
SYNOPSIS:

There are approximately 1 1/4 million known species of animals on earth. About 1/4 of these species are beetles. With amazing close-up and time-lapse photography, this program provides a fascinating look at the world's most abundant and successful form of insect life, as it details the life cycles of two of its representatives, the fearsomely predatory tiger beetle and the familiar ladybug.

CURRICULUM UNITS:

Biology
Entomology
General Science
Life Science

CAREER OPPORTUNITIES:

Biologist
Ecologist
Entomologist
Farmer
Forester
Horticulturist
Naturalist
Nature Photographer
Zoologist

BACKGROUND INFORMATION**& PROGRAM OVERVIEW:**

It is estimated that three of every four animal species on earth are insects. With approximately 300,000 different species, beetles are the most abundant and varied of insect and animal life.

This program profiles in detail two representatives of the beetle kingdom, the tiger beetle and the ladybug, but students will see a variety of other fascinating species as well. The program gives a definition of "species" and physiological characteristics beetles share with other insects. Species of the insect order of Coleoptera, or beetles, are characterized by two pairs of wings. One pair is hardened and covers the second pair as a protective "shell". The wings meet in a straight line down the center of the beetle's back. Like many other insects, all beetles undergo complete metamorphosis over their lifetime. Juvenile forms differ greatly from the adults. Beetles hatch from eggs as larvae and go through a pupal stage from which adults emerge. Students will see tiger and ladybug beetles progress through these stages.

Tiger beetles and ladybugs are predators like many beetles, but they are also preyed upon. Students will witness some of the defenses these and other beetles have developed to survive, such as hard wing covers, the ability to release chemical toxins, to fly, or to move very quickly.

The beetle has always been significant to civilization. The program closes with some of the reasons why, including competing with them for food and regarding them as religious symbols.

ISSUES AND CRITICAL THINKING:

- 1) After showing the video, ask your class the following:
 - a) What are some of the features beetles share in common with other insects?
 - b) What are the stages of beetle development?
 - c) What forms a beetle's "shell"?
 - d) What are some ways beetles defend themselves?
 - e) What are some ways beetles have been important to humans?

- 2) After showing the program, discuss the variety of habitats in which beetles can be found. Take the class for a nature walk on the school grounds and search for beetles. Determine if your students are able to distinguish beetles from other insect orders. Use a field manual to identify the beetles that are found. Where were they found? What do the different species eat? Is there any information on their lifespans? How long do they remain in the larval or pupal stage? If you live in a cold climate, do the beetles live through the winter?

- 3) If there is a nature center, natural history museum or entomological collection in your area which has a collection of beetles, arrange a visit.

- 4) Have students draw pictures of one of the beetle species they observed in the program, on the nature walk, at the entomological collection, or at home. They should include in their drawings their species' habitat, food, life cycle, or means of defending itself.

- 5) Discuss both beneficial and harmful beetle species. Study the history and importance of a type of beetle, such as the boll weevil or scarab beetle. Research which, if any, beetles are endangered and why. How might they be ecologically important?

6) Recall the program's sequence about the ancient Egyptians' use of the scarab beetle as a symbol for death and rebirth. Have you or any of your students seen a stone carved like a scarab? Can the class find any more examples, in books or magazine, of the beetle used in works of art, jewelry. etc?

7) There is incredible variation in the beetles kingdom. Some beetles have body modifications such as "horns" iridescent or vivid coloration, distinctive marking, unusual diets or habitats. Some, such as fireflies. can even luminesce. Do their variations have purpose or significance? Have students research some of the more extraordinary species of booties.

GLOSSARY:

Abdomen- One of the 3 regions of the body of an insect: head, thorax, abdomen.

Beetle- An insect of the order Coleoptera, with two pairs of wings, the outer pair of which is hardened and forms a protective cover over the other pair of wings. The wings meet in a straight line down the center of the insects back.

Dormant- In a state of suspended biological activities, which are capable of being resumed.

Habitat- The place or site where plants or animals grow or live naturally.

Insect- Small animal, with 6 legs, no backbone, and a body divided into 3 parts; head, thorax, and abdomen.

Larva(e)- Worm-like stage in beetle development. generally with a distinct head, thorax, and abdomen.

Predator- An animal that lives by devouring other animals.

Prey- An animal that is potential food for another animal.

Pupa(e)- Resting stage in beetle development, in which the larva remains dormant within a hard, tough "skin" as it changes into an adult.

Scarab- Any of several species of beetles. especially significant to the ancient Egyptians as a symbol of death and rebirth, and often represented in small stone carvings which are today regarded as good luck charms.

Species- A group of animals which share the same traits.

Weevils- Several types of beetles that are food posts.

Whirligig beetle- Any of several species of water beetles which spend much of their time upon the surface of still water, moving rapidly in circles.

**Wonders of Biology – Animals,
Insects, Plants & Fungi**



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THE ABUNDANT BEETLES



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