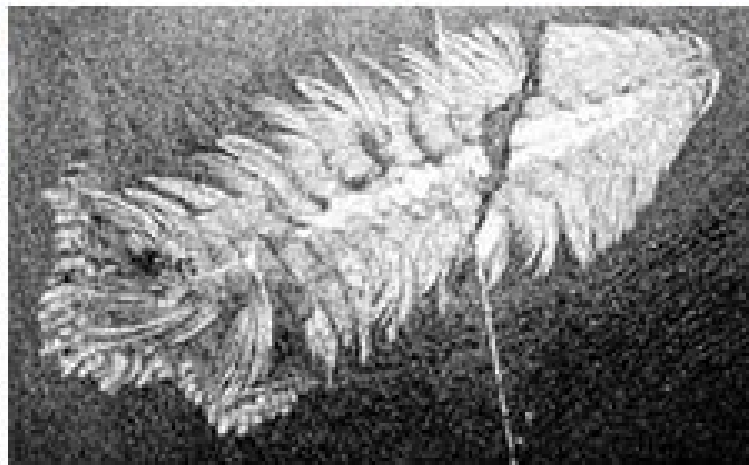
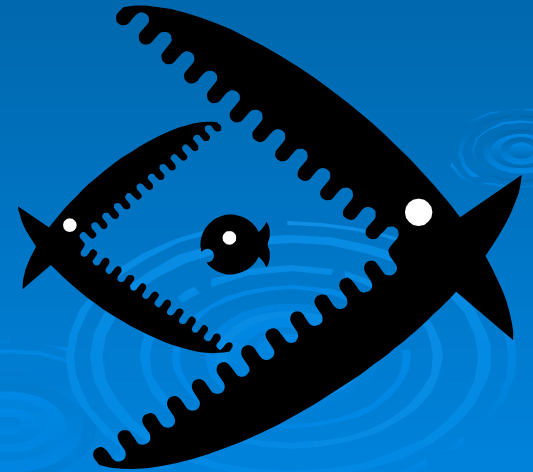
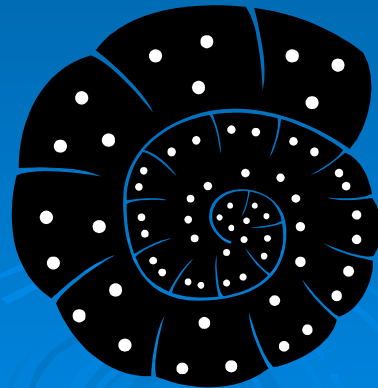


Fossils



What are Fossils?

Fossils are the preserved remains of plants or animals that lived a long time ago, or any evidence of their existence.



What Can Fossils Tell Us?

