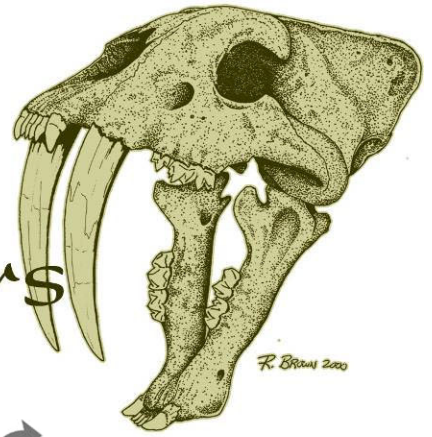


# NEWS

## Florida Fossil Hunters



Florida Prehistorical Museum, Inc.  
dba/ Florida Fossil Hunters  
Volume 31, Number 6

NOV/DEC 2021

### From the President's Desk...

Wow 2021 is coming to end and the Holiday's are around the corner.

Its been a hard year dealing with covid and high inflation. I hope all members and there families are doing well.

Field trips were hard to schedule this year because of COVID and insurance liabilities. But next year we will be working hard to schedule field trips.

Also FFH needs someone to help with Kids' Blasts before the meetings.

November meeting we will have a fossil swap. Where members can trade fossils.

December's meeting will be held at Dave Dunaway Resident. See Page 2 for more information on both the November & December meetings.

Thank You  
Salvatore Sansone  
FFH President

## Sink your teeth into this issue ALL ABOUT TEETH!

### VOLUNTEER SURVEY

**CLUB & FAIR**  
Make it Happen!

[www.floridafossilhunters.com/club-volunteer-survey/](http://www.floridafossilhunters.com/club-volunteer-survey/)

### NOVEMBER MTG

**RESCHEDULED**  
Saturday the 20th  
Kids' Mtg 2pm  
Club 3pm  
Page 2 for more info

### DECEMBER MTG & PARTY

**DECEMBER 18th**  
**5pm to 9pm**  
Page 2 for more info

## Coming Events

### UPCOMING MEETINGS at the Orlando Science Center

**2022 Fossil Fair**  
Info Coming Soon

**FFH meeting at OSC**  
Saturday, November 20th  
2pm Kid's Meeting  
3pm Club Meeting

**Christmas Party & Meeting**  
Saturday, December 18th  
5-9pm | See pg 2

## Table of Contents

|   |   |
|---|---|
| Fragments, Meeting, Peace River, Kid's Meeting, A Fossil Exhibit & more .....       | 2 |
| Why are Teeth so important to the Fossil World? .....                               | 3 |
| What can Shark's Teeth tell us about Living Creatures? .....                        | 4 |
| The role of diet in the rise of modern shark communities .....                      | 4 |
| TRUE OR FALSE?<br>Can a shark get a cavity? .....                                   | 5 |
| A study of skull growth and tooth emergence reveals that timing is everything ..... | 6 |
| Contacts & Membership Info ...  | 7 |
| Calendar .....  | 8 |

[www.floridafossilhunters.com](http://www.floridafossilhunters.com)

# MEETINGS & MORE

## November FFH meeting at OSC

RESCHEDULED FOR NOVEMBER 20TH

We will have a fossil swap, bring your fossils and trade. Topics to discuss are the show report and Upcoming Officers elections.

## FFH Christmas Party & December meeting

DECEMBER 18TH FROM 5 PM TO 9PM.

Held at Dave Dunaway Resident  
600 Fern Drive, Longwood Florida 32779.

All members please bring a covered dish and FFH will provide the ham.

Bring your fossil bucks for the fossil bucks live auction. Lots of fossils to auction off thanks to Dave & Ed.

