

# The Paleo Times

Volume 14 Number 7

July 2015

The Official Publication of the Eastern Missouri Society For Paleontology

## EMSP SOAPBOX

By Ryan Fairbanks & Faye Whobrey

If you have any articles, comments, or need to communicate with me I can be reached through the following: [emsp.sec@mofossils.com](mailto:emsp.sec@mofossils.com).

### Next meeting

Next meeting is **Friday, September 11, 2015** at 7:30 pm in the New Earth and Planetary Sciences building at Washington University (see more details below).

## President's Corner July 2015

### Greater St. Louis Association of Earth Science Clubs – Scholarship Program:

**REPEAT – WE NEED APPLICANTS:** The Association has funds available for up to three (3) scholarships up to \$500 each for this year. There is a link under “Fossil Links” on our website ([www.mofossils.com](http://www.mofossils.com)) for more information regarding the scholarship program. **Click on the link that has “forms” in it to get the application.**

Proceeds from the “boutique” and the “wheel” go directly to the scholarship fund. Do you have any Geology books that you would like to recycle? Bring them to the picnic and we will deliver them for you. When you are out collecting and you see something “nice” but not what you would want in your collection, pick it up and bring to the next meeting.

I will make sure it gets to Bob for the next show.

### Recap of George Phillips, Paleontology Curator for Mississippi Museum of Natural Science, Jackson, Mississippi, visit to St. Louis:

- We kept George very busy meeting with club members, reviewing and discussing their collections.
- Thanks to Carl, Rick, John and Dorothy, and Dr. Bruce for not only sharing information but also donating specimens to the Museum.
- Also thanks to Abby and Ryan for helping host him at dinner Friday night.
- Dr. Bruce took George on a field trip to Ardeola and he was so impressed with the information he was able to gather—went home with lots of soil samples from the different layers as well as some nice specimens.
- George was especially impressed with some of the questions from our younger members. This is what we want from all our speakers/programs – knowledge flowing from the presenters to our members.

### Election of Officers:

- What office would you like to volunteer for?
- Think about the strengths of your fellow club member – maybe they just haven't thought about supporting the Club in a particular office or committee – nominate them.
- It takes the time, energy and talents of many people to make our Club work for everyone and continue to provide the learning/sharing/information atmosphere that helps each of us.

**Meeting Schedule. Remember our new format where program will be first and business meeting after break.**

- **August 02, 2015:** Club picnic at Kirkwood Park. We will have silent auctions continuously every 30 minutes. Bring your excess and a card table with 20% of the proceeds going to EMSP.
- **September 11, 2015:** What we did on our summer vacation (Show and Tell)
- **October 09, 2015:** Dr. Bruce on St. Louis Pleistocene.
- **November 13, 2015:** Potential speaker is Andrew McDonald on the Igenodon family (a genus of ornithomimid dinosaur that existed roughly halfway between the first of the swift bipedal hysilophodontids of the mid-Jurassic and the duck-billed dinosaurs of the late Cretaceous). We will have election of officers in the second half of the meeting.
- **December 2015:** Annual Christmas Party (date & location to be announced).

**We want to have “MINI” Presentations at most of our meetings. Have you read a good book? Have you researched a specific fossil? What is your favorite formation for collecting – Why – Examples? Let me know so we can add you to the agenda. We have openings for these for each of our meetings starting with September.**

**Field Trips:** If you have suggestions for field trips or would like to lead a trip, please contact Dr. Stinchcomb, Chris Braught or Faye Whobrey.

- June: Sunday, June 28, to Ardeola. This was a small group they found some very nice specimens from the Owl Creek Formation.
- Fall trips to Mark Twain Lake (Keokuk and Burlington formations), HWY MM (Decorah formation), Barite Pit (Potosi formation), Mark Twain Nation Forest south of Cherokee Pass (Cambrian and Pre-Cambrian) and possibly to Fulton area (Keokuk formation and others) to be planned.
- Steve would appreciate volunteers with our out-reach program for scouts and schools. Contact him for details.

#### **Paleotrek – Dino Dig:**

Paleotrek will run from July 4 – 23 for 2105. It is open to EMSP members and prior participants. Much of our field work will consist of prospecting for new excavation sites. There is a one-time fee of \$75/person to help cover storage costs and supplies.

