

# Fossils

**Fossils** are the preserved remains of an organism from Earth's past. When a plant or animal dies, it usually decomposes. Bacteria break down its tissue, and over a period of months or years, the tissue disintegrates. But sometimes animal or plant remains are protected from the elements and bacteria that would normally break it down. When this happens, traces of the fleshy parts of the organism may be preserved as a fossil. However, usually only the mineral parts of an organism, such as shells or skeletons, are preserved.

Fossils can be formed in many different ways. One type of fossil is an animal bone, tooth, or shell that has been preserved—often for millions of years. Fossils also can be formed when minerals seep into the pores of a slowly decaying shell or bone and replace the organism's cells with mineral material. Ancient wood preserved in this way is called "petrified wood," which is actually stone. An organism preserved in this way does not continue to decay.

Two other kinds of fossils are molds and casts. A mold is formed when acids dissolve a bone, tooth, or shell and leave an imprint or mold of the object in sediment. One way to think about a mold is to imagine pushing a seashell into wet sand. When you pull the shell away, the shape of the shell has been pressed into the sand. If the sand hardened over time, the impression of the shell would be preserved as a mold. A tiny sea creature's skeleton found in a piece of sand- stone is an example of a mold. A



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*Is it a rock or is it wood? This petrified wood was found in Navajo, Arizona, and probably formed more than 225 million years ago. This fossil is four times as hard as granite rock. The colors are the result of different kinds of minerals that replaced the organic material in the wood.*

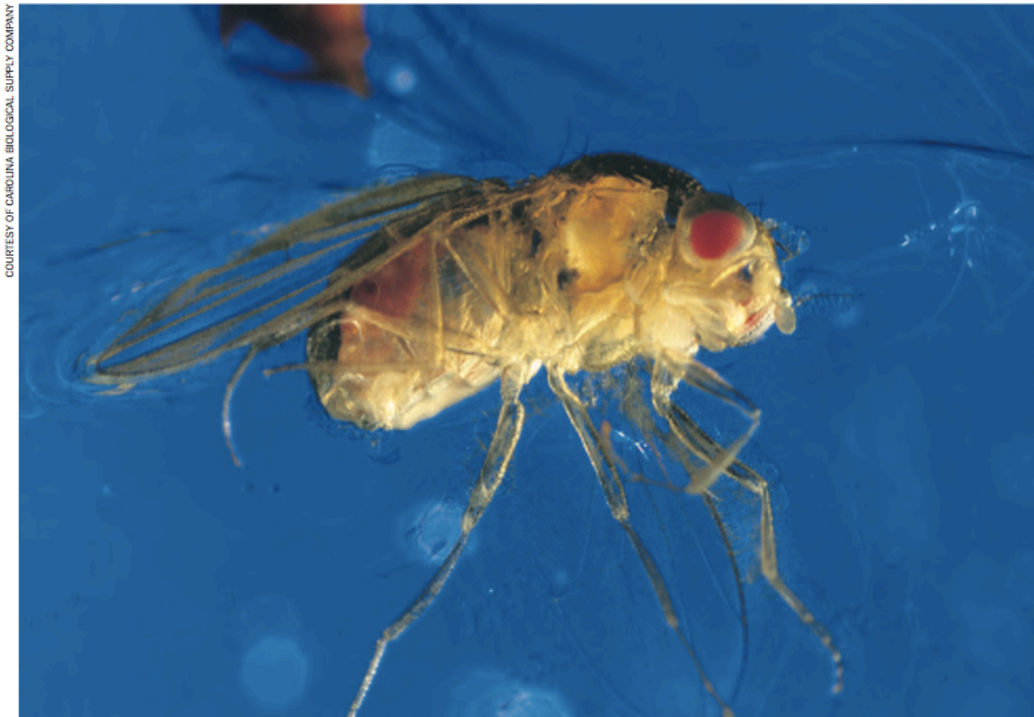


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*This rock was found in Cap Rock, Texas. How many molds or casts of organisms can you find?*

cast is formed when sand or other minerals fill a cavity-shaped mold over time, and then harden to form a replica of the original organism.

