

OAKES QUARRY

FOSSILS

WHAT IS A FOSSIL? A fossil is any evidence of life from the past. Things like shells, bones, plant remains, and even footprints are all considered fossils. In the Oakes Quarry Park the fossils are parts of organisms that once lived in an ocean.

GEOLOGIC HISTORY

The Brassfield Formation was deposited around 440 million years ago during the Silurian Period when Ohio was covered by a shallow, warm, clear, tropical sea. This environment was ideal for the existence and preservation of the organisms which are preserved in the rocks we see today. The sea floor would have been covered with organisms like corals, molluscs, brachiopods, and many other invertebrate animals.

GEOLOGIC TIME SCALE

EON	ERA	PERIOD	EPOCH
Phanerozoic	Cenozoic	Quaternary	Holocene
			Pleistocene
		Neogene	Pliocene
			Miocene
			Oligocene
		Paleogene	Eocene
	Paleocene		
	Mesozoic	Cretaceous	
		Jurassic	
		Triassic	
		Paleozoic	Pennsylvanian
Mississippian			
Devonian			
Silurian			
Proterozoic		Ordovician	
		Cambrian	
		Ordovician	
		Cambrian	
Archaean			

PHOTO SCALE NOTE

Each black/yellow square equals 1 centimeter
Each line on purple/white ruler equals 1 millimeter

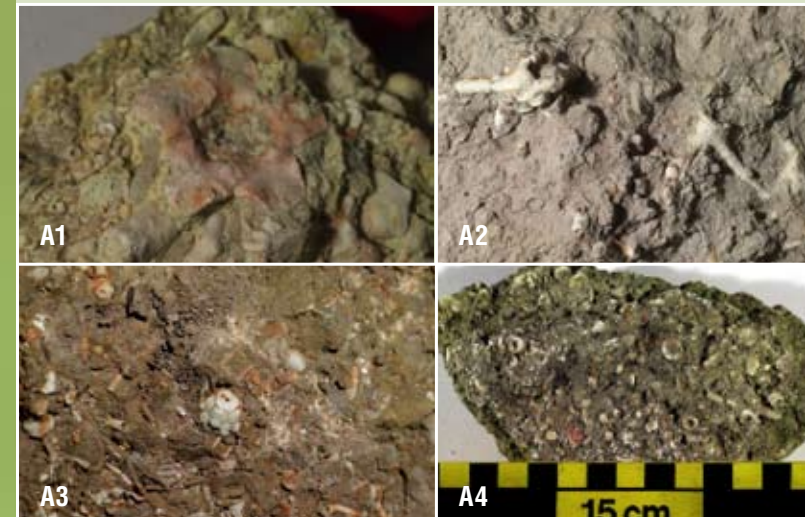
RULES FOR FOSSIL COLLECTING

- Absolutely no collecting near the high wall or at the coral reef.
- The map on the following page shows the designated collecting areas in the spoil piles. These piles contain samples of all rock types in the quarry.
- Please remember that this is an active research area so limit yourself in the number of samples you take.

CRINOIDS

WHAT IS A CRINOID? A crinoid or sea lily is an animal in the Phylum Echinodermata. The organism has a long stalk made of little discs stacked on top of each other. It is held in place by a holdfast which anchors it into the soft sediment. At the top of the crinoid there are feathery arms used for feeding. The arms wave back and forth in the water and capture food out of the water column. This type of feeding mechanism is called filter feeding.

Common crinoid fossils found in this quarry are the holdfasts, calyces, and discs from the stalks.



A1. *Stereoaster squamosus calyx*
FOSSIL IS APPROXIMATELY 2.5 CENTIMETERS WIDE

A2. *Stereoaster squamosus holdfast*
FOSSIL IS APPROXIMATELY 3 CENTIMETERS WIDE

A3. *Phrygilocrinus batheri*
FOSSILS ARE APPROXIMATELY 1 CENTIMETER WIDE

A4. *Various crinoid stems and plates*
SCALE NOTE—EACH SQUARE EQUALS 1 CENTIMETER

