

CRAIGLEITH  
HERITAGE DEPOT  
JUNIOR  
NATURALIST



# JUNIOR PALEONTOLOGIST

Activity book: Understanding Time –  
Paleozoic Era 4–6



# 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

- **Fossils in ancient China were thought to be dragon bones.**
- **Modern tools like X-rays let scientists study inside fossils without damaging them.**
- **Paleontology was first used in 1822 by geologist William Buckland.**
- **Studying fossils can help predict how a species will respond to climate change and other environmental threats in the near future.**



# UNDERSTANDING TIME

The Earth is really old, it formed 4.6 billion years ago. We can divide the Earth's history into smaller sections called eons, eras, and periods. Palaeontologist need to learn about the different periods because each had unique forms of life.

The colours below represent the 3 major eras of geological time – Paleozoic Era, Mesozoic Era, and Cenozoic Era. Try to match up the creatures or plants to the right time period.



Trilobites and fish dominate the seas



Cycads and ferns grow on land



Dinosaurs like *Brachiosaurus* appear



*Saber-Toothed Cat* and other mammals dominate

Cenozoic

66 Million Years Ago

Mass Extinction

Mesozoic

252 Million Years Ago

Mass Extinction

Paleozoic

541 Million Years Ago

# UNDERWATER KINGDOM



The Paleozoic Era started with the Cambrian Period, this start has been called the "Cambrian Explosion".



Cambrian Explosion

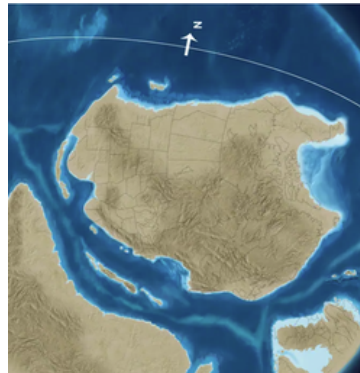


This explosion included the evolution of arthropods (ancestors of today's insects and crustaceans) and chordates (animals with basic spinal cords).



Age of Invertebrates

North America was a very different place in the Paleozoic era.



North America 550 Million Years ago

The Blue Mountains was closer to the equator so it was much hotter and tropical. The ocean covered much of what is now dry land.

Age of Fish



It was during this era that the first vertebrate animals moved onto the land.



The era began with the slow breakup of one supercontinent and the formation of another called Pangea



Fungi



Land Plants



Age of Amphibians



Insects



Coal Deposits



Extinction



## Paleozoic Era Timeline



252 million years ago

During this period Craigleith would have been at the bottom of a low laying sea

541 million years ago

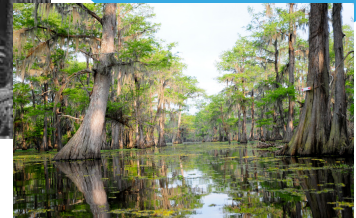


# UNDERWATER KINGDOM

Learn more about the Paleozoic Era with the blue bubbles and the activities!



Courtesy of the Department Library Services, American Museum of Natural History, neg. #333983



**Plants became widespread. ferns and conifers provided food to land animals**

Much of the Paleozoic plants would have been similar to the photographs on this page!



Draw the plants you see in your everyday life. How are they different?