Sometimes an entire animal is preserved as a fossil. For example, 30 million years ago a fly may have gotten caught in tree resin. Eventually, that resin hardened into a clear, rocklike substance called “amber” with the fly entombed inside it. Sediment covered the amber and buried it deep inside the earth. Eventually, erosion may have brought the amber with the perfectly preserved fly to the surface to the lucky person who found it. The oldest amber fossil ever found is about 300 million years old.

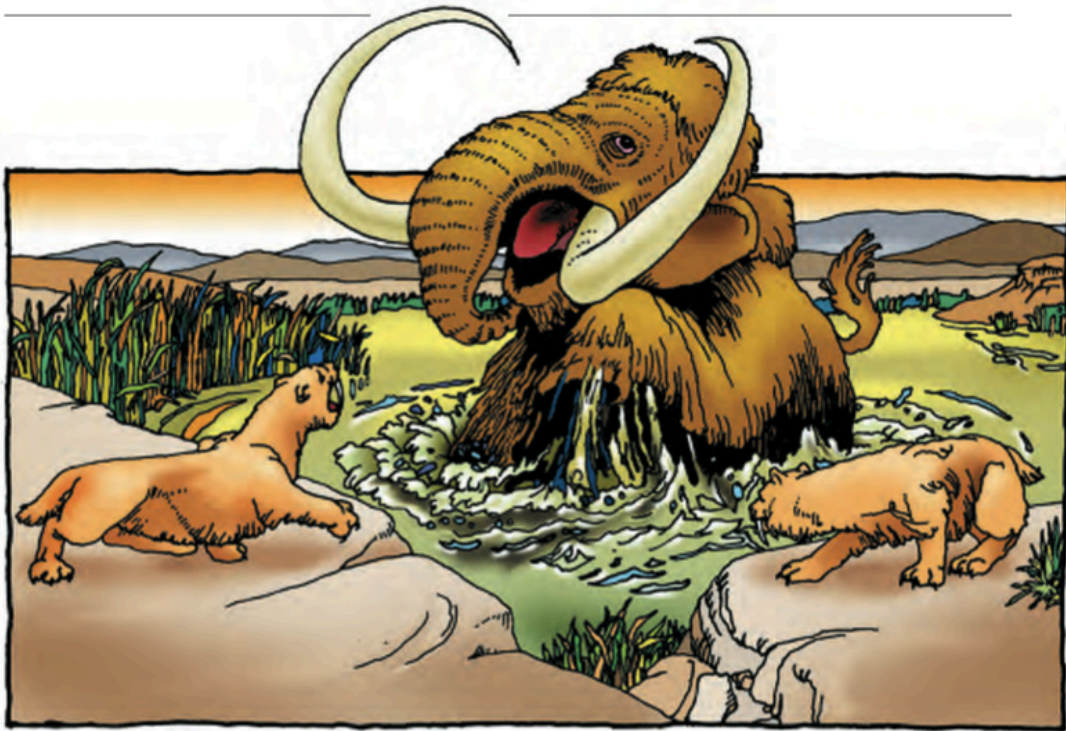


*This fly was trapped when it landed on sticky resin. In time, the resin turned to amber and the fly was preserved. This piece of fossilized tree resin was found in the Dominican Republic and dates back 24–34 million years.*

Being trapped in tar also can fossilize animals. In the La Brea Tar Pits in southern California, tar bubbled up to the surface and formed pools in which many animals became trapped. In rare cases, freezing can also preserve an entire organism. Woolly mammoths, woolly rhinoceroses, and musk oxen are animals that were once frozen and have been recovered. Another method for preserving fossils is mummification. Mummification involves the air-drying of soft tissues such as muscles and tendons before the organism becomes buried.

Fossils also can include tracks, burrows, borings, nests, or any other preserved indication of the activities of an organism. Even an organism’s feces (solid waste) can become fossilized. Fossilized waste can provide important information about diet and the size of the animal that produced it.





*This mammoth was trapped in the La Brea Tar Pits of southern California. Saber-toothed tigers are in the foreground.*

The fossilized remains of microorganisms and organisms with skeletons or shells are abundant. Even the fossilized bones and teeth of dinosaurs and sharks are more common than you may realize. The next time you find yourself on a beach, don't just look for shells—look for the fossil of a shell in a piece of sandy rock. You might be surprised at what you will find!



*This fossil records the tracks of a three-toed Archosaurus. It was found near Summit, New Jersey. Sediment washed over the tracks and in time, hardened into stone, preserving the tracks.*