Contact Professor Campbell if you are interested in participating and/or need additional information. He needs to know when and who will be participating before he leaves on July 1.

#### **Shows:**

- Greater St. Louis Association of Earth Science Clubs.** August 14-16, 2015. Machinist Hall in Bridgeton, MO. We need volunteers for setup/teardown and for working our booth and ticket booth.
- St. Louis Mineral and Gem Club.** November 20-22, 2015. White Rogers Community Center, Afton, MO. We need volunteers for setup/teardown and for working our booth.
- Several of our members participated in the **Mines Rock Swap in Rock Hill** earlier this month and came home with some great additions to our collections plus a lot of knowledge from talking to the vendors.

#### **Summer Collecting: Summer is here and so many great opportunities for collecting.**

Add some museums to your agenda. If July is anything like June you will have some rainy days no matter where you are so don't waste those days – find some indoor exhibits, etc.

Take pictures wherever you are: museums or outdoor scenery or specimens in place.

If you don't know what something is, pick it up anyway and bring to the September meeting or to the picnic in August and let our “experts” assist you with the identification.

**Members:** Please let Ryan Fairbanks know of any updated contact information.

Volunteer outreach help needed-

#### **NO EXPERIENCE NECESSARY!**

Please sign up to help staff the Rockwood school district requests and any other for fossil presentations/demonstrations/science night tables. Last year we reached at least 3 science nights at elementary schools, a number of day time presentations, and a library summer reading club. We have the outreach kit- just take and open the lid for an instant interactive table. An accompanying book has more details on each fossil. A PowerPoint presentation is also in the works

## Paleo-shorts

### How Did the Asteroid or Comet at Chicxulub Destroy and Change Life on Earth?

By Faye Whobrey

#### Summary from “T. Rex and the Crater of Doom” by Alfred Alvarez

##### Size and Impact:

- Size was enormous, probably 10 kilometers (approximately 6.2 miles) in diameter at a velocity of 30 Kilometers per second which is 6 times faster than the speed of seismic waves in rock.
- Picture it as the size of San Francisco and the height of Mt. Everest.
- Speed coupled with scope had destruction capability of 100 million hydrogen bombs.
- Impact so significant that it crushed and compressed both the impacting and target rock, and after the shock passed, the decompressing rock either melted, or flew apart or even “vaporized.”
- Energy of just the motion of the comet **before** impact was equivalent to explosion of 100 million megatons of TNT – vaporize the comet in 1 second – blowout a hole 40 km deep collapsing into a crater 150-200 km across.
- This impact which ended the Cretaceous was equivalent to explosion of 10,000 times the nuclear arsenal of the world (although impact was not nuclear).

##### Moment of Impact:

- Air in front of the comet was violently compressed and produced one of the most colossal sonic booms ever heard on this planet.
- This compression **INSTANTLY** produced temperature **4 to 5 times** that of the Sun.
- Two shock waves:
  - One went thru the bedrock, passed through 3km layer of limestone, and down into the granite below, destroying much of the orderly structure of minerals.

- The second flashed backwards into the comet, became an incandescent coating on the inside of the crater and was mostly vaporized as well as most of the target rock.
- The shock wave curved backwards to surface and spewed out ejecta—melted blobs and fragments which fell back to the earth a few hundred km of the rim of the crater.

- The explosion sent a fireball that blew thru the atmosphere, accelerating out into space and launched particles of rock around the Earth before falling back to the ground.
- Second fireball triggered the release of enormous quantities of CO<sub>2</sub> gas. This exploding gas ball also blew through the atmosphere and into space.
- Crater continued to expand to depth of 40km and then the center began to rise into a central peak like those preserved in many of the crater of the Moon.

