

News from the FOSSIL Project

Vol. 4, Issue 4, Winter 2017







FOSSIL PROJECT UPDATES WINTER 2017

by Sadie Mills, FOSSIL Project Coordinator

FOSSIL Roadshow Webinar Series

In October, we continued the FOSSIL Roadshow webinar series in Dallas, where we learned about Pennsylvanian Fossils of North Texas with the Dallas Paleontological Society and Dr. Merlynd Nestell of UT Arlington. The wonderful members of DPS shared some incredible specimens, including a beautiful nautiloid, crinoid stem with attached bryozoan, microfossils, and more!



Screenshot from Dallas Roadshow Webinar

Watch a recording of the episode here: https://www.myfossil.org/video-tutorials/#secondroadshow

In November, we took a break from the Roadshow to bring you A FOSSIL Feast, a webinar on the fossil history behind favorite holiday foods. Thanks to all on myFOSSIL and our social media outlets who submitted topic recommendations for this webinar. If you missed the program, check out the recording here: https://www.myfossil.org/video-tutorials/#thirdroadshow

In December, the FOSSIL Roadshow traveled to Greenville, North Carolina, where the Special Friends of the Aurora Fossil Museum presented Fossils of the Carolinas. If you missed this episode, check out the recording at: https://www.myfossil.org/video-tutorials/#fourthroadshow

As our Fall 2017 webinar series draws to a close, FOSSIL would like to express some gratitude to all who made the episodes possible. The first thanks go to FOSSIL webinar staff, including Sharon Holte and Victor Perez for providing technical support, Michael Le for creating social media promotions and live-tweeting the events, and Bruce MacFadden and MacKenzie Smith for researching and presenting ancient foods during A FOSSIL Feast. We'd also like to thank Lisa Lundgren for serving as the FOSSIL Feast moderator, and Jeanette Pirlo for moderating and providing support throughout the series.

Additionally, we want to thank the club members and paleontologists who shared their time, specimens, and knowledge with us during the webinars, including the Dry

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Dredgers, Dr. Brenda Hunda of the Cincinnati Museum, the Dallas Paleontological Society, Dr. Merlynd Nestell of UT Arlington, the Special Friends of the Aurora Fossil Museum, and Dr. Bobby Boessenecker of the College of Charleston. This webinar series would not have been possible without their time and support!

Finally, thank you to all who attended and participated in the webinar episodes. We enjoyed "seeing" everyone online and helping to answer some phenomenal questions!

Website and Mobile App

Coming soon- a new look to the myFOSSIL homepage! Thank you to everyone in the community who provided feedback on the proposed redesign, which was created by our web developer Atmosphere Apps. Be on the lookout for myFOSSIL's new look early in Spring 2018.

We are also considering further website upgrades, including the development of a badge system for myFOSSIL participants. A badge system would allow us to provide recognition for myFOSSIL users that contribute significantly to the community, such as through uploading fossils or providing expertise in an identification forum. We are still in the development phase of this system, but look forward to recognizing the knowledge and work of our community members! In other website news, some of you have recently encountered unwanted messages from spam accounts on myFOSSIL. We apologize for any confusion or inconvenience these messages may have caused, and are working diligently to alter our registration process so spam users cannot access the site. We appreciate your patience and understanding as we get these protections in place. Please continue to alert us to suspicious activity on the site, as we want to address spam issues as quickly as we can.

Finally, the National Science Foundation has awarded FOSSIL funds for use in the development of a myFOSSIL mobile app! We have just begun the design process, but are looking forward to bringing our community a new tool to use in the field.

Guest Lecture: Jonathan Hendricks and the Digital Atlas of Ancient Life

On November 3rd, distinguished lecturer Jonathan Hendricks of the Paleontological Research Institute (PRI) gave a talk at the Harn Museum on the University of Florida campus. This free, public lecture was sponsored by the FOSSIL Project, the Paleontological Society, and iDigBio. During the talk, Dr. Hendricks showcased PRI's online identification resource, The Digital Atlas of Ancient Life. You can learn more about the Digital Atlas here: <u>http://www.digitalatlasofancientlife.org/</u>



Jonathan Hendricks' Presentation

National Fossil Day

The FOSSIL Project joined six fossil clubs from around Florida to celebrate National Fossil Day at the Florida Museum of Natural History on November 4th, 2017. During the event, more than 1,000 visitors were able to take part in a children's dig pit and screenwash activity, as well as view amazing specimens shared by Florida's fabulous fossil clubs! Many thanks to the following individuals and organizations for coming together to put on this fun-filled event:

Florida Fossils Hunters Manasota Fossil Club Florida Geological Foundation Southwest Florida Fossil Club Florida Paleontological Society Gunther Lobisch Florida Museum of Natural History Fossil Club of Lee County Florida Geologic Survey Valerie First



Southwest Florida Fossil Society display at the National Fossil Day Celebration at the Florida Museum

We'd also like to thank the Florida Museum staff and students who helped put on the event, including Jeanette Pirlo, Sharon Holte, Sean Moran, Victor Perez, Michelle Barboza, Isaac Magallanes, Michael Ziegler, Claudia Grant, Laura Cotton, Carmi Thompson, Sean Roberts, Rafal Narwot, Kris Kusnerik, Shamindri Tennakoon, Fatemah Jamal, and Roger Portell. These individuals volunteered their time and knowledge to make National Fossil Day a success.

Social Media

Facebook- We are excited to announce we have over 4,000 "likes" on Facebook! Facebook is just one of the many ways we connect with amateur and professional paleontologists, so we are excited to continue growing our social paleontology network.

Instagram- Through the hard work of our social media intern, Michael Le, FOSSIL now has an active Instagram profile. We are using the account to share photos of myFOSSIL member specimens and FOSSIL events. Follow us at https://www.instagram.com/thefossilproject/ to see these photos and more!

Program Evaluation

As The FOSSIL Project moves into its final year of grant funding, our external evaluator will begin contacting the community this spring regarding participation in a summative survey of the project. The feedback gained from this survey will be critical to understanding the broader impacts of FOSSIL, and will be invaluable as we decide which aspects of myFOSSIL to preserve and maintain for the future. If you encounter this survey, we ask that you please participate, and thank you in advance.



