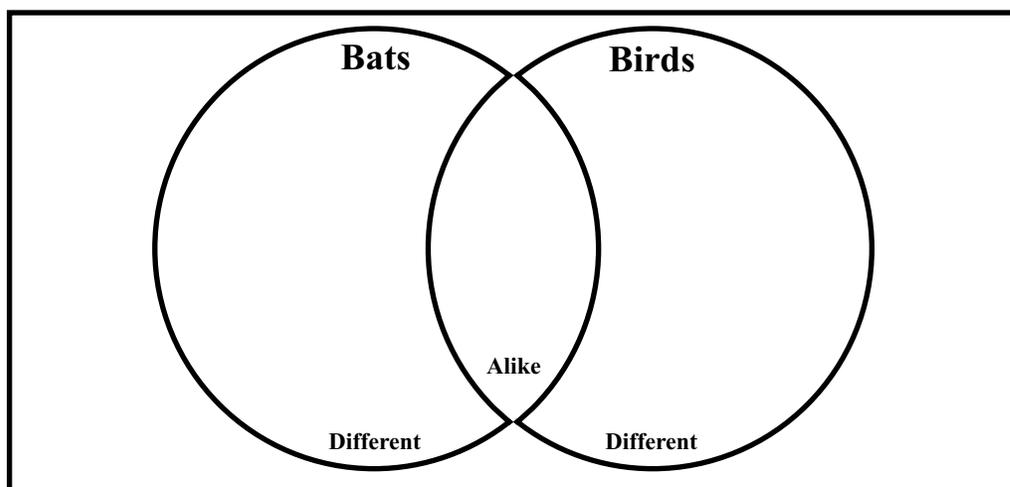
### Bat Parts

Assemble a bat costume for one child to wear and display. Then ask questions about various bat parts. Allow students to come up to the front of the class and share their answers while they identify the correct bat body part.

### Follow-Up

Review facts that the students learned by doing a fact-and-opinion activity. Discuss what “fact” and “opinion” mean. Provide each student with a worksheet, scissors, and a plastic sandwich bag. Have students cut out the statements and sort by “fact” and “opinion.” Have a partner assigned to check answers. Store in the sandwich bag when finished.

## EXTENSIONS:



1. Complete the Compare - Contrast Venn Diagram.
2. Read the story *Stellaluna* by Janell Cannon.
3. For a fun creative writing project, write and illustrate “Bat Tales” about bats who come into our homes to visit. Use the bat book pattern.
4. Play a bat and sound game. Talk about echolocation and how bats use sound waves, echoes, and their large ears in order to catch insects. Have students form a large circle in an open area. Blindfold one student (the bat) and lead to the center of the circle. Appoint several students to be moths and ask them to step inside the circle. The remaining students, who are spaced evenly, are trees. To play, the bat and moths carefully move around inside the circle. The bat repeatedly calls out “moth” and the moths in loud voices repeatedly answer “moth.” The object of the game is for the bat to listen carefully and tag as many moths as possible within an allotted amount of time. When a moth is tagged, he becomes a tree. If a bat wanders too close to a tree, the tree whispers “tree! tree!” and carefully helps steer the bat back on course. Play as many rounds as desired.

Questions to ask:

- a. Why must the bat call out?
- b. Why must the moths respond each time the bat calls out?

## ORIGINAL DEVELOPMENT RESOURCES:

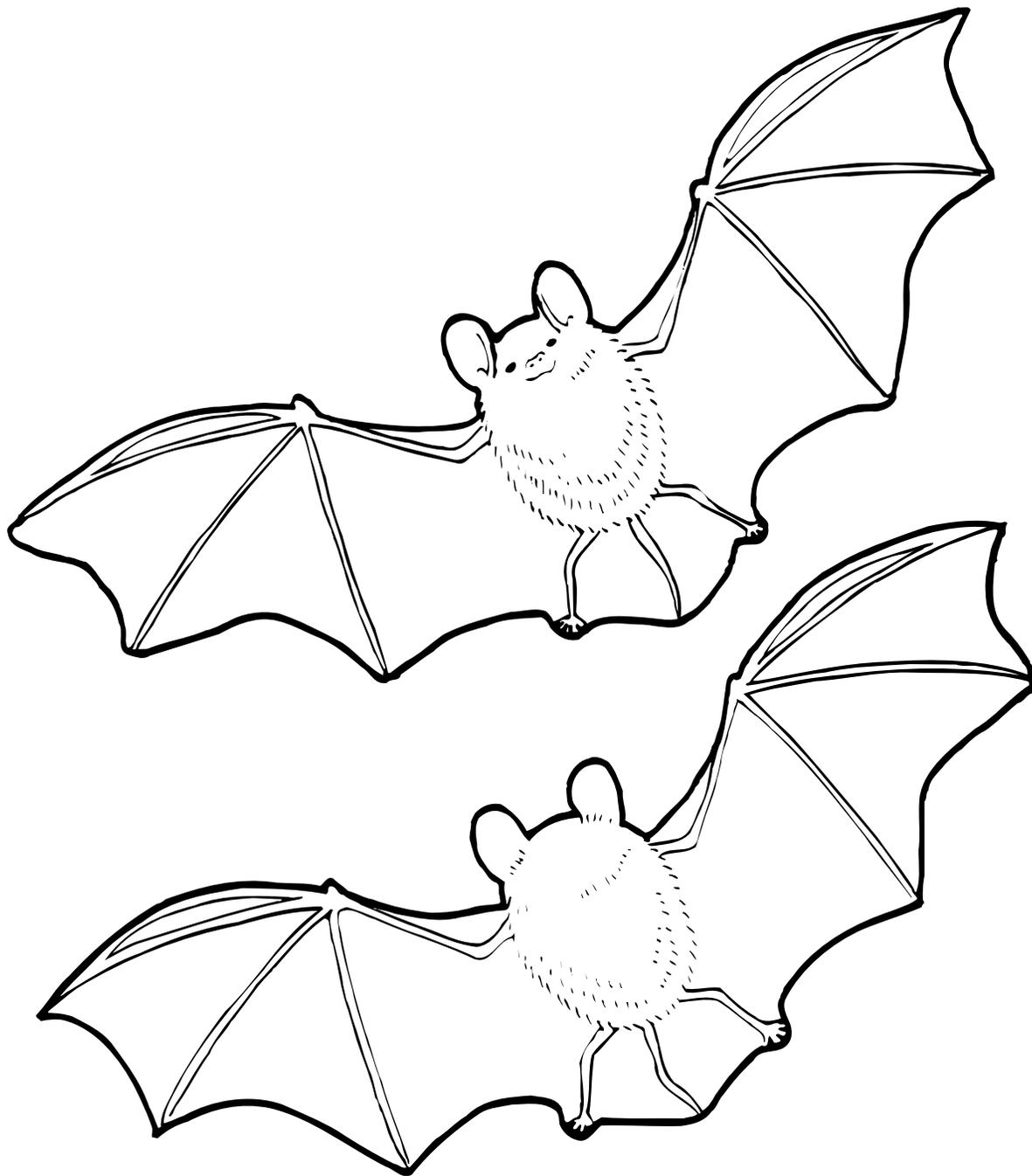
Cannon, J. (1993). *Stellaluna*. Orlando, FL: Harcourt, Brace, Jovanovich.

# Batty Statement

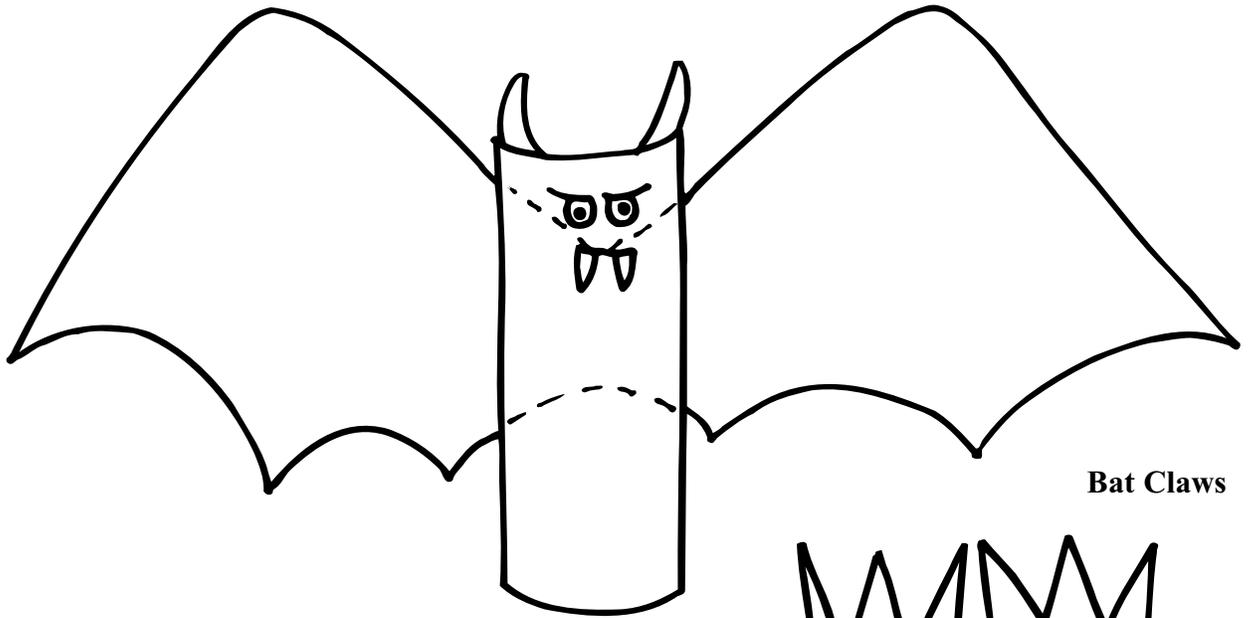
Read each bat statement. Decide if it is fact or opinion. Divide into two piles - "Fact" or "Opinion".

