

#10549 OUR EARTH: FOSSILS



LANDMARK MEDIA, 2003
GRADE LEVEL: 4–8
15 MINUTES
1 INSTRUCTIONAL GRAPHIC INCLUDED

DESCRIPTION

Uses trilobite fossils as an example to illustrate the challenges scientists face in understanding the prehistoric world and its place in time. Examines fossil sites in Australia, discusses how fossils are formed, and tells how a fossil's world is recreated.

ACADEMIC STANDARDS

Subject Area: Science

- Standard: Understands Earth's composition and structure.
 - Benchmark: Knows that fossils provide important evidence of how environmental conditions have changed on the Earth over time (e.g., changes in atmospheric composition, movement of lithospheric plates, impact of an asteroid or comet). (See INSTRUCTIONAL GOALS 1 and 2.)
 - Benchmark: Knows how successive layers of sedimentary rock and the fossils contained within them can be used to confirm the age, history, and changing life forms of the Earth, and how this evidence is affected by the folding, breaking, and uplifting of layers. (See INSTRUCTIONAL GOALS 2 and 3.)
 - Benchmark: Knows methods used to estimate geologic time (e.g., observing rock sequences and using fossils to correlate the sequences at various locations; using the known decay rates of radioactive isotopes present in rock to measure the time since the rock was formed). (See INSTRUCTIONAL GOALS 3.)
- Standard: Understands biological evolution and the diversity of life
 - Benchmark: Knows that the fossil record, through geologic evidence, documents the appearance, diversification, and extinction of many life forms. (See INSTRUCTIONAL GOALS 4.)

INSTRUCTIONAL GOALS

1. To describe how trilobite fossils are formed.
2. To explain how the trilobite fossils offer clues to the past.
3. To depict how locations of fossil layers reveal change and evolution.

C a p t i o n e d M e d i a P r o g r a m

4. To state the responsibilities of paleontologists.

VOCABULARY

- | | |
|--------------------|-----------------------|
| 1. bivalve | 7. paleontologists |
| 2. Cambrian period | 8. Permian extinction |
| 3. fossilize | 9. sediment |
| 4. impression | 10. strata |
| 5. mass extinction | 11. stromatolites |
| 6. minerals | 12. trilobite |

BEFORE SHOWING

1. Present a timeline including prehistoric eras and modern times. Point out the Cambrian and the Permian periods.
2. Complete the "Test Your Knowledge" worksheet about fossils. (See INSTRUCTIONAL GRAPHIC.)

DURING SHOWING

1. View the media more than once, with one showing uninterrupted.
2. Pause at the sections mentioning locations in Australia, and point them out on a map:
 - a. Kangaroo Island.
 - b. Queensland.
 - c. Riversley.
 - d. Lark Quarry.
 - e. Shark Bay.
3. Pause at the section showing the stromatolites in Shark Bay. Discuss why these organisms still exist today.
4. Pause at the scene showing an asteroid hitting the Earth. Discuss other possibilities for the Permian extinction and the later extinction of dinosaurs.



AFTER SHOWING

Discussion Items and Questions

1. What is a fossil, and how does it form?
2. Trilobites are ancient relatives of what groups of animals?
3. In what geological period did the trilobites live?
4. How did the trilobites get their name?
5. Which organisms are the trilobites relatives of?
6. How does a trilobite fossilize?
7. How do scientists know that trilobites are similar to crabs and shrimps?
8. The trilobites had compound eyes. What does this suggest?



9. Some trilobites were found rolled into a defensive ball. What does this indicate?
10. Where does the mineral that replaces an original fossil come from?
11. What factors determine if an organism will fossilize or not?
12. What are trace fossils?
13. In undisturbed strata, where are the oldest rocks always found?
14. Which fossils would be found in the upper layers of rock: trilobites or dinosaurs?
15. Why are most fossils formed in water?
16. What are stromatolites, and how are they formed?
17. About how old are the oldest stromatolite fossils?
18. Why have creatures in the sea changed less than those on land?
19. What explanation is given for the mass extinction of trilobites before the arrival of the dinosaurs?
20. In what period did this mass extinction occur?
21. What are three goals of paleontologists?

