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FOSSIL Project Updates

by Eleanor Gardner & Bruce MacFadden

Updates

On May 7, FOSSIL sent six women from UF/FLMNH (Dr. Cristina Robins, Sarah Allen, Eleanor Gardner, Dawn Mitchell, Rachel Narducci, and Lisa Lundgren) to participate in the third annual Women in Paleontology Day at the Orlando Science Center, hosted by the Florida Fossil Hunters club. All of the talks were well-received and over 500 school-age children explored the fascinating world of paleontology. A big thank you goes out to Cindy Lockner for spearheading the successful event. To see pictures from WiP Day, please view our [album on Facebook](#).



Cindy Lockner explaining how a T. rex skull cast is put together at the Women in Paleontology event 2016

About three weeks later, we received notification that the paleontology outreach & education grant proposal jointly written by Eleanor Gardner of FOSSIL and Cindy Lockner, Bonnie Cronin, and Russell Brown of the Florida Fossil Hunters was funded by the Paleontological Society. This grant will improve the reach of the next Women in Paleontology Day by (1) securing either in-person or virtual-based talks from a more racially diverse population of female paleontologists; (2) adding Girl Scout badge-earning activities as part of the event; and (3) facilitating girls' participation in the National Park Service's "Junior Paleontologist Program." Funding from the Paleontological Society will be used to help underprivileged girls attend the program.



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FOSSIL team members continue to give talks to local fossil clubs. On May 7th Ronny Leder gave a talk entitled “New Techniques for the Classification of Shark Teeth (and the benefits of big database research and digitization of fossils)” at the Tampa Bay Fossil Club, and on May 14th Victor Perez spoke to the Southwest Florida Fossil Society about his research on fossil sharks and rays of Panama. Victor also received the society’s Mitchell Hope scholarship. FOSSIL is always happy to help facilitate talks at club meetings – contact us at fossil@flmnh.ufl.edu!

On Friday May 27th and Saturday, May 28th, Bruce MacFadden, FOSSIL Project Director, represented FOSSIL at the Aurora Fossil Festival in North Carolina. He first joined many members of fossil clubs in the pre-meeting trip to Belgrade fossil quarry, which has yielded many interesting Cenozoic fossils and continues to be a focal point before the festival. On Saturday, Bruce staffed the FOSSIL display table next to the Smithsonian’s table and helped to identify fossils as well as help with turtle shell anatomy to participants.



Bruce MacFadden at the Aurora Fossil Festival

Each year, the FOSSIL Project sponsors a meeting to bring together folks involved in this project and highlight a fossil club or society. This year, the FOSSIL/Dry Dredgers Cincinnati Mini Conference on Paleontology, held June 2-5, was a huge success. Over 80 attendees from across the country participated in the mini conference, with representatives from 12 different fossil clubs, professors and students from 12 different colleges/universities, teachers from 7 different K-12 schools, and professionals from several local museums and government offices. The day-long field trips on Friday and Sunday were outstanding, as were the keynote talk on Friday night by Tony Martin on trace fossils and the mini conference events on Saturday. The townhall discussion on Saturday evening, with Arnie Miller and Steve Holland of the Paleontological Society, generated lots of great ideas about enhanced professional and amateur engagement. To read a more detailed summary of the Cincinnati Mini Conference, please see the Special Bulletin from the Dry Dredgers appended to the end of this newsletter. To see photos from Cincinnati, please see our [gallery](#) at community.myfossil.org.



Left: Exploring a Cincinnati outcrop for Paleozoic Fossils; Center: Tony Martin’s Keynote Talk; Right: Attendees participating in the ‘Biostratinomy and Taphonomy’ breakout session

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Days after the FOSSIL team returned from Cincinnati, on June 7th and 8th, FOSSIL team members Bruce MacFadden, Victor Perez, and Lisa Lundgren, plus UF graduate student Sean Moran, led a professional development workshop on using fossils in the classroom. Sixty elementary school teachers from Palm Beach County, Florida, were provided with kits of local fossils to take back with them. Bruce MacFadden (FOSSIL Project director) is putting together similar fossil kits for K-12 teachers in Santa Cruz, California, and he needs redwood leaf fossils – if you can help by donating samples, please contact Bruce at bmacfadd@flmnh.ufl.edu. Related to the search for fossils for K-12 kits, on June 23rd, Bruce received a donation of eight redwood leaf fossils (but he still needs more!) from Aaron Currier, president of the North America Research Group in Oregon, during a STEM teacher workshop and fossil dig in Gainesville, Florida, sponsored by our sister project [PCP-PIRE/GABI-RET](#). Several other fossil clubs were represented at this workshop, including the Western Interior Paleontological Society, the Dallas Paleontological Society, and the Fossil Club of Lee County.



Aaron Currier donating fossil redwood leaves to Bruce MacFadden Photo © Jeff Gage

On Friday June 17th, Bruce MacFadden visited the Smithsonian fossil vertebrate collections. There he worked with Fred Grady, retired paleontologist from the U. S. National Museum, on fossils from Belgrade, North Carolina. Each year new taxa are added by discoveries and donations and we are approaching a point where a distinct fauna of early Miocene land mammals is coming together. The Belgrade collection now has diagnostic land mammals, including the pig-like entelodont (big tooth in upper left of photo), which indicates an Arikareean land mammal age, about 20 million years old. Arikareean-age mammals take their name from the Arikaree Group sediments and fossils from western Nebraska, and these animals are also known as far north as Canada and as far south as Panama. We would like to publish a paper on the Belgrade fossil mammals, and therefore are interested in learning about additional fossil land mammals that might be in private collections. We are looking for donations (to the Smithsonian) or loans of these materials for scientific research to describe the fauna from this interesting locality.



Fossils from Belgrade, North Carolina

Recent FOSSIL publications

MacFadden, B. J., Lundgren, L.M., Dunckel, B.A., Ellis, S., and Crippen., K. 2016. Amateur paleontological societies and fossil clubs, interactions with professional paleontologists, and the rise of 21st century social paleontology in the United States. [Palaeontologia Electronica](#), 19.2.1E. (Open access)

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Crippen, K.J., Ellis, S., Dunckel, B.A., Hendy, A.J.W., and MacFadden, B. J. 2016. Seeking shared practice: A juxtaposition of the attributes and activities of organized fossil groups with those of professional paleontology. *Journal of Science Education and Technology*, 10.1007/s10956-016-9627-3.

Upcoming Events

August 31, online – The first FOSSIL webinar will take place in the evening on Wednesday, August 31, and our speaker will be [The Fossil Guy](#), Jayson Kowinsky. Webinars are online videoconferences typically presenting a topic by a leader, and with real-time participation from participants. There will be no charge to attend the webinars and you can pick and choose which ones you want to attend. We are still finalizing the details for the first few webinars; we'll keep everyone updated via social media and community.myfossil.org. A schedule will be distributed after all of the Fall webinar dates are determined. Questions? Contact fossil@flmnh.ufl.edu.

September 23, 1-5pm, Denver, CO - FOSSIL-sponsored short course held prior to the Geological Society of America Annual Meeting taking place Sept 25-28.

The FOSSIL Project plans to offer a half-day short course called “Facilitating effective STEM learning and public engagement in paleontology” prior to national GSA 2016. This short course is intended for professionals (including graduate students), amateurs, and K-12 teachers. We will explore best practices for engaging both formal and informal STEM learners with paleontological data. Topics to be covered include: (1) contributing to and benefiting from digitization efforts of fossil collections; (2) incorporating fossils into the design of curricula that satisfy the Next Generation Science Standards; (3) fostering engagement and learning by amateurs; and (4) using social media to mobilize the community. Laptops are required and digital cameras are recommended. Find out more and register before August 22 at <http://community.geosociety.org/gsa2016/science-careers/courses>

Scholarship opportunity! Ten (10) fossil club members will receive reimbursement funding to attend both the short course *and* the four-day GSA meeting. Please contact fossil@flmnh.ufl.edu for more details. And don't forget, if you want to present research at GSA this year, the abstract deadline is July 12.

March 19-21, 2017, Pittsburgh, PA – Theme session at joint Northeast / North-Central Geological Society of America regional meeting.

We have submitted a proposal for a theme session (both oral and poster) to the organizers of the 2017 NE/NC GSA regional meeting taking place in Pittsburgh next March. Hopefully our proposal will be accepted and then we can begin planning a great session featuring both amateurs and professionals in paleontology.

TBA – We are still planning a fossil preparation PaleoBlitz for later this year. Ronny Leder, the FOSSIL Project's preparation guru, just welcomed a new baby boy on June 18th so plans for the PaleoBlitz are understandably slow-going at the moment!

FOSSIL Evaluation

Evaluation is fundamental to understanding the progress and success of projects such as FOSSIL to know if we are meeting our goals and objectives. Throughout the months of April - June, the FOSSIL team worked closely with our project's external evaluator, Kate Haley Goldman, to craft a “summative” survey. This survey will help us to achieve a better understanding of fossil clubs, and getting feedback from club members is a key aspect of the FOSSIL Project having funding. The National Science Foundation wants to know more about how to better support the community, and we are required to get community feedback and evaluations as part of the funding. Thus, the survey is an important part of being able to support future FOSSIL meetings, the myFOSSIL website, and much more. If you receive a survey email (it would come from), please fill it out – it would be of enormous help to us and would show support for the contributions of amateurs. If you have any questions about the summative survey, please contact the project coordinator, Eleanor Gardner, at fossil@flmnh.ufl.edu or our evaluator at Kate@HaleyGoldman.com.

ANNOUNCEMENTS

Newsletter Seeking Submissions

The FOSSIL Project is seeking newsletter articles of all types from the community, but especially those for our “**Club Corner**” section.

Did you know there are around 60 organized groups of fossil collectors and hobbyists across the U.S.? These groups range from loosely organized social organizations to legally recognized 501(c)3 corporations. The FOSSIL Project seeks to highlight one of these clubs or societies in each issue of its newsletter and is soliciting articles written by group members to be included in upcoming issues. Our goal is to increase the visibility of these organizations among the paleontological community and beyond.

The FOSSIL Newsletter is a great way for your organization to publicize its contributions to your local communities and to science! Sharing news about your field trips and other successful programs might inspire other clubs to try the same. By virtue of being in the newsletter, your organization becomes easier to find by potential new members-- including youth and their families who may not be familiar with the long-standing amateur tradition in paleontology-- or travellers visiting your area.

The articles on clubs and societies published so far have been fascinating! We have learned that:

- at least one organization has been in existence since the 1940s
- many have scholarship funds for students
- others collect fossils to donate to schools and other organizations that provide programs for children
- some hold special programs for children
- some have close relationships with museums or universities while others are independent organizations and still others actually operate their own centers and sites
- many sponsor collecting field trips
- some club members have new taxa named after them
- some groups have close ties with other clubs
- they often assist local museums and institutions with fossil excavations
- some have their own “identification” squads
- some started at universities and some in people’s backyards

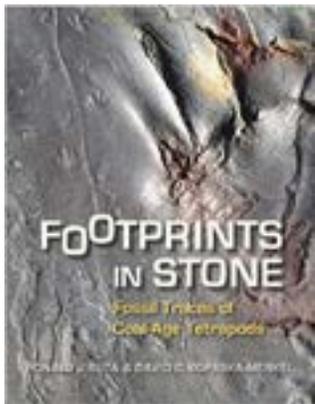
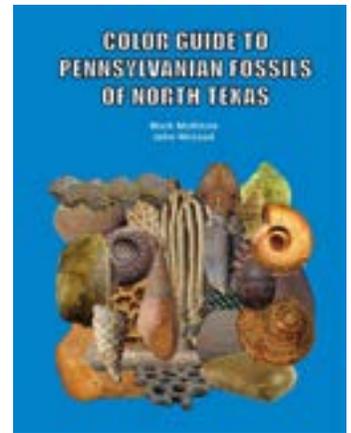
No club or organization is too small or casual to be included in the newsletter! Don’t like to write? No problem--we have excellent editors on our team who can help you polish your article! All we need is your story and a few images of your group in action. If you are interested in providing an article about your organization, please contact Eleanor Gardner, Project Coordinator, at fossil@flmnh.ufl.edu.

