



Discussion Guide for

THE LIVING SOIL

OBJECTIVES:

- To show that the source of soil is rock that is broken down by the action of many natural physical forces.
- To provide evidence of the dependence of living things on soil.
- To show the ways in which living things interact with each other and with the soil.
- To develop appreciation for the role of death and decay in the cycle of life.
- To provide the opportunity, through micro and time-lapse cinematography, to observe and reflect on natural events.

SYNOPSIS:

Awarded a Golden Tripod Award, the film uses photographic techniques to reveal activities of nature that our human senses cannot otherwise register. With remarkable micro- and time-lapse cinematography, this non-narrated film develops understanding of the following opening message which scrolls across the screen:

For millions of years, immense forces have weathered and shaped the surface of the earth to produce a thin layer of soil. Yet this continually changing, fragile veneer is the foundation of all terrestrial life.

The soil is both the source and the product of the cycle of life and decay.

A large boulder rolls down a seaside cliff and continues its fall to the sea floor where, gradually over time, it will be broken down and become part of Earth's moving, living soil. The sun heats down on Earth's surface. Snow falls and lodges in the crack of a rock and freezes, expanding the crack and breaking the rock into separate parts.

A drop of water splashes on sandy soil. The sun shines and warms a moist seed. The seed sprouts and sends a root into the soil. Millipedes, centipedes, spiders, mollusks, and various insects work their way in and around the sprout and down into this small patch of soil. The growing sprout unfolds its leaves; its stem and root systems grow longer, stronger. A bud forms and becomes a flower. Ants and bees come to the plant. A worm crawls through the soil. A mouse scurries nearby. A mushroom grows. All these events of months, we can view in minutes. Then from growth, the activity moves to decay. The plant and mushroom wither and die. The mouse lies dead on the ground; and in an unforgettable time-lapse sequence, beetles and other insects devour the mouse carcass leaving nothing but skeleton which is pushed aside by a new seed sprout.

QUESTIONS TO ASK BEFORE SHOWING THE FILM:

Many concepts and generalizations about life cycles, weathering, interrelationships, and soil nutrients are supported by the visual sequences in this film. Review and discuss those of primary interest to your group before showing the film, and ask that everybody look for evidence of the generalizations in the footage that they'll see.

Some suggestions for discussion follow:

- Soil is made up of rock and mineral particles mixed with living things and their remains.
- Rock is broken down by natural physical forces. These forces include moving water, rain, snow, ice, wind, temperature change, gravity, and chemical erosion.
- Soil is the thin layer of the earth's surface that supports the growth of terrestrial plants.
- Animals are dependent on soil, directly and indirectly, for life.
- Decay of plants and animals returns chemicals to the soil that contribute to new life.

QUESTION TO ASK AFTER SHOWING THE FILM:

1. Why do you think soil is one of Earth's most important natural resources? (All life is dependent-directly and indirectly on soil for growth.)
2. Describe the events you saw in the film that support the following opening statements: "For millions of years, immense forces have weathered and shaped the surface of the earth to produce a thin layer of soil." What are some of those forces? (Sun, water, temperature changes, wind.) "Yet this continually changing fragile veneer is the foundation of all terrestrial life." Why is soil called a "fragile veneer"? (It's a thin layer, easily eroded.) Why do you think it's important to conserve soil? (It took millions of years to produce. All life on land relies on it for life. Without soil there could be no terrestrial life.) "The soil is both the source and the product of the cycle of life and decay." How is soil the source of the cycle of life? Reinforce that all terrestrial life depends on soil.) What do decayed plants and animals contribute to the soil? (The indispensable chemical nutrients for new growth.)



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3. What animals did you observe living in the patch of soil? (Among those shown are a millipede, snail, worm, beetle, grubs, ant, bee, spider, mouse.)

4. What do you think is meant by the term living soil? Fertile soil, rich in the nutrients that are the food for plants.)

5. In what ways do you think plants contribute to living soil? (their roots break up the soil, making it good for plants to grow in. When plants die, they decay, returning nutrients to the soil. As living things, they provide food and shelter to other living things which die, decay, and fertilize the soil. And plants help prevent soil erosion.)

6. Describe the cycle of life and death represented in the film by the mouse.

ADDITIONAL ACTIVITIES:

Assign research topics to small groups and ask them to share their findings.

- Find Out more about the processes of weathering and deposition in the formation of soil.
- How does the earthworm contribute to fertile soil?
- Why is erosion a threat to farming? What do farmers do to protect their soil from erosion? Find out about the dust storms of the 1930s.
- Scientists who specialize in the study of soil are called pedologists. What kind of work do they do?
- Identify some of the animals shown in the film; find out what they eat- which eat plants, which eat other animals, and which eat both plants and animals and make a food chain.

PROGRAMS DETAILS

LENGTH:

9 minutes

SUBJECT AREAS: LIFE SCIENCE, ECOLOGY

AUDIENCE LEVELS:

INTERMEDIATE-ADULT

Ages 6 - 11

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