MOLLUSCS

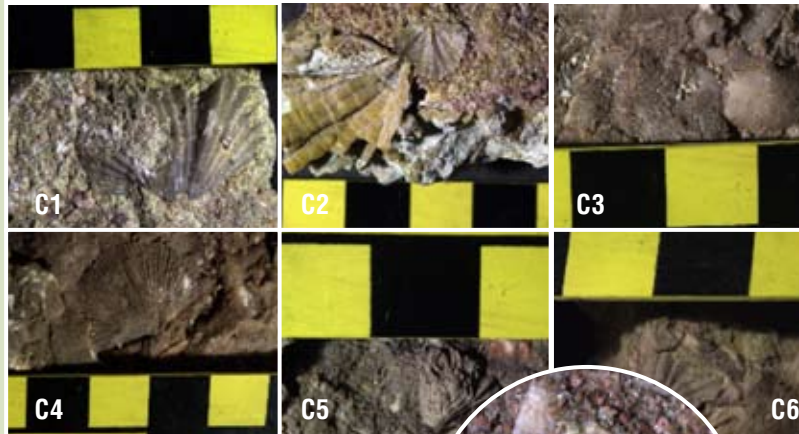
In this quarry there are two types of molluscs, cephalopods and gastropods.

WHAT IS A CEPHALOPOD? Examples of modern cephalopods are squids, octopi, cuttlefish, and nautiloids. Ancient cephalopods looked much different than modern examples in that they had a hard outer shell with the soft parts of the animal sticking out. The hard outer shell of the organism is what is preserved in the fossil record. Here at the quarry there is an entire layer that has many cephalopod fossils in it.

WHAT IS A GASTROPOD? Gastropods or snails, are very common animals today. These organisms are found on land and in fresh and salt water environments. The snails you see in the rocks at this quarry are all shallow marine snails.



B1. *Cephalopod*
B2. *Cephalopod*
B3. *Gastropod*



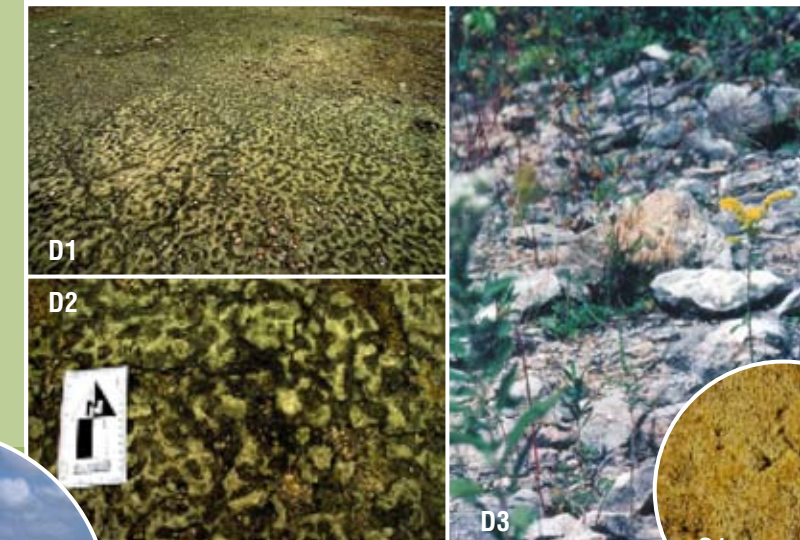
PHOTOS ABOVE
C1. *Platystrophia sp.*
C2. *Zygospira sp.*
C3. *Orthis*
C4. *Orthis*
C5. *Rhynchotrema sp.*
C6. *Rhynchotrema sp.*
C7. *Inside the shell of the brachiopod*

BRACHIOPODS

WHAT IS A BRACHIOPOD? A brachiopod is an animal in the Phylum Brachiopoda. Although it is not a mollusc, it has two shells like many pelecypods (clams). The brachiopods shells form mirror images of themselves or are symmetrical from left to right where as a pelecypod is symmetrical from top to bottom.

TRACE FOSSILS

WHAT IS A TRACE FOSSIL? A trace fossil is a sign of activity made by an organism. Trace fossils can be tracks, trails, resting spots, burrows into soft surfaces, borings into hard surfaces, etc. The floor of the quarry is covered with burrows made by some of the animals that once lived here.

