

Concepts in Nature Program 1

Animal Predators and the Balance of Nature

Videotape Teaching Guide

Video: 14 minutes

Major Concepts

- Predators come in all shapes and sizes.
- Predators eat other predators.
- Nature tries to keep predators and prey in balance.
- People affect nature's balance in many ways.
- There is a limit to what the earth can support in the way of food.

Summary

This program uses incredible wildlife photography to show various kinds of predators that exist, and explains the complex relationship between predator, prey and nature. Students will learn the difference between omnivores, carnivores, and herbivores, with examples of each being shown. Factors that help maintain nature's balance, including disease and competition, are covered as well, helping the student to understand exactly how bears, lions, frogs, insects, sparrows, even people, play a role in maintaining nature's delicate balance.

Before Viewing

Introduce the title of the video to the students and then discuss what they think the video will be about. List the glossary words on the chalkboard or overhead. Tell the students to try to interpret the meaning of the words as they watch the program. Discuss the terms after viewing the video. When students are in doubt of the meaning of a term, assign someone to research the word in the dictionary and then have that person share the definition with the class. Have students fold a piece of notebook paper into three equal parts. Head each section as follows: What I know, What I would like to know, What I have learned. Have a discussion with the class about what they know about animal predators and list their answers under the first column. Do the same with column two listing their answers as to what they would like to know about predators. Do not fill in the last column until the end of the unit.

Focus Question

To give students a specific purpose for viewing, ask:
How does nature try to keep its own balance?

Glossary

Carnivore- an animal or plant that feeds chiefly on flesh.

Ecosystem- all the living things within a particular area and their relationship to each other and to their physical environment.

Erode- to wear or wash away gradually by rubbing or friction.

Habitat- the area or region in which an animal or plant naturally lives or grows.

Herbivore- any animal that feeds chiefly on plants.

Insect- any of a group of small animals without a backbone, having a body divided into three parts.

Monoculture- the care or raising of one plant.

Omnivore- an organism that eats both animal and vegetable food.

Predator- an animal that lives by preying on other animals.

Prey- any animal hunted or killed by another animal for food.

Species- a subdivision in the classification of living things.

Questions for DISCUSSION

1. Discuss and explain why it is said that predators come in all shapes and sizes.
2. Give an example of each of the following: omnivore, carnivore, and herbivore.
3. Explain what is meant by carrying capacity.
4. Explain why predators eat mostly surplus animals.
5. Discuss the three things that help maintain the balance of nature between predator and prey.
6. Discuss how people affect nature's balance.
7. Discuss what predator and prey you think are the most important in keeping the balance of nature.

Interdisciplinary CONNECTIONS

Language Arts- Invite the local forest preserve ranger to class to talk about predators and prey that are, or once were, common to the area. Depending upon the grade level, the invitation can be written by the whole class or a small group. (Listening/Writing)

Assign each student, or a group of students, an animal. Have them write a report that includes as many facts about their animal as possible; including what prey they eat, and what prey eats them. (Research/Writing/Speaking)

Assign a group of students the term “biome.” Have them prepare an oral report. (Research/Writing/Speaking)

Science- Instruct students to find a shaded area and a sunny spot on or near your school grounds. Have them mark off one square foot of ground in each location. Have them compare the quantity and type of life present in each. Have them make a chart to show their findings.

(Research/Writing/Analytical Thinking)

Assign students to make a chart of the common animals of your region. Have them include their habitat, diet, method of survival in winter, special adaptations, and other factors of importance.

(Research/Writing/Creativity)

Prepare a copy for each student of the list of interactions below. Have students match each numbered event with the type of interaction listed at the bottom of the list. You may have to have some students research and give a report to the class on what is a scavenger and what is a decomposer (bacteria and fungi).

1. A bird eats a caterpillar.
2. A mosquito sucks blood.
3. Mold grows on oranges.
4. An aphid lives on the leaves of trees.
5. A toad eats a fly.
6. A millipede eats dead plants.
7. A dog has fleas.
8. A human kills and eats a deer.
9. Bacteria live on a dead sparrow.
10. A sowbug eats rotting wood and leaves.

a. predator-prey b. parasite-host
c. scavenger and its food d. decomposer and its food. (Analytical Thinking/Comparison)

Explain to the students that a food chain shows the relationship of how living things depend on one another for food energy. Assign some students to choose an animal and show its food chain making their animal the top carnivore so that the chain will stop with them. They should make a chart to show the chain.

(Research/Creativity/Writing/Speaking)

Social Studies- Assign some students to go to the local grocery store and make a list of all the foods they can find that come from animals. Have them list what animals produced the food.

(Research/Creativity)

With the assistance of students, prepare a bulletin board of a world map. Have students collect pictures of principle animals native to various continents and place them on the map. Have them list the ecosystem for each continent.

Research/Writing/Creativity)

Art- Assign some students to make a food chain mobile. Have them cut out pictures of different foods, plants, animals, and other organisms on an index card. Tie the cards together with string in a chain in the same order as the positions of the organisms in a food chain. Hang the mobile in your classroom. (Research/Analysis/Creativity)

After Viewing

1. Go over the glossary terms with students.
2. Fill out the "What I have learned" section of the folded paper.
3. Convert major concepts into questions to make sure students understand the main ideas.
4. Ask students to tell you one new thing they learned from this program.
5. Go over the focus question with students.
6. Prepare a copy of the last page for each student. Assign the page for homework.

Make copies of this page and pass it out to your students.

Producers are organisms in a food chain that make their own food.

Consumers cannot make their own food and must eat plants or other animals. There are small plant eaters like mice and large flesh eaters like lions. Mice and lions are usually the second and third link in the food chain.

