

# THE FOSSIL RECORD



**NEXT MEETING: WEDNESDAY, APRIL 14TH... ONLINE!**

## RAPTORS, EH?



The DPS will continue to meet online, using Zoom, for our next meeting on **Wednesday, April 14th**. We will begin at **6:30pm Central Time** for fossil show-and-tell and chat, with the formal meeting starting at **7:00pm**. **Dr. Philip Currie**, Professor of Dinosaur Paleobiology at the University of Alberta in Edmonton, will speak on **“The Dromaeosaurids (‘Raptors’) of Alberta.”**

Dr. Currie earned a BS in Zoology from U of Toronto in 1972, and MS and PhD degrees from McGill University in 1975 and 1981. He has been interested in dinosaurs since childhood, and his research has focused on their growth and variation, anatomy and relationships of carnivorous dinosaurs, and the origin of birds. Much of his field collecting has been in Alberta, particularly at Dinosaur Provincial Park. He has published more than 265 scientific articles, 175 popular articles, and 20 books, and been recognized and awarded many times for his work, including the naming of the Philip J. Currie Dinosaur Museum, which opened in 2015 in Grande Prairie, Alberta. Dr. Currie is also responsible for the excellent “Dinosaur Paleobiology” course, free and highly popular (over 51,000 learners) on Coursera. Check it out, and come to our next meeting to learn about the Raptors of Alberta.

Please continue to the next page (page 2) for instructions on how to register on Zoom and join the meeting live online...

## APRIL DPS MEETING (LIVE ONLINE): HOW TO JOIN US

by Tom Dill

We recommended creating a free **Zoom** account at <https://zoom.us> before the meeting (and you will receive a confirmation email), and then installing the Zoom application on your computer (Mac, PC, or Linux). You can also get the app for tablets and phones from the Apple or Android app stores, then click on this link to join the meeting on **Wednesday, April 14th at 6:30pm Central Time** for informal chat and show-and-tell of fossils, with the formal meeting starting at **7:00pm Central Time**:

<http://zoom.us/j/92646471548>

If you haven't used Zoom before, join early so you can test your audio and video; and if you cannot install the application, you can also use a web browser (they recommend Google Chrome). Or start the Zoom app and join the **meeting ID of 926 4647 1548** and **passcode is 863388**.

If you move your mouse over the Zoom window, controls will appear where you can turn on and off your audio and video "feeds" to the meeting. Remember that you are on camera to the world and, if your audio feed is on when you cough or the dog barks, Zoom will switch the focus to you. So, please be respectful and mute your audio until you want to talk. Make yourself familiar with the Zoom controls, which appear when you move the mouse over the window, and learn where and how to turn on and off (mute) your audio, and your video feed. Be aware that your spacebar also mutes and unmutes your microphone (you can change that setting also).

During the presentations, we will mute everyone's audio, but if you come in late, be sure to mute yourself. You can submit questions for the speaker in the chat box, typing "QUESTION" to make them stand out. We will read them at the end in the order received. We would love to see you (appropriately dressed) and hear you (at the appropriate times) at our next meeting!

We hope to see you there!



Raptorial claw of *Saurornitholestes langstoni* (previous page).

Reconstruction of *Saurornitholestes langstoni* (left) and its skull (right).

## CELEBRATING WITH THE DPS PRESIDENT

by Estée Easley

My wonderful husband, Joe, celebrated his 50th birthday with family. The cake was much more sophisticated than any seven-year-old's dinosaur themed party cake. Joe's sister Megan created an interactive fossil dig!

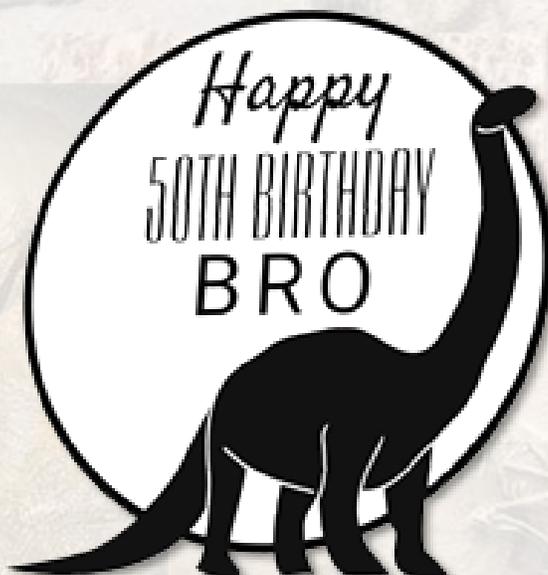
You know Joe O'Neil as the head of PIT Crew and as our Education Chair. You have also seen him on field trips, working tables at events, and coordinating FOSSILMANIA. Behind the scenes (at home), I get to see how each of his ideas takes shape! I watch as he plans out his presentations. I see his fossil collection grow. I hear as he fields adorable questions from children on a Zoom call. Joe was absolutely due to have a perfect prehistoric birthday. It turns out Dr. Robert (Bob) Bakker and Joe share the same birthday!

Megan made her amazing Fossil Dig cake using a base chocolate sheet cake. She cut out the dig site to leave room for the fossils. These were milk chocolate, white chocolate, and caramel made in a candy mold (Roylco fossil molds, [Amazon](#)). She ground up chocolate cookies and chocolate chip cookies to make the different colored dirt. After icing the cake area and covering the fossils in the dig site, she added posts (Pirouette wafer cookies, [Amazon](#)) at the corners of the cake. She also used these posts to anchor a grid. Her stratigraphic outcrop looked amazing! Megan created the layers using chocolate and white cake as well as vanilla and chocolate mousse filling. She added green icing as grass on top. She divided candy rocks (Cake Supply, [Amazon](#)) by color and carefully placed them around the dig site and in the cliff layers. Impressively, the cake withstood a long ride in the car to get it to the party!

After the traditional birthday song, Joe got to use a brush to excavate in the dirt to find his perfect ammonite and other yummy fossils. Paleontology is delicious!

