

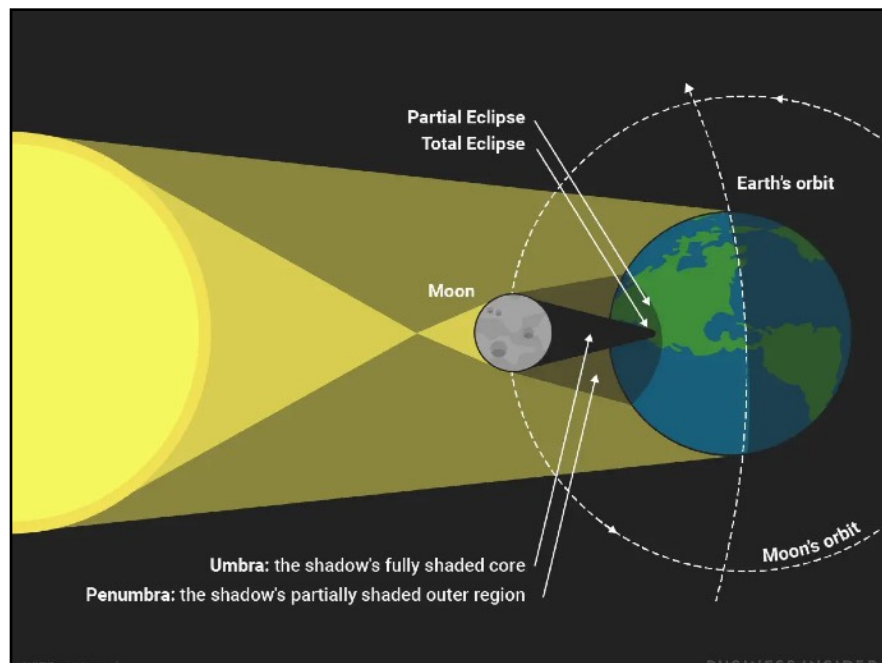


Volume 71 ♦ Number 02 ♦ February 2025 ♦ A monthly newsletter for and by the members of MAGS

## Solar Eclipse of April 8, 2024—RECAP

February Program

Jeremy Veldman



Most people saw the total solar eclipse of April 8, 2024. The weather forecast overachieved (fortunately). A week before, however, it didn't look good. Because of this, a series of agonizing decisions was made that made my personal eclipse experience both

memorable and regretful. And, perhaps, that was my greatest lesson from experiencing the 2024 Total Solar Eclipse.

A solar eclipse occurs when the moon gets between the Earth and the Sun, causing it to go dark for *Continued, P. 4*

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### YOUR BOARD NEEDS YOU

Many of us haven't completely recovered from the Covid-19 shutdown, and that includes the MAGS Board. The recent unfortunate death of MAGS President W.C. McDaniel has created another vacancy. The Board has been working to fill the vacancies, but it takes time. Some positions have been filled but there are



still openings.

Interested in having a say in how your club operates? If you're considering joining the Board, or just want information (no obligation), contact acting President Christine Anderson ([catclaus79@yahoo.com](mailto:catclaus79@yahoo.com) or (901) 201-8011) or any other Board Member.

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS Rockhound News ♦ A monthly newsletter for and by the members of MAGS

## 2025 MAGS BOARD

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## MAGS AND FEDERATION NOTES

**Memphis Archaeological and Geological Society,  
Memphis, Tennessee**

The objectives of this society shall be as set out in the Charter of Incorporation issued by the State of Tennessee on September 29, 1958, as follows: for the purpose of promoting an active interest in the geological finds and data by scientific methods; to offer possible assistance to any archaeologist or geologist in the general area covered by the work and purposes of this society; to discourage commercialization of archaeology and work to its elimination and to assist in the younger members of the society; to publicize and create further public interest in the archaeological and geological field in the general area of the Mid-South and conduct means of displaying, publishing and conducting public forums for scientific and educational purposes.

MAGS Membership Meetings are at 7:00 P. M. on the second Friday of each month May-October, and 10:00 A.M. on Saturday after the second Friday November-April. The meetings are held in the Fellowship Hall of Shady Grove Presbyterian Church, 5530 Shady Grove Road, Memphis, Tennessee.

MAGS Website: [memphisgeology.com](http://memphisgeology.com)

MAGS Show Website: <https://earthwideopen.wixsite.com/rocks>



Please contribute articles or pictures on any subject of interest to rockhounds. The 20th of the month is the deadline for next month's issue. Send material to [mlybanon@yahoo.com](mailto:mlybanon@yahoo.com).

