Evolution and the Fossil Record

Fossils and Ancient Life

- **Paleontologists** are scientists who collect and study fossils.
- All information about past life is called the **fossil record.**
- The fossil record includes information about the structure of organisms, what they ate, what ate them, in what environment they lived, and the order in which they lived.

Fossils and Ancient Life

- The fossil record provides evidence about the history of life on Earth. It also shows how different groups of organisms, including species, have changed over time.

Fossils and Ancient Life

- The fossil record provides incomplete information about the history of life.
- Over 99% of all species that have lived on Earth have become extinct, which means that the species has died out.

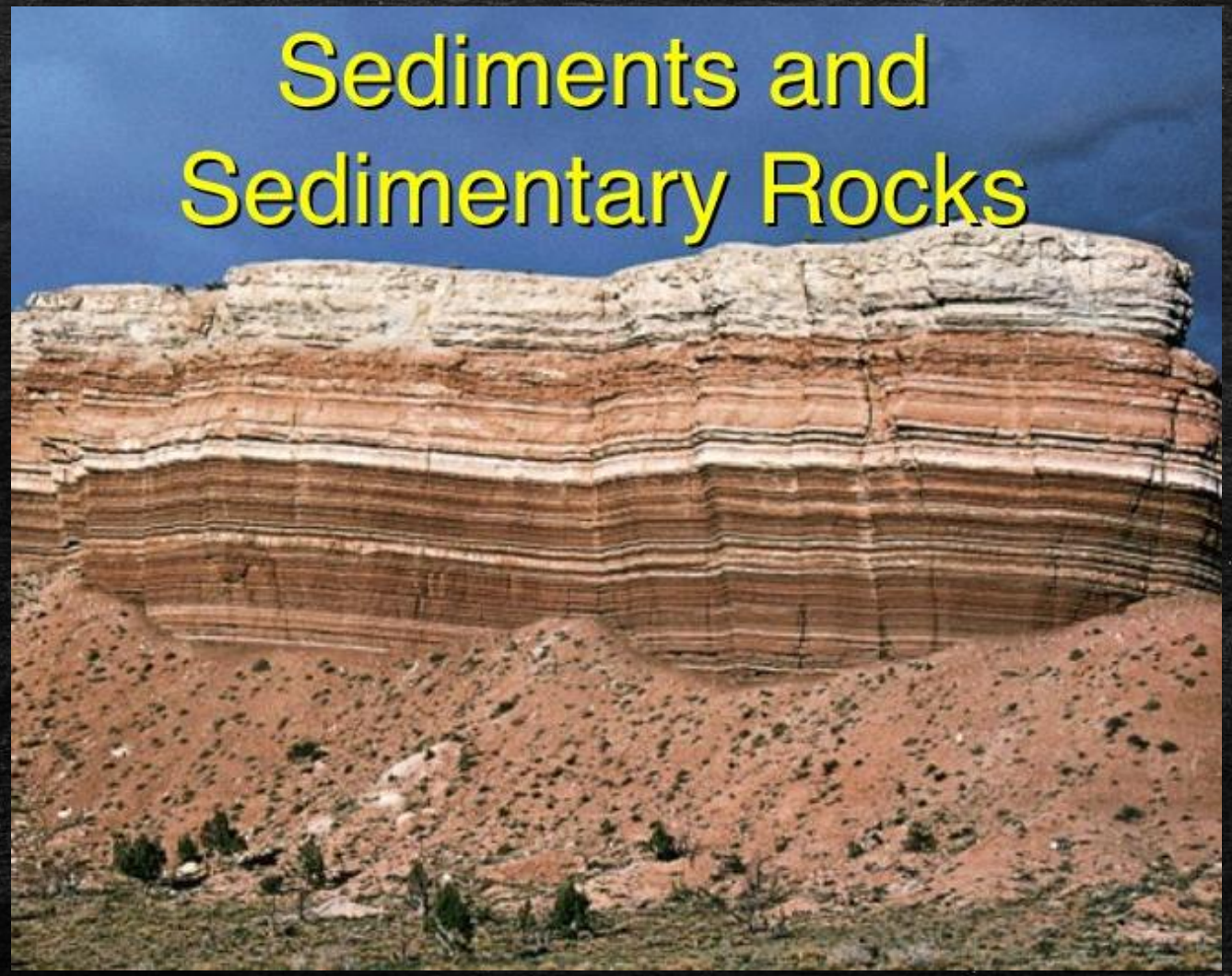
How Fossils Form

Fossils can be as large as a complete, preserved animals, OR as small as a fragment of a species.