And, while we are on the topic, we are also always looking for suggestions from the community about cool fossils or fossil mysteries, successful education and outreach programs, exhibitions, festivals and other events, and individuals to highlight in both the professional and amateur categories. The first amateur we wrote about--[Zack Deyo](#)--was nominated by his club president so don’t be shy!

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New Books by Fossil Club Members

[Dallas Paleontological Society](#) members [Mark McKinzie](#) and John McLeod's book *Color Guide to Pennsylvanian Fossils of North Texas* is now available on amazon.com. The book identifies Pennsylvanian-age plant, invertebrate, vertebrate, and trace fossils of north Texas. There are over 200 high resolution color illustrations with complete descriptions and collecting localities. Some of the specimens are reported and illustrated for the first time.



[Alabama Paleontological Society](#) members Ron Buta and David Kopaska-Merkel recently published *Footprints in Stone: Fossil Traces of Coal-Age Tetrapods* (forward by Dana Ehret). The authors recount the accidental discovery of the Steven C. Minkin Paleozoic Footprint Site (Union Chapel Mine) by a high school science teacher. More than 300 million years ago, the site was a swampy tropical forest next to a tidal flat. Today, the site's coal beds house the fossilized footprints of our planet's earliest reptiles as well as amphibians, fish, horseshoe crabs, spiders, jumping insects, among other organisms. The study of fossil trackways is a burgeoning area in modern paleontology, and the Minkin site is the first and largest in the eastern U.S. This volume is also available on amazon.com.

UK Museum Adding Wing to Honor First Female Paleontologist Mary Anning

by Eleanor Gardner and Shari Ellis

The Lyme Regis Philpot Museum in the UK is adding a new extension to their institution to be known as The Mary Anning Wing. The honor is fitting as the first female paleontologist lived her entire life in Lyme Regis, a town along Britain's "Jurassic Coast." Born in 1799, Mary Anning began collecting fossils as a young girl with her working-class family as a means to gain extra income. After the death of her father, Mary used her self-taught fossil preparation techniques (even creating her own preparation tools!) to prepare fossils and sell them in order to continue supporting her family. This is where the tongue twister "She sells seashells at the seashore" came from. About a year after her father's death, she and her brother discovered the first ichthyosaur known to the scientific community in London. Eventually, word spread about Mary's beautifully prepared fossils and her specimens became highly sought-after by museums and scientists across Europe. Her most scientifically important find was the discovery of the first nearly complete plesiosaur skeleton. She also found the first pterosaur fossil outside of Germany. Additionally, Mary was an expert in identifying trace fossils such as footprints, and was among the first to correctly identify coprolites, originally called 'bezoar stones,' as fossilized feces.

Although she communicated regularly with some of the most prominent scientists of the time, Anning rarely received full credit for her contributions. All of her discoveries were published by men because women were not allowed to write scientific articles; nor could she join any scientific organizations of the day. Sadly, after her death, she was largely forgotten. In 2010, the Royal Society of London voted her one of the 10 women in British history who made the greatest influence in science. She was also the inspiration for the best-selling novel *Remarkable Creatures*.

To help fund the Mary Anning Wing, please visit <http://www.lymeregismuseum.co.uk/about-us/mary-anning-wing/>

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To learn more about Mary Anning:

Listen to a podcast about Mary Anning at missedinhistory.com

Read about Mary Anning on the American Museum of Natural History [website](#) or at [UCMP](#) or [macroevolution.net](#)

See the “Jurassic Cliffs” in this short video about Mary Anning at smithsonian.com

Books inspired by the story of Mary Anning:

Chevalier, Tracy. (2010). Remarkable Creatures. Penguin Books. (Historical fiction)

Emling, Shelley. (2011). The Fossil Hunter: Dinosaurs, Evolution, and the Woman Whose Discoveries Changed the World. St. Martin’s Griffin.

Anholt, Lawrence. (2006). Stone Girl Bone Girl: The Story of Mary Anning. Frances Lincoln Children’s Books. (for Grades 1 – 4).

To learn more about the fossils of the Jurassic Coast: Visit the [Jurassic Coast World Heritage website](#)

UPCOMING EVENTS AND OPPORTUNITIES

July 9, Waco, Texas

[Waco Mammoth National Monument’s First Birthday](#)

July 29 - 31, Albany, Oregon

[“Treasures of the Northwest” 2016 NFMS/AFMS Show](#)

August 13 - 14, Clarksville, Indiana

[‘Life in the Ordovician: A Fossil Symposium’ at Falls of the Ohio State Park](#)

August 13, Hillsboro, Oregon

[2016 Northwest Fossil Fest](#)

August 26 - 28, Cape Breton, Nova Scotia

[Canadian Paleontological Conference 2016](#)

September 10, Orlando Florida

[Fossil Fest at the Orlando Science Center](#)

September 23, Denver, Colorado

[FOSSIL-Sponsored Short Course at GSA 2016: Facilitating effective STEM learning and public engagement in paleontology](#)

September 25 - 28, Denver, Colorado

[Geological Society of America national meeting](#)

September 24, Ellerbe, North Carolina

[Rankin Museum Fossil Fair](#)

Visit <http://community.myfossil.org/events/> for more events or to add your own to the calendar!

FEATURED PROFESSIONAL: ROBERT BOESSENECKER

Editor's Note: Our featured professional this issue is Robert (Bobby) Boessenecker, a paleontologist at the College of Charleston in Charleston, South Carolina.

by Robert Boessenecker

In my experience, budding paleontologists essentially come from two backgrounds: college students who discovered paleontology in college or children who have wanted to be paleontologists since they were three years old. I'm in the latter category - and I'm not passing judgement on either background: some of my best friends and sharpest minds in the field strayed into paleontology seemingly by accident. Growing up with the desire to study fossils for a living, it was inevitable that I started collecting them as an amateur before I made it into college. However, as most young dinosaur aficionados in coastal California learn by the age of ten, there aren't really many opportunities for finding dinosaur fossils close by. So it wasn't until I matured a little bit during my high school years and asked myself "Okay, there are other fossils besides dinosaurs. So what do we have?" and I quickly found the answer: "Shark teeth, ice age mammals, and marine mammals - that could be pretty cool." During my sophomore year of high school, my dad started humoring me by taking me to various local fossil sites in Santa Cruz, California, and the "East Bay" (Oakland, California), and one great trip down to the famed Sharktooth Hill near Bakersfield, California - the holy grail of west coast fossil sites. Senior year of high school rolled around and I got out early one day a week, so I kept a field bag full of tools permanently in my car and I'd leave directly from high school and go exploring.



Bobby on an outcrop of Pleistocene marine rocks in coastal Oregon



Excavating Paleocene sea turtle and penguin bones with a Pionjar rock drill in New Zealand

In Fall 2003 I started as a freshmen at Montana State University, and within a few months, my undergraduate adviser Dave Varricchio encouraged me - despite my grades - to think about a field-based research project. I had a few suggestions, but the answer didn't hit me in the face until I got a phone call from my uncle while I was on vacation up at Lake Tahoe, who had heard from a surfer friend about a skeleton in a cliff out on the coast. I left the annual Tahoe vacation early, called the surfer, and got directions to the site; with my friend Tim Palladino, we drove out and began exploring. We spotted great white shark teeth and several bonebeds full of bones sticking out of the cliffs which represented a newly-discovered vertebrate fossil locality unknown to amateurs and professional paleontologists alike. I was sure, based on the location, that it was the Purisima Formation - a late Miocene-Pliocene aged marine sandstone unit that is exposed further south in Santa Cruz county and further north near Half Moon Bay. Upon returning to MSU in Fall 2004, Dave and I sat down and began crafting a permit application and got in touch with California State Parks and an undergraduate scholarship program at MSU. I received a small grant and my first paleontological collections permit at the age of 19 - and much of this early research background was responsible for getting me into graduate school at MSU, and eventually a doctoral program in New Zealand.

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in parallel, a separate Purisima Formation locality frequented by amateurs, known as Capitola in Santa Cruz County, was in danger of being covered up by a seawall. Being a bit bored of non-geology classes like freshmen level English and Chemistry, I participated in a letter-writing campaign against the seawall proposal and put together the “Help Save Capitola” petition to raise awareness of the loss of the fossil site. The seawall proponents actually said that the seawall would protect the fossils! I was flabbergasted. Fortunately, the Sierra Club and Surfriders distributed the petition, and it was read aloud at the City Council meeting that would ultimately block the seawall - and all future seawalls within city limits. Admittedly, I had selfish reasons for doing so - it was my favorite fossil locality - but the campaign’s success had the added side effect of enabling amateur paleontologists to continue visiting the cliffs in search of beautiful Pliocene mollusks. Five years later, the Capitola cliffs became one of my key localities for my master’s thesis on the preservation of fossil vertebrates in marine shelf deposits, using the Purisima Formation as a model. After my master’s program, I continued on to do doctoral research at the University of Otago in New Zealand with Ewan Fordyce, studying Oligocene baleen whales, and have since graduated and gotten a job at the College of Charleston in South Carolina teaching introductory geology and studying Oligocene whales and dolphins.



Amateur paleontologist Chris Pirrone and Bobby with a small Pliocene baleen whale skull in a plaster jacket, Santa Cruz, CA

I didn’t do much of this alone. In my early years I learned most of what I knew from other amateur paleontologists. The very spirit of my field studies have rarely approached the archetypal dinosaur dig on TV: an army of volunteers and graduate students toiling over a white plaster monolith under the blistering Montana sun. Rather, just like my undergraduate fieldwork, I’m often with a small crew (typically consisting of my wife Sarah, a fellow paleontologist who loves the coast and has a keen eye for tiny fossils), tramping through the fog up and down isolated driftwood-strewn beaches in search of bones. If I need help collecting something big, my extra field hands are more often than not friends of mine who are amateur paleontologists. Two of my favorite amateur collaborators are Chris Pirrone, an attorney in Redwood City, California (who has helped me collect several important whale and dolphin skulls and skeletons, and several of his own), and undergraduate student Forrest Sheperd (who found a complete Pliocene walrus skull in Santa Cruz at age 13, which he donated to UC Berkeley).

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As my studies and employment have migrated further and further away from my favorite fossil localities in California, I've maintained positive relationships with local amateurs like Chris and Forrest, who continue to find spectacular treasures - and generously offer them to science. I hadn't seen either Chris or Forrest in a couple of years during my Ph.D. down under, so one of the first things I did upon returning was to schedule some joint collecting trips last summer. There are far more amateur paleontologists than there ever will be professionals, and they get far more opportunities than we do to make it into the field (and for that, we are jealous!). Cultivating strong, positive relationships with amateur collectors should be a priority for all paleontologists who care about growing fossil collections in museums. As I write this, my mind wanders to my next task: writing labels and planning out a new display for our museum at the College of Charleston showcasing and celebrating local fossil discoveries donated by amateurs to our museum. With the possible exception of grant agencies, amateur paleontologists are our greatest allies.

