

Follow-up Activities

- As a class, research the typical number of babies that different kinds of animals have at a time (insects, reptiles, amphibians, birds, fish and mammals). Integrate this into a math lesson by creating line or bar graphs to summarize the data.
- Divide the class into groups and assign specific habitats for them to study. Each student should choose a mammal present in that habitat to research, while working with their group to present the findings through illustrations and oral reports.
- Have each student choose a mammal from the endangered species list to research. (A good place to start is the U.S. Fish and Wildlife Service's endangered creatures Web site: http://www.fws.gov/r9endspp/kid_cor/spp_mnth.htm) Encourage students to collect information about the animal's habitat, intelligence, any unique characteristics and the ways people are trying to prevent the extinction of these rare mammals.
- To demonstrate the value of having opposable thumbs, divide the class into small groups. Have students attempt to complete a series of tasks with their thumbs secured to the side of their hands with rubber bands or strong tape while their classmates observe and record outcomes. Brainstorm a list of things people could not accomplish without the use of their thumbs. Use this information to write an essay on what life would be like if humans had not developed opposable thumbs (More information on this activity can be found at the following Web site: <http://www.accessexcellence.org/AE/AEPC/WWC/1991/opposable.html>).

Internet Resources

Periodically, Internet Resources are updated on our web site at www.LibraryVideo.com

- www.abdn.ac.uk/mammal/records.htm
This site contains interesting facts about mammal "record breakers," including information about the biggest, the smallest and the smelliest of these animals.
- www.geobop.com/Mammals/
This site lists a great deal of information about different kinds of mammals, their homes and family life, and also provides lesson plans and thematic units on mammals for elementary students.
- www.zooatlanta.org
This site allows students to find out about characteristics of many fascinating mammals.

Suggested Print Resources

- Earle, Anne. *Zippling, Zapping, Zooming Bats*. HarperTrophy, New York, NY; 1995.
- Heller, Ruth. *How to Hide a Polar Bear and Other Mammals*. Stern Sloan, New York, NY; 1994.
- Kalman, Bobbie. *What Is a Mammal? (Science of Living Things)*. Crabtree Publishing, New York, NY; 1997.
- Markle, Sandra. *Outside and Inside Big Cats*. Atheneum Press, New York, NY; 2003.
- Sill, Cathryn P. *About Mammals: A Guide for Children*. Peachtree Publishing, Atlanta, GA; 1997.
- Snedden, Robert. *What is a Mammal?* Sierra Club Books for Children, San Francisco, CA; 1994.
- Stone, Lynn. *Giant Pandas*. Lerner Publishing, Minneapolis, MN; 2002.

TEACHER'S GUIDE CONSULTANT

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| • ALL ABOUT ANIMAL ADAPTATION | • ALL ABOUT ENDANGERED & EXTINCT ANIMALS |
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All About Mammals

Grades K-4

This guide is a supplement, designed for educators to use when presenting this program in an instructional setting.

Before Viewing: Research in learning suggests that it is important for the teacher to discover what the students know — or think they know — about a topic, at the start of a new unit, so that their accurate conceptions can be validated and reinforced, and their misconceptions identified and corrected. Therefore, after reviewing the pre-viewing discussion questions provided for your class, create a "Everything We Know About..." list. Preview key vocabulary words and have students raise additional questions they hope will be answered by this program. Most importantly, students should be told that as "science detectives" they must listen closely, so that after viewing the program, they will be able to tell whether or not the facts/beliefs they put on their list were scientifically accurate.

After Viewing: After a brief discussion about the program, challenge your "science detectives" to prove or disprove the accuracy of the facts they put on their "Everything We Know About..." list. Discuss what else they learned and use the follow-up questions and activities to inspire further discussion. Encourage students to research the topic further with the Internet and reading resources provided.



Program Summary

Mammals are everywhere — in the sea, on land and in the air. But what makes a mammal a mammal is a number of defining characteristics that its neighbors in the water, air and on land don't have.

All mammals have mammary glands to nurse their young, hair and backbones. They are all warm-blooded, breathe air with lungs and have highly developed brains. Though other types of animals share many of these traits, mammals are the only animals with mammary glands and hair. In fact, the word "mammal" is derived from "mammary glands." These identifying characteristics are examined in detail, providing examples of different mammals, some of whom have specialized characteristics. The porcupine, for example, has sharp, spiny hairs called quills that it uses to ward off any predators.

There are three different ways that mammals are born. Most baby mammals — like humans — grow inside the mother until they are ready to be born. But marsupials, like kangaroos and koalas, are born very tiny and must crawl into their mother's pouch in order to continue their development. There are even a few kinds of mammals that lay eggs!

