MYSTERIES OF MEGALODON

Julius T. Csotonyi / Houston Museum of Natural Science

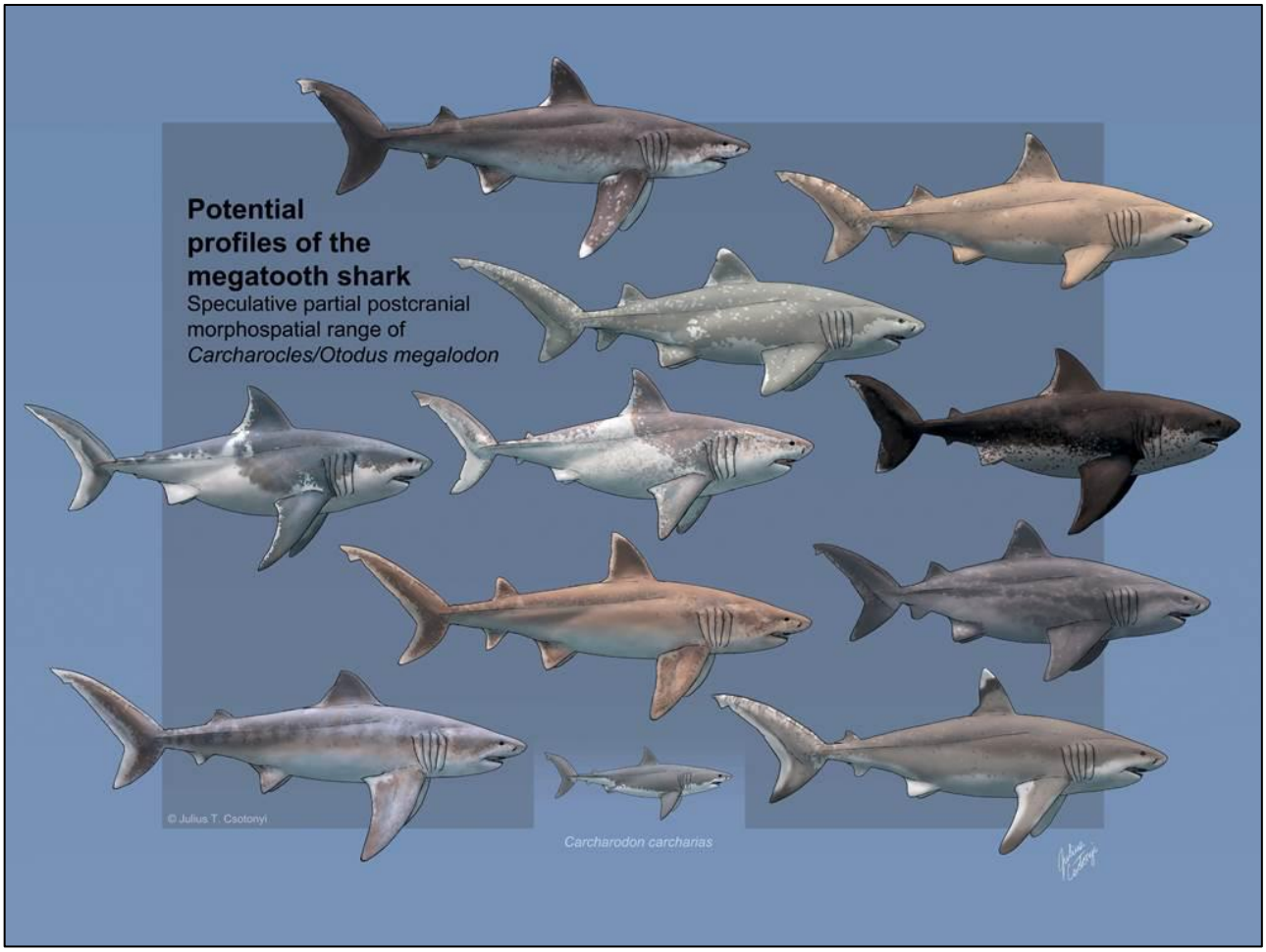
OCEAN FIRST INSTITUTE

Ocean First Institute is a nonprofit organization with the mission of ocean conservation through research and education. We work to protect the ocean and imperiled species through scientific research, while also educating individuals to take positive action for the environment through community projects and outreach programs.

