North America Research Group

NARG NEWSLETTER

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Federation of Minerology Show

Lewiston, Idaho

October 18-20, 2019

By Greg Carr

I traveled to this show to showcase the NARG group, display several recent finds, talk about fossils, geology and all things dead. I had 5 display cases – 4 for Bernie Oregon's Thalattosaur and one of the Saber-tooth Salmon. I also brought a full table of fossils for hands on show-and-tell and my trustworthy 3D printer. By far the two most popular fossils that people picked up were the Megalodon tooth and the large crab-in-concretion. Not too many sharks or fossil crabs in that part of the world!

Setup was on Thursday afternoon with the show running all day Friday, Saturday and until 4PM Sunday. There was a good attendance (by my eye) even though my scheduled two talks were sparsely attended. Thank goodness for that, as I left my laptop and lectures at home!

I really enjoyed myself, and the folks there at the Hell's Canyon Gem Club were very friendly. I drove through the Wallula Gap, a serious barrier to the ice-age Bretz floods. Basically, the entire trip was through Columbia river basalts, and most of it was through Bretz-floods affected areas. Interesting geology / history! I may go back, although it's a long way to drive (7 hours).

(Sue, I heard). Just look at the size difference!

Most of the displays – only the banner was down and the salmon was in its own separate case.

Close up of one of Bernie's posters and first two cabinets, plus the fossil petting zoo on the display table.

Closeup of the saber-tooth salmon case. Lots of fishermen commented on this one.

One of my many visitors.

December's NARG Meeting "Favorite Fossil of 2019" Show-and-Tell.

Phil Knutson brought in recent botanical finds from the Lyons Formation. (Left)

Greg Carr shared his pair of baby mammoth teeth he procured on-line. (Right)

Here are some life-size fossil replicas at the show. These, and 2 semi-trucks of rocks are for sale from a vendor getting out of the business – only $25,000 for the whole shoot'n match!

Crab found by Peg Johnson going to the Smithsonian

By Bruce Thiel

The small crab that Peg found and is holding was prepared on both sides by Bruce Thiel and is one of the most complete and detailed specimens of the genus Macroacaena known with both claws and all the legs visible on the ventral side. Peg and Bruce feel that it belongs in an institution and agreed that it should go to the Smithsonian to help clear up the mystery of what species these crabs from the Nehalem River area are.

When Bruce visited the Smithsonian in September, he spent a day going through their drawers of NW crabs and photographed the “type” specimens from which two species of Macroacaena were described, the *schencki* and the *naselensis*. As you can see from the pictures of the Holotype, and one of the Paratypes, they are not very complete and hard to distinguish the differences. The first Smithsonian picture is of the Holotype of the *schencki*, the second picture a *naselensis*.

Bruce sent pictures and contacted Drs. Carrie Schweitzer and Rod Feldmann, Kent State Professors and world-renowned authorities on fossil crabs and Rod wrote back:

"That specimen is a beauty and, because the venter and legs are so well preserved, it would be an excellent contribution to the Smithsonian's collection. We could write up a short note so that interested folks would be aware of its existence. What do you think?”

Bruce is in process of assembling a study collection to go with Peg’s that will include several examples of these crabs to sort out the difference between the species. Greg Gentry and Bob Manley both have examples they have indicated they would be willing to contribute.

A Few Natural History Collections in London … and on the Hunt for Stray Fossils in France

By G F Lukos

In June I returned to the UK for the first time in … well, decades. Fossils were not on the official itinerary, which was centered in Cornwall, but I did some unofficial scouting once I had some free time in London.

London has many must-see sights, including world-famous museums. Restricting myself to free* museums, I was able to see "specimens" that I had read about over the years in the disciplines of archaeology, anthropology, and paleontology. If you haven't yet had the opportunity to visit these institutions, here are a few tips and highlights.

*Note: Free museums welcome and encourage a donation as you enter. Well worth the cost, especially when you see the entry prices at many popular sights.