Go to <https://www.southeastfed.org/sfms-field-trips/dmc-field-trip-program> for the DMC field trip schedule and other information.

### Links to Federation News

- ➔ AFMS: [www.amfed.org/afms\\_news.htm](http://www.amfed.org/afms_news.htm)
- ➔ SFMS: <https://www.southeastfed.org/>



## MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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IN LOVING  
*Memory*  
OF



### W.C. McDaniel

November 1, 1948 - January 19, 2025



W.C. led MAGS as President for years, and he was a big part of our annual show. We will miss him, his sense of humor, and his many contributions to MAGS.

*Solar Eclipse of April 8, 2024 a few minutes*

during the day. The moon orbits the Earth each month and gets between the Earth and Sun during its 'new moon' phase. But because the plane of the moon's orbit is tilted at a 5° angle with respect to the plane of the Earth's orbit around the Sun (Ecliptic) we don't see solar eclipses each month. The planes intersect at 2 points called 'nodes.' Normally, the moon is not located on a node during its new moon (between Earth and Sun) or full moon (opposite side of Earth from Sun) phase. So, the moon's shadow 'misses us' most of the time. However, occasionally, the moon will be located on a node during new moon and, when that occurs, a solar eclipse happens somewhere on Earth.

Further, the moon orbits the Earth in a slightly elliptical path. Sometimes it's closer to Earth (perigee) and sometimes it's further out (apogee). When the moon is at apogee and on a lunar node during new moon, the moon's shadow doesn't completely reach Earth and we get an 'annular' solar eclipse ('annulus' being Latin for 'ring'). Sometimes called a 'ring of fire' eclipse—we had such an eclipse on October 13, 2023. An annular eclipse is still dramatic, but not nearly as dramatic as a total solar eclipse, which occurs when the new moon is at perigee and on a lunar node. Then, the darkest part of the moon's shadow (called the 'umbra') reaches Earth's surface and those who are in the 'eclipse path' can experience the full darkness of a solar eclipse. We had such an opportunity on April

8, 2024, not far from Memphis.

The moon's umbral shadow was scheduled to cross Arkansas, southern Missouri, southern Illinois, and several other locations easily accessible from Memphis on April 8, 2024. The last such opportunity occurred on August 21, 2017 (many of you saw that one as well). The next opportunity won't occur until August 12, 2045. Because the moon is much smaller than Earth and much farther away, only 1% of the Earth's daylight side is in the Eclipse Path. This is why solar eclipses are SO RARE and only 1 in 10,000 people ever see one in their lifetime. And you need to be in the eclipse path to see a total solar eclipse—Memphis was just outside and experienced a 97% partial eclipse. But 97% doesn't cut it, when it comes to solar eclipses. It's either a 1 (in the eclipse path) or a 0 (outside the eclipse path). You're either a winner, or a loser. That's the catch!

There's another catch also—clouds. Being in the eclipse path during totality is a 'nice' start, but you'll still miss the eclipse if the skies aren't clear. Clouds are opaque.

So, given the rarity of the event and the challenges of positioning yourself to see it in the right spot under the right conditions, it would behoove anyone who truly wants to see it to leave NOTHING TO CHANCE!

One week out, the advanced forecast did not look promising. Overcast skies and high probability of clouds and rain in much of the eclipse path from Texas to Ohio. It's a cruel irony that we can predict thousands of years in ad-

vance where and when an eclipse will occur, but we may not know until minutes in advance where the clouds will be. Clouds rule. I had booked two airBNB's in northeastern Texas, anticipating (based on climatology data) a higher probability of clear skies. But, in a cruel twist of fate, climate and weather were appearing to be the inverse of each other. Texas was out.

Arkansas was still a remote possibility, as was southern Missouri (my plan A was Cape Girardeau) and I even began to explore possibilities in Illinois, Indiana, and even Erie, Pennsylvania! Anywhere the clouds weren't. But, then the inevitable question comes: how far am I willing to drive and how late am I willing to wait to make a decision. The answer came three days out.

An inconsistent forecast all week, but one spot kept surfacing as a high probability of success—Maine! Less than a week out, Jim Cantore of the Weather Channel said it best: "Maine is the place to be, there is no other!" Ironically, they were in the middle of an April nor'easter, when that statement was made. But, harsh weather is usually followed by high pressure and favorable skies.