Decomposers are bacteria and fungi. They cause decay or the breakdown of dead plants and animals.

Scavengers are animals that feed on dead animals. Decomposers and scavengers are consumers.

Answer the following questions by using the picture below.

1. List the producers in this habitat.
2. List the primary consumers.
3. Are there any decomposers in the picture? Why or why not?
4. If the habitat was cleared to make way for a road, how would this affect the food chain in the picture?

Concepts In Nature Program 2

Instincts In Animals

Video: 14 minutes

Lesson: 45 minutes

Major Concepts

- Instincts provide animals with important and remarkable skills.
- Instincts are inherited.
- Instincts help animals survive.
- Not all animal behavior is instinctive. They can also learn behavior.

Summary

How does a spider know how to spin a web? How does a bird know how to fly? This video program provides an easy-to-understand explanation of what instincts are, and describes how instincts direct animals through their lives. Beautiful footage of mourning doves, hares, ground squirrels, deer, foxes, and bears helps demonstrate the instincts these animals have, and the difference between instincts and learned behavior. Students will learn that from migration to hunting for food, instincts help animals survive.

Before Viewing

1. List the glossary terms on the board or on the overhead. Tell the students to try to interpret the meaning of the words as they watch the program. Discuss the terms after viewing the program. When students are in doubt of the meaning of a term assign a student to research the word in the dictionary and then have the student share the information with the class.
2. Introduce the title of the video to the class and ask them what they think the program will be about.

Glossary

Behavior—the manner in which something acts under given circumstances.

Flexible—able to adjust easily to change; adaptable.

Generation—a group of individuals born at about the same time. A period of time, usually about thirty years, between the birth of one group and the next.

Inheritance—to receive from ones parents or parent.

Instinct—a natural tendency to act in a certain way.

Involuntary—not done willingly or by choice.

Mammal—any of a class of warm-blooded animals with backbones and it gives milk to its young.

Reflex—the response to a stimulus that happens without a person's control or effort.

Focus Question

To give students a specific purpose for viewing, ask:

Is there a difference between instinct and learned behavior? Explain.

Questions for Discussion and Activities

1. What is an animal instinct and give some examples.
2. What is the strongest instinct for all animals? Would this include humans? Why?
3. What are some of the instincts of the beaver?
4. Discuss how animals get their instincts.
5. Discuss the difference between an instinct and a learned behavior.
6. Have students copy the following statements or make a xerox copy for each student.
Direct them to place an “L” after the statement if it is a learned behavior; “I” if it is an instinct; “R” if it is a reflex.
 - A. A butterfly flying. _____
 - B. Pulling you hand away from something that is hot. _____
 - C. A bear catching a fish. _____
 - D. A lion hunting for food. _____
 - E. A man blinking his eye. _____
 - F. A fish swimming. _____
7. Explain the differences and similarities for the following: instincts, involuntary actions, and reflex actions.
8. What are at least two things animals do that are considered involuntary actions?
9. What is a learned behavior that you have? Explain why you think it is a learned behavior instead of an instinct

Interdisciplinary Connections

Art

1. Have students construct spider webs of their own using sticks, glue or transparent tape, and white thread. Glue or tape the sticks together to form the web framework and string the thread inside. Hang the finished webs in the classroom windows.
(Creativity/Research)
2. Enlarge and make copies of the last page. Give one to each student. On a separate piece of paper have the students copy the animal pictures following the different stages

shown until they have a finished animal. Under each picture have the student write two instincts, two learned behaviors, and two reflective actions for each animal shown. (Creativity/Research/Reading)

3. Have students draw a circle around the base of a drinking glass. Have them draw a picture of an animal that they have researched inside the circle. Glue the drawing to a piece of cardboard or onto a small sheet of stiff poster paper. Cover the drawing with contact paper or laminate if possible. Carefully cut around the circle. Use a piece of masking tape to attach a small safety pin to the back of the button. Have students divide into small groups. Each group should place their buttons into a container. One student pulls out a button from the container and has to give one instinct, one learned behavior, and one reflex of that animal. The student who made the button will be the judge as to the answer given. The student keeps the button if all the answers are correct. Students keep drawing out buttons until all buttons are gone or the time limit is up for the game. The student with the most buttons is the winner. (Creativity/Cooperation/Listening)

Language Arts

1. Assign each student an animal to research. Have them give an oral report on their animal that includes instincts, learned behavior, and reflexes of the animal. (Creativity/Writing/Speaking/Listening)

2. Have students use the school's camcorder to record various student reflective actions, learned behavior, and instincts. (Creativity/Analytical Thinking)

After Viewing

1. Review glossary terms.
2. Review focus questions.

Concepts in Nature Program 3 **Why Animals Love Geography**

Videotape Teaching Guide
Video: 14 minutes

Major Concepts

- The earth is made up of many different surfaces that provide different homes for different animals.
- The science of geography can help us understand people's place and future in the world, as well as the place and future in the world of animals.
- People have changed the earth in countless ways which have affected most animals.

Summary

People are constantly changing the earth in many ways, and animals are affected. This video will help students understand why various animals live where they do, and how they adapt to their environment. The difference between physical geography and human geography is explained, as well as the role conservation plays in geography. From the grey squirrel of the East coast, to kangaroo rats that thrive in the Great Plains, to mountain goats, to the animals that live in the Pacific Ocean, students are shown that the human presence effects animals in different ways, including where and how they live.

Before viewing

Write the glossary words on the chalkboard or overhead. Tell the students to try to interpret the meaning of the word as they watch the program. Discuss the terms after viewing the video. When students are in doubt of the meaning of a term, assign someone to research the word and share the definition with the class. You may wish to have the students place the terms and definition in their journals. Have each student write a sentence using the term properly. Tell the students the title of the video and ask them what they think the video will be about. Write their statements down on the chalkboard or overhead and discuss their statements after viewing the video.

