

MARINEreview: Prehistoric Oceans

Your most important resources are www.sciencrush.net and PowerSchools. Use them! I am available every day before school, after school, and during lunch for extra help. Let me know if there is anything I can add to this review to help you.

Marine Organisms of the Day

1. Coelacanths (*Latimeria chalumnae* and *Latimeria menadoensis*): With only two extant species, coelacanths are known as "living fossils" and were only discovered recently (1998). They can grow to be over 2 meters long, and have unique hollow spine fins. https://www.youtube.com/watch?v=4jl_txxYQEA (2:00-3:00) and <https://www.youtube.com/watch?v=MunowVfXOuY> (0:30)

2. Atlantic Horseshoe Crab (*Limulus polyphemus*): Despite the name, horseshoe crabs are more closely related to spiders than crabs. They evolved 250-500 million years ago with blood containing hemocyanin (as opposed to our hemoglobin) which turns their blood blue when exposed to oxygen. <https://www.youtube.com/watch?v=LgQZWSILBnA> (3:22)

3. Megalodon (*Carcharodon megalodon*): Megalodon was one of the most powerful predators in history. Its phylogeny was similar to a great white, but megalodon grew to be almost 60 feet long. <https://www.youtube.com/watch?v=Spo8vkrJFRo> (2:37)

4. Trilobites (Order Trilobita): Trilobites are an ancient class of Arthropod that consisted of more than 20,000 species. They were a dominant group in the Paleozoic Era and they were particularly important in the development of the concept of punctuated equilibrium by Gould and Eldridge. <https://www.youtube.com/watch?v=-iXalNPd64E> (2:45)

5. Nautilus (Family Nautilidae): There are six extant species of Nautilus and they are often considered living fossils since they have remained relatively unchanged in 500 millions years. They are most closely related to squid and octopus, though those groups have obviously lost the external shell that is evident in the Nautilus. <https://www.youtube.com/watch?v=PIheRYcm6sI> (4:11)

6. Plesiosaur (Order Plesiosaurus): Plesiosaurs, which are often mistakenly called dinosaurs, are prehistoric marine reptiles that lived at the same time as dinosaurs. Species in this genus ranged from 2 meters to 20 meters in length and they all lived in shallow seas along continental shelves. <https://video.nationalgeographic.com/video/101-videos/00000165-1fd4-d579-ab65-3fd4d1cd0000> (3:07)

7. Helicoprion (*Helicoprion sp.*): The genus of Helicoprion sharks are known for their bizarre tooth whorls which looked like buzzsaws. These spirals of teeth were most likely located in the throat, though some renderings have placed these strange structures on the bottom jaw. The exact placement is unclear because the cartilage skeleton of a shark does not fossilize well. <https://www.youtube.com/watch?v=0lfZxoCgMEc> (3:12)

8. Mosasaurus (Mosasauridae family): The Mosasaurus was an enormous aquatic lizard of the late Cretaceous, dwelling in what would become the North Atlantic Ocean. The largest species of the Mosasaur species could grow to over 50 feet long, with a streamlined skull bristling with teeth, a barrel like trunk for its midsection, and a long, powerful tail. <https://youtu.be/YhO0aczNDK0> (4:54)

Top 10 Terms for This Exam

Fossil	Macroevolution
Extinction	Natural Selection
Pangaea	Chemical Evolution
Eras	Vestigial Structure
Age of Fishes	Age of Mammals

The Gimme Questions for This Exam

- Which of the following gases were **not** present in large amounts in the early Earth atmosphere?
a. water vapor b. carbon dioxide c. nitrogen d. oxygen
- What conditions are more likely to preserve an organism as a fossil?
a. organism with hard parts and slow burial b. soft-bodied organism and slow burial
c. organism with hard parts and rapid burial d. soft-bodied organism and rapid burial

3. Fossils are important because they provide evidence for

a. ancient climate

b. geologic events

c. evolution

d. all of these answers

Finding Nemo Clips for This Exam

4 – Field Trip

18 – Off Ramp