<b>1. Seeing a bat is a lucky sign.</b>	<b>9. Bats only have one baby per year.</b>
<b>2. Bats hang upside down to sleep.</b>	<b>10. Most bats eat insects.</b>
<b>3. Some bats eat fruit.</b>	<b>11. Bats usually live in groups called roosts</b>
<b>4. Bats are more interesting than spiders.</b>	<b>12. Bats look funny hanging upside down.</b>
<b>5. Bats hunt for food at night.</b>	<b>13. Bats are important to our environment.</b>
<b>6. A bat would make a fun pet.</b>	<b>14. Bats should live far away from people.</b>
<b>7. Bats are ugly.</b>	<b>15. Bats caves are spooky.</b>
<b>8. Bats are helpful to farmers.</b>	<b>16. All bats do not look alike.</b>

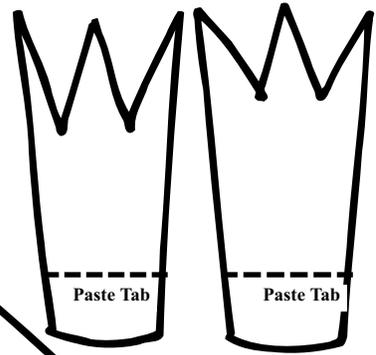
# Little Brown Bat



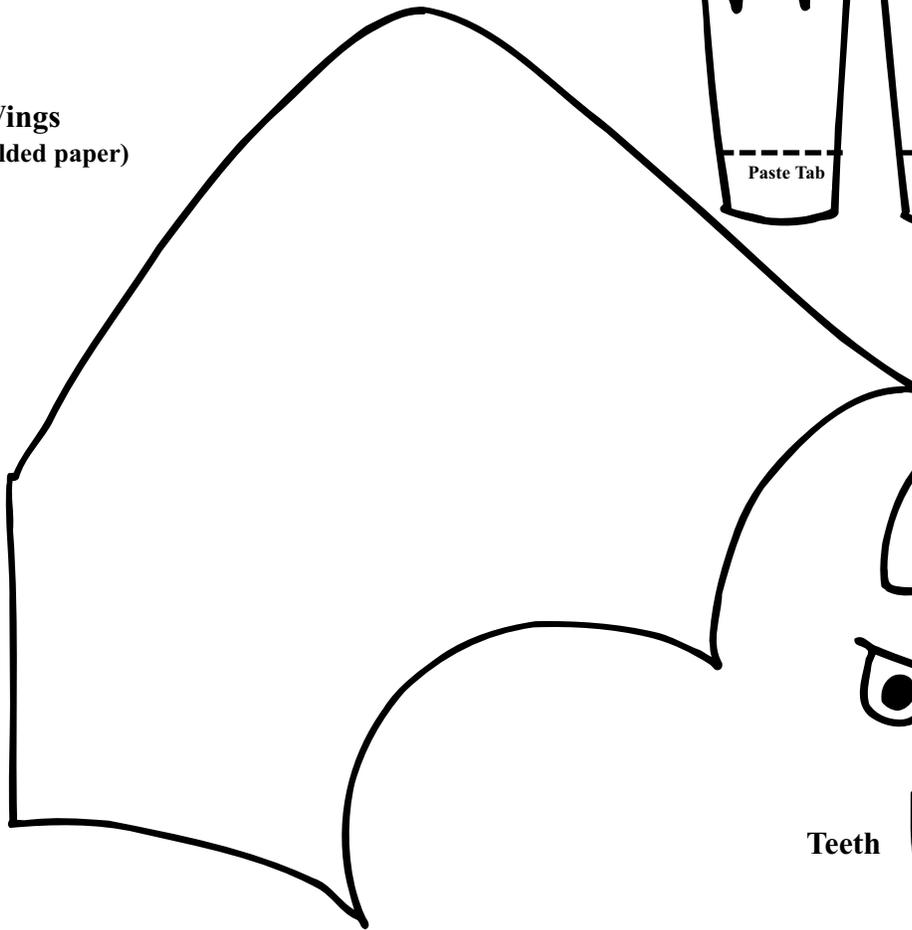
# Monster Bat



Bat Claws

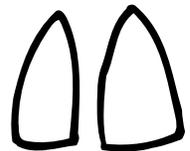


Bat Wings  
(Use folded paper)



Fold

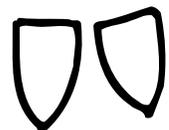
Ears



Eyes



Teeth



# Notes

## OBJECTIVES:

The student will be able to:

1. Locate the Gulf of Mexico.
2. Name some of the ocean life in or near the Gulf.

## BACKGROUND:

The Gulf of Mexico is an extension of the Atlantic Ocean into North America that has a 3,000 mile coast. The state of Alabama has 53 miles of this coast as its southern border. The Gulf is a major source of food, recreation, and natural gas. Commercial fishers catch red snapper, flounder, shrimp, mullet, oysters, and crabs. Some of the other sea life found in the Gulf are starfish, sand dollars, jellyfish, sea horses, and sea urchins. Look for these animals in a book about shells, fish, or seashore.

## VOCABULARY:

**ecosystem** - a system dealing with the interrelationships of organisms living in one environment.

**gulf** - a body of water that is an extension of an ocean or sea

## ADVANCE PREPARATION:

1. Gather materials.
2. Prepare a touch lab with samples of sea life, shells, and simple books about sea life.
3. Hang up a map showing the Gulf of Mexico.

## PROCEDURE:

### *Setting the Stage*

Explain that we are going to study a group of animals that live in a special ecosystem of our world. Give the students a sheet of white paper. Say, "As I draw on the chalkboard, you draw the same thing."

Draw a large fish on your paper. Add an eye and a mouth. Add two fins. Fill in the tail fin. Add scales all over the body. Now, where would you find this animal? If we called this fish a flounder, a red snapper, or a shark, where would it be found? Explain that we are going to study sea life that live in or near the Gulf of Mexico. Have a student locate the Gulf of Mexico on a map and mark it with a sticker. Talk about how the creatures that live in it need saltwater to live, not fresh water that is found in rivers, streams and ponds.

### *Activities*

See if the students can name some sea life that could be found in or near the Gulf. Have the class inspect and talk about the sea life and shells that are on display.

### *Follow-Up*

Provide a touch lab worksheet and some simple books to identify some of the sea life in the center. The worksheet would be made by the teacher with clues about sea life in the center. An example would be: find and name an animal that has two claws, fins, five arms, and a tube that squirts ink. Students can identify some of the sea life or just enjoy looking and touching the samples in groups with the teacher supervising.

## Grades:

K-2

## Subjects:

Social Studies, Science

## Time Needed:

45 minutes

## Materials:

large map showing the Gulf of Mexico  
samples of sea life and shells (some can be purchased at a seafood market or grocery store)  
simple shell and fish or seashore books  
white paper per student  
crayons  
colored sticker  
touch lab worksheet per student  
copies of sea animal memory games

## **EXTENSIONS:**

1. Place sea animal memory game in a learning center to be used during the students' free time. (See attached sheet.) Make two copies of each. Students turn over cards and try to find a match.
2. Have the students add to their original sea creatures' drawing by adding some blue water and other creatures that live in the sea.
3. Copy this poem for a handwriting and choral reading activity or use as a finger play. Students can illustrate this also.

Underneath the water  
Way down deep  
In sand, shells and seaweed  
Starfish creep  
Snails inch slowly  
Oysters sleep  
Underneath the water  
Way down deep.

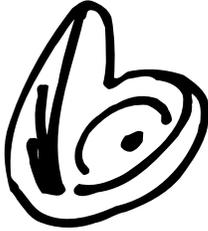
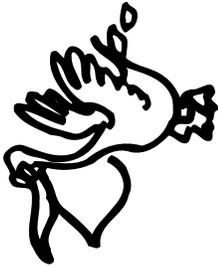
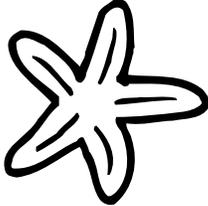
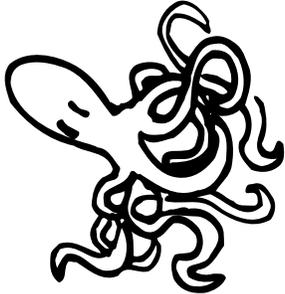
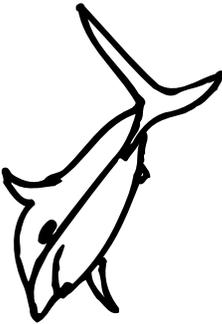
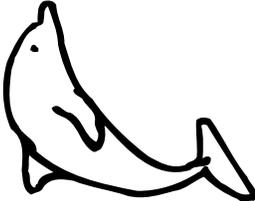
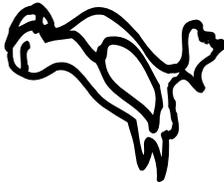
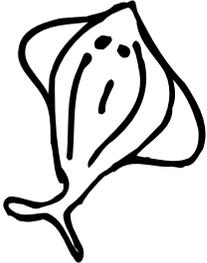
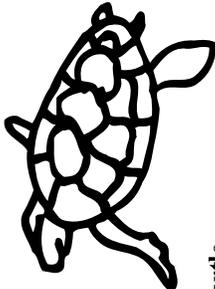
4. Refer to the "Life in the Gulf" and "Captain Bob and His Friends" in Learning Through Legacy (K-2).

