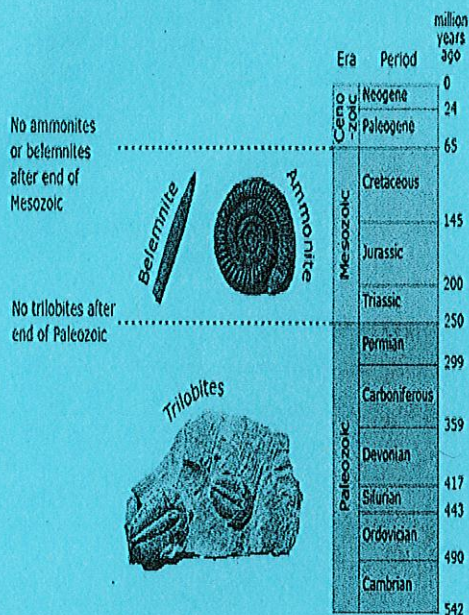


Station

F O S S I L D A T I N G

Relative dating is used to arrange geological events, and the rocks they leave behind, in a sequence. The method of reading the order is called stratigraphy (layers of rock are called strata). Relative dating does not provide actual numerical dates for the rocks. Fossils are important for working out the relative ages of sedimentary rocks. Throughout the history of life, different organisms have appeared,

flourished and become extinct. Many of these organisms have left their remains as fossils in sedimentary rocks. Geologists have studied the order in which fossils appeared and disappeared through time and rocks. This study is called biostratigraphy.



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Fossils can help to match rocks of the same age, even when you find those rocks a long way apart. This matching process is called correlation, which has been an important process in constructing geological timescales.

Some fossils, called index fossils, are particularly useful in correlating rocks. For a fossil to be a good index fossil, it needs to have lived during one specific time period, be easy to identify and have been abundant and found in many places. For example, ammonites lived in the Mesozoic era. If you find ammonites in a

rock in the South Island and also in a rock in the North Island, you can say that both rocks are Mesozoic. Different species of ammonites lived at different times within the Mesozoic, so identifying a fossil species can help narrow down when a rock was formed.

Correlation can involve matching an undated rock with a dated one at another location. Suppose you find a fossil at one place that cannot be dated using absolute methods. That fossil species may have been dated somewhere else, so you can match them and say that your fossil has a similar age. Some of the most useful fossils for dating purposes are very small ones. For example, microscopic dinoflagellates have been studied and dated in great detail around the world. Correlation with them has helped geologists date many New Zealand rocks, including those containing dinosaurs.

What did you learn?

1. How do index fossils work? (COMPREHENSION 8.1)
2. Does relative dating provide accurate and precise information? Explain why or why not. (ANALYSIS RI 8.2)