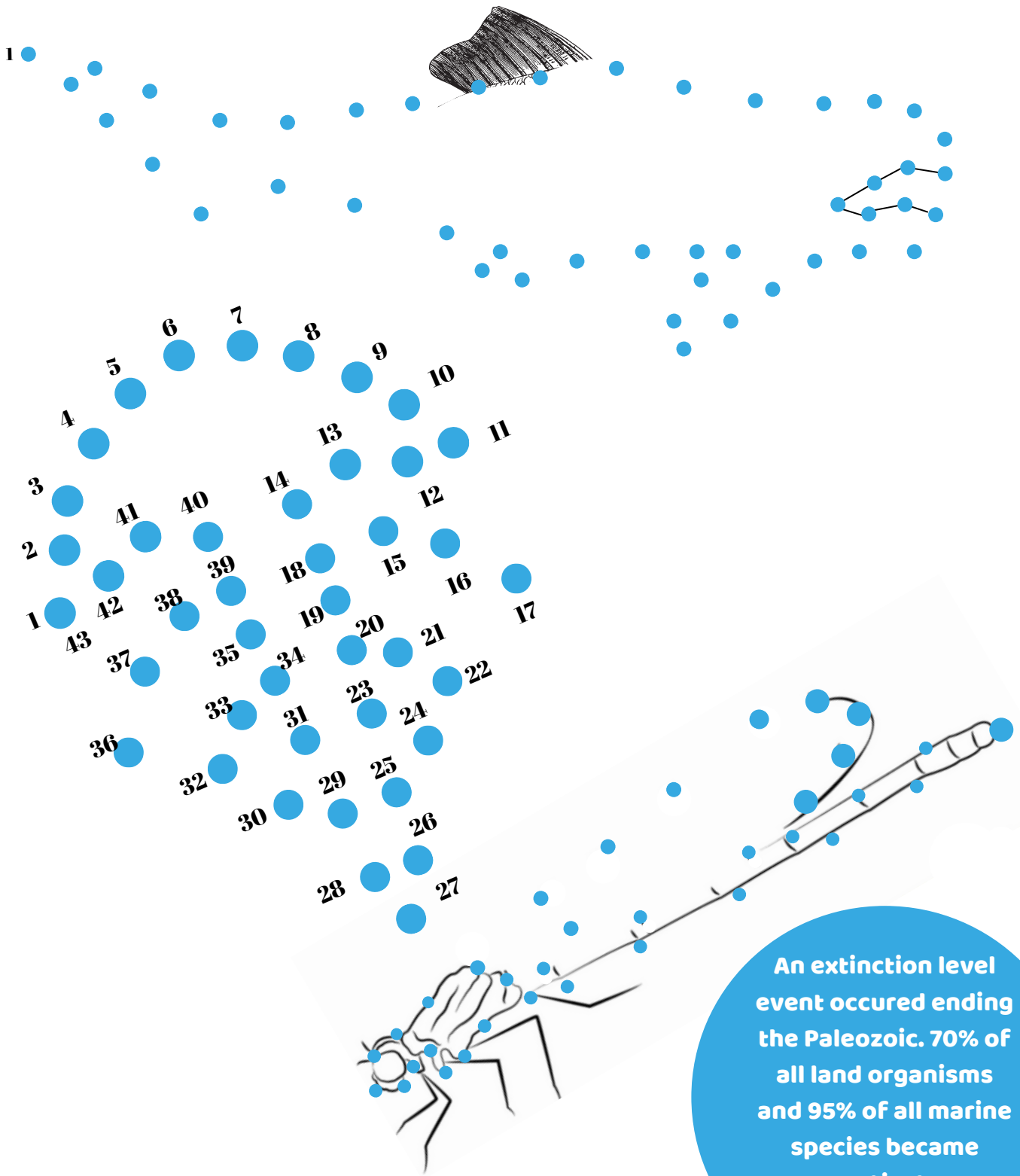
**First fossil evidence of plants on land is from 470 Million Years Ago!**

Paleozoic 541 Million-252 Million Years Ago

Paleozoic 541 Million-252 Million Years Ago

# UNDERWATER KINGDOM

Can you connect the dots to make some of these Paleozoic Era creatures? Can you name them?



An extinction level event occurred ending the Paleozoic. 70% of all land organisms and 95% of all marine species became extinct

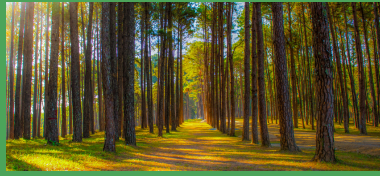
# UNDERWATER KINGDOM

## Permian

299 Million Years Ago



Super continent Pangaea finishes forming



Fern forests turned to coniferous tree forests - which dominated the landscape



End of the era the climate became drier, desert like landscapes appeared

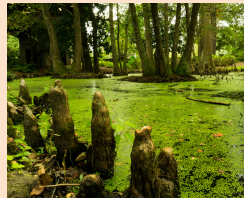
## Carboniferous

359 Million Years Ago



Forest could be found at the Equator

Wetlands, which are always low-lying, stretched across the supercontinent of Laurussia.



