

**Ecosystems** is an exciting program that describes the ways plants and animals disperse. It compares the six major land biomes and explains the factors affecting cycles and rhythms of living things. Dr. Science conducts an experiment which can be duplicated in the classroom, then compared to the results on the video. He gives students opportunities to formulate their own hypothesis, then checks to see if they are correct. This program is designed for the teacher and students to interact with Dr. Science.

**Vocabulary:** (In order as it appears in the video)

**Biogeographer:** Scientists who study where plants and animals live.

**Ecology:** The relationship of plants, animals, and their environment.

**Habitat:** A living place.

**Dispersal:** The movement of plants and animals from one place to another.

**Active dispersal:** Animals move by their own energy.

**Passive dispersal:** When organisms are carried by wind, water or other animals.

**Physical barriers:** An object that blocks the dispersal of plant or animal.

**Ecological barrier:** When a habitat does not meet the needs of the plant or animal.

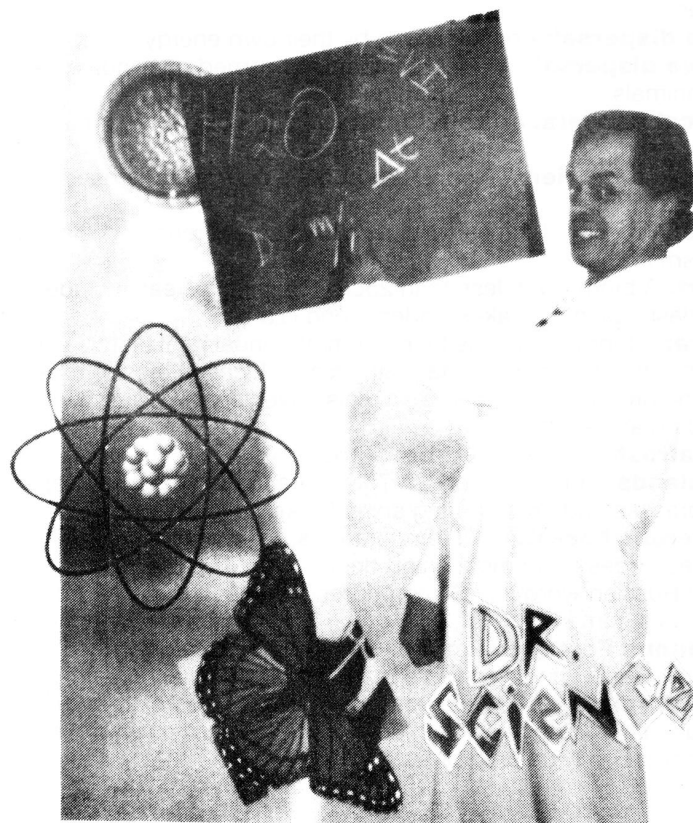
**Biome:** A region of the earth with its own characteristic climate and organisms.

**Desert:** A biome with less than 25cm of rainfall a year. Includes cacti, fleshy plants, snakes, rodents and lizards.

**Tundra:** A biome with less than 20cm of annual rainfall. It is very dry, cold and the ground is permanently frozen. Lichens are the most common organism found. The animals have very thick fur, like musk ox and polar bear.

# Teacher's Guide

## VOL. 4 **Ecosystems**



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**Permafrost:** Permanently frozen ground.

**Grasslands:** Approximately 25-75cm of annual rainfall, widespread fires, grasses and grass-eating animals like deer and buffalo.

**Coniferous Forest:** Cold temperatures, high moisture, pine and evergreen trees. With moose and deer.

**Taiga:** Russian word for "Swamp forest" found in the coniferous forests in summer.

**Deciduous Forest:** Warm summers and cold winters, where trees lose their leaves in winter. More than 75cm of annual rainfall.

**Tropical rainforest:** Very warm temperatures and extremely high moisture all year long. Up to 200cm of rainfall yearly with palms, tree ferns and brightly colored birds.

**Ecosystem:** Made up of all the plants and animals in a natural community or biome.

**Biological clock:** Internal rhythm.

**Daily rhythm:** Behavior tied into the 24-hour day-night cycle.

**Diurnal:** Animals that hunt food during the day.

**Nocturnal:** Animals that hunt for food at night.

**Lunar rhythm:** Cycles that are determined by the moon.

**Annual rhythm:** Cycles that occur yearly.

**Hibernation:** The internal process of animals slows down during hostile winter conditions.

**Estivation:** When the internal process slow down due to extremely dry and hot conditions.

**Photoperiod:** The length of day light.

### Preview and Review Questions:

What factor most affects the kind of plant and animal found in an area. (The climate).

How are conifers different than deciduous trees? (Conifers have seed bearing cones, and do not shed their leaves in winter. Deciduous trees shed their leaves in winter).

How do volcanic islands become lush paradises? (Plant and animal life disperse by wind and water. Seeds can float on the water or blow in the wind. Small animals may ride on twigs and branches as they float to the island).

Give examples of physical barriers. (Tall mountains, oceans, wide valleys and man made barriers like tall buildings and dams.)

Give examples of ecological barriers? (When a habitat does not meet the needs of certain plants and animals.)

What are some factors that determine life in an area? (Moisture, temperature, light, soil conditions, and wind).

Why do some birds migrate to the tundra in the summer? ( When the surface snows melt, they leave puddles of water that attracts insects for the birds to eat. Also, most of the plants bear seeds at the same time providing food.)

Why is it difficult to tell exactly where one biome ends and another begins? (Biomes are general classifications for an area.)