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## Featured Paleontologist: Thomas J. DeVries

Our featured paleontologist is Dr. Thomas DeVries. An invertebrate paleontologist, Tom received his Ph.D. from The Ohio State University. Recently retired, he spent his entire career as a high-school science teacher in Washington (Vashon Island), while at the same time developing an active research career as a well-respected paleontologist, publishing numerous articles in scientific journals. Tom is an expert in



geology and extinct molluscs, with his particular field area being the rich Neogene sequences of coastal Peru where he has worked for decades. He has been a research affiliate of the [Burke Museum of Natural History and Culture](#) in Seattle, WA.

Dr. Thomas DeVries, 2015  
 Puerto Caballas, Eocene outcrop

### How did you discover your passion for paleontology?

Collecting seashells at Cape Cod became a true hobby at age nine with a birthday gift of Ed-U-Kit shells with proper Latin names. At Amherst College, Richard Foose persuaded me to add geology as a major; Ed Belt introduced me to paleontology; and Peter Isaacson's enthusiasm led to fieldwork in West Virginia for a senior thesis on Devonian brachiopods.

### I understand that you have been conducting field work in Peru for 30 years. How did you come to work in Peru and what keeps you going back?

Bill Percy at Oregon State University offered me an RA for an oceanography MS to study the record of fish scales in Quaternary sediments off the coast of Peru. In 1979, I shifted back to geology and, looking for a Peru focus with mollusks, was taken on by Bill Zinsmeister at Ohio State University to do a doctoral study of the rich Plio-Pleistocene molluscan fauna of the tablazos of northern Peru. In 1983, Christian



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Lisa Lundgren  
 Interim FOSSIL Project  
 Coordinator  
[fossil@flmnh.ufl.edu](mailto:fossil@flmnh.ufl.edu)  
 (352) 273-4355

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De Muizon pointed out the great potential for molluscan research in the Pisco Basin of southern Peru, which is where I've worked ever since, addressing issues of alpha taxonomy, evolution within genera, paleoecology, paleobiogeography, and, necessarily in a barely studied region, stratigraphy and sedimentology.

My familiarity with molecular biology had been made possible by an enlightened teacher education program at Oregon State University, which required science MAT students to take a number of graduate-level science courses, and teacher enrichment programs offered through the Fred Hutchinson Cancer Research Center in Seattle and the Research Corporation of Tucson.

One choice I've made is not to take high school students into the field in Peru. Supervising two graduate students one summer was trouble enough in the face of limited time and resources and the distractions of city night life.

**Since you have years of experience as an educator, do you have any advice to share with other professionals and amateurs about effective ways to get children and teens interested in paleontology and collections--or science more generally?**

Nearly every kid is interested in paleontology and I suppose most stay favorably disposed towards paleontology as adults. Giving students an authentic field experience (discovering) and collections experience (classifying) could be the means for investing the childhood experience with an understanding of paleontology as science.

**Of the fossils you have discovered, do you have a favorite? or two?**

Devonian carroids, unexpectedly encountered during my college field season in 1976; and middle Miocene ancestors of the abalone-like muricid, *Concholepas*, known as the 'loco' in Chile. And it's nice to have an [Eocene penguin named after me](#). Thanks, Julia Clarke.

**Given that the goal of FOSSIL is to link amateur groups with professionals, what are your thoughts about the role of amateurs in the science?**

*I doubt there is any scientific field other than ornithology in which amateurs play a more prominent role in the advancement of their science. The term 'amateur' hardly conveys the contributions to paleontology made by some who draw no salary for their efforts. The development of an amateur corps, however, can be haphazard, opportunistic, and reliant on retirees. A concerted effort to enlist younger aficionados, which would require an accommodation of their work and family schedules, would produce a greater variety and depth of contributions.*

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**Do you see on the horizon any new directions or opportunities in paleontology emerging as the result of technological advances or new discoveries?**

Classical paleontological research and modern efforts that intend to jump on the 'big data set' bandwagon suffer from the opacity of museum collections. Current efforts to make museum holdings more visible - literally, as well as figuratively - could spur research into biodiversity changes at biome and biosphere scales, research that has often been unsatisfying in its earliest iterations.

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Late Miocene aprons of bioclastic debris (white) around paleo-pinnacles of basement rock. Among the molluscan species present is *Hermineospina saskiae*. DeVries and Vermeij, 1997, a toothed gastropod named after the daughters of the two authors.

**Further Reading:**

You can access one of Dr. DeVries papers that describes the development of a stratigraphic framework for the Pisco Basin in Peru at [origins.swau.edu/who/chadwick/Pisco.pdf](http://origins.swau.edu/who/chadwick/Pisco.pdf)

Julia Clark and colleagues' [paper](#) on the Eocene penguin *Perudyptes devriesi* in the Proceedings of the National Academy of Sciences

Daniel Ksepka's describes the importance of the penguin find on his [March of the Fossil Penguins blog](#)

## FOSSIL Project Announcements

The FOSSIL Project is developing a lineup of distinguished speakers who are available to visit fossil clubs and paleontological societies across the country. Topics will vary. Contact [fossil@flmnh.ufl.edu](mailto:fossil@flmnh.ufl.edu) if you are interested in hosting a speaker.



