

Evidence of Evolution

Key Words

fossil:	preserved remains or traces of a once-living thing
ancestor:	a species of the past, from which other living species have evolved
descendant:	a species that has evolved from an ancestor

KEY IDEAS

Scientists can learn about living things of the past by studying fossils. From fossils, scientists can learn how living things of the past evolved and how they compare to living things of today. By comparing living things of the present, scientists can also find evidence of common ancestors.

Fossils. When most living things die, they decay. They die without leaving any trace of their passing. Occasionally, however, the remains of an organism last for a very long time. For example, sometimes an insect becomes trapped in the sap that runs down a tree. A larger animal might become trapped in a tar pit and die. Sometimes, an animal is buried in ice. In each of these cases, the animal is preserved, or kept from decaying. The animal or other living thing becomes a fossil. A **fossil** (FAHS-uhl) is the preserved remains or traces of a once-living thing.

Most fossils are not complete. They are usually made up of only the hard parts of an organism such as the bones, the shells, or the teeth. Often when an animal dies, its soft parts quickly decay or are eaten by another organism. The hard parts may be covered by dust or soil. In time, more and more soil is layered on top of the remains. These layers of soil press down upon each other and harden to form rock. Sometimes, the remains themselves turn into rock. Most fossils are formed in this way. See Fig. 15-1.



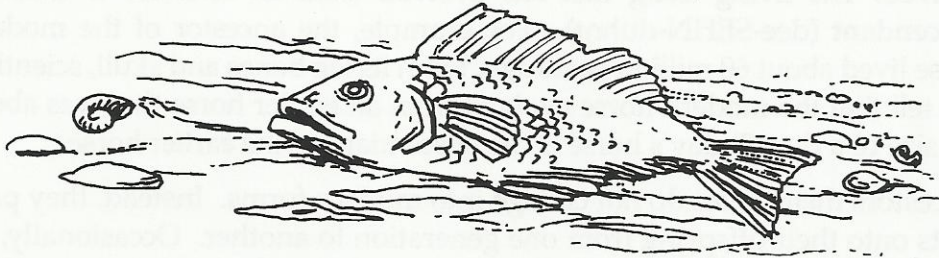
1. What is a fossil? _____

From animal fossils, scientists can learn where the animal lived and what it might have eaten. From plant fossils, scientists can learn what the weather was like millions of years ago. But even more important, by studying fossils scientists can find out how different living species of today have evolved.

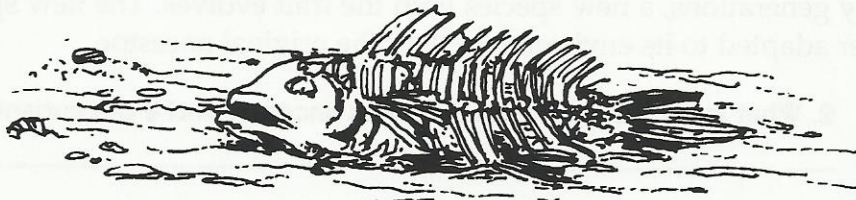
Fig. 15-1

HOW FOSSILS FORM

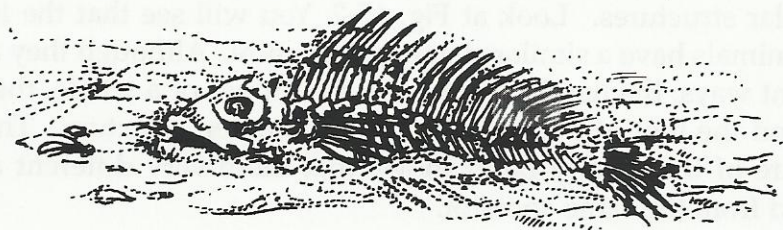
Animal dies.