## Kids' Fossil Blast

November 20th

2:00-3:00pm

*Kids' Fossil Blast is an informal, hands-on experience aimed at kids ages 5 to 14.*

# TUSKS & TAILS EXHIBIT

Don't miss **Tusks to Tails: A Fossil History of Florida**. Now through Jan 16, 2022 at the Tampa Bay History Center. Learn more: [www.tampabayhistorycenter.org/changing-exhibits/](http://www.tampabayhistorycenter.org/changing-exhibits/)

## 2021 FOSSIL FAIR THANK YOU!!!

FFH annual Fossil Show was fun and successful and the dealers were happy. I want to say thank you too all volunteers for their hard work setting up and working at the show. I want to give a special thank you for Valerie, Dave and Margie with FFH Fossil Show.  
*Thank You, Salvatore Sansone, FFH President*

## PIECE ON THE PEACE

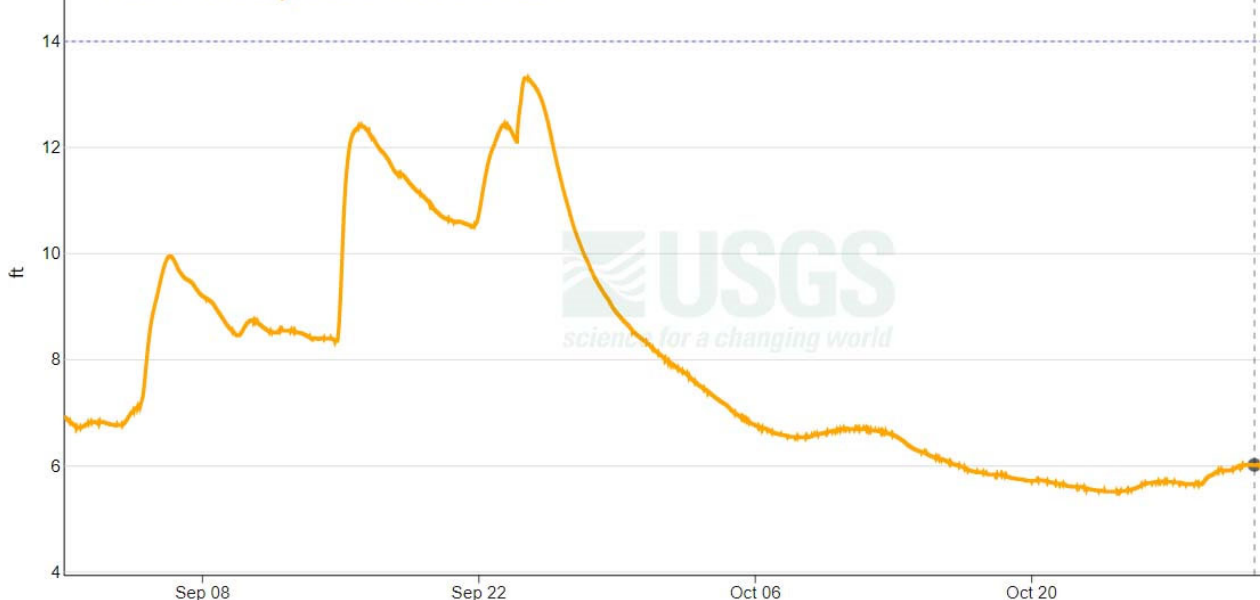
Check out the **NEW** Water level data page on the [USGS website](http://USGS website).

### **Want the most current height?**

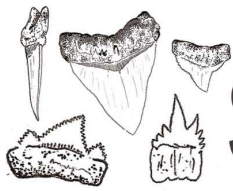
Visit [floridafossilhunters.com](http://floridafossilhunters.com) and click on the easy Peace River Gauge button in the sidebar or under the Resources tab.

### Gage height, ft ⓘ

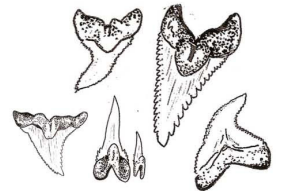
6.02 ft - Oct 31, 2021 06:45:00 AM EDT



# Florida Fossil Hunters News



# sink your teeth in



## Why are Teeth so important to the Fossil World?

By Amanda Masterjohn  
Florida Native – Fossil Hunting Enthusiast

In the world of sea predators, the term “kill or be killed” is a matter of life or death. The question as to how certain species of sharks evolved over millions of years while others have gone extinct has baffled scientists for centuries, that is, until recently.