FOSSIL AT GEOLOGICAL SOCIETY ANNUAL MEETING

By Sadie Mills

In late October, the FOSSIL Project traveled to the Geological Society of America Annual Meeting in Seattle, Washington. There, FOSSIL staff and community members learned about, shared, and celebrated collaborations between amateur and professional paleontologists. Three FOSSIL team members gave talks at the technical session, *Citizen Science in Paleontology: Harnessing Public Interest to Advance Research and STEM Education*, which was co-organized by Eleanor Gardner. Bruce MacFadden presented a case study on how cooperation between amateur and professional paleontologists led to the documentation of rare early Miocene land mammals of Belgrade, North Carolina. FOSSIL graduate student, Victor Perez, shared his experience



22-25 October Seattle, Washington, USA

collaborating with amateur collector, Ken Marks, to document the first known occurrence of cookie cutter sharks in the Florida fossil record. Finally, former FOSSIL coordinator, Eleanor Gardner, presented on citizen science best practices based on lessons learned from the FOSSIL Project.



Linda McCall's presentation

FOSSIL was pleased to sponsor the travel and conference attendance of three professional and three amateur paleontologists, four of whom also gave presentations during the citizen science technical session. Richard Twitchett, a research leader at the Natural History Museum in London, presented on the use of a paleoblitz outreach event to engage the public in paleontology. John Westgaard, project leader of the Hill Annex Paleontology Project, described his experience mobilizing citizen scientists to explore the Cretaceous soils of Minnesota. Bobby Boessenecker, adjunct lecturer at the College of Charleston Mace Brown Museum of Natural History, spoke on the development of a museum exhibit honoring contributions made by amateur paleontologists. Finally, North Carolina Fossil Club president, Linda McCall, presented on her club's four-part book series featuring the most complete photographic record of North Carolina fossils.

The project also staffed a booth in the GSA Exhibit Hall, where we promoted our social paleontology community. This booth was co-sponsored by Seattle-area fossil club, the Northwest Paleontological Association (NPA). NPA members Paul Kester, Gregg Wilson, Meg Richards, and Tom Wolfe volunteered their time at the booth, and helped share their knowledge of and enthusiasm for fossils in the Pacific Northwest. The club also brought some amazing specimens to display at the booth, including a terror bird track, a Stonerose specimen, and Cambrian trilobites. The dedication of FOSSIL staff and volunteers helped the project recruit 61 new members to the my website, as well as 100 new followers on our social media platforms. Thank you to NPA and our other collaborators for helping to grow our community!



MacKenzie Smith at the FOSSIL booth at GSA

While in the area, FOSSIL Project graduate students, MacKenzie Smith, Jeanette Pirlo, and Victor Perez had the opportunity to join Northwest Paleontological Association members Gregg Wilson, Tom Wolfe, and Peg Johnson for a trip to the Ginko Petrified Forest State Park in Eastern Washington. They also got the chance to dig for petrified wood specimens at Saddle Mountain Management Area, part of which is BLM (Bureu of Land Management) land near Mattawa, Washington. All of the collected samples were examined for cellular structure. Cellular structure in wood is difficult to preserve, however, and none of the samples collected retained any. If the samples had retained cellular structure, it would have aided in identification and made them important specimens to add to the Florida Museum's paleobotany collection. Nonetheless, these collected specimens will not go to waste as they will be used for educational outreach programs.

To learn more about the annual meeting, visit <u>http://community.geosociety.org/gsa2017/home</u>



From Back Left to Right: Jeanette Pirlo, Gregg Wilson, Victor Perez, MacKenzie Smith, and Peg Johnson, take a quick group shot after a productive day collecting petrified wood in Mattawa, Washington. Photo credit: Tom Wolfe.

FEATURED PROFESSIONAL: TALIA KARIM

Editor's note: This issue we feature Dr. Talia Karim, Collections Manager of Invertebrate Paleontology at the University of Colorado Museum of Natural History. Talia completed her undergraduate degrees at the University of Oklahoma, Master of Science degree from Oxford, and Ph.D. from the University of Iowa. Talia is involved in a number of digitization efforts as co-PI of the NSF-funded Fossil Insect Collaborative TCN including the education portal iDigPaleo, a collaborator on the Cretaceous World TCN, and a partner on ePANDDA, a tool to allow seamless searching and data discovery among iDigPaleo, iDigBio, and the Paleobiology Database (PBDB).

How did you become interested in paleontology? Were you drawn to fossils as a child?

I went on a fossil collecting field trip with the Stovall Museum and the University of Oklahoma when I was about six years old and I was hooked. I especially loved invertebrates such as brachiopods, trilobites, and crinoids. Years later, when I started college at the University of Oklahoma, I majored in Geology and started volunteering for the museum two nights a week through their vertebrate paleontology prep program. I met Roger Burkhalter, Invertebrate Paleontology Collections Manager, one night while volunteering and he introduced me to Steve Westrop, Curator of Invertebrate Paleontology. From there I was on track to study trilobites and I went on to do a senior honors thesis with Steve on Ordovician trilobite mass mortality beds from south central Oklahoma.



Talia taking a photo of a trilobite in the paleontology collection at Harvard in 2016.

As a collections manager, what is a typical work day like for you? What are some of your favorite parts of your job? Your least favorite?

Right now we are working on two major digitization grants, so a typical day for me

includes responding to emails, working on database issues related to the grants, and making sure the student workers have work to do. I also give tours, manage loan and image requests, write grant reports, and work on initiatives to make sharing our collections data easier. My favorite part of the job is working with specimens. My least favorite part of the job is writing reports.

When you reflect back on your decision to go into paleontology, what surprises you most about what your life as a paleontologist vs what you thought it might entail?

I spend a lot more time sitting at a computer than I thought I would. I also spend a lot more time managing student workers for our grant projects than I anticipated.

You are involved in a variety of collaborative projects that rely heavily on technology. I know you are part of at least two NSF-projects to digitize fossils (Fossil Insect Collaborative and Cretaceous World) and have taken a leadership role in running training webinars related to that. You've also helped develop an online resource called iDigPaleo, are working with a team on a project called ePANDDA that aims to improve connectivity among geoscience databases.

