Lesson 2

Essential Question

What Are Some Animal Adaptations?

Preview Lesson Content

Objectives  Read the objectives with students. Refer to them throughout the lesson.

Vocabulary  Have students write each word on an index card. Then have them write what they think the term means, using the format /think (vocabulary term) means/ and completing the sentence. As students learn about each word, have them write the definition on the back of the index card.

Engage

Use this page and the Try This! activity to engage students, determine students’ background knowledge, and create excitement about the lesson content.

Get Ready to Learn

How did God make animals different? Can you think of animals that have special adaptations that help them survive? Each adaptation an animal has helps it survive. Some of these adaptations serve more than one purpose. A rhinoceros, for example, has horns that it uses for several purposes. If a predator such as a lion attacks, a rhino will use its horn to protect itself and its young. Rhinos also use their horns to fight with other rhinos over territory, or for a mate.

Try This!

What is your favorite animal? List what you know about the adaptations of this animal. How does the animal use these adaptations to meet its needs? Describe the adaptations of your animal to a partner and ask how the animal uses the adaptations to survive. If you are unsure about the adaptations of an animal, research it.

Science Background

The meaning of rhinoceros is “horn-nosed.” Rhinoceros horns grow from the skin. They are made of keratin, the same material human hair and nails are made of. Rhinoceros horns are not attached to the skull and they are always growing. If the horn is broken, it grows back.

Two species of rhinoceros live in Africa, the black rhinoceros and the white rhinoceros. These rhinoceros have large, well-developed horns. Three species of rhinoceros, the Sumatran, Indian, and Javan, live in Asia. Unlike the other two-horned rhinoceros, the Javan and Indian are one-horned rhinoceros. The Asian species do not use their horns as weapons because they are small. The horns are mainly used for courting, digging, and other activities.
The Beaks Have It!
How is the shape of a bird’s beak related to what it eats?

SAFETY: Never eat or drink anything in science class.

Materials
• beaks: straws, tweezers, nutcrackers, chopsticks, toothpicks, spoon
• food: gummy worms, sunflower seeds, plastic foam pieces, marshmallows, rice, colored water in a cup
• paper plates • plastic cup
• stopwatch or clock with second hand

Step 1 Place each food on a different paper plate. Keep the water in the cup.

Step 2 Develop a hypothesis that has to do with the tools. Which beak will work best for eating the food or drinking the water?

Step 3 Investigate. Choose a “beak” to test first. Use the stopwatch to time how much of each type of food you can pick up and place in an empty cup in 30 seconds with your chosen beak.

Step 4 Record your data in a chart. Repeat Steps 3 and 4 for the next “beak.”

Create Explanations
1. How is the shape of a bird’s beak related to what it eats?

2. How did using models help you conduct an investigation about bird beaks?

Discover
Use the inquiry activities as an opportunity for students to perform hands-on investigations and think like a scientist.

The Beaks Have It!
How is the shape of a bird’s beak related to what it eats?

Remind students never to eat or drink anything in science class.

Preparation and Tips
Demonstrate how to use each tool. Be sure students understand these models of bird beaks. Display pictures of actual bird beaks and relate them to the tools. For example, the straw is like the long, tubular beak of a hummingbird and the toothpick is a model for the sharp bill of an eagle. Likewise, the different foods are models for bird food. For example, the colored water is similar to flower nectar that hummingbirds eat.

Predict Which model “beak” will work best for eating each food?

Have students use their Science Journals to record their work for this inquiry.

Inquiry Practice Tip
Conduct Investigations Explain to students that when they investigate, they make a plan and then try their ideas.

Expected Results
Students should realize that birds’ beaks come in many sizes and shapes and are suited to the food they eat.

Create Explanations
1. Different beak shapes allow birds to eat different types of food.

2. Sample answer: I cannot directly observe birds in class, so I can use a model beak to see how beak shape affects the type of food a bird eats.
Physical Adaptations

When you dress, you may choose colors, patterns, and shapes that attract attention. But suppose you did not want anyone to notice you. What colors, patterns, or shapes would you wear then?

Animals cannot choose their color, pattern, or shape. These are physical, or structural, adaptations. Many animals have physical adaptations that serve as a disguise. They can hide out in the open because they blend into their environment. The adaptation that allows some animals to blend into their surroundings is camouflage.