In an article published on October 6<sup>th</sup>, 2021 by Uppsala University in Science Daily Online Magazine, Scientists are now using modern technology called, “Tooth Morphology” to show how shape, density & size of teeth have changed over the last (approximately 80 million years ago) to present day. Until recently, only a method of mathematical shape analysis was used and was very time consuming and limited by who could perform it.

But now, as these scientists’ study modern day living sharks’ teeth and the sharks diet, scientists can more accurately paint the picture of why or at least a solid theory as to why the Megalodon Sharks went extinct about five million years ago at the end of the Miocene period with the last dinosaurs.

What is Tooth morphology you may ask? Dr Bazzi of Uppsala university defines it as “a more direct proxy

for the living habits of sharks and our study is the first attempt to explore how diet impacted lamniform and carcharhiniform sharks over the past 83 million years. By measuring the association between tooth shapes and diets from living sharks, we built a foundation for interpreting changes in diet in the fossil record,”.

Megalodon Teeth are now of interest to many people in and out of the scientific world. And until recently, although many theories have emerged, not much was known why the Megalodon went extinct. We now know that they probably couldn’t change fast enough to seek out prey as the oceans changed and their food sources died off. They were too large to survive but those that had the ability to eat a more generalized diet, adapted and survived. More specifically, Dr. Bazzi believes that during this period, lamniform sharks had record-low tooth disparity.

Megalodon sharks likely specialized in eating the large whales of that time and so this low disparity again suggests that specialized diets among top predatory sharks may place them at a greater risk of extinction.

For more information, check The role of diet in the rise of modern shark communities on page 4-5.

### Why are teeth so important to paleontologists?

Paleontologists love the enamel of teeth, **because of its strength to preserve teeth**, even if nature successfully decomposed and destroyed other parts of the body. The enamel protects your teeth along with your history.

[A Paleontologist's Guide to Dental Analysis](https://www.dentalone-ga.com/a-paleontologists-guide-to-dental-analysis/)

<https://www.dentalone-ga.com/a-paleontologists-guide-to-dental-analysis/>

### MORE RECENT ARTICLES ON TEETH & FOSSILS

- Plant-eating lizards on the cusp of tooth evolution  
<https://www.sciencedaily.com/releases/2021/10/211015184314.htm>
- Toothy grins from the past: Ancient birds replaced their teeth like living crocodilians  
<https://www.sciencedaily.com/releases/2021/09/210930140735.htm>

# Florida Fossil Hunters News

# What can Shark's Teeth tell us about Living Creatures?

By Amanda Masterjohn  
Florida Native – Fossil Hunting Enthusiast

Life on this earth is a miracle, but a lot of people go about their daily lives rarely stopping to ponder and look back through the lens of time at the story it tells of the animals that came before us on Earth.

Thankfully, we have Paleontologists and just recently in the scientific world a new analysis method was discovered called, "Tooth Morphology". It offers scientists the ability to accurately depict the Shark's diet, predators and natural surroundings based on tooth composition of up to 80 million years ago and the marks left on fossilized bones from sharks.

In addition, these same scientists are using what they've learned in the lab and are furthering the study by observing living sharks in their natural environments to verify their findings.

We know the Megalodon was the largest predator in the ocean but when the Earth's climate changed and their primary food source of giant whales tapered off, so did the Megalodon Sharks until final extinction about 5 million years ago. The sharks we see today are the smaller cousins of the massive sharks and continue to thrive because they continue to adapt with their environment.

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## What you can learn from Teeth

Paleontologists can learn a lot from teeth age, diet, societal diseases, health, demography, and even relationships.

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## The role of diet in the rise of modern shark communities

October 6, 2021 | Uppsala University

*The availability of prey and the ability to adapt to changing environments played key roles in the evolution of sharks. A new study, in which over 3,000 shark teeth were analyzed, provides new insight into how modern shark communities were established. The results are published in the journal Current Biology.*



The new research investigated the diversity of shark teeth from the final stages of the Mesozoic (approximately 80 million years ago) to the present day. In particular, it sought to understand why there are only 15 species of mackerel sharks living today (scientific name: Lamniformes), whereas there are more than 290 species of ground sharks (Carcharhiniformes).

