The Paleo Times

Volume 15 Number 3 **March 2016**

The Official Publication of the Eastern Missouri Society for Paleontology

President's Corner

I hope everyone got out and enjoyed our lovely 70 degree February days. Maybe some of you even found some fossils? Hopefully the great weather continues for our upcoming field trips.

I'm looking forward to having Dr. McDonald speak again and I hope you can all join us for his talk and also to help us assemble fund-raising fossil starter collection boards in March.

Abby

Congratulations!

Congratulations to EMSP member *Casey Thater* who has been awarded a major scholarship to study Geology at the University of Missouri!

Fossil Board Assembly

Attention all officers, board members and interested club members! It's time again to assemble those ever-popular fossil boards EMSP sells at the shows. We will meet at 12:30 pm on Saturday, March 19th at the home of Ryan & Abby Fairbanks, 217 Glen Cove Dr., Chesterfield, MO. The plan is to assemble about 40 new boards. Attendees are asked to bring small, loose fossils (1/2-1 inch size) to help replenish our dwindling supply. Please RSVP Abby & Ryan at 314-805-4737 or abfactor@gmail.com if you plan to attend. Chili and beer have been discussed.

Wanted: Display Fossils

Carl Campbell is looking for donations of good quality, local fossils for a display at Meramec College. Please contact him if you would like to make a donation. CECampbell@stlcc.edu.

March Meeting

Our next meeting is **Friday, March 11, 2016** at 7:30 pm in the new Earth and Planetary Sciences building on the Washington University campus. Our speaker for the evening will be Dr. Andrew McDonald speaking about variations in Late Cretaceous vertebrate life, (dinos, crocs, mammals) travelogue style, across the Americas from Patagonia north to Canada. He will also update us on his field work including progress on producing a paleo related video that may feature collections and paleo projects in the St. Louis area.

Please join us for what promises to be a great program.

TUCSON 2016

After taking a year off, I visited the Tucson Show in late January. My travelling companion was world-renown trilobite expert, Doug DeRosear, who promised to teach me the intricacies of bartering with Morrocan dealers. I learned a lot! It was fun to watch the master bring down the price of a $150 trilobite to less than $30. The best tactic I learned was talking a price down to a reasonable amount, then saying 'no' and walking away. Often, the dealer would run (literally) after me with an even lower price. I bought a number of great specimens using this method. Not fair you say? The fact is they expect to bargain and all deploy the same selling strategy. They don't price anything, then, try to size you up to see how much you might spend. You have to ask the price of everything. With starting prices so high, I often wondered how they sold anything at all.

Doug also taught me how to spot repairs and fakes quickly and I learned to be very picky about quality because all the dealers had the same merchandise.

All in all, it was a great trip, even though I came home with an upper respiratory infection called the Tucson Crud. R.P.

Fossil of the Month

The March fossil of the month is the left-handed gastropod, *Lecanspira perplana* (Heller, 1954) from the Lower Ordovician Roubidoux formation near Berryman, Missouri. Macrofossils are rare in this formation, but casts and molds of gastropods, mainly Lecanospira, can be locally common. The Roubidoux formation in southeastern Missouri is composed of sandstone, chert and interbedded cherty dolomite and is host to barite deposits along the northwest flank of the Ozark Uplift.

MARCH FIELD TRIP

For those of you who suffer from cabin fever, take heart! A field trip has been scheduled for Saturday March 12 to Bruce's K/P boundary site at Ardeola, Missouri. This trip is for EMSP members only. **Meet at the I-55/Hwy M (exit 185, Barnhart) commuter lot at 9:00 am CST** to sign a trip release form and get organized. We will travel (carpool?) in a caravan to the site.

The focus of this trip will be to collect marine fossils from the Upper Cretaceous Owl Creek formation. Work will involve digging with pickaxe and shovel into the clay, removing chunks of matrix and searching the chunks for fossils. You may keep most of what you find, but rare or scientifically important fossils will go to Bruce.

