

Adult Guidance

Fantastic Fossils

In this lesson children will learn about fossils in terms of their relationship with rocks. The main focus will be how and why fossils form in sedimentary rocks. While there are other types of fossils (e.g. whole body fossils preserved in amber and ice) these will be touched upon but will not be investigated in greater depth. The children will study fossilisation in greater depth in Year 6 as part of the Evolution and Inheritance unit.

There are a number of different classifications of fossils. However, most sources would state that at a simple level there are three types of fossils:

Type of Fossil	Fossil	Explanation
Body Fossils These are related to both plants and animals.	Mold Fossil	The animal or plant is compressed between layers of rock but everything decays so it leaves an empty mold.
	Cast Fossil	Same process occurs as for the mold fossil except in this case sediment fills the mold and therefore creates a cast of the animal or plant.
	Replacement Fossil	The bones do not decay, unlike when mold and cast fossils are formed. The organic parts of the bone, like blood cells, collagen and fat, eventually break down. However, the inorganic parts, or the parts made from minerals like calcium, remain. This means that the bones are porous. Water containing minerals such as iron and calcium carbonate gradually makes its way to the bone and fill in the gaps created by the organic matter. This can be compared to filling a sponge with glue. The shape stays the same but the pores will fill up and gradually harden. As long as the fossil can stand the pressure of gradually building layers on top of it, it will keep its shape.
	Whole Body Fossil	Insects can often be found in amber, which is fossilised tree resin. Other animals have been trapped in ice such as woolly mammoths that have been found. In both cases the bodies are completely preserved and have not decayed at all.
Trace Fossils These are related only to animals.	Animal movements including: Footprints and Trackways	Footprints would be individual footprints whereas trackways are a number of footprints by the same animal which shows it was moving in a certain direction.
	Coprolite	This is animal faeces that have become fossilised.
Chemical Fossils These are related to both plants and animals.	Any rocks, gases and liquids that have formed underground which contain organic carbon. Carbon is contained in all living things and therefore they must be formed from the remains of living matter.	This can be both in solid and liquid form – hence fossil fuels are fuels that have formed from decayed plants and animals. Rocks such as coal have been formed from decayed animal matter. In all cases they will be found in sedimentary rocks.