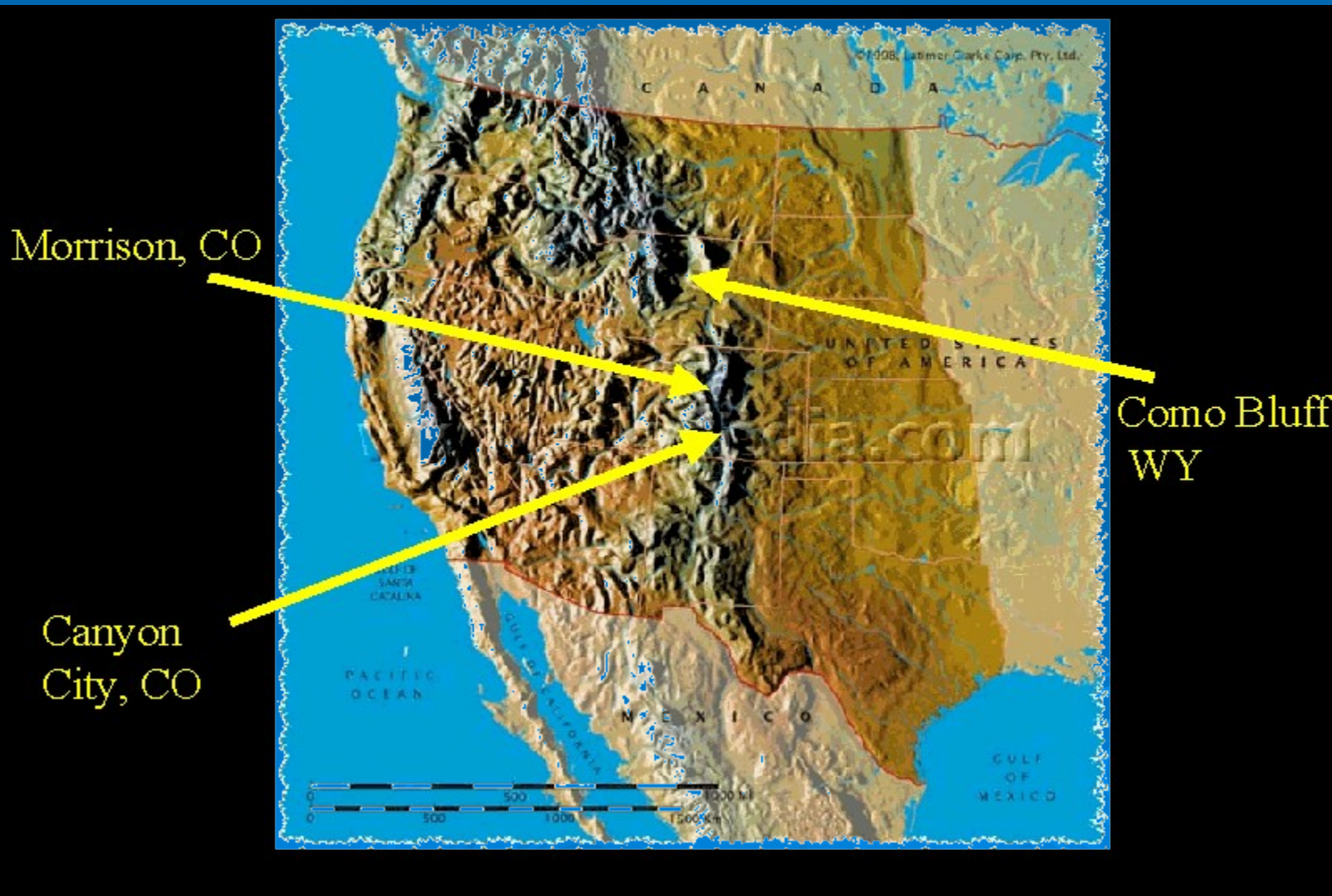
- How life forms have changed over time
- How the Earth's surface has changed
- Clues to past environments



Where are Fossils Found?



Usually in arid environments, including Colorado!

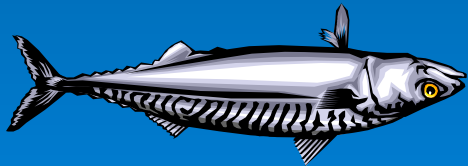
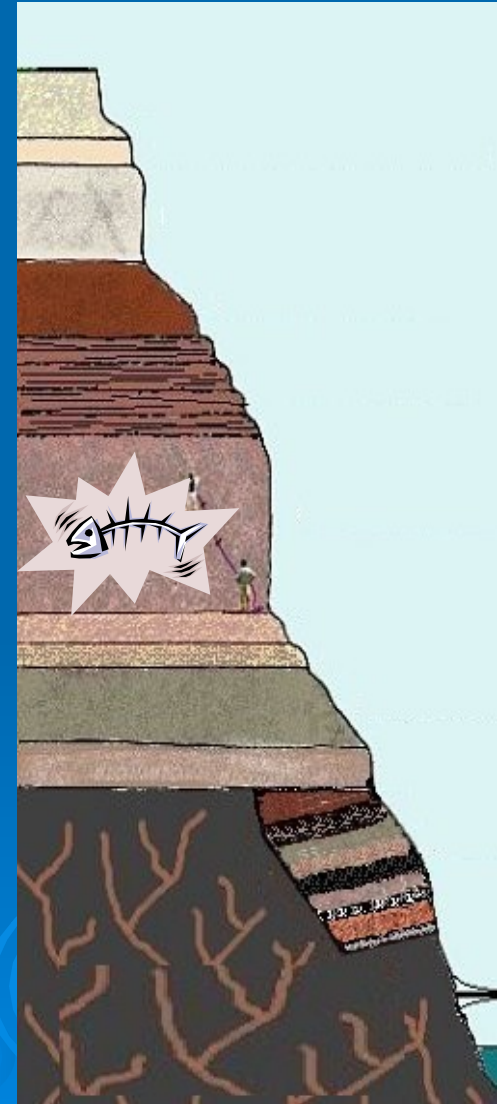
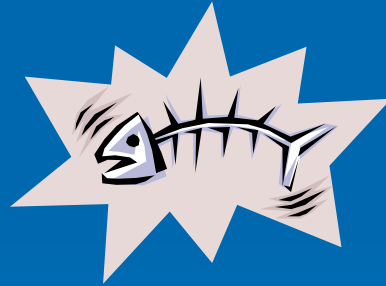
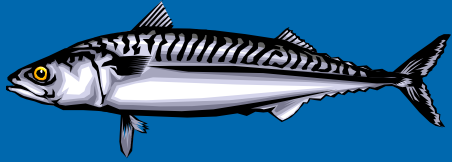