We also celebrated Joe's birthday with a fossil hunting trip to Oklahoma ending in Idabel. See the article on Acrofest later in this issue.

Happy Birthday, Joe!



# APRIL 2021

| Sun                    | Mon | Tue | Wed                                     | Thu                 | Fri | Sat |
|------------------------|-----|-----|---|---------------------|-----|-----|
|                        |     |     |   | 1                   | 2   | 3   |
| 4 <b>Easter Sunday</b> | 5   | 6   | 7                                       | 8                   | 9   | 10  |
| 11                     | 12  | 13  | 14 <b>DPS Monthly Meeting</b>           | 15                  | 16  | 27  |
| 18                     | 19  | 20  | 21 <b>DPS Monthly Executive Meeting</b> | 22 <b>Earth Day</b> | 23  | 24  |
| 25                     | 26  | 27  | 28                                      | 29                  | 30  |     |

Visit [dallaspaleo.org](http://dallaspaleo.org) for most up-to-date information and further details.

## FROM THE DPS STORE

by Diane N. Tran

While the DPS website is a wealth of information, we also have store where one can buy these available books to be shipped to you, as well as other merch with our logo, such hats, shirts, hoodies, water bottles, mugs, etc.

The products that we sell help to fund scholarships for students working on paleontological degrees and the furthering of paleo-education within the Dallas area.

Please check us out our store at:

<http://www.dallaspaleo.org>



## DPS MARCH MEETING: “A FOREST IN ASH” Event Overview by Michael Satterwhite

Dori L. Contreras, Ph.D. gave a lecture entitled, “Forest in Ash,” to The Dallas Paleontological Society for the March 2021 monthly meeting. She gave a very instructive overview of prehistoric plants, particularly angiosperms (flowering plants). Angiosperms are the most recent group of plants to evolve and spread across the globe, rapidly diversifying. All major lineages of flowering plants



evolved by the end of the Cretaceous. Paleobotanists, like Dori, figure out what plants lived when by identifying the types of pollen stored in the rock record. Pollen is so resilient and heavily distributed that it is easily preserved in rock layers that scientists can tell that pollinating plants showed up around 137 million years ago.

Ferns.

Angiosperm specimens dated about 100 million years ago make up about fifty percent of fossil plant specimens and were already highly diversified in certain individual sites. They lived in “weedy” habitats and developed in “disturbed environments” like the margins of river channels. Erosion, flooding, and other characteristics of riverbed environments meant these early, tangly, flowering plants would probably die fast from the tumultuous conditions. A quick generational turnout lead to the emergence of highly adaptable genes. Angiosperms eventually evolved thick, woody trunks in the Late Cretaceous but apparently didn’t disperse beyond the frenzied river channel environments until the very end of the Cretaceous.

Worldwide dominance for angiosperms wasn’t achieved until about 34 million years after their initial diversification. This time difference is referred to as an “ecological lag.”

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Conifers (left three) and cycads (right).

## DPS MARCH MEETING CON'T



The remainder of Dori's lecture focused on Western North America, primarily in a 1.2 kilometer stretch of rock named, Dori's Tuff (named after her). It's comprised of an orange-colored ash layer known as ashfall and is a great preserver of fossils. The layer has been radiometrically dated to be 74.6 million years old and provided 7,362 samples of plant fossils gathered in Dori's census which consisted of 26 quarries. She looked at the relative abundance of leaf impressions on rock as well as the percent cover, or the surface area of leaves to understand their photosynthetic properties.



The fossilized wood revealed no growth rings which would indicate a habitat with no periods of hard dormancy during a seasonal drop in temperature or drop in precipitation. Dori showed us photos of the widely varied fossil specimens collected in her digs. Samples included redwood relatives, sabalites, which had leaves like palm fronds, ginger, cycads, and more. Dori's insightful census revealed that a Late Cretaceous stroll the forests of Western North America would have been a warm one with a mean annual temperature of 69.8 to 77 degrees Fahrenheit and a highly diversified flora community packed with different and even rare species wherever you looked.



Angiosperms: "monocots" (top left); toothed "dicots" (second left); palmate "dicots" (third left); and pinnate "dicots" (bottom left).



# DPS “SOCIAL DISTANCING VIA FOSSIL HUNTING” SCRAPBOOK

Complied by Diane N. Tran

The best way to fight the spread of COVID-19 pandemic is to practice “social distancing” and, while many have opted to spend their time at home, others have spent the time fossil hunting. So, here are some wonderful finds our fellow members generously shared on the [DPS Facebook Group](#) have come together to show off their fossils! Stay safe, everyone!



Donnie C: Jawpiece of *Globidens*, Ozan formation, Northeast Texas.



Donnie C: *Tylosaurus* vertebra, Ozan formation, Northeast Texas.



Joe W: Jaw from a new unnamed species of *Halisaurus*, Ozan formation, NSR. “Now part of the Shuler Museum of Paleontology at SMU.”

Continued next page

# DPS "SOCIAL DISTANCING" SCRAPBOOK CON'T

Daniel W: *Camelops axis* in matrix, Texas.



Daniel W: Horse jaw, Texas.



Daniel W: 8-foot mammoth tusk, NSR.



Michael B: *Xiphactinus* jaw section, Ozan formation, NSR (bottom right two).



Daniel W: *Bison latifrons* skull, Texas.



Daniel W: Camel, Texas.



Continued next time

DPS "SOCIAL DISTANCING" SCRAPBOOK CON'T 2



Charlie S: *Cretodus* tooth, Eagle Ford Denton County (top left two).



Jarrold B: Bivalve deer heart clam, Ozan formation, Northeast Texas.



Joe W: *Tylosaurus proriger* jaw, Ozan Formation, NSR (top right).

Jarrold B: Crocodile scute, Ozan formation, Northeast Texas (bottom right).



Christina H: *Linuparus* (spear lobster), NSR (bottom left).