Color, patterns, and body shape are adaptations that help camouflage both predators and prey. Because a polar bear’s fur looks white, for example, it can blend in with the snow. The polar bear can watch its prey without being seen, and attack when the time is right. The spots on a fawn camouflage it from predators in the light of the forest. An insect shaped like a twig is camouflaged by its shape.

Think About It

What advantage does camouflage give to the animal? Sample answer: A tiger’s stripes help it hide in the jungle and sneak up on its prey without being seen.

Teach Science Concepts

For many animals that are both predators and prey, being able to blend in with their surroundings is important for their survival. Students should understand that camouflage helps prey hide from predators, and helps predators sneak up on prey unseen.

What camouflage does a fawn have? Its spotted fur color blends in with the vegetation and the ground in dappled sunlight.

How might camouflage help a tiger? The tiger can sneak up and surprise its prey without being seen.

Scaffolded Questions

Approaching Level What would happen if a duck did not have webbed feet? The duck would not be able to swim very well since webbed feet are an adaptation for swimming. Webbed feet push more water back.

On Level Katydid’s look like leaves. If a katydid was on a bush, and a predator came by, what might happen? If the predator doesn’t eat leaves, it most likely will not eat the katydid since it looks like a leaf.

Above Level Why might an animal not survive if it moved out of its natural environment? Sample answer: Animals develop adaptations for specific environments and may not be suited to other places. In the case of invasive species, when the animal/plant is moved from its home environment to elsewhere, the natural controls that keep species in check are gone. The species becomes a pest.
God designed some animals to look, sound, or behave like other animals. These other animals may have warning signals to protect them. Their colors or patterns may inform predators they are poisonous or taste horrible. The animals that imitate them are neither poisonous nor terrible-tasting. However, predators stay away anyway, because they think both are the same kind of animal. When an animal imitates another animal or object to avoid predators, it is called **mimicry**.

An animal’s body covering is a physical adaptation too. A fish’s scales keep water out of its body. Scales keep a reptile’s body from drying out. The moist skin of amphibians is adapted for water. Birds’ feathers provide warmth, help birds fly or swim, and keep them dry. Fur or hair protects animals from extreme cold or heat and protects skin from scrapes and scratches and too much Sun. Fur may be colored or patterned to provide camouflage.

### Develop Key Vocabulary
**mimicry** Ask students what it means to mimic someone. (to copy or imitate closely) Then explain that *mimicry* comes from the Greek word *mimos*, which means “imitator.” Discuss how this fits with the definition.

### Teach Science Concepts
Stress that mimicry uses shape, color, and patterns to look like another plant or animal—usually one that is dangerous, tastes bad, or looks like an inedible plant part such as a leaf or twig.

**Why do predators stay away from animals that imitate certain other animals?** Predators stay away from mimics because they confuse them with animal look-alikes that are dangerous or bad-tasting.

**Some flies look like bees. Is this camouflage or mimicry? Why?** This is mimicry because the flies are harmless, but they resemble bees, which sting. Ask students to explain the difference between camouflage and mimicry. Emphasize that both are adaptations.

### Lesson Activity
Tell students to decide where they want to hide their “insects” before they color them, since they want the “insects” to blend in with their surroundings. Provide students with colored markers or crayons to color their insects. Remind students that their “insects” cannot be hidden under, inside, or behind any object. They must be on a surface. You may wish to be the timekeeper for each group and have groups take turns.

**How did you color your “insects” to try to hide them?** Sample answer: I made their color as close as possible to the color of the place I put them. **How could you change your “insects” to hide them better?** Sample answer: I could put them on something with a pattern and color them to match the pattern.

### Science Background
Mimicry involves one animal, the mimic, another animal, the model, and a third animal, the one confused by the other two.

**Batesian Mimicry:** An edible mimic looks like a poisonous or inedible model. For example, the scarlet king snake is not poisonous. However, it mimics the coral snake, which is very poisonous.

**Mullerian Mimicry:** Two or more bad-tasting or poisonous animals look like each other. Each animal benefits since predators that learn to stay away from one will most likely stay away from the other. An example involves the look-alike monarch and viceroy butterflies. Recently, scientists have found that birds find both distasteful. Previously they were thought to be examples of Batesian mimicry.
You already know that a bird’s beak is adapted to its foods. Did you know that other animals have adaptations for specific purposes too? Some animals have sharp, pointed teeth for eating meat. For animals that swim, webbed feet are an adaptation. They help the animal swim faster and easier.