MEGALODON FACT SHEET

BODY SHAPE AND SIZE

Think back to the last time you saw a semi-truck or a school bus. Can you imagine a shark that large, even larger? Weighing up to 60 tons (equal to nearly nine large elephants), the megalodon (*Carcharocles megalodon)* is the largest shark that has ever lived. Its name means "big toothed shark", and for good reason! Scientists estimate that the megalodon measured between 50 and 60 feet long, with massive jaws and a stocky body. These size estimates have been gathered from known relationships between shark body length and tooth size.



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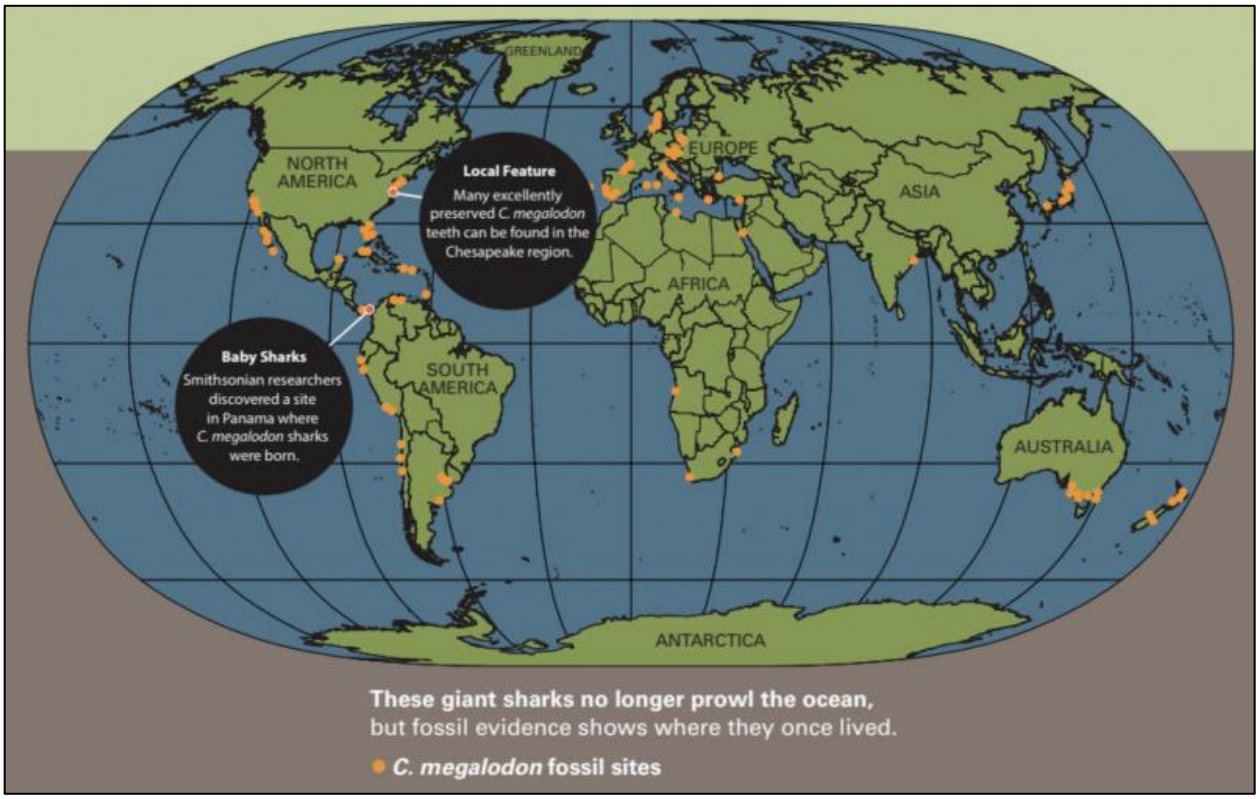
DIET

The megalodon was at the very top of the food chain and had no known predators, making it an apex predator. With its enormous size and strength, the megalodon could consume a wide variety of prey, including whales, dolphins, seals, and large sea turtles. Imagine how many of these animals the large megalodon must have consumed to sustain itself!

HABITAT

Fossil evidence can be used by scientists to determine where extinct species used to live. Based on megalodon fossil records, it is believed that these sharks inhabited most regions of the ocean (except the North and South poles). Smithsonian researchers have even discovered fossilized megalodon juvenile teeth off the coast of Panama, which they believe was a megalodon nursery ground where these sharks went to give birth approximately 10 million years ago. Similar sites have also been identified in Florida, Maryland, and the Canary Islands.