## HEARD MUSEUM PRESENTS TEXAS NESSIE (McKINNEY, TX)

by Darlene Sumerfelt

*An Ancient Sea Creature's Journey from Life During the Age of the Dinosaurs to the Museum Floor*

In May of 1991, avid fossil collector Mike Donovan made an amazing find in Collin County: the partial skeleton of a plesiosaur. He nicknamed the fossil "Texas Nessie" and spoke often of how he hoped the bones would eventually be displayed in a museum, where they could be viewed and appreciated.

Nearly twenty years after that remarkable discovery, Donovan's dream is now a reality. The lengthy, complicated process began in September of 2015 when Darlene Sumerfelt, Heard Paleontological Lab Manager and Lead Preparator, was contacted by Debera Donovan regarding her late husband's fossil collection, which contained a wide variety of bones in addition to the partial skeleton of a plesiosaur. After the bones were donated to the Heard Museum by the Debera Donovan Foundation on 30th of September 2015, Sumerfelt and plesiosaur expert Mike Polcyn of SMU, performed an initial evaluation. That analysis revealed that approximately 40% of the skeleton was present and that the species of plesiosaur was a *Trinacromerum*. The skull bones were unique in that they were not compressed, as is the case with most other specimens of this type of plesiosaur. In fact, the preservation and completeness of the specimen provides anatomical details that will help illuminate the relationships among this group of plesiosaurs and may provide clues about how these animals were evolving and dividing up the ecosystem about 93-million-years-ago in what is now the DFW area. This makes the specimen not only a beautiful example of a plesiosaur fossil but one with great scientific value as well.

Specific locality information for the specimen is lacking and can only be narrowed to the central western part of Collin County. Fortunately, during prep of the bones, Sumerfelt found several ammonite imprints in the matrix surrounding the bones. The imprints were sent to an ammonite expert who identified them as *Collignoniceras woollgari regulare*, which provides a precise stratigraphic placement. Therefore, this specimen was likely from the lowest ten meters of the Arcadia Park Formation of the Eagle Ford group, which provides an age approximation of 93 million years old.

Prep of the plesiosaur bones took place over a four-year period using pneumatic tools called aircsribes to slowly chip away the rock encasing the bones. The prep team led by Sumerfelt included Joan and Richard Sheppard and Fletcher Wise. As the prep moved forward, Mike Donovan's dream of seeing this fossil become a full mount museum exhibit became Sumerfelt's dream as well. Funds would have to be raised as a full 14-foot plesiosaur museum mount and exhibit enclosure would be well beyond the means of a non-profit museum. Thankfully, funding was obtained from many sources which included the Dallas Paleo Society, and the project moved forward, hiring Triebold Paleontology in Woodland Park, Colorado, to mount the bones for display. Soon after delivery to Triebold, the COVID shutdown began, and the project went on hold. Work resumed a few months later and was completed in February 2021.

During the time the bones were in Colorado, artist Pamela Riddle was busy creating a beautiful digital wall mural for the exhibit. The mural is 22 feet long and depicts a plesiosaur as well as other creatures from the time this plesiosaur lived.

In late February, Triebold Paleontology delivered and installed the 14-foot-long plesiosaur. Sumerfelt and her team designed the text panels for the exhibit and contractors were hired to do the exhibit enclosure and lighting.



*Collignoniceras woollgari regulare.*

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## HEARD MUSEUM PRESENTS TEXAS NESSIE CON'T

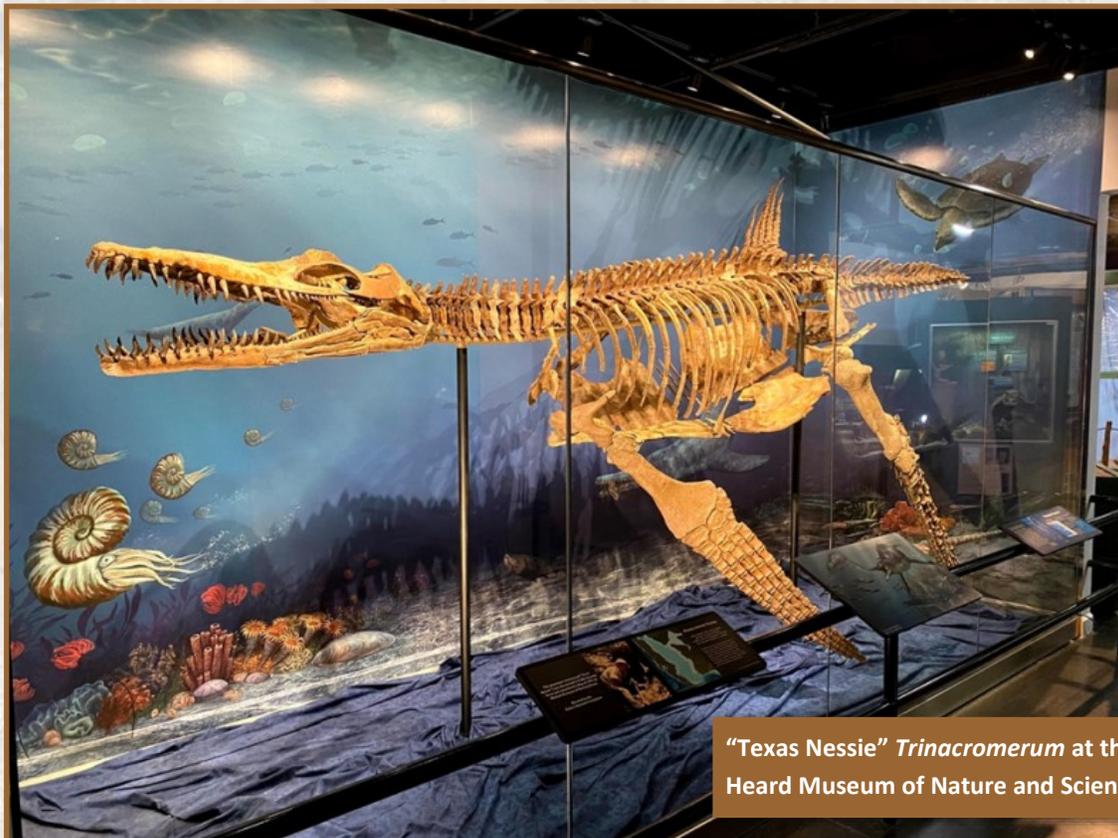
In life, this vicious predator had a streamlined body and would have looked like a giant penguin swimming through the water. Plesiosaurs propelled themselves with four flippers. The two in front were for propulsion and the two rear were used like rudders for steering. Each flipper moved like a penguin's wing, sweeping backward to quickly move through the water. Penguins are among the speediest oceanic predators as they "fly" through the water. Plesiosaurs might have been as fast or faster with their two pairs of "wings."