Catalina Pimiento

The FOSSIL Project will be participating in the 2015 Aurora Fossil Festival held in Aurora, NC in May. Hope you can join us!



The Aurora Fossil



## By John Catalani, MAPS

The Mid-America Paleontology Society (MAPS) is one of the few strictly fossil clubs in the country. MAPS was founded in 1978 by a group of amateur paleontologists interested in starting a club that would be exclusively fossil-oriented. MAPS is designed for all levels of interest and expertise in paleontology: It is for the novice/beginner who wants to know more about these treasures from the past; it is for the old-timers who have so much expertise and knowledge to share with the rest of us; and it is for all those who fall in-between who share our love of fossils. Anyone, anywhere in the world who is interested in fossils is eligible for membership in MAPS.

We have more than 400 families or individuals on our membership list from 40 states 7 countries on 4 continents. The most noteworthy thing about the members is their intense love for the hobby. There are those who have become members after seeing a fossil display in a museum; there are those who are caught up in the charisma of other fossil lovers only to become addicted themselves; there are those who have been in this hobby for forty years; there are those who are professional Paleontologists; and there are those who just quietly go about collecting and sharing. Ages of our members span eight decades.



Recent MAPS trip to a Coralville (Iowa) quarry

Our desire and aim is that MAPS develop into a semiprofessional society that will make a real contribution to the collecting, study, preparation, identification, and display of fossils. A current project involves a unique deposit of Devonian cephalopods, many of which have never been described.

A major benefit of joining MAPS is the vigorous trading of fossils that occurs between members from different parts of the world. Many members also send give-away fossils to school teachers for use in their classrooms.

MAPS joins with other clubs to sponsor several field trips per year to various local quarries. There we collect wonderful Devonian trilobites, huge nautiloids, the occasional perfect crinoid and many species of brachiopods and other interesting fossils.

MAPS has sponsored the National Fossil Exposition (EXPO) since 1979. EXPO is held in early spring with fossil enthusiasts converging from all across the nation as well as from Canada and a few overseas countries. Each EXPO is centered on a theme reflecting a type or group of fossils, a specific Geologic Period, or other aspects of collecting. In conjunction with the theme, a keynote speaker, most often a professional that specializes on the EXPO theme, and a special EXPO Edition of the Digest is printed containing contributed articles from both professionals and amateurs. It is the place for fossil lovers to be. Information on the next MAPS EXPO can be found on the club's website.



Activity at the 2014 MAPS EXPO held at Iowa City, Iowa

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For those who can attend, monthly meetings are held on the second Saturday of October, November, January, and February at 2 P.M. in Trowbridge Hall at the University of Iowa, 123 N. Capital St., Iowa City, Iowa. Occasionally, meetings are held at other sites, so it is wise to check the Calendar section in the Digest or the website before attending the meeting if you are not a regular attendee. If you can attend only an occasional meeting of the society, your major contact will be through the MAPS Digest. It is published about 4 times per year. We hope to make this a worthwhile bulletin, with good articles on all aspects of fossil collecting.

**Some representative fossils donated by amateurs to the University of Iowa Paleontology Repository:**



Crinoid



Trilobite



Brachiopod

## By Cindy Roll, Florida Fossil Hunters



Cindy Roll

*This issue's featured fossil was provided by Cindy Roll. Cindy Roll is an avid fossil hunter and a member of the Florida Fossil Hunters Club. She has coordinated several trips for the club into the Mosaic phosphate mines which she says are a "blast" to surface hunt. She has volunteered in the Florida Museum of Natural History's Vertebrate Paleontology lab, where she assisted in the restoration and preservation of all kinds of fossils. She also had the wonderful opportunity to participate in several FLMNH sponsored digs to include the unearthing of a mammoth in central Florida. Cindy is an outdoor girl and loves the sun and water. She will look high and low for fossils and is willing to try just about anything to find them...to include going as far as, a black water dive in South Carolina! Her absolute favorite place to be is in the middle of the Peace River, digging and sifting for megs and mastodons!*

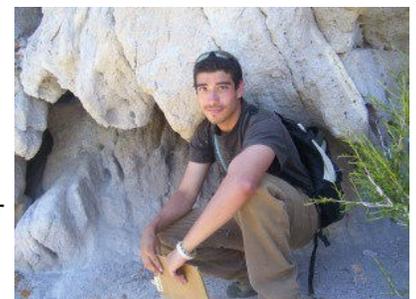
It was a chilly Saturday morning in early January of this year when five of my friends and I rented a boat from Sundial Charters in Tybee Island, Georgia. They took us up the Savannah River to a 'spoil' island, which is where the dredgers dump all the stuff they are pulling up from the bottom of the river. At low tide you surface hunt for sharks teeth and other collectible so like antique bottles. We found a few large pieces of Megalodon, a old bottles and lots of little teeth....but my favorite find of the day was what looks to be a piece of whale bone with a few Meg bite marks on it. It was a fun day trip for us and the folks at Sundial were great!