I also believe you may be developing an app? Do you have a strong background in technology or has your interest or involvement in tech projects simply grown as opportunities arose? What skills have you needed to make all those projects successful?

I do not have a strong technology background, but it is quickly becoming a requirement for collections managers.



Talia Karim doing trilobite fieldwork in the Ibex area of western Utah, 2011.

You have to know the basics of how a relational database works, how to archive and manage digital data, etc. When we need someone with a specific skill set (e.g., mobile app developer), we will hire an expert on contract.

Some of the projects I mentioned above are focused on education and outreach. What are your thoughts about using web-based resources to engage teachers and youth in paleontology versus direct experience collecting fossils and the like?

I love the idea of bringing fossils into the classroom. Not everyone has the luxury of having an outcrop down the road where they can collect fossils, but with technology we can bring that experience to more people. Additionally, fossils are a finite resource and there are so many amazing specimens already in museum collections just waiting to be discovered. Being able to share those specimens via the web is a major goal for me.

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 am very much in favor of amateurs participating in science and many have made wonderful contributions to museum collections. I would like to see more citizen science projects involving museums and fossil club members as well. These kinds of projects are a great way for the amateur community to gain better insights into what we do behind the scenes at the museum and how research data are collected.

Do you have a favorite fossil discovery (can be your own, or a famous historical discovery)?

I love the story of the Burgess Shale, how it was discovered, described, and then described again. The specimens are so amazing as well.

What do you currently find most exciting in the field of paleontology?

The fact that we are mobilizing museum collection data via digitization projects and making these data available online is really exciting. Some of these collections have been sitting in museum drawers for decades or longer and they have a lot to tell us.

You can follow Talia on Twitter @paleojabb

To learn more:

Read about the Fossil Insect Collaborative on <u>iDigBio</u> or visit the FIC <u>website</u>. Follow the FIC on <u>Facebook</u> or <u>Twitter</u>.

Browse for fossils on <u>iDigPaleo</u>, or read about it in a previous newsletter <u>article</u>.

Read about the Cretaceous World TCN on <u>iDigBio</u> or visit the Cretaceous World <u>website</u>.

Explore <u>ePANDDA</u> -- Enhancing Paleontological and Neontological Data Discovery API.



Fossil Insect Collaborative TCN group photo in the paleontology collection at Harvard in 2016. From Left front: Talia Karim, Susan Butts, Chris Norris, Diane Erwin, Ricardo Perez de la Fuente, Brian Farrell, Christina Byrd, Whit Farnum, Seth Kaufman, Dena Smith, and David Zelagin.

AMATEUR SPOTLIGHT: BONNIE CRONIN

There are those that make a difference in lives quietly. Through hard work and long hours of unrecognized efforts, these individuals spend their time gathering, writing, organizing, packing, transporting, and showing their personal collections and educational material to individuals of all ages, sharing their knowledge and enthusiasm about fossils and the field of science. Spending their own personal time to passionately educate young impressionable children and individuals of all ages. The impact of these personal engagements will probably never be known, but to these individuals they persist nonetheless.

We meet many people throughout our lives. Some will be special, with a warm smile and receptivity, they will provide us with experiences that stay with us for a lifetime.

One such individual is Bonnie Cronin. Bonnie is on the Board of Directors for the Florida Fossil Hunters, and holds the following positions: Secretary, Education Chair, Membership Chair, and Newsletter Chair. She also co-authored a poster titled "Using out reach as a bridge between professional paleontologist and the general public", which was presented at the 2016 Southeastern Section regional meeting of the Geological Society of America conference. Bonnie has worked closely with the FOSSIL project staff, and has coordinated an annual Women in Paleontology educational and outreach event. In addition, Bonnie also conducts a Kid's Fossil Blast the third Saturday of every month at the Orlando Science Center.

For those of you that know Bonnie, I know you share my appreciation for everything she does, for her kindness, and for her friendship. -Cindy Lockner, Florida Fossil Hunters

by Bonnie Cronin

Back when there was no internet (circa 1965), it was common to grow up ignorant of the wonders of the universe. So, at 17 I didn't know much about the origins of our world. Then I came upon a Readers' Digest article on Louis Leakey and his discoveries of early hominids in Africa.... I was hooked. For the next 30 or so years while working and raising children, I read all I could on the evolution of early humans which led me to learn about how life emerged and even to the beginning of the universe.

Finally, after the kids were grown, I found the Florida Fossil Hunters. I was thrilled to discover that there were other people just as curious about the world and very willing to share what they knew.

My third lucky break was finding Russell Brown in the Florida Fossil Hunters. We share a passion for knowledge and sharing it with others. Together we have collected fossils and casts to use in education and outreach events. We have worked with others in the club to establish a collection for displays most of which are in the Dinosaur Exhibit at the Orlando Science Center. Russell has the eye for detail, so he excels in getting the fossils sorted and identified. Like many amateurs, we have a collection of books to use for references. Also, I like working with kids, so I started a kids' program that meets about 6 times a year. The idea is to expose the kids to fossils and talk about paleontology in a relaxed environment. Touching the fossils is encouraged. I have learned so much preparing for each "class".

With the inspiration of the FOSSIL Project, we have endeavored to expand our contacts with the community. We began a Florida Fossil Hunters Facebook page – but not a "closed" one that is used just for paid FFH members. We had the goal of making it



Bonnie Cronin and Russell Brown with the fantastic Florida Fossil Hunter display at an Orlando Science Center event

a forum for amateurs to talk to one another about hunting for fossils here in Florida and learning about them. It has exceeded my expectations. Today there are over 3,000 members who post pictures, ask questions, and help newbies get started.

Another method of community outreach has been our annual "Women in Paleontology" programs. The FOSSIL Project has been very supportive of this event with resources and young women paleontologists to talk to the people who come. We are still trying to find the right ingredients to reach a larger number of girls and women to challenge and inspire them to go into science.

