

Plant and Animal Communities

Standard IV

Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.

Objective 1

Tell how external features affect an animals ability to survive in its environment.

Intended Learning Outcomes

Communicating Science: Communicating effectively using science language and reasoning.

Knowing in Science: Understanding the nature of science.

Content Connections: Language Arts, Writing

Background Information:

There are six main classes of the animal kingdom: insects, birds, fish, mammals, amphibians, and reptiles. All animals live in a habitat that is suited to fit their needs. Animals also have adaptations that allow them to survive in their habitat. In addition, plants have adaptations that allow them to live in a specific habitat. All living things depend on plants to survive.

Research Basis

Gallenstein, N. (2005). Engaging young children in science and mathematics. *Journal of elementary science education*, Volume 17.

A key element for children in understanding science and mathematics knowledge on the early childhood level is through active, creative, and intellectual engagement. According to Jerome Bruner, instruction should include a variety of developmentally appropriate techniques. These techniques include the representation of knowledge through actions, drawings, and words. The process skills of observing, communicating, and inferring are also crucial to the understanding and problem solving in science and mathematics. In addition, basic mathematics concepts—such as comparing, sorting, counting, and graphing—are crucial to the understanding and organization of data in science.

Invitation to Learn

Place a picture of an animal on the board facing inward so that the students cannot see it. Make up some riddles and have the students try to guess the animal you are describing.

Connections

2nd 4-1 3.1

Materials

- Plastic animals
- Bucket
- Sentence strips
- Marker
- Animal Kingdom Poster
- 6 flap book pages
- Animal Kingdom Labels
- Animal Pictures
- Baskets / containers
- 12x18 sheets of construction paper



Which Class do you belong to?

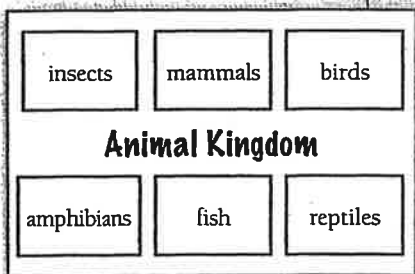
1. Label the six containers with each of the main classes of the animal kingdom (insects, mammals, birds, amphibians, fish, reptiles).
2. Place the plastic animals in the bucket. Ask a student to come up, pick an animal and place it in the appropriate class. If the student places an animal in the incorrect class, just ignore it for now. Later you will correct it.
3. Write the animals that have been placed in each container on the sentence strips. Stick the sentence strips up on the poster. Tell the students that they will be learning more about the animal kingdom.
4. Spend some time discussing facts from each of the six main classes of the animal kingdom using nonfiction literature, videos, etc. As you discuss each kingdom, give each student a copy of the *fFlap Book Page*. Have them write down facts about the animals as you write them on the overhead. Then have them cut out their *Flap Book Page* and fold it.
5. Next, have the students color the *Animal Pictures* and cut them out. Then have the students cut out the *Animal Kingdom Labels* and glue them on the front of each page of their book. Finally, have the students glue the *Animal Pictures* on each appropriate class on the book.
6. Arrange the book pages onto the sheet of construction paper as shown at left. Have the students label their flap book poster with a marker.
7. After making the flap book and discussing each of the six main classes of the animal kingdom, pull out the poster from the beginning of the lesson. Decide if any of the animals need to be moved to a different class.

These are basic facts from each of the classes that can be written in the flap books.

Insects:

- Have an exoskeleton
- Have three body parts (head, thorax, abdomen)
- Have six legs
- Have two antennae
- Mouthparts

Mammals:



- Usually have fur or hair
- Use lungs to breathe
- Give birth to live young
- Drink milk from the mother
- Mom takes care of her young

Birds:

- Has feathers
- Two legs
- Has wings
- Has lungs
- Lays eggs
- Has a beak instead of a mouth

Amphibians:

- Begin life in the water and move onto land as adults
- Lay eggs in the water and eggs hatch in the water
- Have wet skin
- Begin with gills that then change into lungs
- Grow front and back legs to live on land
- The word amphibian comes from two Greek words. “amphi” means double, and “bios” means “life.” Amphibians live a double life.