This plesiosaur lived in the cretaceous period 93 million years ago in a large interior seaway that split the continent of North America into two landmasses. The interior seaway stretched from the Gulf of Mexico to the Arctic Ocean to the north. The seaway was filled with abundant marine life including large, predatory, marine reptiles such as the plesiosaur in our exhibit. This is why this huge sea creature was found right in our own backyard!

Soft tissue impressions have been found showing that plesiosaur skin had a smooth surface absent of scales. Their diet probably included fish based on the interlocking design of their teeth. Their long, curved teeth would impale and hold their slippery prey. Plesiosaurs did not have gills. They were air-breathing reptiles. They could, however, remain submerged for long periods. They were viviparous, meaning they gave birth to live young. Evidence has been found of an adult female plesiosaur with a fetus inside.

Decades after that exciting moment when Mike Donovan first discovered and excavated this epic example of an ancient marine predator, his dream of a museum display has finally become a reality. Thanks to six years of coordinated efforts of dedicated experts and volunteers, this exhibit showcases a beautiful, scientifically important specimen, representing dreams fulfilled, thousands of hours of labor, and gracious, generous community donations. Bringing "Texas Nessie" to the Heard Museum has truly been a labor of love.

The exhibit is now open, and "Nessie" is ready to pose with you with her fabulous toothy grin!



"Texas Nessie" *Trinacromerum* at the Heard Museum of Nature and Science.

# MUSEUM OF THE RED RIVER'S ACROFEST 2021 (IDABEL, OK)

Event Overview by Estée Easley

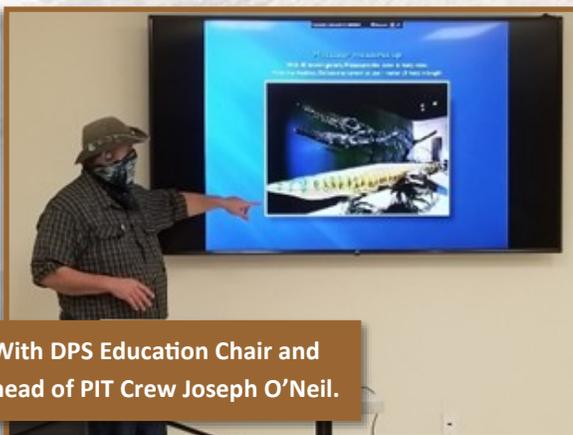
Acrofest is an annual event hosted by the Museum of the Red River in Idabel, Oklahoma. It is the celebration of their *Acrocantnosaurus atokensis*. This year, it took place on March 6th.

The most popular tables were face painting and balloon art. Other tables had crafts, but the DPS table provided information and education.

While wearing our masks and gloves, we showed our *Tylosaurus* skull, demonstrations of Florissant fossil prep, and examples of common fossils. We also helped identify a few items brought in by visitors. We had over 200 people stop by the DPS table, and that was calculated by the door prize tickets we handed out to individual visitors.



Skeleton of *Acrocantnosaurus* (top two), with DPS President Estée Easley (bottom left two) and DPS member Grace Kendall with a *Tylosaurus* skull (bottom right two).



With DPS Education Chair and head of PIT Crew Joseph O'Neil.

Our newest DPS volunteer, Grace Kendall, is a superstar! She quickly learned what we were presenting and helped share our information with everyone stopping at our table.

Joe O'Neil, Education Chair and head of PIT Crew, was an invited guest speaker again this year. His talk was "Prehistoric Submarine Eating Machine" on mosasaurs, and I heard wonderful feedback from numerous adults about the interactive presentation.

Joe also hosted two sessions of Dino Dance Party with a disco-happy *T. rex*, costumed by Nic Easley-O'Neil, Grace, and Reah Easley. Other events on the schedule included a dino painting class, a game called Acro Says, Lee's Firehouse BBQ lunch, and a presentation by Dr. Holly Woodward of OSU called "*T. rex* Growing Pains: The King of Dinosaurs was First a Tyrannical Teenager."



This is a great annual event at a fantastic museum, and we look forward to volunteering at the DPS table again next year!

## EARLY FOSSIL INTERPRETATIONS

by Roger Farish

Once early man evolved from solitary animals into social/survival 'tribes', there was always one or two individuals who were brighter than the others as is the case today. These became the local go-to people when the unwashed masses needed explanations of things they did not understand. These people became the resident witch doctor, shaman, priest, guru, wizard, chief, who would provide explanations for events or physical items that were odd and could not be explained or understood by common sense. Their explanations were naturally accepted because these were the brightest people around, so their interpretations were deemed credible. These individuals unfortunately provided the basis of today's religions and even science.

From the beginning of time, man has recognized the remains of living entities that have been largely transformed into stone. Marine shells were the most plentiful and the easiest to identify and their presence in paleolithic burial places proves that the first men already accorded them some significance.