Colorado LOVES It's Fossils

- Colorado's State Fossil is the Stegosaurus because so many have been found here.
- Denver's new mass transit system is named T-Rex after a fossil was found during construction.




Most Fossils Form in Sedimentary Rock



- When an organism dies, it's soft parts usually decay or are eaten by animals
- Usually only hard parts get fossilized
 - Bones
 - Shells
 - Teeth
 - Seeds
 - Leaves
 - Stems and Trunks



How can Fossils be Preserved?

- Unaltered Preservation
 - Altered Preservation
 - Trace Fossils
 - Molds and Casts
- 
- The background of the slide is a solid blue color. In the bottom right corner, there are several decorative elements consisting of concentric circles, resembling ripples in water. These circles are light blue and vary in size and opacity, creating a subtle pattern.

Unaltered Preservation



Insects that got stuck in tree sap were preserved unaltered.

The La Brea tar pits in California trapped and preserved organisms.



Frozen remains of Woolly Mammoths have been found in ancient glaciers.

Altered Preservation

The organism is preserved but its original skeletal material is altered by chemical changes, such as petrified wood.

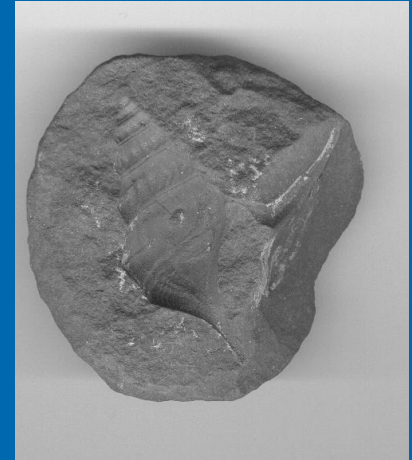
The cells in the wood are slowly replaced by minerals, turning it to stone.



Molds and Casts

➤ Molds

- A mold forms when something is pressed into soft mud and removed by decomposition or pulled out, leaving an impression of the object.



➤ Casts

- A cast is a 3-D representation of an object from the past. It is created when a mold fills up with sediment that hardens.