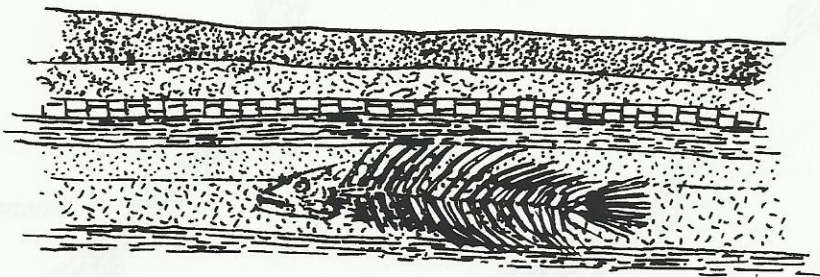
Soft parts of animal are eaten or decay. Bones remain.



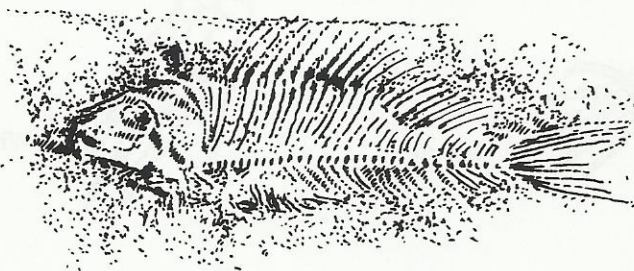
Bones are covered by dust and soil.



Bones are buried in layers of soil.



Layers of soil turn to stone.
Remains of animal turn to stone and form fossil.



Ancestors and Descendants. By looking at fossil bones, scientists can see that many species living today have common ancestors. An **ancestor** (AN-sehs-tuhr) is a species of the past, from which another living species has evolved. The living thing that has evolved from an ancestor is called a **descendant** (dee-SEHN-duhnt). For example, the ancestor of the modern horse lived about 60 million years ago. From its leg bones and skull, scientists can tell that the modern horse evolved from an earlier horse that was about the size of a dog. Today's horse is the descendant of the earlier horse.

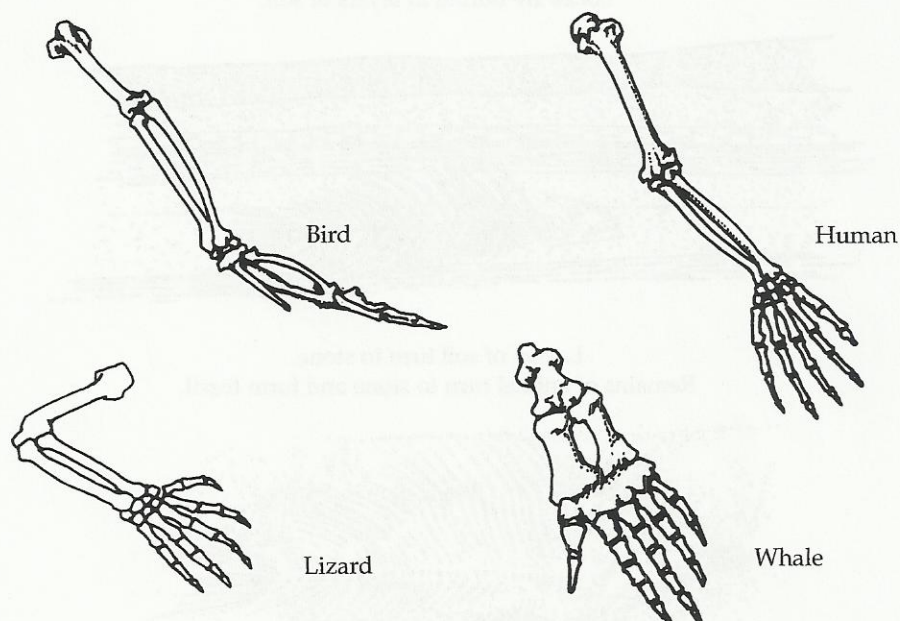
Ancestors themselves do not change into modern forms. Instead, they pass traits onto their offspring from one generation to another. Occasionally, an individual offspring has a trait that helps it adapt to its environment. That offspring passes the trait onto its offspring. Eventually, over a long time and many generations, a new species with the trait evolves. The new species is better adapted to its environment than the original ancestor.