## Shark Scavenging

by Victor Perez, Florida Museum of Natural History

It is not uncommon to come across bone with scavenging traces. These traces tell the story of a violent interaction between predator and prey. It remains unknown if these bite marks indicate a fatal encounter or rather indicate scavenging of an already deceased carcass. None-the-less, the size, shape and spacing of these traces can provide insight into the ecological interactions that transpired millions of years ago. The bone fragment is likely a section of the lower jaw of a baleen whale. The random orientation of the scratch marks indicates multiple bites from different angles. This may suggest one individual approaching the whale from different vantages or numerous individuals involved in a feeding frenzy. After a whale dies the carcass often sinks down to the seafloor where other small critters (crabs, fish, etc.) join in on the scavenging and they too can leave traces of their scavenging activity.



Victor Perez

By Victor Perez



Jayson Kowinsky

Jayson Kowinsky, possibly better known as "fossil guy," has long been impacting the paleontology community through his website [www.fossilguy.com](http://www.fossilguy.com). Jayson purchased the domain name in 2000 with the initial intent of posting field trip reports and seeking out aid in identifying his own fossil finds. However, over the years the website has evolved into a resource for amateur and professional paleontologists alike. Resources expanded from basic education regarding what a fossil is and locality information for making your own discoveries to in depth discussions on "hot topics" like the evolution of Megalodon. In fact, having grown up in Maryland myself, the identification guides on Jayson's website were among the first resources I used to identify the fossils found along the Calvert Cliffs.

Jayson grew up collecting marine fossils from the Pennsylvanian Ames Limestone (~318-299 million years old) with a particular interest in crinoids and brachiopods. Jayson's interests became much broader as his field trips expanded. His website provides information on localities all around the mid-Atlantic region with a large swath of geologic ages represented. Of course Jayson's involvement is not solely limited to his website, but also through contributions to museum collections and participation in museum led excavations. Of particular note is a partial Squalodon (shark-toothed whale) skull discovered along the Calvert Cliffs. Jayson currently works as a high school Physics and Astronomy teacher; however his paleontology interests are not absent in the school setting. Fossils from Jayson's personal collection are utilized to aid students in the National Science Olympiad program.

When asked how he envisioned the role of amateur paleontologists, Jayson had a rather insightful response:

"Since many important fossil finds are from amateur paleontologists, and those finds would have eroded away without them, I personally see their role as "scouts," going out and finding new fossils. If they stumble upon something scientifically valuable, they should notify the nearest museum... If amateurs learn what is scientifically valuable and what is not, and how to help with excavations, they can become a big help to local museums."



To better align efforts of professional and amateur paleontologists requires increased communication between the two. Every day fossils are being further degraded by weathering processes. In order to capture as much information as possible, it is imperative that collection efforts continue; and yet, no matter how many people are involved we will never find everything. All we can do is amass as many like-minded people as possible and continue to inspire others to join the brigade. Jayson has built an information hub for all of us paleo-centric folk and continues to stimulate this interest in others, an effort that mirrors that of the FOSSIL Project. As our community continues to grow, a challenge to overcome will be establishing a dialogue within that community. We address this issue by fostering relationships between clubs and museums. You can address it by joining the conversation through social media, museum events and club meetings!



fossilguy.com website

by Andy Farke, Robert Gay and Taormina Lepore

It's an oft-repeated opinion that digitization of fossils expands access beyond the museum cabinet and into the broader world. Although this is broadly true, a number of factors have, at least to date, hindered meaningful distribution and usage of these digital fossils in the classroom. A unique partnership between museums and three very different schools is helping to change that.

The three of us—Andy, Tara, and Rob—have a unique shared experience in both secondary school education as well as formal training paleontology and geology. Nothing is better than bringing our own experience in the field into the classroom! Although most schools do not have a formal paleontology class, the field is absolutely critical for understanding that cornerstone of the science curriculum: biology.

The [Raymond M. Alf Museum of Paleontology](#) (Andy's home base) is the only nationally accredited natural history museum on a secondary school campus—The Webb Schools, an independent boarding school in southern California. Students are involved in all aspects of paleontology research, from fossil collection to peer reviewed publication in major journals. The Alf Museum houses over 150,000 fossil specimens, as well as a new research facility including equipment and software for laser scanning, photogrammetry, and 3D printing. The research space has opened opportunities for high school students to create 3D digital models of many specimens the Alf Museum collection. Why not share them with students at other schools?



A student from The Webb Schools works on laser-scanning a fossil

Our main focus to date has been on the fossil mammals of the White River Group (~33 million years old) collected on private land in western North America and permanently housed at the Alf Museum. Animals include close and distant relatives of today's camels, cats, horses, and dogs; this is a great opportunity for students to compare ancient and modern life.

Tara works at Waltrip High School, a public Title 1 school in downtown Houston, Texas, where she teaches classes in Advanced Placement biology. Students in her class have the chance to use digital fossils to complete studies in comparative anatomy and basic biomechanics (the study of the physics of animal function). Access to these museum specimens, even from a distance, opens a multitude of project possibilities and sparks genuine scientific interest in the students, while building and strengthening much-needed research skills. Project topics have included comparative morphology of modern and extinct vertebrates, evolutionary adaptations in extinct organisms, and the ecological impacts of extinct species.

Rob is based at Mission Heights Preparatory High School (MHP), a public charter school in Casa Grande, Arizona. The area is primarily rural, with most students coming from families that have not had college experience. Because museum collections are difficult to access in this area, digital specimens are an essential part of the curriculum. Students are engaged in original research based on specimens in the collections at MHP, specimens on loan from the Museum of Northern Arizona and the Museum of Western Colorado, as well as working with digital specimens from the Alf Museum.

