
Quiz Four (10:10-10:15 AM)



UNIVERSITY OF SOUTH ALABAMA

GY 112: Earth History

Fossils Part 2: Paleoenvironments

Last Time

1. Chronostratigraphy versus biostratigraphy
2. Paleontological correlations
3. Index fossils

Web notes: 9

Fossils & Time

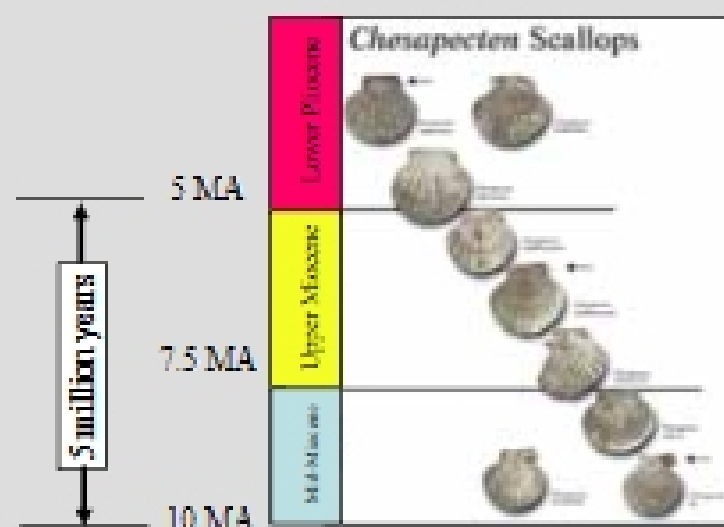
Types of Stratigraphy

Lithostratigraphy: using rocks to correlate

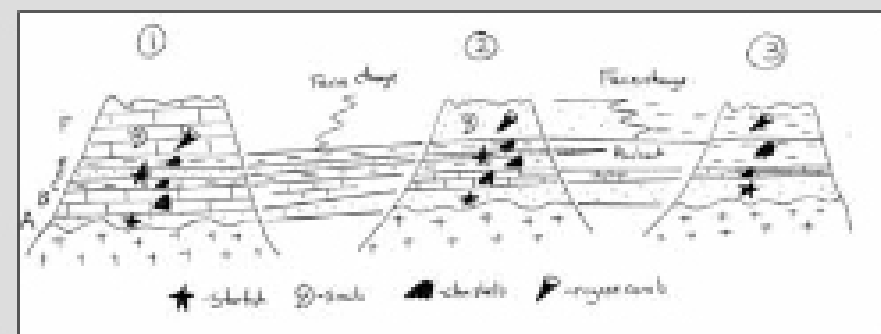
Chronostratigraphy: actual dates to correlate
(absolute dating)

Biostratigraphy: using fossils to establish dates and
correlate (relative dating)

Biostratigraphy



Biostratigraphy



Note pinch outs and facies changes

Biostratigraphy

There are a lot of fossils in the rock record, but not all are useful for biostratigraphy.

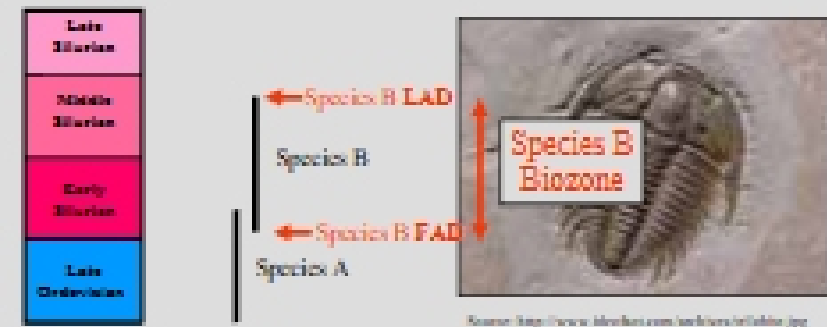
Some are too restricted (they only occur in one particular place or environment) (**Endemic Species**).

The best fossils for biostratigraphy are **Cosmopolitan species** (wide ranging)

Cosmopolitan species that occur **over a very narrow time range** (e.g., less than 1 million years) can be used to tell time. They are called **Index Fossils**

How to use fossils to tell time

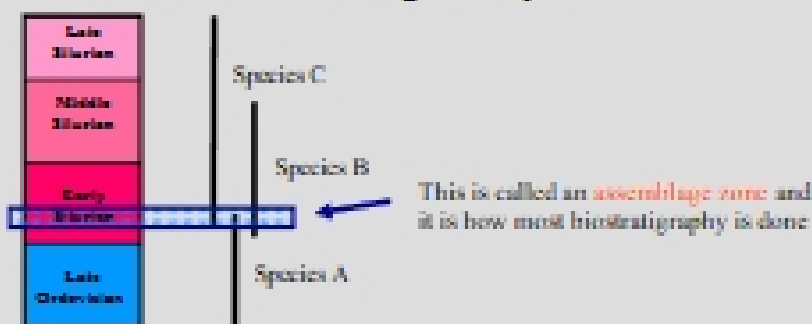
Species B (Early Silurian to Middle Silurian; a good index fossil if it's cosmopolitan)