Woodpecker Adaptations
- strong, sharp beak for drilling holes
- stiff tail for support on the tree
- two toes point backward to help with climbing trees
- very long tongue has a barb to skewer insects

Explore-a-Lab
What adaptations will help an animal survive in a new environment?
Working in a group, write a list of your favorite animals on small slips of paper. Place them in a cup or hat. Then write a list of environments, such as tundra, rain forest, and desert, on slips of paper and place them in another cup or hat. Make sure you have an equal number of environments and animals.
Without looking, choose one animal. Then choose an environment. Consider what adaptations the chosen animal might need to survive in the chosen environment. Draw the animal and label its adaptation. Communicate and explain why you changed the features of the model animal as you did.
Choose another animal and environment. Continue until all animals and environments have been chosen.

Science and Society
In the United States, it is illegal to sell, trade, or possess eagle feathers, hawk feathers, or feathers from any other wild bird protected by the Migratory Bird Treaty Act of 1918 and Bald Eagle Protection Act. A person found with an eagle or its parts can be fined up to $25,000.

However, eagle feathers have great cultural and spiritual significance to Native Americans in the United States and First Nations peoples in Canada. In the United States, the religious use of eagle and hawk feathers is governed by a federal law limiting the possession of eagle feathers to certified and enrolled members of federally recognized Native American tribes.
Behaviors That Are Instincts

Camouflage, mimicry, and animals' body parts and coverings are physical adaptations. The way in which an animal behaves is an adaptation, too—a behavioral adaptation. Behaviors that animals are born knowing how to do are instincts. A lion preying upon a zebra and a bird building a nest are examples of instincts. When animals flee from danger, they are following their instincts.

Why do some animals like to live in groups? Some animals are safer in a group. It's harder for predators to choose one from a moving herd. Zebras' stripes confuse predators when zebras travel in large groups. Although fully grown male bison are safe from most predators, they live in groups and form a circle to protect their females and young.

Think About It
Prey animals often live in groups. Predators also sometimes live in groups. What advantages might predators gain from living in groups?

Behavioral Adaptations

<table>
<thead>
<tr>
<th>Puffer Fish</th>
<th>Fish</th>
<th>Opossum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puffer fish can inflate to several times their normal size.</td>
<td>Fish and other animals travel in groups for protection and to find food.</td>
<td>Opossums can roll onto their backs, slow their breathing, and become stiff, as if dead.</td>
</tr>
</tbody>
</table>

Science Background

The puffer fish can inflate its body in just a few seconds by swallowing great gulps of water or air. It is able to accomplish this because of a sac attached to its intestines. It uses a muscular valve to shut off its esophagus and stomach. Then it uses its specialized gills, which behave like a suction pump, to fill up the sac. Because the puffer fish does not have any pelvic bones or ribs, it can expand itself to a great extent. However, in order to not blow itself up too much, there are controls in the muscles of its skin, which help in regulating the expansion. Once the body of the puffer fish is fully extended, its predators can neither grip its body nor bite through the skin. The puffer deflates itself by releasing the muscular valves, allowing the water to be ejected through the gills and mouth.

Think About It
What advantages might predators gain from living in groups? Predators can learn to hunt cooperatively.
You may know that some animals travel south in the fall and return home in the spring. These animals are migrating. **Migration** is the act of traveling from one place to another, and back again. It is an instinctual behavior. For example, many birds that breed and raise their young in North America migrate in autumn. The areas where they spend winters are South and Central America, the Caribbean Islands, and the far southern United States.

Why do animals migrate? When it gets cold and the ground is covered with snow and ice, it’s hard for many animals to find food and stay warm. However, some animals migrate during times other than fall. Wildebeests in Africa, for example, migrate throughout the year, always looking for fresh grazing and water.

**Explore-a-Lab**

**Structured Inquiry**

**Practice: Observe** Remind students that when we observe, we carefully watch without interference.

*How will earthworms respond to light?*

Earthworms will move away from bright light.

**A Good Place to Live**

Encourage students to complete the analysis of the data gathered in the Open Inquiry activity. Remind them that they should think like scientists and use the scientific process when creating explanations.