Focus Question

To give students a specific purpose for viewing, ask:
How does geography affect many animals?

Glossary

Arid- having little rainfall; dry; parched.

Conservation- preserving or protecting from loss, harm, or waste, especially the preserving or protecting of natural resources, such as forests, rivers, and wildlife.

Deciduous- of a tree, shrub, or other plant shedding its leaves each year.

Density- the quality of being closely packed together; thickness, compactness.

Environment- all of the objects, influences, and conditions that surround and affect the development of a living thing.

Geography- the study of the earth's surface, countries, and people.

Great Plains- the middle section of the United States. Contains the grasslands of the country.

Habitat- the area or region in which an animal or plant naturally lives or grows.

Mammal- an animal that gives milk to its young. Almost all mammals give birth to live offspring rather than lay eggs.

Pasture- a field or other tract of land used for the grazing of cattle, sheep, or other animals.

Physical Geography- the study of the physical features of the earth, such as land formation, climate, and vegetation.

Prairie- a large, level or gently rolling grassland without trees.

Range- a large area of open land over which livestock roam and graze.

Refuge- a place providing shelter, protection, or safety; haven.

Topography- the detailed description or drawing of the natural and artificial surface features of a place or area, such as hills, valleys, lakes, roads, and bridges.

Questions for DISCUSSION

1. What is the difference between physical and human geography?
2. Why do you think that there may be more ground hogs than grey squirrels in the Eastern ranges?
3. What are some of the ways grey squirrels have adapted to the changing of their environment by man?
4. What are some of the causes that have reduced the bison population?
5. Why are the grasslands the leading area in the United States for raising "red meat"?
6. Discuss why conservation is so important to geography and our animal population.
7. Why are there so few different species of animals living at the peaks of mountains?
8. Why do large animals, such as mountain lions and elk, tend to live in the mountain areas?

9. What is a rain shadow?

Interdisciplinary CONNECTIONS

Language Arts/Science- Invite the local forest ranger to class to talk about the animals that are common to the area now and any animals that once were commonly found there. Depending upon the grade level, the invitation can be written by the whole class or a small group. (Listening/Writing)

Assign each student, or a group of students, an animal to research. Have them write a report that includes as many facts about their animal as possible, including what they eat, their homes and what their mechanism for survival is.

(Research/Writing/Cooperation/Interpretation)

Assign a student or a group of students to make a chart of the common animals of their region. Have them include their habitat, diet, method of survival in winter, special adaptations, and other factors of importance.

(Research/Creativity/Writing/Cooperation)

The following assignment may be copied and given to each student as a classroom assignment or for homework.

A cause makes something happen. An effect is what happens. For each pair of sentences indicate which is the cause and which is the effect.

1. a. Whales have blubber that was used to make whale oil.
b. More whales were killed than were born.
2. a. People hunt and kill many wild animals.
b. Many wild animals are important for their meat and hides.
3. a. Some wild animals no longer have places to raise their young.
b. Land is often cleared because people must build roads and houses.
4. a. Many kinds of elephants are now endangered.
b. The ivory from elephant tusks is used to make beautiful objects.
5. a. The dodo bird is extinct.
b. Today you can see a dodo bird only in a picture.
6. a. Condors must be protected in a wildlife refuge.

b. There are less than 50 condors alive today.
(Analytical Thinking)

Social Studies- Reproduce the map on the last page. Each student should receive a copy. Tell them to use different colors to color in the Eastern Region, Midwest Region, Mountain Region, and the Pacific Region. Have them find animals that live in each of the regions. They may either write the names of the animals or find a picture of the animal and paste it on the map in the proper region. You may wish them to fill in the names of the states in each region.
(Research/Creativity)

Science- Take a trip to the local zoo and assign each student or group of students an animal to observe while there. Have them list what they observe about the animal. If your school has a camcorder you may wish to record their trip and have each group show their animal on camera and tell what they have observed.
(Observation/Interpretation/Speaking)

Art- Have students pick an animal from any region. Have students make a mobile using pictures of their animal and the vegetation in its habitat.
(Research/Creativity/Organization)

After Viewing

1. Go over the glossary terms.
2. Go over the focus question.
3. Check statements they made prior to seeing the video and have them state which ones were correct and which ones were not.
4. Have each student state one new thing they learned from the video.

Concepts in Nature Program 4 Adapting to Changes in Nature

Videotape Teaching Guide
Video: 14 minutes

Major Concepts

- The world of nature is always changing.
- One way or another every animal adapts from daylight to darkness.
- Every season brings its own changes to which animals must adapt.
- As animals adapt to one thing they may lose ability somewhere else.
- Adaptation is a matter of survival for animals.

Summary

The world of nature is always changing. This program explains how animals cope both with routine and unpredictable changes that nature brings, from the changing seasons, to changes in climate, to destruction of habitats. Fascinating footage of deer, a great horned owl, rabbits and bears helps students understand why some animals seem to adapt to change better than others. Finally, the role that humans play in creating change is questioned and analyzed from different points of view.

Before Viewing

Write the glossary words on the chalkboard or overhead. Tell the students to try to interpret the meaning of the word as they watch the program. Discuss the terms after viewing the video. When students are in doubt of the meaning of a term, assign someone to research the word and share the definition with the class. Tell the students the title of the video and ask them what they think the video will be about. Write their statements down on the chalkboard or overhead and discuss their statements after viewing the video.

Focus Question

To give students a specific purpose for viewing, ask:
Do animals ever stop adapting to changes in nature?

Glossary

Adapt- to change, to meet requirements, or to fit new uses; modify; alter.