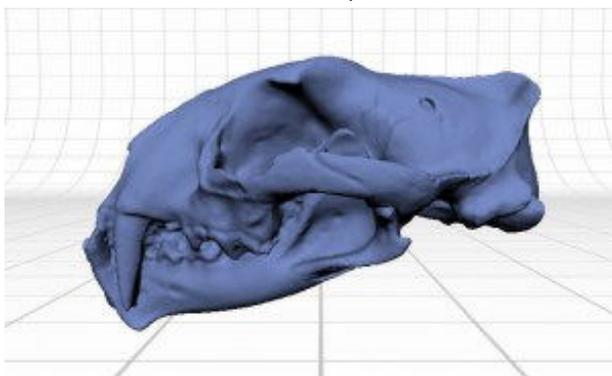
MHP's research is focused on the transition of life on land from the Late Triassic Period into the Early Jurassic Period, specifically in western North America. This is the crucial time in Earth's history when dinosaurs went from a minor component of terrestrial ecosystem to the dominant life forms on land.

*Continued from page 8*

Digital specimens make a lot of sense in the science classes at MHP. We are an hour away from the nearest paleontology museum (The Arizona Natural History Museum), three hours away from the Museum of Northern Arizona, where our specimens are permanently repositied, and six hours away from our field sites. In order to provide student-researchers (and high school students in general) the ability to look at and interact with other collections it is essential to have high quality digital specimens. The students learn to integrate with technology that will form an important part of their futures as well as understanding what role museums play in science. For studying individual variation or evolutionary trends the collections at MHP are too small. Digital specimens fill in gaps in our own collections and allow students novel ways to test their own hypotheses on how groups of organisms have changed over time.



Fossil skull of the Cat-like mammal *Dinictis*;  
Alf Museum specimen



Digital scan of *Dinictis*;  
Alf Museum specimen

Student engagement is also boosted by digital specimens. Rob is often asked by his students when he is going to 3D print another specimen. At outreach events in the community the 3D printed miniature *Tarbosaurus* skull (a close relative of *Tyrannosaurus rex*) is always a big hit. Physical reproductions of these digital objects draw secondary students in to the learning process. Not only can digital specimens help students in class but they can serve as a gateway to get those same students intellectually involved in the class in the first place. Making the learning applicable to the student is a key part of education, and what could be better for exciting a student that the crossroads of the distant past of fossils and the “high tech” future of 3D scanning and printing.

MHP students are also at work using photogrammetry to document every specimen in our collections. It is hoped that students will be able to produce publicly accessible 3D models of all of our specimens by the end of the decade. It is not enough for students to become familiar with what to do with a digital specimen they have

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received from elsewhere. To truly understand and evaluate a digital specimen, it is our belief at MHP that students should be able to create digital models as well. If a student is not cognizant of differences between photogrammetry, laser scanning, and CT scans, for example, how can they evaluate what data has been collected? The availability of data can impact the ability to test hypotheses. As with all things in science, knowing the method is just as important as reading the output data.

Students who participate in these activities with digital specimens learn broadly applicable technology skills, and also get a chance to develop their scientific research and writing skills. It's an unusual opportunity to get hands-on access to "real" specimens, and as such can be a hook to interest students in science and the natural world. Finally, projects such as this let students interact with their peers and other researchers across the country. As more fossils become available digitally, we are hopeful that opportunities such as this will become more widely available!

**For more information:**

Check out Tara's post at the [Cracking the Collections blog](#)

Scan files are downloadable at: <http://outboundedventurer.com/digital-scans/>

More on Andy Farke's thoughts about [digital paleontology](#)

**Further reading:**

Andy's research on [triceratops](#)

[Andy reports on oldest horned dinosaurs in North America](#)

You can follow Andy Farke on [Twitter](#) @AndyFarke and on the [Integrative Paleontologists on PLOS Blogs](#)

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**By Stephen G. B. Chester**

*Editor's note: Dr. Chester received his undergraduate degree from the University of Florida and his doctorate from Yale. He is currently an assistant professor at Brooklyn College, City University of New York.*

People often ask me about my most exciting fossil discovery when they find out that I'm a paleontologist. Their assumption tends to be that I was on a paleontological expedition wiping a combination of sweat and dirt off my brow when I unearthed an amazing specimen that had not seen the light of day for millions of years. Though I have been fortunate to be a part of many exciting fossil discoveries in the field, some of my most important finds have actually been made in more comfortable, climate-controlled, museum settings. The most recent of these finds occurred when searching for bones of the geologically oldest primate in boxes of unsorted vertebrate fossils at the University of California Museum of Paleontology with my former advisor and current collaborator, Dr. Jonathan Bloch.



