



June 2024 issue

The next regular meeting will be on THURSDAY, June 20 at 6:30 p.m. at the VFW Post at 3400 Veterans Drive in Traverse City.

The June 20 meeting will feature our annual Silent Auction, club fundraiser. Club members bring items to donate for the auction and then members and guests get the opportunity to view the items and put their bids on the slips located with the items. There are usually two rounds of bidding with each round around 20 to 30 minutes. Those of you that plan to attend and possibly bid on items, please have small bills or checks to pay for your purchases. Everything will be purchased at \$1 or above, with all bidding for even dollar amounts only. No bids allowed for amounts less than full dollar increments.

Items can include rocks and minerals, lapidary materials, finished jewelry or other projects, baked goods, lapidary or rock hunting books, tools or equipment, or other interesting items.

The next regular meeting of the Pebble Pups will be in September. There will be some field trips and other events this summer.

May Highlights

The program for the May meeting was “Demo Night” where members shared information and demos on various skills, techniques, or equipment used in various lapidary, jewelry or rock and mineral related topics.

Beginning in April, the club meeting day changed to the third Thursday of the month. The next new meeting date will be Thursday, June 20 at 6:30 pm.

Food Pantry Donations

Lorna Coe and Jim and De Elder would like to thank all that have brought items for the food pantry and clothing donations. Due to the success of the

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program, they are going to continue this at every meeting. Non-perishable food items (no expired dated items, please), personal hygiene products, children's new underwear, sizes elementary to teens, are welcomed. An additional item of need is toothbrushes and toothpaste. As an added incentive, every time you donate items, put your name in the hat for a drawing, which will take place at our Christmas dinner.

Membership Information

From Cathy Kowaleski, Membership Chair:

You must be a paid member to continue to receive club benefits (participation in classes, outings and receiving club newsletters.) Dues are \$15 Adult or \$20 for a couple, Juniors (8-17) \$5, and those under 8 are free with an adult membership. Make checks out to GTARMC.

Membership dues may be mailed to:

Cathy Kowaleski, Membership Chair
801 S. Garfield Avenue #241
Traverse City, MI 49686

Name badges are an additional \$8 per badge. Thank you!

IN MEMORY

I just found out on June 3, that owner of the C & M Rock Shop, Bruce Mueller passed away on November 13, 2023 after a battle with cancer. He was 92. He co-authored several Rock Hunting books with our own Kevin Gauthier, was a wonderful man and a wealth of information on Geology. He presented programs to the club in past years.

Facebook Page

Visit the club's Facebook page at this web address. There is also a link on our club website. <https://www.facebook.com/TCRockhounds>

Club Email Addresses

To send a request for classes or workroom time, please send an email request to our club scheduler.

scheduling@tcrockhounds.com

gtarmc@tcrockhounds.com (is our main club email address)

If you have any photos that you would like to share of club events or members, those can be sent to:

photos@tcrockhounds.com or noonanjohntc@gmail.com

To view club photos on Flickr, enter the following web address:

[GT Rock & Mineral | Flickr](#)

Club Member Assignment

To assist the new committee that is looking at potential new locations for our club workroom and classroom, Jim Elder is asking all club members to let him know about possible locations that you may be aware of, that may work for the club. The space should be in the greater Traverse City area but doesn't have to be within the city limits.

A good size for the room would be 400 to 600 square feet and must have a restroom for member use. This would give us adequate space for our equipment and enough room to hold classes.

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The above contact list will be included in each newsletter so that you know who to contact for various items.

GTARMC Pebble Pup Info

More Rock & Mineral Specimens Needs for the Pups

The Pebble Pups need specimens for study and for Steven Veatch to give out at the Pup's meetings and for public outreach events that are staged about 4 times a year. People can contact Steven at steven.veatch@gmail.com or bring them to the meetings for him.

Upcoming Events

NEW PEBBLE PUP PROGRAM WITH THE TC LIBRARY

Adventure Begins at Your Library: Mysteries of the Earth

Dive into the fascinating world of rocks, minerals, and fossils with our captivating tween program! In this dynamic and hands-on course, young learners will embark on an exciting journey through Earth's history, uncovering the secrets hidden within its ancient rocks and sparkling minerals. Through engaging activities and interactive demonstrations, students will explore the incredible diversity of our planet's geological treasures, from the towering formations of igneous rocks to the delicate beauty of fossilized remains. Led by the Grand Traverse Rock and Mineral Club Pebble Pup instructors, this educational adventure will ignite curiosity, spark imaginations, and instill a lifelong love for the wonders of the natural world. Meet the Pebble Pups and take a deep dive into the world of rocks, minerals, and fossils. Do real science. Do some art. Write a story about a dinosaur. Join us and rock on towards discovery!

Dates: June 13, June 27, and July 11

Time: 4:00 to 5:30

Place: Traverse City District Library

Next is an exciting article written by a teen member of our Pebble Pup group and one from the Colorado Springs Group, along with three of our younger Pups.

Following that, is a written and photo summary of the May 18 Pebble Pup Field Trip.