To learn more:

Read about Bobby (in his student days) and fossil hunting at Capitola in this [2005 article](#)

View some Capitola fossil finds on the [Fossil Forum](#)

Boessenecker RW, Churchill M (2013) [A Reevaluation of the Morphology, Paleoecology, and Phylogenetic Relationships of the Enigmatic Walrus *Pelagiarctos*](#). PLoS ONE 8(1): e54311. doi:10.1371/journal.pone.0054311

Boessenecker RW, Perry FA, Schmitt JG (2014) [Comparative Taphonomy, Taphofacies, and Bonebeds of the Mio-Pliocene Purisima Formation, Central California: Strong Physical Control on Marine Vertebrate Preservation in Shallow Marine Settings](#). PLoS ONE 9(3): e91419. doi:10.1371/journal.pone.0091419

Boessenecker, R. W., Fordyce, R. E. (2015) [A new Eomysticetid \(Mammalia: Cetacea\) from the Late Oligocene of New Zealand and a re-evaluation of '*Mauicetus*' waitakiensis](#). Papers in Palaeontology, 1: 107–140. doi: 10.1002/spp2.1005

You can also follow Bobby on Twitter [@CoastalPaleo](#) and read his blog at <http://coastalpaleo.blogspot.com/>

AMATEUR SPOTLIGHT: WILLIAM P. HEIMBROCK

Editor's Note: This issue we highlight William Heimbrock, a board member of the Dry Dredgers organization based in Cincinnati.

Tell us a little bit about yourself.

First of all, I'd like to say I'm very grateful and honored to be selected for this Amateur Spotlight. There are so many more interesting, noteworthy amateurs in the Dry Dredgers. I also want to thank Dr. Ben Dattilo, among others, for championing amateur paleontology in our area and for allowing me to be a co-author in our recent paper in *Palaios*.

How did you first discover your passion for fossil collecting?

I didn't take a sincere interest in studying paleontology until my 30's, despite the fact that I've lived my whole life in the Cincinnati area. Professionally, I'm a mainframe computer systems analyst. Science and technology have always my passion and hobby.

In the late 1980's I was taking 3-D hyper-stereo photographs of the hills of Cincinnati using two 35mm cameras in tandem. This lets you see landscapes in true 3D. While viewing my stereo slides, I noticed that some hills were gently sloping while others were steep, as if an ancient river had carved the hills. I had to find out why. I became interested in glaciology and geology.

So my quest took me to a nearby creek bed to look for clues. I had hoped to find evidence of ancient glaciers and Native American artifacts. Instead, I found marine invertebrate fossils. Fascinating! I also found a large bone and a large tooth. I took my suspected Pleistocene bison femur and tooth to the Cincinnati Museum of Natural History where vertebrate curator Dr. Greg McDonald opened a big drawer filled with Pleistocene bison femurs and pulled one out to compare to my cow bone. I learned how to tell the difference! Greg recommended I join the Dry Dredgers. That was great advice.

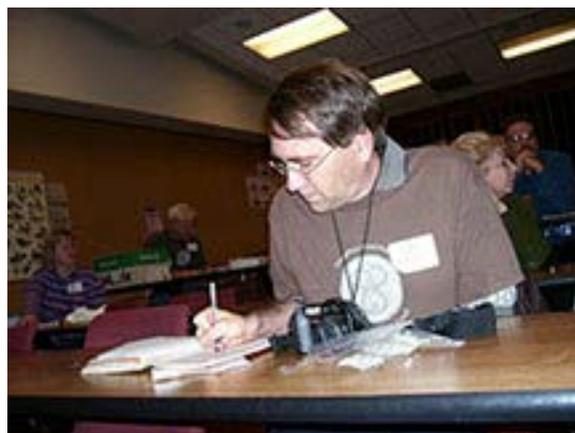
When did you begin working with the Cincinnati Dry Dredgers? How many projects have you done in collaboration with the Dry Dredgers and affiliated professional paleontologists, such as Dr. Benjamin Dattilo and Dr. Rebecca Freeman?

I joined the Dry Dredgers in 1991. As a board member, I have a number of committee positions that have led me into long term projects with the group. Most are tied to outreach efforts. I've been the designer and webmaster of drydredgers.org since 1998, taking it over from Greg Hand. I now do the website for our annual Geofair (Geofair.com).

I have been chair of the Dry Dredgers fossil kit committee since 1992. These kits of 12 "genuine fossils from the hills of Cincinnati" are sold in museum and park gift shops around the area. We also sell and donate kits and loose fossils to local schools and universities. I encourage our membership to donate their extra fossils to this outreach effort. All fossils are screened for scientifically important specimens and determination is made if they should go to museum collections, a researcher with specific needs or as teaching kits. Supply does not always keep up with demand.



Bill Heimbrock at Geier Collections and Research Center



Bill taking notes at a Dry Dredgers meeting



Fossil Kits Produced by the Dry Dredgers

I have been involved in paleo research projects with the Dry Dredgers since 1991. Award winning amateur paleontologist Steve Felton has been my greatest mentor the entire time. I remember Steve engaging us in those early meetings to look for worm tubes on our fossils for one of his collaborative projects. I began examining every slab and fossil with a hand lens, looking for the positions of worm tubes and other epizoans to give clues to feeding and life positions.

Our Dry Dredgers meetings have always been attended by plenty of professional geologists and paleontologists, all of whom were eager to educate us and engage us in their research. When I found a pavement of brachiopods with a population of Edriasteroids in the year 2000, Drs. Dave Meyer, Carlton Brett, Colin Sumrall and Paula Work along with a crew of amateurs rallied to the dig site to help excavate the pavement and record every detail within the grid. This provided data for their respective projects and was a great education for me. (<http://www.drydredgers.org/fieldtrips/edriodig.htm>)

Our professionals are very aware that this tradition of amateur paleontology in Cincinnati goes back to the 1800's and the current members of the Dry Dredgers are their heirs. (<http://drydredgers.org/avocational01.htm>)

I was soon helping graduate students, such as Brenda Hunda, in the field to complete their theses. Many of the Dry Dredgers shared their trilobite locations and knowledge with Brenda. We are happy to say Brenda is now the [invertebrate curator at the Cincinnati Museum of Natural History and Science](#).

I have had three collaborations that have resulted in my being a co-author of a published paper.



Greg Schumacher and Bill Heimbrock

The first publication was with Dr. Greg Schumacher, of the Ohio Geologic Survey. He came out to my favorite trilobite site with Dr. Bob Frey and Dry Dredgers Steve Felton and Debby Scheid.

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I donated about 350 *Flexicalymene* sp. trilobites to aid his search for epizoans. Other Dry Dredgers including Bruce Gibson and Dan Cooper also donated specimens. Greg Schumacher and Marcus Key were very generous to include us all as co-authors and gave us a chance to edit drafts of the paper. This made me feel included as a true co-author.

The second publication was with Dr. Michael Vendrasco of California State University, Fullerton. Michael saw the <http://Xfossils.com> website I started in 2001 to promote collaborations between amateurs and professionals. He was gathering tiny phosphatic molds of mollusks from the Late Ordovician to look for evidence of early nacre (mother-of-pearl) and wanted some samples from the Cincinnati area. After Michael's SEM's of the first sample I mailed him showed possible nacre impressions on snail and clam surfaces, I began an extensive sampling of phosphatic layers in the Cincinnati Series. Over several years I mailed him samples of clay and rock containing phosphatic steinkerns we call "Cyclora Hash" from 24 sites local sites covering several formations. The results have been astounding. Clear evidence of nacre has been found on snails and clams in most locations and formations. Some of this evidence has been now been published and some is yet-unpublished. Our work is still ongoing. I was honored to be a participating co-author.

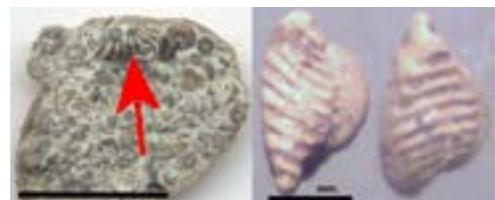
Please tell us about your contributions to the project that resulted in the *Palaeis* paper "Giants among micromorphs: were Cincinnati (Ordovician, Katian) small shell phosphatic fauna dwarfed?". How did this research project develop over the years? Do you have any other collaborative projects in the pipeline?

This is my third co-authorship. This project for me actually began 20 years ago. I have Dr. Ben Dattilo to thank for helping to bring everything together for me and including me in his and Rebecca Freeman's research. I had found clear evidence that hinge dentitions of ordinary sized clams were selectively preserved in phosphatic "Cyclora" layers of the Cincinnati Series. These layers were previously interpreted as micromorph assemblages of dwarfed or stunted forms.

In the mid-1990s, my involvement began when I had found a phosphatic layer in the Arnheim Formation (late Ordovician) of Florence KY that was so totally loaded with tiny phosphatic snail and clam molds, I scooped up some clay and took it home to examine under a microscope. Most of these phosphatic fossils I could easily identify, such as the snails and clams collectively referred to as "Cyclora". But one fossil stumped me as well as other Dry Dredgers. Yet I was finding thousands of this mystery fossil in the phosphatic layers of Kentucky. I thought surely someone would know what this was. I spent the next several years asking amateurs and professionals from around the world for identifications or rule-outs. I received back only rule-outs and ideas of dozens of things this mystery fossil could be. I would have to figure it out for myself by comparing it to known fossil fauna. I learned a great deal about paleontology in those years. Colin Sumrall, Jack Kallmeyer and Roger Cuffey all helped me a great deal, but so did many others.

Several Dry Dredgers and professionals suggested reading the only in depth work on the phosphatic "Cyclora" layers of the Cincinnati. I went to the geology library at Miami University in Oxford to read Anthony J. Martin's master's thesis from 1986 on "A Paleoenvironmental Interpretation of the 'Arnheim' Micromorph Fossil Assemblage from the Cincinnati Series (Upper Ordovician), Southeastern Indiana and Southwestern Ohio." Dr. Martin's thesis helped give me new perspective on these phosphatic layers. He is one of the co-authors on our current paper.

Finally, after an extensive process of elimination, my mystery fossil found a good match. It was the phosphatic mold of the surfaces of bivalve hinge teeth, probably of *Lyrodesma* sp. The actual dentitions were made of aragonite and were completely destroyed over time. The sturdier phosphate molds survived. For more information in this "mystery fossil", see my website <http://xfossils.com/billheim/mystery1.htm>.



Lyrodesma Hinge Dentitions

This is when Dr. Ben Dattilo, with whom I've worked previously on brachiopod fossil sites, came to me for samples

continued from page 13

of my phosphatic fossils and my thoughts on how these layers may have formed. It was clear to both of us that my mystery fossils were from normal sized clams, and not part of a dwarfed community. Ben found lots of other examples of where the phosphates only filled in tiny cavities in full-sized shells. This became the topic for our paper that made the cover feature of the March 2016 issue of *Palaios*.

I plan to continue examining the phosphatic layers of the Cincinnati Series to discover new interpretations and methods previously unavailable to paleontology.

You can follow my paleontological research on <http://researchgate.com>.

Do you have any recommendations or tips for other fossils clubs/societies who are trying to improve their level of collaboration with professionals?

