# tpo_45

Did bees a type of insect exist on Earth as early as 200 million years ago? Such a theory is supported by the discovery of very old fossil structures that resemble bee nests. The structures have been found inside 200-million-year-old fossilized trees in the state of Arizona in the southwestern United States. However, many skeptics doubt that the structures were created by bees. The skeptics support their view with several arguments. No Fossils of Actual Bees First, no fossil remains of actual bees have ever been found that date to 200 million years ago. The earliest preserved body of a bee is 100 million years old—only half as old as the fossilized structures discovered in Arizona. Absence of Flowering Plants A second reason to doubt that bees existed 200 million years ago is the absence of flowering plants in that period. Today's bees feed almost exclusively on the flowers of flowering plants; in fact, bees and flowering plants have evolved a close, mutually dependent biological relationship. Flowering plants, however, first appeared on Earth 125 million years ago. Given the bees' close association with flowering plants, it is unlikely bees could have existed before that time. Structures Lack Some Details Third, while the fossilized structures found in Arizona are somewhat similar to nest chambers made by modern bees, they lack some of the finer details of bees' nests. For example, chambers of modern bee nests are closed by caps that have a spiral pattern, but the fossilized chambers lack such caps. That suggests the fossilized structures were made by other insects, such as wood-boring beetles.

Now listen to part of a lecture on the topic you just read about. It's perfectly possible that the nests found inside the fossilized trees were made by bees 200 million years ago. The arguments used by the skeptics are not convincing. First, it's true we have no fossil remains of actual bees that date to 200 million years ago. But maybe the reason for that is that bees could not be preserved as fossils at that time. Fossil bees have typically been preserved in fossilized tree resin, a sticky liquid produced by trees. However, trees with this type of resin were very rare 200 million years ago. Such trees became common much later. So the fact that we have no bee remains that are 200 million years old doesn't mean that bees did not exist at that time. Maybe bees existed, but since there were almost no trees producing the right kind of resin, the bees could not be preserved. Second, while it's true that bees have a close mutual relationship with flowering plants today, it's quite possible that bees existed before flowering plants appeared on Earth. Those very early bees may have been feeding on non-flowering plants that preceded flowering plants during evolutionary history. The early bees could have fed on non-flowering plants such as ferns, or pine trees. Later, when flowering plants evolved, bees may have adapted to feeding on them, and this new relationship between bees and flowering plants may have remained stable ever since. Third, even though the fossilized chambers lack spiral caps, there's chemical evidence that supports the theory that bees built the chambers. Modern bees protect their nest chambers against water by using a special waterproofing substance that has a distinctive chemical composition. When the fossilized chambers were chemically analyzed, it turned out that they contained the same kind of waterproofing material that's used by modern bees.

Summarize the points made in the lecture, being sure to explain how they cast doubt on the specific points made in the reading passage.

Do you agree or disagree with the following statement? In the past, young people depended too much on their parents to make decisions for them; today young people are better able to make decisions about their own lives. Use specific reasons and examples to support your answer.