

JUNIOR PALEONTOLOGIST

Activity book: Finding Fossils 10-13



BECOME A JUNIOR PALAEOONTOLOGIST

This activity book is part of the Craigleith Heritage Depot Junior Naturalist Program.



This badge will introduce kids to palaeontology and local fossil history. The activities are designed to engage kids whilst teaching them about the science of palaeontology. By completing your Junior Palaeontologist Badge you will learn about ancient life, and explore your local area for fossils. There are six booklets, complete four of the six booklets and receive your Junior Explorer badge.

HOW TO RECEIVE YOUR BADGE

To receive your Junior Palaeontologist badge you must complete the activity book and bring it to the Craigleith Heritage Depot where the staff will look over the booklet and award you a stamp in your Field Journal, once you have completed four of the six books the CHD staff will award you your badge!



FUN FACTS ABOUT FOSSILS

- **Oldest Fossils Are Bacteria**
- **Scientists have found fossils of feathered dinosaurs**
- **Fossilization is really rare most bones decompose quickly after they die.**
- **Some modern animals are living fossils - like Crocodiles, Komodo Dragons and Platypus' - meaning they are organisms that have remained essentially unchanged from earlier geologic times and whose close relatives are usually extinct**



JUNIOR PALAEOONTOLOGIST: STAYING SAFE

While completing activities and learning more about palaeontology please keep some of these rules in mind!



INDOOR RULES

- **Handle with care - edges are sharp and fossils can break if dropped**
- **Keep track of your finds with location and date found**
- **When not on display wrap fossils in soft toilet paper and put in ziplock bag, write on the outside in marker what is inside**
- **Make note of the books that help you identify your fossils for future use**



OUTDOOR RULES

- **Collection of fossils in Provincial or National Parks is prohibited by law**
- **Never go alone - tell others where you are going**
- **Only collect a few, leave some for others**
- **Be prepared for the weather - raining where a rain jacket - sunny wear a hat and sunscreen**
- **Wear proper shoes (closed toed and back)**



FOSSIL RULES

When looking for fossils be aware of your surroundings - shale can be slippery when wet. When you have found a fossil do not hit, pick or remove the fossils you find (there is a By-Law that makes removing fossils illegal). When you are looking at the fossil be careful as shale can be super sharp - be aware when walking on shale or when touching shale rock (wearing gloves can prevent cuts).

DIGGING DOWN

There are several ways Palaeontologist find fossils; prospecting and accidental finds.

PROSPECTING

This technique involves hiking while keeping one's eyes focused on the ground in hopes of finding fragments of fossils on the surface.



ACCIDENTAL FINDS

This technique involves the public finding fossils while out walking and stumbling upon a fossil.

Once a fossil is located palaeontologists will brush away loose dirt to see how whole the fossil is. They will then use awls, rock hammers, chisels, and other tools to remove the rock and debris covering the fossil.



National Geographics



Getty Images

Many fossils are found in pieces, to hold them together special glue is applied. Palaeontologist will then dig a trench around the bones so that they are on a pedestal.



Natural History Museum

Once the fossil is as stable as the palaeontologist can get it, a layer of plaster bandage is wrapped around the bones to create a cast. The cast hardens around the fossil securing it for transport to a museum or university.



Childrensmuseum.org



The fossils are first studied by palaeontologist - some of the fossils will eventually be displayed for the public to view and learn from



DIGGING DOWN

Look at the photographs below and put the images in the order (1 through 8) a palaeontologist would perform a dig!



Childrensmuseum.org



Childrensmuseum.org

PALEO SLEUTHS

Creating Fossil Field Jackets

What is a Field Jacket?

A field jacket is a plaster covering placed over and around a fossil, while in the field to protect the fossil while its moved to a museum or university for further study



Childrensmuseum.org



Childrensmuseum.org



Childrensmuseum.org

Try creating your own Fossil Field Jacket with the activity below!

Materials Needed

1 roll of plaster cloth 1 plastic bucket or container Warm water



Childrensmuseum.org



Choose sea shell, small fossil, or rock



Scissors



Newspaper



1/2" paint brush



Rolls of toilet paper



Rubber gloves



PALEO SLEUTHS

Creating Fossil Field Jackets

Try creating your own Fossil Field Jacket with the activity below!
With this activity, you are the paleontologist who will create a field jacket to preserve a specimen.

Step 1: Cover surface area with newspaper.



Step 2: Take seashell or other fossil and place on newspaper

Step 3: Fill plastic bucket 1/2 full with lukewarm water.



Step 4: Take 1-2 folds of toilet paper and dampen it.