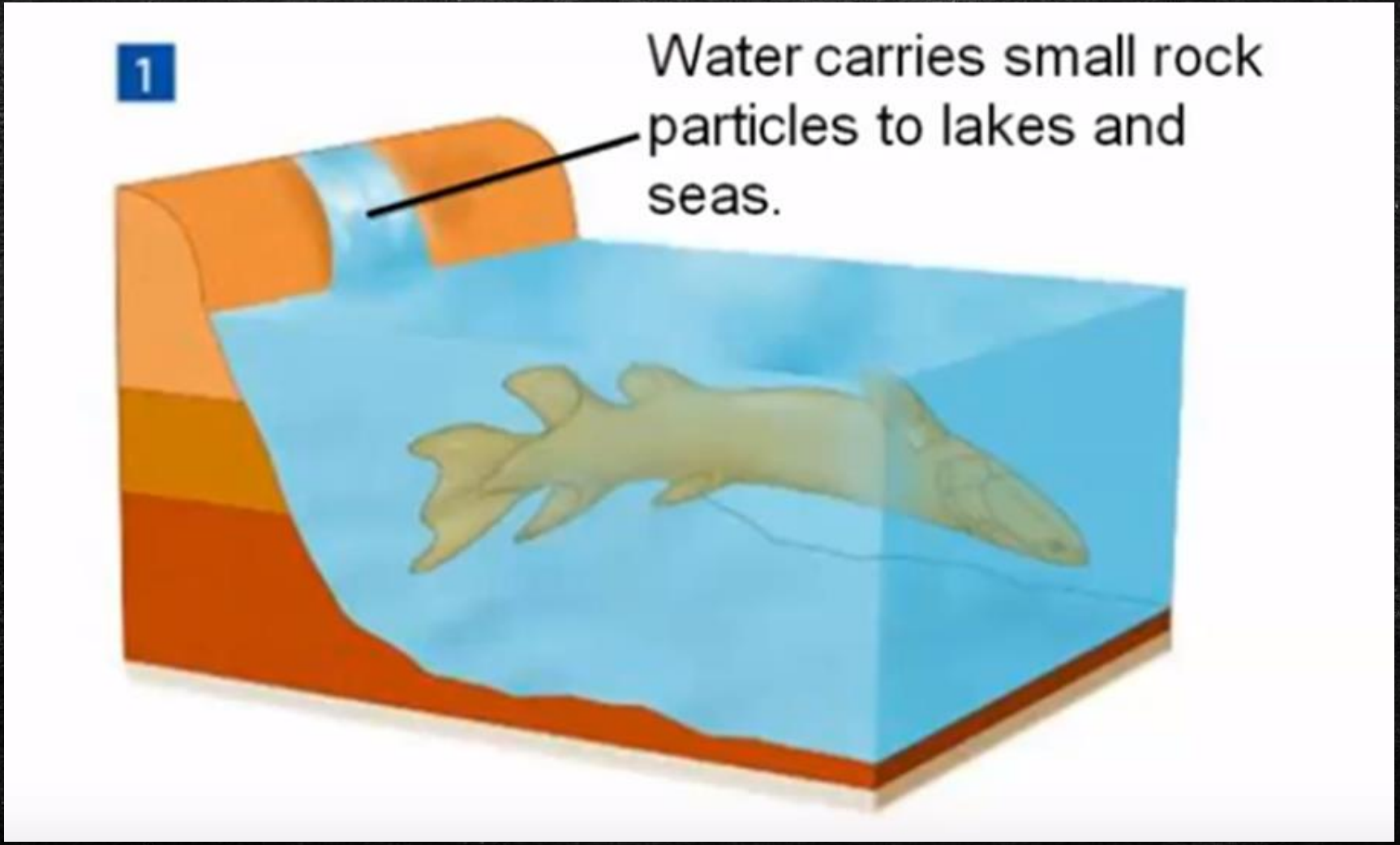
Most fossils form in sedimentary rock.

Sedimentary rock forms when exposure to the elements breaks down existing rock into small particles of sand, silt, and clay.