I have found through volunteering at community events that there are so very many people out there who are hungry for knowledge and haven't had the opportunities to learn about the evolution of life (it can be a very intimidating topic) and the history of the earth. Some are satisfied with just a nibble of a few facts while others want to sit down to the whole feast. We welcome them all.

During my 2.5 years with the FOSSIL Project, I had the great pleasure of getting to know Bonnie Cronin of the Florida Fossil Hunters. She has a heartwarming personality and a true passion for paleontology. Whether working with you in field or working with you on a grant proposal, Bonnie will put in hours of hard work and charm you with her infectious laugh. She is a force in Central Florida providing opportunities for children to get hands-on experience with fossils. She has extensive experience doing paleontology presentations at local schools, and she has been heavily involved in the production of NPS Junior Paleontologist Educational Kits which are sent to various national parks/monuments around the U.S. Bonnie also serves critical roles for the Florida Fossil Hunters, working as Secretary, Education Chair, Newsletter Editor, and Membership Manager. Along with Russell Brown, Bonnie has been recognized for her contributions to Florida paleontology with the 2012 Howard Converse Award (Florida Museum of Natural History) and the 2015 National Fossil Day Partnership Award. Keep up the great work, Bonnie! -Eleanor Gardner, Outreach & Engagement Coordinator, University of Kansas Natural History Museum



Bonnie Cronin & Russell Brown receiving the National Fossil Day Partnership award in 2015

CLUB CORNER: NORTH AMERICA RESEARCH GROUP

By MacKenzie Smith, Bruce Thiel, and David Ellingson



What is now a 501(c)(3) organization with 106 members, the North America Research Group (NARG) started in 2004 as five collectors wanting to form something that would help the field of paleontology. Our mission is, "To encourage responsible stewardship of Earth's paleontological resources; to promote scientific research, communication and public education." Our club meets the first Wednesday of every month at the Rice Northwest Museum of Rocks and Minerals, Hillsboro, Oregon at 7:00 pm. There are three main outreach events that we attend or organize each year. They are the Fossil Fest at the Hatfield Marine Science Center (Newport, OR) in February, the Northwest Fossil Fest hosted by NARG at the Rice Museum in August, and the Portland Regional Gem and Mineral Show in Hillsboro, OR in August. Each year we organize several field trips around Oregon and Washington. We are

the only fossil group in Oregon and have members primarily from Oregon and Washington, but also have members from other states and countries. Our members are currently engaged in a variety of projects: documenting Paleogene molluscan fauna of the Willamette Valley, documenting Pleistocene fauna of the Yamhill River, collaborating with researchers at the University of Florida with describing the flora of the Menagerie Wilderness, bringing paleontology to the K-12 classroom, helping the accession of a collection with the University of Oregon's Museum of Natural and Cultural History, and preparing fossils in front of the public and teaching students fossil preparation at the Oregon Museum of Science and Industry. I became a member in December of 2005 and have seen the club grow, and I think I can safely say that the founding five members achieved their original goal.

As a research assistant on the FOSSIL Project and a board member of NARG, I am proud to present two articles written by our members that reflect what we do as a club. The first article, written by Bruce Thiel, highlights some of NARG's contributions to science. Bruce specializes in crabs and is a superb preparator who has collaborated with Dr. Rodney Feldmann at Kent State in Ohio. The second article is written by Dave Ellingson, a science teacher at Woodburn High School. Dave discusses one of NARG's outreach components and how he brings paleontology to his students. Enjoy! For more information about our group you can visit our website at <u>www.nargpaleo.org</u> or our Facebook page at <u>www.facebook.com/nargpaleo</u>. --MacKenzie Smith

Scientific Contributions by NARG Members



NARG excavation group Photo © Greg Carr

by Bruce Thiel

Ten members of the North America Research Group (NARG), a 100+ member fossil club based in Hillsboro, Oregon, have found or identified several new fossil species and/or genera or have had a new species named after them.

A recent fossil lobster found by NARG member Bob Manley highlights the importance of discoveries made by amateurs and fossil club members. We should note the finds and contributions fossil club members have made to science whenever someone proposes new rules to restrict fossil collecting on public lands. With this in mind, Bob is the tenth NARG member to have discovered, described or have a new genus or species named after him/her.

Finds and descriptions by the ten NARG members or former members include:

In 1973 a green lacewing insect was found by Gregg Wilson at Republic, WA named Adamsochrysa wilsoni after him and published in the Journal of Paleontology V87, No. 1 [1].

A cancer crab from the Olympic Peninsula was found by Seattle member David Starr, named Metacarcinus starri published in 1996 [2] and the oldest record for the dogwood family, Suciacarpa starri, a new genus and species which was found by David and described by Brian Atkinson, Oregon State University, in 2016 [3].

The wing of a new species of scorpionfly, Cimbrophlebia westae, was found by Joanne West in Republic, Washington in 2009. It was described and published by Bruce Archibald in Zootaxa 2249: 51-62 (2009) [4]. westae, along with three other species from the Early Eocene Okanagan Highlands are the first occurrences of the extinct family Cimbrophlebiidae from the Western Hemisphere.

A Jurassic seed cone was found in Eastern Oregon by Greg Carr--named after him and called Pararaucaria carrii in 2013 [5]. Bernie the thalattosaur, also found by Greg Carr, will also undoubtedly be a new addition to the fossil record once it is described and published [6].

A crocodile was found in Eastern Oregon by Andrew Bland with the species named after NARG called Zoneait nargorum [7]. Andrew also led a NARG expedition to Coos Bay, OR, in 2007, to recover a Miocene whale skull that has not yet been studied or identified.

A new species of Cretaceous fern from British Columbia named Osmundacaulis whittlesii was identified and described by MacKenzie Smith, Drs. Gar Rothwell and Ruth Stockey in 2015 [8].

A thorough description of a Pliocene deer Bretzia pseudalces, by Eric Gustafson, published in 2015 by U of O. Originally found by Eric and a co-collector which they described earlier, Eric recently compiled a very thorough analysis and detailed description of its osteology and biology [9].

A new genus & species of flightless penguin-like bird named Olympidytes thieli found by Bruce Thiel and published by Gerald Mayr in 2016 [10].

