

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 student understanding. A couple of suggestions are listed below:

- How are tropical rainforests, deciduous forests and coniferous forests alike and different?
- Why are forests important to people? How can we protect them?
- Would you be able to find all three types of forests in the same general place on Earth? Why or why not?

Follow-up Activities

- "Adopting" a tree on the school grounds is a popular project. Students can photograph and draw their "adopted" tree in all four seasons, make bark and leaf rubbings, and track the types of animals that either visit or live in their tree. Have students compare the different qualities that their "adopted" trees possess.
- If your location is convenient, invite a ranger from the U.S. Forestry Service into your classroom to meet with students and make a presentation about forests, discussing their plants and animals, prevention of forest fires and their natural beauty.
- Encourage students to get involved in a forest conservation project. Students can promote a school-wide paper recycling project or an ambitious tree-planting project to help to preserve forest ecosystems.

Suggested Internet Resources

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

- www.smokeybear.com/kids

The "Smokey Kids" web site contains information about the importance of the forest and how to prevent forest fires, as well as several kid-friendly games that illustrate these ideas.

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- www.srs.fs.fed.us/kids/

This site, offered by a branch of the USDA Forest Service, presents a downloadable coloring book, shows kids the difference between coniferous and deciduous trees, and provides links to other forest education sites.

Suggested Print Resources

- Bash, Barbara. *Ancient Ones: The World of the Old-Growth Douglas Fir*. Sierra Club Books; San Francisco, CA; 2002.
- Bishop, Nic. *Forest Explorer: A Life-Sized Field Guide*. Scholastic, Inc., New York, NY; 2004.
- Tagliaferro, Linda. *Explore the Deciduous Forest*. Coughlan Publishing, Mankato, MN; 2004.
- Worth, Bonnie. *If I Ran the Rain Forest: All About Tropical Rain Forests*. Random House, New York, NY; 2003.

TEACHER'S GUIDE CONSULTANT

Paula J. Bense, M.Ed.

Curriculum Specialist, Schlessinger Media

Conrad M. Follmer

25 years as a K-5 Science & Math coordinator for a Pennsylvania public school system, currently an independent consultant to elementary schools.

TITLES

- ALL ABOUT DESERTS & GRASSLANDS
- ALL ABOUT FOREST ECOSYSTEMS
- ALL ABOUT WATER ECOSYSTEMS

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All About Forest Ecosystems

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 an "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

Ecosystems are places where plants and animals live, interacting with the non-living things around them, like soil, air, water, temperature and sunlight. Forests are ecosystems with trees as the major plant life form. Around the world you can find three different kinds of forest ecosystems: tropical rainforests, deciduous forests and coniferous forests.

Tropical rainforests are among the wettest places on Earth, receiving at least 200 centimeters (80 inches) of rain each year. Rainforest ecosystems are located near the equator, particularly in South and Central America and Africa, where the high temperature and humidity remain constant all year round. The typical rainforest has four layers, each with different animal and plant life. The emergent level has the tallest trees, sticking up above the high, sun-bathed canopy, which is like the roof or umbrella of the forest. The dense canopy layer shades the forest below, and contains most of the animal life of this ecosystem. Many of the creatures are camouflaged, or disguised for protection from various predators. The understory, which is the level just below the busy canopy, contains the young trees and small plants that are adapted to growing in low-light conditions. The forest floor contains the decomposers (bacteria, fungi, insects, worms and snails), which quickly break down the once-living plant and animal life that falls to the ground, returning important nutrients to the soil.

Deciduous forests, located on almost every continent in the temperate zone north of the tropics, are much cooler and drier than tropical rainforests. Deciduous means “to fall off,” which is what the leaves of these trees do during the autumn months, growing back again in spring. Without this unique adaptation, the leaves of the deciduous forest would freeze during winter, weighing down branches that could easily snap in the strong winter winds. Deciduous forests only receive between 80–200 cm (30–80 in) of rain and snow per year, which is fine for the 800 different types of trees adapted to this ecosystem, including maples, oaks, birches, beeches and hickories. Though deciduous forests do not have as many different plant and animal species as the rainforest, many birds migrate here during the spring and summer months. All-year residents of these forests include raptors, bears, deer, mountain lions, rodents, reptiles, amphibians and many small mammals.