Bring digging tools, buckets, newspaper for wrapping specimens, water, snacks and lunch. Dress for the weather.

Rick's Ramblings

MAPS Expo is just a few weeks away. For those new to our club, MAPS is the Mid America Paleontology Society, a fossil-only club with a world-wide membership. Each spring they host what is probably the largest fossil-only show and sale in the world, right here in the Midwest. This year, the show theme is the Mesozoic and educational talks on a variety of theme topics will occur daily. There are thousands of fossils for sale, plus both a silent auction and a live auction.

This year the keynote address will be given by Phil Currie, a world-renown Canadian paleontologist and museum curator who helped form the Royal Tyrell Museum of Paleontology in Drumheller, Alberta and is now a professor at the University of Alberta in Edmonton. In the 1980s he became the director of the Canada-China Dinosaur Project, the first cooperative palaeontological partnering between China and the West since the Central Asiatic Expeditions in the 1920s, and helped describe some of the first feathered dinosaurs. He is one of the primary editors of the influential *Encyclopedia of Dinosaurs,* and his areas of expertise include theropods(especially Tyrannosauridae), the origin of the birds, and dinosaurian migration patterns and herding behavior. He was one of the models for palaeontologist Alan Grant in the film *Jurassic Park*.

A number of EMSP members attend MAPS Expo every year. I highly recommend it! For those who might like to attend, an information card and map are included in this newsletter. A reminder to those who go up a day or two early, the hotel show (like a mini-Tucson) begins on Wednesday and has been moved from the Travelodge to the Clarion on the north side of I-80, exit 246.

On a different note, **PALEOTREK** will be held from July 1-28 this year. Carl Campbell asks that those who are planning to attend contact him with the dates they will be in Jordan. See Carl for more info.

Calendar

Mar. 11-13	Assoc. of Earth Science Clubs Show KCI Expo Center Kansas City, Missouri
Mar.25-27	St. Louis Rock Hobby Club Show Machinist Hall Bridgeton, Missouri
Apr. 1-3	MAPS EXPO Sharpless Auction Facility Iowa City, Iowa
Apr. 9-10	S. Illinois Earth Science Show City Pavilion Marion, Illinois
May 28-29	40th Annual Mineral & Fossil Show DuPage County Fairgrounds Wheaton, Illinois
June 10-12	Missouri Mines Rock Swap MO. Mines State Historic Site Park Hills, Missouri
June 24-26	Bedford Indiana Rick Swap Lawrence County Fairgrounds South of Bedford, Indiana
July 1-28	Paleotrek Garfield County, Montana
August 7	Club picnic at Kirkwood Park

THANK YOU!

A big **Thank You** goes out to Dr. David Schmidt from Westminster College at Fulton, Missouri for presenting an interesting and informative talk on his ongoing field work with Oligocene and Eocene fossils in the Toad Stool Park area of northwestern Nebraska. A full house enjoyed his presentation and the very cool fossils he brought with him.

Smithsonian Scientists Discover Butterfly-like Insect in the Deep Mesozoic

Study Reveals Rare Example of Convergent Evolution, Plant–Insect Coevolution and Evidence of an Increasingly Complex Web of Life from 165 to 125 Million Years Ago. Smithsonian News release, February 3, 2016.

Large butterfly-like insects known as Kalligrammatid lacewings, which fluttered through Eurasian fern- and cycad-filled woodland during the Mesozoic Era, have been extinct for more than 120 million years. But with new fossil analyses, scientists at the Smithsonian's National Museum of Natural History have discovered that these ancient lacewings were surprisingly similar to modern butterflies, which did not appear on Earth for another 50 million years.