## **ORIGINAL DEVELOPMENT RESOURCES:**

*Compton's interactive encyclopedia.* (1993/1994). Compton's New Media, Inc.

*Whole language environmental education manual - Oceans and the environment.* Sixth Annual Science and Environmental Education Conference EEAA.

# Sea Animal Memory Cards

			
Oyster	Pelican	Starfish	Octopus
			
Shark	Shrimp	Whale	Manatee
			
Crab	Porpoise	Puffin	Stingray
			
Hammerhead Shark	Sea Horse	Sea Turtle	Marlin

# Notes

## OBJECTIVES:

The student will be able to:

1. Identify things seen while visiting the beach.
2. Describe several species of ocean life in or near the Gulf of Mexico.

## BACKGROUND:

The Gulf of Mexico is an extension of the Atlantic Ocean into North America that has a 3,000 mile coast. The state of Alabama has 53 miles of this coast as its southern border. The Gulf is a major source of food, recreation, and natural gas. Commercial fishermen catch red snapper, flounder, shrimp, mullet, oysters, and crabs. Other sea life found in the Gulf are starfish, sand dollars, jellyfish, sea horses, and sea urchins. Fact cards are provided at the end of this lesson. These provide general information on each of these species.

## VOCABULARY:

**crab** - a sea animal that has a hard shell and paddle-shaped legs to help it swim

**starfish** - a star-shaped sea animal that lives in or on the sand of the ocean floor

**jellyfish** - simple animals made of jelly-like tissue that float on the ocean surface

**sand dollar** - a round hard sea animal that lives in the sand of the ocean floor

**sea horse** - a tiny fish whose head looks like a tiny horse

**sea urchin** - a sea animal that is covered with prickly spines

## ADVANCE PREPARATION:

1. Gather materials.
2. Prepare a display of sea life and shells.
3. Prepare fact cards.
4. Prepare materials for art projects.
5. Enlist adult or older student volunteers to help with art projects.

## PROCEDURE:

### *Setting the Stage*

Read *The Seashore Book* by Charlotte Zolotow. Have students discuss what they would see if they visited the beach.

### *Activities*

Share samples of sea life and shells with the students. Explain that they will be moving to several learning centers in the room and learning about some of the different sea life that live in the Gulf of Mexico. Explain that in each center there are fact cards to read about each sea animal and materials and instructions to make each sea animal. If possible, have an adult volunteer or older student in each center to help. Six different sea animals are studied and projects made.

## Grades:

K-2

## Subjects:

Science, Art

## Time Needed:

two one-hour periods

## Materials:

*The Seashore Book* by Charlotte Zolotow

samples of sea life and shells

sea animal fact cards for art projects

materials for art projects (parents are usually happy to donate some of these)

scissors

glue

crayons or markers

### *Follow-Up*

Divide the students in groups and send them to each center where they will find out facts about sea animals and then prepare art projects on these: sea urchin, jellyfish, sand dollar, crab, starfish, and sea horse. Instructions and patterns are included at the end of this lesson. Display the work from the ceiling and windows or on a wall.

### **EXTENSIONS:**

1. Have the students write stories on “What would you see at the beach?” with an emphasis on animals. A good idea would be to display these stories on a bulletin board with a beach towel as a background. Another title suggestion is “An Adventure at the Beach.”
2. For a beach effect, add a beach chair, umbrella, and sand toys to a reading corner where there are ocean books.
3. Create an ocean mural to display the sea animal on a bulletin board.
4. See “Exploring the Gulf” and “Captain Bob and His Friends” in Learning Through Legacy (K-2).

### **ORIGINAL DEVELOPMENT RESOURCES:**

*Compton's interactive encyclopedia 2000.* Compton's New Media, Inc.

*Whole language environmental education manual - Oceans and the environment.* Sixth Annual Science and Environmental Education Conference EEAA.

Zolotow, C. (1992). *The seashore book.* New York, NY: Harper Collins Publishers.

# Jellyfish

**Materials:**

one plastic grocery bag (clear), one twist tie, Easter grass

**Instructions:**

Place a small amount of clear Easter grass in plastic grocery bag. Close the end with the twist tie, near the stuffing. Shape the head so that it is round. Shred the rest of the bag to form tentacles.

# Spiny Sea Urchin

**Materials:**

one large marshmallow, toothpicks

**Instructions:**

Create a model of the sea urchin by sticking toothpicks into a marshmallow. Cover all sides using the toothpick “spines.”

# Sand Dollar

**Materials:**

one small white paper plate, glue, gold glitter, or sand

**Instructions:**

Using a pencil, trace a large pattern of sand dollar on the paper plate. Trace it with glue and sprinkle with gold glitter or sand.

# Sea Animal Fact Cards

## Sand Dollar Facts

1. A sand dollar is a round sea animal that lives in the sand of the ocean floor.
2. The sand dollar has holes on both sides of its body. It sticks its feet through these holes to move.
3. It is covered with tiny hairs.
4. When a sand dollar dies, it sometimes washes up out of the water, and its skeleton is found on the beach.

## Crab Facts

1. Crabs have two paddle-shaped legs to help them swim.
2. Crabs have eyes on short stalks.
3. They have a set of pincers used for holding and eating food and for defense.
4. They eat mostly meat and fish.
5. Some types of crabs are blue crab, fiddler crab, and ghost crab.

## Seahorse Facts

1. A seahorse is really a tiny fish. Its head looks like a tiny horse. Its body is long and bony with a tail that can hook on to objects.
2. A seahorse has no teeth; it sucks in tiny bits of food that float by.
3. Big fish like to eat seahorses, so they hide in seaweed. Some seahorses can change color.
4. The mother seahorse lays about 200 eggs, which the father carries in a pouch until they hatch.

## Sea Urchin Facts

1. A sea urchin is covered with prickly spines.
2. It has five teeth and can scrape algae off the rocks for food.
3. The sea urchin moves with tube feet.
4. They are often found in tide pools and are eaten by birds, seastars, cod, lobster, and foxes.

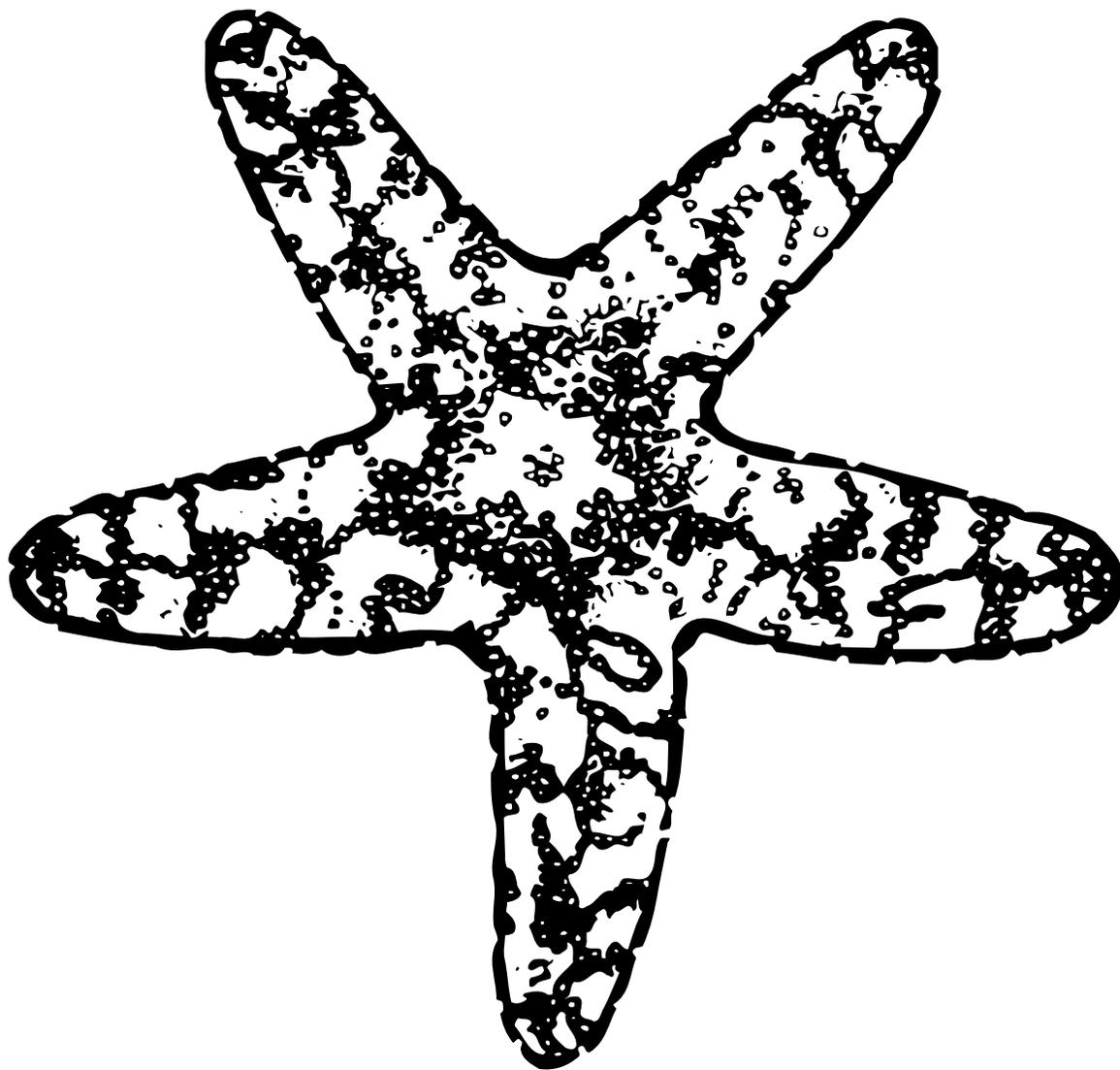
## Jellyfish Facts

1. Jellyfish are simple animals with no bones - invertebrates.
2. Jellyfish can be different shapes.
3. They are made of jelly-like tissue.
4. Jellyfish have tentacles they use for protection by stinging their prey. Their sting can paralyze or kill slow tiny creatures.
5. They float on the surface of the ocean.