Examples: frogs, toads, and salamanders

Fish:

- Live their whole life in the water
- Breathe with gills
- Have scales
- Most fish lay eggs, but some give birth to live young
- Have fins to help them move

Reptiles:

- Land animals
- Have dry skin covered with scales
- Use lungs to breathe
- Some young hatch from eggs and some are born alive
- Babies take care of themselves

Examples: Lizards, snakes, alligators, crocodiles, turtles and tortoises. Tortoises live on land and turtles live in the water.

What do plants and animals need?

1. Explain to the students that plants and animals have needs in order to survive.
2. Tell the students that plants need water, sunlight, soil and air (carbon dioxide) to survive. Explain that people and animals give off carbon dioxide when they breathe out. Tell the students that plants make their own food from each of these needs. Do the following experiments with the students.

Materials

- Green plant
- Black construction paper
- Paper clips
- Petroleum jelly
- Clear bowl
- Jar
- Pond plants
- Four pennies
- Water



What happens when a plant doesn't get enough light?

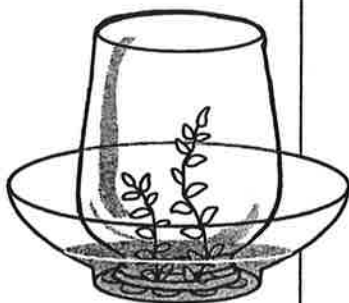
- a. Attach a piece of black paper to the top of a leaf using paper clips.
- b. Check the leaf each day for one week. Observe and describe what the leaf looks like each day. Have the students record results using words and pictures in a science journal.
- c. Discuss what happens when a plant doesn't get the sunlight it needs to survive.

What happens when a plant doesn't get enough carbon dioxide?

- a. Cover a few leaves of the plant with petroleum jelly.
 - b. Check the leaves each day for one week. Observe and describe what is happening to the leaves each day. Have the students record the results in a science journal using pictures and words.
 - c. Discuss what happens when a plant doesn't get enough carbon dioxide.
3. Animals need food, water, a home, and oxygen to breathe in order to survive. Plants give off oxygen. Land animals get oxygen from the air by breathing with their lungs. Insects get oxygen by breathing through tiny hole in their bodies, and water animals get oxygen from the water. Animals don't make their own food, but they have body parts that help them to get their food. Do the following experiment with the students.

How do animals that live in the water get oxygen?

- a. Explain to the students that water plants help to add oxygen to the water.
- b. Fill the jar up with water and water plants.
- c. Put the bowl on top of the jar and carefully flip it over so that the jar is upside down in the bowl.



- d. Pour a few inches of water into the bowl.
 - e. Slide the four pennies underneath the rim of the jar.
 - f. Leave the bowl and jar in the sun for a few hours. Oxygen bubbles will start to form on the plants and float to the top of the jar.
4. Make a Venn diagram of plant and animal needs.

Forest and Pond Communities

1. Explain to students that the forest is a place where many trees and smaller plants grow. Many kinds of animals make their homes in the forest.
2. Read *Forest Bright, Forest Night?* by Jennifer Ward. Talk about some of the different animals and plants that live in a forest and pond. Make a list of the animals.
3. Read *Pond Plants* by Ernestine Giesecke and discuss the plants that live around the pond. Explain that the plants and animals work together to make a community. Plants provide animals with food and shelter, and animals also help plants.

How do plants help animals?

1. Explain to the students that many animals make their homes out of plants. Read *Animal Homes* by Diane James and Sara Lynn to the students. Discuss how animals use plants to make their homes.
2. Explain to the students that another way that plants help animals is by providing food. Many animals eat plants. Animals that only eat plants are called herbivores. Animals that eat plants and other animals are called omnivores, and animals that only eat other animals are called carnivores. However, even though some animals only eat other animals, all animals depend on plants.
3. Tape the *Food Chain Picture Cards* to the board vertically. Put the grass at the bottom, the cricket, the frog next, then the snake, and the hawk last (at the top). Explain that a cricket eats grass, so grass is the beginning of the food chain. The food chain is the path of food from one animal to another. Next, a frog eats the cricket. A snake eats the frog, and finally a hawk eats the snake. What would happen if all of the grass died? Would the hawk be able to stay alive even though he doesn't eat grass?