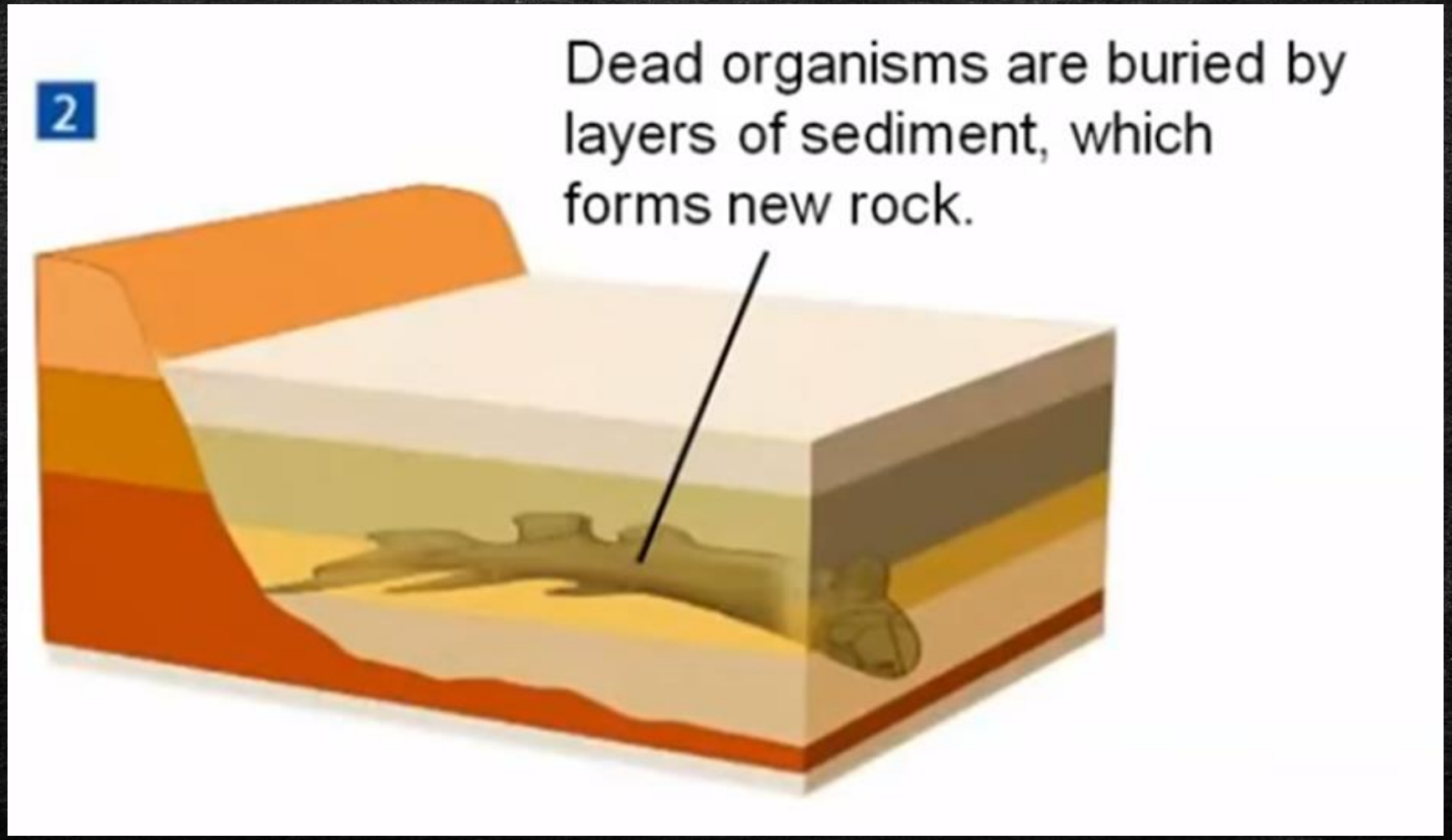
Sedimentary Rock



Fossil Formation



Fossil Formation

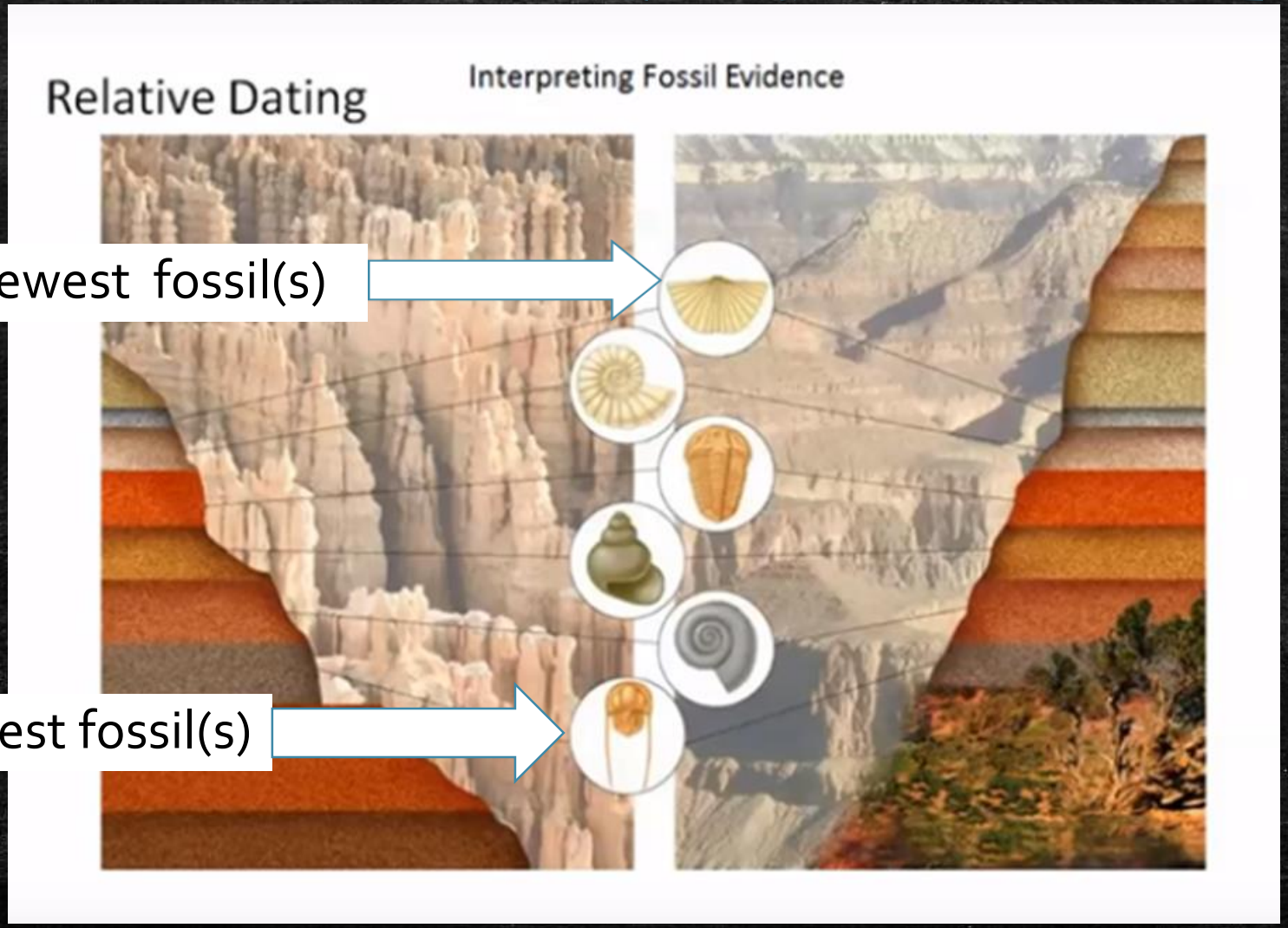


Interpreting Fossil Evidence

In **relative dating**, the age of a fossil is determined by comparing its placement with that of fossils in other layers of rock.

Rock layers form in order by age – the oldest on t he bottom, with more recent layers on top.

Interpreting Fossil Evidence



Interpreting Fossil Evidence

Index fossils are used to compare the relative age of fossils.

An **index fossil** is a species that is recognizable and that existed for a short period but had a wide geographic range.

Interpreting Fossil Evidence

Trace Fossils provide us with *indirect* evidence of life in the past, such as the footprints, tracks, burrows, and feces left behind by animals, rather than the preserved remains of the body of the actual animal itself.

Interpreting Fossil Evidence

Relative dating allows paleontologists to *estimate* a fossil's age compared with that of other fossils.