## Starfish Facts

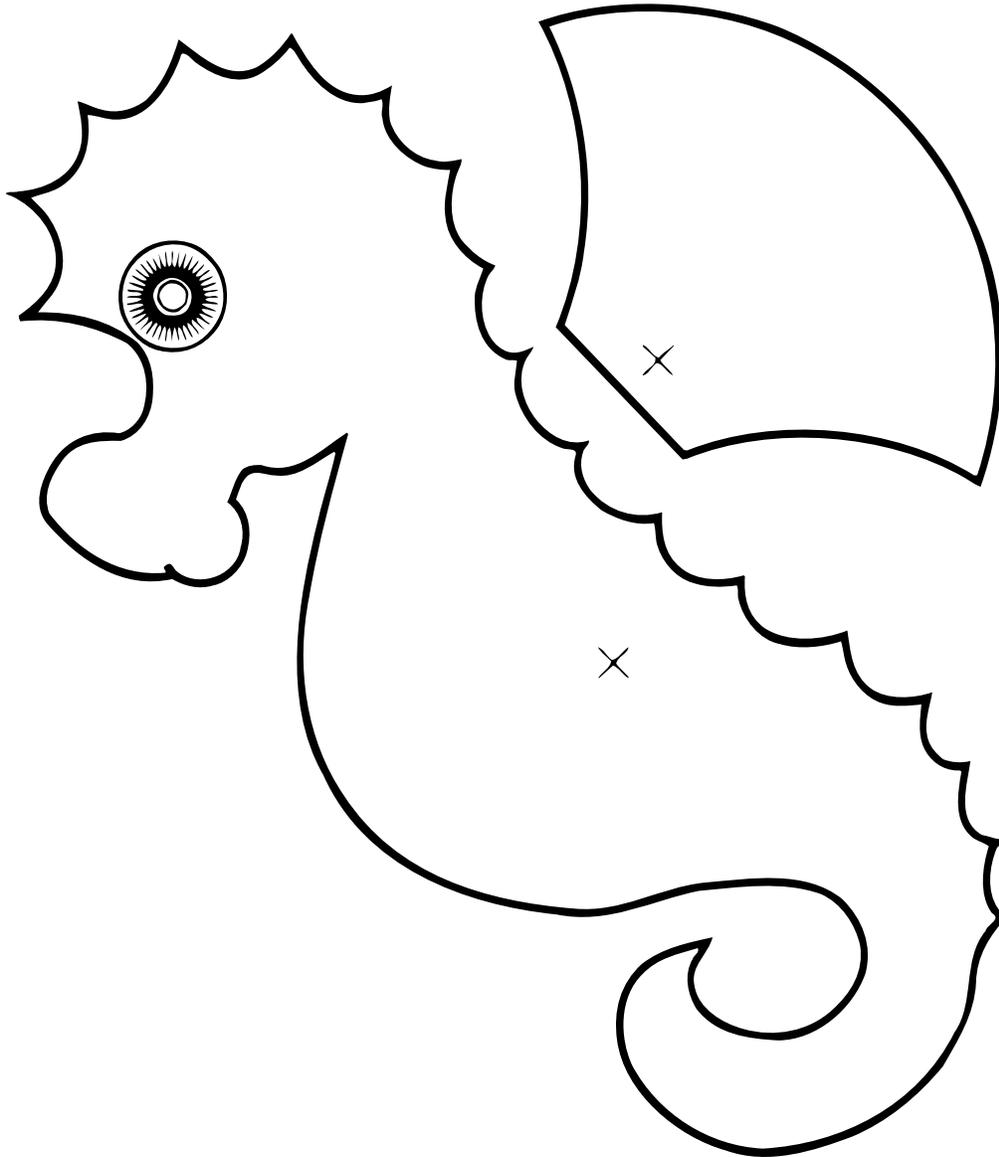
1. Starfish are star-shaped sea animals that live in or on the sand of the ocean floor.
2. Starfish have radial symmetry and have arms connected by a central disc.
3. There are many spines scattered over the surface of the arms and central disc.
4. The mouth is located on the bottom surface directly in the center of the starfish.
5. They move about with tubular walking feet.

## Starfish Pattern



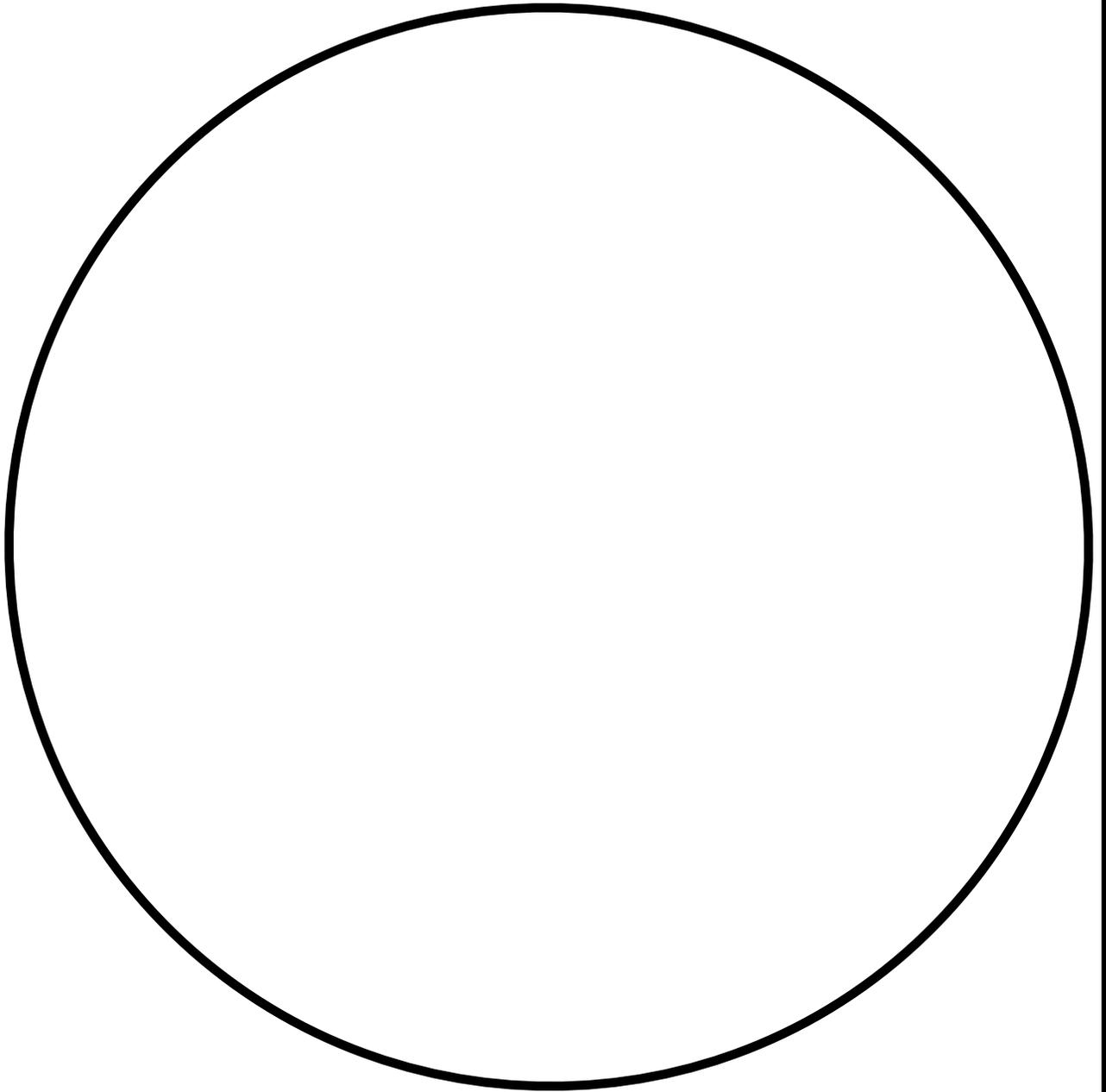
1. Trace on yellow construction paper. Cut out and glue on crushed shredded wheat or cereal.
2. Trace on card stock. Cut and cover with glue. Provide many different items to press in glue, including glitter, beads, or rice.
3. Copy on card stock. Color, smear glue all over starfish, press in sand. Lift carefully. Let dry. Display.