##### Ring of Devastation:

- No living thing could survive where the bedrock was melted or vaporized – probably for hundreds of kms from ground zero.
- Flash of light in sky then a last moment of calm.
- Ground shook uncontrollably from the passing seismic waves.
- Sky became lethal as it grew hotter and hotter as it cooked, charred, ignited, and immolated everything on the surface.
- Continent sized wild fires swept across the lands, consuming entire forests and removing the oxygen from the atmosphere.
- Seismic shaking, submarine landslides, and splashdown of ejecta triggered a gigantic tsunami – wave probably 1 kilometer high.
- Impact so enormous that its keel swept across the bottom of the Gulf, digging channels into the fine sediment and mixing them with the debris from impact that had settled. The tsunami grew taller and taller as it crashed into the shallow waters of Florida and the Gulf.
- It shook the continental margin so violently that submarine landslides flowed into the deep Gulf burying the impact debris.

- In a matter of hours of the impact, the lush fertile landscapes of Mexico and the United State that were once teeming with plants and animals, were reduced to a smoldering wasteland.

### What Happened Next?

- Was that the worst or was it still to come?
- The initial effects were dying out but the Earth was turning “cold and dark.”
- Vast amount of fine dust particles had burst thru the atmosphere in the fireball and were settling in the upper atmosphere—**BLOCKING THE SUNLIGHT.**
- This probably lasted several months. Just looking at vegetation alone – what happens when it doesn’t get sunlight for long periods of time?
- Was the eventual return of light good? The climate took a complete 180 degree turn and was sweltering hot.
- Vast quantities of two greenhouse vapors – water vapor and carbon dioxide –had been released. Since carbon dioxide can only be removed slowly from the air, it trapped the heat from the sun. It probably took thousands of years before the carbon dioxide levels returned to normal.
- There was acid rain – some was probably sulfuric acid from sulfur in anhydrite but most was nitric acid which was originating from the atmosphere itself. This was so intense the acid literally rained out of the sky, killing plants and animals and even dissolving rock.

### The global aftermath of the Yucatan impact was a world first dark and frozen, then deadly hot, a world poisoned by acid and soot.

- How did this cause the extinction so many plants and animals (both marine and land) besides those that were destroyed in the impact and immediately thereafter?
- Think of the food chain – vegetarians who originally survived died because of devastation of plants – meat eaters died because their food source had died – marine animals died because of the immediate

effects and by the same disruption in their food source.

Meetings are held the 2nd Friday of every month (except July, August, and December) in room 203 of the new Earth & Planetary Sciences Building on the campus of Washington University. The building is on the southwest corner of Hoyt Dr. and Forest Park Pkwy. There is a large parking lot just across the street.

### CONTACTS

Do you need to find out something about the next meeting or have questions on the next field trip? If so, please talk to or contact one of the EMSP officers.

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### DUES

Our treasurer, Rick Poropat will accept dues payment for a full year. **Dues are \$20.00 per household per year-payable in January if receiving the newsletter by e-mail. The dues are \$25 for those receiving the newsletter by regular mail.** See Rick at the next meeting or mail a check (payable to Eastern Missouri Society for Paleontology) to:

**EMSP  
 P.O. Box 220273  
 St. Louis, MO. 63122**

### Distribution of the Newsletter by email

Can’t find your newsletter, just when you need it for a trip? Then sign up for the e-mail version. This also saves the club money so we can bring in speakers. E-mail requests to [emsp.sec@mofossils.com](mailto:emsp.sec@mofossils.com)



## What is EMSP?

**The Eastern Missouri Society for Paleontology (EMSP) is a not-for-profit organization Dedicated to promoting the enjoyment of fossil collecting. It is open to all individuals interested in learning about the history of life on earth. The club membership includes professional paleontologists as well as amateur hobbyists. The EMSP provides an open forum for the exchange of information and access to expertise on collecting, identifying, preparing and displaying fossils.**

**EMSP meetings are held on the second Friday of every month (except July, August and December) at 7:30pm in the Earth and Planetary Sciences Building on the campus of Washington University. Each meeting includes an informal exchange of information and speakers on a variety of fossil-related topics.**

**Weather permitting, field trips to fossil collection localities around the St. Louis area are held each month. Led by experienced collectors, these trips are a fun way to augment discussions at the monthly meetings. The club participates in joint field trips with other paleo clubs, visiting fossil sites throughout the United States. EMSP is also a proud to be involved in partnerships with the St. Louis Science Center and the Greater St. Louis Association of Earth Science Clubs, Inc.**

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