

Fossils

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What is a fossil?

A fossil is a part of an animal or plant that has been preserved in rock.

A few living things have been trapped in ice, or tar, or sticky sap from trees called amber, but most fossils were formed in wet mud and sand. We call that mud and sand "sediment." As the sediment dries, the trapped, once living thing becomes part of the rock layers of the earth.

How is a fossil formed?

Under normal circumstances, plants or animals that die do not last very long. Scavengers might eat the body, or perhaps it will rot from bacteria that cause it to decompose. Just exposure to air and sunlight can also cause the organism to disintegrate.

So, how did it happen that billions and billions of things did die and are preserved for us in the rock layers of the earth? The answer lies in how fossils were formed.

There are different kinds of fossils, but most all have three things in common. They all involve death, quick burial (which closes them off from other things), and large amounts of wet sediment. Fossils do not require millions of years to form. They do require exactly the right conditions.

Paleontologists (scientists who study fossils) tell us there are two main types of fossils: body parts fossils and trace fossils.

Body parts fossils

Body parts fossils were formed when a plant or animal died and was buried quickly in wet sediment. The soft body parts rotted. This left hard parts like bones, teeth, or shells. The weight of the layers of mud in which they were buried pressed down, causing minerals dissolved in the water that is in the ground to seep into the spaces in the cells of the hard parts. Eventually, the bones or teeth or shells were replaced by these minerals, and they became a rock. Silica, calcite, and pyrite are common minerals involved in the process of making body parts into fossils. These fossils often take on the color of the minerals from which they were made. This process of making fossils is called permineralization.

Trace fossils

Trace fossils are marks of a creature's everyday activities left in sediment that has hardened. The actual living thing is no longer there, but the fossil is made from its markings. These can be things like the footprints from a dinosaur, impressions from leaves, paths made by clams, or burrows made by worms. A special kind of trace fossil is fossilized "poop" called coprolite. This waste material has turned to rock, so

it doesn't smell, and it won't come off in your hand if you touch it. Coprolite can be studied under a microscope and may even reveal the contents of the organism's last meal.

Which living things are found in the fossil record?

This might sound surprising to you, but 95% of all fossils are creatures from the sea like clams, corals, sea snails, trilobites, and lamp shells. These organisms do not have backbones. They do have hard outer parts that have the greatest chance to become fossils. Somehow they had to have been buried quickly and so deeply, under heavy layers of sediment, that they were unable to escape. They died. The conditions were perfect for them to be turned into rock.

Nearly 5% of all fossils are plants. Many are ferns, but some are ordinary plants like oaks and willows. These, too, were buried deeply under sediment. The conditions were perfect for them to be turned into rock.

Less than 1% of all fossils are animals with backbones, which we call vertebrates. These would be the bones of animals like fish, or birds, or dinosaurs, but they are very rare. Few fossils are vertebrates because many of these animals lived on land. When land animals die in water, they often bloat, float, and rot. They are not easily and quickly buried. Their bodies would have decomposed from bacterial action or been ripped apart by strong flood currents, or been devoured by scavengers. A few vertebrates, or parts of vertebrates, remained intact, were buried quickly, and the conditions were perfect for them to be turned into rock.

Where can fossils be found?

Most fossils are found in sedimentary rocks (rocks laid down by water), such as limestone, mudstone (or shale), and sandstone. Common places to hunt for fossils are in stream beds, quarries, and on the walls of cliffs and road cuts. And you can hunt for these hidden treasures all over this world. Fossils are found on tall mountains.

Fossils are found at the seashore. Fossils are found inland where there is no water present at all. But this is exactly what you would expect if there was a water catastrophe that covered the whole world at one time.

What can we learn from the fossil record?

Most fossils are a few thousand years old. They can help us understand what animal and plant life was like many years ago. Some of the creatures we see preserved in rock may no longer exist today, like trilobites and dinosaurs. Creatures that no longer exist we call extinct. If we did not have the fossil record, we would have no idea what these forms of plants and animals were like.

Many fossils we find are from animals and plants that do exist today. Very little has changed in their structure and appearance. We call them living fossils. The nautilus, horseshoe crab, coelacanth (a fish), and ginkgo tree are examples of living fossils.

Another thing we can learn from the fossil record is that something very important is missing. There are no fossils of creatures turning from one kind of animal or plant into another kind. It's clear from Genesis that God created each organism to reproduce after its own kind.

The fossil record supports the creation account from the Bible.

The fossil record is also a statement of how much God hates sin. He sent a flood that covered the world so that every land creature that had the breath of life in it would perish. Fossils remind us that God is fair and He judges sin severely.

But God gave the world a second chance. He didn't just end history with the worldwide Flood. He preserved two of every kind (and seven of some) of air-breathing land animal to start up the world again. And He saved a family—Noah's family—so the human family could continue. God did this because He had made a promise that He intended to keep. That promise was to send a Savior to this earth who would be a Rescuer from sin. His name was Jesus. And just as the Ark was a place where Noah and his family could be safe from the judgment of the Flood, so Jesus is the ONE who can keep us safe from God's judgment on our sin.

And finally, the fossil record shows us that we can trust God's Word, the Bible, completely. Everything we can observe from the fossils we find fits perfectly into the account of the world's history as the Bible records it.