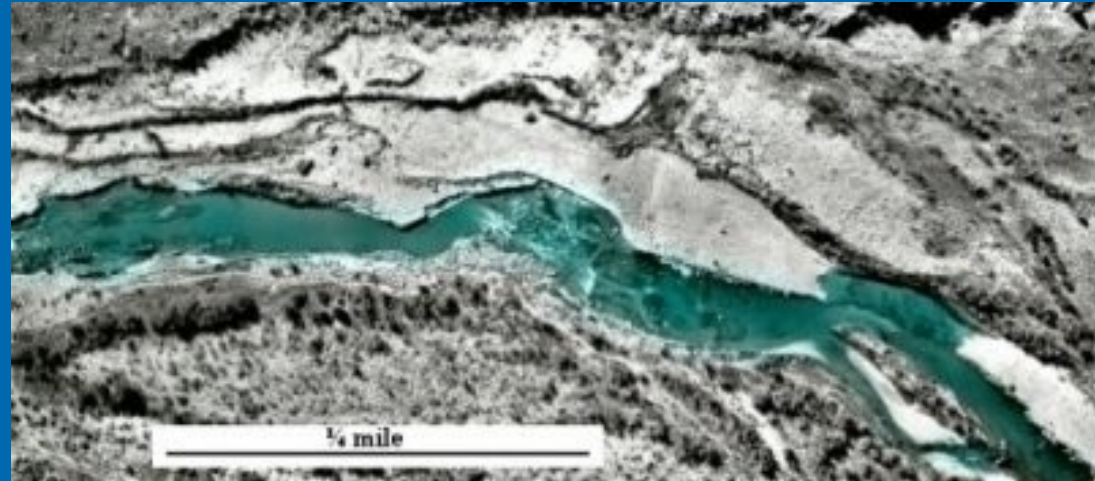
Trace Fossils



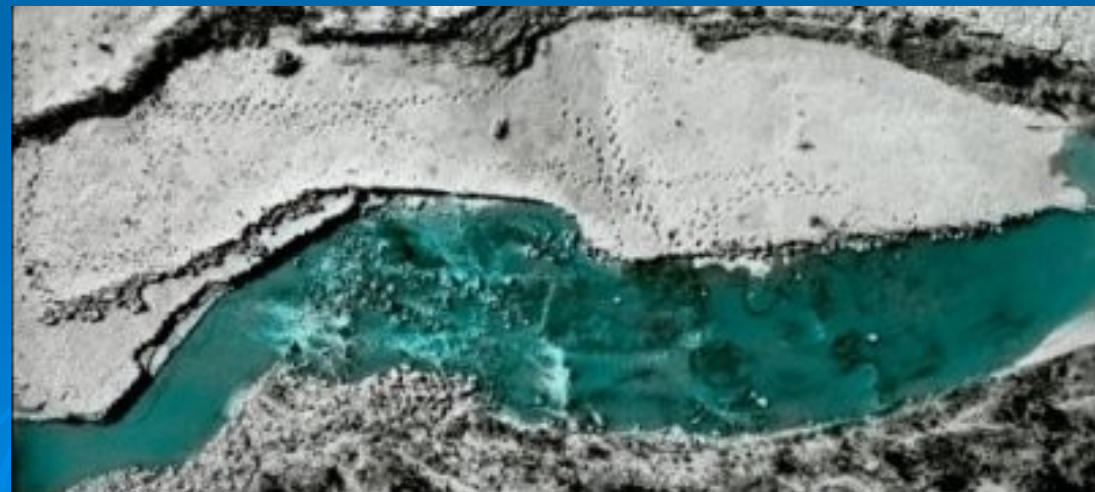
Trace fossils are indications that an organism existed, not the actual organism. They include footprints, nests, tooth marks, worm burrows, root traces, etc.

Dinosaur Trackway in Picketwire Canyon, CO

Aerial view



Closer view



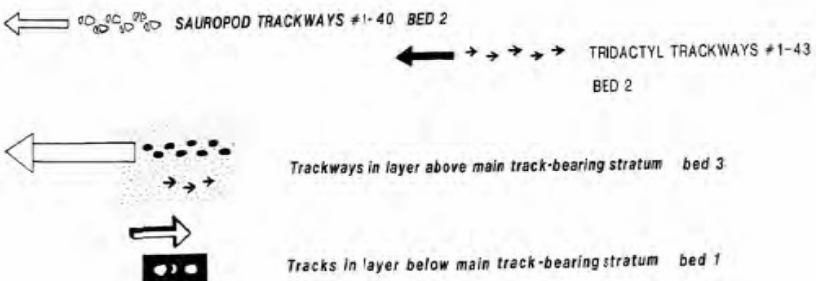
Track Details:

- Over 1300 tracks in an area about 1/4 of a mile long.
- Made in the mud on the shore of an ancient lake
- Made by plant-eating **brontosaurus** and smaller meat-eating **allosaurs**.
- Two to three feet long, a foot or more deep.
- Parallel pair of tracks = evidence that they traveled together in herds?
- Tracks are even older than the Rocky Mountains!