The Natural History Museum is in a massive building in South Kensington. You could easily spend a day there exploring all the nooks and crannies and architectural details. One of the most important exhibits is the light-filled Gallery of Marine Reptile Fossils in which fossil skeletons of prehistoric marine giants, including some found by Mary Anning, are displayed behind glass along the walls. It is very impressive but, unfortunately, not really conducive to leisurely, thoughtful study, because many of the creatures are way overhead, or to photography, due to the glare from the skylights. (Note that other rooms are very dimly lit, presenting a different set of photography problems.)

The museum is divided into zones, and, not realizing how huge the place was, I spent too much time in the Red Zone, which includes the displays on human evolution. There I met Cheddar Man, the oldest (est. 10,000 yo) nearly complete human skeleton ever found in Britain.

I skimmed other areas of the museum and would gladly go back if I again find myself in London.

Cheddar Man at Natural History Museum

Lindow Man at British Museum

A few days later I went across town to the British Museum specifically to meet another old Brit I'd heard of: Lindow Man, aka Bog Man. This naturally mummified body was found in a peat bog in 1984. He is estimated to have died a violent death sometime between 2 BC and 119 AD. Look for him in the corner of the room on pre-Roman history just before you head into Roman times.

There is much in the way of anthropology and archaeology to see in this large museum, including the famed Rosetta Stone). A tip: Don't try to be clever and head upstairs to the Ancient Egypt rooms to find the Rosetta Stone. It's on the ground floor, because it's too heavy for the upper floors. And good luck getting around the crowds to get a close look. This rock appears to be the Mona Lisa of London.

(Continued on next page)

But I didn't spend a lot of time at the giant BM, because I wanted to go a few blocks north to visit a tiny museum I'd learned about in a YouTube video tour of this part of the city: The Grant Museum of Zoology and Comparative Anatomy. Established by Robert Edmond Grant, who was a teacher of a young Charles Darwin at Edinburgh University, the museum began as a teaching collection. The essentially one-room museum is jam-packed with bones (dodos!) and slides and specimens submersed in formaldehyde. But be warned, many of the specimens are casts or replicas – and are not always identified as such. It is still a teaching collection, and students who come in to draw pictures don't need originals.


Micrarium at Grant Museum

One noteworthy exhibit is the Micrarium, a walk-in light box that was designed to display some of the Grant's vast collection of tiny critters captured on microscope slides. I was told that this idea has been borrowed by other museums.

So that was London. A few months later I was in France. With no natural history museums on the agenda, I continued my habit of examining walls to see if I can find any fossils.

Most of my trip was in the Loire Valley where we visited a selection of elegant chateaux and historic religious buildings. It was at one of the latter, the Fontevraud Abbey, that I spotted some fossils in the walls and floor and heard the word "tuffeau." Actually, I wasn't sure exactly what I'd heard, and when I returned home I looked up tuff and tufa before I hit on the description of tuffeau. And it all made sense.

What is now the Loire Valley was once – 90 million years ago – the bottom of a sea, and Tuffeau Stone is what became of the sediment of that ancient sea bed. The fine-grained, cream-colored limestone has been used over the ages to build many of the fabulous structures that now attract millions of tourists. People who did not live in the grand buildings -- and their ancestors -- carved homes out of the soft stone, and those caves continue to be used as extra rooms for the modern homes abutting the cliffs. Former quarries are used as wine cellars and mushroom farms. I didn't have the chance to visit any of the so-called troglodyte caves or cellars that are open to the public, but as we drove through the region I could spot caves in use in residential areas. If I ever go back to the Loire Valley...

LINKS

Natural History Museum: https://www.nhm.ac.uk/

British Museum: https://www.britishmuseum.org/

Grant Museum of Zoology and Comparative Anatomy: https://www.ucl.ac.uk/culture/

SCOUT ME IN

October's NARG Meeting
"An Introduction to the Fossils of Oregon"

We hosted about 15 Boy Scouts and their families, 29 guests in all, at the October meeting. NARG members gave a brief and broad introduction to the many different types of fossils that can be found in Oregon. Hopefully this was enough for the boys and girls of the club to earn their Paleontology patch (see left).

Finding Fossils on Vacation

By Tara L. Baker

If I could, I would take paleontology vacations; the kind where I spend 100% of the time out in the field searching for fossils. Unfortunately, the rest of my family does not share my passion (obsession?) for fossils, so I have learned how to add a bit of natural history to every trip. I want to share with you some of my techniques for finding collecting sites and museums before I head out on vacation, and how I used these methods to collect on a recent trip to Illinois.