Materials

- Forest Bright Forest Night*
- Pond Plants*

Materials

- Animal Homes*
- Food Chain Picture Cards*
- The Dancing Deer and the Foolish Hunter*

Sing the following song sung to the tune of "The Farmer in the Dell."

The Food in the Forest

The cricket eats some grass; the cricket eats some grass,
Hi ho the forest-o, the cricket eats some grass.

The frog eats the cricket; the frog eats the cricket,
Hi ho the forest-o, the frog eats the cricket.

The snake eats the frog; the snake eats the frog,
Hi ho the forest-o, the snake eats the frog.

The hawk eats the snake; the hawk eats the snake,
Hi ho the forest-o, the hawk eats the snake.

That's how the food chain works, that's how the food chain works,
Hi ho the forest-o, that's how the food chain works.

Materials

- How and Why Seeds Travel*
- One fresh cut flower
- Three artificial flowers
- Cornmeal
- Container of water
- Plastic flying insect
- Piece of fake fur
- Different kinds of seeds (maple, cherry, apple, sandbur, corn, acorn)
- Tweezers



4. Read *The Dancing Deer and the Foolish Hunter* to the class. Relate the chain in the story to the food chain that the students just learned about. Discuss what is fantasy and what is real in the story.

How do animals help plants?

1. Explain to the students that animals help plants too. Read the book *How and Why Seeds Travel* by Elaine Pascoe.
2. Discuss the different ways that animals help seeds to travel. Hold up the seeds and ask how an animal would help them to travel. Place the seeds on the piece of fake fur and see if any stick. Ask if these seeds would be spread through droppings, or if they would be spread through fur?
3. Insects drink nectar from flowers. When an insect takes a drink of nectar, it picks up pollen from the flower and carries it from plant to plant helping to make new plants grow.

Try this experiment:

1. Use a real flower and show the students what pollen looks like.

2nd 4-1 3.6

2. Sprinkle some cornmeal into the center of the artificial flowers.
3. Dip the plastic insect's legs and mouth parts into the water.
4. Show the insect travel from flower to flower picking up "pollen" on its body and spreading it to the other flowers. Explain that this will help new flowers to grow.

Assessment Suggestions

- Check student journals for understanding of the concepts taught.
- Ask students to name two ways that plants help animals, and two ways that animals help plants.
- Ask students to identify characteristics of animals in each of the six kingdoms.

Curriculum Extensions/Adaptations/Integrations

Read *Frog in a Bog* by John Himmelman. Make a cause and effect chart using the events in the story.

Family Connections

- Have the students observe animal and plant life in their neighborhood.
- Encourage students to teach family members what they have learned.

Additional Resources

Books

Animal Homes, by Sally Hewitt; ISBN 1587288605

Animal Faces in the Forest, by Hannah Kate Sackett; ISBN 1-57768-428-1

Life in a Pond, by Allan Fowler; ISBN 0-516-06053-8

Peek at a Pond, by Neecey Twinem; ISBN 0-448-41953-X

What's in the Pond? by Anne Hunter; ISBN 0-395-91224-5

Pond Plants, by Ernestine Giesecke; ISBN 157572826-5

Who's Who in the Garden? by Vera Rosenberry; ISBN 0-8234-1529-5

Box Turtle at Long Pond, by William T. George; ISBN 0-688-08184-3

Around the Pond: Who's Been Here? by Lindsey George Barrett; ISBN 0-688-14376-8

In the Snow: Who's Been Here? by Lindsay Barrett George; ISBN 0-688-12321-X

Forest Bright, Forest Night, by Jennifer Ward; ISBN 1-58469-066-6

Animal Homes, by Diane James and Sara Lynn; ISBN 0-590-20585-4

Finding a Friend in the Forest, by Dean Bennett; ISBN 0-89272-662-8

Frog in a Bog, by John Himmelman; ISBN 1-57091-518-0

Plants that Eat Animals, by Allan Fowler; ISBN 0-516-27309-4

Animal Babies Series:

Reptiles, by Rod Theodorou; ISBN 157572884-2

Mammals, by Rod Theodorou; ISBN 1575728834

Insects, by Rod Theodorou; ISBN 157572-880-X

Fish, by Rod Theodorou; ISBN 157572882-6

Birds, by Rod Theodorou; ISBN 1575728818

Amphibians, by Rod Theodorou; ISBN 1575729504

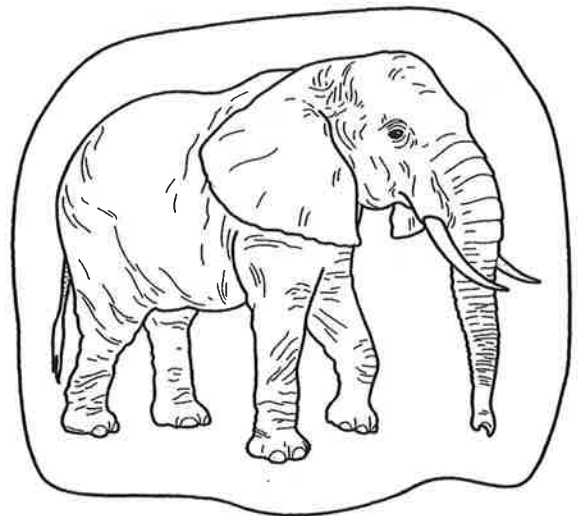
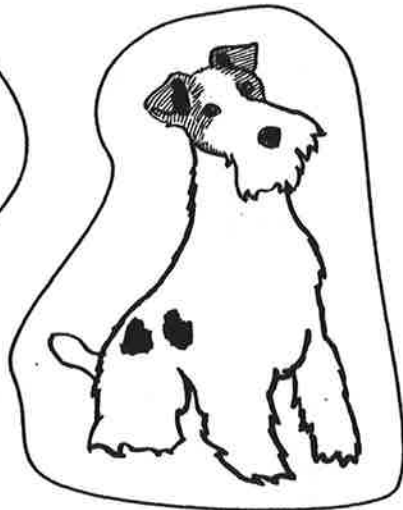
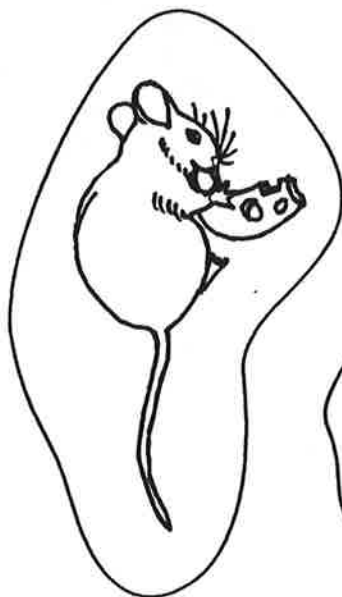
How and Why Seeds Travel, by Elaine Pascoe; ISBN 1574716581