I think the key to building collaborative efforts is the education of members and educational outreach. Teach members how to take good site notes and how to identify the local formations. Every fossil club should have beginner's classes in addition to the feature guest lecturer so that knowledge is accessible to all ages. Perhaps invite paleontologists to speak at your meetings who have a sincere interest in fostering the amateur community.

Always have a show-and-tell time at meetings where collectors bring in the fossils they have found. Make sure local professionals have received your newsletter so they can attend the meetings and see the fossils members have brought in. For us, this has often been the first step in a collaboration.

Engage both members and the local paleontologists by having an annual event like a fossil festival. Educational outreach is a common goal for both parties and this is where we can shine. Make every effort to advance the knowledge of fossils and the professionals will be there with you.

I have a final word. Do you want to be a co-author of a professional paper? Rather than simply depositing your interesting fossils in a museum collection silently, seek out a professional actively doing work on it. Search papers with <http://scholar.google.com> or post your request for researchers on <http://community.myfossil.org>.

Go the extra yard and gather more site notes and analyze implications of your fossil find. You may get more than a mention in the acknowledgements section of the final paper. Being named a co-author often depends on your level of effort. You could even be named as the first author on that paper. You can be a publishing amateur paleontologist!

To learn more:

Key, M.M., Jr., G.A. Schumacher, L.E. Babcock, R.C. Frey, W.P. Heimbrock, S.H. Felton, D.L. Cooper, W.B. Gibson, D.G. Scheid, and S.A. Schumacher. 2010. Paleoecology of commensal epizoans fouling *Flexicalymene* (Trilobita) from the Upper Ordovician, Cincinnati Arch region, USA. *Journal of Paleontology* 84(6): 1121-1134.

Vendrasco, M.J., A. Checa, W.P. Heimbrock, and S.D.J. Baumann. 2013. Nacre in molluscs from the Ordovician of the Midwestern United States. *Geosciences* 3(1): 1-29.

Dattilo, B.F., Freeman, R. L., Peters, W. S., Heimbrock, W. P., Deline, B., Martin, A. J., Kallmeyer, J. W., Reeder, J., & Argast, A. 2016. Giants among micromorphs: Were Cincinnati (Ordovician, Katian) small shelly phosphatic faunas dwarfed? *Palaios*, 31(3): 55-70. v. 31, doi:10.2110/palo.2015.040

RESEARCH: THE MYSTERY OF THE TULLY MONSTER HAS BEEN SOLVED

by Emma R. Locatelli and Sean McMahon, The Department of Geology & Geophysics, Yale University

In the summer of 1955, amateur paleontologist Francis Tully was exploring the spoil piles of a coal mine south of Chicago, searching for the 308 million years old Mazon Creek nodules that often contain fossils. He spotted one that had split open, revealing its contents, and knew that he had found something strange and new. Inside was a soft-bodied organism that had an unusual suite of anatomical traits that did not fit clearly into any animal group: a proboscis ending in a claw-shaped apparatus, a horizontal bar at the front end of the body, and spade-shaped fins at the rear. This strange fossil creature, which would eventually be named *Tullimonstrum gregarium* (common Tully Monster) and become the State Fossil of Illinois, has confounded paleontologists' efforts to identify its position on the tree of life for more than 50 years. The Tully Monster has been described as a nematode, polychaete worm, mollusc, and stem arthropod, but until this year, its identity has remained a mystery.

In two recent papers, the Tully Monster has been reinvestigated using new methods and analytical approaches in hopes of finally solving this paleontological problem. Victoria McCoy and colleagues examined the anatomy and preservation of more than 1200 Tully Monster fossils, and compared them to other animals found within the Mazon Creek fauna. Thomas Clements and colleagues took a more specific approach, analyzing dark spots at the end of the Tully Monster's horizontal bar, which have previously been interpreted as eye-spots.



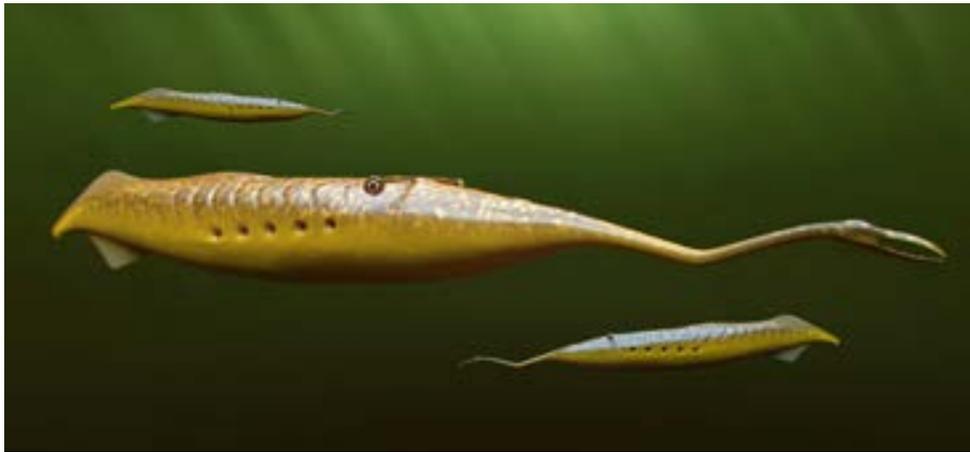
Fossil: An example of a complete Tully Monster fossil (FMNH PE 10504) within a siderite nodule from the Mazon Creek lagerstätte, Illinois, USA, with some anatomical features labeled.

The extensive comparative study conducted by McCoy and co-authors found several new anatomical characteristics that pointed toward a vertebrate identity – most notably, the presence of a notochord, the flexible rod-like structure that is a defining feature of all chordates. Previous interpretations of Tully Monster fossils identified this feature as a gut trace. However, gut traces in the Mazon Creek fossils are normally preserved as dark, three-dimensional features; in the Tully Monster, the linear feature that begins behind the transverse bar and runs down the body is normally white and has no significant topography. Moreover, some Tully Monster fossils have a dark, raised linear feature that extends from the clawed proboscis to just before the fins in addition to the lighter character, providing further evidence for the presence of a notochord. McCoy and colleagues also noted similarities between the teeth of the Tully Monster and those of lampreys and hagfish.

Clements and colleagues focused on a specific portion of the Tully Monster in their study: the horizontal bar. Using scanning electron microscopy, a method that enables paleontologists to examine fossils at micrometer scales, Clements and his co-authors found that the dark spots at the end of many Tully Monsters' transverse bars are comprised of small spherical and cylindrical structures arranged in well-ordered layers. They analyzed the chemical

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composition of these structures, and found them to be the fossilized remains of pigment-bearing organelles called melanosomes. These layered melanosomes confirm the Tully Monster is a vertebrate, for while melanosomes are known from several groups of animals, only chordates have both spherical and cylindrical melanosomes in their eyes.



Illustrated Tully Monster: A reconstruction of a Tully Monster (S. McMahon)

Why has it taken so long for paleontologists to unravel the Tully Monster mystery? The Tully Monster did not have any mineralized tissues, like a skeleton. Soft-bodied organisms require certain conditions to be fossilized, and even in localities that promoted soft-tissue preservation such as Mazon Creek, preservation of every specimen is imperfect. Each individual fossil may only preserve a fraction of useful traits, and thus analyses of hundreds of fossils are necessary to determine how the living animal was built. Our understanding of how fossilization processes act on different tissues has increased in the past 30 years, and these studies were able to use this knowledge to differentiate between the different portions of the fossil that have been previously overlooked or misinterpreted, such as the notochord and gut traces. Additionally, advances in imaging technology, microscopy, and chemical analyses that have been developed in the last 20 years provided the tools necessary to reveal some of the otherwise obscure anatomical traits that helped to nail down the Tully Monster's identity, like the melanosomes at the ends of the transverse bar that confirm a vertebrate-affinity.

The strange puzzle of the Tully Monster that has intrigued paleontologists for so long has been solved, but many new questions now arise. How did the Tully Monster come to evolve such an unusual body-plan? Why is the Tully Monster known from only a single locality? Are there other ancient animals like the Tully Monster that we have yet to discover? What role did the Tully Monster play in the ancient Mazon Creek environment? With the vertebrate identity now well-established, paleontologists will continue to discover new aspects of Francis Tully's monster for decades to come.

To learn more:

McCoy, V. E., Saupe, E.E., Lamsdell, J.C., Tarhan, L.G., McMahon, S., Lidgard, S., Mayer, P., Whalen, C.D., Soriano, C., Finney, L., Vogt, S., Clark, E.G., Anderson, R.P., Petermann, H., Locatelli, E.R., & Briggs, D. E. G et al., (2016). [The 'Tully monster' is a vertebrate](#). *Nature*, 532, 496–499 (28 April 2016) doi:10.1038/nature16992

Emily Graslie interviews Scott Lidgard and Paul Mayer of the Field Museum, other study co-authors, in this [BrainScoop video](#) (Note: Interesting technique involving your home freezer is revealed.)

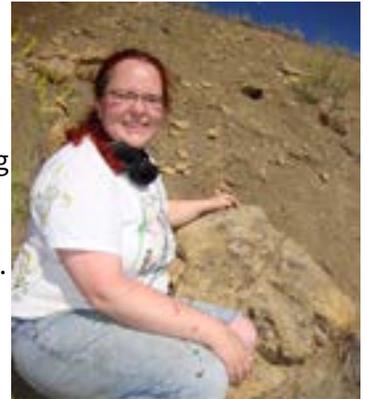
This [video from the Field Museum](#) shows the technology used to aid in the discovery.

FEATURED FOSSIL: A NEW SPECIES OF THALATTOSAUR FROM NORTH-CENTRAL OREGON

written by Eleanor Gardner via Aaron Currier and Greg & Gloria Carr of [North America Research Group](#)

In the spring of 2011, during a geology class field trip to a road cut near Suplee, Oregon, Gloria Carr and her father Greg found bone fragments from a large vertebrate preserved in concretions of conglomerate rock. The father-daughter pair, who are members of North America Research Group (NARG), did a quick survey of the area and realized that the bone-bearing concretions were tumbling downhill from an immense block containing disarticulated skeletal material. They marked the spot on a map and then went about the process of seeking permission to excavate, which required working with county lawyers, local landowners, and the University of Oregon (recipient of the donated fossils).

On Memorial Day of 2012, a team of 22 NARG members excavated the fossils – they unearthed over 1000 pounds of rock during the dig and named the skeletal material “Bernie” in honor of the landowners, Gene & Miriam Bernard.



Gloria Carr Photo © Greg Carr



NARG excavation group Photo © Greg Carr



Greg Carr Photo © Greg Carr

Initially, the bones were thought to be from ichthyosaurs, but that identification was only tentative due to the limited number of diagnostic bones visible at the time. Because the fossils were imbedded in solid rock, the fossil preparation process was very slow-going; for example, it took 5 months to prepare one half of a skull.



Half skull Part 1 Photo © Greg Carr



Half skull Part 2 Photo © Greg Carr

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Over time and with great care in preparation at the Paleo Lab of the Oregon Museum of Science and Industry, Greg Carr and fellow museum volunteers realized that the bones were not from ichthyosaurs but rather thalattosaurs. Thalattosaurs (“ocean lizards”) are a group of extinct marine reptiles from the Triassic period, of undetermined evolutionary affinity: some experts group them near ichthyosaurs, some group them near archosaurs, and others group them near lepidosaurs. (see related image [here](#)). Thalattosaur material has been found in California, Alaska, as well as British Columbia; the rocks from which the Bernie bones were recovered are part of the Brisbois Member of the Vester Formation, representing a deltaic environment and dating to the Upper Triassic. Therefore, Bernie’s skeletal elements may be the oldest bones in the state of Oregon.