Stephen Chester

I first met Jon in 2004 when I was an undergraduate studying biological anthropology at the University of Florida. I still remember our first conversation in his office at the Florida Museum of Natural History. He told me all about his research on the evolution of primates and other mammals, and mentioned numerous research opportunities for volunteers. Jon's enthusiasm for paleontology was contagious, and I never looked back. Some of the first fossils that I studied were those of plesiadapiforms, a group of very primitive primates that first appear in the fossil record within the first few hundred thousand years following the extinction of the non-avian dinosaurs. It wasn't long before I couldn't stop thinking about the origin and earliest evolutionary history of primates. And it turns out that there's no better place to be than a natural history museum when questions about evolutionary history are on your mind. Along with countless fossil specimens, natural history museums also tend to house an incredible community of people with overlapping interests, including curators, collections managers, preparators, students, volunteers, and visiting scientists. My two years volunteering and interacting with such individuals at the Florida Museum of Natural History were a lot of fun and very important in my preparation for graduate school.



Stephen Chester and Jon Bloch in the lab

Speaking of preparation, it was within the prep lab where I gained a great appreciation not only for the fossils themselves, but also for the amount of time and effort that it can take to process such priceless and irreplaceable specimens. Jon showed me how partial skeletons of plesiadapiforms were etched out of fossiliferous freshwater limestone blocks with formic acid. This process requires painstaking attention to detail and takes a considerable amount of time given that the acid may only dissolve one millimeter of limestone every several hours. So why is it worth dedicating months or even years to uncover these skeletons? Well, it turns out that even though approximately 150 species of plesiadapiforms are known from the Paleogene of North America, Europe, and Asia, almost all of these species are known only from dental remains. Fossil mammal teeth can provide us with a lot of information about diet, body mass, and evolutionary relationships, but they are not very informative when it comes to understanding the positional behaviors and substrate preference of these extinct animals. Fortunately, skeletons like those of plesiadapiforms from limestone blocks provide a great deal of information that can help us reconstruct how these mammals moved around and whether these animals lived on the ground or in the trees.

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*Purgatorius* is the oldest and most primitive plesiadapiform, and has been viewed as a plausible ancestor for all other primates since it was first discovered 50 years ago. Just like many other plesiadapiforms and mammals from the Paleocene Epoch, it has been known only from isolated teeth and jaw fragments. Dr. William Clemens and members of his field crews have collected many specimens of *Purgatorius* over the past four decades in Montana. Bill has dedicated much of his career to studying how mammals evolved following the End-Cretaceous mass extinction event and he has built exceptional collections of earliest Paleocene mammals at the University of California Museum of Paleontology. In 2009 in Bristol, England, Jon introduced me to Bill at the annual Society of Vertebrate Paleontology conference. The three of us discussed *Purgatorius* and other plesiadapiforms and Bill mentioned that he had many cabinets of unsorted bone from the same deposits where many dental specimens of *Purgatorius* had been discovered. Jon and I told him that given similarities of the dentition between micromomyid plesiadapiforms and *Purgatorius*, we might be able to use the micromomyid skeletons as Rosetta Stones to search for isolated skeletal elements of *Purgatorius*. Bill was intrigued and thanks to his generosity, Jon and I visited Berkeley two years later in search for new clues about the paleobiology of the oldest known primate.

The University of California Museum of Paleontology is an incredible museum and it's very easy to get distracted because there are so many amazing fossils and interesting people to talk to. Jon, who was a member of my Ph.D. committee at the time, and I had to focus because we had an important task in front of us. There were several large cabinets of bone to sort through. Each cabinet contained 10-20 drawers, each drawer contained 20-50 boxes, and each box contained hundreds of bone fragments. This was extremely intimidating at first and it seemed like finding bones of *Purgatorius* was going to be harder than finding a needle in a haystack. Nevertheless, after a few days, we started finding postcranial elements of mammals, including 65 million year old ankle bones that looked extremely similar to those of micromomyid plesiadapiforms!!!

My colleagues and I were able to confidently attribute these ankle bones to *Purgatorius* based on their size and unique similarities to those of other plesiadapiforms and living primates. These fossils have diagnostic characteristics for mobility that can still be found in the ankle bones of primates and their closest living relatives today. Such features would have allowed *Purgatorius* enough mobility to grab differently oriented branches with its feet while moving through the trees. In contrast, mammals that are terrestrial typically lack such features for mobility, and have more rigid ankles to effectively propel themselves forward while moving on the ground. We already knew from dental remains that *Purgatorius* was a fairly small, squirrel-sized mammal that ate a combination of fruit and insects, and these new ankle bones show that *Purgatorius* had skeletal specializations that would have allowed it to access plant products in the branches of trees. This discovery is really exciting because it is the oldest direct evidence that our earliest primate relatives were arboreal. This study also demonstrates that important paleontological discoveries do not only occur in the field; the next significant find might happen soon at a museum near you!



Stephen Chester holds the tiny ankle bones of *Purgatorius*, which scientists believe weighed about 3.5 ounces—or as much as a deck of playing cards. Photo courtesy of Stephen Chester

**Further reading:**

Stephen's paper on *Purgatorius* published in the [Proceedings of the National Academy of Sciences](#)

Coverage of the discovery by [National Geographic](#)

FLMNH [press release](#) on the paper

### By Ronny Leder



Ronny M. Leder, Ph.D.

