

## Journey Through Geologic Time

*Hints for Teachers (Middle School and UP)*



### MUSEUM INFORMATION:

*"Journey Through Time" is a worksheet to explore the concept of Deep Time through the many different examples in the Beneski Museum of Natural History.*

- The museum does NOT provide copies of *Journey Through Time*. Please prepare copies for your students.
- The *Beneski Museum of Natural History* displays the fossil remains of many different creatures throughout different periods of life.
- While exploring the exhibition, encourage your students to look above their heads to see specimens displayed at different levels of the museum.
- The *Beneski Museum of Natural History* can accommodate up to 45 students and chaperones at a time. Please consider splitting into smaller sub-groups when completing the Lessons in Evolution activity.
- This lesson was designed as an extra-credit assignment; therefore, it can be used for a class assignment or an independent assignment.
- When your students arrive at the museum, they will be given a brief greeting by a museum staff member. After this greeting is a good time for you to talk to your students and chaperones about the *Journey Through Time* activity.

### PREPARING AN ACTIVITY:

- *"Journey Through Time"* asks students to look critically at museum specimens to understand the extensive scale of Deep Time and the concept of the Geologic Time Scale.
- The museum asks that students refrain from leaning on any of the glass cases while working. We recommend providing students with clipboards or notebooks to lean on.
- *"Journey Through Time"* has a brief set of directions printed at the top.

### IN THE CLASSROOM:

- Make sure students have a basic idea of what to look at when they arrive. For some of the questions they will need a basic understanding of animal anatomy.
- Distinguish whether you would like your students to form complete sentences or not. The worksheet does not specify.
- Discuss with students the concepts of: extinction, mass extinction, climate vs. weather, and genus/species, to prepare them for their *"Journey Through Time"* scavenger hunt activity.

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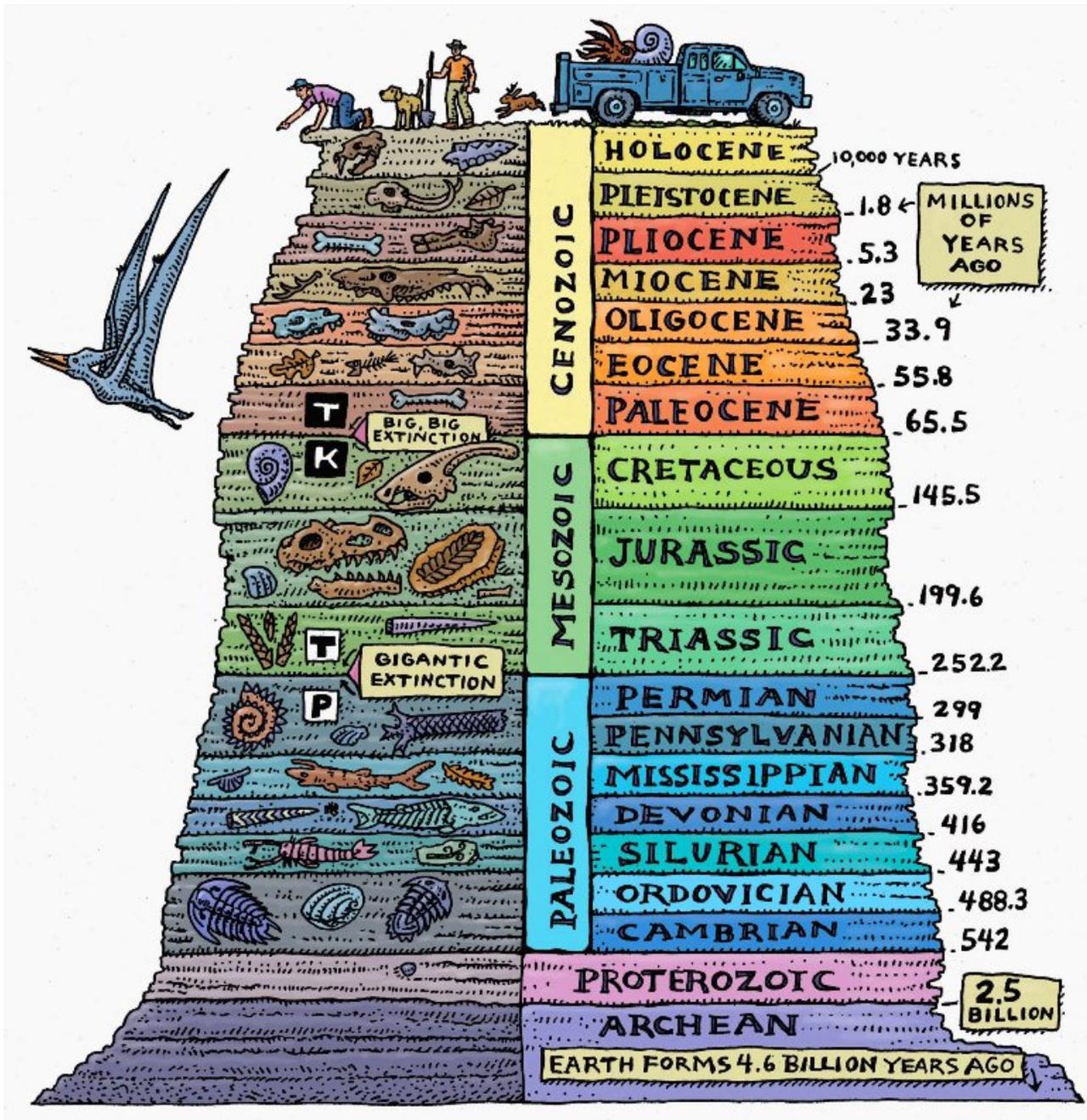
## Journey Through Geologic Time (Middle School and UP)