Photo © Greg Carr

The Bernie fossils actually come from at least seven different disarticulated individuals. More than 60 separate bones have been recovered, including limb bones, ribs, shoulder girdle elements, vertebrae, fragmentary premaxillae and maxillae (upper jaw), a partial mandible (lower jaw), and the entire right half of a skull.



Photo © Greg Carr

The bones are three-dimensional and tightly packed on top of each other in indurated rock, making removal very difficult. With the slow but steady recovery of more and more material, it became clear that these thalattosaur fossils were new to science, so in 2014 diagnostic specimens were sent to the University of Alaska at Fairbanks for expert analysis.

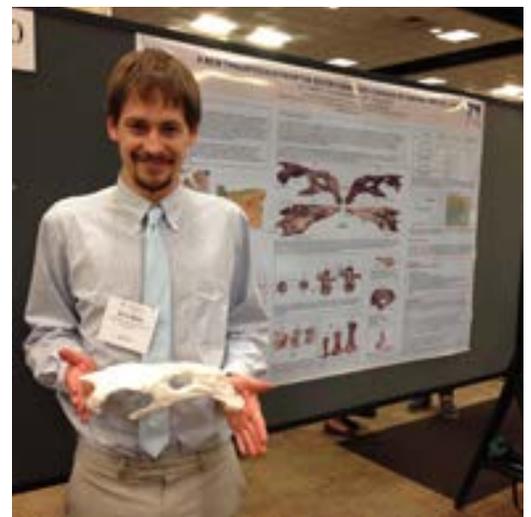


Chevron bones Photo © Greg Carr

In December 2015, preparation revealed an extremely large chevron bone (an arch-like bone that is part of the caudal vertebrae in reptile tails). This specimen, measuring 18 cm, is three times as big as all other previously-found thalattosaur chevron bones.

According to University of Alaska graduate student Eric Metz, who presented at the 2015 Society of Vertebrate Paleontology meeting in Dallas, Texas, the Bernie material represents a new species of thalattosaur which also happens to be the largest discovered thus far in North America.

A paper describing the new species is forthcoming, with publication anticipated in the spring of 2017. After publication, the diagnostic fossils will be returned to the University of Oregon's paleontology research collection and preserved as holotype specimens. In the future, NARG hopes to share the 3D data from this discovery through online repositories such as MorphoSource and to create traveling exhibit displays to help educate the public about Oregon's ancient ocean lizards.



Eric Metz at SVP Photo © Laura Geggel for LiveScience

For more information, see:

Geggel, L. (2015). Triassic Reptile Skewered Clams with Teeth on Roof of Its Mouth. LiveScience. Retrieved from <http://www.livescience.com/52781-new-thalattosaur-fossils.html>.

Leone, H. (2014). 'The oldest bones in Oregon' make their way to Century High students' senior project. The Oregonian/OregonLive. Retrieved from http://www.oregonlive.com/hillsboro/index.ssf/2014/11/the_oldest_bones_in_oregon_cen.html.

by Ariel Marcy

Hi! My name is Ariel Marcy, I'm a PhD student / game designer / paleontologist at the University of Queensland and I think board games are the best way to teach biology.

Picky paleontologists & pre-teens agree

Go extinct!

is the dinosaur's pajamas

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THE HUFFINGTON POST

"Go Extinct! is a remarkable game, with big friendly pictures and cute descriptors that neatly underscore a **rigorous set of scientific underpinnings.**" - PLOS Paleo Blog

"Loved it! Excellent multi-generational way of **sneakily teaching** evolution."
- MENSA Mind Games judge

"We were pleased to find the contents **hilarious.**"
- National Center for Science Education

"Very fun... I had no idea **chickens were related to dinosaurs!**"
- Jasmine, middle school student

"Go Extinct! is a **fantastic science** game."
- National Science Teachers Association

Learn more at www.themagical.com

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Games teach systems intuitively

Both biology and games thrive on system thinking and games incentivize players to think critically and strategically about the system. Board games also provide a social environment where learning from “failure” is fine - even fun! I’m probably preaching to the proverbial choir when I say that mammals learn best from this kind of play.

My game, *Go Extinct!* is Go Fish evolved! Players put on zoologist hats and compete to collect clades of closely related animal cards. *Go Extinct!* is laugh-out-loud funny and the winning strategy just happens to teach players one of the most important scientific skills: how to read an evolutionary tree.

Evolutionary trees, simply put, are sets-within-sets — e.g. humans are also mammals and also vertebrates — a simple yet rich system. In a game, this system pairs high reward with high risk, a mainstay of game design! Deductive risk-takers can steal entire sets away from opponents by using the “Ask-Again” rule for specific animals. But, ask for a specific animal the other player doesn’t have, and you’ve tipped your hand!

Therefore, the emergent low-risk strategy is also the major learning objective: identify and ask for deeper common ancestors to maximize both your mystique and your chance for a useful card. *Go Extinct!* can be enjoyed over again and by older audiences because of the meaningful risk/reward choices that depend on the sharpness of your memory, the luck of the draw, and how your friends choose to play!

The laugh-out-loud factor comes from the silly yet sneakily scientific nicknames for each set of animals. You might find yourself asking for someone’s “Big Babies” or their “Toothy Grinners” — punny mnemonics for traits these animals share and the various evidence scientists use to infer evolutionary relationships: physical traits, DNA, and the geographic location of fossil ancestors.

Unlike linear formats - I’m looking at you, textbooks and lectures - games thrive on repetition without getting bogged down in detail. During a round of *Go Extinct!*, players will explore the branching structure of the land vertebrate evolutionary tree in a way that doesn’t get old! Therefore, the most important concepts — like identifying a common ancestor — can be reiterated over and over while smaller details — like the etymology of “Dinosaur” — can be noted with interest but not at the expense of the main learning goal. Furthermore, the game’s visuals leverage color to underscore the gradations of “related-ness” while icons call out the evidence used to infer these relationships.

The Making of the Game and of Student Science Game Designers

Game design, like science requires testing and iteration. In fact, one of the earliest prototypes was tested at the 2013 Society for Vertebrate Paleontology meeting!

Just like the feedback from the peer-review process, the suggestions can be “game-changers.” For example, one of people’s favorite parts of *Go Extinct!*, the playful nicknames, were prompted by feedback from a 7th grader. The student pointed out that kids couldn’t say the scientific names currently in use and suggested fun nicknames instead. Realizing that scientific names are really just nicknames in Latin, I ran with this suggestion.



Go Extinct! Quick Stats:

Teach humans as young as 8 the most profound idea in science: life is mind-bogglingly diverse yet we all share common ancestors!

30-45 minutes
3-6 players per game
Easy to learn Go Fish-like gameplay
8 & up in a family / homeschool setting
Middle school through undergraduate in a classroom setting

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STEAM GALAXY

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Games not only provides an example of an engaging way to communicate complex scientific concepts, but also brings to the forefront the creativity inherent in all STEM (science, technology, engineering, and mathematics) fields – a primary goal of my company, STEAM Galaxy Studios. Science does not rely on arts solely for communication, but like art, creativity is inherent throughout the scientific process.

One of my favorite experiences play-testing *Go Extinct!* was working with Jane, a middle schooler from the project-based Brightworks School, who designed her own version of the game around her favorite group of animals - cats! She based her game on the latest Felidae phylogeny - gamely interpreting the scientific literature to make scientific and design decisions. Her knowledge of evolutionary trees afterwards shone brightly at her final presentation:



Ariel mentoring Jane's design process; Jane presenting Cat Family *Go Extinct!* creation!

What's Next? Get Involved and Get Gaming!

STEAM Galaxy Studios is just getting started! Next up is a dinosaur-specific version of *Go Extinct!* and an all-new game modeling how embryos reveal evolutionary relationships called *Suddenly Cute*. Following up on the critiques within the National Center for Science Education's otherwise [glowing review](#), we are partnering with the NCSE and UC Berkeley's UCMF to create a series of worksheets to guide students through more evolutionary concepts the game can facilitate.

Even more excitingly, we are partnering with [Evidently So](#), an Australian-based science visualization company to create a game design platform for students and classrooms. We want to create a tool for kids to easily design their own *Go Extinct!*-like games around different parts of the evolutionary tree, just like Jane!

To stay on top of all the new games and classroom-supporting materials, please sign up for the sparingly-used [educator mailing list](#)!

Furthermore, we're always looking for new play-testers, especially those willing to give games a try in their classrooms. Email me at aemarcy@steamgalaxy.com

Go Extinct! be purchased through Amazon.com or the STEAM Galaxy website. Another main objective of STEAM Galaxy Studios is to diversify engagement with STEM fields and we are committed to removing barriers to quality science

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materials. Educators can purchase a discounted classroom set or access the free print-and-play version through the STEAM Galaxy's For Educators webpage. This page also includes extensive [Next Generation Standards Alignment documentation](#).

You can read more about my work in a 1-page feature article in [Science!](#) You can learn more about how teachers have used the game in a [brief review](#) by the National Science Teachers Association and or the in-depth account by paleontologist and outreach specialist Taormina Lepore for the [PLOS Paleo blog](#).

Visit Ariel's website at www.aemarcy.com

Follow Ariel on Twitter [@aemarcy](https://twitter.com/aemarcy)



"[High school] students who were strong card players but perhaps not as strong academically **were equal on the playing field and got to teach** the less strong card players who were sometimes the more academically-minded content-focused students."

- Barbara Marrs, LA county biology teacher



"In five minutes I had my least motivated kids in class teaching my dinosaur nerd how to play, while **all the students involved got excited about collecting clades.**

I could have called Ariel right then and given her an over-the-phone hug, because some of these were kids that I was convinced never would have learned or cared about clades and phylogeny. **Their test scores improved, too.**"

- Taormina Lepore, paleontologist & teacher

REFLECTIONS ON THE 2016 GSA SOUTHEASTERN SECTION MEETING IN COLUMBIA, SC

by Lee Cone, President, Special Friends of the Aurora Fossil Museum

The [2016 Geological Society of America Southeastern Section \(SEGSA\) regional meeting](#) was held in Columbia, SC, on March 31-April 1. Quite a few members of the [Special Friends of the Aurora Fossil Museum](#) made the trip to the Capital City, including Lee and Amanda Cone, Linda and Bruce McCall, Jayson Kowinsky, Chuck Ferrara, Al Klatt, George Powell, and AFM director Cynthia Crane. Between speaking times for oral presentations and discussion times for poster presentations, attendees had few opportunities for idle chatter. The combination oral/poster theme session hosted by the FOSSIL Project was entitled, Synergistic Paleontology: The FOSSIL Project and Amateur Contributions to the Field.

Oral Sessions. This was the first time, that I am aware, that both a morning session and an afternoon session at a professional conference were filled by presentations devoted to amateur contributions to paleontology. Seventeen speakers in total presented on a wide variety of topics, ranging from a museum's point of view to a commercial paleontologist's point of view. Representatives from the west coast, the east coast, and areas in between spoke on collaborative ventures between amateurs and professionals. Also highlighted were the academic contributions made by amateurs, as well as the important support system that many amateurs provide to museums across the country. Surprisingly, although the core themes were consistent throughout, none of the talks were repetitive in nature or overlapped in coverage. All of the talks were very well received by the audience, which was supported in part by numerous professional paleontologists.