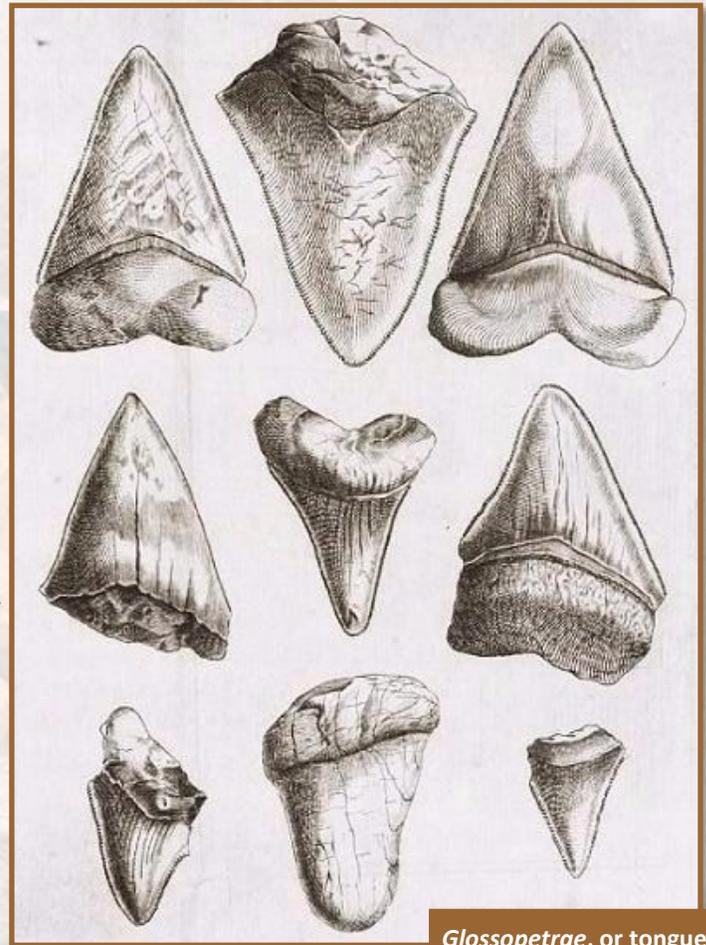
Greek antiquity is rich in indications of interest in fossils and in attempts to explain their origins. About 600 B.C. observations of shells and marine remains in the mountains and imprints of fish found in rocks were direct proof that the ancient oceans were 'burned out' by the sun. After that, Ovid in his *Metamorphoses* states that, "I have seen lands flowing from the heart of the waves; far distant from the sea were embedded marine shells." Herodotus (484-425 B.C.) who scaled the mountains of Egypt and the Libyan desert, noted the presence of shells and thought that "Egypt might have been a gulf, carrying the Mediterranean waters as far as Ethiopia."

Thus, the first observations concluded with an organic origin for fossils which, in the final analysis, was perhaps the most logical one. This was one of the merits of Greek science. Aristotle who believed in spontaneous generation (production of living organisms from nonliving matter) had a very clear idea about the origin of fossils. He thought that exhalations rose from the earth in sunlight, with the "humid" ones producing metals and the "dry" ones fossils! His scientific ideas, taken up by Arab commentators were, centuries later, to become the foundations of medieval science.

Greek scientific thought ended with Strabo at the dawn of the Christian era who sought plausible explanations of fossil origins. Pliny the Ancient posed baffling scientific opinions. He mentions the 'ostracites' in the shape of oysters and 'spongites' in the form of sponges, but then takes the teeth of fossil sharks for petrified tongues, calling them *Glossopetrae*, a name they would keep for centuries: "The glossopetra falls from the sky during the moon's eclipses."

For a long time, no new curiosity would renew the interest in these objects of nature and the knowledge of fossils would founder for centuries in obscurantism and superstition. Thus, we enter the Dark Ages.

Taken from *Fossils of All Ages*, by Jean-Claude Fischer and Yvette Gayrard-Valy.



*Glossopetrae*, or tongue-stones (Illustration by Niels Stensen, 1666).

## ZOD FABRICATIONS DOES AMBER

by Scotty Bleck and Diane N. Tran

My friend Scotty Bleck is an artist, a prop and creature-making enthusiast, and all-around lover of movies, with his own self-made business, Zod Fabrications. He gained popularity for his art through the local DFW cosplay communities who gather *en masse* at sci-fi and comic conventions through his full-bodied dinosaur costumes and prop reconstructions directly inspired by the *Jurassic Park* and *Jurassic World* franchises.

He generously took some time out of his busy schedule to speak about his paleo-related fabrications, specifically his “amber deposit” props:

“Like many dinosaur enthusiasts and movie lovers, I, too, wondered if dinosaurs could be brought back through the advancement science and time.

Making iconic themed props has always been a passion for me. *Jurassic Park* is definitely a film that influenced and always kept me wondering. The cloning theme using fossilized ambers and extracting viable stands of DNA of dinosaurs to produce a successful recreation of a dinosaur is no doubt intriguing.

In general, resin is a key stage. Amber is the result of tempered resin that once was a fluid that circulated throughout a trees vascular system known as sap. Although it’s not the same process I use to create the natural way, it still yields a similar feel and accurate look to the *JP* movies I loved growing up. Every one I make is completely unique and contain a specimen preserved in a poly resin.

Yes, I use *real* specimens! I use the common Texas Mayflies, or Crane Flies. They are often very large and similar to the ones used in the film. The production team used Mayflies instead of the much smaller Mosquitos, because they were easier and clearer to capture on camera at the time. I find them once or twice throughout the year in the early spring. I capture them by hand and net. Oftentimes, I find them in the garage and backyard. I put them in cold storage, so that it preserves them a little longer till I am ready to insert them in resin.

Will we ever get to see dinosaurs again through the advance of science and time? I love thinking about it. Hopefully, someday I’ll come across my own fossilized amber piece.”

For more details about Zod Fabrications, check out his [Facebook](#) and [Instagram](#).



# ENGINEERING SPECS FOR THE PERFECT FOSSIL-HUNTING MACHINE

by Roger Farish

Sent to Engineering Department — Please design a perfect fossil-collecting machine. Specifications follow:

Discussion — Device should be able to efficiently traverse any terrain in search of fossils.

## Basic Design

- Warm-blooded and water-based for adaptability under a wide range of temperatures and climates,
- Cooling and heating system for constant adaptation,
- Locomotion — Bipedal with appendages capable of negotiating any terrain no matter how uneven,
- Collection system based on bilateral symmetry for accomplishing any task,
- Appendages for retrieving items down to one millimeter in size,
- Weather resistant to be able to operate in wet, dry, humid, arid, hot and cold environments,
- Color should not be a factor so that it can be operated by anyone,
- Should be equipped with all 5 senses for reception of external stimuli for self preservation.