- ❖ Geologists split up the 4.6 billion years of Earth's existence into the smaller chunks of time we see in the Geologic Time Scale. They decide when each new age starts by looking at changes in the rock record. For example, mass extinctions and changes in climate can act as markers for new geologic ages.
- ❖ By examining the fossils in the museum, you will learn about the depth of geologic time, when different plants and animals appeared in the rock record, and when mass extinctions took place.
- ❖ A simplified version of the Geologic Time Scale is on the next page, which will help you complete the activities.
- ❖ MYA= Million years ago



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## Journey Through Geologic Time: Scavenger Hunt



1. First, head upstairs and find the “Trilobites” drawers. Find a trilobite that is older than 480 MYA.

How old is it? During which geologic time period did it exist? Refer back to the time scale on the previous page.

What is its scientific name?

Genus: \_\_\_\_\_ Species: \_\_\_\_\_

The informational panel next to the drawers calls trilobites “Index fossils.”  
What does this mean?

2. Next, walk down to the main floor. Some fish fossils don’t have jaws; these are called “Jawless fish.” But other types of fish, like most modern fish we are familiar with, do have jaws. Find a fossil of a fish *with* jaws in either the “Placoderms” or “Acanthodians” drawers.

How old is it? During which geologic time period did it exist?

What is its scientific name?

Genus: \_\_\_\_\_ Species: \_\_\_\_\_

During what time period did the evolution of jaws occur? Why are jaws advantageous for fish?

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3. Still on the main floor, find an amphibian fossil. Sometimes, these are called "Tetrapods." In these drawers, you will also find modern amphibians, like frogs, but remember, you are looking for a *fossil*.

How old is it? During which geologic time period did it exist?

What is its scientific name?

Genus: \_\_\_\_\_ Species: \_\_\_\_\_

What adaptations did tetrapods possess that allowed them to survive on land?

4. Head downstairs and find the oldest complete dinosaur specimen.

How old is it? During which geologic time period did it exist?

What is its scientific name?

Genus: \_\_\_\_\_ Species: \_\_\_\_\_

Check out the plaque about the *Diplodocus* legs, located to the right of the fossil you just found. After reading about their ages and where these fossils were found, can you infer that *Dryosaurus* and *Diplodocus* existed in the same place and time? Why or why not?

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5. Next, head back to the main floor and find the mammal wall, which is across from the stairs. Find the Brontothere on the mammal wall.

How old is it? During which geologic time period did it exist?

What is its scientific name?

Genus: \_\_\_\_\_ Species: \_\_\_\_\_

Read the plaque to the right of the mammal wall. What caused Brontotheres to go extinct?

6. Still on the main floor, find the Mammoth. (Not the mastodon!).

How old is it? During which geologic time period did it exist?

What is its scientific name?

Genus: \_\_\_\_\_ Species: \_\_\_\_\_

Mammoths ate around 800 pounds of vegetation per day. How might a major climate change event have affected the Mammoth's ability to survive?

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## Journey Through Geologic Time: Completing a Cross Section

Cross sections are geologic diagrams that view the Earth as if it were cut open and seen from the side.

The cross section below shows a cut through a sedimentary rock, with the geologic ages of each rock section labeled for you. Draw, in the cross section below, some fossils you might find in each of the time periods listed. Refer back to the geologic time scale on page 3 and your answers to the scavenger hunt activity to get some ideas! The Pleistocene section is done for you as an example. Remember: hard parts like bones and teeth are most commonly preserved as fossils.

The Pleistocene section contains two brown, rectangular fossil teeth with serrated edges on the left, and a single, curved, brown bone fragment on the right.	Pleistocene (1.8 MYA- 10,000 years ago)
	Cretaceous (145.5-65.5 MYA)
	Jurassic (199.6-145.5 MYA)
	Cambrian (542-488.3 MYA)

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Below, write which fossils you chose to draw in the cross section. Again, the Pleistocene section is filled in for you already.

**Pleistocene:**

Mastodon teeth, mammoth tusk

**Cretaceous:**

**Jurassic:**

**Cambrian:**

Thinking Questions:

1. How has life on Earth changed (as reflected in the fossil record) during the millions of years that we studied today?
  
  
  
  
  
  
  
  
  
  
2. Millions of years in the future, what do you think geologists would find in the rock record as evidence of human life today? Do you think that we will leave a lot of evidence of our existence in the fossil record? Why or why not?