

AN INTRODUCTION TO LIFE IN A CAVE ACTIVITY

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For the Virtual Center for the Environment (VCE)

A part of the Institute of Natural Resources Analysis and Management (INRAM)

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TEACHER INFORMATION

ABSTRACT: Students will develop two webs showing the interactions between organisms and the environment. The first web will look at the environment outside of a cave and the second will look at the environment inside of a cave. The two webs will be compared and hypotheses will be made concerning what adaptations cave organisms would need to survive in a cave.

GRADE LEVEL (S): 7--12

OBJECTIVES: Students will:

- Develop a web showing the general interactions of organisms and their environment outside of a cave.
- Develop a web showing the general interactions of organisms and their environment inside of a cave.
- Compare the two webs, and hypothesize about conditions of living in a cave.

NATIONAL STANDARDS:

Unifying Concepts and Processes

Change, consistency, and measurement (5-12)

Life Science – Development of an understanding of:

Interdependence of organisms (9-12)

Matter, energy, and organization in living systems (9-12)

NEW MEXICO STANDARDS:

Strand II: Content of Science- Standards

Content Standard 2 - LIFE SCIENCE: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.

5-8 Benchmark I: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.

9-12 Benchmark I: Understand how the survival of species depends on biodiversity and on complex interactions, including the cycling of matter and the flow of energy.

MATERIALS:

- A large tablet and marker, chalkboard and chalk, whiteboard and marker, or overhead projector, transparency, and marker.

BACKGROUND: A cave is a limited environment compared to environments where light is present. The "food materials" primarily come from outside of the cave, except for some chemosynthetic bacteria. The lack of light also creates problems for animals seeking food, avoiding predators, and finding a mate. The atmosphere in the cave is also dependent on exchange with the atmosphere outside of the cave.

PROCEDURES:

