

Dinosaur Fossil Dating

Have you ever been to a natural history museum and seen preserved dinosaur bones? Or perhaps found an imprint of a footprint or leaf in a rock? All of these things are different types of *fossils*. Although many people think that fossils are only bones, they can also be several other things, including prints, pieces of plants, nests, eggs, and animal droppings. Fossils are fascinating because they are clues to the past. By analyzing animal or plant fossils, we can extract data and learn much more about their biology and behavior. People who do this professionally are called *paleontologists*. There are several ways in which paleontologists study fossils to determine their age and other factors.

How and Where are Fossils Formed?

Plant and animals are turned into fossils in a variety of ways. One of the most common ways is when a living creature dies, over time it is buried by layers of sediment. Over thousands of years, the sediment becomes very hard and turns into rock. In this way, the fossil seems to be embedded in rock. Sometimes we can find fossils of seashells or footprints in small rocks, while at other times, entire skeletons are found in the walls of cliffs or caves. In colder climates, creatures would die and their bodies were trapped in ice, which preserved them very well! For example, scientists have found woolly mammoth fossils that still have whiskers and fur preserved. Finally, some small creatures, such as insects, have been trapped in resin or sap in trees. When the resin hardens, it turned into hard amber. Since amber is translucent, scientists were able to see the insect or plant fossils inside. Fossils have been found all over the Earth. In the United States, we have found so many fossils, that each state has their very own State Fossils!

Examining Prints

When paleontologists find a fossil, they have to treat it very carefully for fear of damaging it. With special instruments, they brush or chip away as much sediment as possible and attempt to extract the fossil. In some cases, if this is impossible, they leave it embedded in the rock or amber, and simply take that entire piece with them to a laboratory for further examination. Sometimes a fossil might only be a few parts of an animal. By piecing together the parts as best as possible, the scientists try to determine which creature it was. In a way, it's a little bit similar to putting together a jigsaw puzzle and trying to guess the final picture, even if there are a few pieces missing.

Radiocarbon Dating

Paleontologists have a very special way of determining the age of a fossil. This method is called *radiocarbon dating*. Every living creature on earth contains a large amount of carbon. Only a very tiny amount of this carbon is radioactive. Don't worry, it can't harm us! As we go through our daily lives, eating and breathing, we continue to take in carbon from other sources. However, when a living creature dies, it's carbon intake stops. Now, if the creature is fossilized, then the existing amount of carbon in it remains there. However, like most other things, radioactive carbon also decays, although at a very slow rate. Scientists know the exact rate of radiocarbon decay. This means that when they measure the radiocarbon decay rate in a fossil, they can estimate how long ago it died.

The method of radiocarbon dating works best for fossils that have been around for a maximum of fifty thousand years. Since fossils also contain many other elements, scientists also use these factors to determine date going as far back as 2.2 billion years! Since these techniques have not yet been perfected, scientists usually make an estimate. This is why we often see descriptions alongside fossils that use the word “circa” to let viewers know that the date is not exact, but simply a best approximation

Finding Fossils

To try finding fossils yourself, visit your state's official website and find their geology office. The staff there will be able to inform you of where to go to find fossils, as well as any applicable rules and regulations regarding fossil hunting in that area.

Additional Resources

Check out these cool resources to learn more about fossils and radiocarbon dating, and then try a few activities and crafts to make your own fossils!

- [Fossil Resources for Kids](#)
- [Where to Find Fossils](#)
- [How Does Radiocarbon Dating Work?](#)
- [Fossil Vocabulary Words](#)
- [Play the Fossil Hunter Game](#)
- [Make Your Own Fossils](#)
- [Fossil Crafts, Puzzles, and Projects](#)
- [Find Your State's Fossil](#)
- [Try a Virtual Fossil Dig](#)
- [How Fossils are Created](#)