Three days out, it was decision time—stay in Memphis and have a 65%-70% chance of seeing it in Arkansas, or fly to Maine and have a 95% chance of seeing it (??). And that's where my eclipse journey begins...





## Fabulous Tennessee Fossils

Dr. Michael A. Gibson,  
University of Tennessee at Martin

### FTF 119

*Maclurites magnus*—Part 1

Dedicated to W.C. McDaniel



One of the more distinctive and common fossils to find in the Middle Ordovician of East Tennessee is the gastropod *Maclurites magnus* (and the less common *M. nitidus*). While a graduate student at UTK working toward my Ph.D., Dr. Ken Walker's advanced paleoecology class would use local outcrops for classroom study. One particular day when I took the class back in 1986, we walked down from "The Hill" upon which the G&G building (Geology & Geography Building) was situated, down to Neyland Drive which runs the east periphery of the UTK campus and parallels the Tennessee River. A few blocks south from the stadium, and cropping-out at a road intersection with the railroad tracks that also parallel Neyland Drive, was an outcrop of the Middle Ordovician Lenoir Limestone that was commonly used for classes because of its quick access during two-hour lab periods. At this locality, the Lenoir is a dark gray, argillaceous (muddy), calcareous shale. The most conspicuous fossil in the formation is *Maclurites magnus* LeSueur, 1818 (Figure 1). In this brief essay, and continuing for the next couple of essays, I want to introduce you to this iconic snail and to set the stage for follow-up essays about some less obvious aspects of the snail and its occurrences.

Kingdom Animalia  
Phylum Mollusca  
Class Gastropoda  
Order Archaeogastropoda or Euomphalina  
Family Macluritidae  
Genus *Maclurites* LeSueur, 1818  
Species *magnus* LeSueur, 1818

*Maclurites* was described and named in 1818 by Charles-Alexandre LeSueur (1748-1846) in honor of naturalist William Maclure, who is most famous for having made the first geologic map of North America (hand colored, no less). LeSueur had lived at Maclure's New Harmony utopian settlement for many years and was a student of geology and paleontology (among other natural history interests). The New Harmony settlement is a story unto itself for a later day (as we can tie it into our old friend Gerard Troost as well), as is William McClure, who has iconic status among students of the history of American geology.

*Maclurites* is classified as an "archaeogastropod" snail, meaning it belongs to the more ancient, basal stock of gastropods and shows the most primitive characteristics. Late Cambrian occurrences occur, but *Maclurites* is mostly an Ordovician fossil, having gone extinct by the Silurian (hence is often considered a guide fossil to the Ordovician locally). It is a large gastropod that has a circular outline, coiled, but flattened

side (base; Figure 1A) upon which the animal is interpreted to have rested on the substrate, and an upper side that was "conispiral" (meaning spiraled out of a single plane) with each successive coil/whorl barely touching the previous coil/whorl ("advolute") to slightly overlapping the previous whorl/coil ("involute"). More conspicuously, the *Maclurites* whorl/coil pattern is also considered "hyperstrophic", meaning that the inner spire (earlier whorls of the shell) did not rise (spiral) upwards to a point like most gastropods you are probably familiar with, but instead the spire is depressed downward to make a depression in the upper surface of the shell (Figure 1B). Thus, the shell looks asymmetrical when viewed from the side, or obliquely, with the tallest whorls to the outside of the flat-bottomed shell (Figure 1C). As noted above, in outline, the shell is roughly circular. Viewed looking down at the top of a *Maclurites* fossil (Figure 1B), the coiling direction (starting with the outer whorls and spiraling inward to the inner whorls) appears "sinistral" (to the left or "counter-clockwise").

*Maclurites* is usually preserved as a mud-filled steinkern with no shell remaining, suggesting that the shell was composed of aragonite originally. The

*Continued, P. 6*



Figure 1. Steinkern preservation of *Maclurites magnus*, a gastropod from the Middle Ordovician of East Tennessee (UT Martin Collection). A. View looking at the bottom of the coiled shell from the underside. B. View looking downwards onto the top of a smaller *Maclurites* showing the depressed inner whorls with sediment infill. Note that counter-clockwise (sinistral) coiling direction. Note that the outer whorls are slightly ridge-like and taller than the inner whorls, forming a depression in the center. C. Oblique-view of specimen in Figure 1A showing the depressed center infilled with sediment (X), higher angular outer whorls, and aperture (A). (Scale in cm; photos by Michael A. Gibson).