A crab found by Greg Carr and later named in memory of Bill Sullivan called Macrocheira sullivanialso published in 2016 [11].

A fossil lobster named Scyllarella manleyi, from SW Oregon found by Robert Manley was recently described in 2017, by Drs. Feldmann and Schweitzer as a new species [12].

This list does not include the numerous finds by amateur collector and NARG advisor Jim Goedert who has 18 genera/ species named after him or his wife, Gail, with two more waiting for publication. Jim has also found several other fossils that he gave to researchers that were given other names and currently has over 100 publications in which he was an author or co-author. Jim and David Starr were also responsible for discovering the first dinosaur in Washington State, after finding a piece of tyrannosauroid leg bone on Sucia Island and bringing it to the attention of the Burke Museum.

NARG members Tim Fisher and Greg Carr also made an important contribution with their find of early saber-tooth salmon bones and articulated vertebrae. They brought it to the attention of the University of Oregon Condon Collection, which excavated the site and removed two fish skulls which show a new arrangement of the saber teeth, sticking out sideways, perpendicular to the skull, different from the earlier original described format for the salmon, which showed them as frontal, and downward facing.

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[12] Feldmann, R. M. and Schweitzer, C. E. 2017. Scyllarella (Decapoda: Achelata: Scyllaridae) from the Lookingglass Formation (Eocene): first occurrence on western coast of North America. *Bulletin of the Mizunami Fossil Museum*, 43: 11–15.

Collaboration in Woodburn, Oregon

by David Ellingson

Since 2003, students at Woodburn High School have been engaging in a paleontology dig located on their campus. These digs occur in September and have become part of the curriculum taught in the school's biology classes. With the assistance of the City Water Department, who provides a track hoe and operators, peat from 4 meters deep are brought to the surface and are sorted and screened for fossils of animals that lived during the late Pleistocene. A variety of animal bones have been found, including



Interpretive display at the High School funded by NARG and other community members

bison, elk, ground sloths, beavers, muskrats, pocket gophers, geese, ducks, turtles, frogs, and fish.

Word spread quickly through the area about the site and interest from community members and fossil enthusiasts created an opportunity for summer digs to start happening. Members of the North America Research Group (NARG) were some of the first to start participating in these summer digs and over the years have created a unique connection between the fossil club and the school. NARG members built water screening stations for students to use, purchased equipment and tools that helped in the excavation, and donated their time to help in the digs. In addition, many members would come to the school to identify fossils and help students to clean and prepare the fossils for display and inventory.

NARG member Debra Shannon was been coming to both summer and September digs for the last eight years. She has developed a unique method of water screening and has helped teach students how to screen through the peat to find some of the smaller bones. Debra has also done an extensive reworking of the inventory to help create a database that can be easily accessed for research and comparative anatomy.

Collaboration with NARG members has helped bring some advanced technology into the classroom. Gregg Carr is an expert in 3D scanning and printing and has taken many of the bones that have been found at Woodburn to be 3D scanned. The bones are printed at the school and students paint these prints to make replicas of the bones which can then be used in displays as well as sent to scientists around the country for identification.

During this year's digs, over 300 bones were found. Two of the most exciting finds were two bird vertebrae. These vertebrae were much larger than any other bird vertebrae that had been found in the past. Pictures were sent to a variety of professionals to see if they could help identify the animal belonging to these vertebrae. Their response was mixed, as pictures were not able to give all the information needed for proper identification. Thanks to Greg, these bones have been scanned and printed to be sent to a number of professionals.



Debra Shannon at the water screening station.



Bird vertebrae beside the 3D print of the bones

Woodburn is an excellent example where enthusiastic amateur paleontologists are sharing their passion with teenagers and together use fossils to work to tell the story of a late ice age environment.

To learn more:

Read about NARG members' scientific contributions in this past <u>newsletter article</u>.

FEATURED FOSSIL: HARDOUINIA MORTONIS URCHINS

This issue, we feature two echinoid specimens found by Linda McCall of the North Carolina Fossil Club and the Special Friends of the Aurora Fossil Museum.



Linda presented about these echinoids during our most recent webinar, *Fossils of the Carolinas*. The pictured specimens were found in a sand pit, located in the Rocky Point member of the Pee Dee formation in Eastern North Carolina. They date between 66 million and 70 million years old. Despite their differences in appearance, they are both Hardouinia mortonis specimens. Linda explained that sea urchin spines are attached by soft tissue. When an urchin dies, the soft tissue decays and the spines fall off. Accordingly, the specimen on the left (without spines) is a fossil of an urchin that became buried after the animal had died. The specimen on the right, however, retains its spines, suggesting it was buried alive! While this may have made for a bad day for this ancient sea urchin, it becomes a great day for the fossil hunter who is able to recover the specimen with its spines intact.

Thank you to Linda for sharing these wonderful specimens with us!

RESEARCH: THE TIBETAN PLATEAU: THE BIODIVERSITY HOTSPOT DURING THE PALEOGENE

By Tao Su

Dr. Tao Su is an associate professor and principle investigator with the Paleoecology Research Group of the Xishuangbanna Tropical Botanical Garden in Yunnan, China. He recently visited the paleobotany collections at the Florida Museum to compare his specimens from the Tibetan Plateau to similarly aged specimens in the US for identification.

The Tibetan Plateau, about 250 million km2 with average altitudes of more than 4000 m, is called 'the Third Pole' in the world. The collision between the Indian Plate and the Eurasian Plate shaped the topography of this large region. The evolution of this plateau greatly influenced the topography of Asia, as well as the regional, and even global, climate patterns. Plant fossils are pivotal for us to understand the biodiversity history and evolution of the plateau in the geological past, however, fossil floras in this area have been far from fully investigated because of access and logistical difficulties.