## Energy Source

- Must be able to operate on common, off-the-shelf organic nutrients,
- Should be able to exist up to 24 hours without food, but water needed regularly.

## Size

- Compact and durable but should be at least three feet high,
- Large enough to accomplish all tasks, but small enough to be fuel efficient.

## ENGINEERING RESULTS:

See image on right, male model shown only.

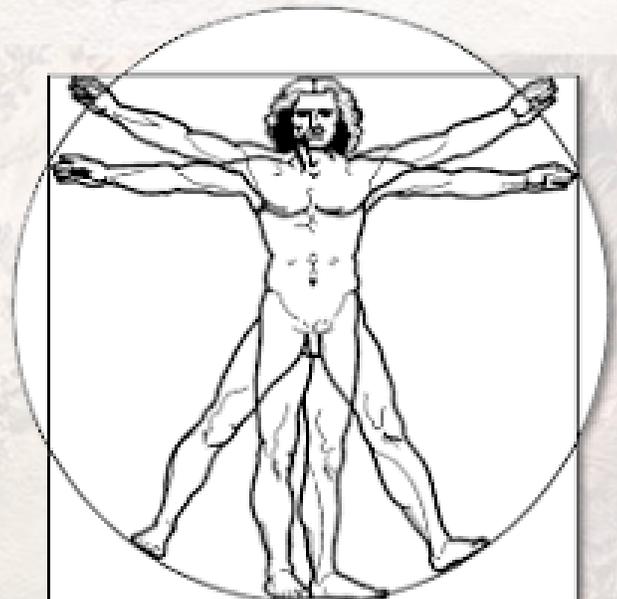
So, owning and living in the most perfect fossil-collecting system possible, we really have no excuses for not finding all the fossils we want.

## Optical System

- Capable of visually analyzing subjects from a few inches up to infinity,
- Must be high resolution capable of resolving a 1mm object from a distance of 4',
- Binocular to be able to analyze objects in 3-D for optimum identification, distance and location,
- Variable aperture for gathering data in very high and very low light levels,
- Must have high-speed connection to the computer system.

## Computer System

- 256-bit operating system for instant response,
- High-speed processor capable of analyzing millions of data points per second correlating each with every entry in the data base,
- Infinite data base storage capability that each owner can program according to their specific interests,
- Dynamic memory capacity that can be continually modified/enhanced,
- Adaptable to all external information systems.



## WOMEN IN PALEONTOLOGY: ELIZABETH “BETSY” NICHOLLS

Series by Reah Easley

Elizabeth “Betsy” Nicholls.



When, in 1992, a huge set of bones was found on a river bank in the forest of Canada, most paleontologists had no hopes of procuring the find. Getting to the site in British Columbia alone was challenging, it was a two-hour hike from the nearest road; the raging Sikanni Chief River flooded the site during the year, the matrix was so hard that usual tools didn't make a dent; the bones were incredibly fragile; and the thing, whatever it was, was over 70 feet long! The best that could be hoped for was to study the animal *in situ*, take photographs and make drawings, and maybe — just maybe — take some samples. That is, if the bears don't come for dinner or the mosquitoes don't suck you dry!

Elizabeth Nicholls (1946-2004), an American-Canadian paleontologist at the Royal Tyrrell Museum in



Alberta, Canada, wanted to have a look. She specialized in Triassic marine reptiles and loved field work. It was two years before she lead an exploratory group to the site and another three years before funds were raised and logistics were in place to tackle this amazing fossil.

It took three field seasons with transportation of equipment and crews in and out of the location by helicopter. Hard labor with jack hammers and rock saws, manipulating heavy equipment, barricading the river back with talus from the site to protect the skeleton, and rough camping made it necessary to switch out the crew members during digs, but Betsy didn't miss a beat.

Decisions had to be made, logistics adjusted, and frustrating challenges dealt with and Nicholls stayed on as the amazing animal was exposed. Massive plaster wrapped pieces were hoisted by helicopter out of the forest and onto a waiting transport truck to the Royal Tyrrell Museum for curating. The skull alone turned out to weigh 4 ½ tons.



*Shonisaurus sikanniensis*.

Preparing a skeleton takes time and money. Nicholls was awarded the Rolex Award for Enterprise which came with a timely financial prize that Betsy donated to the Tyrrell to facilitate the work left to be done. At that time, it was anticipated to be completed by 2008. The air scribes filled the prep lab with their reverberating whirl!

The later named *Shonisaurus sikanniensis* was measured by paleontologist at the museum to be 23 meters (75 feet). Its skull is 5.8 meters (18 feet) long and each flipper is 5.3 meters long. Obviously, Betsy achieved a gargantuan success. “It's really been worth all the effort — it rewrites the history of what we know about the ichthyosaur,” Nicholls observed.

Dr. Elizabeth L. Nicholls died of cancer in 2004, almost four years before curators had finished preparation of the newly-discovered ichthyosaur was finished. In preparing for exhibit, the bones of the skull were exposed on both front and back and the rest of the body was exposed only on the front. Because of the fragility of the bones, Nicholls thought that a flat exhibit would be wisest until newer methods of preservation could be used for a full-dimensional display of the future.

## DINO BO BULLETIN

Series by Beau “Dino Bo” McDaniel

After taking a month off thanks to COVID and then the horrible pneumonia that followed (0 stars — would not recommend), I'll be honest dinosaurs were not on my mind for quite a while. Heck, I was more worried about not turning into a fossil myself. But that break can at times give you a fresh perspective once you make your way back.

I want to briefly talk about the Morrison Formation in Colorado. The Morrison Formation ranges from about 156-146 million years ago in age and brings up the rear of the Jurassic period. What interests me most about this formation are the Theropods, specifically the *large* ones!



Skull of an *Allosaurus* from the Salt Wash Member of the Morrison Formation.