Before we get into how to find fossil locales, you need to know some **general guidelines for collecting**:

- Collecting any vertebrate material is usually off-limits. If you are collecting on any public land and you find bones, leave them alone and contact the local rangers. There are exceptions to the vertebrate rules.
    - You can collect vertebrate fossils on private land if you have the owner's permission.
    - In Oregon, you can collect fossilized bone along the coast.
    - Some fish bone and shark teeth can be collected from around the United States.
- When searching for fossils, collect from exposed surfaces and do not dig.
- It is illegal to remove any materials from a National Park.
- If you aren't sure if the land is public or private, don't collect.

Once you know where you and your family will be going for vacation, it is time to do some research. The first and best way to find a dig site is to contact local paleontology clubs. Most larger metropolitan areas have these groups of citizen scientists. Before a recent trip to Texas, I emailed a member of the Paleontology Club of Austin. He was very helpful, providing a lot of information like GPS coordinates, pictures of the typical fossil types in the area, even advice on where to park. Local paleontology clubs are a great resource.

If I can't find a paleontology group with local know-how, I turn to the internet. I start with a general search for fossils in the area I plan to visit. In September, I made a trip back to the Midwest to visit family. I typed "fossils Illinois" into a search engine. The very first resource was a pamphlet from the Illinois State Geological Survey intitled "Where to Look for Fossils." It had some good, but general information. What I learned here was that most fossils in Illinois would be invertebrates from a time when Illinois was covered by a great inland sea.

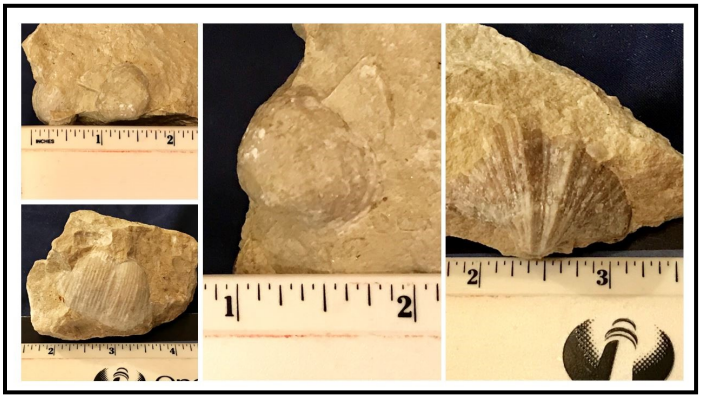
With this general information, I now went to a great paleontology internet tool: Fossil Spot. This site has many fossil locales in the United States and Canada, organized by state, county, and city. It also lists what kind of fossils you will be looking for at a specific site: plants, snails, shells, fish, etc. Fossil Spot can provide very detailed directions to the locations, though this is not always the case. For instance, I did not find any specific site information for the county I was visiting in Illinois in September.

Another website I use is The Fossil Forum, a discussion group made-up of amateur paleontologists who share all kinds of information about dig sites, but also about fossil prep, equipment, regulations, and more. Before heading to Illinois, I found information at Fossil Forum about a specific site that was only about an hour from where I was staying. A member described a collecting trip and included detailed information about the location including a map. He also provided pictures of his recent fossil finds so I would know exactly what to look for. From the map posted on the Fossil Forum, I was able to find directions using Google Maps, the third website I use regularly.

The brachiopod site near Ogelsby in Western Illinois is an eroding hillside at a road-cut in a rural area. Layers of limestone are exposed and crumbling down a short embankment.

Before I left for the site, I wanted to know as much it as I could, like how far a walk it would be, how much rock was exposed, and the steepness of the incline. To answer these questions, I used Google Earth. This is a program you can download to your computer, or you can use an on-line version. With Google Earth's Street View function, I saw the site was a road-cut along a rural highway. I was also able to see exactly what the hillside looked like, if it was accessible, and where to park safely.