"The modern-day imbalance in diversity between mackerel and ground sharks has, until now, lacked a deep-time ecological perspective. However, if we look to the past, we see the opposite pattern: Lamniforms were more diverse than Carcharhiniforms," says study leader Dr Mohamad Bazzi, previously a researcher at Uppsala University but now at the University of Zurich.

The evolution of sharks is a story told by their teeth. This is because most of what remains behind for palaeontologists to work on are shed teeth. As a result, researchers must seek innovative approaches to help us fill in the many gaps in knowledge relating to their past.

"Tooth morphology is a more direct proxy for the living habits of sharks and our study is the first attempt to explore how diet impacted lamniform and carcharhiniform sharks over the past 83 million years. By measuring the association between tooth shapes and diets from living sharks, we built a foundation for interpreting changes in diet in the fossil record," says Dr Bazzi.

The research team compiled an extensive database of over 3,000 shark teeth and then evaluated their shape. To attain a measure of shape diversity (or disparity as it is technically called) the study relied on a method known as geometric morphometrics, which is a type of mathematical shape analysis.



To understand the role played by diet in shaping the diversity of sharks, the team assembled previously published records of shark diets attained from stomach contents.

Many Cretaceous Lamniformes had specialised diets for eating marine reptiles and, following their loss at the end of the age of dinosaurs, these Lamniformes went extinct. On the other

hand, Lamniformes with more generalized diets and Carcharhiniformes survived the extinction event. Carcharhiniformes particularly benefited from the diversification of bony fish following the extinction event, and the spread of coral reefs about 56 million years ago.

As it turns out, the same extinction that killed off the non-bird dinosaurs may have set the stage for the modern shark community.

A similar event may have occurred only 5 million years ago to the largest shark ever to have existed, the lamniform megalodon (scientific name: *Otodus megalodon*).

Megalodon fossils are mostly from the Miocene (which spanned from approximately 23 to 5 million years ago). During this period, lamniform sharks had record-low tooth disparity. Megalodon likely specialized in eating the large whales of that time and so this low disparity again suggests that specialized diets among top predatory sharks may place them at a greater risk of extinction.

"Here, we have a good example of the important biological insights offered by studying fossils," says Dr Nicolás Campione, co-author and member of the University of New England's Palaeoscience Research Centre.

"Our research demonstrates that living Lamniformes are the result of repeated extinction events, perhaps resulting from a tendency to specialise. Dietary specialisation, on top of environmental changes, were likely major factors behind the previously mentioned imbalance between Lamniformes and Carcharhiniformes," says Dr Campione.

"We now have evidence that the availability of prey and the ability of sharks to adapt to changing environments played an important role in their past evolution. These factors underpinned the modern diversity of sharks and, critically, will likely decide their survival into the future," says Dr Bazzi.

<https://www.sciencedaily.com/releases/2021/10/211006104426.htm>



## TRUE OR FALSE? Can a shark get a cavity?

By Amanda Masterjohn  
Florida Native – Fossil Hunting Enthusiast

One would think this is a trick question, but the answer truly is, No. Research shows that sharks' teeth contains the perfect amount of fluoride and are designed to fall out and grow new ones. A shark can have up to 20,000 teeth in its lifetime comparatively, a human has 32 teeth for their whole life. That's a lot of shark teeth.

Essentially, to understand about these fossilized teeth, we need to learn what process the tooth went through to get the mainly black or brown color teeth we find today.

When a shark was either the predator or the prey or sometimes both simultaneously, the teeth would fall out onto the ocean floor and over time and enough layers and pressure, the water would cause minerals in the surrounding sediment to seep into the shark's tooth called, permineralization. Eventually, the minerals filled in and replaced most of the organic material and the shark tooth will be preserved as a fossil, that's why different colored teeth are found, it's based on the sediments the tooth fell into. Unfortunately, the rest of the shark's body is made up of cartilage and does not mineralize to the extent that bone does. It breaks down much quicker and easier than bony elements, but there are rare occasions when fragments have been discovered close by teeth.