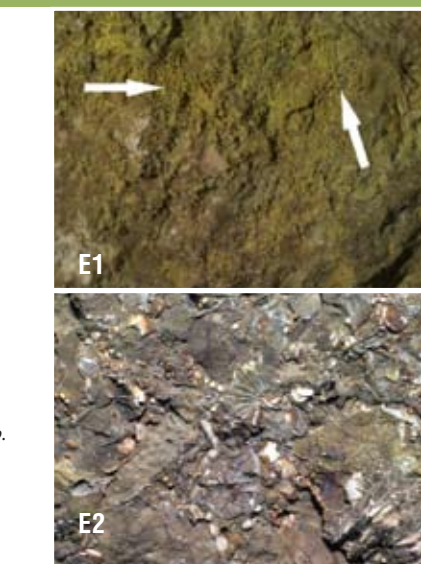


D1. *Floor of the Quarry showing trace fossils*
D2. *A close up of the floor of the Quarry showing the trace fossils in more detail*
D3. *A modern example of sediment that has been burrowed. The floor of this quarry may have looked like this 438 million years ago.*

BRYOZOANS

WHAT IS A BRYOZOAN? A bryozoan is an animal in the Phylum Bryozoa. Like a coral, a bryozoan is a colonial animal. There are many different types and shapes of these organisms. Encrusting bryozoans grow over rocks, shells, and other hard objects. Branching bryozoans look like sticks with branches and fenestrate bryozoans are fan shaped.

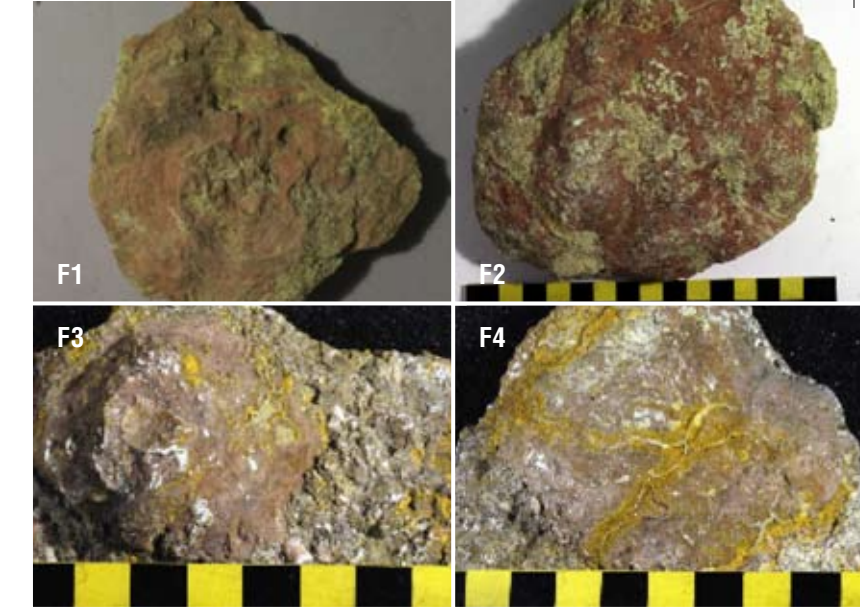
E1. *Fenestrate Bryozoan Chasmatopora sp.*
E2. *Encrusting Bryozoan Phaenopora sp.*