Because of the research I had done before-hand, I was able to find and access the site confidently. Once there, I found an exposed rocky ledge made-up of multiple layers of limestone. The heat and cold of Midwest seasons had eroded the hillside, resulting in a scree of rocks the size of horse troughs, to toasters, to gravel. I was able to search for fossils using only gloves. I wish I had remembered some bug spray because the Midwest mosquitos were pests in the shade of the ledge. I found many fossils, mostly marine invertebrates like brachiopods and gastropods, in the rocks. In all, I only spent about 2 hours at the site, but came away with some beautiful specimens.



Samples of brachiopods collected from Western Illinois

When on vacation, I also look for paleontology museums to visit. For the recent trip to Illinois, I travelled to The Burpee Museum of Natural History located in Rockford. The star of the Burpee Museum is Jane, a juvenile *T. rex*, the most complete juvenile *T. rex* on display in the world. It was discovered in 2001 by amateur paleontologists working with Burpee Museum in the Hell Creek Formation of Montana. Burpee also has a sub-adult Triceratops named Homer on display. Homer was discovered by amateur paleontologists at the Hell Creek Formation in 2005. He is the most complete Triceratops yet found there. Fossil preparation work was done at the Burpee Museum and finished in 2012.

Left to Right: Tara and Jane, the juvenile *T. rex* at Burpee; Homer, the young Triceratops, at Burpee; Cryolosaurus at Augustana College's Fryxell Museum

A second museum in Illinois I was able to visit was the Fryxell Geology Museum at Augustana College. This campus in Rock Island, Illinois is only 15 minutes from where I was staying. The star at the Fryxell Museum is a Cryolosaurus found in Antarctica by an Augustana geology professor. It is surrounded with displays showing more information about the Antarctic expedition. The main hall in the Fryxell Museum is filled primarily with fossils from the Midwest, though there are fossils from around the world as well. They have a large collection of invertebrates organized beautifully so that Augustana geology students can see excellent examples of iconic species side-by-side.

Before you go on your next vacation, do some research so you can add some paleontology sites. I have used the tools above to collect echinoderms in Austin, archaeocyatha (sponge-like animals) in Southern California, and fossilized fish in Wyoming. Remember to make sure you are collecting legally! Some locations will not have accessible fossils. In those places, look into museums where you can get your natural history fix. Bottom line, you can add a little fossil thrill to any vacation if you do your homework. Good hunting!

NARG Field Trip to Central Oregon

By Tara L. Baker

Greg Carr led a field-trip to collect fossil materials in Central Oregon on August 28-29, 2019. Fifteen NARG members and friends met at the corner of Weberg and Paulina-Suplee Roads, a dusty cross-roads in the middle of ranch country. This location is very near-by where Bernie the Oregon Thalattosaur was discovered by Gloria and Greg Carr. We collected in several spots over the two days including the Grindstone Terrane. Greg received special permission for our group to visit and collect on the Grindstone, as it is located on private ranch land.

The Grindstone is a very unique area that includes unmetamorphosed rocks that are from very different geologic times: Permian, Devonian, and Mississippian (Blome & Nestell 1991). Within a very short walking distance, we collected invertebrates and coral from each of these times. Especially interesting were the horn corals and very large crinoid specimens we found.

A second site was on BLM land near-by. Here, we found Cretaceous plant fossils in beautiful shape. Greg found an extremely nice large rock slab with several plant species. Many of the plant species were angiosperms. Flowering plants were just beginning to evolve at the Cretaceous. We collected rocks for ourselves, and also for Dr. Greg Retallack at University of Oregon. Greg Carr delivered these plant fossils to U of O, and Greg R. was excited to receive them.

One of the high-lights of the trip was camping under the vast sky in Central Oregon. We camped at an undeveloped site in trucks, tents, and under tarps, but all enjoyed sitting in the dark together and staring up at the Milky Way.

Blome, C. D. and Nestell, M. K. (1991). Evolution of a Permo-Triassic sedimentary mélange, Grindstone terrane, east-central Oregon. *Geological Society of America Bulletin*, *103*(10), 1280-1296.