Most of you probably immediately thought of the popular *Allosaurus* right off the bat. A few of you might have thought of *Torvosaurus* as well, who was the largest theropod and the apex predator of the area. But did you know about *Marshosaurus* and *Ceratosaurus*? That's four really large-bodied predators in one area, which is a large number for a single ecosystem. And not just those four either. There were other smaller theropods running around, too, including a little tyrannosaur.

That's four large theropods that are apparently rather successful and were living like the apex kings that they were. Then suddenly, something weird happens. All four disappear around 145 million years ago and we don't see another large predator appear in the fossil record for 35 million years, or about 110 million years ago. That new fella goes by the name of *Acrocanthosaurus*. Or at least he does now, maybe at the time he went by Jerry or Tom or something... I digress.

So, what in the world happened? How did we go from what seemed like a theropod theme park to a what must have been a herbivore heaven for 35 million years? That is the million-dollar question. Along with: Were there really no large body theropods for 35 million years? Or were there some and we just haven't found them yet?

As usual, the answer is we need more fossils. So, please if you have any larger theropod skeletons just sitting around in your closet that are between 145-110 million years old, send me a message. If so, I can hopefully get y'all an answer in next months issue then.

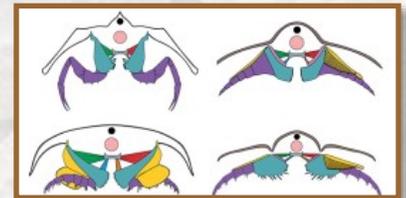
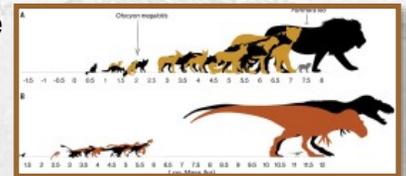


The distinctive banding of the Morrison Formation.

## PALEONTOLOGY IN THE NEWS

Compiled by Andrew “Dino Dad” Stück and Diane N. Tran

1. [Manta Shark](#) ([ScienceMag.org](#)) — A fascinating new shark has been described from Late Cretaceous rocks near Vallecillo, Mexico. The 95 million year old shark was named *Aquilolamna*, or “Eagle Shark,” for its long, skinny, wing-like pectoral fins. As *Aquilolamna* appears to be a filter-feeder, the researchers speculate it operated similarly to a modern Manta Ray. Several other fossils are also present in the block, including an ammonite, a pycnodont fish, a pachyrhizodontid fish, and a pipefish.
2. [A Digging Ankylosaur](#) ([Nature](#)) — An unknown species of ankylosaur recently recovered from the Gobi Desert in Mongolia possesses highly robust forelimbs, a reduced number of fingers, and “trowel-like” forefeet. The researchers suggest this dinosaur habitually dug in the arid dirt and sand of its desert home to search for water and roots. The story of its discovery is interesting as well. It was first found by the famous Polish-Mongolian Expeditions of the 1970s. The team ran out of time in their field season to fully excavate it, and so covered it with a wooden shelter with the intention of returning for it later, though they never did. The specimen was apparently re-discovered by a 1999 expedition, but was not excavated until 2008.
3. [“Teen-Rexes” Outcompeted Other Predators](#) ([ScienceMag.org](#)) — As even the largest dinosaurs hatched from relatively small eggs, they had a significant size gap to close during their early growth. While many likely got some support from parents as hatchlings, as they became more independent as juveniles and sub-adults, they would have had to adapt to different prey and hunting styles as they grew. A research team decided to examine the reported diversity of predator sizes in various paleo-environments, and found that even accounting for preservation bias, there appears to be a noticeable lack in predators whose maximum size fell into what could be considered a “medium range,” especially in later Cretaceous formations where tyrannosaurs were apex predators. This seems to suggest that “teenage” tyrannosaurs (and to a lesser extent, other large theropods) filled the role of mid-sized predators in their ecosystems, preventing entirely separate species from evolving into the same niche.
4. [Some Trilobites Crushed Prey to Death with Their Legs](#) ([Royal Society Publishing](#)) — Modern horseshoe crabs use robust upper segments of their legs with small, flat, crushing surfaces on their inner portions to crack open mussels and other shelled invertebrates. By comparing their anatomy to trilobites, researchers noted similar apparent crushing surfaces on homologous leg segments in some species. Those with similar flattened, inward-facing surfaces likely used them in a similar fashion to modern horseshoe crabs, while those with more delicate, spiny protrusions on these surfaces likely used them to sift for softer-bodied prey.
5. [Oviraptorid Embryos](#) ([Ancient Origins](#)) — Despite that there are many examples of fossilized adult oviraptorids found on top of their nests, scientists discover skeletal embryos inside for the first time, as are the forearms, pelvis, hind limbs, and partial tail of the adult that laid on top of it.



Reconstruction of manta-like planktivorous shark, *Aquilolamna milarcae*, with fossil (top); reconstruction of a digging ankylosaurid (second); a size comparison diagram of the dinosaur gap versus modern carnivorous mammals (third); and biomechanics of leg-crushing trilobites (fourth); and fossilized oviraptorid with embryonic nest (bottom).

**TEXAS THROUGH TIME MUSEUM'S  
"RETURN TO LARAMIDIA" LIMITED EXHIBIT (HILLSBORO, TX)  
by Texas Through Time Museum**

Accumulating one of the most comprehensive collections of Texas fossil anywhere, from June 1st to September 30th, a new exhibition is coming for a limited time to Texas Through Time Museum, Hillsboro, managed by DPS lifetime member Andre Lujan. Accumulating one of the most comprehensive collections of Texas fossil anywhere, they have several new species of dinosaurs, including Texas' first ankylosaur that represents a brand new genus! Also, they have one of the largest and most diverse collections of both flora and fauna from the Upper Campanian deposits of West Texas. Their collections are open for research and study by any and all interested parties.

For more information, check out their website at <http://texasthroughtime.org>.