*Fabulous Tennessee Fossils* flat base is  
Continued from P. 5 believed

to have

offered *Maclurites* greater substrate stability, perhaps from sinking into the muddy sediments (called the “snowshoe effect” by paleoecologists). Finally, *Maclurites* is generally found within algal-rich limestones, especially in the Late

Cambrian strata. This led many paleontologists to infer that grazing for algae was the snail’s primary “trophic” (feeding) method; however, more recently paleontologists have put forth a series of arguments that suggest that *Maclurites* was more sedentary and may have suspension fed. I will delve into this part of the *Maclu-*

*rites* story more in the next essay. As I opened the essay with, *Maclurites* is a pretty common fossil, so I suspect that many of you have them in your collections. You will want to get your collections out and have them handy for the next couple of essays. *Maclurites* has many fun lessons to for us to learn.

## Fluorescent Minerals— Not Always What You Expect!

J. Michael Howard

Many rock collectors like agates and many show dealers have some really nice slabs of agate, especially Brazilian agate. You will see them in a rainbow of colors, but many of the more vibrant colors are dyed...red, pink, green, blue, or yellow! Natural colors of agate are mostly tans or an occa-

sional brown, white to cream, and colorless banded together. Once cut and polished many of these are then dyed. Although chalcedony does not appear porous, it is to a degree, allowing the dyes to penetrate a few mm into the surface when the slabs are submerged and the container heated. As the solution cools off it penetrates the chalcedony, and once cleaned, the polished slabs are sold on the open market. The dye allows the patterns, which might not be very visible in nearly colorless slabs, to

appear and sometimes be quite dramatic.

Most dyed slabs do not fluoresce, however if you come across a pink example, in LW 365nm UV, it displays with a strong orange pattern, and is surprisingly attractive as a fluorescent specimen, even though it is not the mineral, but the dye that is fluorescing! Enjoy the pictures!

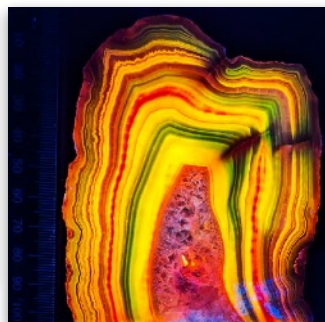
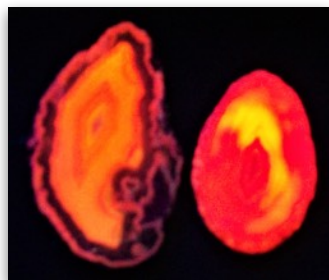
**Pictures on P. 7**





## Fluorescent Minerals—Not Always What You Expect!

Pictures



Agate slab Brazilian dyed Brazil FOV=5.0 in. LWUV 365nm  
Agate slab Brazilian dyed Brazil FOV=5.0 in. natural light

Agate, dyed bookend, Brazil, LW 365nm  
Agate, dyed bookend, Brazil, Natural light

## Travel Tip: Paleo Preserve Fossil Museum

Matthew Lybanon, Editor



Planning a trip to Disney World, or the Florida Gulf Coast beaches? While you're there, why not take a side trip to see something cool?

In 1983, the world's greatest collection of Pleistocene (about 2.6 million to 11,000 years ago) fossils was uncovered at the Leisey Shell Pit in southern Hillsborough County (the county where Tampa is). Florida is geologically young—sorry, no dinosaurs—but it's a remarkably good place to find fossils of life from the 30 million years or so Florida has been above water.

Leisey Shell Pit 1A is about 7 km southwest of Ruskin near Cockroach Bay. The Leisey Shell Pit consists of massive marine shell beds, overlain by a layer of quartz sand. The vertebrate fossils at Leisey Shell Pit 1A are primarily contained in a 5- to 30-cm-thick lens of dark silt covering an area of approximately 2000 sq. m with numerous marine, freshwater, and terrestrial invertebrate fossils. Prior to the discovery of the Leisey Shell Pit 1A locality, the commercial shell pits of South Florida had not been considered a significant source for sizable concentrations of vertebrate fossils. Leisey changed that view.