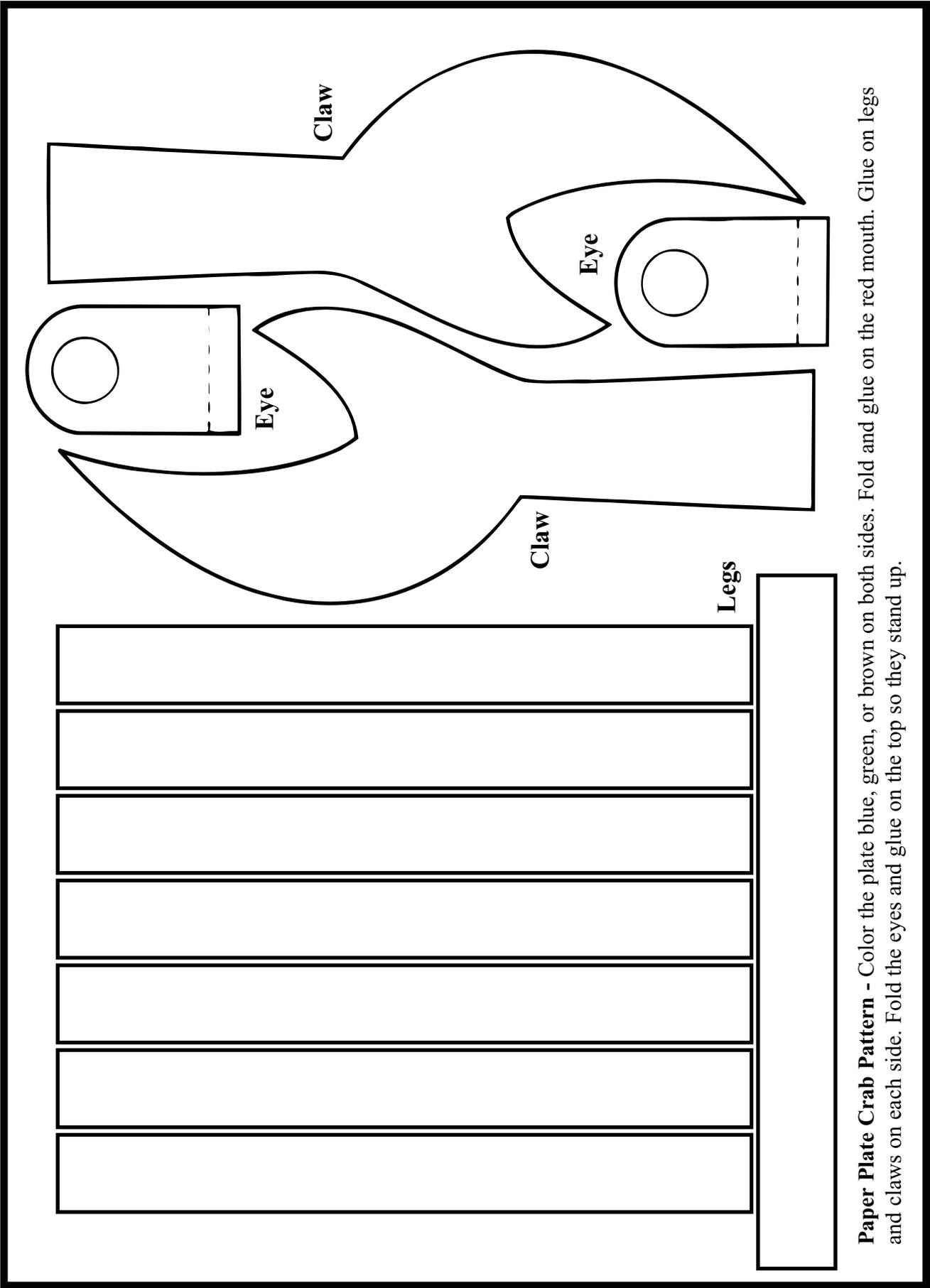
## Seahorse Pattern



Trace seahorse on brown construction paper. Cut out, trace with glue, and sprinkle with sand.  
Trace the fan flipper on plain paper.  
Cut out and attach with a brad. Fold paper back and forth to make a “fan.”

**Crab Mouth  
Cut 1 - Red**





**Paper Plate Crab Pattern** - Color the plate blue, green, or brown on both sides. Fold and glue on the red mouth. Glue on legs and claws on each side. Fold the eyes and glue on the top so they stand up.

## OBJECTIVES:

The student will be able to:

1. Explain the importance of fish in the balance of nature.
2. Identify some uses of fish.
3. Name ways fish are different from each other.

## BACKGROUND:

Fish are an important part of the aquatic ecosystem. They serve as food to other types of fish and sea life as well as people. Fish come in many sizes, shapes, and colors. The sea horse, for example, has a head that looks like a tiny horse. Some fish are flat, like the flounder, which enables them to hide on the ocean floor. Many fish have scales which are added in rings as they grow. Most fish travel in groups called *schools*.

## VOCABULARY:

**flounder** - a type of flatfish

**scales** - thin plates that cover the body of a fish

**sea horse** - a tiny fish whose head looks like a tiny horse

## ADVANCE PREPARATION:

1. Have several pictures of different types of saltwater fish arranged for the children to compare and discuss.
2. Gather materials.

## PROCEDURE:

### *Setting the Stage*

Talk with the students about the importance of fish. Ask the students to name some animals that eat fish. Do any of the students eat fish? What kind of fish do they like? Show them some pictures of fish and talk about how they are alike and different. Talk about some of the fish that are very different from others such as the sea horse and the flounder.

### *Activity*

Read half of the book *The Rainbow Fish* by Marcus Pfister. Have students predict what the rainbow fish will do in the end. Finish the book. Talk about how this fish was different from the other fish. Talk about what he did to make himself happier and become more like the others. Discuss the fact that when a fish loses one of his scales, another grows back in its place. Explain that this is a make-believe story about a fish. Talk about needs of fish. Was the scale a need or a want? A fish needs food, space, water, air.

### *Follow-Up*

Using the fish patterns available, have students create their own fish. They can either color it different colors and touch it up with glue and glitter or create scales by gluing on sequins after first coloring the fish. Have each student come up with descriptive works to tell about the fish. These can be displayed along with the fish.

## Grades:

K-2

## Subjects:

Science, Art, Language Arts

## Time Needed:

45 minutes

## Materials:

*The Rainbow Fish* by Marcus Pfister

Rainbow Fish pattern

crayons

scissors

glue

glitter or sequins (optional)

pictures or samples of different kinds of fish

## **EXTENSIONS:**

1. Write a story titled, "If I were the Rainbow Fish, would I give up my scales?"
2. Extend the story lesson to talk about friendship and what to do to make and keep friends.
3. Make a multi-layered paper fish illustrating the different aspects of a fishes anatomy shown on the sheet.
4. Purchase a whole fish from a fish market. Store on rock salt. Let the children touch the scales and examine the fish. Make "fish prints" by covering one side of the fish with thin tempera paint. Press the painted side firmly onto butcher paper. Remove the fish to reveal a beautiful "scaly" print.

## **ORIGINAL DEVELOPMENT RESOURCES:**

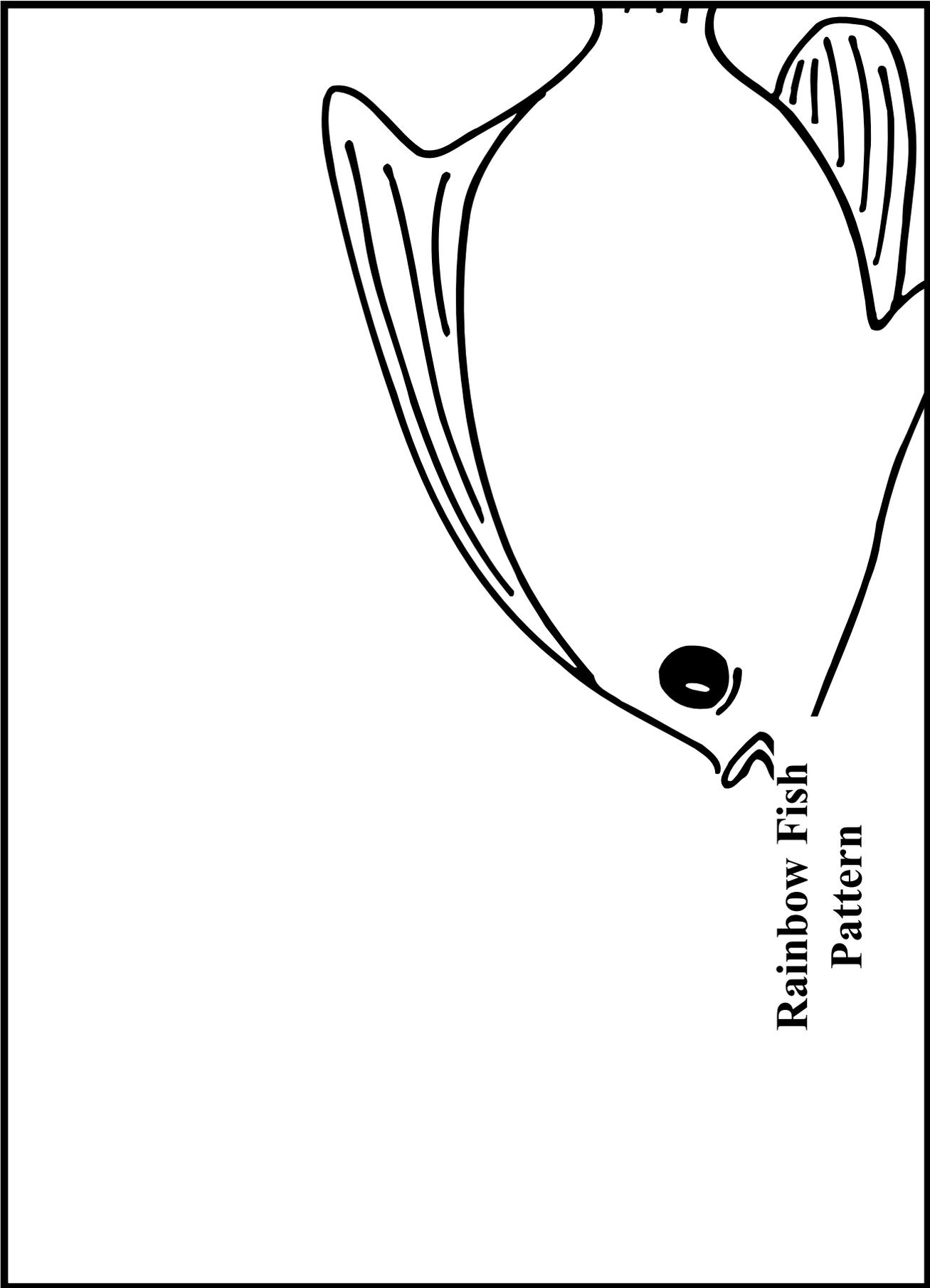
Pfister, M. (1992). *The rainbow fish*. New York, NY: HarperFestival.