Source: <http://www.illustrations.com/see/1000/10101010.jpg>

How to use fossils to tell time

The age of the interval shown in blue can be relatively well constrained. It is the only time all 3 beasts were alive at the same time – sometime during the Early Silurian



Today's Agenda

Fossils and the Environment

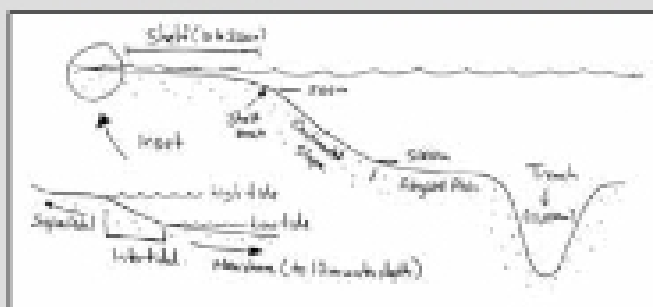
1. The oceans today
2. Estimating water depths
3. Adaptations to environment

(Web Lecture 10)

Fossils & Environment

The Oceans today

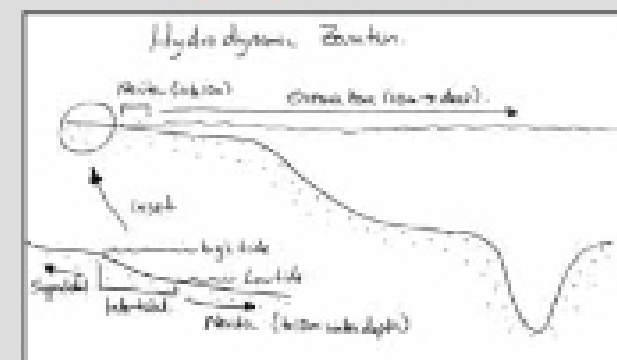
Morphological (**Bathymetrical**) Zonation



Fossils & Environment

The Oceans today

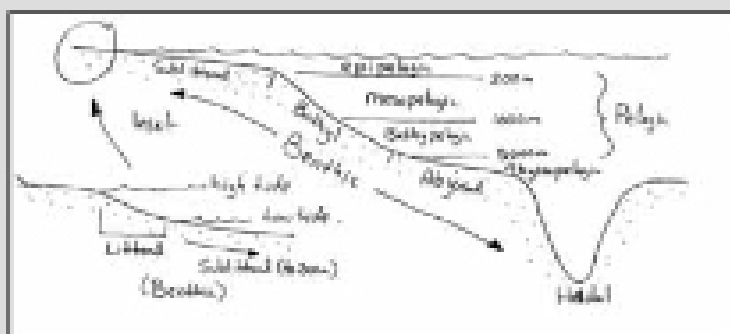
Hydrodynamic Zonation



Fossils & Environment

The Oceans today

Trophic (Habitat) Zonation



Fossils & Environment

Possible Fill-In-The-Blank question

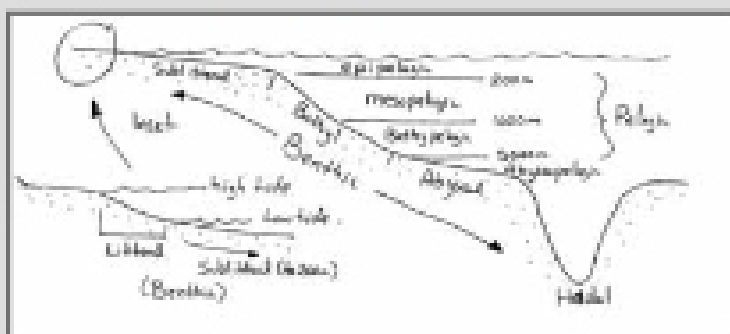
Morphological (Bathymetrical) Zonation



Fossils & Environment

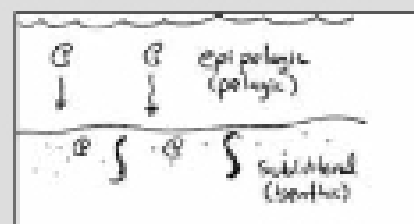
Another possible Fill-In-The-Blank question

Trophic (Habitat) Zonation



Fossils & Environment

Interpreting paleowater depth



On the shelf

Fossils & Environment

Interpreting paleowater depth



On the shelf

On the slope

Fossils & Environment

Interpreting paleowater depth



Sediment samples would only contain epipelagic and sublittoral benthic

Sediment samples would contain epipelagic, mesopelagic and bathyal benthic benthic