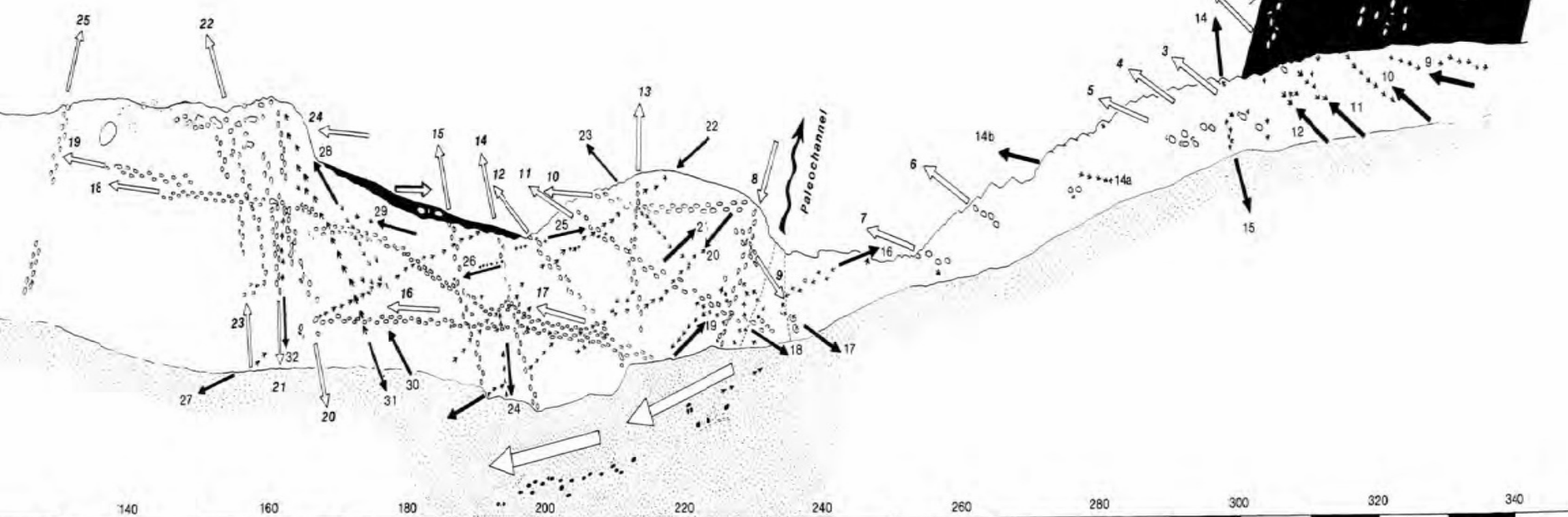
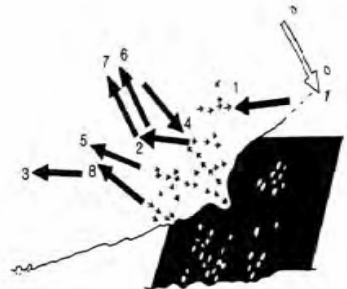
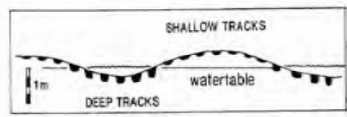
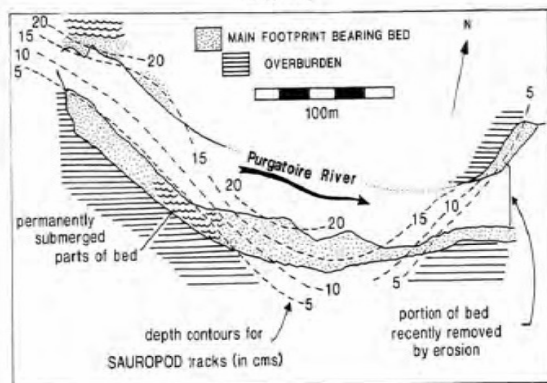