STROMATOPOROIDS

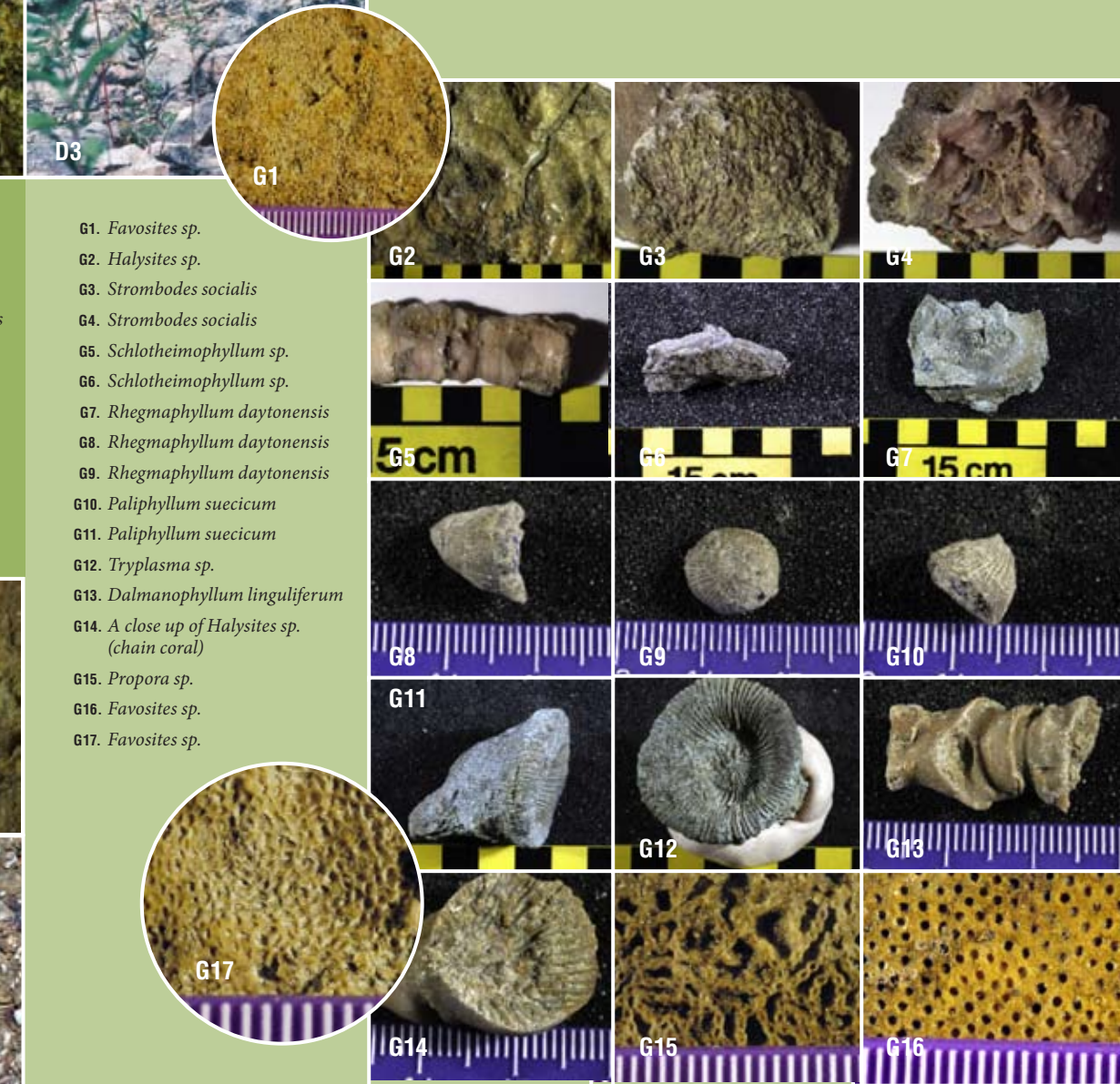
WHAT IS A STROMATOPOROID? A stromatoporoid belongs to the Phylum Porifera. It was an organism that lived on the sea floor and resembles modern sponges. The structure of the organism is made of calcite and it makes a room and pillar pattern if looked at in cross section. Stromatoporoids in this quarry are usually pink in color and can range in size from 5 to 15 centimeters. They can be flat or gently rounded and be smooth or have ridges on them.

F1. *Stromatoporoid*
F2. *Stromatoporoid*
F3. *Stromatoporoid*
F4. *Stromatoporoid*



CORALS

WHAT IS A CORAL? Most corals are filter feeding colonial animals which means many animals live together in one structure. Different types grow and make different structures. Mound corals like *Favosites* make large head or ball shapes while *Halysites* make long chains. Horn corals are solitary corals meaning only one animal lives in each horn shaped fossil.



G1. *Favosites sp.*
G2. *Halysites sp.*
G3. *Strombodes socialis*
G4. *Strombodes socialis*
G5. *Schlotheimophyllum sp.*
G6. *Schlotheimophyllum sp.*
G7. *Rhegmaphyllum daytonensis*
G8. *Rhegmaphyllum daytonensis*
G9. *Rhegmaphyllum daytonensis*
G10. *Paliphyllum suecicum*
G11. *Paliphyllum suecicum*
G12. *Tryplasma sp.*
G13. *Dalmanophyllum linguliferum*
G14. *A close up of Halysites sp. (chain coral)*
G15. *Propora sp.*
G16. *Favosites sp.*
G17. *Favosites sp.*

OAKES QUARRY PARK MAP



MAP KEY

- Points of Interest
- Hiking Trail
- Fossil Trail
- Horse Trail
- Roads
- Coral
- Glacial
- Grass/Barren
- Inner Quarry
- Parking Lot
- Prairie
- Talus
- Water
- Woodland Restoration



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A GUIDE TO GEOLOGICAL HISTORY IN THE OAKES QUARRY