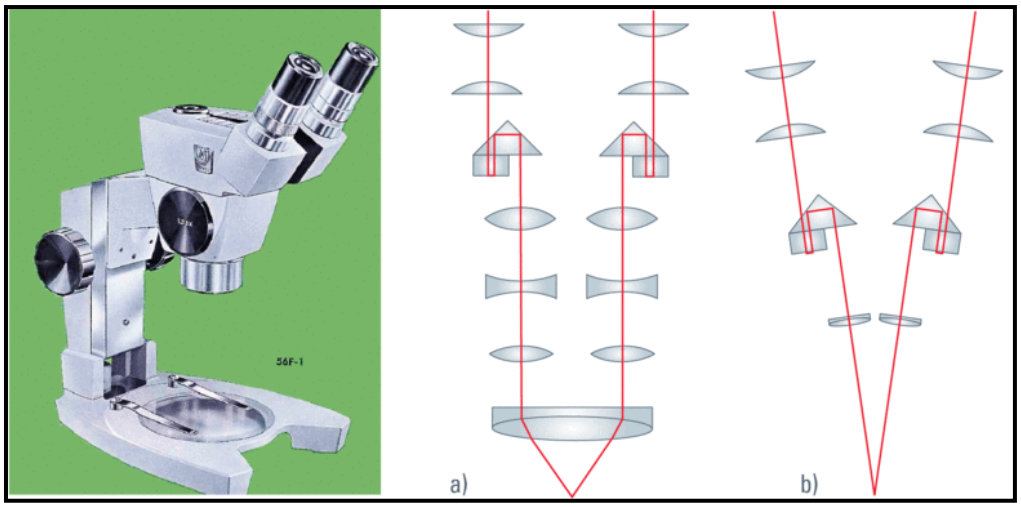
A New Twist on Binocular Microscopes for Fossil Preparation

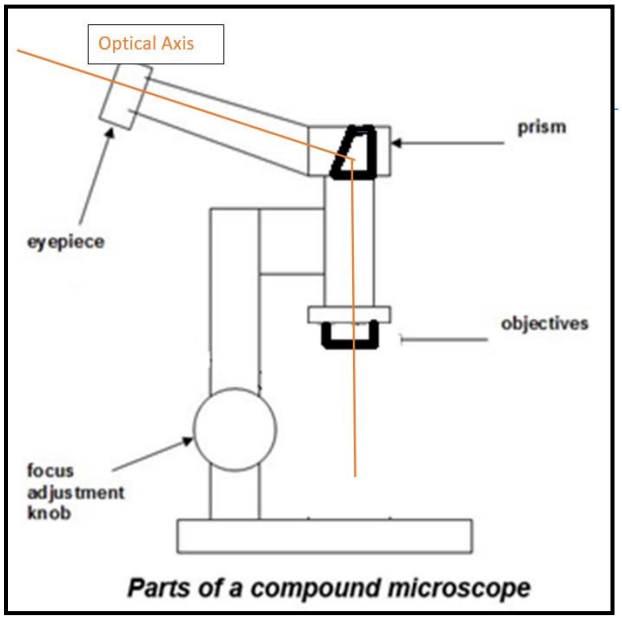
By Greg Carr

I spend a LOT of time preparing vertebrate fossils. Most of my recent work is being done on Ichthyosaur bones from Northern California. The bones are mostly preserved in 3D – they have not been severely compressed by the weight of overlying rocks and sediments. This is very good as far as fossil preservation goes, but it does present a significant problem in preparing them accurately.

The problem is this: since the bones are preserved in 3D, they have sides as well as tops. To properly prepare them, the sides of the bones must be prepared along with the tops. This is all well and good, but microscope preparation is difficult if not impossible since normal dissecting microscopes do not examine the sides of objects – just the tops!