Biome- area or region which has a characteristic type of plant and animal life.

Dominant- having the main influence, authority, or control; most important.

Dormant- in a sleeping or inactive condition.

Evolution- gradual change in groups of plants, animals, or other living things, resulting from tiny changes in the genes that are passed from one generation to the next over many years.

Extinct- no longer in existence.

Habitat- the area or region in which an animal or plant naturally lives or grows.

Hibernate- to spend the winter in a dormant or inactive state, as do many animals, such as bears, squirrels, snakes, most amphibians, a few fish and birds, and certain insects.

Insecticide- a substance for killing insects and similar pests.

Mammal- any of a class of warm-blooded animals with backbones, the females of which have mammary glands. Almost all mammals give birth to live offspring rather than lay eggs.

Mature- having reached full growth or development.

Migrate- to move seasonally or periodically from one region or climate to another.

Succession- transition in the species composition of a biological community, often following ecological disturbance of the community; establishment of a biological community in an area virtually barren of life.

Questions for DISCUSSION

1. Which is the most difficult season for animals to adapt to? Explain.
2. How do hibernating animals get their nourishment during hibernation?
3. Name at least three ways animals adapt for winter.
4. Why don't all weasels shed their brown coats for winter?
5. What are some of the things that can affect an animal's habitat?
6. What is the one thing the white tail deer must have in its habitat?
7. Discuss why you think dinosaurs disappeared from the earth.
8. What happens to an animal when it can't adapt? Explain.
9. How would you describe the development of a new species?
10. Discuss how man adapts to his environment.

Interdisciplinary CONNECTIONS

Language Art/Science- With the help of the school librarian have a student select animal books to be used in the classroom until the unit is completed. Have the books displayed on a display table. Have students bring in animal pictures and animal models to be added to the display. They might also want to bring in their favorite animal books to be shared with classmates. Use this center as a free-time choice or research center.
(Organizing/Reading/Research)

Invite the local forest preserve ranger to class to talk about the animals that are common to the area or once were common in the area. Depending upon the grade level, the

invitation can be written by the whole class or a small group.
(Listening/Writing/Interpreting)

Assign each student an animal to research. Have them give an oral report on how their animal adapts to the various seasons and what its habitat is like.
(Research/Writing/Speaking/Cooperation/Interpretation)

Assign a group of students to prepare an oral report on the following biomes: 1. Tundra
2. Taiga 3. Deciduous forest 4. Tropical rain forest 5. Grassland 6. Desert. The students may wish to draw a picture of their assigned biome to go along with their oral report.
(Research/ Writing/Speaking/Cooperation/ Interpretation)

Assign students to work in small groups. Each group should pick out one endangered animal specie and write a report on that animal. Their report should include the name of the animal, body traits, behavior, its method of protection, food, the habitat it lives in, and why it is endangered. They may wish to draw a picture of their animal. If the school has a camcorder you may wish to record their reports and show them to other classes.
(Research/Writing/Speaking/Cooperation/ Creativity)

Science Experiment- To show students community succession do the following: prepare a hay infusion culture by adding a handful of hay or dry grass to 1 liter of water and bring to a boil. Add a few grains of rice, let mixture stand a few days, then add a few ml of pond water. (You may wish to ask the science teacher in your school for help in this experiment.) Place the culture in a jar. Each day remove a drop of the culture liquid and observe it under a microscope with low and high power. Have students record the changes from day to day in the protozoa species that are present in the culture. Make sure you have shown students what the protozoa will look like under the microscope. If all goes well with the experiment, in time the protozoa will be gone, and the culture will be taken over by bacteria, yeast, and molds. Showing that the dominant populations are replaced by new dominant populations.
(Observation/Writing/Cooperation)

Art- Divide the class into small groups. Have each group select one of the six biomes. Have them cut out pictures from old magazines of plants and animals found in their biome. Have them make a mobile with their pictures.
(Creativity/Research/Cooperation)

Poetry- Copy the poem written below on the chalkboard or overhead. Select a student or students to read the poem to the class. After hearing the poem, have students copy the poem for handwriting practice then have them illustrate the poem. Display pictures in the classroom. (Reading/Listening/Creativity)

Waiting

Dreaming of honeycombs to share
With her small cubs, a mother bear
Sleeps in a snug and snowy lair.

Bees in their drowsy, drifted hive
Sip hoarded honey to survive
Until the flowers come alive.

Sleeping beneath the deep snow
Seeds of honeyed flowers know
When it is time to wake and grow.
Harry Behn

Social Studies- Assign a group of students to research the route of some migrating animals in the United States. Have them show their route on a map of North America. Use different colors to represent the different animal routes.
(Research/Analysis/Organization)

After Viewing

1. Review the glossary terms.
2. Review the focus question.
3. Change concepts to questions to make sure students understand the major ideas.
4. Have students state one new fact they learned from watching the video.

FIND A WORD

Hidden inside the box are the names of eight words used in the video. Look up, down, forward, and diagonally. Circle the words as you find them.

These are the words to look for:

DORMANT EXTINCT HIBERNATE BIOME SUCCESSION
ADAPT MAMMAL MIGRATE

FAETSUWENOPSUM
KDORMANTLQCUBY
HABITATTDSOCVR

IPWMNPAIGHICWA
BTXEITSNKLNEHJ
EABSLGVCONCSGT
RTUMFERTHPLSEI
NCKX MNBALSYIFK
ALTOCUEGTIZODM
TJIMAMMALEENHL
EBDORMZNTKCQEO
VHWTZPSLAIBYJU

Concepts in Nature Program 5 **Why Do Animals Look the Way They Do?**

Videotape Teaching Guide
Video: 14 minutes

Major Concepts

- Animals come in a variety of shapes, sizes, and colors.
- Animals look the way they do for purposes of survival.
- Every specie has special features to take advantage of its niche.
- There are at least one million animals on the earth.