Step 5: Place dampened toilet paper over one side of exposed fossil area and use brush or fingers to lightly press toilet paper into crevasses, surrounding fossil. Add more dampened toilet paper as needed.



Step 6: Measure and cut a piece of plaster cloth the size of the area covered by the toilet paper on the fossil and fold the plaster cloth over to double it. Cut the fold of the double piece of cloth so you have 2 pieces laying one on top of the other. Soak both pieces together 15 seconds in water. Drain off excess water by moving hands over cloth while over bucket.



You can find plaster cloth in a medical supply store or amazon

Step 7: Place plaster cloth over top point of toilet paper. Add more plaster cloth as needed. Press and smooth from inside outward of plaster cloth.

Step 8: Let set and harden. This is the field jacket.



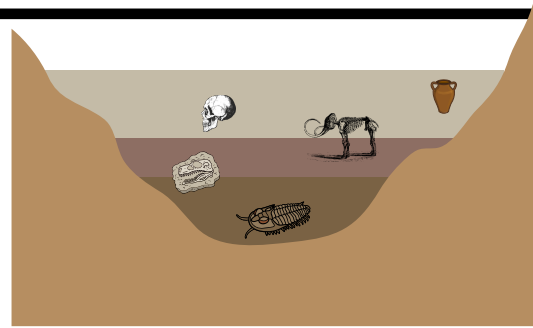
Childrensmuseum.org

DATING FOSSILS

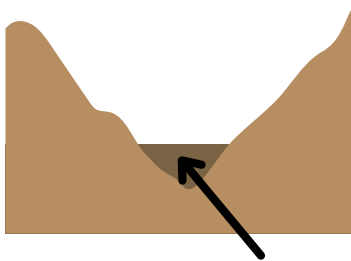
Have you ever looked at the side of a rocky cliff - you might have seen lines or different coloured sections. Layers like the ones you may have seen on rocky cliffs can help palaeontologists date fossils. Palaeontologists call this relative dating.



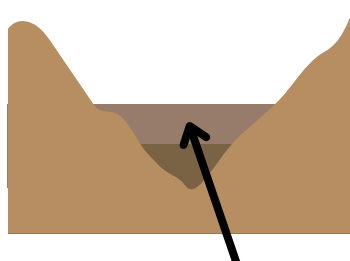
Relative dating is a way to compare the age of different fossils in a section of rock by comparing their positions. By doing so it can help Palaeontologists have a general idea of what is older or younger.



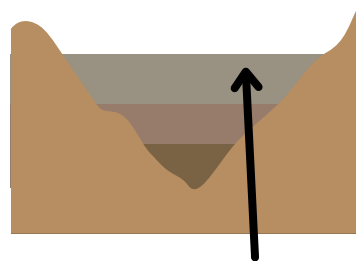
HOW SEDIMENT LAYERS ARE FORMED



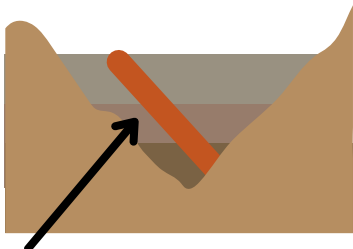
Time 1: A layer of sediment is deposited onto a lake horizontally



Time 2: Later in time, a second layer is deposited on the first



Time 3: Even later in time, a third layer is deposited on top of the first two.



Time 4: A layer cross-cuts the first three layers, making it the youngest layer

As time goes forward the lake sediment layers will continue to build up, erosion and air will expose the sediment and allow scientist to date the layers and anything that may have died in the sediment



DATING FOSSILS

Match the description with the photograph - write the letter on the photograph next to the description in the beige boxes