During recent years, we have done plenty of fieldwork in the central part of the Tibetan Plateau, which has average elevations of around 5000 m. Several Paleogene floras have been found for the first time, which provide a good opportunity to understand the biodiversity history in this fascinating region. Among these

Field work in the Lunpola basin, central Tibetan Plateau (25th July, 2016), Please note that the present elevation is 4750 m in the working place.

floras, the early-middle Eocene Jianglang flora in Bangor County is high in plant diversity, with plant fossils in the forms of fruit/seed, leaf, tuber and flower being preserved. Very interestingly, it shares many floristic components to flora from the Eocene Green River Formation in the Western Interior USA, such as Lagokarpos (unknown family) and Illigera (the family Hernandiaceae), indicating a close floristic relationship between the Tibetan Plateau and North America as early as ~45 Ma. Another site in the Lunpola basin, namely late Oligocene Dayu flora, is well known for its palm and grass fossils. The length of a palm leaf specimen is up to 1 m, even not preserved as whole. Additionally, plenty of grass fossils were collected from the same layer, though it is still unresolved if they are C4 or C3 plants.



Palm leaf collected from the late Oligocene of the Lunpola basin, central Tibetan Plateau. Meanwhile, this site in Lunpola basin is also famous for animal fossils, such as climbing perch (Eoanabas thibetana) and rhino (Plesiaceratherium).

Generally, these new fossil materials collected from the core area of the Tibetan Plateau show quite high biodiversity in the central part of the plateau. They open a new window to exploring the process and mechanism of biodiversity history under dramatic paleoenvironmental changes in the plateau during the geological past. Many more interesting fossils are expected to be found in future.

Questions for Dr. Tao Su? Email sutao@xtbg.org.cn.

To learn more:

Read about the Green River formation here

This paper published in <u>Nature</u> explains more about the paleogeography and paleoenvironment of the Tibetan Plateau during the late Oligocene.

NEW BOOK! DARING TO DIG: ADVENTURES OF WOMEN IN AMERICAN PALEONTOLOGY

Editor's Note: Daring to Dig is a new children's book published by the Paleontological Research Institution (PRI), featuring the stories of twelve women paleontologists from both the past and present. Aimed at ages 8-12, the graphic-novel style book highlights the challenges and achievements of women in paleontology, while showcasing some great science illustrations and content to boot. Sadie Mills, coordinator of the FOSSIL Project, interviewed author Beth Strickler and illustrator Alana McGillis to learn more about the book which is available from PRI and Amazon.

At the FOSSIL Project, we love learning about women in STEM, and were so excited to learn about Daring to Dig. What inspired you to write this book?



Illustrator Alana McGillis at the FOSSIL Project booth at the 2017 GSA annual meeting

Beth: When I was the Director of Exhibitions at the Paleontological Research Institution, I worked on several projects that centered on the history of the Institution, which was founded in 1932. I was intrigued by the surprising number of women paleontological carnel. University at

women paleontologists who were involved with PRI or attended Cornell University at a time when most women weren't going to college, let alone working in the sciences. The more I looked into it, the more I realized there was an opportunity to tell some seriously fascinating and generally unknown stories. Who were the earliest women paleontologists, specifically in the United States? What kind of work were they doing, and why weren't there more of them?

I proposed a broad project at PRI about these women, eventually titled Daring to Dig, that would include a traveling exhibition, a history book, a children's book, a website, educational programs, and so on. I gathered together a team of experts and we delved into the history of women in American paleontology from the late 18th century to the present. Much of this work was possible thanks to a planning grant from the National Endowment for the Humanities. So the book was just one part of the project, but was the most fun to work on. Alana and I got to explore the personal histories of the women as well as their professional accomplishments in a very playful way.



Author Beth Strickler of the Paleontological Research

In addition to featuring amazing women, Daring to Dig also includes great paleontological facts. What is your connection to paleontology?

Beth: Besides a typical general interest in dinosaurs, my involvement in paleontology began in 2010 when I started at PRI. I came with a Bachelor's in Classical Civilizations, an MFA in Museum Exhibition Planning and Design, and a

few years experience taking raw information (mostly American history based) and transforming that into an engaging visitor experience. At PRI I was thrown into the natural history deep end. I worked with many scientists, from

paleontologists to climate scientists to entomologists. So one of the most exciting things about my time at PRI was that I was being paid to learn new things about the natural world and its long history.

Alana: I took my first paleontology class at Smith College as an undergrad. I ended up majoring in geoscience, but always had a particular soft spot for the history of life and loved studying foraminifera. After college, I got a job at the Paleontological Research Institution as an assistant. Paleoart was a field I hadn't thought much about until I got to PRI but the ways we depict past life and how our art has evolved really interests me!

Daring to Dig's illustrations are so fun and engaging! What process did you use to develop them?

Alana: The process to make the book was very collaborative. Beth gave me a word document with the text she wanted me to include and a huge file full of reference images. From there I was given a lot of freedom to map out a page design. Every week, we went back and forth, where we gave each other feedback, adding sentences, changing pictures. Beth was a great partner to work with! In terms of depicting different critters, I looked to fossils, papers, and other paleoartists. The maiasaura and thalattosaurs were both critters that I looked to fossils in order to bring them to life. I read up a bit before drawing the podokesaurus to find out it probably had protofeathers and figure out how to best draw them.



Sample pages from "Daring to Dig"

How did you go about finding and researching women to include in Daring to Dig?

Beth: Once we decided to pursue the larger Daring to Dig project, I knew we had to assemble a team of experts who could contribute their individual knowledge - this included museum educators, paleontologists, and historians. One of the first things we did as a team was to compile a list of women who have contributed to paleontology through the years. We came up with quite a long list at first and had to decide how to trim it; for now, focusing on women in the United States. While it was encouraging that the initial list was fairly long, it was obvious that it was heavily skewed towards the present. It was challenging to come up with many women who were active before the 1960s. I personally only knew about the women who had some affiliation with PRI and so the team, several interns, and I spent time digging up whatever we could. We relied on archives at museums, universities, and professional societies for this process. With the NEH grant, we were able to hire a consulting exhibition developer who traveled to different institutions and gathered information for the team about the short-listed women's paleontological collections, labwork, and personal histories.

Was there anything that surprised you as you researched women in paleontology?