Summary

The animal world is full of strange but wonderful creatures, each one unique in its own way. Students are given a closer look at such animals as elephants, humming birds, barn owls, porcupines and walking sticks through close-up footage, and learn that even the most unusual creature has a purpose to its design. Whether adapting to the environment, taking advantage of a resource, or avoiding competition, this program clearly explains the reasons that animals look the way they do—to help them survive.

Before Viewing

Introduce the title of the video to the class and then discuss what they think the video will be about. List the glossary words on the chalkboard or overhead. Tell the students to try to interpret the meaning of the word as they watch the program. Discuss the terms after viewing the video. When students are in doubt of the meaning of a term, assign someone to research the word in the dictionary and share the definition with the class. Have students fold a piece of notebook paper into three equal parts. Head each section as

follows: What I think I know, What I would like to know, and What I have learned. Have a discussion with the students on the first two columns, writing their answers in the proper columns. Do not fill in the last column until the topic is finished.

Focus Question

To give students a specific purpose for viewing, ask:

Why do different species of animals look different from each other?

Glossary

Amplify- to add to or expand; enlarge on.

Camouflage- any disguise, appearance, or behavior that serves to conceal or deceive.

Habitat- the area or region in which an animal or plant naturally lives or grows.

Mammal- any of a class of warm-blooded animals with backbones, the females of which have mammary glands.

Niche- the area within a habitat occupied by an organism.

Organism- a living individual; plant or animal.

Predator- an animal that lives by eating other animals.

Species- a classification of living things.

Variety- a different kind or form of something.

Questions for DISCUSSION

1. Name as many animals as you can that were shown at the beginning of the program.
2. Discuss and name at least three different possible reasons for the designs on animal skin. Give examples.
3. Why do you think the female of various species are less colorful than the male of the species?
4. Do you think there is a difference in the camouflage used by various types of animals? Explain.

5. How does the body structure of the elephant, giraffe, and antelope help them survive?
6. What do you think is the main purpose of the design of each animal specie?

Interdisciplinary CONNECTIONS

Language Arts- Invite a speaker from the local zoo or pet store to come to your class to tell the students how the physical appearance and structure of animals in the region help them survive. Depending on the grade level, the invitation can be written by the whole class, a small group, or an individual student. (Listening/Writing)

Have each student select an animal to research. Have them include what biome the animal lives in, why the animal looks the way it does and so forth. Students should do both a written and oral report on their findings.
(Research/Writing/Speaking/Creativity)

Have the school librarian select appropriate reading level animal books for your classroom. Prepare an animal reading table using these books and any favorite animal books your students might want to share with classmates. Pictures and models of animals could be added for interest. Use this center as a free-time choice or research center. (Reading/Writing)

Art- Have students work with the art teacher in making three dimensional animals using paper mache. The animal should correspond to the one that the student has selected to report on.
(Creativity)

Science- Have the students write the terms below under their correct headings of:
Behavioral Adaptations Structural Adaptations

large canines, nest-building, webbed feet, hibernation, thick fur, pointed beak, migration, sharp quills. (Analytical Thinking, Research)

Assign some students to research how turtles and frogs survive the winter even though the pond or lake the animals live in freezes.
(Research/Writing/Speaking)

Experiment- To be assigned to two or three students to do and present to the class.

Remove the labels from two tin cans. Coat the outside of one can with glue. Put a layer of cotton over the glued surface. Wait a few minutes for the glue to dry. Fluff the cotton outward. Fill both cans with the same amount of hot water. Record the temperature of the water every five minutes for the next half hour. Make a graph of the temperature findings for the 30 minute period that shows the results for each can. Have the students answer the following questions:

1. Which can lose heat more quickly?
2. Explain the difference between the temperature in the two cans.
(Observation/Interpretation)
3. How do you think animals such as whales keep warm in cold water, even though they have little hair?
(Research/Speaking/Analytical Thinking)

Assign some students to draw or construct an imaginary animal that can survive in the desert. The givens are as follows: feeds on insects in the early evening and morning, during the day it burrows into the ground to avoid the heat, and it is food for a large ground-dwelling bird. Have the students list at least three or four structural adaptations that will help their animal survive.

(Analytical Thinking/Creativity/Speaking/Writing/Cooperation)

Assign some students to give short reports on the following:

1. How are the porcupine and armadillo protected from enemies?
2. Describe the adaptations for movement of the kangaroo, cheetah, and vulture.
3. Describe what is meant by protective coloration and give two examples.
4. Give an example of protective resemblance.
5. Define mimicry and give an example.
(Research/Writing/Speaking)

Social Studies- Assign some students to research the biomes in North America and list the average temperature, average precipitation, and what types of plants and animals would be found in each biome. (Research/Writing/Cooperation)

Have students take a camcorder or camera to the local zoo and record a number of animals. Have them describe what they observed about the animal in relationship to its behavior and structural adaptation. If the recording was done on a camcorder they can place their report on the audio section of the tape. If it was done with a camera the report can be done on an audio tape and pictures could be done in slide format.
(Creativity/ Interpretation/Writing/Cooperation)

After Viewing

1. Go over the glossary terms with students.
2. Fill out the "What I learned" section of the folded paper.
3. Convert major concepts into questions to make sure students understand main ideas.
4. Ask students to tell you one thing they learned from this program.
5. Go over the focus question with students.

Concepts in Nature Program 6 **Animal Communication**

Videotape Teaching Guide
Video: 14 minutes

Major Concepts

- Animals must rest, drink, and communicate to survive.
- Communication helps animals exchange important information.
- Misunderstanding communications in either the animal or human world can cause problems.