**Science Background**

Wildebeests migrate throughout the year, always looking for fresh grazing and better water supplies. Short rains begin around early November. In late November and December, the herds migrate south to the short-grass plains of the Serengeti. They stay there through January, February, and March. Most wildebeest calves are born around February. Gradually the herds spread west across the plains. Then around April they start their great migration north. By May, all the wildebeests begin moving north, migrating to seek fresh grazing and water. During June, July, and August, their migration continues northward. In September, the herds reach and cross the Mara River, full of dangerous crocodiles. By October the herds begin heading south, and they reach the Serengeti National Park’s Lobo area. They stay there until late November, when the whole wildebeest migration begins again.
Female loggerhead turtles leave feeding areas and travel hundreds of miles to nesting grounds, where they lay their eggs. Then they swim back to their feeding area. Salmon spend most of their lives in the ocean even though they were hatched from eggs in rivers or streams. When they are ready to reproduce, they return to where they were hatched. Dall sheep in Alaska migrate up and down mountains. They spend summers near the top of mountains and then spend winter at lower elevations where there is less snow and where food is easier to find.

Rather than migrate when it gets cold, some animals stay in the same place and hibernate, or go into a deep sleep. Because they do not need a lot of energy while hibernating, they survive the winter without much food. Animals that hibernate include woodchucks, ground squirrels, and bats. Snakes, turtles, and frogs also hibernate.

Find out about an animal that migrates to, from, or through the area where you live. Draw its migration route on a map. What can you infer about the migration of the animal you chose?

Lesson Activity
Have students use the Internet or other references to gather data. Provide students with the information below and a world outline map. Have them record the migration routes of their birds or other animals.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pronghorn</td>
<td>moves north in spring from its winter range in the Upper Green River Valley of Wyoming</td>
</tr>
<tr>
<td></td>
<td>following along the Green River, travels down the Gros Ventre valley to its summer range</td>
</tr>
<tr>
<td></td>
<td>in Jackson Hole and Grand Teton National Park, where it gives birth and spends the summer,</td>
</tr>
<tr>
<td></td>
<td>then in fall it begins its return trek to its winter range</td>
</tr>
<tr>
<td>Ruby-throated</td>
<td>from southern Canada flies across the Gulf of Mexico to Central America and as far south</td>
</tr>
<tr>
<td>Hummingbird</td>
<td>as Panama</td>
</tr>
</tbody>
</table>

What can you infer about the migration of the animal you chose? Answers will vary depending on which animals students select.

Scripture Spotlight
Read Proverbs 6:6–8, and explain what animal adaptations you read about. Explain that the passage describes how ants work hard to gather what they need to survive during times when food is plentiful. Ask students if they think the work the ants do is from instinct or if it is a learned behavior. Share with students that ants have been observed teaching new ants to find food sources. In experiments, some ants were rewarded with finding food while other foraging ants found nothing. Eventually, the unsuccessful ants started to perform a different job within the ant nest. This would suggest that ants exhibit some learned behaviors.

English Language Learners
Language Development Write the following words on the board: migration, migrate, hibernation, hibernate, instinct, instinctive, behavior, behavioral. Then, one at a time, point to each word, say it, and ask students to repeat it. Review nouns, verbs, and adjectives with students. Ask them to name the part of speech for each word and use it correctly in a sentence. (migration—noun, migrate—verb, hibernation—noun, hibernate—verb, instinct—noun, instinctive—adjective, behavior—noun, behavioral—adjective).
Learned Behaviors

Objective
- Describe some animal behaviors that are learned.

Develop Key Vocabulary
learned behavior Have students tell the meaning of learned and behavior. Connect their definitions to the meaning of learned behavior.

Teach Science Concepts
Ask students to explain how they learn things. Explain that animals learn things in the same way. Point out that learned behaviors develop as an animal interacts with its environment.

What are examples of learned behaviors? Sample answers: a cat running to be fed when it hears a can opener, a deer returning to a yard to get food, a dog avoiding skunks after being sprayed Which is an example of a learned behavior, a spider spinning a web or a bird getting food from a bird feeder? Explain. A bird getting food from a bird feeder is a learned behavior because bird feeders do not occur in nature. Spinning a web is an instinct because God created in spiders the ability to adapt in this way.

Think About It
Which are instinctive and which are learned behaviors? How do you know? Sample answer: Brushing my teeth is a learned behavior that my parents taught me. When I jumped out of the way when my sister dropped her orange juice, that was instinctive. I didn’t think, I just did it.

