

- Why do we say that all living things get their energy from the sun?
- What is the most important thing that plants give to people?

### Follow-up Activities

- Create an illustrated "Food Web" bulletin board of common plants and animals, listing the ways they are dependent on the sun and each other for energy.
- Have students write a story in which all plants vanish from the Earth. Using each of the senses, have them describe the many ways life would be different.
- Divide the class into groups and assign them specific habitats to study. Each student should choose an animal or plant present in that habitat to research, looking specifically for ways the organisms are dependent upon each other for survival. Have them act out these relationships in skits that they present to the rest of the class.

### Suggested Internet Resources

Periodically, Internet Resources are updated on our Web site at [www.libraryvideo.com](http://www.libraryvideo.com)

- [www.muohio.edu/dragonfly/ita/index.htmlx](http://www.muohio.edu/dragonfly/ita/index.htmlx)

This activity page from the Dragonfly Web site explores the relationship between squirrels and oak trees and offers students experiments to try on their own.

- [www.ag.ohio-state.edu/%7Etwig/browser.cgi](http://www.ag.ohio-state.edu/%7Etwig/browser.cgi)

The Twig Walkingstick Web site asks and answers some very interesting questions about plants, how they grow, and how animals have developed interdependent relationships with plants.

- [www.nybg.org/chil\\_edu/progmat.html](http://www.nybg.org/chil_edu/progmat.html)

The New York Botanical Garden has been a living museum of plants since the end of the 19th century. These pages list teacher guides and student activity booklets that are downloadable and easily adapted for classroom use.

### Suggested Print Resources

- Bitten, Mary. *Aliens from Earth: When Animals and Plants Invade Other Ecosystems*. Peachtree Publishers, Atlanta, GA; 2003.
- Heller, Ruth. *The Reason for a Flower*. Price Stern Sloan; New York, NY; 1999.
- Loewer, Peter. *The Moonflower*. Peachtree, Atlanta, GA; 1997.
- Shetterly, Susan. *Sbelterwood*. Tilbury House, Gardiner, ME; 1999.

### TEACHER'S GUIDE

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### TITLES

- ALL ABOUT CARING FOR PLANTS
- ALL ABOUT PLANT POLLINATION: FRUIT, FLOWERS & SEEDS
- ALL ABOUT PLANT & ANIMAL INTERDEPENDENCY
- ALL ABOUT PLANT STRUCTURE & GROWTH
- ALL ABOUT PLANT ADAPTATION

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# Plant Life for Children™



## All About Plant & Animal Interdependency

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

In nature, when two things depend on each other for their survival, they are called interdependent. Nine year old Dusty Jones and the members of his club, the Marvelous Association of Plant Loving Enthusiasts (M.A.P.L.E.), have a mission — to uproot information on how plants and animals rely on each other for survival. The team discovers that plants provide all animals, including humans, with oxygen, food, shelter, medicines and more. They find that plants also rely on animals, for help in reproduction, seed dispersal and gas exchange.

Oxygen is what all animals need to breathe, and when they exhale, they release carbon dioxide into the air. This invisible gas is one of the ingredients that plants use in the amazing process of photosynthesis, which is how they produce food with energy from the sun. As a byproduct, they release oxygen into the air for animals to breathe! The food they make is stored energy that is passed to plant-eating animals called herbivores and then on to meat-eating animals called carnivores. Without plants, animals could not get the energy necessary for survival. Plants also help take moisture from the soil and put it into the air where it can fall as rain and provide drinking water to animals. In addition, plants serve as shelter for all sorts of animals, from bugs to people. Many plants also contain powerful medicines that help us when we are sick. Our clothes are often made from parts of plants, as are paper and paints.

After the M.A.P.L.E. team discovers how dependent animals are on plants, they begin to wonder what plants could possibly need from animals. A visit with a plant scientist at the New York Botanical Garden helps explain that many plants rely on some animals to help them make seeds by moving pollen from one flower to another. These animals, called pollinators, include many insects, some birds, and even small mammals such as bats and mice! The team also discovers how animals help bring plants to new areas by spreading seeds around. In an investigation, the group examines many different types of seeds and designs an experiment to find out what kinds of animals are useful in seed dispersal. Finally, the students learn how some people are working to protect plants and preserve the interdependent relationships between plants and animals.

## 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 show.

**interdependent** — The term used to describe plants and animals that rely on each other for support and survival. *(Continued)*

**carbon dioxide (CO<sub>2</sub>)** — An invisible gas that is given off when animals breathe and is absorbed from the air by plants during photosynthesis.

**oxygen (O<sub>2</sub>)** — An invisible gas that is released by plants and is needed for the survival of nearly all living things.

**photosynthesis** — A process by which a plant produces its food using energy from sunlight, carbon dioxide from the air and water from the soil.

**producers** — Organisms that use the sun's energy to make food. Green plants are producers.

**consumers** — Organisms that use the sun's energy indirectly by eating plants or animals.

**carnivores** — Animals that eat other animals.

**herbivores** — Animals that eat only plants.

**transpiration** — The evaporation of water from the leaves of a plant into the air.

**plant reproduction** — The development of new plants from adult plants of the same species.

**seed dispersal** — The process of spreading seeds from one place to another; methods of seed dispersal include wind, water and animals.

**pollen** — Fine grains produced in flowers which are used by plants to make seeds.

**pollination** — The fertilization of a flower by the transfer of pollen from the male part of a flower to the female part of a flower. Many animals, like insects, have adaptations that make them excellent pollinators.

**excrete** — To eliminate waste from the body.

**hypothesis** — A prediction or educated guess that is based on scientific evidence.

## 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:

- How are plants different from animals?
- What are some of the things that plants provide for animals?

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 kinds of living things are interdependent?
2. What invisible gas do people get from plants?
3. What invisible gas is released by animals and used by plants?
4. What do plants use carbon dioxide for?
5. How do plants use the energy from the sun?
6. What is an herbivore?
7. How is the sun's energy passed to animals that eat meat?
8. What is an example of a carnivore?
9. How is the transfer of energy from plants to animals like a pyramid?
10. What are producers?
11. Why are people and other animals called consumers?
12. Where does chocolate come from?
13. What sorts of things do plants give people?
14. How do plants help animals obtain water?
15. What kinds of animals use plants for shelter?
16. What can animals do that plants cannot do?
17. How do animals help flowering plants?
18. What are some examples of pollinators?
19. How do plants get carried to new areas?
20. What are some ways that people endanger plants?

## 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: *(Continued)*