Summary

This program provides simple explanations of how animals communicate in order to help them survive in nature. Beautiful footage of bees, cicadas, deer, birds, and bears help to demonstrate the types of communication each of these animals use, as well as the purpose of the communication. The importance of communication for both animal and man is made through easy-to-understand explanations. The program will help students

to understand the importance of the chirp of a bird, the vibration of the cicada, the dance of the bee, and the body language of the deer and bear.

Before Viewing

Write the glossary words on the chalkboard or overhead. Tell the students to try to interpret the meaning of the word as they watch the program. Discuss the terms after viewing the video. When students are in doubt of the meaning of a term, assign someone to research the word and share the definition with the class. You may wish to have the students place the terms and definitions in their journals. Have each student write a sentence using the term properly.

Tell the students the title of the video and ask them what they think the video will be about. Write their statements down on the chalkboard or overhead and discuss their statements after viewing the video.

Focus Question

To give students a specific purpose for viewing, ask:

Why do you think it's essential for living things to be able to communicate?

Glossary

Chatterbox- person who talks too much.

Communicate- to make known or understand; give knowledge or information.

Dominance- having the main influence, authority, or control; most important.

Emotion- strong feeling; a particular feeling, as love, hate, happiness, or sorrow.

Gesture- a movement of the head, body, or limbs, used to express a thought or feeling.

Membrane- a thin layer of tissue that lines a cavity or passage in the body or covers a body surface.

Pheromone- any of various chemical substances secreted by an animal that influence specific patterns of behavior by other members of the same species.

Predator- an animal that lives by preying upon others.

Technology- the use of scientific knowledge for practical purposes, especially in industry.

Territory- a particular area, such as a breeding or nesting ground, in which one or more animals live and from which they keep out intruders of the same or other species.

Vary- to change or make different.

Behavioral Outcomes

1. Students should be able to name a minimum of two animals and tell how they communicate.

2. Students should be able to name at least three ways various animals communicate.
3. When the major concepts are placed in question form the students should be able to answer at least two correctly.
4. Students should be able to explain what the purpose of the bee dance is in the beehive.

Questions for DISCUSSION

1. What information can animals communicate to one another?
2. List some ways humans communicate.
3. List some ways animals communicate.
4. What are some of the reasons birds sing?
5. How do some insects make sounds and what is the purpose of their sounds?
6. What mosquito is most annoying to humans and why?
7. How do bees communicate the location of flowers to the other bees in the hive?
8. How are the Polyphemus moth attracted to one another?
9. What is the purpose of the deer scrape?
10. How does a male deer communicate dominance to the other deer in the herd?
11. What do you think is meant by, "mean what you say, and say what you mean."
12. What do you think would happen if animals or humans could not communicate?

Interdisciplinary CONNECTIONS

Language Arts/Science- With the help of the school librarian have a student select animal books to be used in the classroom until the unit is completed. Have the books displayed on a display table. Have students bring in animal pictures and animal models to be added to the display. They might also want to bring in their favorite animal books to be shared with classmates. Use this center as a free time choice or research center. (Research/Organization)

Assign a student or group of students to make a chart of the common animals of their region and next to the animals name place how they communicate.
(Research/Writing/Creativity)

Invite the local forest preserve ranger to class to talk about the animals in the region and how they communicate. Depending upon the grade level, the invitation can be written by the whole class or a small group.
(Writing/Listening)

Have students with pets describe how their pet communicates with them when they want food, want to play or want to go outside.
(Interpretation/Speaking)

Have students write a poem or story, about a favorite animal and some ways the animal can communicate. You may also wish to have them draw a picture of their animal to go along with their written work.
(Writing/Creativity)

Duplicate the last page of this guide so each student receives a copy. Use as classroom assignment or as homework.
(Comprehension)

Take the class to the local zoo. Assign students individual animals to observe. Provide the students with an audio tape recorder or camcorder in order to record the ways their animal communicated with other animals.
(Observation)

Science- Have students place their heads down on their desk. Make sure their eyes are covered so they cannot see. Tell them you are going to drop various objects on a desk or the floor. If they think they know what the object is they are to raise their hand without looking and tell you. If they are correct they get a point. If they are incorrect they go to a place in the room marked "Eaten by a Predator." (Explain to the class what a predator is. When they guess incorrectly it's as if they didn't hear the animal coming, so the predator was able to eat them.) This should help students understand the importance of sound to survival.
(Following Directions/Listening/Cooperation)

Divide the class into small groups. Each group is to make up a sound or movement to represent a feeling. Have each group come to the front of the class and demonstrate their sound or movement. Then call on another group to try to guess what the first group

was trying to communicate. Each group gets a chance to guess until all groups have had a turn or one group picked out the right answer. The next group should go to the front of the class and the whole process should be repeated again until all the groups have had a chance to demonstrate.

(Cooperation/Interpretation/Listening)

After Viewing

1. Go over the glossary terms.
2. Go over the focus question.
3. Go over behavioral objectives.
4. Have each student state one new thing they learned from the video.

FIND A WORD

Hidden inside the box are the names of eight words used in the video. Look up, down, forward, and diagonally. Circle the words as you find them.

