How Fossils Are Made

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1) Living things (usually aquatic) die and then get buried quickly under sand, dirt, clay, or ash sediments. Usually, the soft parts decay, or rot away, leaving the hard parts behind. These are ammonites, one of the most common fossils that are found.

2) As time goes on more and more sediment accumulates. Pressure, heat, and chemical reaction cause the sediments to harden into rock called sedimentary rock.

The Kinds of Fossils

What is a fossil? Simply put, a fossil is the remains or evidence of any creature or plant that once lived on the Earth.

Most fossils are found in sedimentary rock. The fossils are made when living things die and get buried by sediments quickly before the hardest parts of the animal have a chance to decay. As sediments accumulate, pressure causes the sediments to harden into rock:

Part I – Some common Processes of preservation:

Replacement: Groundwater carries minerals into the sedimentary rock and causes fossils form as minerals as the minerals in the groundwater actually replace the minerals that make up the remains.

Casts & molds. These are made when a hard part such as a shell, fills up with sediments that harden and form an imprint of the internal or external surface of a shell (= a mold). If actual shell then dissolves, it will leave a sediment mold (= the actually shape of the shell). These molds can tell us much about the body structures of animals and plants. If the mold is then filled with another mineral- so that recreates the shape of the original animal, we call this a “cast”

Sometime the actually organic remains of an organism are preserved

Carbonization (distillation)- In this process of fossilization plant leaves, and some soft body parts of fish, reptiles, and marine invertebrates decompose leaving behind only the carbon. This carbon creates an impression in the rock outlining the fossil, sometimes with great detail.
3) Movements in the earth’s crust, pushes the layers of sedimentary rock back up to higher ground.

4) Finally, through erosion caused by weather, wind, and water, the fossils become exposed at the surface again.

Part II - Types of Fossils

**Body fossil** - the remains of the dead animal or plant or the imprint left from the remains (preserve the shape of the organism or it’s skeleton).

**Trace fossils or behavioural fossils**: Something that was made by the animal while it was living that has hardened into stone, and which can tell us about the animal’s behaviour.

**Examples of Trace fossils:**

**TRAILS, TRACKS, AND FOOTPRINTS**

A **GASTROLITH** (‘stomach stones’ or ‘gizzard stones’) are rocks, which are or have been held inside the digestive tract of an animal. Domestic fowl, for instance, require access to ‘grit’, for the purpose of food-grinding. Some extinct animals, such as some dinosaurs, appear to have used stones to grind tough plant matter.

A **COPROLITE** is fossilized animal dung

**Chemical fossils** = organic material produced by an organism and preserved, these fossil usually do not preserve any information about the shape of an organism or its behaviour.

**Examples of Chemical fossils:**

**Amber**: hardened/fossilized tree sap (note may contain insects or other small animals)

**Coal**: Coal forms when a large amount of plant material is buried in an anoxic (low oxygen) environment before the plants can decay.

*Note: some fossil are both chemical and body fossils.*

**Sedimentary environments** are the conditions on the earth’s surface in which a sediment (and the fossils it contains) were first deposited. Non-marine environments include: **streams, lakes, forests, glacial, and desert environments**. Marine environments include: **beach, shallow water, and deep sea (quiet water) environments**.