*Editor's note: Ronny is the new post-doctoral fellow on the project. He is an expert on fossil sharks and will be coordinating the interface of the FOSSIL on-line gallery as it is coordinated with the 25 million natural history specimens in the Cloud (including a few million fossils) hosted by the [IDigBio project](#). In addition to his interest in digital paleontology, Ronny has extensive experience working with the amateur community.*

For almost ten years, I was a member of the paleontological staff under the guidance of Prof. Dr. Arnold Müller at the [University of Leipzig](#)—one of the most historic and leading universities in Germany. The fieldwork of that team focused on places where marine and brackish sediments covered the middle German landscape during the Eocene-Miocene. My research focused primarily on sharks; however, I also studied

broader fish faunas, mollusks and coral reef communities and was the sole member of the team to work with fossil plants. The Eocene-Miocene flora of Germany is pretty well comparable to the extant Florida flora of today (and the past), making Florida an excellent place to study such an ecosystem. I also studied sinkholes, a feature not unknown to paleontologists working in Florida.

In recent years, I have focused on developing new techniques for the classification of fossil shark teeth by comparing their morphometric attributes with a dataset of several thousand teeth of their modern descendants. As part of this study, I created a novel automatic morphometric analysis program based on simple 2D images. This automated program greatly reduces subjectivity in the classification [process](#). This program is also able to classify other objects like skulls, bones or shales. It is adaptable to a great spectrum of morphologies. Modifying that analysis tool for other objects and integrating it with myFossil and iDigBio will be part of my current activities.

My research interests have both shaped and been shaped by my teaching experiences. I have extensive experience working with Bachelor and Masters students in Geology and Paleontology. Over the past ten years, I have taught a variety of courses in Paleozoology, general Geology and Paleobotany at the Institute of Geophysics and Geology of the University of Leipzig. Furthermore, I take pride in having created a major exhibition at the [Museum der Westlausitz \(MWL\), Kamenz](#), one of the leading regional Natural History Museums in Middle Germany, where I worked as the Collection Manager and Administrative Scientist in the fields of general paleontology and paleobotany. The exhibition, [“A Tropical Paradise Lusatica? – Climate Change in Tertiary Times”](#) transported thousands of visitors to the time of the Miocene, when Germany's flora and fauna looked just like those in Florida. The exhibition was based on the research I conducted on the Miocene flora of the world famous Wiesa-Thonberg clay deposit and the Tettha-Buchholz clay deposit.

Not following us yet on Facebook? No worries. Below are some of our most popular stories from the last few months, so you can catch up.

### Facebook Recap: our most popular stories



[Happy #FossilFriday from the Florissant Fossil Beds!](#)

[HMS Beagle LEGO Project](#)

[Are you the Ringmaster? Competition to identify fossilized rings on ancient Wisconsin seafloor](#)

Some of my most satisfying experiences as a museum scientist have come from helping visitors of all ages grasp difficult concepts through a combination of traditional personal interaction, class activities and group discussion—plus modern tools like interactive 3D projections. I believe that a good scientist should always act as ambassador to the public. I am proud of my public outreach activities to date and very eager to pursue such activities with the FOSSIL Project and iDigBio.

### For further reading:

Leder, R., M. (2015). Fossile Reste von Selachiern und Chimaeren aus dem Muschelschluff und Phosphoritknollenhorizont von Zwenkau bei Leipzig. In Festband Prof. Dr. Arnold Müller– Geologica Saxonica – Journal of Central European Geology, 61 (1): 73-90. ISSN 1617-8467, ISBN 978-3-910006-54- 6. [http://www.senckenberg.de/root/index.php?page\\_id=8059](http://www.senckenberg.de/root/index.php?page_id=8059)

Leder, R. M., Müller, A., Henninger, M. & Bach, F. (2014). Die Silberberg-Formation im Profil von Atzendorf bei Stassfurt (Egelner Nordmulde, Sachsen-Anhalt, Deutschland).- Hall. Jb. Geowiss., 36: 73-134. P-ISSN 1432-3702, E-ISSN 2196-3495, <http://public.bibliothek.uni-halle.de/index.php/hjg/article/view/919>

Leder, R., M., Henniger, M., & Müller, A. (2011). [Paläogene Fossilien aus einer Karstschlotte im Unteren Muschelkalk von Karsdorf an der Unstrut \(Sachsen-Anhalt, Burgenlandkreis\)](#), ZDGG, Band 162, Heft 3, Schweitzerbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart, 317-332, ISSN 1860-1804

by Gabriella Nicholas



Jeff Huber

*Editor's Note: With this issue, we are beginning a series of articles on paleoart. Building upon information provided by scientists, paleoartists work in a variety of media to create accurate descriptions of ancient life. Paleoart includes the beautiful murals that serve as the backdrop for classic museum dioramas, illustrations to accompany scientific publications, and 3-D representations of extinct animals. As Bruce MacFadden observes, "One of the most exciting things about paleoart is that it brings extinct fossils back to life, oftentimes in visually beautiful depictions."*

Jeffrey Huber's job requires the talent of Michelangelo and the skill of "Jurassic Park's" Dr. John Hammond. He works with fossils, paintbrushes, microscopes and clay.

Huber is a paleoartist at the Florida Museum of Natural History. These artists typically specialize in paleontology and work to create two-dimensional and three-dimensional versions of prehistoric life.

With a background in figurative art, Huber transitioned into paleoart almost involuntarily after an art gallery he owned was destroyed one winter in a fire.

When Huber joined the museum's art team, the permanent exhibit halls were in the process of being built. He currently works as museum operations spec in the exhibit productions department.