2. What is the difference between an ancestor and a descendant?

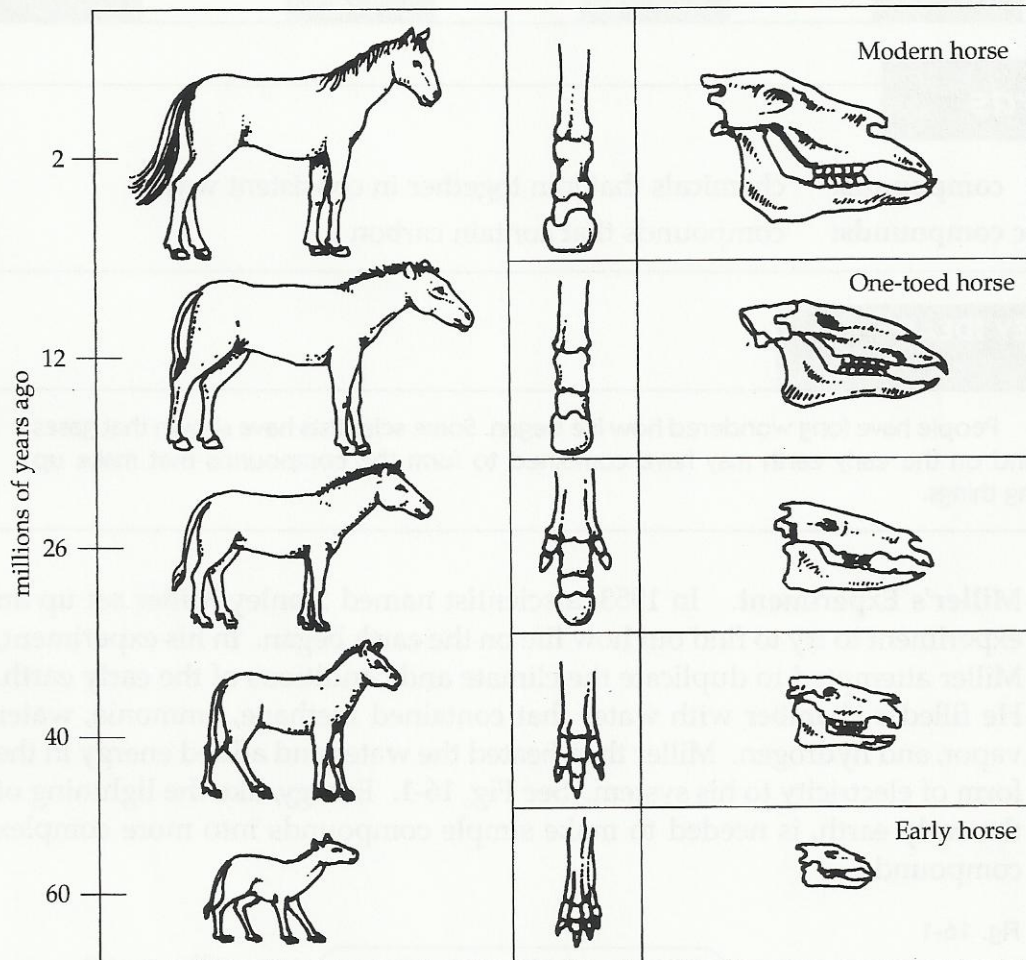
Scientists can tell that animals living today are related to each other by looking at similar structures. Look at Fig. 15-2. You will see that the limbs of all these animals have a similar shape, or structure. Although they are used in different ways, the hand of a human, the flipper of a whale, the wing of a bird, and the foot of a lizard all share a common structure. The common structure of these body parts shows that these very different animals all evolved from the same ancestor.

Fig. 15-2



Study Fig. 15-3. Notice how the sizes of the leg bone and skull of the modern horse differ from those of its ancestors.

Fig. 15-3



**TAKE
ANOTHER
LOOK**

**Check Your
Understanding**

Fill in the blanks.

The preserved remains or traces of a once-living thing is called an (3)_____. They are usually made up of the hard parts of an organism, such as teeth, (4)_____, and (5)_____. Scientists study similar structures to help them understand which species evolved from (6)_____.

7. The most common animal fossils are shells, bones, and teeth. Why?

8. Explain how scientists can learn about the evolution of horses from fossils.