Investigating A Trace Fossil on Ripple Marks in the Middle Cambrian Hickory Sandstone of Central Texas

Sawyer Blizzard, Colorado Springs Mineralogical Society, Junior Member

Nathan Peters, Grand Traverse Area Rock and Mineral Club, Junior Member

Brody Dymond, Grand Traverse Area Rock and Mineral Club, Pebble Pup

Wyatt Maeder, Grand Traverse Area Rock and Mineral Club, Pebble Pup

Hunter Maeder, Grand Traverse Area Rock and Mineral Club, Pebble Pup

Researchers collected ripple marks in the Late Cambrian age (about 500 million years old) Hickory Sandstone near Kingsland, central Texas with puzzling structures on their surface (Figure 1) (Kyle and McBride, 2014). The structures do not have a dense concentration and exhibit curved, bent, and looping shapes, suggesting a biological origin. Given their capability to bend elastically without breaking, and with the presence of short branching appendages, we interpret the structures as the burrows, or trace fossils, of some type of ancient vermiform (worm-shaped) organism moving through sediments.

The widths of the burrows remain relatively constant, and their surfaces are smooth and free from any observable ornamentation. It is our belief that these trace fossils compare with the ichnogenus *Planolites* (Collette, et al. 2011; James Hagadorn, personal communication).



Figure 1. Enigmatic trace fossils twist, turn, and branch out on the top of ripple marks on the Hickory Sandstone member of the Ft. Riley Formation. From the collection X David Regalbuto. Photo by S. W. Veatch.

In central Texas, the Hickory Sandstone is the bottom member of the Riley Formation (Figure 2.) that includes fluvial (river), shoreline, and marine (deposited during the transgression of shallow seas) layers. Kyle and McBride (2014) suggest that some of the Hickory sediments were reworked from wind-blown dunes. It is a predominantly quartz marine sandstone with some mud rock, conglomerate, and limestone, as thick as 150 m (500 ft). There is also a local ironstone layer up to 25 m (80 ft) thick (Kyle and McBride, 2014). The Hickory Sandstone is located in the Llano Uplift region and dips in all directions. It lies unconformably (missing layers of rock) on the surface of Precambrian gneiss and schist, with granitic intrusions (Teran, 2007).

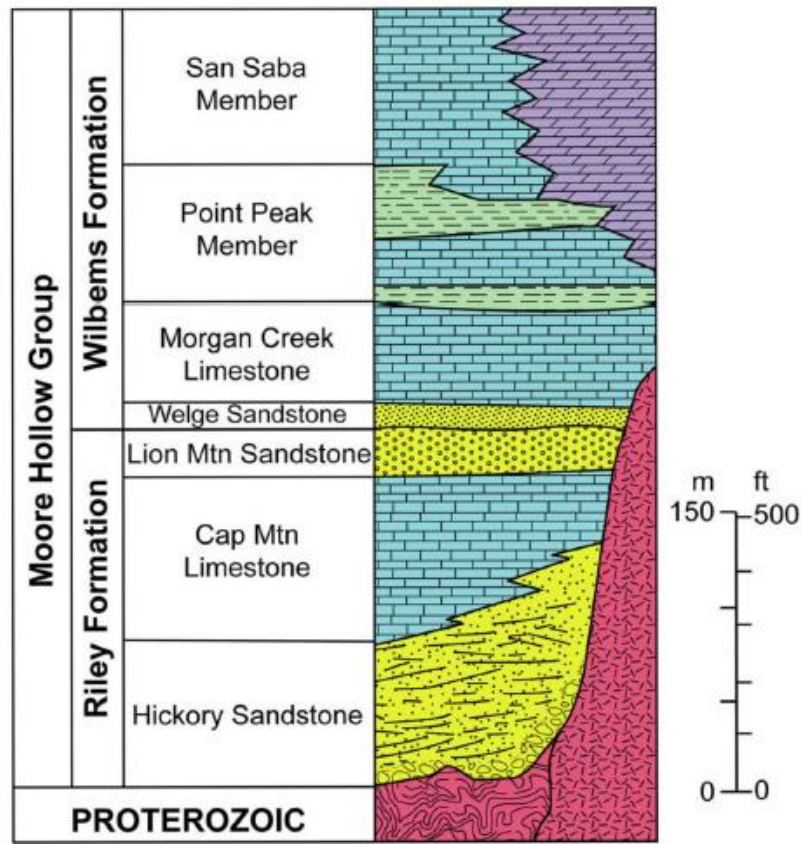


Figure 2. Stratigraphic column for the Cambrian units of the Llano Uplift of Central Texas. The Hickory Sandstone is the bottom member of Riley Formation. Modified after Barnes and Bell (1977). From Kyle and McBride, 2014.

The Hickory Sandstone serves as a source of industrial sand and it is used as a proppant, a gritty material with uniformly sized particles mixed in with a fluid during the fracking process. Injecting this mixture into induced fractures in the rock strata (layers) holds those fractures open for petroleum recovery. Proppants are used with more unconventional petroleum plays. The Hickory Sandstone, on the northwestern side of the Llano Uplift near Voca, Texas, is a major proppant sand production site.