Pfister, M. (1995). *Rainbow fish to the rescue*. New York, NY: HarperFestival.

Pfister, M. (1998). *Rainbow fish and the big blue whale*. New York, NY: HarperFestival.

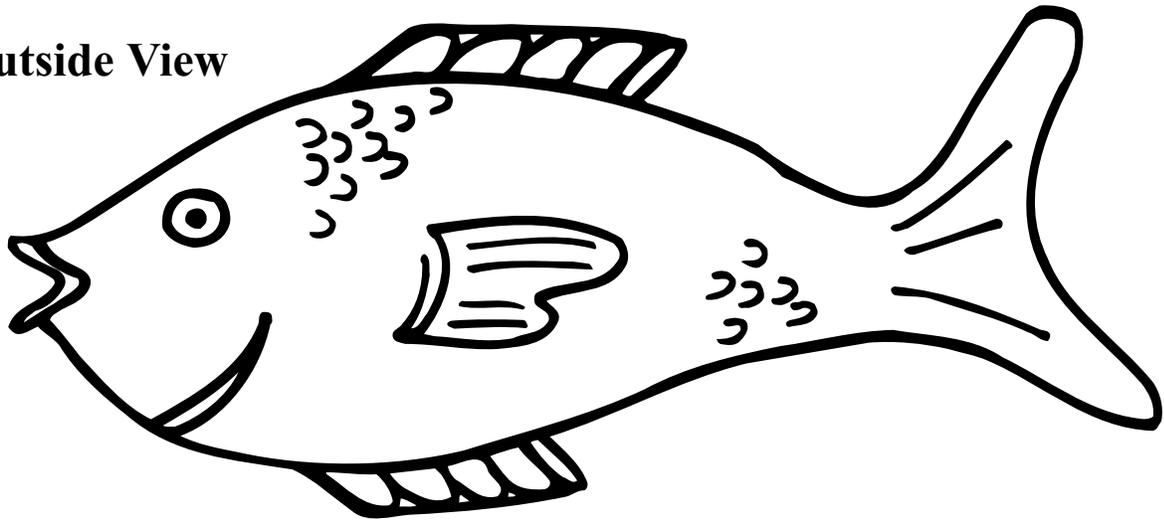
Pfister, M. (2001). *Rainbow fish and the sea monster's cave*. New York, NY: HarperFestival.

Pfister, M. (2002). *Rainbow fish: the dangerous deep*. New York, NY: HarperFestival.

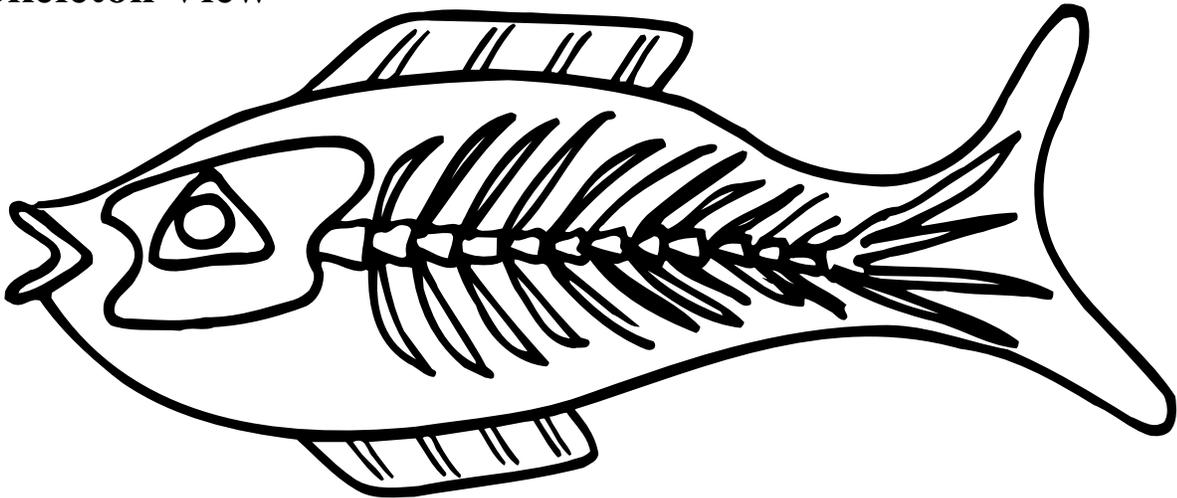


**Rainbow Fish  
Pattern**

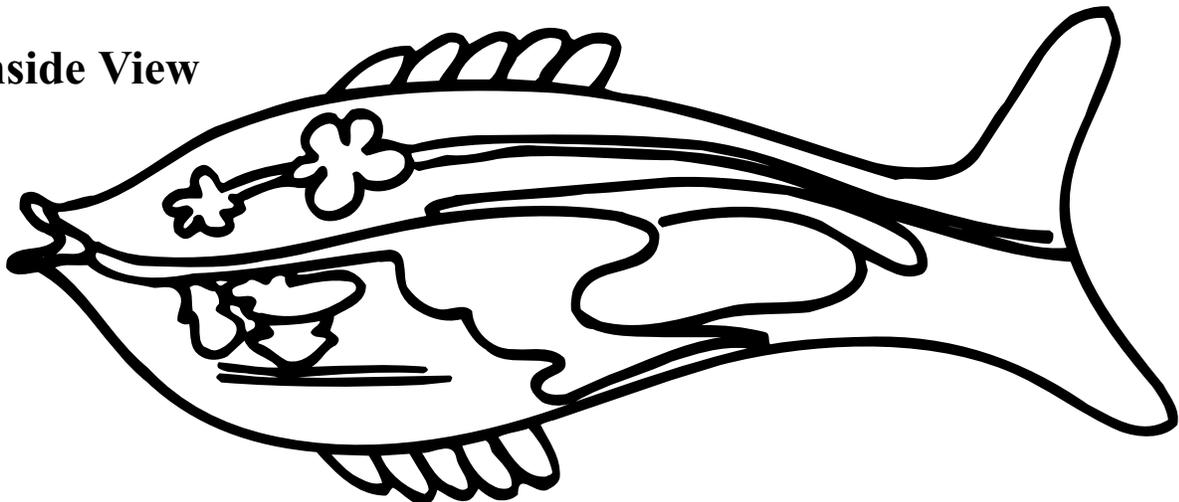
**Outside View**



**Skeleton View**



**Inside View**



## OBJECTIVES:

The student will be able to:

1. Define what a shell is used for.
2. Identify several different kinds of shells.
3. Define the two groups of shells. (univalves and bivalves)

## BACKGROUND:

Many animals build “forts”, or shells, around themselves for protection. These shells can be found on the shores of the sea in an endless variety of shapes and colors. The outside of the shell may be white, brown, black, tan, purple, red, or rose. Some have a pattern combining several colors or shades. The inside of the shell is usually paler and more delicate. Shells exist in a variety of shapes also. Many closely resemble natural objects or human-made objects and are known as harp, helmet, razor, cone, basket, frog, ear, and slipper shells.

Shells can usually be grouped into two categories, univalves and bivalves. Univalves are shells that have one piece such as snails. Most univalves are cone-shaped with a spiral. Bivalves have two pieces hinged at the back such as oysters and clams.

## VOCABULARY:

**bivalve** - shells that have two pieces hinged at the back

**univalve** - shells that have one piece

## ADVANCE PREPARATION:

1. Prepare a shell collection with both univalves and bivalves.
2. Prepare shell identification activity. (Sheet included.)
3. Gather easy shell identification books.
4. Prepare shell memory game. (Included - make two copies for each game.)
5. Prepare shell puzzle sheets. (Included)

## PROCEDURE:

### *Setting the Stage*

Read the book *A House for Hermit Crab* by Eric Carl. At the conclusion, have students generate a list of the types of “homes” on the seashore. Tell students that a seashell is a house for a hermit crab. Talk about how shells are homes for many kinds of sea creatures. Shells are also used for protection. The inside of the shell is smooth so that creatures can easily move inside and not hurt themselves.

