

Fossils

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CHAPTER 1

Fossils

Learning Objectives

- Define fossil.
- Describe how fossils help us understand the past.



Would this be evidence of evolution?

Fossils, like this dinosaur fossil, provide evidence of species that lived in the past and have since gone extinct. In other words, these fossils are evidence of evolution.

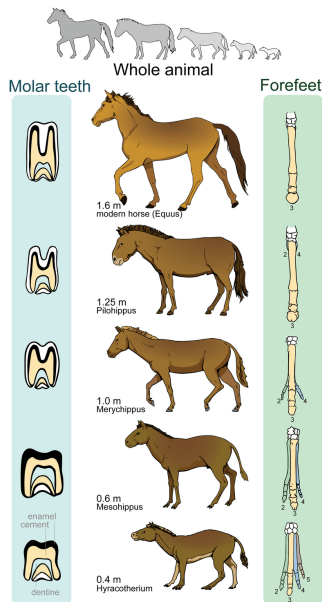
Fossil Evidence

In his book *On the Origin of Species*, Darwin included evidence to show that evolution had taken place. He also made logical arguments to support his theory that evolution occurs by natural selection. Since Darwin's time, much more evidence has been gathered. The evidence includes a huge number of fossils. It also includes more detailed knowledge of living things, right down to their DNA.

Fossils are a window into the past. They provide clear evidence that evolution has occurred. Scientists who find and study fossils are called **paleontologists**. How do they use fossils to understand the past? Consider the example of the horse, shown in the **Figure 1.1**. The fossil record shows how the horse evolved.

The oldest horse fossils show what the earliest horses were like. They were about the size of a fox, and they had four long toes. Other evidence shows they lived in wooded marshlands, where they probably ate soft leaves. Through time, the climate became drier, and grasslands slowly replaced the marshes. Later fossils show that horses changed as well.

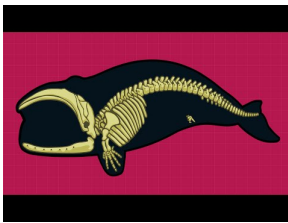
- They became taller, which would help them see predators while they fed in tall grasses.

**FIGURE 1.1**

Evolution of the horse. Fossil evidence, depicted by the skeletal fragments, demonstrates evolutionary milestones in this process. Notice the 57 million year evolution of the horse leg bones and teeth. Especially obvious is the transformation of the leg bones from having four distinct digits to that of today's horse.

- They evolved a single large toe that eventually became a hoof. This would help them run swiftly and escape predators.
- Their molars (back teeth) became longer and covered with cement. This would allow them to grind tough grasses and grass seeds without wearing out their teeth.

Similar fossil evidence demonstrates the evolution of the whale, moving from the land into the sea.

**MEDIA**

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Science Friday: Millions of Fossils Can't Be Wrong

What's in a tar pit? In this video by Science Friday, Dr. John Harris describes how the La Brea Tar Pit has come to accumulate so many fossils.



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Summary

- Fossils provide a window into the past. They are evidence for evolution.
- Scientists who find and study fossils are called paleontologists.

Review

1. What is a fossil?
2. How do paleontologists learn about evolution?
3. Describe what fossils reveal about the evolution of the horse.

References

1. Mariana Ruiz Villarreal (LadyofHats) for CK-12 Foundation. [Evolution of the horse](#) . CC BY-NC 3.0