Follow-up Activities

- As a class, build a number of bird feeders to hang outside the window. The students can observe behavior and learn about the needs of a bird within its habitat. Experiment with different kinds of food to see what different types of birds they attract. Keep a journal of observations.
- Compare pictures of male and female birds within the same species. Talk together about how they are alike and how they are different. Have students brainstorm a list of reasons for differences in coloration.
- Birds are among the most popular symbols in the world. Do a class study of the bird adopted by your state or province. Have students do a report on adopted birds of other states, with emphasis on topics such as habitat, food choice, close relatives, ecology and interaction with humans.
- Research how different cultures use birds in myths, ceremonies, symbols and religion. Choose one such culture and prepare a written report.
- Collect a number of contour feathers and have children explore them with magnifying lenses, test them for water repellency and see how the barbs interlock when ruffled.
- Have students research the wingspans of different birds, like hummingbirds, seagulls and condors. In addition, carry out a comparative math lesson, listing the biggest, the smallest and the average wingspans.
- Show pictures to the class of various birds and airplanes. Have children do a comparative analysis of a bird's body and that of an airplane. Have them draw illustrations and label parts.

Internet Resources

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

- **www.nhm.org/birds/guide/classroom/index.html**
  The Natural History Museum of Los Angeles presents "The Bird Site," featuring background information on birds and assorted classroom activities designed to help young people develop an appreciation, respect and understanding of the diversity and nature of birds.
- **www.enchantedlearning.com/subjects/birds/**
  This "Zoom Birds" site describes the characteristics common to all birds as well as the features that make each bird unique.
- **www.eaglekids.com**
  This fun, interactive site includes a bevy of information on eagles, including games, pictures, coloring pages and monthly articles by a veterinarian.

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Suggested Print Resources

- Arnosky, Jim. *All About Owls.* Scholastic, New York, NY; 1999.
- Cherry, Lynn. *Flute's Journey: The Life of a Wood Thrush.* Harcourt Brace, San Diego, CA; 1997.
- Ehlert, Lois. *Feathers for Lunch.* Harcourt Brace, San Diego, CA; 1996.
- Gans, Roma. *How Do Birds Find Their Way?* Harper Trophy, New York, NY; 1996.
- Sill, John. *About Birds: A Guide for Children.* Peachtree Publishers, Atlanta, GA; 1997.

TEACHER'S GUIDE CONSULTANT

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TITLES

- **ALL ABOUT AMPHIBIANS**
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- **ALL ABOUT ANIMAL NEEDS**
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TEACHER'S GUIDE

ANIMAL LIFE for Children™

All About Birds

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.

SCHLESSINGER SCIENCE LIBRARY

Program Summary

There are about 9,000 species of birds living all over the world today. Many scientists believe that birds evolved from flying reptiles that lived among the dinosaurs over 70 million years ago.

Though birds are not the only animals that have wings, they are the only animals that have feathers. Feathers are the one feature of birds that no other animal shares. On most birds, feathers cover their entire bodies, except for their beak and feet, and serve many purposes. The soft, fluffy feathers found close to a bird's skin — known as down — keep the bird's body warm. Contour feathers are large and stiff, providing birds with their shape and color. The patterns and colors of a bird's contour feathers help some birds attract their mates.

Other characteristics of birds include the following: they are warm-blooded, they lay eggs in nests, and they have backbones. Because they are hollow, a bird's bones are much lighter than those of other animals. This helps them to get off the ground so that they can fly. However, the sizes, shapes and colors of their bodies, feathers, beaks and feet vary according to their habits and environments.

Different birds communicate in different ways; some squawk while others sing. They also build different types of nests for egg laying. All birds protect their eggs from danger and keep them warm while they develop. This is called incubation. Depending on what they eat, different birds have different types of beaks. For example, birds that hunt other animals have sharp, hooked beaks, while others have beaks designed for cracking seeds. Because they have no teeth, birds have developed adaptations that help them break down their food.

Many birds also migrate, which means they fly to warmer places in the winter to search for food, and return in the spring when the temperatures are warmer. If all of this bird talk has gotten your gander, you too can become a professional bird expert. In fact, scientists who study birds are called ornithologists.

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.

birds — Warm-blooded animals with backbones that are covered with feathers, lay eggs with a hard shell and have wings.

barbs — The thread-like parts of a bird's feather.

down — The soft, fluffy feathers found closest to a bird's body that serve to keep the bird warm.

contour feathers — The large feathers of a bird's wings and tail that provide shape, protection and coloration.

characteristics — A distinguishing trait like color, size or shape.

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

backbone — The spine, or the part of the skeleton inside an animal's body that provides support and protects the animal. *(Continued)*

pterodactyls — A group of flying reptiles with leathery wings that lived during the time of the dinosaurs.

warm-blooded — A term that describes animals that control their own body temperature like mammals and birds.

territory — An area where an individual animal lives.

reproduction — The process of producing offspring. Birds reproduce when a male attracts a female, they mate, and an egg is laid.

incubation — Keeping eggs warm and protected from the time eggs are laid until they hatch.

crop — An organ in the bird's throat which stores food.

gizzard — A "second stomach" inside a bird where food is ground down by tiny pebbles.

birds of prey — Birds that hunt and kill other animals for food. Birds of prey have sharp beaks and long claws.

aviary — A place where birds are raised and cared for.

hover — To flutter in the air in one place.

migration — Traveling from one area to another in order to find food or for mating purposes.

ornithologist — A scientist who studies birds.

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 makes a bird a bird?
2. Is everything that flies a bird?
3. What adaptations do birds have to help them fly?
4. What do birds eat?

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. What is the one characteristic that makes birds different from all other animals?
2. About how many different types of birds are there?
3. What are the five main characteristics of birds?
4. What is down? What is its purpose?
5. What are the three jobs that contour feathers perform?

(Continued)

6. How are feathers, the scales of a reptile and human hair all similar?
7. What are some similarities and differences between birds and reptiles?
8. What is special about the bones of birds that assist in flight?
9. Why is it important for penguins to be warm-blooded?
10. What are some of the reasons that birds sing?
11. Are all birds' nests the same? Why or why not?
12. How do birds incubate their eggs?
13. How do parent birds take care of the babies after they hatch?
14. How do birds eat without teeth?
15. Describe two different types of beaks that birds have. Why are they different?
16. What is a "bird of prey?" What are some of their characteristics?
17. What is an aviary?
18. What is migration?
19. What is an ornithologist?

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. Discuss how the shape of a bird's beak can provide many clues as to what kind of food makes up a bird's diet. For example, ducks use their flat bills like strainers, sandpipers use their long beaks to probe in the sand, and hummingbirds use their needle-like beaks as straws to get nectar from flowers. Have students dwell on the importance of having a beak that is specialized for the food and environment in which they eat and live.
2. Discuss the possible reasons that some birds, like penguins and ostriches, have wings and feathers but cannot fly.
3. Discuss the similarities and differences between birds and reptiles.