Focus on Health
What are some healthy behaviors you have learned? What are some unhealthy learned behaviors? Sample answer: Learning to brush your teeth and eating healthful foods are healthy learned behaviors. Unhealthy learned behaviors include drinking too much soda, drinking alcohol, and smoking.

Learned Behaviors

A cat races into the kitchen when it hears a can opener. A deer returns every night to a backyard where people leave food. A dog avoids skunks after being sprayed. After eating a bad-tasting insect, a bird stays away from other insects of the same kind. These animals have learned these behaviors just as you have learned to speak, read, ride a bicycle, or play a sport. A behavior that is taught is a learned behavior.

Learned behaviors are similar to adaptations because they help animals survive. But they are not adaptations because they will not be inherited by offspring from their parents. Young animals, however, can learn many behaviors from watching their parents.

Animals learn behaviors through experience and practice. A raccoon searches for food in a garbage can because it has found food there before. If the garbage can is no longer available, the raccoon’s behavior will no longer get it food. The raccoon will be forced to change its behavior.

Many animals learn behaviors from their parents or others of their own kind. Lions, for example, teach their cubs how to stalk and attack prey. Monkeys teach their young which leaves they can safely eat.

Some raccoons open garbage cans. This behavior is not natural. It is a learned behavior.

Assessment Options

Informal Assessment Use the questions and features provided at point-of-use in the teacher wrap.

Formal Assessment Consider assigning the lesson review in the Student Edition or the lesson support page found as an Online Teacher Resource. The chapter test in the Teacher Edition may be used for formal assessment.

Performance Assessment Ask students to perform the task described below. Use the rubric on the next page to assess students.

Task: Think about an animal you would like to create. Make a list of adaptations your animal has. Draw your animal and name it. Then choose three of the animal’s adaptations. Write a paragraph that explains how these adaptations help your animal survive. Share your animal drawing and paragraph.
Make a Connection

Make a list of ten adaptations that you have learned about in this chapter. Choose one form of communication that is your adaptation to learning. Write a poem or story, draw a picture, or make a cartoon that describes or shows the adaptations you listed. Share your work. When you adapt to learning, what is the benefit?

Lesson Review

Summary: What are some animal adaptations? Animals rely on physical adaptations, instincts, and learned behaviors to survive in their environments.

1. Graphic Organizer Make a cause-and-effect chart to tell what adaptations animals have and why they have them.
2. Vocabulary How is an instinct different from a learned behavior?
3. Test Prep The nonpoisonous scarlet king snake looks and acts like the dangerous coral snake. What is this an example of?
   A. migration
   B. instinct
   C. mimicry
   D. camouflage
4. Inquiry Practice Some animals’ fur turns white at some times of the year. What can you infer is the reason this occurs?
5. What are two ways that animals deal with changing weather?
6. Some female sea turtles return to the beach where they were born to lay their eggs. What is this an example of? How do you know this?
7. Review Proverbs 6:6–8. What lessons do you think God wants you to learn from the ants?

Family Link With a family member, visit a zoo or a park, or observe animals in your own backyard. Observe their physical adaptations and record them in a chart. Then, use the Internet or other reference sources to find out some of each animal’s instincts and learned behaviors. Add the information to your chart. Share it with classmates.

Rubric: Use the following rubric to evaluate student performance.

3—Drawing clearly identifies adaptations. Written explanation is complete and shows understanding of science concepts.
2—Drawing identifies adaptations. Written explanation is partially complete and shows reasonable understanding of science concepts.
1—Drawing somewhat identifies adaptations. Written explanation is somewhat complete and shows limited understanding of science concepts.
0—Drawing does not identify adaptations. Written explanation is incomplete and shows no understanding of science concepts. Ideas are communicated poorly.

Assess/Reflect

Make a Connection

Tell students to pick the form of communication that they feel most successful and comfortable with. After all students have shared their work, discuss the benefits of adapting to learning.

Assess/Reflect

Lesson Review

Read the essential question and lesson summary with students. Ask students if they have any questions about the summary. Then ask students what additional details they would add to it.

Assign the lesson review. Evaluate students’ responses, and review concepts as needed. Sample responses are shown below.