**RETURN TO  
LARAMIDIA**

**A TEXAS THROUGH TIME  
LIMITED EXHIBITION**

**@ 107 FRANKLIN ST.  
HILLSBORO, TX 76645**

**JUNE 1ST - SEPT. 30TH 2021  
TUES. - SAT. 11 AM - 4 PM**

**\$12.00 PER ADULT  
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(AGES 4 AND UNDER FREE)**

**CALL 254-262-DINO(3466) FOR MORE INFO**

## OBITUARY TO NICK CIRINCIONE

by Diane N. Tran

It is with a heavy heart that we mourn the passing of a fellow DPS member, Dominick “Nick” Cirincione. Born August 24th, 1940 in Brooklyn, New York, he joined the Navy after high school. After serving in the Navy, he was employed with Petroleum Helicopters, then Rotor Aids, Inc, and then was employed by Bell Helicopter from 1968 until he retired in 2004.



His appetite for adventure and travel took him to many countries and all seven continents. He took the time to complete his education with a Certificate in Business Management from the University of Maryland, two Associate Degrees in Marketing and Business from Tarrant County Junior College, and finishing his higher education at Texas Christian University with a Bachelor of General Studies Degree. Nick had a desire to preserve history and focused his attention on numerous societies that mirrored his interests. He also focused on archival quality photo documentation on numerous projects and many of his photos appear at the Waco Mammoth National Monument, and photos of the Great American Cattle Drive Re-Enactment 1995, the Sesquicentennial Wagon Train 1986, the Lewis and Clark 200th Anniversary Festivities 2007 were donated to the archives of those societies.

Nick has been a long-time contributor to the Tarrant County Archives to reflect his focus on preserving the history of Aviation and Aviation History, Maps, Film and Theater, Photography, Northeast Tarrant County communities, the exploits of Bonnie and Clyde Barrow, and the John F. Kennedy assassination. He passed on February 4th, 2021; and, in lieu of flowers, the family has asked to consider a donation to Michael J. Fox Parkinson's Research or a charity of your choice.

## PIN ON THE EDITOR'S HAT

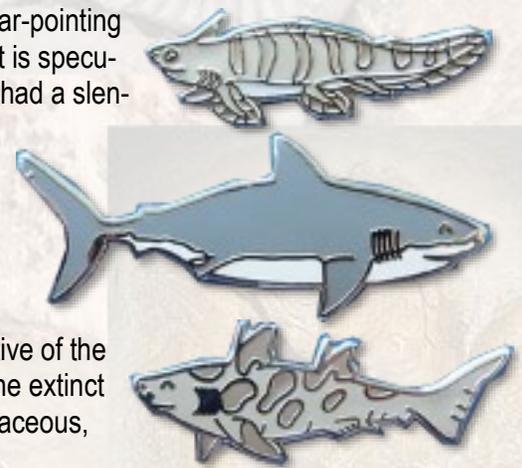
Series by Diane N. Tran

Since joining the DPS, my hat, which is covered with paleo-related enamel pins, has garnered much attention and every month will spotlight a different pin. However, this month is a special one, as I was able to require a set of three distinctive extinct sharks from [Fin Pin Shop](#):

*Xenacanthus decheni* is a freshwater Devonian shark characterized by a long, rear-pointing fin spine just behind the cranium, hence its genus meaning “strange spine,” and it is speculated to have been venomous, perhaps in a similar manner to a sting ray. It also had a slender, eel-like body, an elongate dorsal fin extending along most of the back, a symmetrical, tapered tail, and a specialized set of forked teeth used to feed on small crustaceans and heavily-scaled palaeoniscid fishes.

*Otodus megalodon*, better known as simply *Megalodon*, meaning “ear-shaped tooth, big tooth,” lived long after the dinosaurs during the Early Miocene to the Pliocene. Formerly thought to be a member of the family Lamnidae, a close relative of the Great White Shark (*Carcharodon carcharias*), it has now been re-classified into the extinct family Otodontidae, which diverged from the Great White during the Early Cretaceous, and is considered more closely related to present-day mako sharks.

*Ptychodus mortoni*, genus meaning “fold tooth,” is a Late Cretaceous durophagous (shell-crushing) shark that is believed to have been a sluggish bottom-dweller rather than an actively fast swimmer that fed on bivalves, crustaceans, ammonites, and possibly primitive turtles.



## DALLAS PALEONTOLOGICAL SOCIETY OFFICERS, COMMITTEE CHAIRS, AND ADVISORS

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Philip Scoggins, Rocky Manning, Tom Dill

### Professional Advisors:

Dr. Tony Fiorillo, SMU Shuler Museum  
 Dr. Louis Jacobs, SMU Shuler Museum  
 Dr. Merlynd Nestell, University of Texas at Arlington

*The Dallas Paleontological Society was founded in 1984 for the purpose of promoting interest in and knowledge of the science of paleontology. It was intended by the founding members that the Society would be a network for the exchange of data between professionals and serious amateurs in this field.*

[dallaspaleo.org](http://dallaspaleo.org)

The Dallas Paleontological Society meets the second Wednesday of every month at 7:00pm at Brookhaven College, unless we have something special happening that month. Please [check our calendar](#) for exact dates. Original versions of minutes and treasury reports will be available upon requests. Come meet with us, hear a speaker, learn about paleontology, and bring your unidentified fossils and unique finds to share with the group. You will be welcome, and we will enjoy meeting you. For a map of our meeting location visit [dallaspaleo.org/contact](http://dallaspaleo.org/contact).

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A special PSA from *Citipati* of The Dinosaur Company (Allen, TX): "Have a Hoppy Easter and wear a mask!"



## CONTENTS INSIDE:

- Livestreaming the DPS April meeting [online!](#)
- Overviews of DPS March meeting, Heard Museum's "Texas Nessie" exhibit opens (McKinney, TX), Museum of the Red River's Acrofest (Idabel, OK), a special "fossil dig" birthday cake with DPS President and Education Chair, early fossil interpretations of shark teeth, *Jurassic Park* prop-making by Zed Fabrication, etc!
- Scrapbook of DPS members' fossils while social distancing, "Women in Paleontology," "Dino Bo Bulletin," and "Pin in the Editor's Hat."
- Reviews, updates, news, and more!



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