Leisey Shell Pit 1A was discovered in July 1983 by Frank Garcia. He and friends began to excavate the site. Late in 1983, Garcia informed Florida Museum curator David Webb about the discovery, and donated about 1,200 specimens to the museum. Others in Frank's crew also donated some specimens. Recognizing the significance of the find, Webb reached an agreement with mine owners and managers and Garcia to begin an extensive excavation starting

April 1, 1984, with all recovered fossils to be housed in the Florida Museum collection. This dig lasted until September 1984 and was manned by museum staff, UF paleontology graduate students, and numerous volunteers from the Tampa Bay area. The site was gridded in 1984, positional and other taphonomic data were recorded, and extensive samples of sediment were collected for screenwashing.

Leisey Shell Pit 1A was an extremely rich concentration of vertebrate fossils. Over 20,000 identifiable specimens were collected in 1984. Several species present at the site are found in greater numbers than anywhere else, including the saber-toothed cat *Smilodon gracilis*, the tapir *Tapirus haysii*, and the llama *Palaeolama mirisca*. Several new species of birds, rodents, and a new genus and species of armadillo-like mammal were found there. No skeletons were found in articulation, but scattered associated skeletons were fairly common. Medium- and large-sized terrestrial vertebrates were particularly abundant at Leisey Shell Pit 1A. Screenwashing

*Continued, P. 8*

## MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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*Paleo Preserve Fossil Museum* produced large numbers of small bones of marine fish and sharks.

Volunteers from the Tampa Bay Mineral & Science Club recognized public interest in the Leisey fossils and spawned the Tampa Bay Fossil Club, which continues to meet, 40+ years later.

Though the pit itself has long since closed, many of the fossils discovered there, as well as photographs and articles from its excavation years, are on display at the Paleo Preserve Fossil Museum. This small, nonprofit museum started by Frank Garcia to keep alive the history of the Leisey Shell Pit discovery continues to educate the public about Florida's amazing fossils! The Preserve is unique in the study of paleontology because it opens a window on the creatures of the early ice age.

Paleo Preserve Fossil Museum is open to the public on Saturdays, 9 A.M. until 2 P.M. There is no charge for admission. An interactive experience is offered for schools and groups throughout the year. The experience includes an onsite educational presentation, tour of the museums, and a hands-on dig in the fossil pit. Participants discover, collect, and keep the fossils they find. Kids love it!

The Paleo Preserve Fossil Museum isn't the only museum of interest to MAGSters in that part of Florida. Also worth seeing: the Mulberry Phosphate Museum and the Clewiston Museum.

The Mulberry Phosphate Museum (Mulberry is in Polk County,



33 miles east of Tampa) features four galleries, or areas. The Phosphate Gallery has displays showing where phosphate is found, how it's mined and processed, and how it's used today. The Historic Railroad Gallery has historic photos and information about the city, railroad industry, and phosphate industry. The Fossil Gallery is home to a prehistoric fossil collection that was acquired from the Bone Valley Fossil Collection in the nearby town of Bradley. This area of the museum includes fossils of sea and land creatures including whales, dolphins and sharks, tortoises, rhinos, and giraffes. The Dragline Area is an outdoor exhibit for fossil digging. Visitors will see a 44-yard Dragline bucket that was once used to dig phosphate rock. Kids can dig behind a mound of rock and search for shark teeth and prehistoric animal remains.

The Clewiston Museum (Clewiston is in Hendry County, on the southwest shore of Lake Okeechobee) features exhibits that highlight the heritage and natural history of Clewiston and the Glades. These include fossils (mammoths, mastodons, giant ground sloths, megalodons, saber-

toothed cats, a dugong, a giant land tortoise, and many others) and artifacts found in the surrounding area, artifacts depicting the agri-business history of the area including the sugar, cattle, and

commercial fishing industries, killer hurricanes and the Seminole Indians, and a large collection of artifacts and pictures from the No. 5 Royal Air Force flight training base at Riddle Field that was just outside of Clewiston during WWII.

Amateur paleontologist Mark Renz collected many of the fossils on display in the Clewiston Museum. His book, *Fossiling In Florida: A Guide for Diggers and Divers*, is easy to read and is a good resource for Florida fossil hunters.

Florida has bigger museums, some of them very good. The small museums mentioned in this article shouldn't be overlooked. They are well worth visiting.