Coniferous forests, located at the northernmost reaches of North America, Europe and Asia, are even colder and drier than deciduous forests. The word “coniferous” reminds us that the trees of this ecosystem are mostly “cone-bearing” evergreen trees, like the spruce, hemlock, pine, fir and sequoia. These trees are also known as conifers. The cones hold and protect the seeds, and the coated needles of these trees store moisture. Both the triangular shape of the conifer trees and their needles are adaptations designed to shed the snow and ice, which regularly fall on them during the long, cold seasons
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of the year. Unlike the other two forest types, coniferous forests have only two layers: the canopy and forest floor. Mosses, ferns, blueberries and mushrooms are adapted to growing on the deeply shaded floors of these forests. Many of the same animal species found in deciduous forests also live in coniferous woodlands.

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.

ecosystems — Places where communities of living things interact with each other and with nonliving components, such as soil and water. A forest is an example of an ecosystem.

forest — An ecosystem where trees are the major plant life form.

tropical rainforest — An ecosystem that is hot and wet with dense forests, located in tropical areas around the world. These forests contain the greatest number of different species of plants and animals of all the Earth’s ecosystems.

deciduous forest — An ecosystem found on most continents in cooler regions north of the tropics, named for the tree leaves that fall off during the autumn months. These forests have good soil but get less rain and have fewer species of plants and animals than rainforests.

coniferous forest — An ecosystem that contains mostly cone-bearing, evergreen trees, located in the far northern reaches of North America, Europe and Asia. These areas receive average amounts of rainfall and have very cold winters.

habitat — The area where a plant or animal lives.

canopy — The “roof” of a forest, created by the dense layer of tree branches and leaves, and located some 30–100 feet into the air above the forest floor. In tropical rainforests, this layer is the sunniest and contains the most animal life.

understory — The layer of the forest below the canopy that contains young trees and plants, which can live in areas with a lot of shade.

forest floor — The ground level of a forest. This level receives very little sunlight so few plants can grow here.

niche — A “job” or role of different animals and plants in an ecosystem.

adaptations — Changes in the structure of a plant or animal occurring over long periods of time that make it more fit for living in its environment.

camouflage — A coloring change that helps animals blend in with their environment, protecting them from hungry predators.

predators — Animals that hunt and eat other animals.

decomposers — Organisms like bacteria, fungi and insects that consume and break down dead plants, animals and waste materials, helping to return energy and nutrients back to the soil.
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migration — The movement of animals over many miles to reach better feeding grounds, weather conditions and places to lay eggs or give birth during the winter months.

leaf litter — The thick layer of fallen leaves on the deciduous forest floor.

raptor — A bird like an eagle that catches and eats other animals, using its sharp beak and talons.

conifers — Another name for evergreen trees, which have cones.

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:

- What is a forest?
- What are some different kinds of forests?
- What makes forests different from each other?

After the class has completed their “Everything We Know About...” list, 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

1. What is an ecosystem? Name some of the living and non-living parts of an ecosystem.
2. What are some different types of ecosystems?
3. What are three types of forest ecosystems?
4. Where are most of the Earth’s tropical rainforests located?
5. What are the four layers of a tropical rainforest?
6. What are air plants and air roots? Where do they live? Why do they live there?
7. What are decomposers? Where do they live? Why do they live there?
8. What is the meaning of the word “deciduous”? How does that describe what happens in a deciduous forest?
9. What might happen if the leaves of a deciduous forest didn’t fall off?
10. What trees are most commonly found in deciduous forests?
11. What is leaf litter? What does it have to do with the quality of the soil in deciduous forests?
12. What is an evergreen? What is the purpose of the cone?
13. How are deciduous and coniferous forests similar and different?