FOOTPRINTS IN THE MORRISON FORMATION, PURGATOIRE RIVER SITE, SE COLORADO

KEY



Site Map



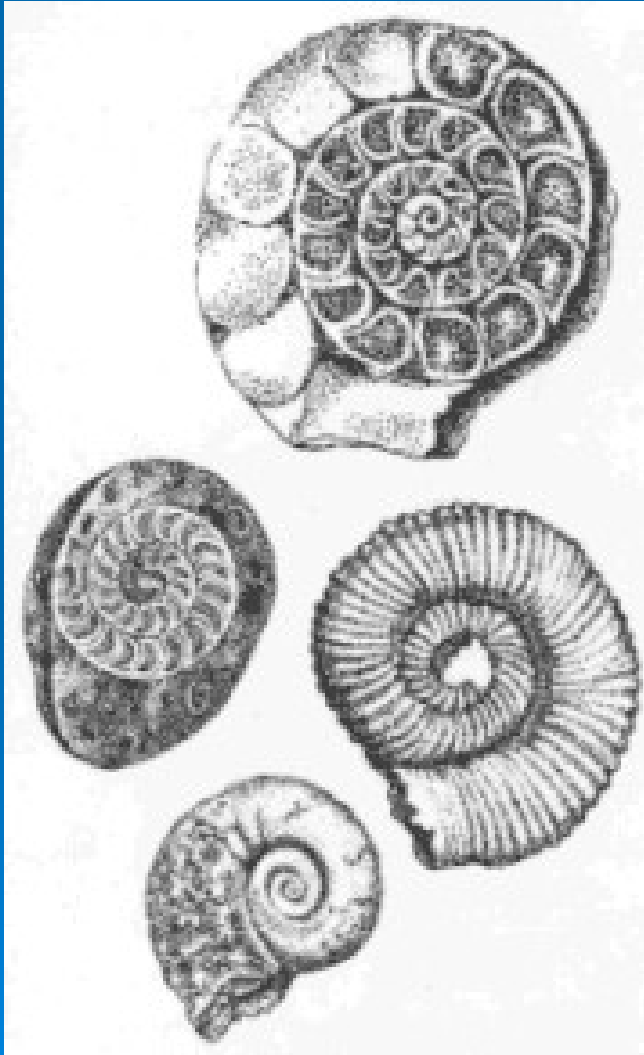
An Up Close Look at the Track Way



Examples of Fossils