These are the words to look for:

Communicate	Pheromone	Predator	VARY	GESTURE									
MEMBRANE		EMOTION	SCRAPE										
a	c	U	a	t	H	e	r	b	Y	x	t	z	v
m	o	e	p	w	f	y	s	e	c	l	e	q	a
g	m	r	m	h	r	t	v	l	p	h	d	b	r
u	m	u	j	o	e	k	d	q	n	a	l	a	y
n	u	t	p	a	t	r	l	x	k	z	r	n	r
x	n	s	e	y	l	i	o	q	w	u	i	c	E
j	i	e	v	w	y	s	o	m	i	a	t	z	s
t	c	g	j	k	l	u	r	n	O	E	k	j	t
u	a	m	n	o	y	x	a	i	e	N	I	T	n

e t z q i k r f j x s E p O
m e m b r a n e l f j a t i
n o p r e D a t o r y x k

Concepts in Nature Program 7

Animal Families

Videotape Teaching Guide
Video: 15 minutes

Major Concepts

1. The purpose of animal families, like human families, is to help the young to be self-sufficient and become the creatures they were meant to be.
2. Not all animals take care of their offspring.
3. Not all birds incubate for the same period of time.
4. Many bird species are born blind and incapable of walking. (Altricial)
5. An animal family is made up of a father or mother or both and their offspring.

Summary

Similar to humans animals have families of their own. The animal young require differing degrees of care. Through beautiful wild nature photography the viewer will be taken into the realm of nature to view how various animals care for their young. The student will be introduced to both mammal and non-mammal animals and their approach to parenthood. The viewer will see how some animals are left to take care of themselves while other are protected and cared for by their parents. In this program various birds, amphibians, and reptiles will represent examples of animal families.

Before Viewing

List the glossary terms on the board or on the overhead. Tell the students to try to interpret the meaning of the terms as they watch the program. When students are in doubt of the meaning of a term assign a student to research the word and then have the student share the information with the class.

Have students dedicate a section in their journal for writing down any new terms they encounter while studying about animals.

Focus Question

To give students a specific purpose for viewing, ask: How are animal families similar to human families?

Glossary

Amphibian - any of a class of cold-blooded animals with backbones, including frog, toads, and salamanders, usually living in or near water and having moist, smooth skin.

Brood - the young of a bird, hatched or cared for at the same time.

Covey - a small flock of partridges, quail, grouse, or similar birds.

Flock - a group of animals of one kind gathered or herded together.

Herd - a group of animals, especially large animals, such as cattle, sheep, reindeer, or elephants, feeding, traveling, or being kept together.

Imprinting - to fix firmly in the mind or memory.

Incubate - to sit on and keep eggs warm for hatching.

Mammal - any of a class of warm-blooded animals with backbones, the females of which have mammary glands. Almost all mammals give birth to live offspring rather than lay eggs.

Precocial - of or characterizing birds that are covered with down and capable of moving about when first hatched. (For teacher use)

Predator - an animal, such as a wolf, lion, or hawk, that lives by preying on other animals.

Reptile - any of a class of cold-blooded animals with backbones, including lizards, snakes, crocodiles, and turtles.

Wean - to make a child or young animal used to food other than the mother's milk.

Questions for Discussion

1. Discuss what wild animals have in common with humans.
2. Do all animal parents take care of their young? Name a few that do not. Why do you think this is so?
3. Explain what would happen if some animals did not lay many eggs.
4. Discuss why some baby animals need more care than other baby animals.
5. What are some of the things mother animals try most to protect their babies from?
6. Why do you think the mother bear paid little attention to her cub when he was climbing the tree?
7. What do you think is meant by the statement, "Nature is not always kind."
8. How does the feeding process differ between a baby mammal and a non-mammal?

Interdisciplinary CONNECTIONS

Language Arts/Science - With the help of the school librarian have students select animal books about baby animals to be used in the classroom until the unit is completed. Have the books displayed on a display table. Have students bring in animal pictures and animal models to be added to the display. They might also want to bring in their favorite

animal books to be shared with classmates. Use this center for free time choice or as a research center. (Research/Organization)

Invite the local veterinarian to the classroom to discuss the growth and development of various baby animals. Depending upon the grade level, the invitation can be written by the whole class or a small group.

(Listening/Writing/Interpreting)

Assign each student an animal to research that includes the animal's habitat, its possible predators, how parents care for their young, the foods that it eats and any other special information about the assigned animal. (Speaking/Writing/Research/Organization)

Have students make a book about young animals and their parents. Put the finished book on the animal display table in the room. (Research/Organization)

Have students keep a chart of the animals that they see in their neighborhood. Have them list the name of the animal and whether it is a mammal or non-mammal. Have them draw a picture of the animal and what they think the baby animal would look like. A class book could be made from the pictures titled, "Our Neighborhood Animals."

(Observation/Writing/Creativity)

Kangaroos are a special group of mammals. These mammals care for their young in a way that is different from other mammals. Assign some students to research the kangaroo to find out how it cares for its young. Also have them find out what other animals care for their young in the same way. They should tell the class the special name given this group of mammals.

(Research/Interpretation/Writing/Speaking/Organization)

Have students take a camcorder or camera to the local zoo and record the animals in the baby zoo. Have them describe what they observed about the animals in relationship to their behavior with their parents and siblings. If the recording was done on a camcorder they can place their report on the audio section of the tape. If it was done with a camera the report can be done on an audio tape and pictures could be done in slide format.

(Creativity/Interpretation/Writing/Cooperation)

Art -

Have students draw a circle around the base of a drinking glass. Have them draw a picture inside the circle of a baby animal that they have researched. Glue the drawing to a piece of cardboard or onto a small sheet of poster paper. Cover the drawing with contact paper. Carefully cut around the circle. Use a piece of masking tape to attach a small safety pin to the back of the button. Have students divide into small groups. Each group should place their buttons into a container and has to give one piece of information about that animal. The student that made the button will be the judge as to the correctness of the answer given. The student keeps drawing out buttons until all buttons are gone or the time limit is up for the game. The student with the most buttons is the winner. Every button should be returned to the person that made it.