Left: Cynthia Crane and Linda McCall waiting patiently for the morning oral session to begin. Center: Jayson Kowinsky delivers his talk. Right: Chuck Ferrara gives his presentation. To view more photos from SEGSA, click [here](#).

Topics covered by amateur/avocational paleontologists are listed below, and show the diversity of the oral presentations:

Lee Cone: [The Special Friends of the Aurora Fossil Museum: A Model for Amateur Involvement in a Museum Setting](#)

Linda McCall: [Amateur/Avocational Contributions to Paleontology - The Big Picture](#)

Chuck Ferrara: [Fossil Clubs and Societies Are Still Relevant: The Paleontological Contributions of the Southwest Florida Fossil Society](#)

Jayson Kowinsky: [The Value of Amateur Websites in the Field of Paleontology](#)

Walter Stein: [The Ten Ton Dinosaur in the Room: Contributions of Commercial Paleontology and a Holistic Approach to Moving Forward](#)

Greta Polites: [Encouraging Professional-Amateur Collaboration: Lessons from the Literature on Collecting Motives](#)

Tynessa Craft: [Exploring the Past through the Future: Grooming the Next Generation of Paleontologists](#)

Topics covered by professional paleontologists are listed here, and highlight the positive influence of amateur involvement:

Cynthia Crane: [The Aurora Fossil Museum: A Model Showcase of the Contributions of the Citizen Scientist](#)

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Bruce MacFadden: [The FOSSIL Project: A Collaborative Community of Amateur and Professional Paleontologists](#)

Benjamin Dattilo: [The Mutual Obligations Between Fossil Enthusiasts and Academic Paleontologists](#)

Robert Boessenecker: [Collaboration Between Amateur and Professional Paleontologists on the West Coast: A Case Study from the Late Neogene Purisima Formation and Santa Margarita Sandstone of Northern California](#)

Dana Ehret: [The Steven C. Minkin Paleozoic Footprint Site: A Successful Collaboration Between Amateur and Professional Paleontologists](#)

Victor Perez: [The Calvert Marine Museum: A Community Collaboration](#)

Michael Gibson: [Contributions of Amateur Fossil Collectors to West Tennessee Paleontology](#)

Additional talks in the oral session provided excellent 'food for thought' for all in attendance:

Steven Fields: [South Carolina's Serengeti: Connecting Palmetto State Residents to their Pleistocene Past](#)

Ronny Leder: [Maxing Out the Potential of Private Fossil Collections through Digitization: Best Practices in Photographing Specimens](#)

Lisa Lundgren: [Implementing Social Paleontology: An Examination of Amateur Paleontologists' Facebook Groups](#)

Poster Session. The poster session featured six posters, the majority of which listed amateur paleontologists as first author. The posters were displayed in a large exhibit hall, enabling one-on-one discussions with any interested conference attendees. George Powell presented the Aurora whale prep and jacket process that he had organized and carried out with volunteers from the Special Friends. While some poster presenters were balancing the oral session with the poster session, George and other dedicated poster presenters, such as Paul Roth (Florida Paleontological Society), Russell Brown, Bonnie Cronin, and Cindy Lockner (all three from the Florida Fossil Hunters), held court all day long in the exhibit hall fielding questions.



Upper Left: George Powell with his poster. Upper Right: Chuck Ferrara, Lee Cone, and Walter Stein explore the exhibit hall. Lower Left: Russell Brown and Paul Roth pose with their poster. Lower Right: Cindy Lockner and Bonnie Cronin display their poster. To view more pictures from SEGSA, click [here](#).

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Poster topics were varied and emphasized the value of amateurs for public outreach and education:

Lee Cone (with co-author Cynthia Crane): [Amateur Contributions to Science Education: The Supportive Role of the Special Friends of the Aurora Fossil Museum](#)

George Powell (with co-author Cynthia Crane): [A Whale of a Challenge: The Development of a Large-Scale Fossil Display at the Aurora Fossil Museum](#)

Cynthia Crane: [The Impact of a Little Dirt: The Significance of Aurora Fossil Museum's Fossil Park](#)

Paul Roth (with co-authors Alex Kittle, Vincent Santucci, Russell Brown, and Bonnie Cronin): [Junior Paleontologist Educational Kits, A Resource for the National Park Service's Junior Ranger Program](#)

Bonnie Cronin (with co-authors Cindy Lockner and Russell Brown): [Using Outreach as a Bridge Between Professional Paleontologists and the General Public](#)

Chuck Ferrara: [Avocational Paleontology Outreach and Education in Southern Florida: Efforts by the Southwest Florida Fossil Society](#)

Conclusions and Reflections

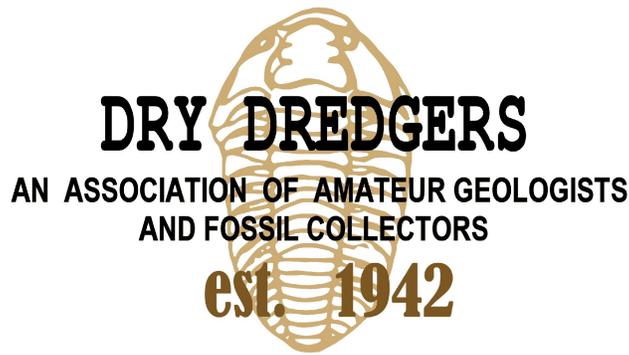
As I look back on this experience there are several important milestones that we as amateurs crossed in Columbia. The first is the legitimacy that we brought to the FOSSIL Project as a critical force in the future of progressive paleontology. That is not to say that what has transpired in the past with respect to the FOSSIL Project is not legitimate. It has been monumental in so far as opening doors, inviting amateurs, and enlightening professional paleontologists, but this conference was a step forward - a higher plane in that amateurs were not simply brought along, but rather became a part of a theme session, making valid points in a variety of diverse areas regarding amateur involvement, collaboration, and donation. The case for amateur inclusion was in fact legitimately and successfully presented in each of the seventeen oral presentations and six posters. In past conferences, such as at NAPC 2014 in Gainesville and SVP 2015 in Dallas, the amateur was a passive participant: there, but with limited involvement. For the first time at a professional conference, the amateur voice presented strong opinions - supported by irrefutable data - in an entire theme session.

Though the positive nature of our presentations sent a strong message, there was also a troubling side that demonstrates that we have much more work to do. I applaud the professionals who did come in to hear one or more of our oral presentations, but I was somewhat disappointed that more of the two thousand attendees at SEGSA did not attend our session. I feel that if professionals do not allow themselves to become involved and hear our message as to the positive aspects of amateur collaboration, then there will always remain a level of distrust with the amateur community. We, as members and supporters of the FOSSIL Project, are working tirelessly to educate all our members about best practices, professional and museum inclusion, and preservation of valuable information for research and study. I would like to see the professional paleontologists do the same among their colleagues, to learn by listening to the many divergent ways that collaboration and service is being carried out by the amateur community. One cannot become fully educated on a subject without understanding not only what you think to be true, but also what you think may not be true.

It was very nice to be a part of SEGSA 2016 and experience the openness and welcoming attitude that the organizers extended to us. It was particularly positive that SEGSA provided the FOSSIL Project with a forum to share the contributions of amateur paleontologists with the members of the Geological Society of America. It is also important to recognize the FOSSIL Project as the leader and organizer that allowed us the opportunity to express our views at this prestigious scientific meeting. A major step was achieved at SEGSA, in the direction of forming synergistic amateur-professional relationships, as well as fostering mutual respect between all paleontologists.

FOSSIL is funded by a grant from the National Science Foundation (AISL Award #1322725). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. All images used with permission or are free from copyright. Copyright © 2016 FOSSIL. All rights reserved.





Editor: Jack Kallmeyer

July 2016

Conference Edition

The Cincinnati Mini Conference was held on June 2nd through June 5th and all of the feedback thus far has been quite positive. I felt it appropriate to provide a summation of the events to keep the Dry Dredgers members informed about what happened and where this all leads.

Big Bone Lick Tour

by Jack Kallmeyer

The Friends of Big Bone sponsored a tour of the famous birthplace of American vertebrate paleontology. The tour began at 2:00 PM on June 2nd and was led by Dr. Glenn Storrs from the Cincinnati Museum Center. Around thirty people attended this tour and feedback that I received from those that attended was that the tour was excellent. If you recall the weather for this weekend there were scattered thunderstorms all around the area. This tour ended just before one of those storms came through the area.

We'd like to thank the FOBB for setting up this tour and Dr. Storrs for being kind enough to be an expert tour guide.

Keynote Address & Tour

by Jack Kallmeyer

Friday night featured a keynote address by Dr. Tony Martin of Emory University. While Dr. Martin was the keynote speaker for our FOSSIL conference, the Museum Center also made this talk a part of their Insight Lecture Series. Attendance was between 75 and 100. Dr. Martin's energetic style and interesting subject matter kept the audience riveted.

Following the talk, the Museum Center guided conference participants on a tour of the Cincinnati Under the Sea exhibit. This was well received by everyone. People were fascinated by the exhibit and by the interpretations given by Professors Dave Meyer and Carl Brett. Dr. Brenda Hunda attended as well and was able to add to the cadre of professional paleontologists assisting on the tour.

We owe a great deal of thanks to the Cincinnati Museum Center for keeping the Cincinnati Under the Sea exhibit open for our conference in the midst of their

preparations for Union Terminal remodeling. Glenn Storrs had secured the buy-in for our event from the Museum right after our planning meeting in Dallas, with the assurance that these exhibits would remain open until after our conference. They held true to their word despite the extra pressure this put on their staff for exhibit removal.

Cincinnati Mini Conference Field Trip Report

by Kyle Hartshorn

Starting in 2014, the Dry Dredgers have been engaged in the FOSSIL Project, a National Science Foundation funded project to improve collaboration between amateur and professional paleontologists (see myfossil.org for more details). The FOSSIL Project sponsors an annual "mini conference" to serve as a meetup for members of various fossil clubs, professional paleontologists, and science educators. Last year's mini conference was held in Dallas, Texas, in conjunction with the 2015 Society of Vertebrate Paleontology (SVP) meeting (see the January 2016 Dry Dredgers bulletin). Given the fossil richness of the Cincinnati Arch, the prominence of the club, and our laudable working relationship with professional paleontologists, the Dry Dredgers were selected to host the 2016 mini conference.

Like any self-respecting paleontology conference, the Cincinnati mini conference required a slate of field trips. Having been to a local outcrop or two, I volunteered for field trip planning duties, with the aim of providing visitors of a rough summary of the type Cincinnati: top to bottom and east to west. Over the course of this past winter and spring Jack Kallmeyer and I undertook a series of scouting field trips to confirm driving routes and verify the fossiliferousness of proposed stops. I had originally planned a fair number of stops for each day, but this was cut down when we realized that we had limited time and needed to ensure that everyone had enough time to collect. Friday would have just two stops, while Sunday could afford three.

In late May, Jack, University of Cincinnati's Dr. Carl Brett, and I assembled a 40 page field trip guide to provide attendees with a brief background on Cincinnati

paleontology and stratigraphy, as well as descriptions of each stop. This guide was completed in the nick of time, thanks to a few all-nighters, and Jack arranged for high quality printing and binding.