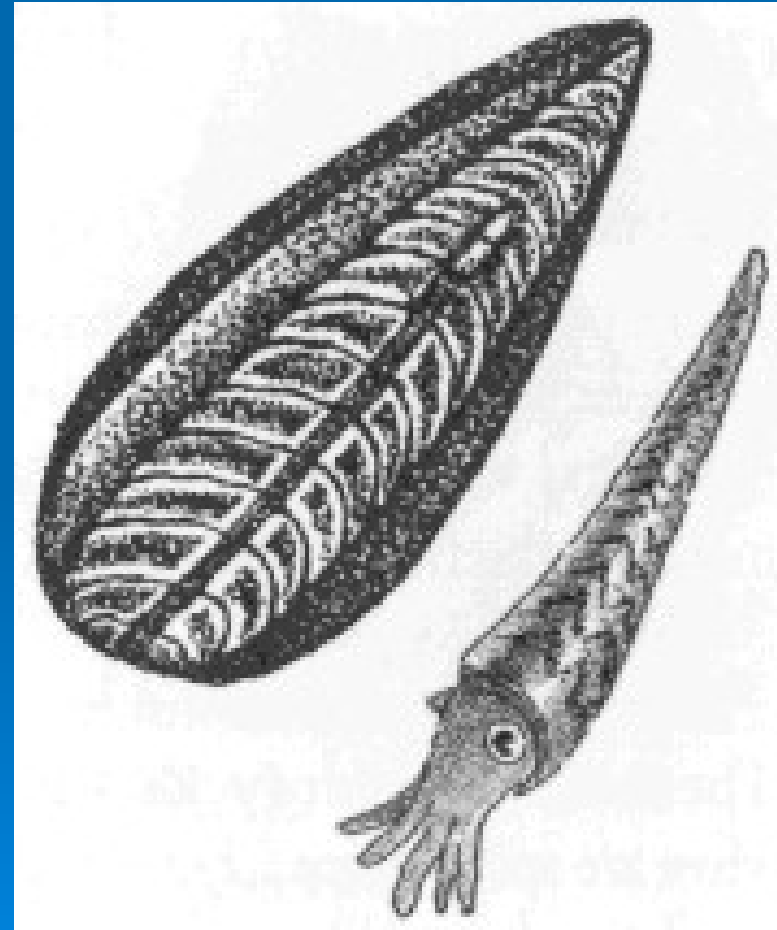
Sporadoceras



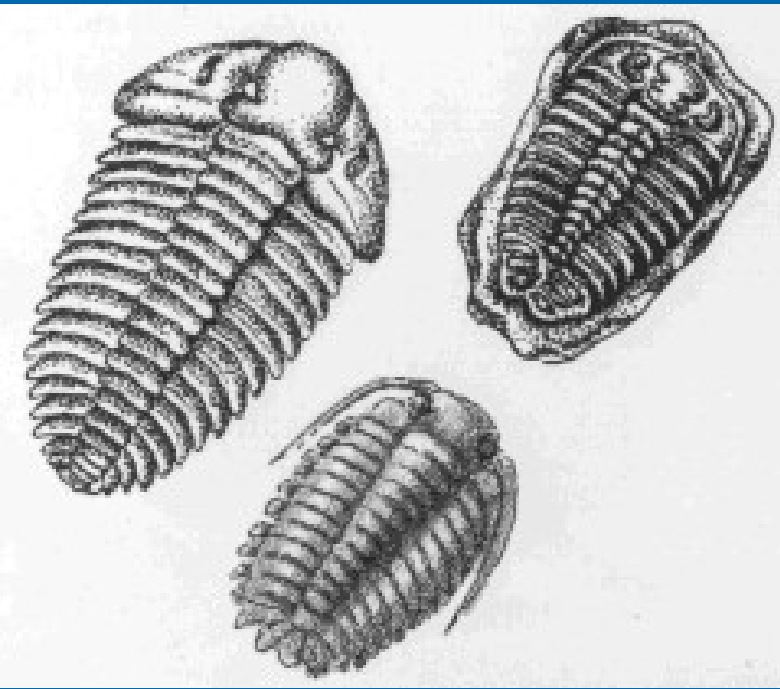
Nautilus



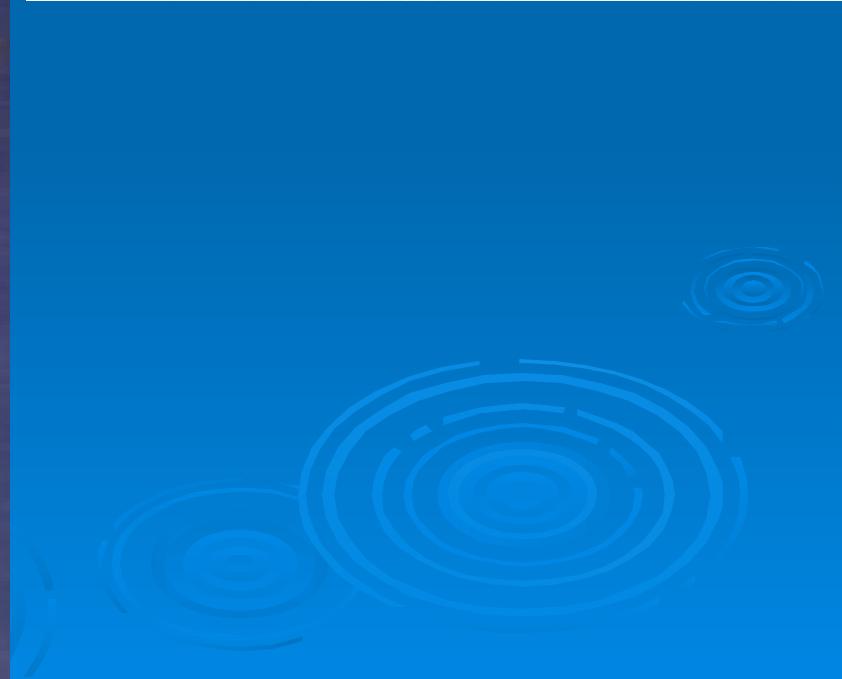
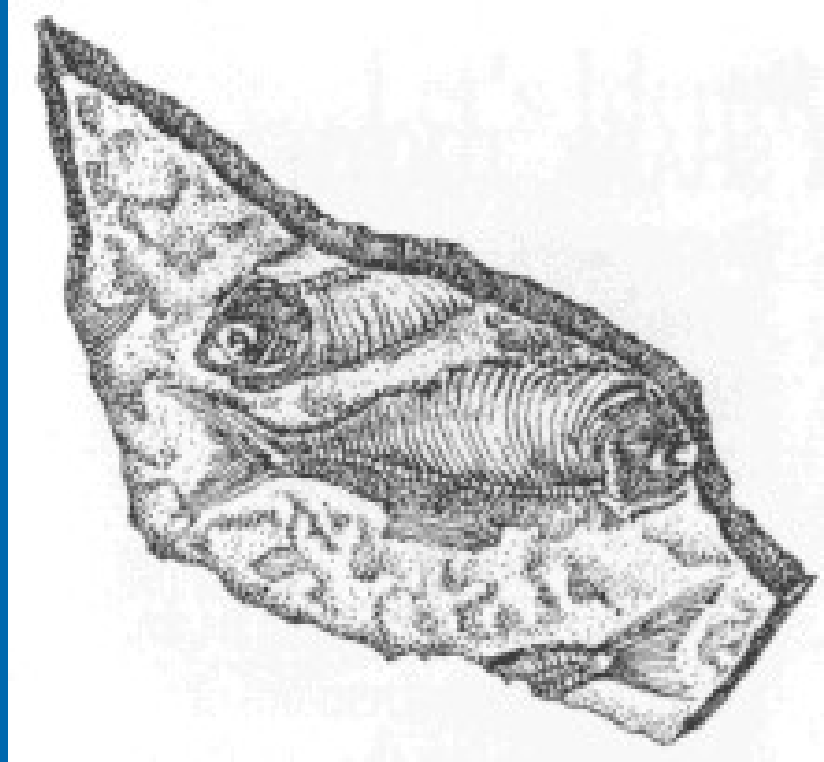
Orthoceras