Through taxonomic, anatomical and geochemical studies, scientists led by Smithsonian paleoecologist Conrad Labandeira revealed that Kalligrammatid lacewings likely served as important pollinators during mid-Mesozoic times, using mouthparts that were strikingly similar to the elongated, tubular structures that modern butterflies have to sip nectar-like fluids from flowering plants. What's more, their wings bore eyespot patterns that closely resemble those found on some butterflies today, which may have helped to distract or deter potential predators.

Labandeira and his colleagues—an international team of geochemists, botanists, entomologists and paleobiologists—reported their findings Feb. 3, in the journal *Proceedings of the Royal Society B*. Their findings represent a striking example of convergent evolution between these two unrelated lineages, in which the two distinct groups of organisms evolve similar traits as they interact to similar features in their environments.

Paleobiologists have known for more than 100 years that Kalligrammatid lacewings lived in Eurasia during the Mesozoic. But the insects have remained largely enigmatic until recent discoveries of well-preserved fossils from two sites in northeastern China. Thanks to extensive lakes that limited oxygen exposure in these areas during mid-Jurassic

A photo of the modern owl butterfly (*Caligo Memnon*) shown below a fossilized Kalligrammatid lacewing (*Oregramma illecebrosa*) shows some of the convergent features independently evolved by the two distantly-related insects, including wing eyespots and wing scales.**Credit: James Di Loreto / Smithsonian News Release**

through lower Cretaceous, paleontologists have been able to recover exquisitely preserved fossils that retain much of their original structure.

Labandeira, who is the museum's curator of fossil arthropods, began the analysis of Kalligrammatid fossils from these sites by producing precise drawings of specimens using a camera lucida. This projection device lets artists trace fine features, such as the head and mouthparts of insects, while viewing them under a microscope. Labandeira's drawings depicted insects with surprisingly long, tubular proboscises. "Various features of the mouthparts all indicate that these things were sucking fluids from the reproductive structures of gymnosperm plants," Labandeira said. That idea was supported by an analysis of a bit of material lingering within the food tube of one fossil, which was found to contain only carbon. Had the insect been feeding on blood, its final meal would have left traces of iron in the food tube as well.

Although the lacewings' mouthparts were strikingly similar to those of modern butterflies, there were no nectar-producing flowers in these Mesozoic forests. Paleobotanist David Dilcher of Indiana University, a member of the research team, said that like many Mesozoic insects, Kalligrammatids would have fed on sugary pollen drops produced by seed plants, transferring pollen between male and female plant parts as they did so. A now-extinct group of plants called bennettitaleans, whose deep, tubular reproductive structures may have been accessed by kalligrammatid proboscises, likely was the primary food source for the co-occurring lacewings. But variations in proboscis shapes among the fossils suggest the insects were associated with a wide variety of host plants. Careful observation of the fossils also revealed the presence of scales on wings and mouthparts, which, like the scales on modern butterflies, likely contained pigments that gave the insects vibrant colors. Based on similarities between Kalligrammatid wing patterns and those found on modern nymphalid butterflies (a group that includes red admirals and painted ladies), Labandeira said Kalligrammatids might have been decorated with red or orange hues.

That discovery prompted the team to examine the chemical composition of various regions of the Kalligrammatid's patterned wings, particularly the wing eyespots, an eye-like marking that might have deterred potential predators in Mesozoic woodlands. In modern butterflies with eyespots, the dark center of the mark is formed by a concentration of the pigment melanin. A sensitive chemical analysis indicated that Kalligrammatids, too, had melanin at the center of their eyespots. "That, in turn, suggests that the two groups of insects share a genetic program for eyespot production," Labandeira said. "The last common ancestor of these insects lived about 320 million years ago, deep in the Paleozoic. So we think this must be a developmental mechanism that goes all the way back to the origins of winged insects."

Taken together, the team's findings highlight two ways in which relationships between plant-hosts and their pollinator species drove evolution, Dilcher said. "Here, we've got coevolution of plants with these animals due to their feeding behavior, and we've got coevolution of the lacewings and their predators. It's building a web of life that is more and more complex."