Field Trip 1: Friday, June 3rd

To maximize collecting time, attendees assembled at 6:00 AM, congregating at the Radisson Hotel in west Covington. University of Cincinnati's Dr. Dave Meyer provided doughnuts and coffee, both gladly accepted. As sometimes happens with events of this scale, we had a number of participants cancel at the last minute, a few late arrivals, and a bit of a muddled start.

Most of the 50 or so attendees chose to ride in the rental vans provided by the FOSSIL Project staff, with only a handful of independent drivers. The majority of attendees were not local, including groups from Illinois, Michigan, Florida, and the Carolinas, among other regions. Each van contained at least one Dry Dredger to help point out the Cincinnati sights. Taking inspiration from Carl Brett's class field trips, I also supplied each vehicle with a two way radio. These handy devices helped keep the caravan together and also allowed me (and a few others) to inform the party about the passing scenery and geology.

Our first stop was to be the large Maysville roadcut familiar to most Dry Dredgers. Thus, we headed out along the AA Highway. Though the eastward journey was foggy, attendees were able to see many of the AA's famous outcrops. As we neared Maysville, we even noted a few new cuts being blasted: small, but exposing fresh blue-grey limestone most likely from the Grant Lake Formation.

Due to our somewhat late departure and a Maysvillian bathroom stop, we arrived at the big US 68 roadcut about an hour behind schedule. We met Carl Brett at the base of the hill, down in the shaly Alexandria Submember of the Kope Formation, where he provided an introduction to the geology of the Cincinnati Arch and showed off some interesting trace fossils and sedimentary structures. After a group photo, we proceeded to walk up through the roadcut, inspecting the strata and fauna along the way. Unfortunately, given our tardiness, we were unable to spend as much time on the outcrop as I had originally planned. Many typical Cincinnati fossils were found, but people did not spend as much time collecting as they would have liked. We had barely made it up to the Fairview Formation when we had to leave for lunch.

Said lunch was served at the Maysville-Mason County Recreation Park lake shelter. Jack Kallmeyer had gone ahead and picked up a suitable number of sandwiches catered by a Maysville Subway. Dan Cooper generously donated a side dish: a cup of enrolled *Flexicalymene* trilobites, one for each attendee.

After lunch, the party drove south of Flemingsburg (our departure was not delayed by Maysville locals and a snapping turtle, as happened to Jack). There we encountered a series of highly fossiliferous roadcuts exposing the Corryville Member of the Grant Lake Formation. The site was littered with thousands of *Vinlandostrophia ponderosa*, as

well as a fossil that is quite rare elsewhere: the red algae (or perhaps chaetetid sponge) *Solenopora*. These calcareous lumps look eerily brain-like, provoking a cascade of cerebral humor from various attendees.

After an interval of intense collecting, Carl Brett took us a few miles down the road to a cut he and his students are using as a reference section for the upper Grant Lake Formation and Arnheim Formation in that region. He walked us up the section, describing the sequence stratigraphic significance of each interval and showed a recent discovery: stromatoporoid biostromes within the upper Corryville and Mount Auburn Members of the Grant Lake Formation, a callback to similar (albeit millions of years older) occurrences in the Lexington Limestone. Nancy Swartz also made a very rare and important find: a colonial coral, likely fallen down from the Mount Auburn biostrome (or perhaps the overlying Sunset biostrome).

Slaves to a timeline beyond our control, we had to leave the outcrop at about 2:30. We arrived back in Covington with plenty of time to allow for dinner and cleanup before the evening's events: a lecture at the Cincinnati Museum by ichnologist Dr. Anthony Martin---an attendee of both field trips---and a special tour of the Cincinnati Under the Sea exhibit (now disassembled for the upcoming museum renovations).

Field Trip 2: Sunday, June 5th

As on Friday, Sunday's party met at 6:00 in the morning at the Radisson, with roughly the same number of attendees. Also as on Friday, we ended up leaving slightly behind schedule.

This time we headed west along I-71 then north to Vevay, Indiana. There we stopped at an exposure of the upper Fairview Formation and the Bellevue and Corryville Members of the Grant Lake Formation, with a sliver of Mount Auburn at the top (though different in lithology from the rubbly Mount Auburn many of us are used to near Cincinnati). This proved to be one of the most popular stops of the conference, as large, loose fossils covered the hillside. In particular, *Vinlandostrophia ponderosa* and *Hebertella* brachiopods, nautiloid cephalopods, and interesting bryozoans rolled out of the hills with reckless abandon. A few lucky collectors even found *Flexicalymene* trilobites. Carl Brett and Ben Dattilo met up with us just as we were concluding our collections, and helped to identify finds and explain the general stratigraphy.

We then headed still further west, to the great US 421 roadcut north of Madison, Indiana. This outcrop has one of Indiana's best southern exposures of the Waynesville and Liberty Formations, and attendees were able to collect Richmondian brachiopods and corals. Though we were somewhat behind schedule so too were our lunches. The Madison Subway in charge of the catering had only just begun to make our sandwiches when Jack arrived. Thus, we had an extra 30 minutes or so on the outcrop, allowing Carl Brett to lead a stratigraphic expedition up through the Saluda Member of the Whitewater Formation and show off the "Madison Reef". A few of us were even able to make it up to the

Ordovician-Silurian boundary where the Hitz beds (=Upper Whitewater) meet the “Golden” Brassfield Formation.

Receiving word from Jack that our order was finally complete, we returned to Madison proper and debarked along the town’s riverside park for a well-earned lunch along a scenic stretch of the Ohio River. After lunch, one of the vans parted company and returned to Cincinnati with attendees needing to leave early. Carl Brett and Ben Dattilo also split off, intent on geologizing across the river in Kentucky. The rest of us headed north to I-74, passing through Versailles along the way. Once at I-74, we headed east to an exit well known to most Dry Dredgers: Indiana Route 1.

Our final stop was the great Route 1 roadcut north of Saint Leon, Indiana, where we were met by the notorious Steve Felton. As is usual for our field trips to the site, participants quickly glommed onto the *minuens* “butter shale” to hunt for *Flexicalymene retrorsa minuens*. Several attendees found a few of these tiny trilobites. Meanwhile, Dr. Alycia Stigall (Ohio University) and I looked for Richmondian brachiopods (especially *Glyptorthis insculpta*) in the basal Liberty, where I accidentally found a large-ish *Flexicalymene retrorsa* and possibly a fragment of a starfish arm.

After about two hours of collecting, the vans returned to Covington, and the end of the 2016 Cincinnati mini conference.

Conference Events June 4th

by Jack Kallmeyer

All of the events on Saturday June 4th took place at the Geier Collections and Research Facility. We provided coffee and doughnuts plus cold drinks throughout the day. A pizza lunch was provided. We had a two hour break for dinner and the most expedient way to do this was to bring in City BBQ. This was a big hit for those who stayed for the after dinner session with the Paleontological Society.

Morning sessions

Professor Carl Brett of the University of Cincinnati started us off with a talk covering the stratigraphy of the Kope to tie in with the previous day’s field trip. This was a shorter version of the talk professor Brett gave to the Dry Dredgers earlier this year.

Professor Alycia Stigall of Ohio University followed Carl with an introduction into the Richmondian invasion as a prelude to the field trips the next day. Professor Stigall and her students have given talks to the Dry Dredgers covering this over the past couple of years.

Both of these talks included comments concerning amateur involvement with professional research.

In order to show Cincinnati paleontology from the amateur’s side including working with professionals, Jack Kallmeyer gave a presentation of his work on the newly discovered and published crinoid from the Kope, *Glyptocrinus nodosus*.

Afternoon Sessions

During and following the lunch break, conference attendees enjoyed tours of the Geier collections. Dr. Glenn Storrs enthralled people with things on the vertebrate side while professor Dave Meyer filled in for Dr. Brenda Hunda on the invertebrate side. The tours were handled in three groups to make them manageable. Groups who were not on the tour enjoyed the poster session exhibited by students, professionals and clubs.

Following the tours, everyone split in to three groups based upon their interest in three breakout sessions: Incorporating paleontology into K12 education; Taphonomy and Biostratigraphy; and eMuseum brainstorming. While the first two session topics listed are self explanatory, I think the last one needs further explanation. The myFOSSIL website has a section for users to upload photos of their fossils. I’ve uploaded a few of mine there. The eMuseum topic was a discussion for a more formal way to upload fossil photos so that the data included with the photo would be sufficient to allow it to be uploaded to the cloud databases like iDigBio. Thus, this would make the data from your fossils an integral part of a research database. Typically, information from the fossils in your personal collections wouldn’t end up in a research database until donated to a museum. One concern expressed pertained to publishing exact locality data as rare fossils oftentimes need the localities protected. This would be resolved by having the locality viewable by the public as a very general location. Researchers would be able to access the exact data if needed.

Evening Session

Professor Arnie Miller of the University of Cincinnati and Professor Steve Holland of the University of Georgia ran the evening session. Professor Miller is the incoming President of the Paleontological Society and Professor Holland is the outgoing President. Over the past year or so, both Arnie and Steve have been working on a way to increase amateur/avocational involvement in the Paleontological Society. The Paleontological Society recognizes the value of the amateur community and its role in advancing paleontological studies. Their action plan is exciting news for the amateur community. It features: discounted dues to the Paleontological Society with full member benefits; establishing a webpage on the PS website devoted to amateurs or using the myFOSSIL community website; inviting the amateur community to elect a liaison person to the Paleontological Society Council; inviting amateurs to attend professional conventions like NAPC at reduced rates; and sponsor FOSSIL Project webinars. This news was well received by the audience.

Some discussion followed. One interesting point of semantics came up - what should “we” be called? Should we be referred to as “amateurs” or “avocational paleontologists?” In a survey done by FOSSIL, the amateur community indicated that being referred to as amateurs was our preferred choice. The Paleontological Society however feels that avocational paleontologist would be better. From their viewpoint,

“amateur” carries a negative connotations, i.e., think of “amateurish” and you can see their point. So, we’ll see. While amateur doesn’t bother us, we may gain more respect by being called avocational paleontologists.

Chuck Ferrara from the Southwest Fossil Society suggested that the Paleontological Society consider allowing club membership. Chuck’s idea is that this type of membership would require vetting by the PS before a club could be recognized. This vetting process would include how a club operates, what outreach and educational goals they have, and their ethics regarding collecting.

We ended the evening with door prizes. FOSSIL gave away special FOSSIL field notebooks to randomly selected people in attendance who were members of the myFOSSIL website. The Dry Dredgers supplied a half dozen T-shirts and a book on Patagonian Dinosaurs.

