FOSSIL IDENTIFICATION

GRADE LEVEL: 6-12

TIME REQUIRED: Two class sessions

SETTING: Classroom as a pre-site activity

GOAL: The student will identify types and frequency of fossils found in rocks at Mammoth Cave National Park.

OUTCOMES: At the end of the lesson the student will:
- identify fossils routinely found in the Mammoth Cave area, including:
  - gastropod
  - brachiopod
  - trilobite
  - bryozoan
  - horn coral
  - crinoid
- define an index fossil.
- state the index fossil for Mammoth Cave St. Genevieve limestone.

KERA GOALS: Meets KERA goals 1.1, 1.2, 1.3, 1.4, 1.5, 1.10, 2.1, 5.3, 6.1, 6.2

BACKGROUND INFORMATION

The Mississippian Period was named for the limestone bluffs along the Mississippi River where typical outcrops occur. Rocks formed during this time period are found in the states that make up the upper Mississippi Valley. During most of the Mississippian period a shallow sea covered Kentucky. As these seas receded they were replaced by river deltas and low coastal areas. These periods of coastal environments alternated with periods when the sea inundated the area. Life forms from this ancient ocean became our current fossil record.

Fossils are the remains or traces of ancient life that are preserved in rocks. Of the large numbers of organisms that once lived, only a small number became fossils. Most of these fossils are found in sedimentary rock. To become a fossil the organism must meet specific criteria. The organism must have hard body parts such as bones, cartilage, teeth, or shells. The organism needs to be protected from scavengers and decomposers. Therefore, when it dies it needs to be buried quickly. The best location for fossilization to occur is in mud. A riverbed, lake, or sea floor are ideal fossilization sites. As more and more layers of sediment cover the organism, the resulting pressure and heat hardens the sediments into rock, capturing the evidence of past history.

Because fossils are restricted to a certain time interval, a fossil can be used to determine the relative age of the rock in which it is preserved. If, for example, we find rocks that contain crinoids, we can conclude the rocks are Paleozoic in age. Such fossils are called index fossils. Some Mississippian rocks contain so many broken pieces of the crinoid fossil that the Mississippian era is known as the “Age of the Crinoid.”

MATERIALS NEEDED
- Replicas or examples of Mississippian era fossils to include a gastropod, brachiopod, trilobite, bryozoan, horn coral, crinoid, and others as available*
- Rocks embedded with fossils
- *Fossil Identification Workbook* (included with this curriculum)
- “Fossil Identification Graph”
- Pencil

*fossil replicas available to borrow from Mammoth Cave Education Program.

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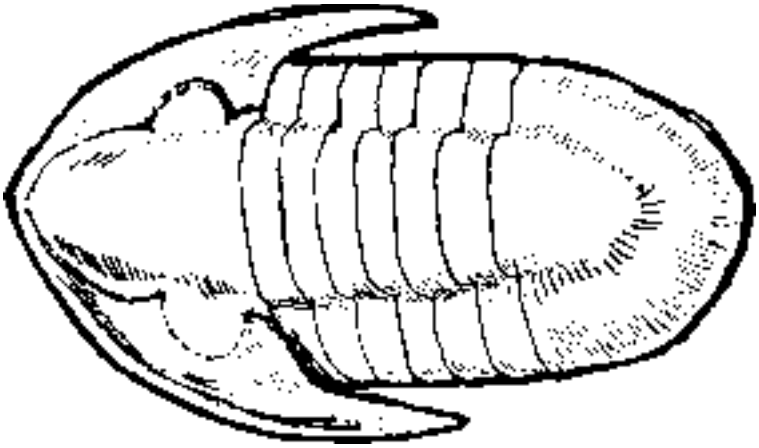
PROCEDURE

1. Divide the class into small groups of 2-4 students each. Give each group a set of fossil replicas and a copy of the Fossil Identifcation Workbook.
2. Have the students compare the drawings on the workbook with their fossil replicas.
3. Because each fossil has a different part exposed in real life, instruct the students to look at each fossil from various angles in order to practice seeing their fossils from different perspectives.
4. Discuss the identifying features of the various fossil types.
5. Give each group a selection of rock samples that contain embedded fossils and a copy of the "Fossil Identification Graph." Instruct students to examine their rocks carefully. They should use the *Fossil Identification Workbook* to identify the fossils found in their rocks.
6. Instruct the students to make a list of the fossils their group can identify. Count the number of each type of fossil. Represent this number as a bar graph on the "Fossil Identification Graph."

EXTENSION

- Ask each group to present an oral or written report that summarizes their findings.
- On the board, prepare a frequency graph representing the total numbers and types of fossils found by all the groups. Show the combined total as a bar graph.
- Have the students convert their findings into a line graph.
- Plan a field trip to identify types of fossils in situ. In south-central Kentucky, possible sites could include Mammoth Cave National Park, areas where ground excavations have left rocks littering the area, road-cuts, or the banks of rivers which have cut down through limestone layers.



FOSSIL IDENTIFICATION GRAPH

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11									
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7									
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	Brachiopods	Pelecypods	Gastropods	Bryozoans	Trilobites	Corals	Echinoderms	Teeth	Plants