

Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (Second Year)

Subject: Geology

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Paper Title: Principles of Stratigraphy and Paleontology

Unit: 2

**Module Name: Fossils: Definition and types: Mega fossils (dinosaurs),
Microfossils, Ichnofossils**

Module No: 11

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Notes

Fossils

A Fossil (in Latin: Fossils means “obtained by digging”). Fossil is any preserved remains, impression, or trace of any once- living thing from a past geological age. For examples include bones, shells, exoskeletons, stone imprints of animals or microbes, objects preserved in amber, hair, petrified wood, oil, coal, and DNA remnants.

The totality of fossils is known as the fossil record.

Paleontology is a the study of fossils and mainly deals with understanding their age, method of formation, and evolutionary. Specimens are usually considered to be fossils if they are over 10,000 years old. The oldest fossils are around 3.48- 4.1Billion years old

The observation in the 19th century - certain fossils were associated with certain rock strata led to the recognition of a geological

timescale and relative ages of different fossils. The development of radiometric dating techniques in the early 20th century allowed scientists to quantitatively measure the absolute age of rocks and the fossils they host.

Megafofossils

Megafofossils are also known as Macrofofossils. Megafofossils are preserved organic remains large enough to be visible without a microscope. Most fossils observed in the field and most "museum-quality" specimens are macrofofossils.

Example: Remains of Dinosaur fossils. A well known site for this in India is the Dinosaur And Fossil Park at Balasinor - Gujarat, India

Microfofossils

Microfofossils are tiny fossils that require a microscope to identify and study. This is a special study apart from the study of larger fossils, because it requires more specific skills to extract these very tiny fossils from sedimentary rock. In fact, just one small sample of rock can hold thousands of microfofossils. Because they are so tiny--most coming in at under 1 mm in size--most are still well-preserved and protected in the rock, not having been exposed to the elements.

Microfofossils are used to determine how old a piece of rock is and determine if there is gas or oil in the area. They are also used to see what kinds of major geological events took place such as earthquakes or major weather changes such as ice storms. The oil industry uses microfofossils to determine the locations of old delta reservoirs for oil.

Plant macrofossils

Plant macrofossils include leaf, needle, cone and stem debris. These can be used to identify types of plants formerly growing in the area. Such botanical macrofossil data provide a valuable complement to pollen and faunal data that can be used to reconstruct the prehistoric environment.

Algal macrofossils (for instance, brown kelp, sea lettuce and large stromatolites) are increasingly used to analyze marine and aquatic ecosystem.

Animal macrofossils

Animal macrofossils include the teeth, skull, and bones of vertebrates. Animal macrofossils also include invertebrates remains such as shells, tests, faunal armor and exoskeletons.

Ichnofossils

Ichnofossils also known as trace fossil. Ichno in Greek means "trace, track". Is a fossil record of biological activity but not the preserved remains of the plant or animal itself.

Trace fossils contrast with body fossils, which are the fossilized remains of parts of organisms' bodies, usually altered by later chemical activity or mineralization. Ichnology is the study of such trace fossils and is the work of ichnologists.

Trace fossils may consist of impressions made on or in the substrate by an organism. For example, burrows, borings (bioerosion), urolites (erosion caused by evacuation of liquid wastes), footprints and feeding marks and root cavities may all be trace fossils.