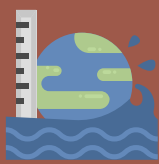
britannica.com



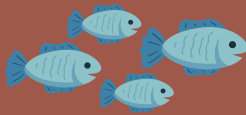
Large animals emerge - Dragonflies with 2.5 foot wingspans!

## Devonian

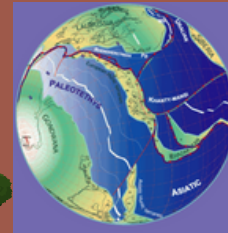
419 Million Years Ago



Sea levels were high, and there was a great variety of fish and other marine organisms



The first seed-bearing plants spread across dry land, forming huge forests.

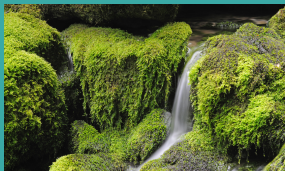


kids.kiddle.co/Devonian

The supercontinent Pangaea was just starting to form.

## Silurian

443 Million Years Ago



Fully terrestrial life evolved, including early arachnids, fungi, and centipedes



Oldest known terrestrial animals can be found in this period - millipede fossil

First fossil evidence of plants like moss on land

First freshwater fish evolved



## Ordovician

485 Million Years Ago

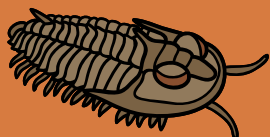
Sea levels are high!



Sea Stars Appear



alchetron.com



Trilobites are still present but have evolved to defend against predators



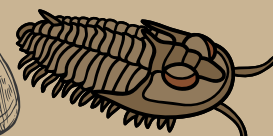
Coral appears

The very first Gnathostomata (jawed fish) appeared in the Upper Ordovician.

## Cambrian

541 Million Years Ago

There was a growth in the number and type of marine animals during this period - we call this the Cambrian Explosion



Mollusks, Trilobites and Brachiopods are some of the creatures that evolved during the Cambrian Explosion



# UNDERWATER KINGDOM

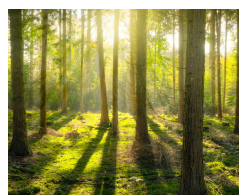
The colours below represent the 6 periods that make up the division of Paleozoic Era!  
Try to match up the creatures or plants to the right time period.

