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JUNIOR PALEONTOLOGIST

Activity book: Finding Fossils 4-6

BECOME A JUNIOR Palaeontologist

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

Heritage Dep

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 PALAEONTOLOGIST: 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

Heritage Depo

- 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 Geographic





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 stable, a plaster bandage is wrapped around the fossil to create a hard cast. The cast secures it for transport to a museum or university. Once there the cast is opened and the rock around the fossil removed.



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!



Draw yourself as a palaeontologist and what you would be doing! Are you the person excavating the fossil or are you possibly the one studying the fossil?

PALEO SLEUTHS

Digging for Dinos

Try excavating your own dinosaur

Materials Needed

- Cornstarch
- Water
- Container
- Dinosaur fossil skeletons or dinosaur toys
- toothbrush/small paint brush

Instructions



Mix up the cornstarch and water. No exact measurements because it will depend on the size of the container you are using and how much cornstarch you have on hand.

Water and starch will create oobleck (fluid which turns hard when you touch it), you will place the dinosaur/toy into the oobleck. You will want to push them down as much as possible to so that they are <u>b</u>uried. You will want to use approximately twice as much cornstarch as water. If it is too soupy, add more cornstarch. If it is too thick, add more water.



Put outside in the sun and leave it for a day or two. This will harden up the cornstarch and water mixture around the dinosaur or toy!

PALEO SLEUTHS

Digging for Dinos

Instructions

funlearningforkids.com



Once the oobleck is very hard and has started to crack all over the surface you are ready to excavate your "fossils"!

Once the oobleck is hard from the sun flip over the container letting the hardened oobleck release from the container and use your paint brush or tooth brush to slowly remove the oobleck from your "fossil"

OR

Once the oobleck is hard from the sun you can use your paint brush or tooth brush to slowly remove the oobleck from your "fossil"

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Continue to excavate your "fossil" from the harden oobleck. Remember to go slow and don't get mad if you can't find the fossil quickly – As Junior Palaeontologist you have to be patient!



playideas.com



funlearningforkids.com

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



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

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



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



DATING FOSSILS

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

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

2) Which fossil is older Ichthyosaur (C) or T-Rex skull (G)? _____

3) Which fossil is the oldest?

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



FOSSIL TYPES

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

<u>Trace Fossils</u> 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:











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 ON1

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







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