### *Activities*

Several shell centers can be made available.

1. Provide a shell sorting center where shells can be sorted in a variety of ways: univalves and bivalves, color, shape. Students can count or graph the different kinds.
2. Provide a shell identification activity. Number the shells and have students write these on the shell identification page. The teacher can make an answer key. Provide simple shell identification books and common shells.

## Grades:

K-2

## Subjects:

Science, Math

## Time Needed:

45 minutes

## Materials:

collection of shells

easy shell identification books

shell identification sheets per student

shell memory game

shell puzzles

*A House for Hermit Crab* by Eric Carl

Gem clip or brad for spinner

3. Tell addition stories by using macaroni shells and story boards. (Beach picture included)
4. Play shell memory. (Pattern included)
5. Learn to use a compass rose with a “shell” map game. Make copies of the sample grid provided and direction cards. Teacher spins cardinal directions off card and students move their shells in the appropriate direction.
6. Write poems about shells on the Shell Poem Sheet. (Pattern included)

*Follow-Up*

1. Have students use characters from *A House For Hermit Crab* to retell their own hermit crab story.
2. Make shell activity centers available for individual work as the class continues to study ocean ecology.

**EXTENSIONS:**

1. Students can do an art project with tempera paint and shells or shell patterns making shell prints or stencils.
2. Fill a jar with small shells or shell macaroni and do an estimation activity.

**ORIGINAL DEVELOPMENT RESOURCES:**

*Compton's interactive encyclopedia 2000.* Compton's New Media, Inc.

Hoberman, M.A. (1982). *A house is a house for me.*



## Shell Identification



1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_



4. \_\_\_\_\_



5. \_\_\_\_\_



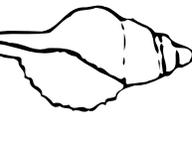
6. \_\_\_\_\_



7. \_\_\_\_\_



8. \_\_\_\_\_



10. \_\_\_\_\_



# Shell Math Problems

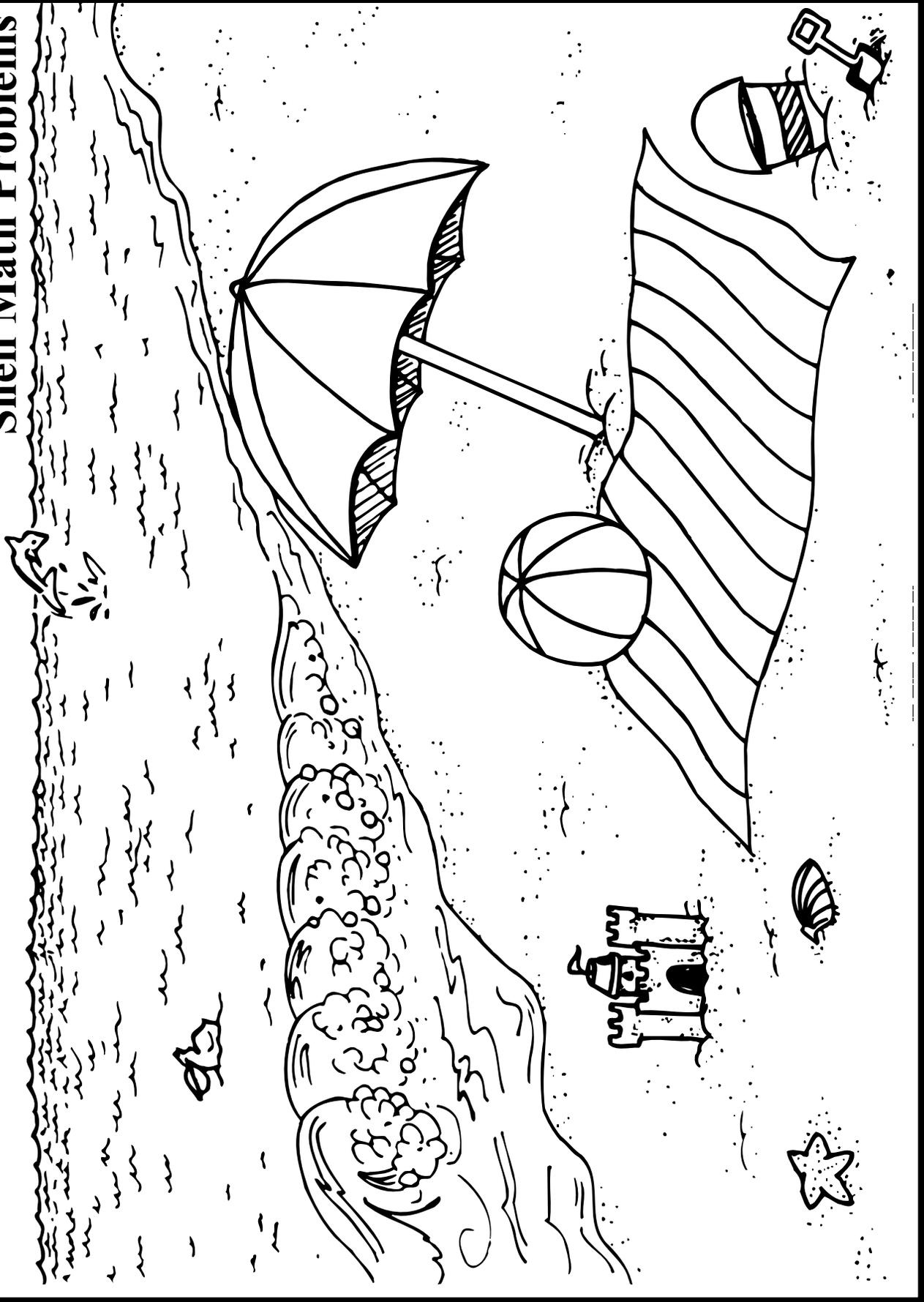
1. Tell the children you are going to give them some math problems using shell macaroni.
2. Create several problems using shell macaroni.

Example: Place 10 shells on the beach (Picture sheet). Then say the ocean's waves washed 3 back into the water. Ask the children to take 3 off. Count how many shells are left on the shore.

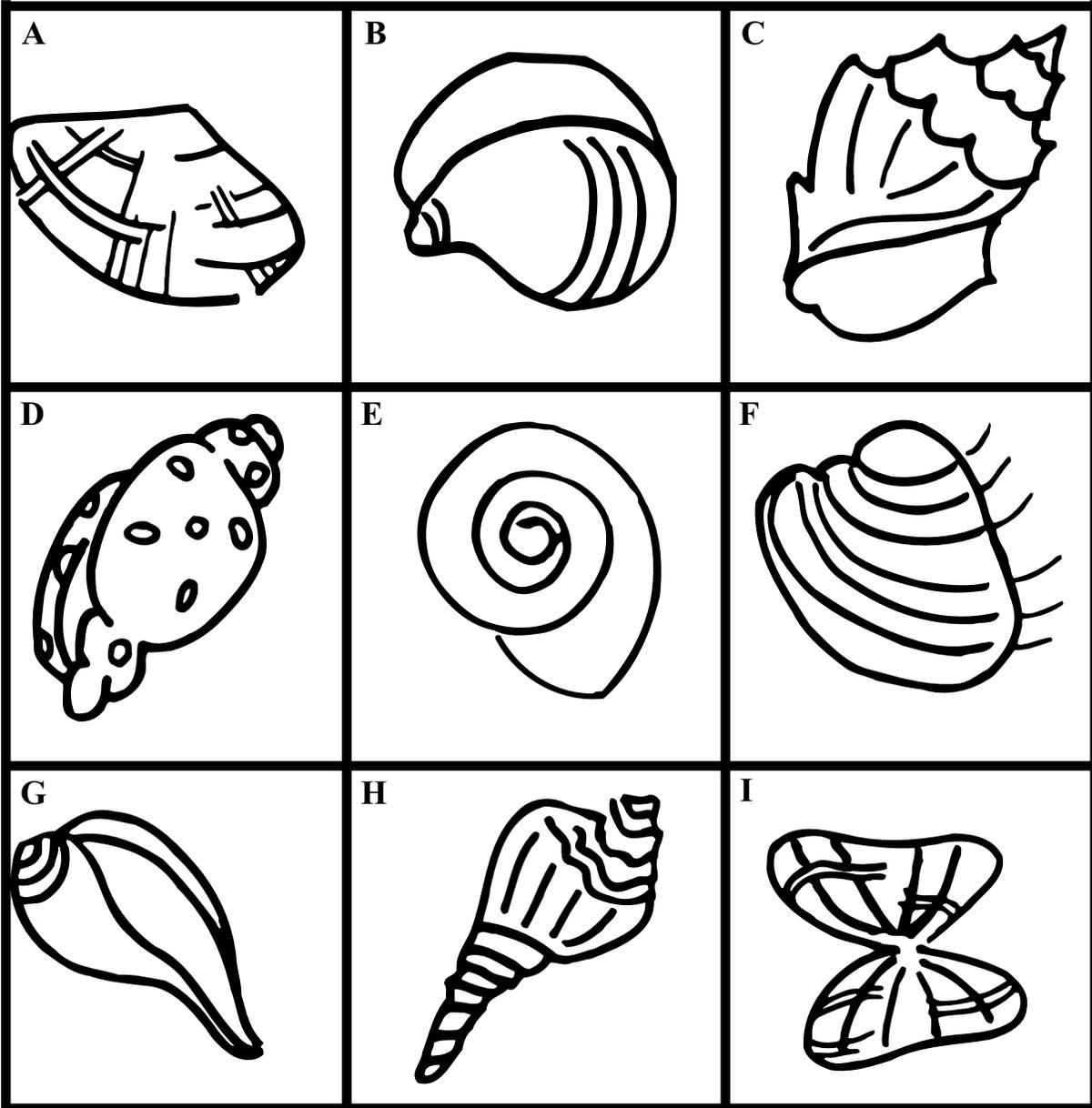
3. You can continue in this way, making the problems more challenging each time. After practice the children can eventually make up their own problems. You can add ocean facts into the problems.