Applications and Activities

1. Report on the various kinds of fossils (i.e., imprint, mineralized, fossilized bones, petrified wood, amber).
2. Make samples of fossils using clay, plaster of Paris, chicken bones, shells, and sculpturing tools.
3. Make a poster or trifold display showing the process of fossilization of a trilobite. Label the steps and illustrate with drawings.
4. Refer to a geological timeline, and calculate the difference in years between the eras of:
 - a. Trilobites and dinosaurs.
 - b. Stromatolites and trilobites.
 - c. Fish and trilobites.
 - d. Humans and dinosaurs.
 - e. Stromatolites and humans.
5. Set up activities relating to the work of paleontologists:
 - a. Chicken bones.
 - (1) Save and clean the bones of a baked chicken.
 - (2) Put them in a pile and assemble them to form a skeleton.
 - b. A dig.
 - (1) Distribute cookies made with raisins, chocolate chips, and other cookie ingredients.
 - (2) Using tooth picks, dig the pieces out of the cookie without breaking them.
 - (3) Report on tools paleontologists use on digs.
 - c. Descriptions.
 - (1) Display pictures or slides of fossils.



C a p t i o n e d M e d i a P r o g r a m

- (2) Write a descriptive paragraph of each.
 - (3) Exchange paragraphs and illustrate the fossil described in the paragraph.
6. Research and report on the fossil site at Lark Quarry.

INSTRUCTIONAL GRAPHIC

- TEST YOUR KNOWLEDGE: FOSSILS

RELATED RESOURCES

Captioned Media Program

- [*Dinosaurs on Earth: Then . . . And Now #3231*](#)
- [*Fossils and Dinosaurs #10406*](#)

World Wide Web



The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and “kid safe” sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **FOSSILS! BEHIND THE SCENE AT THE MUSEUM**

<http://www.rom.on.ca/quiz/fossil/>

Contains information on how fossils are formed, prepared, collected, identified and classified. Includes a short fossil game.

- **A GUIDE TO THE ORDERS OF TRILOBITES**

<http://www.trilobites.info/>

Includes a glossary of terms, fact sheets, FAQs, identification quiz, and other links. Features the “trilobite of the month.” This award-winning Web site is also available in book form.



- **I4C**

<http://www.internet4classrooms.com/earthspace.htm>

Includes links to extinction files, fossil finds, and geologic timelines.

- **FOSSIL FIDDLINGS**

<http://imnh.isu.edu/Public/JustForKids/FossilRecord/subm2temp.html>

Includes activities related to fossils, such as a word find, fossil maze, crossword puzzle, strata cake, and fossil name origins.

- **GEOLOGIC TIMELINE**

<http://www.childrensmuseum.org/geomysteries/timeline.html>

Dive into the depths of time with this geologic timeline. The farther you scroll down, the farther back in time you'll travel. Solve "geo mysteries" with Rex the Dino Detective. Also includes a FAQs link.



TEST YOUR KNOWLEDGE

FOSSILS



Directions: Circle T (true) or F (false)
for each sentence.

- T F 1. Both soft parts and hard parts of an organism will fossilize.
- T F 2. Fossils of dinosaurs are the most common.
- T F 3. Trilobites are organisms that belong to the same group as insects.
- T F 4. Organisms that live on land make more fossils than those that live in water.
- T F 5. Fossils are commonly found in coal.
- T F 6. In rock layers, the more primitive fossils are found on the bottom.
- T F 7. Dinosaur fossils are the oldest fossils in the world.
- T F 8. Creatures in the sea have lost more over the years than those on land.
- T F 9. Trilobites and dinosaurs lived in the same prehistoric era.
- T F 10. A scientist who studies fossils is called a "paleontologist."
- T F 11. Minerals that help form fossils usually come from the soil.
- T F 12. The oldest fossil is about 540 million years old.