"At the time, I didn't have a lot of background in the area," Huber said. "I would be given a task and I would have to conduct research to create the most accurate piece."

The creation of paleo pieces is based on fossil information, preexisting drawings, current species for comparison and scientific research. Huber's most challenging project involved viewing small fossils through a microscope and creating limestone pieces from the observations.

Mark Hallett, an illustrator of prehistoric life and environments, first coined the term "paleoart." It blends an artist's imagination with scientific knowledge to build versions of extinct animals. Imagine trying to construct the idea of a dinosaur in your head without any visual representations.



Terror-bird

Paleoart plays an important role in scientific research because paleo artists provide scientists with fleshed-out forms of prehistoric life.

Huber constructed several bronze, one-sixth scale sculptures of extinct animals in the [Florida Fossils: Evolution of Life & Land exhibit](#). In addition to the bronze models, Huber played a major role in building the museum's Megalodon exhibit, Northwest Florida: Waterways & Wildlife hall and South Florida People & Environments exhibit.

Currently, Huber is preparing for the construction of a new hands-on Discovery Room for young museum-goers. The exhibit will have larger-than-life 3D models, which he hopes to help create.

"The projects are always different," Huber said. "You're never doing the same thing and you're working with all types of people."

by Bruce MacFadden

Social paleontology is upon us. The style of communication among our stakeholders is evolving rapidly: When we proposed the FOSSIL project just two-and-a-half years ago, our primary means of communication was by meetings, the e-newsletter and the initial myFOSSIL web site. With the explosion of social media (e.g., Facebook and Twitter) and highly interactive web sites that also host chats, groups, blogs etc., social paleontology is exploding too. We hope that when myFOSSIL 2.0, is released, you will find it a go-to place to communicate and learn about the science of paleontology. We are close to announcing the release of the beta-version of myFOSSIL 2.0 which is designed to be a social space where anyone interested in fossils and paleontology will want to come together, learn and socialize in cyberspace. It's a new space for social paleontology.



After a national search in which we had more than 100 applicants, we have hired a new FOSSIL project coordinator, Eleanor Gardner. Eleanor has a Masters degree in paleontology from the University of Georgia, and currently is an instructor in the geology department at Middle Tennessee State University. She has diverse interests and experience in paleo education and outreach. We will publish a longer bio about Eleanor once she joins us later this Spring, but for now we are delighted that she will be part of the FOSSIL team. Eleanor's role as FOSSIL project coordinator will be to run the day-to-day components of the job, keep in contact with our stakeholders, organize travel and participate in talks, workshops and other events that promote the goals of FOSSIL.

The FOSSIL project has added several other new members to its core team. Along with the senior personnel, including me, Kent Crippen, Betty Dunckel, and Shari Ellis, we have Lisa Lundgren, who has filled in admirably as our interim project coordinator, and graduate students Victor Perez, Julia Tejada, with recent help provided by Sharon Holte. We also have hired a postdoctoral research fellow, Dr. Ronny Leder. Read more about Ronny [here](#).

## Student Awards

Each year the SW Florida Fossil Society awards two scholarships to deserving students in Florida Paleontology. One is the Mitchell Hope Scholarship and the other is the Bill and Lelia Brayfield scholarship. Mitchell and the Brayfields were long-time members of the SWFFC, avid fossil enthusiasts, and always welcomed us to their homes to see and study their collections. This year the SWFFS has awarded the Mitchell Hope scholarship to Julia Tejada. A native of Peru, Julia is close to completing her Masters degree under the supervision of Bruce MacFadden at the University of Florida. She is studying the chemistry of Miocene mammal teeth to understand the ancient ecology of the proto-Amazon rainforest of Peru.

The Bill and Leila Brayfield Scholarship has been awarded to Kathryn (Katy) Estes-Smargiassi, a 2<sup>nd</sup> year M.S. student in Museum Studies at the University of Florida. Katy's research focuses on scaphopods (tusk shells). Scaphopods have remained understudied in the fossil record and only a few reports of predation on them exist. The aim of Katy's research is to increase the knowledge of scaphopods in general, and in particular, about the predation record in scaphopod fossils. Katy plans to examine several genera (e.g., *Anatalis*, *Graptacme*, *Tesseracme*) of scaphopods collected from the lower Pinecrest beds (Units 4-9) of the Tamiami Formation (upper Pliocene), from Phase 10 of SMR Aggregates, Inc. in Sarasota, Florida.

We would love to bring greater attention to the various ways fossil clubs and societies support paleontology students (and aspiring ones). If you provide scholarships or other support to students and would like it recognized in this newsletter, please contact the newsletter editor Shari Ellis at [sellis@ufl.edu](mailto:sellis@ufl.edu).

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### Upcoming partnerships, activities and events

We are working with several fossil clubs, societies and other stakeholders to host or coordinate educational and authentic learning activities that might be of interest to both professional and amateur paleontologists.