Smithsonian Ocean – Smithsonian Institution

EXTINCTION

The megalodon thrived during the Miocene of the Neogene Period, which extended from about 23 to 5 million years ago. However, their populations began to decline during the Pliocene, and the megalodon disappeared from fossil records around 3.6 million years ago. Changes in ocean temperature and volcanic activity resulting in the formation of mountains that stretched from North to South America likely affected the megalodon's access to prey, making it difficult for the giant shark to sustain its massive energy needs.

Gary Staab

ADDITIONAL RESOURCES

- Check out Ocean First Institute's Mysteries of Megalodon webinar recording with paleoartisit Gary Staab and shark biologist Dr. Mikki McComb-Kobza to learn all about the world of megalodons!

- Students can check out the Smithsonian Ocean's page to read more about the megalodon's anatomy, evolution, ecology, and behavior.

- Even better, take a look at the recently installed megalodon sculpture in the National Museum of Natural History in Washington D.C.!

- Watch National Geographic's short video on how shark researchers can utilize fossils to learn about the history and ancestry of megalodons.

- For more student activities, educators can use this megalodon Educator's Guide, provided by the Florida Museum of Natural History.

MEGALODON ACTIVITY #1

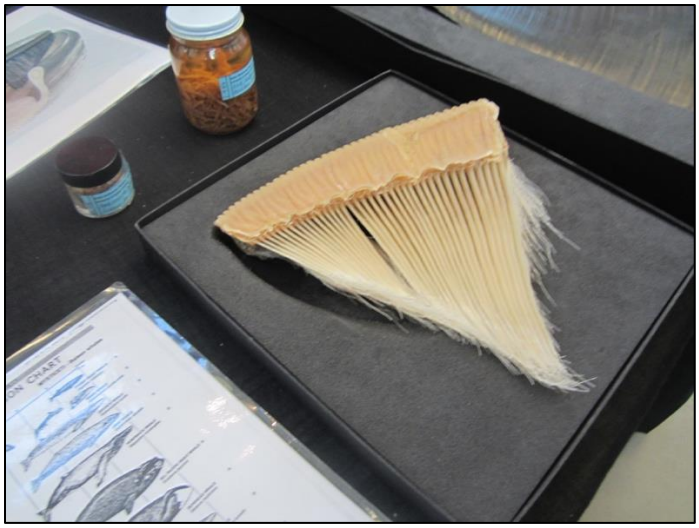
Grades 4-8

WHAT DID THE MEGALODON EAT?

The photos below show different types of animal teeth. Take a look at these photos and discuss what type of food you think each animal consumed and why. Are these animals herbivores? Carnivores? Maybe both? Spend some time discussing what you think and then complete the discussion questions below.

Jeff Rotman/Alamy Stock Photo

Figure 1: A great white shark tooth on the left, megalodon tooth on the right



Beaty Biodiversity Museum

Figure 2: Baleen from a baleen whale

Paleo Discoveries

Figure 3: A manatee tooth

Google Images

Figure 4: An anglerfish jaw

DISCUSSION QUESTIONS

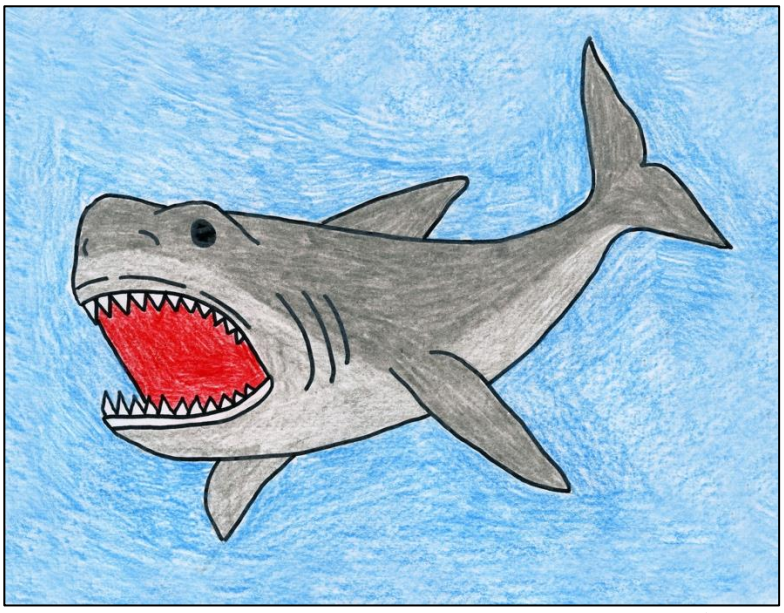
1. What types of creatures were megalodon's prey?
2. Could the megalodon have been an herbivore? Why or why not?
3. What types of creatures were megalodon's predators?