*Continued, P. 9*



# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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## MAGS Notes

*Continued from P. 8*

### 🎵 Adult Programs

*February 8:* Jeremy Veldman, "Solar Eclipse of April 8, 2024-RECAP"  
—Zoom meeting

*March 8:* Keith Riding, "Mt. Everest"

*April 12:* Jane Coop, "Gemology 101" (rescheduled from January)

### 🎵 Junior Programs

*February-April:* TBD

### 🎵 Field Trips

*February:* Graceland (details TBD)

*February or March:* Melba Cole's Selenite property

*April:* TBD

### 🎵 February Birthdays

- |    |                  |
|----|------------------|
| 2  | Ryan Pudwell     |
| 3  | Bill Price       |
| 10 | Gypsee McManus   |
| 12 | Laura McManus    |
|    | Louis White      |
| 17 | Gary Sherman     |
| 19 | David Vaughn     |
| 21 | Helen Beaudoin   |
|    | George Gregory   |
| 24 | Katie Waddell    |
|    | Cheryl Yarbrough |
| 27 | Susie Logan      |

## December Board Minutes

*Josh Anderson*

Zoom meeting called to order 6:53 P.M. Attending: Christine Anderson, Joshua Anderson, Bonnie Cooper, Nannett McDougal-Dykes, Matthew Lybanon, non-Member Carol Lybanon.

**Secretary:** Presented November's 2024 Board meeting minutes. Minutes

approved.

**Treasurer:** Presented reports for October and November (absent last meeting). Reports approved.

**Membership:** Position vacant. Christine Anderson (VP) will take over Membership temporarily. Matthew will send an email about renewing membership at the Holiday Party. Christine A will accept money and handle membership at the party.

**Adult Programs:** July and November 2025 open and need presenters. December, Holiday Party. January, Jane Coop (needs access to printer). February, Dr. Jeremy Veldman, Memphis Astronomical Society, Eclipse 2024. March, Dr. Keith Riding, possibly Mt. Everest Adventures.

**Field Trips:** Position open. Jan/Feb, Graceland, Pompeii exhibit.

**Youth Programs:** No report.

**Library:** No report due to time.

**Editor:** Requests three months of material and events in advance of publication. The last date to submit materials is the 20th of each month.

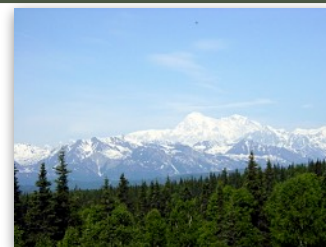
**Rock Swaps:** No report.

**MAGS Show: 2025:** Due to health concerns with MAGS leadership, the 2025 show schedule was discussed: Need leadership at that position. Need to inquire with Agricenter about changing dates for show and their schedule. and flexibility. Matthew will call.

**New Business:** Need to update Board members on checking accounts for club. This list of accounts includes MAGS club account, MAGS show account, MAGS CD accounts.

**Old Business:** Holiday Party discussion. Friday December 13th, 7 P.M. Board members arrive at 6 P.M. No table setup needed. Church will handle. No need to put away chairs/tables either at end of party. Rock Walk will be new activity.

Adjourned 7:10 P.M.



## Denali Fault

*Matthew Lybanon, Editor*

New research shows that three sites spread along an approximately 620-mile portion of today's Denali Fault in Alaska were once a smaller united geologic feature indicative of the final joining of two land masses. That feature was then torn apart by millions of years of tectonic activity.

The Denali Fault is a strike-slip fault, a place where two chunks of continental crust slide past each other. On Nov. 3, 2002, the fault jolted, creating a magnitude 7.9 earthquake that knocked houseboats off their moorings in Seattle

According to new research, the Denali Fault is actually an ancient suture mark where two land masses once joined together. Between 72 million and 56 million years ago, an oceanic plate called the Wrangellia Composite Terrane bumped into the western edge of North America and stuck there.

More details? See <https://www.uaf.edu/news/denali-fault-tore-apart-ancient-joining-of-two-land-masses.php#>.

*Ref: Sean P. Regan, et al; Orogen-scale inverted metamorphism during Cretaceous–Paleogene terminal suturing along the North American Cordillera, Alaska, USA. Geology 2024;; 52 (12): 933–938. doi: <https://doi.org/10.1130/G52614.1>*

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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## MAGS At A Glance February 2025

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
26	27	28	29	30 Zoom February Board Meeting, 6:30 P.M.	31	1
2	3	4	5	6	7	8 Zoom Membership Meeting, 10:00 A.M., Jeremy Veldman, "Eclipse 2024—RECAP"
9	10	11	12	13	14 <i>Happy Valentine's Day!</i>	15 DMC Field Trip
16 	17	18	19	20	21	22
23	24	25	26	27 Zoom March Board Meeting, 6:30 P.M.	28	1

Memphis Archaeological and Geological Society  
PO Box 880  
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