

Name: _____ Class: _____

Clues to Ancient Life

By Rona Arato
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Fossils are the remains or impressions of organisms from long ago. In this informational text, Rona Arato discusses how different types of fossils are formed and why it's important to study them. As you read, take notes on the different types of fossils, how they're formed, and why they are important.

- [1] Fossils provide a record of life on Earth. Fossils reveal evidence of ancient life that is preserved in sediment or sedimentary rock. Fossils range from tiny plants and animals to the bones of enormous dinosaurs.



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Why study fossils?

Scientists learn about past life on Earth and how Earth has changed over millions of years from fossils. Fossils tell what animals and plants lived and died out at different times. By examining fossils and the rocks they are found in, scientists understand the effects that events such as mass extinctions,¹ meteorite² impacts, and climate change have on Earth's history. Fossils provide a valuable look into our past, but they do not tell the whole story. Many plants and animals did not become fossils.

Body Fossils

Body fossils are the whole body or parts of the body of a plant or animal. To become a body fossil, some part of the organism must not decay or rot. Skin and internal organs rot, but bones do not. Plant material rots, so plants occur only as imprint fossils. Most body fossils are found buried in sediment, or layers of rock and soil. In rare cases, extreme cold freezes an organism, similar to the way a freezer preserves food. In very dry conditions, such as deserts, a dead animal loses its moisture and shrivels up.

Trace fossils

Trace fossils are markings left behind by an organism such as footprints, trails, burrows, and nests. Scientists learn about the movement and behavior of animals from trace fossils. Coprolites are fossilized animal waste. Paleontologists³ learn what an animal ate from its coprolite.

1. **Extinction (noun):** the state or process of an entire species dying out
 2. a mass of stone or metal that has reached the earth from outer space
 3. a scientist who studies fossils

Sea fossils

- [5] Over 2,000 years ago, Greek scientists found fossils of sea life in the Pindus Mountain range, in Greece. They said the fossils proved that the mountains had at one time been under the sea. Most people refused to believe them. Today, scientists know that oceans at one time covered most of Earth then receded,⁴ leaving behind dry land. Life began in the sea and has existed about eight times longer than life on land. Many more sea animals than land animals have been preserved.

How fossils form

Earth's crust is made up of different types of rock. Fossils are found in rock. There are three forms of rock: igneous, sedimentary, and metamorphic. Rocks are made up of different kinds of minerals. Minerals are solid, non-living substances made of elements.

Sedimentary rock

Most fossils are found in sedimentary rock. The word sediment means "something that settles." Sedimentary rocks are a mixture of dust, sand, mud, shells, corals, and other materials that settle underwater or on land, and compress under pressure. Sedimentary rock forms in layers called strata, with the oldest layer under the newer layers. When a plant or animal dies, it is covered by layers of sediment and preserved as a fossil. Many sedimentary rocks are fossil-rich, while others contain no fossils.

Making fossils

Few of the billions of organisms that have lived on Earth became fossils. For fossilization to occur, an organism must contain hard parts, such as a skeleton or a shell. It has to be buried deeply right after it dies, before it decays from exposure to air, water, or bacteria.

Igneous rock

Some igneous rocks form when magma⁵ rises to the surface through cracks or volcanoes, and cools. Other igneous rocks form when magma crystallizes within Earth's crust. The word igneous means "fiery." Igneous rock does not contain fossils because the lava is so hot it burns any animals and plants it touches.

Metamorphic rock

- [10] Metamorphic rocks are rocks that are changed by heat and pressure. The word metamorphic means "change." Most metamorphic rocks are fossil-free because the pressures that changed them destroyed all evidence of fossils. Some rocks, such as slate, may contain traces of fossils, although their shapes are very different than when they were alive.

4. **Recede** (*verb*): to move back or further away from a previous position

5. hot fluid or semifluid material below or within the earth's crust

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Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Read the sentence from paragraph 1 of Clues to Ancient Life: "Fossils provide a record of life on Earth." How does the author elaborate on the idea in this sentence? [RI.3]
 - A. by describing the different ways that fossils can be formed
 - B. by explaining the types of rocks that usually contain fossils
 - C. by explaining the information that can be learned from studying fossils
 - D. by describing how human understanding of fossils has changed over time

2. PART B: Which sentence from the article best supports the answer to Part A? [RI.1]
 - A. "By examining fossils and the rocks they are found in, scientists understand the effects that events such as mass extinctions, meteorite impacts, and climate change have on Earth's history." (Paragraph 2)
 - B. "Earth's crust is made up of different types of rock." (Paragraph 6)
 - C. "Sedimentary rock forms in layers called strata, with the oldest layer under the newer layers." (Paragraph 7)
 - D. "Some rocks, such as slate, may contain traces of fossils, although their shapes are very different than when they were alive." (Paragraph 10)

3. PART A: How does paragraph 6 of "Clues to Ancient Life" help to develop an idea in the article? [RI.5]
 - A. It introduces how fossils can be found.
 - B. It summarizes where fossils can be found.
 - C. It illustrates the process needed for fossils to form.
 - D. It explains the conditions that allow fossils to form.

4. PART B: Which paragraph best expands on the idea developed in Part A? [RI.1]
 - A. Paragraph 7
 - B. Paragraph 8
 - C. Paragraph 9
 - D. Paragraph 10