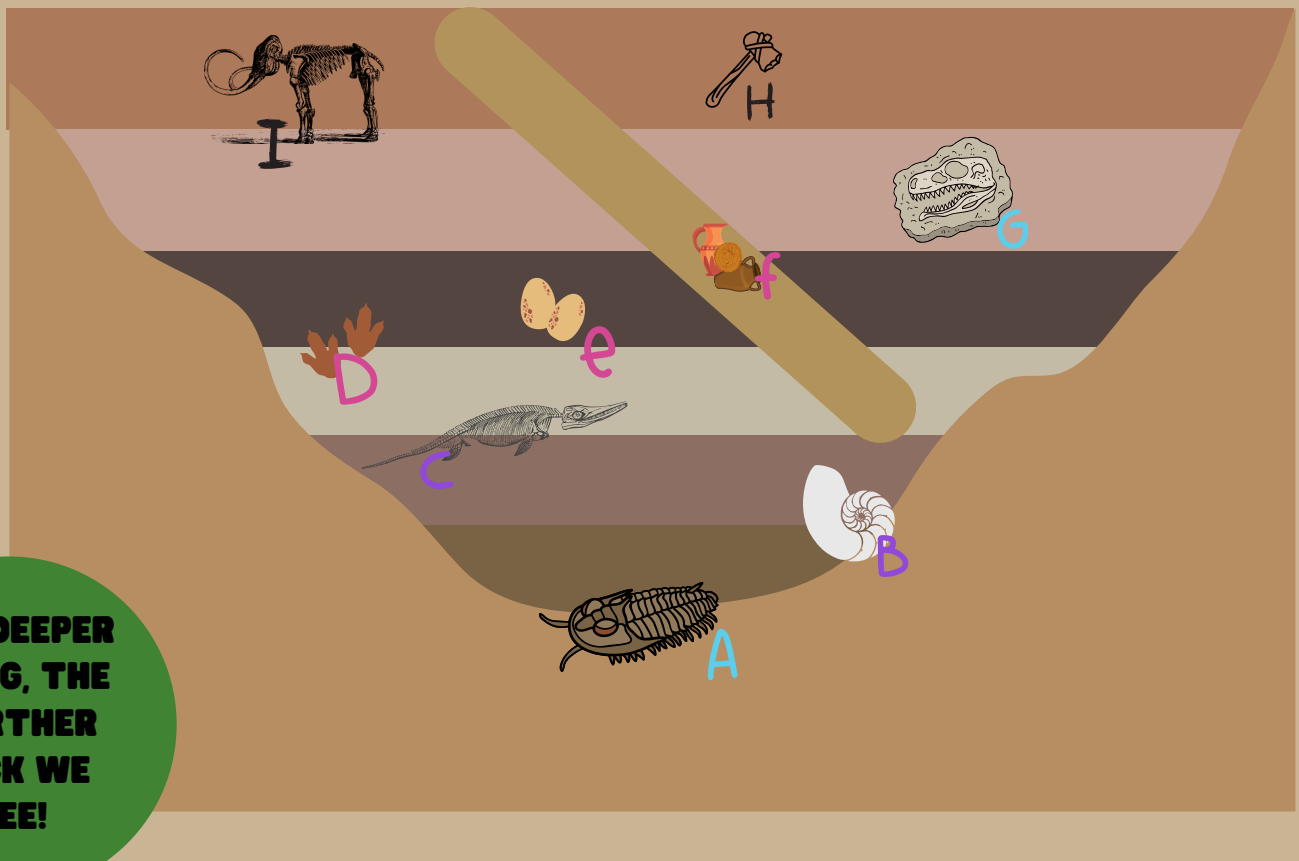
1) If each soil layer takes 60 million years to build up, how old is the Trilobite (A)? _____

2) Are the Roman coins and pottery old or younger than the Dinosaur eggs (E)? _____

3) Which fossil is older Ichthyosaurus (C) or T-Rex skull (G)? _____

4) Which fossil is the oldest? _____

5) Are the mammoth (I) and the stone tool (H) the same age? _____



**THE DEEPER
WE DIG, THE
FARTHER
BACK WE
SEE!**

F O S S I L T Y P E S

Fossils are evidence of prehistoric life; palaeontologist study both the fossil and the rocks where they are found. By studying both Palaeontologist are able to understand past life forms and the environment they lived in.

Match the description with the photograph – write the letter on the photograph next to the description in the beige boxes

Vertebrate Fossils

Animals with backbones (vertebrae). Mammals, fish and dinosaur bones or teeth are examples of vertebrate fossils

Invertebrate Fossils

Animals without backbones (vertebrae). Examples include shells and exoskeletons like clams and coral.



Plant Fossils

Remains of petrified wood, leaves, cones, seeds, pollen, and flowers are all types of plant fossils

Trace Fossils

Include tracks, burrows, and coprolites (ancient poop) - these types of fossils show how organisms interacted with their environment

HIDDEN FOSSILS

Fossils come in a variety of shapes and sizes some may be so small that only with a magnifying glass can you really see the fossil. Palaeontologist must be vigilant when excavating to make sure they do not miss any fossils!

Do you have the eyes of a palaeontologist? Can you search the photographs below and find the 10 fossils? Circle the fossils when you find them.

BLUE MOUNTAIN FOSSILS

Now that you've learned about Palaeontologist and how and what they do its now your turn to find fossils!

If you want to find fossils, knowing what kind of rocks to search in is the first step. As you know most fossils "hide out" in sedimentary rock



Sandstone



Shale

Craigleith area is full of places to find fossils! The bedrock exposed in the area consists of slightly tilted layers of limestone and shale, which were originally deposited approximately 445 million years ago.