Example: There were 6 bivalve shells on the ocean floor. Homes were needed by 8 crabs. How many crabs will be homeless?

# Shell Math Problems



# Shell Memory

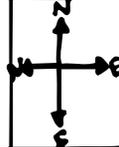
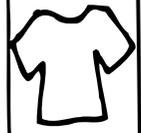
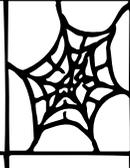
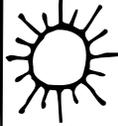
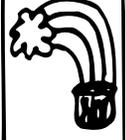


- A Sunrise Tellin
- B Blue Mussel
- C Crown Conch
- D Textile Cone
- E Shark's Eye

- F Royal Comb Venus
- G Paper Fig
- H Left-handed Whelk
- I Coquina

# Shell Map Game

N

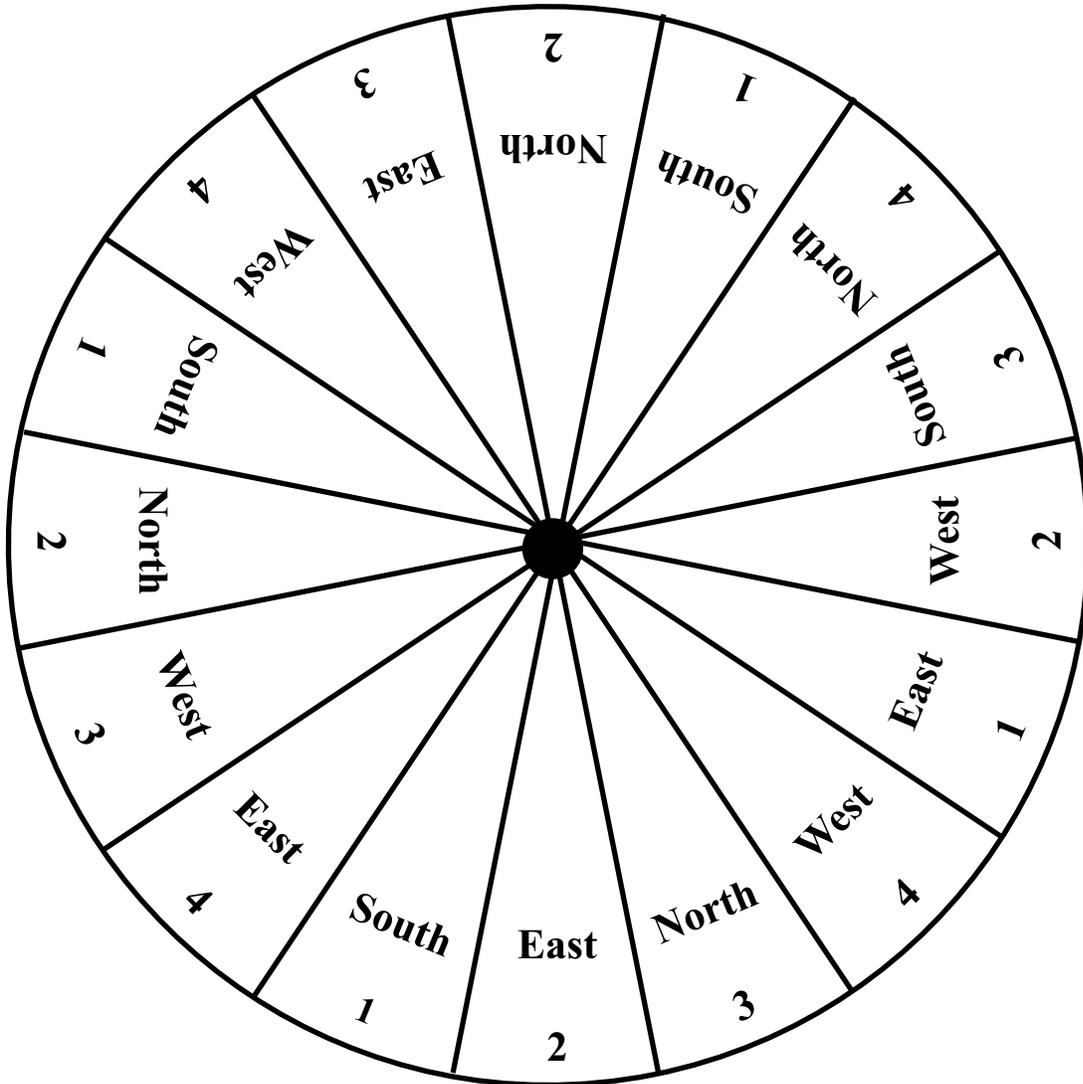
							
							
							
							
							
							
							
							
							

W

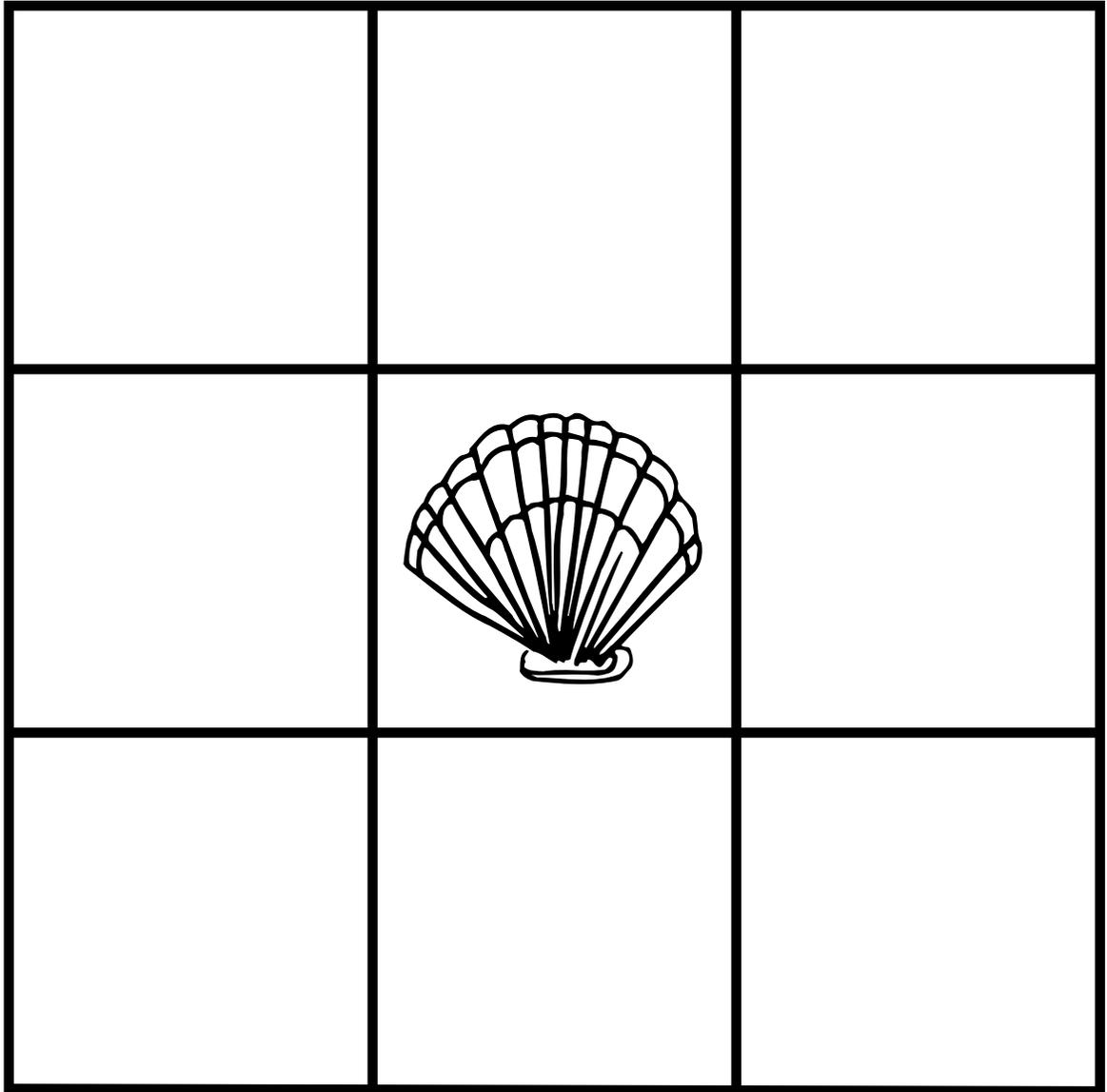
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S

# Shell Map Game



# Shell Memory Game



# Shell Poem Sheet