No matter how their young are born, mammal mothers typically take care of them for a long time and teach them how to survive. Mammals have fewer young than other animal species, in large part because of the time and energy it takes to care for them. Mammals have more advanced brains than other animals, making them the most intelligent animals on Earth. Some mammals, like humans and monkeys, have developed opposable thumbs and can use them to make and use tools, while others have unique ways of finding and eating food.

Despite their intelligence, however, the populations of many mammals — including marine mammals such as dolphins and sea lions — are in danger. A visit to the Monterey Bay Aquarium introduces the practices of the Sea Otter Research Project, whose members help rescue injured or ill sea otters.

Vocabulary

The following words are included for teacher reference or for use with students. They are listed in the order in which they appear in the video.

mammals — Warm-blooded vertebrates that have hair and mammary glands that produce milk to feed their young.

vertebrates — Animals that have a backbone as part of their skeleton.

limbs — Body parts typically used for movement. Most mammals have four limbs in the form of arms, legs, flippers, fins or wings.

hind legs — The back limbs of an animal.

mammary glands — Specialized structures on the bodies of mammals that in adult females produce milk to feed their young.

nursing — The process of getting nourishment by drinking milk from mammary glands.

weaned — When a young mammal stops getting all of its nourishment by drinking milk from its mother's mammary glands and starts to eat other food.

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lungs — The organs that mammals and some other types of animals use to breathe in air and exhale.

warm-blooded — A term describing animals that maintain a constant body temperature no matter what the temperature of their environment is.

cold-blooded — A term that describes animals that cannot control their body temperature so they assume the temperature of their environment.

reproduction — The development of new organisms, or offspring, from adult organisms of the same species.

marsupials — Mammals that give birth to tiny young that must develop in an external pouch located in the mother's abdomen.

endangered species — Animals and plants that are in danger of becoming extinct; some endangered mammals include certain whales, gorillas, pandas, elephants and tigers.

rehabilitate — To help sick and injured animals become healthy and strong.

opposable thumbs — Thumbs that freely move and rotate, allowing mammals like monkeys, apes and humans to use their hands to grasp and use tools.

carnivore — An animal that eats other animals.

herbivore — An animal that eats plants.

omnivore — An animal that eats both plants and other animals.

echolocation — The process of sending out high-pitched squeaks that bounce off objects, helping animals like bats locate food and avoid objects while they are in flight.

Pre-viewing Discussion

Before students generate their list of "Everything We Know About..." this topic, stimulate and focus their thinking by raising these questions so that their list will better reflect the key ideas in this show:

1. What is a mammal? Are humans mammals?
2. What characteristics do all mammals have in common and how are mammals different from other animals?
3. How many different mammals can you name?

After the class has completed their "Everything We Know About..." list, and before watching the show, ask them what other questions they have that they hope will be answered during this program. Have students listen closely to learn if everything on their class list is accurate and to hear if any of their own questions are answered.

Focus Questions

You may wish to ask your class the following questions to assess their comprehension of key points presented in the program:

1. In what kinds of environments are mammals found?
2. What are some characteristics of mammals that are shared with other animals?

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3. What are the two main characteristics that only mammals have?
4. What are mammary glands?
5. What does nursing mean? What does it mean to say a baby is weaned?
6. Mammals are the only animals to have hair. What are some special types of hair that some mammals have?
7. If mammals like otters, sea lions, dolphins and whales breathe with lungs, how can they live in the water?
8. What does it mean when we say that an animal is a vertebrate?
9. What does "warm-blooded" mean?
10. How does being warm-blooded help mammals survive?
11. What type of mammal is a kangaroo?
12. Do all mammal mothers have pouches? What is the pouch used for?
13. What is an endangered species?
14. How can humans help endangered mammals survive?
15. Why are opposable thumbs so important to humans? What other mammals have opposable thumbs?
16. What is the difference between a carnivore, an herbivore and an omnivore?

Follow-up Discussion

The most important part of this segment is to examine both the facts and beliefs generated by the class in their "Everything We Know About..." list. Research indicates that students will retain their previous misconceptions — in preference to the new information — until they actively recognize and correct their own errors. Because of this, it is important to lead students to the correct ideas while identifying and correcting any misconceptions from the class list. After reviewing the list, encourage students to share the answers they got to the questions raised before viewing the program.

Raising a thought-provoking question is a good way to assess the overall depth of understanding. A couple of suggestions are listed below:

1. Compared to the number of young birthed by members of the fish and insect families, mammals tend to have fewer offspring. Discuss the possible reasons for this.
2. Discuss the specialized hairs that some mammals possess. Encourage students to use their imaginations to think of new adaptations made from hair that might give a particular animal an advantage.
3. Discuss the evidence we have that mammals have the most powerful brains and are the most intelligent of all animals.