(Creativity/Cooperation/Listening)

Math -

Assign some students to pretend that they have received a ten-gallon aquarium as a birthday gift. They also have been given \$75.00 to buy equipment for their tank and fish. Have them list all the equipment they think they would need. Have them price out the equipment by going to a local pet store or through newspaper advertisements. Have them total the cost of the equipment as well as how much they will have left to buy fish. Have them check fish prices and decide how many fish they can purchase. Will there be any money leftover? (Research/Math/Decision Making)

After Viewing

1. Go over glossary terms with students
2. Convert major concepts into questions to make sure students understand the main ideas.
3. Go over Focus Question with students.
4. Have students give one new thing they learned from watching the video program.

Concepts in Nature Program 8

Where Animals Live

Videotape Teaching Guide

Video: 15 minutes

Major Concepts

1. Animal shelters provide a safe place to sleep, and a safe place to care for their young along with protection from the weather.
2. There are different types of shelters for different types of animals.
3. Animals need the right habitat to build their shelters.
4. Animal bodies are adapted to help them in making their shelters.

Summary

Like people, animals need shelter, one of the three basics of life. Shelters provide places to sleep, to feel safe, to stay out of bad weather and to care for young. Animals use an array of shelters, ranging from burrows and caves to lodges and nests. Many factors affect shelter selection, including the user's physical design and lifestyle. Viewers will learn about ecosystems, habitats and niches while seeing incredible wildlife footage.

Before Viewing

List the glossary terms on the board or on the overhead. Tell the students to try to interpret the meaning of the terms as they watch the program. When students are in doubt of the meaning of a term assign a student to research the work and then have the student share the information with the class. (The term biome and ecosystem is not used in the video but you may wish to introduce these terms to your students; depending on their grade level.) Introduce the title of the video to the students and then have them discuss what they think the video will be about.

Focus Question

To give students a specific purpose for viewing, ask:

Why are there so many different styles of shelters for animals?

Glossary

Adapt - to change to meet new requirements or to fit new uses; modify; alter.

Biome - a complex community of plants and animals living in a particular geographical area with a particular climate.

Burrow - a hole dug in the ground by an animal, such as a rabbit or fox, for living or hiding in.

Ecosystem - all the living things within a particular area and their relationship to each other and to their physical environment.

Habitat - the area or region in which an animal or plant naturally lives or grows.

Hibernate - to spend the winter in a dormant or inactive state, as do many animals, such as bears, squirrels, snakes, most amphibians, a few fish and birds, and certain insects.

Lichen -any of a large group of plant-like organisms found on all parts of the world, usually growing on trees, trunks, rocks, or the ground.

Questions for Discussion

1. Explain the purpose of the mound around the prairie dogs home.
2. Give at least two reasons why snakes go underground.

3. Discuss the relationship of the cricket to the sand wasp.
4. Explain the stages of development that a hornet must go through.
5. What is the reason for the two or more entrances a prairie dog has to his borrow?
6. What are some of the shelters animals live in? Name at least three.
7. What type of material do hornets use to make their shelter? How is it different from bees?
8. What animal needs two types of homes? Explain.
9. Compare some of the body adaptations different animals have for both building their shelter and securing food.
10. Explain why an animal cannot build their shelter anywhere they want.
11. People clear land to build houses and roads. What do you think happens to plants and animals living in these places? What do you think is the purpose of a wildlife refuge?

Interdisciplinary CONNECTIONS

Language Arts/Science -

Assign some students to research the types of animals that live in their community and the types of shelters these animals built. Have them give their report to the class.
(Research/Writing/Speaking/Cooperation)

Have a group of students find pictures of different animals and the shelter they use. Have the students prepare a display board with the pictures making sure they label each animal and connect each animal to its particular shelter. This display board could become a matching activity for primary grades by having only the shelters attached permanently to the display board and the animals kept to the side in an envelope the students could reach on their own. Primary students could then pin animals to their correct shelter. (Research/Creativity)

Have students construct simple dioramas showing animals in their homes.
(Research/Creativity)

Invite the local forest preserve ranger to class to talk about the animals that are common to the area or once were common in the area and the types of shelters they built. Depending upon the grade level, the invitation can be written by the whole class or a small group. (Research/Writing/Listening)

Take the class to the local zoo. Assign students individual animals to observe. Provide the students with an audio tape recorder or camcorder in order to record their animals and the shelter they are kept in. Have each student give their report to the entire class. (Speaking/Observation/Creativity)

Assign students the words from the glossary list. Have them look up the words in the dictionary and write down the page number each word can be found on with at least one definition. As an extra credit activity have students write a sentence for each word. (Dictionary/Skills/Writing)

Social Studies -

Assign some students to research the biomes in North America and list the average temperature, average precipitation, what types of plants and animals would be found in each biome and the type of shelters the various animals make. (Research/Writing/Interpretation/Speaking/Cooperation)

Art -

Have students work with the art teacher to make three dimensional animals and their shelters. If possible, using paper mache. (Creativity)

Word Find

Hidden inside the box are the names of eight words used in the video. Look up, down, forward, backward, and diagonally. Circle the words as you find them.

These are the words to look for:

Burrow Hibernates Lichen Hornet Adapt Habitat Ecosystem
 Bear

A	C	J	A	T	H	E	R	T	I	C	H	E
M	E	T	D	Y	S	Q	A	L	E	V	A	K
G	C	E	A	D	V	T	L	P	H	C	B	R
U	O	N	P	A	I	Q	N	A	L	T	U	B
X	S	R	T	B	L	I	C	H	E	N	B	K
J	Y	O	A	T	A	H	R	T	A	E	F	S
T	S	H	B	U	R	R	O	W	A	E	A	B
U	T	N	V	R	E	B	O	R	Y	H	Z	E

E E Z Q I A R F T A E X A
G M H I B E R N A T E C R