Paleozoic 541 Million-252 Million Years Ago

Paleozoic 541 Million-252 Million Years Ago



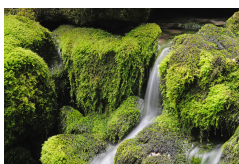
Coral appears



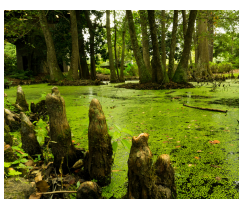
Huge forest start forming



Oldest known terrestrial animals can be found in this period - millipede fossil



First fossil evidence of plants like moss on land



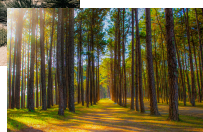
Humid tropical swamps dominate



Trilobites and mollusks are present



Fern forests turned to coniferous tree forests



Climate was drying, swamps disappeared - desert like landscapes appeared

252 Million Years Ago

Permian

299 Million Years Ago

Carboniferous

359 Million Years Ago

Devonian

419 Million Years Ago

Silurian

443 Million Years Ago

Ordovician

485 Million Years Ago

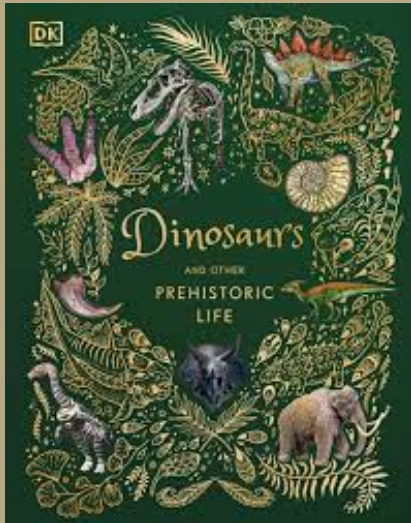
Cambrian

541 Million Years Ago

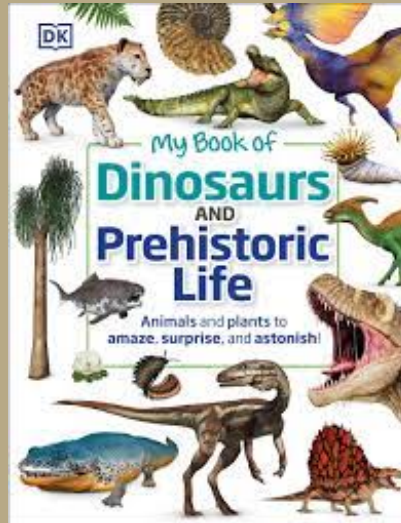
# LEARN MORE!

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

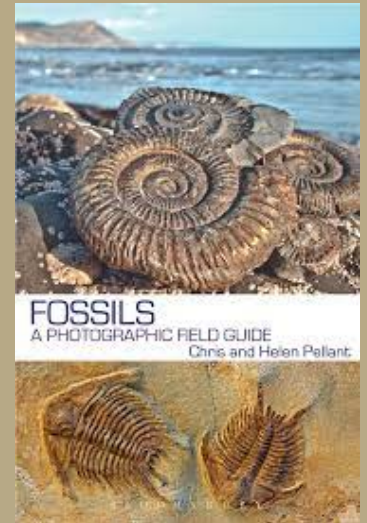
## GREAT BOOKS



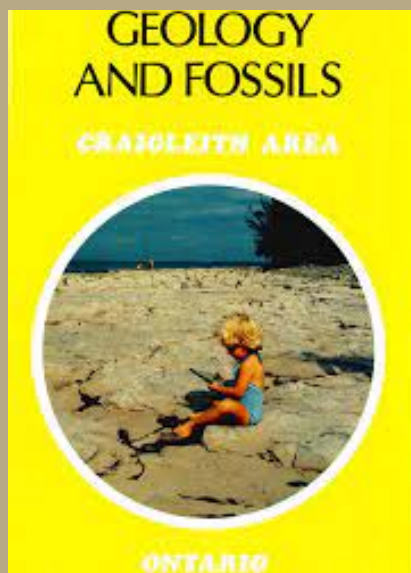
J 567.9 CHI



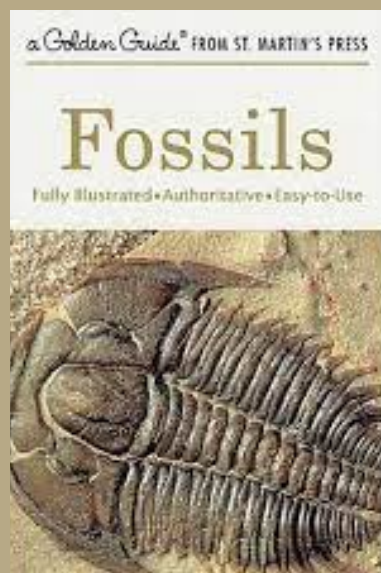
J 567.9 LOM



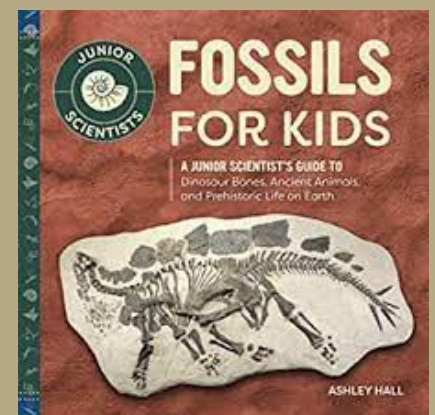
560 PEL



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560 RHO



J 560 HAL