As a enthusiast, it's quite fascinating to me to think about the shark, the time frame, the rise and fall of the oceans and now, millions of years later, how we just drive to our favorite spots and sift, dig or dive for these fossilized beauties and store them as prized possessions.

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### Fossil ID Sheets

<https://floridafossilhunters.com/fossil-id-sheets-by-russell-brown/>

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# A study of skull growth and tooth emergence reveals that timing is everything

October 6, 2021

Six, 12, and 18. These are the ages that most people get their three adult molars or large chewing teeth towards the back of the mouth. These teeth come in at a much later age than they do in our closest living relative, the chimpanzee, who get those same adult molars at around three, six, and 12 years old. Paleoanthropologists have wondered for a long time how and why humans evolved molars that emerge into the mouth at these specific ages and why those ages are so delayed compared to living apes. Scientists at the University of Arizona and Arizona State University unveil a study in *Science Advances* this week that they think has finally cracked the case.

Humans are unusual primates. We are highly intelligent, extremely social, remarkably resourceful, able learners, skilled teachers, and as a result, a remarkable evolutionary success story. A key aspect of our biology allowing these components of the human experience to evolve is our unique "life history," or the overall pace of life, including how fast we grow, how long we are dependent on mothers for nutritional support, how long it takes us to reach sexual maturity, and how long we live. Amazingly, clues to most of these components of our human biology are connected with our teeth.

The one dental feature intimately associated with the pace of growth and life history is the ages at which our adult molars cut through the gumline. For many decades, evolutionary anthropologists have leveraged the very tight relationship -- which exists across all primates -- between the pace at which these adult molars emerge into the mouth with the overall pace of life. Modern humans, for instance, grow up incredibly slowly, have a very long and protracted life history, and emerge their adult molars very late in life, later than any other living or extinct primate.

"One of the mysteries of human biological development is how the precise synchrony between molar emergence and life history came about and how it is regulated," said Halszka Glowacka, lead author and assistant professor at the University of Arizona, College of Medicine-Phoenix.

Glowacka and paleoanthropologist Gary Schwartz, published their study this week that provides the first

clear answer -- it is the coordination between facial growth and the mechanics of the chewing muscles that determines not just *where* but *when* adult molars emerge. This delicate dance results in molars coming in only when enough of a "mechanically safe" space is created. Molars that emerge "ahead of schedule" would do so in a space that, when chewed on, would disrupt the fine-tuned function of the entire chewing apparatus by causing damage to the jaw joint.

The authors note that this research establishes two things -- it convincingly demonstrates that it is the precise biomechanical relationship between growing faces and growing chewing muscles that results in the tight and predictive relationship between dental development and life history, and it reveals that our species' delayed molar emergence schedules are a result of the evolution of overall slow growth coupled with short jaws and retracted faces -- faces situated directly beneath our braincase.

"It turns out that our jaws grow very slowly, likely due to our overall slow life histories and, in combination with our short faces, delays when a mechanically safe space -- or a 'sweet spot' if you will -- is available, resulting in our very late ages at molar emergence," said Schwartz.

"This study provides a powerful new lens through which the long-known linkages among dental development, skull growth and maturational profiles can be viewed," said Glowacka.

The researchers plan to apply their model to fossil human skulls to answer questions about when slowed jaw growth and delayed molar emergence first appeared in our fossil ancestors.

*Arizona State University. "A study of skull growth and tooth emergence reveals that timing is everything." ScienceDaily. ScienceDaily, 6 October 2021. For full article, visit: <[www.sciencedaily.com/releases/2021/10/211006143415.htm](http://www.sciencedaily.com/releases/2021/10/211006143415.htm)>.*

## Florida Fossil Hunters News

# Florida Fossil Hunters

is a fun and educational group whose goal is to further our understanding of the prehistory of Florida. We encourage family participation and welcome explorers of all ages.