Beth: Despite the fact that most other women had been excluded from the sciences due to their gender, I was still surprised that those who did find work were greatly underpaid, or completely unpaid. Even if these women managed to finish school, gain entrance to a graduate program, eventually find work in the field, and generally go against social standards, they were not paid enough money to support themselves. Many of the women featured in the book were only able to make the discoveries that they did because they had financial support from their families. It made me think about all the barriers women were facing - money, education, race - and wonder about the stories of the unknown women who wanted to pursue paleontology but never could. If it was difficult to find records of past paleontologists, it was near impossible to find records of those who were pushed out.

Who do you hope will read the book, and what do you hope they'll take away?

Beth: I hope that parents and children, regardless of gender, enjoy the lively stories of discovery and the fun details in Alana's illustrations. Overall, I hope they will simply enjoy the stories. But it's important to me that both boys and girls see women in roles such as "Paleontologist," so that one day people just ask, "What's it like to be a paleontologist?" rather than "What's it like to be a woman paleontologist?"

I want kids to be thrilled by the women's adventures, and so interested in the science behind them that they look things up on their own and visit museums to learn more. I also hope that readers recognize the value of diversity in science, and see that although much has changed in the last 125 years, there is still a ways to go. Scientific progress benefits from diversity.

Alana: I hope young girls and boys will read it. I think it's important boys also learn they can look up to girls, that women role models are role models for everyone. I hope that hearing these stories makes girls feel like there is a place for them in paleontology and that there always has been. Kids are naturally interested in fossils, mostly dinosaurs, so I also hope this book helps expand the perspective for kids on what paleontology is. This book has crinoids and forams and horses and birds, much more than just dinos. I did my best to try and put my enthusiasm for these critters into the book, so hopefully that will come across.

Daring to Dig is such hit! What kind of projects do you hope to work on next?

Alana: Thank you for the kind words! It was the most fun I've ever had on a project. Next I hope to keep telling science stories through comics and illustrations! I've been very fortunate to get to make comics for the Critical Zone Observatory, and I draw geology doodles for fun online. My goal is to help more scientists tell their stories in compelling and fun ways through art, so I've got my eyes peeled for more projects!

Beth: I will probably always work in museum exhibition design, but I'm thrilled by this first foray into children's book writing. PRI's Daring to Dig project as a whole should continue to expand, especially the website (<u>daringtodig.org</u>) and exhibit, and I hope to contribute more to it. In the meantime, Alana and I have talked about the possibility of other books, and I have a couple fun ideas I've been pondering. Giant ground sloths, anyone?

Thank you to both Beth and Alana for sharing their book and experiences with us. To learn more about Daring to Dig, visit <u>http://www.priweb.org/daringtodig</u> or <u>www.daringtodig.com</u>.

By Karol McQueary, President, Southern California Paleontological Society

Good news! California now has an official state dinosaur, as of September 23rd, when Governor Jerry Brown signed AB1540, making *Augustynolophus morrisi* an official symbol of our great state! This impressive hadrosaur had a tremendous outpouring of support and publicity, all of which played a part in the passage of this bill. Certainly no other dinosaur in history has had its own Twitter account and Facebook page. But the real story is the part our young people played in making this happen.

"Dinosaurs are cool, and highlighting a dinosaur that has such a deep connection to our state will stimulate interest in paleontology and science overall, particularly with children," said Assembly member Richard Bloom, the author of this bill. We couldn't agree more!



Election poster in favor of a state

dinosaur for California

Our students DID think this was cool, and they both supported this bill and learned about the legislative process as they circulated petitions, wrote persuasive letters, and drew posters urging a "yes" vote for Auggie. The fifth grade classes from Chapman Elementary School, a Los Angeles Unified public school in Gardena, sent a stack of letters of support to Sacramento. They also sent posters, which were on display on the third floor of the Capitol building in Sacramento during the month of July. Their arguments were well thought out and eloquent. I believe that some of these young people might have a future in politics!

Aubrey, a student at Chapman, stated, "Another reason why I think the *Augustynolophus morrisi* dinosaur should be our California state dinosaur is because if we do, then kids will want to find out more about the dinosaur and study more. It could lead them to be inventors, or they could find new plants or animals or new medicines. This dinosaur is a lesson to all of us. It's our dinosaur. We can't let this dinosaur go to waste!"

Young members of the Southern California Paleontological Society joined the effort, also learning about how a bill becomes a law and how to take part in the legislative process. They presented information about the bill to their various school classes, circulated petitions, and made their voices heard as well. The senators certainly heard from their young constituents.

As a step in the process, each bill goes to a committee prior to being read to the entire legislative body. On July 11, the Senate Governmental Organization Committee heard arguments in favor of this bill. Speaking in favor were Dr. Luis Chiappe (Vice president of Research and Collections at the Natural History Museum of Los Angeles County & Director of the Dinosaur Institute), Karol McQueary (President of the Southern California Paleontological Society), and society member and 6th grade student Llandyn Lubs.

Llandyn, who was there with his parents, Brian and Stacy Lubs and sister Quynn, first asked the senators to repeat the dinosaur's name after he pronounced it for them, stating that he didn't want them to vote for something they couldn't pronounce. That got a laugh, but the senators did as they were instructed, and they properly pronounced the dino's name. After his presentation and questions from the committee, Llandyn and family posed for a



Sixth grader Llandyn Lubs speaking to the Senate Governmental Organization Committee



Dr. Luis Chiappe (Vice president of Research and Collections at the Natural History Museum of Los Angeles County & Director of the Dinosaur Institute), Karol McQueary (President of the Southern California Paleontological Society), and 6th grade student Llandyn Lubs and family with Assembly member Richard Bloom

photo in the Assembly Chamber with Assembly member Bloom and were treated to a private tour of the Capitol building.

All in all, it was a great experience for California students as they took part in helping a bill become a law. They were fully invested in the process, and we anticipate that when they see a picture of *Augustynolophus* - in a book, or at the museum, or on the internet, they will know that they played a part in making this happen.

Read a little about the history of this effort here



One of the Chapman School posters encouraging support of AB1540



A Facebook post. Perhaps a new flag for California?