Trilobites



Fossil Fish



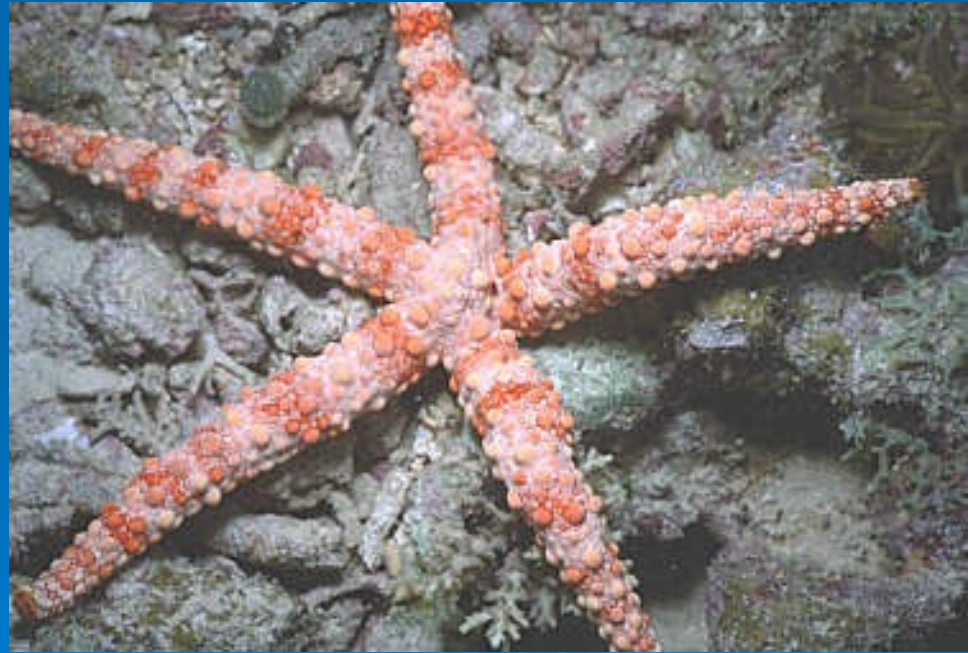
Dinosaur Bone



Brachiopods



Echinoderms



Chrinoid Stems



Coral Fossils



























Plant Fossils



Snails and Slugs



Different Fossils Belong to Different Time Periods

CENOZOIC ERA (Age of Recent Life)	Quaternary Period	<i>Pecten gibbus</i>		<i>Neptunea tabulata</i>	
	Tertiary Period		<i>Calyptrophorus velatus</i>		<i>Venericardia planicosta</i>
MESOZOIC ERA (Age of Medieval Life)	Cretaceous Period	<i>Scaphites hippocrepis</i>		<i>Inoceramus labiatus</i>	
	Jurassic Period		<i>Perisphinctes tiziani</i>		<i>Nerinea trinodosa</i>
	Triassic Period	<i>Trophites subbullatus</i>		<i>Monotis subcircularis</i>	
PALEOZOIC ERA (Age of Ancient Life)	Permian Period		<i>Leptodus americanus</i>		<i>Parafusulina bosei</i>
	Pennsylvanian Period	<i>Dictyoclostus americanus</i>		<i>Lophophyllidium proliferum</i>	
	Mississippian Period		<i>Cactocrinus multibrachiatus</i>		<i>Prolecanites gurleyi</i>
	Devonian Period	<i>Mucrospirifer mucronatus</i>		<i>Palmatolepus unicornis</i>	
	Silurian Period		<i>Cystiphyllum niagarensis</i>		<i>Hexamoceras hertzeri</i>
	Ordovician Period	<i>Bathyrurus extans</i>		<i>Tetragraptus fructicosus</i>	
	Cambrian Period		<i>Paradoxides pinus</i>		<i>Billingsella corrugata</i>
PRECAMBRIAN	-----				

Fossil Molds



Sometimes you find a fossil mold of a shell, like this one. Depending on the shape of the mold, it is sometimes possible to make a cast of the shell.

Making a Cast



By filling the mold with plaster, a cast of the fossil can be made. In nature, sediments would fill the mold and eventually harden, also forming a cast.

The Cast



When the plaster dries it can be separated from the mold, resulting in two types of fossils, a mold and a cast.