Membership options are listed to the right.

Meetings are usually held on the third Saturday of the month but may vary with club activities. Check the website for the date and location of the next meeting or call one of the officers.

## Officers:

|                  |                   |                |
|------------------|-------------------|----------------|
| President        | Salvatore Sansone | (321) 278-9294 |
| Vice President 1 | Steve Sharpe      | (352) 552-2296 |
| Vice President 2 |                   |                |
| Secretary        |                   |                |
| Treasurer        | David Dunaway     | (407) 786-8844 |

## Chairs:

|                 |                     |                  |
|-----------------|---------------------|------------------|
| Field Trips     | <b>OPEN</b>         |                  |
| Fossil Fair     | Valerie First       | (407) 699-9274   |
| Fossil Auctions | Dave Dunaway        | (407) 786-8844   |
| Fossil Bucks    | Dave Dunaway        | (407) 786-8844   |
| Fossil Lotto    | Ed Metrin           | (407) 321-7462   |
| Membership      | Ken Sellers         |                  |
| Newsletter      |                     |                  |
|                 | Elise Cronin-Hurley | info@elisech.com |
| Photography     | John Heinsen        | (407) 291-7672   |
| Facebook        | Salvatore Sansone   |                  |
|                 | Ken Sellers         |                  |
| Webmaster       | Elise Cronin-Hurley | info@elisech.com |

## Board of Directors:

|               |                |
|---------------|----------------|
| Joyce Bittle  |                |
| Melissa Cole  | 407-461-8507   |
| Marge Fantozi |                |
| Valerie First |                |
| Ed Metrin     | (407) 321-7462 |
| Ken Sellers   |                |

# Membership Application

**MAIL in this form or Register ONLINE at [www.floridafossilhunters.com/membership](http://www.floridafossilhunters.com/membership)**

Names: \_\_\_\_\_

Associate Members: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_

e-mail: \_\_\_\_\_

\_\_\_\_ New \_\_\_\_ Renewal

Please list any interests, experience, talents or just plain enthusiasm, which you would like to offer to the club:

\_\_\_\_\_  
\_\_\_\_\_

Family membership: \$25  
Individual membership: \$20

## Please make your checks payable to:

Florida Fossil Hunters  
Post Office Box 540404  
Orlando, Florida 32854-0404

*Associate members are people in the same household, included at no extra charge, 2 adult votes per household with Family Membership.*

Membership year runs from January to December.

## Newsletter Policy

Articles must be submitted by the first of the month to be included in that month's newsletter. These can be mailed to the above Post Office Box or e-mailed to: [info@floridafossilhunters.com](mailto:info@floridafossilhunters.com). Articles can be sent as text in the e-mail or in Microsoft Word files (.doc or .docx).

*Please note in subject of email 'FFH News: [article or info]*

**Florida Prehistorical Museum, Inc.  
dba/ Florida Fossil Hunters â**

# Florida Fossil Hunters News

# Florida Fossil Hunters Mark Your Calendar

## RESCHEDULED

**November 20th**

2pm Kid's Meeting

3pm Club Meeting

**December**

Holiday Party

**Mtgs held at the OSC  
Orlando Science Center,  
unless otherwise noted.**

**2022 Meeting dates are currently under  
review by OSC and subject to change.**

## TENTATIVE

### 2022 Meetings Dates

January - 15

February - 19

March - 19

April - 16

May - 21

June - 18

July - 16

August - 20

September - 17

October - 15

November - 19

December - no meeting

See inside for more information on

Join Our Facebook group, Search:

[Florida Fossil Hunters](#)

facebook

Visit us online at [www.floridafossilhunters.com](http://www.floridafossilhunters.com)

Email [info@floridafossilhunters.com](mailto:info@floridafossilhunters.com) to share articles, comments and how to receive the newsletters by email.

## Florida Fossil Hunters

Post Office Box 540404

Orlando, Florida 32854-0404



## Florida Fossil Hunters News