Points of Interest

by Jack Kallmeyer

Planning and execution of an event like this requires precision performance of multiple events at precise times so that everything flows throughout. When done well, conference attendees can enjoy their time without being affected by bumps and glitches in timing. One of these juggling performances required me to pick up lunches for the Friday field trip in Maysville and deliver them to a pre-arranged picnic spot for the group. Once dropped off, I had to return to Cincinnati immediately to get the chairs set up for the Saturday conferences at the Geier Collections and Research Center. All went smoothly until I tried leaving the Maysville picnic shelter to return to the Geier. The shelter is on a narrow one way drive surrounding a small lake. I had the misfortune to get behind someone else on the way out. At one point the drive crosses the earthen dam that formed the lake. The drop off was steep on both sides down to the lake level about 15 feet below. At this point, the folks in front of me decided to “rescue” a turtle that was just at the edge of the road. They stopped, blocking my exit. With the wife as driver, the husband exited the passenger side to walk around and get the turtle. This poor fellow had leg issues and could hardly walk. He grabs the turtle by the rear of the shell and starts to pick it up when . . . it almost got him - it was a snapper! Undeterred by this near miss, the wife gives the husband a canvas shopping bag to use while giving me the “wait just a minute finger.” Rather than trying to get the turtle in the bag, the husband throws the bag on top of the turtle using it like an oven hot pad to pick him up. The husband hobbles over to the lake side of the road and - remember, the original purpose was to rescue the turtle - throws it down the embankment! I couldn’t tell if the turtle landed on grass or the rocks at the edge of the lake but apparently, more rescuing was in order. The husband could not get down the steep embankment so the wife goes down to do the final rescue (or burial). Luckily for me, the husband got in the car and drove twenty feet ahead and off the road at a pull off thus ending my time eating ordeal. Despite this, I did get to the Geier on time. No idea if the

turtle survived his rescue.

After the Insight Lecture by Dr. Martin on Friday night, everyone got an after hours tour of the Cincinnati Under the Sea exhibit. One of the museum staff members escorted the group down through the museum to the exhibit. I was with Lee Cone from the Friends of the Aurora Museum club and we had missed the guided group. Not to worry though as I knew my way down to the exhibit so off we went. I only know one way to get there and that is through the ice age exhibit. Unbeknownst to me, the museum had turned off all but very dim emergency lights in that exhibit. The main group had indeed gone another way. We trudged on anyway using our cell phones to provide additional light. We did make it through safely but I must say, the ice age exhibit is a bit spooky in the dark.

Tom Bantel was helpful during the field trips as one of our local experts providing insight to our out of town guests. Tom is very detail and safety oriented so he provided cautionary advice when needed to keep our friends safe. In this role, on the Sunday stop at Vevay, Tom observed a safety hazard and he alerted people to the dangerously slippery conditions in the ditch near where the vans had parked. The ditch had wet mud covered with an algal mat that posed a slip and fall hazard. After informing everyone he could of this condition, Tom promptly stepped in the ditch and fell down himself. I can only presume this was his way to demonstrate just how dangerous this was to everyone. We appreciated Tom’s sacrifice but as he tells me, at least four other people did the same thing he did upon exiting the vans. Fortunately, no one was seriously injured.

Dan Cooper also provided local expert guidance for our visitors. Once again Dan demonstrated his generous nature by proving enrolled *Flexicalymene retrorsa* trilobites from Mt. Orab for everyone on the Friday field trip. Dan couldn’t attend the Sunday field trip but he still provided prone *Flexi’s* in matrix for all on the Sunday trip as well. This gesture was most appreciated by all those in attendance since the likelihood of finding a trilobite on a one time field trip is slim. Dan didn’t want anyone to go home disappointed.

Apparently, the local cuisine is an acquired taste. My friend Chuck Ferrara from the Southwest Florida Fossil Society is a big White Castle fan. Chuck convinced Lee Cone from Aurora to go there for dinner one night. Lee said he didn’t think anyone could mess up mac and cheese until he had the White Castle mac and cheese nibblers. This duo also ate at Skyline and declared it “different, but not bad.” By the way, Chuck drove from Florida to the conference and he tells me he took 100 White Castles back with him in a cooler! That’s dedication.

Our conference marks the fourth FOSSIL sponsored event that I have been able to attend. I have met and become friends with a number of other fossil club presidents over that time. I was proud to hear some of the things these other presidents said to me about the Dry Dredgers. To paraphrase, the Dry Dredgers are viewed as being at the top of their game doing everything right. We have professional involvement from university professors and the museum, we have members

involved in publication and active research, and we are nationally known and highly respected.

People Who Made This Work

by Jack Kallmeyer

The following Dry Dredgers and professionals all stepped up to my request for help in making our conference successful. All were key in getting things done on time and I sincerely thank all of them.

- Professor Dave Meyer
- Professor Carlton Brett
- Professor Alycia Stigall
- Professor Ben Dattilo
- Professor Arnie Miller
- Professor Steve Holland
- Dr. Tony Martin
- Dr. Brenda Hunda
- Dr. Glenn Storrs
- Kyle Hartshorn
- Dean Swartz
- Nancy Swartz
- Dan Cooper
- Tom Bantel
- Bill Heimbrock
- John Simon
- Rich Fuchs
- Don Bissett
- Debby Scheid
- Becky Algenio
- Robert Marsh
- Angelica Smith
- Bruce Gibson
- Charlotte Gibson
- Bob Bross

Eleanor Gardner deserves a huge thank you from me especially. Eleanor was the project coordinator from FOSSIL with whom I communicated daily as we worked out the details of this conference. Her experience and project management skills were paramount to making the conference a success.

General Statistics

by Jack Kallmeyer

- Over 80 people registered for this conference
- About 30 people attended the Big Bone Lick tour
- Over 50 people attended each field trip
- Between 75 and 100 people attended the keynote talk

by Dr Tony Martin

Between 60 and 70 people attended the events at the Geier on Saturday

There were about a dozen posters exhibited for the poster session at the Geier

Fifteen Dry Dredgers assisted in the organization or execution of the conference

Nine professional paleontologists were actively

involved in the conference

Registrants came from many States: Ohio, Michigan, Kentucky, Indiana, Delaware, North Carolina, Florida, Tennessee, Georgia, Illinois, Louisiana, New York, New Jersey, Wisconsin.

Limited Book Copies

by Jack Kallmeyer

Our original plan included giving away a “goody bag” to each registrant that would include a copy of Cincinnati Fossils and the standard Dry Dredgers tri-fold brochures. The plan ran amok when registration exceeded our original estimate and the Museum Center sold completely out of Cincinnati Fossils. Compounding this was the fact the Museum Center would not be printing any more copies of this book until they reopen in two or three years. This meant that the Dry Dredgers would have none available for new members who wished to buy one at our meetings. The situation caused us to request that local Dry Dredgers turn down the goody bags since they already had these items. The members responded to this request and helped assure that our out of town guests all received one and that new members will be able to obtain one in the future as well. My thanks to these Dry Dredgers for their flexibility.

Survey Response

by Jack Kallmeyer

As mentioned earlier, the FOSSIL program is a National Science Foundation funded effort. FOSSIL is accountable to the NSF for results based upon their grant criteria. Because of this, FOSSIL has sent out a survey to participants of the conference for feedback. If you receive one of these surveys please take the time to respond.

In addition, specifically to meet NSF requirements, FOSSIL needs to get feedback about their efforts overall outside of this conference activity. To this end, I have provided members’ email addresses to FOSSIL for this use only. You will not be spammed! They will not share the email list with anyone. Please respond to the survey as it will help FOSSIL as they move forward.

What’s Next for FOSSIL?

by Jack Kallmeyer & Eleanor Gardner

The next event with FOSSIL participation will be at a short course & exhibition (along with research presentations) at the national GSA 2016 in Denver, CO, Sept 23-28 2016. After that, FOSSIL intends to be involved in an oral & poster theme session at the joint Northeastern / North-Central GSA regional meeting in Pittsburgh, PA, March 19-21, 2017. There is a possibility that the March event could become a mini conference similar to ours here in Cincinnati but that is not known at this time.

Cincinnati Mini Conference Photos

Photos courtesy of FOSSIL unless otherwise noted



VIEW OF CINCINNATI, OHIO FROM THE 13TH FLOOR



CINCINNATI MUSEUM CENTER
AT UNION TERMINAL
06/03/2016

Field Trip June 3rd - Maysville



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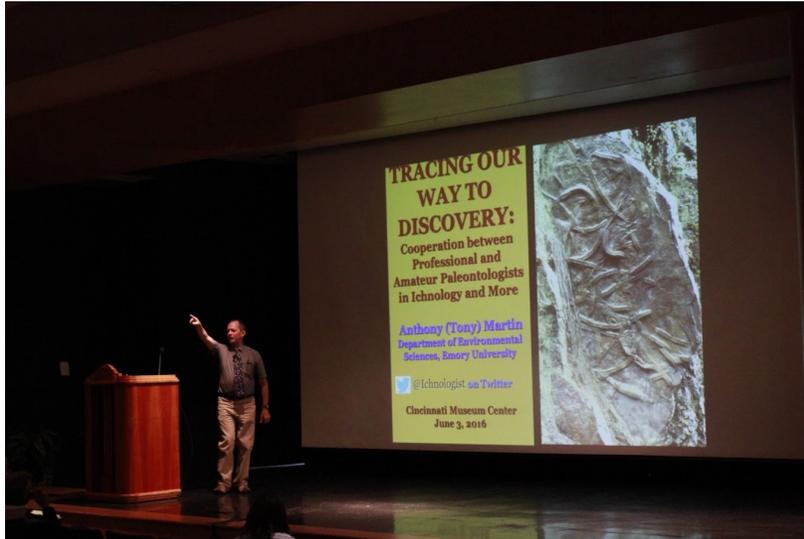


Field Trip June 3rd - Flemingsburg

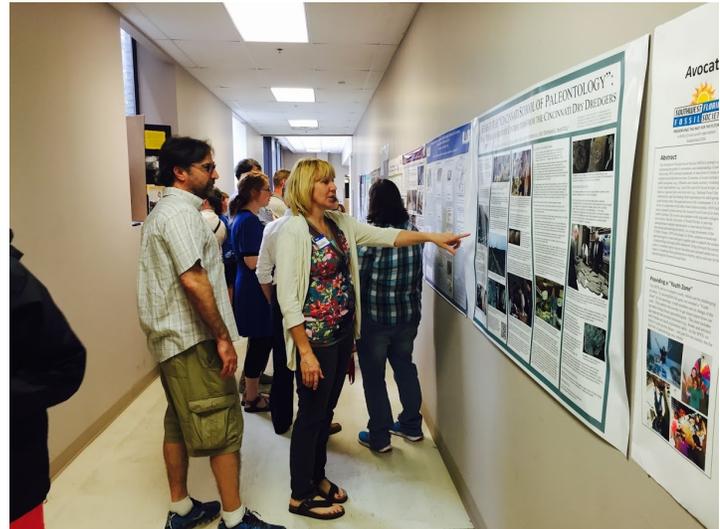




Friday Evening Lecture and Museum Tour



Saturday June 4th at Geier







Taphonomy Breakout Session

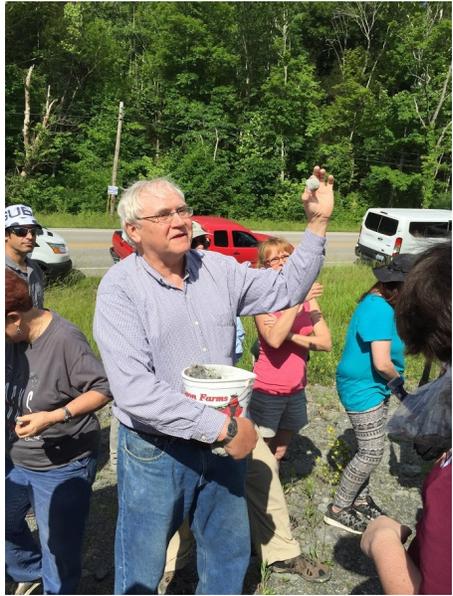


K-12 Breakout Session

Paleontological Society Town Hall meeting



Field Trip June 5th - Vevay



Field Trip June 5th - Madison



Field Trip June 5th - St. Leon