If you imagine the field of view of a binocular dissecting microscope, it is a cone that diverges slightly away from the objective. There are two main types of optics – one has the optical paths of each eye entirely separate, the other has the optical paths combined for part of the processing. Here is an illustration:





Parts of a compound microscope

From the side view, the light paths from both eyes travel side-by-side and are in the same plane:

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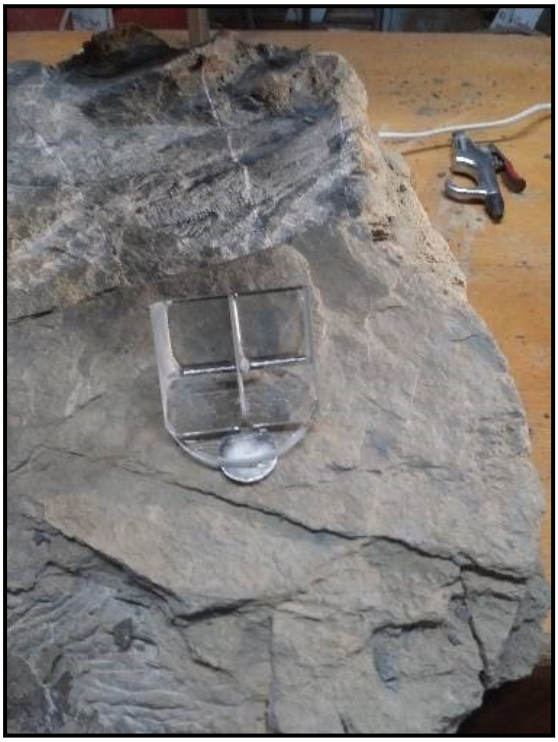
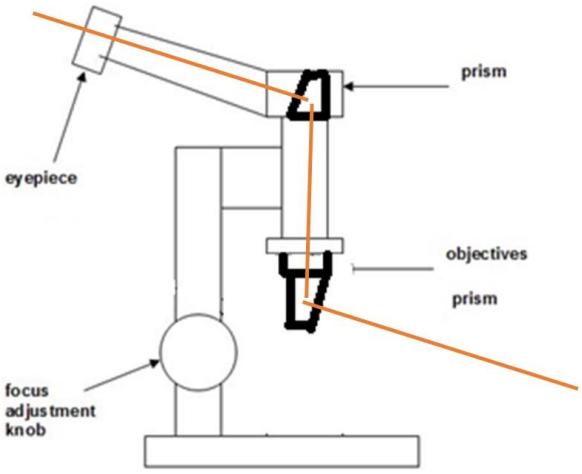
Now, if we want to see the sides of an object, we must bend the optical axis of the light once again. Luckily, we have available more prisms like the one present inside the microscope.



Here I have glued two of them side-by-side for the two optical paths from the two eyepieces and mounted them on a clear glass disk. The optical assemblage is then mounted at the bottom of the microscope objective with two pairs of thin super magnets. This allows the assemblage to be easily removed.

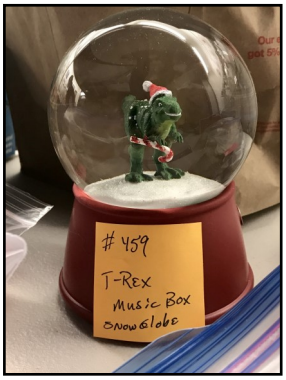


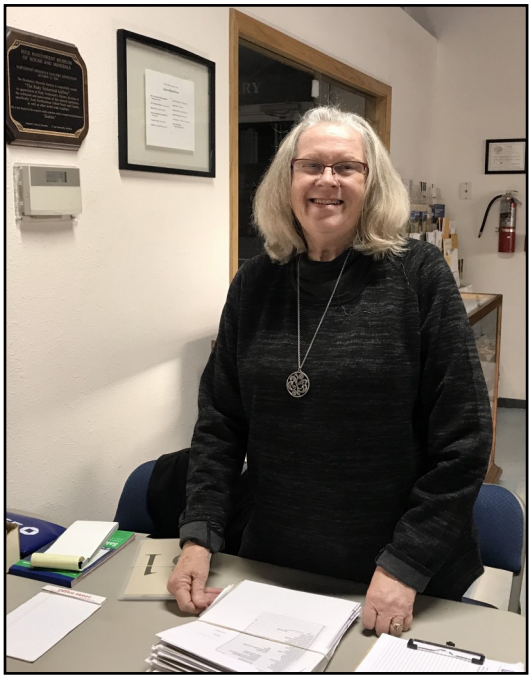
Parts of a compound microscope

The optical path is bent once more by these new prisms, allowing me to see the sides of an object! Perfect for preparing the sides of bones as well as the tops.