This area of Southern Georgian Bay during the Ordovician period was under water!

Fossils of the once abundant sea-creatures in this area can be seen in some of the weathered surfaces and shale rock pieces that have broken up over time.

Some fossils found in the Craigleith Area include:



Gastropods



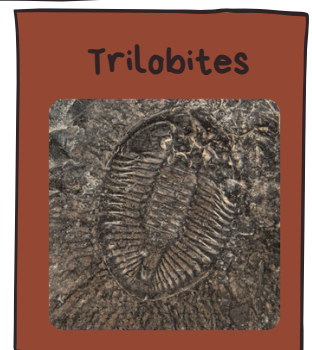
Crinoids



Brachiopods



Cephalopods



Trilobites

FINDING FOSSILS

Great places to look for fossils:

These are the best places to find fossils, however, anywhere there is shale rock you should be able to find fossils! Even on the Georgian Trail!



Delphi Point Beach
209233 Highway 26, ON



Northwinds Beach
209605 ON-26, The Blue Mountains, ON L9Y 0N1

Try to see if you have the eye of a Palaeontologist with this fossil scavenger hunt!



Gastropods



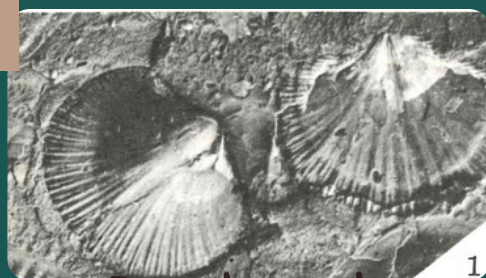
Cephalopods



Trilobites



Crinoids

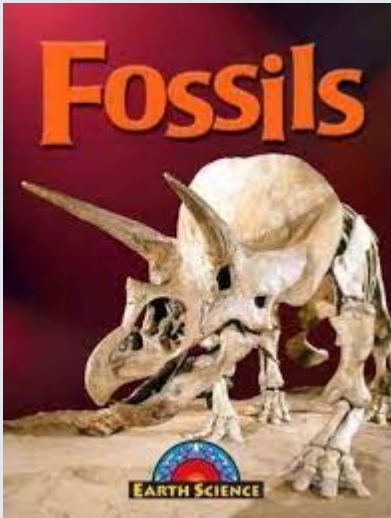


Brachiopods

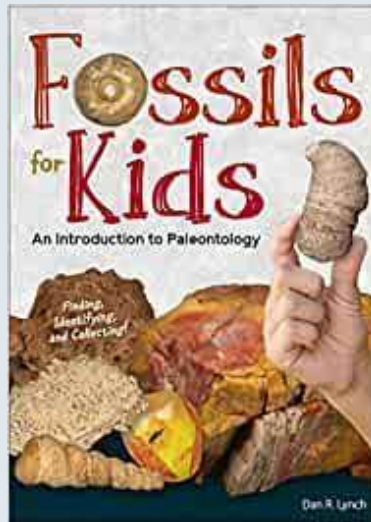
LEARN MORE!

WANT TO LEARN MORE ABOUT LOCAL ANIMALS CHECK OUT SOME OF THE ONLINE AND LIBRARY RESORUCES!

GREAT BOOKS



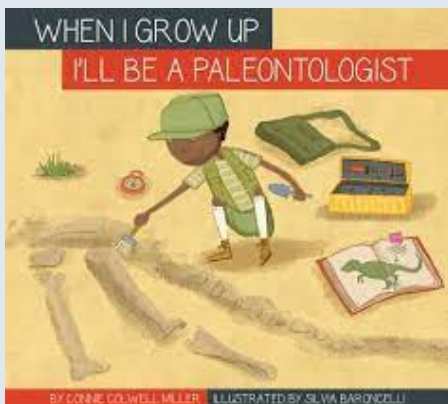
J 560 LAP



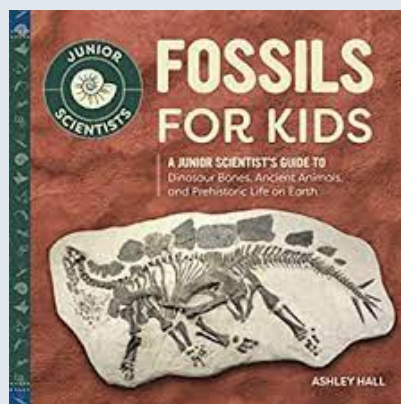
J 560 LYN



Ontario Parks Pass Kit



J 560 .92 MIL



J 560 HAL



FOSSIL KIT