How do you tell the difference between a colonial rugose coral and a tabulate coral?

Rugose Coral

Tabulate Coral
What makes corals both colonial and clonal?

Arthropoda - Trilobites, Crustaceans, Insects, Eurypterids

Why do trilobites have the best fossil record of all arthropods?
What is the temporal range of the trilobites?

Paleozoic
Darwinian Philosopher Michael Ruse showing off his trilobite tattoo

Eurypterida (sea scorpions)
- Chelicerates
- Related to spiders and scorpions
- State fossil of New York!
- Middle Paleozoic
Brachiopods -
- 2 valved shell, calcite or calcium phosphate

Articulate Brachiopod

Inarticulate Brachiopod

How can you tell the difference between an articulate brachiopod fossil and a clam fossil?
**Bryozoans**

Kingdom Animalia
Phylum Bryozoa

- **Dendroid**
  - Bryozoan colony forms

- **Encrusting**

- **Massive**
  - Bryozoan colony forms

- **Ramose**
How can you tell the difference between a stony coral fossil and a bryozoan fossil?

Bryozoan

Stony Coral

Crinoids

Kingdom Animalia
Phylum Echinodermata
Class Crinoidea
During which interval of geologic history are crinoid fossils most abundant and diverse?
What is the temporal range of the Graptolites?
What is the temporal range of the Graptolites?
Mesozoic Marine Life - Mollusk Dominated

Mollusks - “sea food”

Kingdom Animalia
Phylum Mollusca
Class Gastropoda - snails
    Cephalopoda - squid
    Pelecypoda - clams

Paleozoic Gastropods
Paleozoic pelecypods (bivalves)

Paleozoic cephalopods
Nautiloida

Class Cephalopoda (nautiloids, ammonites, belemnites, squid, octopods, cuttlefish)
chambered shell
How can you tell the difference between a fossil cephalopod and a fossil gastropod?

Orthoconic Cephalopods

Cretaceous Cephalopods - Class Ammonoidea
Cretaceous Cephalopods - Class Belemnoidea

Belemnites

Mesozoic pelecypods (bivalves)

Echinoids

Kingdom Animalia
Phylum Echinodermata
Class Echinoidea
Irregular Echinoids

Regular Echinoids

What is the ecological difference?
**Modern Corals**

- Kingdom: Animalia
- Phylum: Cnidaria
- Class: Anthozoa
- Order: Scleractinia

**Class Gastropoda (snails and slugs)**

- Predatory gastropod with victims
Class Pelecypoda (clams, oysters, scallops)

Phylum Porifera
Late Proterozoic - Recent

- Osculum
- Ostia - pores
- Spongocoel
- Canal
- Branch
- Bud

simple sponge
Phylum Porifera

Triactine Spicules

Phylum Porifera?

Archaeocyatha

L. - M. Cambrian

inner wall

outer wall

septa

locula

Phylum Porifera?

Stromatoporata

Ordovician - Mississippian

laminae

pillars

mamelon

astrorhiza

outflow