

Three thoughts about fossils

1. Fossils are preserved evidence of ancient life.

They include

- a. **Body fossils** – materials that preserve the form of an ancient organism, and in particular that of a macroscopic organism, either
 - directly, as a shell or bone(s),
 - as a mold or cast,
 - or as an impression.
- b. **Microfossils** – the tests (tiny housings) of very small (commonly single-celled) organisms. Foraminifera, diatoms, coccolithophores, and radiolarians are examples of common organisms seen as microfossils.
- c. **Trace fossils** – the tracks, trails, and burrows of ancient organisms. Dinosaur tracks are a spectacular example; worm burrows are a very common example.
- d. **Coprolites** – the now-mineralized feces of ancient organisms.
- e. **Molecular fossils, or biomarkers** – molecules unique to organisms, or to specific kinds of organisms, and thus evidence of ancient organisms. These are especially meaningful with regard to abundant organisms that do not leave mineralized remains, such as marine algae.

2. Fossils are most commonly found in sedimentary rocks.

That's because

- The sediments of sedimentary rocks accumulate at Earth's surface where organisms live.
- Only a few organisms are trapped in volcanic eruptions that form volcanic rocks.
- Metamorphism destroys any fossils as sedimentary rocks are metamorphosed to become metamorphic rocks.
- Organisms can't survive deep in the earth where plutonic rocks form.

3. Not all organisms have the same potential to be preserved as fossils.

Characteristics that favor preservation include

- a. **Mineralized body parts**, either
 - a massive mineralized form (as with many corals)
 - a shell (as in clams and snails),
 - a mineralized test (as in most foraminifera),
 - or bones (as in vertebrates)
- b. **Location in a place where sediment accumulates**, rather than where the landscape undergoes erosion. Such locations include
 - The oceans (from which sedimentary rocks commonly survive hundreds of millions of years).
 - Lakes (but with a lesser geologic duration than the oceans).
 - Rift valleys (again, with a lesser geologic duration than the oceans).

This table provides some examples:

	<i>Lived on land (likely to be eroded)</i>	<i>Lived in sea (less likely to be eroded)</i>
<i>Soft tissue only</i>	Insects, plants, etc.	Jellyfish, shrimp
<i>Mineralized parts</i>	Land vertebrates, land snails, etc.	Marine shelly organisms (clams, snails, etc.)

Most likely to be preserved as fossils