

## *Why is finding a fossil of a particular species so unlikely?*

There are many reasons why, if you were to find a fossil from an extinct species, it would be an extraordinary event. The first reason why it isn't always possible to find a fossil from an ancient species is that usually only hard bone or shell can be fossilised. Many organisms are, or are at least partially, soft tissue. This therefore already eliminates a large number of species from being able to form a rock fossil, which is the most common form of fossil.

However, it is not completely impossible to preserve a soft bodied organism. Fossils can form when an organism does not decay. This could be because of lack of oxygen, extremely low temperatures, or a poisonous gas present in the environment- killing off bacteria. In these rarer cases, the organism is practically fully preserved, making analysis easier. An example of this would be cases where woolly mammoths have been found preserved in ice. This was possible because of the ice age they were living in, meaning the sediment they were buried in froze. In spite of this, these conditions were rare, meaning we can conclude that the majority of species that lived, will not have become fossilised.

So already not many of the species that have lived will ever have formed fossils. Yet even if a fossil was formed, the chances of finding the fossil millions of years later, seems almost impossible. Firstly, huge amounts of geological activity will have taken place during such a large timespan. This includes earthquakes and volcanic activity, as well as continental movements- since we know that the continents have been steadily moving apart. We also know that on five occasions there have been mass extinctions, creating huge gaps in the fossil record.

From the select number of fossils that have ceased to be destroyed, the final challenge is finding and extracting them. With many located on the bottom of vast oceans, they are not always possible to extract. Furthermore, we are still unaware of most of the ancient history of the earth, so knowing exactly where to look will continue to be a challenge.

Scientists believe that only 1% of all species that have become extinct, have been found as fossils. Weighing up the evidence of how unlikely finding a fossil appears to be, makes this statistic very believable. This is probably how they

came up with the figure; tracing through time, stage by stage, and considering the percentage of species that would remain to the next stage.

Other evidence that scientists may have used to base this statistic on is the species alive today. Darwin's theory explains how all species alive today have evolved from earlier forms, by natural selection. For some animals, such as the horses, there is a very complete fossil record available. However, for most organisms, this is not the case. Therefore, we know that so many more species than just those in the fossil record have lived; in order to evolve into what we have today.