Activity adapted from the Florida Museum of Natural History Educator's Guide

MEGALODON ACTIVITY #2

Grades 5-8

BUILD A SHARK: LEARNING ABOUT BIOLOGICAL CLASSIFICATION



Art Projects for Kids

WORDS TO KNOW

Classification: The process of grouping individual organisms together based on characteristics similar to their common ancestor.

Binomial: A two-part name, which identifies the scientific name of a living organism.

Nomenclature: The choosing of names for things, particularly in the biological sciences.

Taxonomy: The branch of science concerned with classification of organisms.

Learn more about taxonomy and its categories (genus, species, etc.) here.

INTRODUCTION

Have you ever heard of the shark called the "tasseled wobbegong"? Take a look at the photo below and think about why this shark may have such a bizarre name.

The Sierra Club

Figure 1: A tasseled wobbegong shark

As you can see, this strange looking shark has tasseled fringe hanging around its entire mouth, which it uses to camouflage itself against the coral reef environment where it lives.

When scientists name a newly discovered species, they often name the animal after physical or genetic characteristics, like the unique tassels around the tasseled wobbegong's mouth. However, "tasseled wobbegong" is only the **common name** of this species. A common name is one that is easily recognized by the general community. Organisms also have what is known as a **scientific name**, which is created from binomial nomenclature with Latin/Greek/French roots. The tasseled wobbegong's scientific name is *Eucrossorhinus dasypogon,* which roughly translates to "well fringed nose with shaggy beard". That's a great description of this shark, isn't it?

In this activity, you will select four nomenclature roots (Table 1). You will arrange the four roots to create a new shark name and draw what you think this shark looks like. Once you've drawn your shark, do some research and see if you can find any existing sharks that you think might be related to your new creation!

INSTRUCTIONS

1. Find the first four letters of your name in Table 1 below. Each letter has an associated nomenclature root. Example – If our student's name is Bailey, we select B - *cephalus* (brain/head), A - *glauca* (blue-gray), I - *manta* (blanket), and L - *oura* (tail).

2. Once you have all four roots, decide how you want to arrange these roots into a new shark name. Remember, the scientific name is two words. Example – Our student arranges the shark name to *Mantacephalus glaucaoura* (meaning "blanket head blue-gray tail" – that's going to be an interesting-looking shark!).

3. Now that you've formed your shark's scientific name, look at the physical characteristics that are related to each root. How do you think this shark will look based on these physical characteristics?

4. Time to get drawing! Use the space below to draw your shark.

Table 1: Nomenclature roots

A: *-glauca* (blue-gray)	N: *-haplo* (simple)
B: *-cephalus* (brain/head)	O: *-blephar* (eyelid)
C: *-micro* (small)	P: *-brachii* (arm)
D: *-maxima* (large)	Q: *-celio* (belly)
E: *-rhinus* (nose)	R: *-gnatho* (jaw)
F: *-odont* (teeth/tooth)	S: *-fluoro* (luminous)
G: *-carcharos* (sharp)	T: *-amphi* (round)
H: *-pristis* (saw)	U: *-morph* (form)
I: *-manta* (blanket)	V: *-campto* (bent)
J: *-pogon* (beard)	W: *-archaios* (ancient)
K: *-sphyrna* (hammer)	X: *-ginglimo* (hinge)
L: *-oura* (tail)	Y: *-prion* (point)
M: *-stego* (covered)	Z: *-poly* (many)

DISCUSSION QUESTIONS

1. How can different organisms be grouped (classified) based on their different physical or genetic characteristics?

2. Why should we classify organisms?

YOUR SHARK'S NAME: _____

Activity adapted from the Gills Club Build a Shark