SHARK TEETH FORENSICS AND DIVERSITY IN SCIENCE

Editor's note: While preparing for our Citizen Science in Paleontology technical session at the GSA annual meeting, the FOSSIL Project learned about the research of North Carolina State University Undergraduates Neal Hairston and Erik Ryder. The project was please to help sponsor accommodations for these students at GSA, so that they might be able to share their work on diversity and paleontology citizen science. Below, Neal Hairston describes his project and what it was like to present at a large conference.

by Sadie Mills, Coordinator of the FOSSIL Project

How do we increase diversity in paleontology? Neal Hairston, a senior at North Carolina State University, is working on that problem. Though Neal is pursuing a degree in Psychology with a Spanish minor, he became involved with paleontology through Shark Teeth Forensics, a K-12 citizen science outreach project at NC State University in Raleigh.

During a Shark Teeth Forensics lesson, students find shark teeth by sorting through provided sediment. They then take and record measurements on the found teeth, and report that data back to Paleontology Research Lab at the North Carolina Museum of Natural Sciences. The lab then uses the data to reveal preservational biases in the fossil record, as well as reconstruct the body size of ancient sharks.

Neal brought his psychology background to the project by looking at the role Shark Teeth Forensics could play in addressing diversity issues in the STEM field. He explained that the Shark Teeth Forensics project was a tool that helped underrepresented students in STEM begin to see that science was possible for them, and that they could be scientists. He further explained: "Many of these students face constant messages through media, and by other people, that tell them that they are not capable of doing science, or pursuing it in a future career. However, involving them in this project, and letting them have this hands-on experience, while also learning how their work in that moment was contributing to the realm of STEM, helped combat these messages they were used to receiving."

Neal, along with fellow student Erik Ryder, presented their work with Shark Teeth Forensics and STEM diversity at the Geological Society of America annual meeting this past October. Having never presented at a large conference before, Neal was nervous about the experience. Once he arrived, however, he found the conference friendly and inviting. About his talk, he noted: "I was very appreciative of how open-minded people seemed to be, and I was able to tell that people genuinely cared about our topic."

In the near future, Neal hopes to continue working with Shark Teeth Forensics and help train others to administer the program. More long-term, Neal hopes to pursue a career where he can directly impact and help others. He is considering both counseling and academia as options, and is especially interested in conducting psychological research dealing with racial identity and its effects on minority college students. Ideally, he would love to



Neal Hairston (far left) at the FOSSIL booth at GSA 2017

connect this future research to the Shark Teeth Forensics work he has completed so far.

Thank you to Neal, for sharing his experience with us. You can learn more about the Shark Tooth Forensics program here: <u>http://studentsdiscover.org/research/shark-teeth/</u>

NEWS FROM THE PALEONTOLOGICAL SOCIETY

By Bruce MacFadden, President-elect

We are pleased to announce that after the first year of offering a new amateur/avocational membership category, almost 100 individuals have signed up as PS members. We hope to continue to increase benefits and representation to make the PS more inclusive and attractive for fossil enthusiasts.

Every year the PS has a series of awards and grants, some of which might be of interest to the amateur fossil community:

Strimple Award



The Strimple Award recognizes outstanding achievement in paleontology by amateurs (someone who does not make a living full-time from paleontology). Contributions may be an outstanding record of research and publication, making outstanding collections, safeguarding unique paleontological materials through public service, teaching activities in the area of paleontology, and collaborations with others working in paleontology. Anyone, including other amateurs, may make a nomination. Nominators do not have to be members of the Paleontological Society.

PS Outreach and Education Grants

The Paleontological Society works to increase the public's awareness and understanding of paleontology by enhancing formal and informal educational opportunities. The Paleontological Society Outreach and Education Grants provides support to our members for programs and activities involving educational outreach and community engagement.

The application deadline for these and most other PS grants and awards is **1 February 2018**. For more information see: <u>http://paleosoc.org/grants-and-awards/</u>

RISE Program

There is increasing awareness within professional societies about the importance of diversity among its membership, equality in terms of opportunity, and inclusiveness—feeling welcome and part of the professional community. In 2017 the Geological Society of America (GSA) started a program called RISE (Respectful, Inclusive, Scientific, Events) that seeks to develop and maintain affirming environments at professional meetings, and other sponsored activities (e.g., field trips). Each of the PS presidents (current, elect, and past) took the RISE training before the GSA Annual Meeting in Seattle in October 2017. We look forward to continuing the awareness of, and commitment to diversity, equity, and inclusiveness to broaden representation as part of our culture within the PS.



UPCOMING EVENTS

December 28, 2017 @ 9:30 am - 5:00 pm

Family Paleontology Day at Falls of the Ohio State Park (IN)

January 6, 2018 @ 1:00 pm - 3:00 pm

Dickson Mounds Museum Kids Day - Rocks, Minerals, and Fossil (IL)

January 17, 2018 @ 9:00 am - 5:00 pm

Museum Selfie Day (everywhere!)

January 18, 2017 @ 11:00 am - 11:30 am EST

Smithsonian Science How: Text Chat with Fossil Preparator Michelle Pinsdorf (Online)

January 20, 2018 @ 9:00 am - 11:00 am

Dino Preschool Party at the Arizona Museum of Natural History (AZ)

February 1, 2018

Deadline for Paleontological Society Strimple Award Nominations

February 2, 2018

Application deadline for the NPS Geoscientists-in-the-Parks Program

February 3, 2018

Application deadline for 2018 GeoCorps America

February 3, 2018 @ 7:00 pm - 9:00 pm

The Importance of Paleontology Education and Outreach in Georgia: Talk by Cam Muskelly (GA)

February 12, 2018

Darwin Day at the University of Tennessee, Knoxville (TN)

February 16, 2018 @6:00 pm - February 19, 2018@ 5:00 pm

The 52nd Annual Meeting of the Western Association of Vertebrate Paleontogy (UT)

February 17, 2018 @ 9:00 am - 5:00 pm

Fossil Club of Lee County 13th Annual Fossil Fest (FL)

February 18, 2018

Postmark deadline for submissions for Dry Dredger Paleontological Research Award

March 17, 2018 @ 10:00 am - 3:00 pm

Can You Dig It? (FL)

April 6, 2018 @ 9:00 am - April 8, 2018@ 5:00 pm

Mid-American Paleontology Society's 40th National Fossil Expo

More events