Speakers: Phil Currie & Eva Koppelhus

National Fossil Exposition XXXVIII

Sponsored by

Mid America Paleontology Society (MAPS)

http://www.midamericapaleo.org

April 1-3, 2016

Sharpless Auctions Facility
5049 Herbert Hoover Hwy NE, I-80 Exit 249
Iowa City, IA

April 1-3, 2016
Fri. 8:00-5:00, Sat. 8:00-5:00
Sun. 8:00-3:00

BUY, SELL, SWAP & DISPLAY OF FOSSILS EXCLUSIVELY

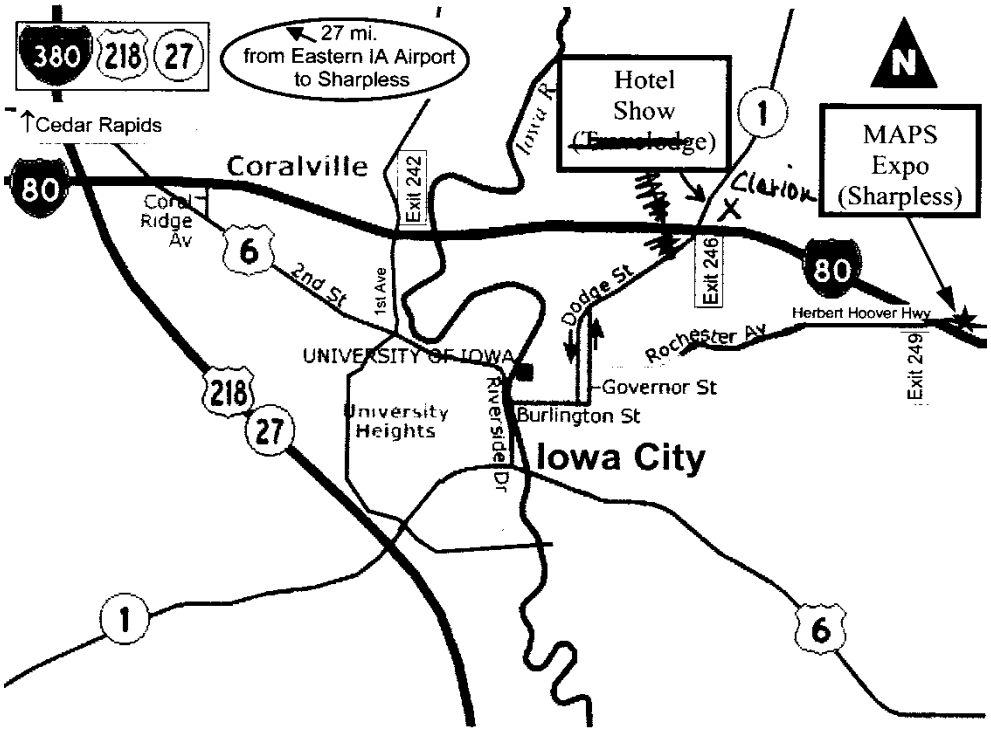
For full information and registration forms, check the website or contact:

TOM WILLIAMS (Tables)
2122 14th St
Peru, IL 61354
815-223-9638; c: 815-228-5083
Paleotom234@comcast.net

JOHN CATALANI
Fossilnautiloid@aol.com

Info will be mailed and available online by mid-January. Membership in MAPS is not required, except for table rental.

FREE ADMISSION to the World's Largest Fossil Exhibition!
Donations Welcome!



The Eastern Missouri Society for Paleontology (EMSP) is a Missouri registered 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 ancient 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 sites 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 proud to be involved in partnerships with the St. Louis Science Center and the Greater St. Louis Association of Earth Science Clubs, Inc.

Eastern Missouri Society for Paleontology (EMSP)
P.O. Box 220273
St. Louis, MO. 63122

FIRST CLASS MAIL