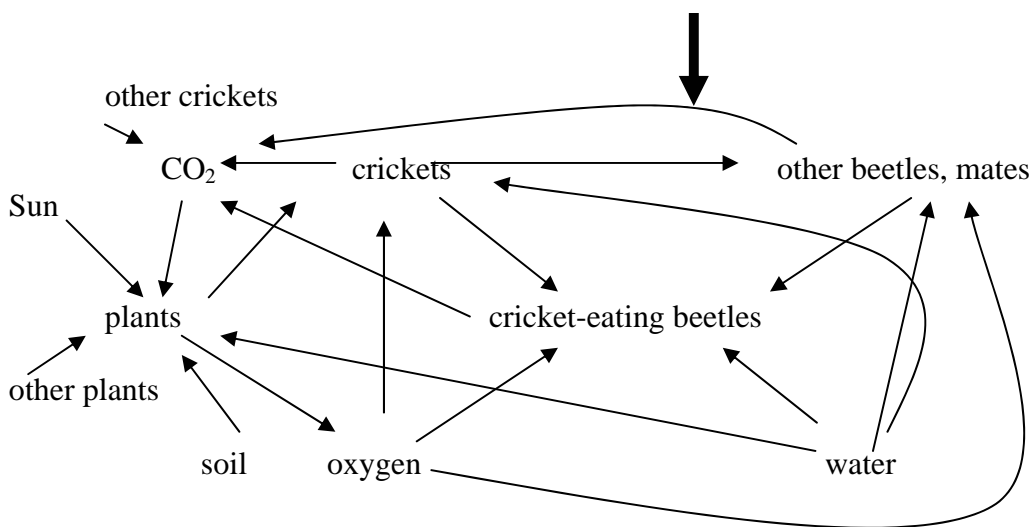
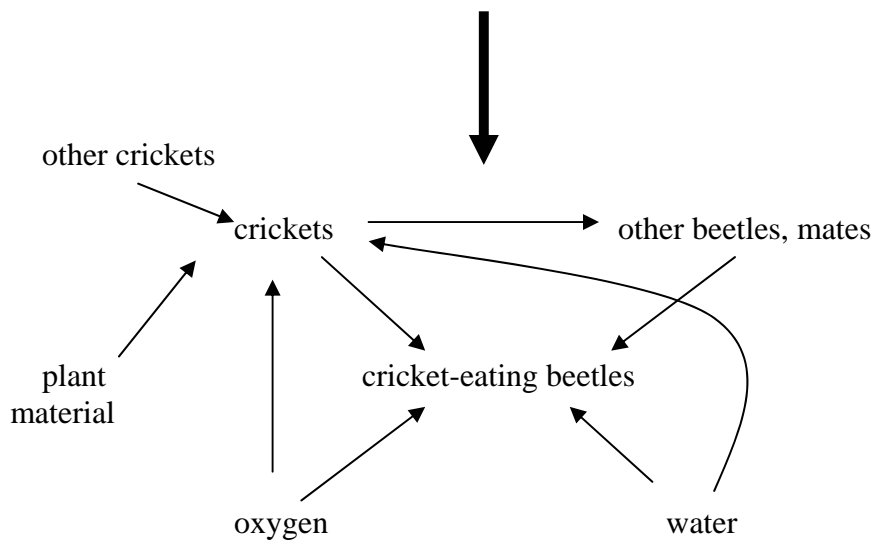
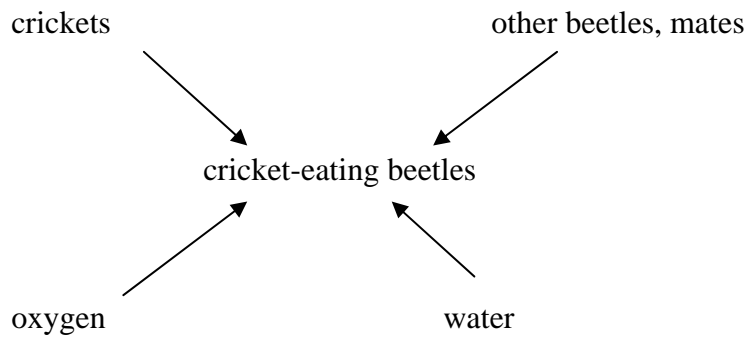
- At the top of a sheet board, or transparency write "Community Outside of a Cave." Write the phrase "cricket eating beetle" in the middle of the sheet, board, or transparency. Have the students write this in their notebooks.
- Ask the students what a cricket eating beetle needs to survive. Write all answers around the "cricket eating beetle," and draw arrows toward the beetle to indicate that the beetle needs these. Have the students also record this.
- Next choose one of the beetle's needs, for example crickets, and ask the students what it needs to survive, crickets need plant material, or where the beetle's need comes from, for example oxygen.
- Write all of the suggestions down and draw arrows to indicate the direction of movement. Have the students continue to copy this information.
- Continue to do this for all suggestions. This will eventually get quite complex.
- When every suggestion has been accounted for, start a new sheet for a cave community
- At the top of a sheet board, or transparency write "Community Inside of a Cave." Write the phrase "cricket eating cave beetle" in the middle of the sheet, board, or transparency. Have the students write this in their notebooks.
- Ask the students what a cricket eating cave beetle needs to survive. Write all answers around the "cricket eating cave beetle," and draw arrows toward the beetle to indicate that the beetle needs these. Have the students also record this.
- If any item must come from outside of the cave indicate this and that item is completed, for example oxygen from outside of the cave.
- Next choose one of the beetle's needs, for example crickets, and ask the students what it needs to survive, crickets need plant material from outside of the cave
- Write all of the suggestions down and draw arrows to indicate the direction of movement. Have the students continue to copy this information.
- Continue to do this for all suggestions that do not come from outside of the cave.
- When every suggestion has been accounted for, compare the two webs.
- Record the comparisons on an additional sheet. Have the students write the comparisons in their notebooks.
- Next ask the students to hypothesize how the cave organism's needs can be met. Record this hypothesizes.

References:

- Culver, David C. 1982. Cave Life, Evolution and Ecology. Cambridge, Mass. Harvard University Press
- Mohr, Charles E. and Thomas L. Poulson. 1966. The Life of the Cave. New York: McGraw-Hill Book Company
- National Research Council. 1996, National Science Education Standards. Washington D.C.: National Academy Press
- New Mexico Department of Education. 2003. New Mexico Science Content Standards, Benchmarks, and Performance Standards. <http://164.64.166.11/cilt/standards/science/index.html>

SAMPLES

Community Outside of the Cave



Community Inside of the Cave