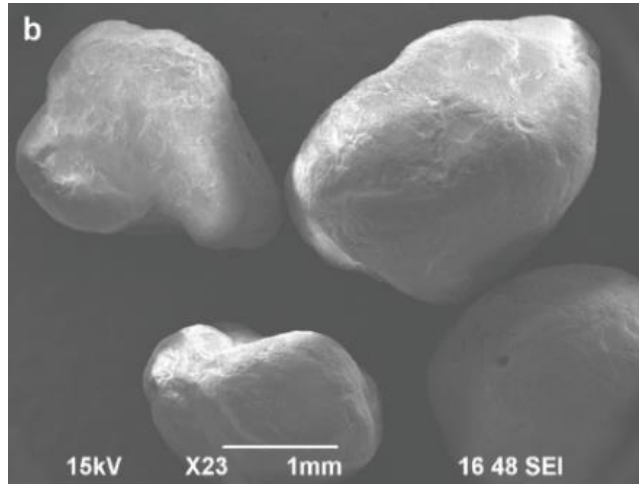


Figure 3. SEM image of well-rounded Hickory Sandstone quartz grains. The size and roundness of these grains make the Hickory an important industrial sand (proppant). From Kyle and McBride, 2014.

Previous researchers have acknowledged the presence of trace fossils in the Hickory Sandstone. Barnes and Bell (1977) linked trace fossils to the *Cruziana* ichnogenus. Cornish (1975) noted ichnofossils, including trilobite tracks, resting traces, and scratches. He also found an abundance of U-shaped burrows classified as *Diplocraterion* and *Planolites*. Wilson (2001) noted *Planolites* or possibly the meandering burrow of *Cosmorhapha*, and observed that *Diplocraterion*, *Cruziana*, and *Skolithos* occurred less frequently.

SYSTEMATIC ICHNOLOGY
Ichnogenus *Planolites* Richter 1937
cf. *Planolites*
(Figure 1.)

Locality: near Kingman, Texas.

Stratigraphic horizon: Hickory Sandstone member of the Ft. Riley Formation.

Age: mid-Cambrian. *Planolites* is known since the Cambrian (Buatois et al. 2016).

Description: Cylindrical, winding, or meandering burrows with convex surfaces that possess some branches with short appendages. The infill material shares the same composition and sand size as the host sediment, with only slight variations in color when compared to the surrounding rock. Variation in both length and width is clear in the exposed burrows. The unbranched, curved, or bending burrows range from 2 mm to ~3 mm wide, with a definite mode around 2 mm, exposed lengths are up to 9 cm. The shorter, branched burrows range from 1 mm to ~3 mm wide, with a definite mode around 2 mm, exposed lengths are up to 2.5 cm.

Remarks: The trace fossils from the Hickory Sandstone show that shallow water, near-shore marine environments—with high to moderate energy conditions—deposited the sediments of the sandstone. These sediments built up on intertidal sand flats and sand bars. Organisms, likely a worm, made all the burrows in soft sand before the consolidation of the sediments. The

sediments were abundant in nutrients, supporting deposit feeders (Cornish, 1975a, 1975b; Seilacher, 1978; Ekdale et al., 1984). **The study specimen shows a close resemblance in morphology to *Planolites montanus* (Billings, 1862; Richter, 1937) (Figure 1).** *Planolites* is interpreted as a feeding trace of a mobile deposit feeder, predominantly worms (Pemberton & Frey 1982), or possibly the larva of insects (Buatois & Mángano 1993). The key differences between *Planolites montanus* and *Planolites beverleyensis* are their size and shape: *Planolites montanus* are smaller and more meandering, while *Planolites beverleyensis* is larger and straighter (Pemberton and Frey 1982). *Planolites* occur in most depositional environments (Pemberton and Frey 1982) and have a temporal range from the Ediacaran to Holocene (Häntzschel 1975). According to most paleontologists, standing water (or fully saturated sediments) is crucial for the existence of *Planolites*. This conclusion is supported by various studies (Gierlowski-Kordesch 1991; Pickerill 1992; Buatois and Mángano 1993; MacNaughton and Pickerill 1995; Metz 1996; Keighley and Pickerill 2003; Gillette et al. 2003; Melchor 2004).

Acknowledgements:

The authors thank Dave Regalbuto for donating the specimen we studied. We want to thank Steven Veatch for guiding us in this research.

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GTARMC Pebble Pup Field Trip

On Saturday, May 18th, The Grand Traverse Area Rock and Mineral Club's Pebble Pups and the Grand Traverse Conservation District led the second hike in the Family and Children Geology Hike Series. This field trip was titled Ancient Echoes Expedition! Over 50 children, their parents, and members of the GTARMC signed up for this event. After a paleontology lesson the hikers embarked on a trip through a landscape rich in ancient echoes, where fossilized remnants told the tales of prehistoric life. Fossil discoveries were made by everyone.

