

Looking at Fossils

Well-Preserved Mammoth Carcass Found in Siberia



Objectives

- **Describe** five ways that different types of fossils form.
- **List** three types of fossils that are not part of organisms.
- **Explain** how fossils can be used to determine the history of changes in environments and organisms.
- **Explain** how index fossils can be used to date rock layers.

I. Fossilized Organisms

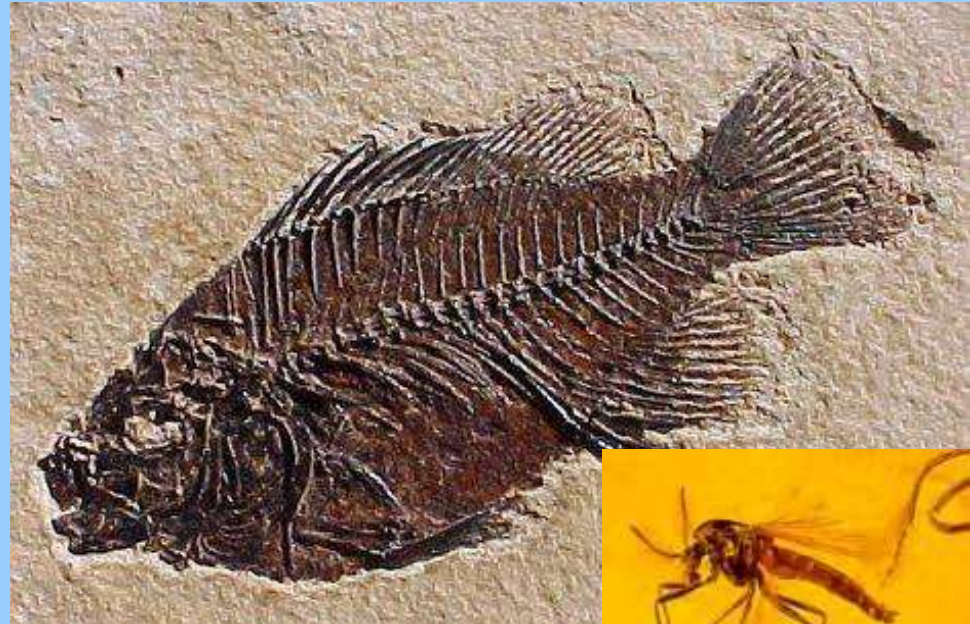
A. Fossils in Rocks

Sometimes organisms are quickly buried by sediment when they die. When the sediment becomes rock, parts of the organism's body may be preserved.

B. Fossils in Amber

Hardened tree sap is called *amber*. Some of our best insect fossils are found in amber.

C. Fossils in Asphalt There are places where asphalt wells up at the Earth's surface in thick, sticky pools. These pools of thick, sticky asphalt have trapped and preserved many kinds of organisms



La Brea Tar Pits

- Asphalt, known as **bitumen**, is the sticky, black and highly viscous liquid or semi-solid present in most crude petroleums and in some natural deposits
- <http://www.tarpits.org/la-brea-tar-pits/current-excavations>
- [Dirty Jobs Video](#)

I. Fossilized Organisms

D. Petrification *Petrifaction*

is a process in which minerals replace an organism's tissues.

The Petrified Forest

E. Frozen Fossils

Because cold temperatures slow down decay, many types of frozen fossils are preserved from the last ice age.



II. Other Types of Fossils

A. Trace Fossils Any naturally preserved evidence of animal activity is called a trace fossil. Tracks are an example of a trace fossil.



B. Molds and Casts A cavity in rock where a plant or animal was buried is called a mold. A cast is an object created when sediment fills a mold and becomes rock.



III. Using Fossils to Interpret the Past

- A. The Information in the Fossil Record** The fossil record offers only a rough sketch of the history of life on Earth. However, the fossil record is incomplete.
- B. History of Environmental Changes** Fossils can tell scientists whether the climate in an area was cooler or wetter in an area than it is at present.
- C. History of Changing Organisms** By studying the relationships between fossils, scientists can interpret how life has changed over time.

IV. Using Fossils to Date Rocks

A. Ammonites Index fossils are fossils of organisms that lived during a relatively short, well-defined geologic time span. One example of an index fossil is the fossil of a genus of ammonites called *Tropites*. *Tropites* lived between 230 million and 208 million years ago and is an index fossil for that period of time.



B. Trilobites Fossils of a genus of trilobites called *Phacops* are another example of an index fossil. When scientists find *Phacops* in a rock, they assume that the rock is approximately 400 million years old.