A Walk in the Woods, by Caroline Arnold; ISBN 0382246500

The Dancing Deer and the Foolish Hunter, by Elisa Kleven; ISBN 0525468323

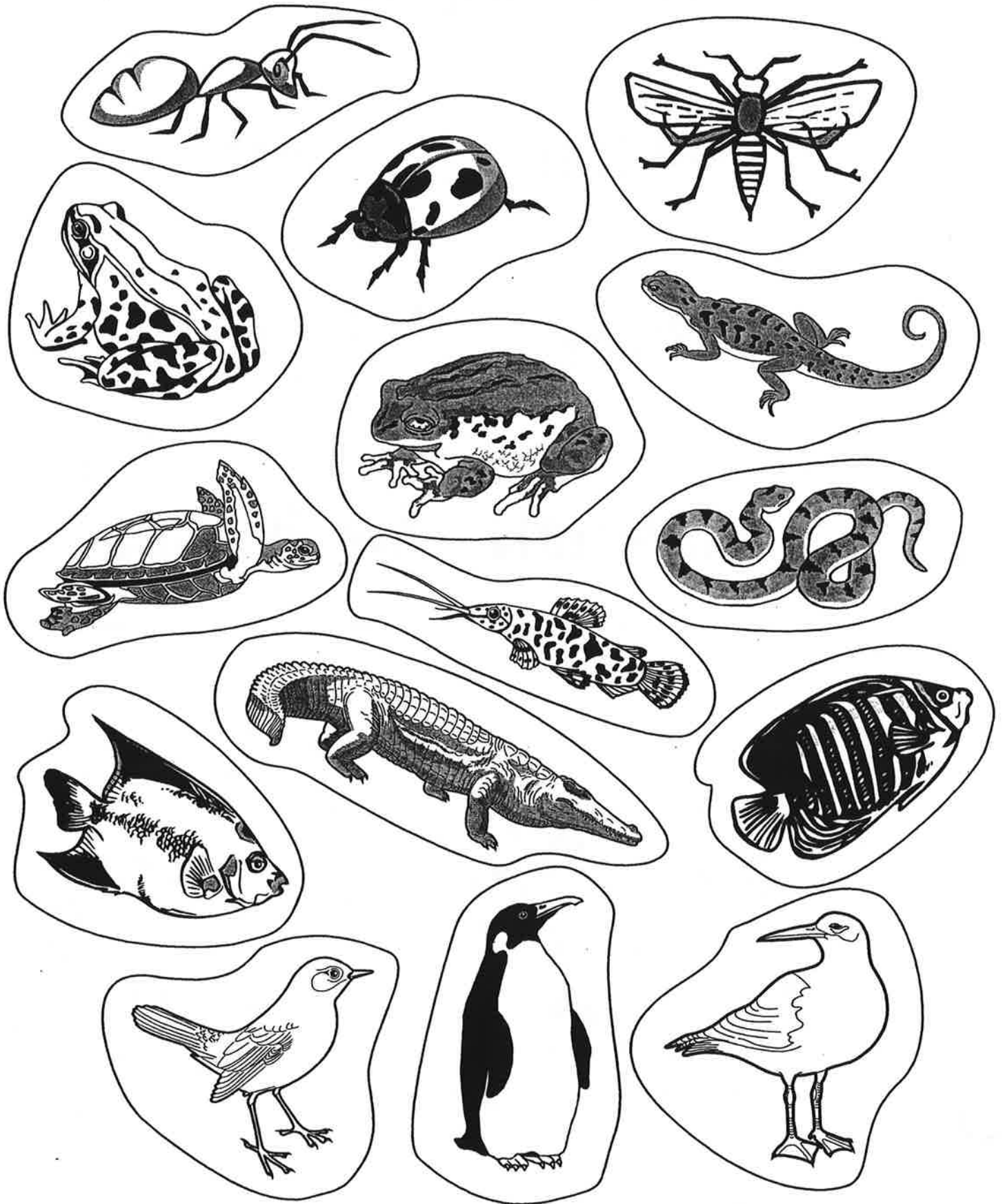
Animal Kingdom Labels

Insects	Fish
Birds	Reptiles
Mammals	Amphibians



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Animal Pictures



Food Chain Picture Cards

Grass



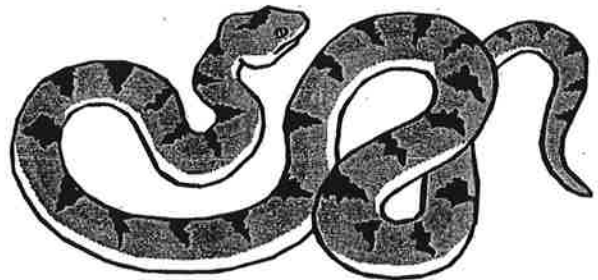
Cricket



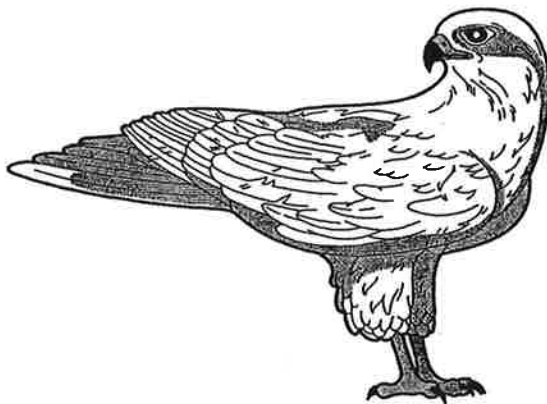
Frog



Snake



Hawk



2nd 4-1 3.12