**10<sup>th</sup> and 11<sup>th</sup> April, Iowa City IA:** [Tiffany Adrain](#), member of the Mid-American Paleontology Society (MAPS) and collection manager at the University of Iowa Paleontology Repository invited us to participate in the [MAPS 37th Annual Fossil Exhibition](#) to be held in Iowa City IA. The Fossil Expo is advertised as the largest show in the world that focuses exclusively on fossils! We will be launching our new website at the meeting, and Ronny Leder and Sean Moran will demonstrate techniques that will help you take the best possible photos of your fossils. Contact: Shari Ellis [sellis@ufl.edu](mailto:sellis@ufl.edu)

**16 May, Orlando FL:** We are excited to be invited to join the Florida Fossil Hunters of Orlando Florida to help with the program and activities surrounding the “Women’s Day in Paleontology.” Five members of the FOSSIL project team and graduate students will be participating in this event, which includes talks and display tables. Contact: Cindy Lockner [clockner@comcast.net](mailto:clockner@comcast.net)

**22<sup>nd</sup> and 23<sup>rd</sup> May, Aurora, NC:** We will be joining the [Aurora Fossil Festival](#) to coordinate FOSSIL involvement in the Memorial Day festival in North Carolina. We will be bringing speakers, a display table, and demonstrate the myFOSSIL web site that event. Contact: <http://aurorafossilfestival.net/>

**26<sup>th</sup> and 27<sup>th</sup> May, Solomons MD:** John Nance and Stephen Godfrey and [Friends of the Calvert Marine Museum](#) will host a field conference directly following Aurora in Calvert County MD. This will include talks, social events and a field trip to the classic Miocene localities along the Calvert Cliffs. The FOSSIL project has reserved a dozen places for interested members of other fossil clubs to join us. We also will have representation from the Dallas Paleontological Society and the Dry Dredgers (Cincinnati). The FOSSIL project will pay for the meeting registration fee for up to 10 participants from fossil clubs, with an emphasis on representation from diverse clubs. Contact: Victor Perez at [victorjperez@ufl.edu](mailto:victorjperez@ufl.edu)

**15<sup>th</sup> and 16<sup>th</sup> June, Gainesville FL:** In collaboration with the iDigBio national digitization project, FOSSIL is co-hosting a workshop for 3D scanning and printing of fossils for K12 educators and members of fossil clubs at the University of Florida, Florida Museum of Natural History. Spaces are available for 10 members of fossil clubs, with priority given to those who can show that they will translate this experience to K12 education and outreach. Travel and lodging costs are covered. Contact: Claudia Grant [cgrant@flmnh.ufl.edu](mailto:cgrant@flmnh.ufl.edu)

**11<sup>th</sup> through 14<sup>th</sup> August, western Nebraska--Badlands Fossil trip.** FOSSIL will be hosting a four-day field trip to the Nebraska badlands, which are classic and highly fossiliferous exposures of late Eocene and early Oligocene sediments. Our goal for this field trip is to learn about evolution and extinction as documented from the fossil record, with particular emphasis on how this knowledge might translate to K12 learning. Participants will include amateur and professional paleontologists and K12 educators. We will be staying at the historic Fort Robinson State Park in Crawford NE. FOSSIL will support lodging and meals for 12 participants from fossil clubs. Preference will be given to participation from members of different clubs, particularly from the Midwest and western regions who also have interest in K12 education and outreach. Contact: [fossil@flmnh.ufl.edu](mailto:fossil@flmnh.ufl.edu) **12<sup>th</sup> and 13<sup>th</sup> October.** The Dallas Paleontological Society will host a meeting for amateur and professional paleontologists prior to the meeting of the Society of Vertebrate Paleontology. This will include talks, social events, and a field trip. Contact: Rocky Manning [manningrl@verizon.net](mailto:manningrl@verizon.net)

Continued from page 17

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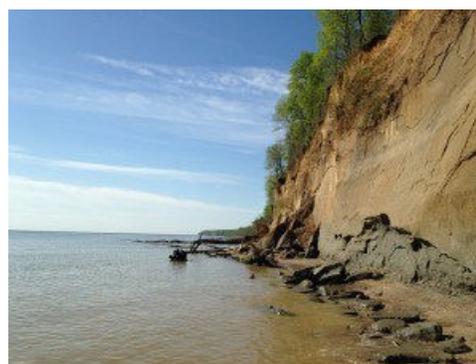
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**14<sup>th</sup> through 17<sup>th</sup> October.** The [Society of Vertebrate Paleontology meeting](#) will be held in Dallas in collaboration with the Perot Museum. This meeting will have more than 1000 amateur and professional paleontologists from the U.S. and around the world. We are planning presentations about FOSSIL and education. The FOSSIL project will support the registration fees for interested members of fossil clubs in the U.S.

**1<sup>st</sup> through 4<sup>th</sup> November, Baltimore MD.** The [Geological Society of America meeting](#), will host more than 5,000 professional geologist, paleontologists, educators, and other stakeholders. The FOSSIL project will be represented in sessions on geological education and outreach.

**2016.** We are working with the **Dry Dredgers** to host a meeting in Cincinnati, OH with more updates to follow. Contact: Jack Kallmeyer [paleojack@fuse.net](mailto:paleojack@fuse.net)

For 2016 onwards, if your fossil club or society is interested in hosting a meeting, field trip or related activity, particularly ones that will promote building a community of amateur and professional fossil enthusiasts and learning about paleontology, please contact us about a possible collaboration at [fossil@flmnh.ufl.edu](mailto:fossil@flmnh.ufl.edu).



Calvert Cliffs photo courtesy of Victor Perez