1. Graphic organizers will vary. Sample answers: Cause: camouflage, mimicry, run fast, travel in groups; Effect: stay safe from predators/startle prey; Cause: migration, hibernation, fur or hair; Effect: stay warm
2. Instincts are behaviors animals are born knowing. Learned behaviors are taught.
3. C
4. Sample answer: I can infer that the fur turns white in winter to camouflage the animal in the snow.
5. Two ways animals deal with changing weather are by migrating or hibernating.
6. This is an example of an instinct. Female sea turtles are born knowing to do this. It is not something they learn from others of their own kind.
7. God wants you to take the initiative to prepare for what you need in life and work hard to achieve it.

Family Link Suggest students and family members take photographs of the animals they observe, if possible. Invite students to share their charts with the class.

Chapter 2 • Lesson 2
Set Goals
As students study this page, ask them to think about how each device takes the place of a natural adaptation to help organisms live in inhospitable areas.

Bioshelter
Teach Science Concepts
Bioshelters are a way to raise plants and animals where people need them. Bioshelters allow plants and animals to live where they could not live in nature. A bioshelter is a solar greenhouse. It protects the plants and animals inside. Bioshelters are used to grow crops for food. They have ponds with fish. They also include insects and other animals. That helps keep the shelter habitat in natural balance.

The greenhouse protects the life inside of it. Solar energy heats it. The ponds help keep the temperature inside from getting too hot or too cold. Insects are used to naturally control harmful pests. Someday, people may live inside bioshelters.

Clay Pot Irrigation
Teach Science Concepts
Clay pot irrigation helps plants, specifically trees, survive in areas with insufficient water. What adaptation might a species of tree develop if it were going to survive without the help of a clay pot irrigation system? Over time, the species might develop faster-growing roots or it might develop a lesser need for water.

Concept Check
1. Bioshelters protect living things from the natural environment that may not be suitable for certain plants and animals to grow.
2. Sample answer: Water leaks out of the pots slowly, providing continuous water in an area where it doesn’t rain very often.

Harriet Russell Strong was born in the state of New York in 1844. Her family moved west to California when she was a child. When she grew up, she and her husband purchased 320 acres of land in California. It was very dry land, so she began searching for better ways to irrigate the crops. She invented a flood control/storage dam system. She used the system to irrigate their crops of walnuts, citrus fruits, pampas grass, and pomegranates. Her irrigation system became widely used and is primarily responsible for the growth of the Southern California produce industry.

All her adult life, Strong was an advocate for water conservation. She was one of the first people to propose using the Colorado River to supply water for Los Angeles. She even spoke before Congress about the need for water conservation practices.
Set Goals
As students study this page, ask them to think about how both herpetologists and animal behaviorists help animals survive and be comfortable in their environments.

Herpetologist

Teach Science Concepts
It is not unusual to see snakes or lizards lying on a rock in the sunlight. They are absorbing the heat from the rock and from the sunlight to warm their bodies. People who keep a cold-blooded animal as a pet must provide a heat source so the pet can stay warm.

Animal Behaviorist

Teach Science Concepts
There are many types of jobs for people who work with animal behavior. Some people work with pets to improve their behavior. These animal behaviorists work to help pets get along better with human families. They first look to make sure the pet is not sick. Then, they try to find out why the pet is behaving in an inappropriate manner. Finally, they come up with strategies for the family to use to help stop the unwanted behavior. Pets often encounter other people and their pets, so the need for good behavior is important for everyone’s safety and well-being.

Why do you think many people are interested in what an animal behaviorist can do for their pets? Many people have pets. They want their pets to get along with people and with other animals.

Concept Check
1. It is a reptile. It appears to have scaly skin and claws.
2. By studying endangered species, scientists may find ways to help them survive.

Science and Society

One of the jobs an animal behaviorist might hold is that of designing the habitats for animals in zoos. Although zoos have existed for a long time (since about 3500 B.C.), in the 1970s zoos took on a more active role in conservation. Many modern zoos embrace this philosophy. Animals often live in open areas that try to mimic their natural habitat in appearance, climate, and lighting. Zoos may participate in breeding programs for endangered species.

All zoos in the United States must have a license and be inspected. They also must follow laws established to protect animals. The Association of Zoos and Aquariums (AZA) requires zoos accredited by it to meet very strict standards for both animal care and conservation. Many popular zoos in the United States are accredited by the AZA.