NARG Annual Holiday Banquet and Auction

November 9, 2019





Peg Johnson prepares for the auction.

Genesis Cordova looks through the many auction items..

A potluck spread to go with provided turkey and ham.

Phil Knutson and his wife chat with Robert Rosé before the auction.

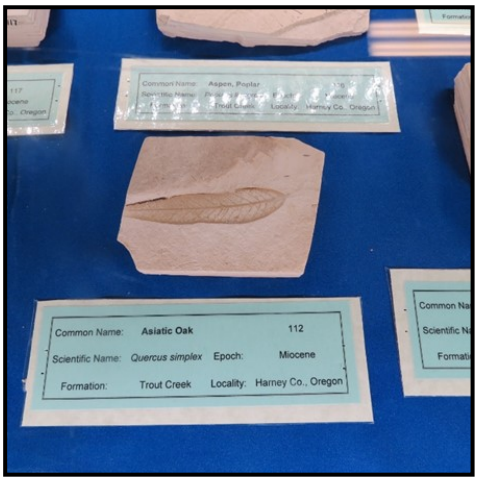
Paleontology Stops in South Dakota and Montana

By Debbie Shannon

My husband and I stopped at a few new places during a cross country road trip the Summer of 2018. Several are museums and one is a fun photo stop.

If you find yourself in **Rapid City, South Dakota** with some spare time, I recommend two places to see. One is Dinosaur Park which is on a hill overlooking the city. They have a fun gift shop where you can find lots of dinosaur-themed trinkets. It was built in 1936 and the park has several statues of dinosaurs to look at and take pictures with. (Note: the dinosaurs are dragging their tales! This is the older way of modeling them-we now know they probably did not drag their tails.)

Another fun stop in Rapid City is the science museum at the South Dakota School of Mines and Technology. It's not a big museum but they have displays of bison, dinner plate-sized ammonites and even some Oregon fossils.



While in the Black Hills area of South Dakota, don't forget to stop by the Mammoth Site Museum in **Hot Springs, SD**. They have been digging there since the 1970s and may still have another 50 years to get to the bones on the bottom of the mud pit. The bones are mostly from male juvenile mammoths and its thought that it was a mud hole that was too hard for the mammoths to get out of once they fell in.

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If you are on Highway 2 in Northern Montana, make sure you stop at **Malta, Montana**. The town has a population of only a few thousand people but it has 2 dinosaur museums. These are the Phillips County Museum and the Great Plains Dinosaur Museum. Both are small but have a lot of fossils to look at, including a famous mummy dinosaur and a dinosaur named Elvis.


A Note from Jim Goedert…

The Paleontological Society has an annual award (called the Strimple Award) to recognize outstanding achievement in paleontology by amateurs. Smithsonian Natural Museum Director Kirk Johnson nominated our advisor Jim Goedert who received the award from President Bruce McFadden at their annual meeting this September.

First of all, I sincerely thank Kirk Johnson for nominating us for the Strimple Award, and to everyone who wrote letters of support for the nomination (I know who some of you are, but not everyone). It is sad that Gail is no longer with us, but she would have been pleased. Together, we explored many a muddy beach or creek bed, at all times of the year and all kinds of weather, mostly in Oregon and Washington. This resulted in many discoveries that have become parts of scientific papers, and nothing quite matches the thrill of discovery. That, to us, is largely what kept us going – Paleontology is amazing because *anyone* has the potential to make a discovery that will be of some kind of importance to the science. Everyone can participate, and that is not true of many branches of science. You don't really need any special tools, ability, or training, just a good set of eyes, some patience, and the time and willingness to go for a walk. In many cases we

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found fossils that were eventually the basis for new species and even genera, and all we really had to do was pick them up and carry them home because in much of the Pacific Northwest USA, fossils are preserved in nodules, and Mother Nature has already completed the excavation. In fact, we found most of the best and really important fossils without even breaking a rock.

The next step, of course, is finding the right paleontologist who is interested or willing to work on these specimens, and sometimes this is much harder than finding the fossils. Gail and I were always willing to help professional paleontologists and freely made available specimens we had collected or went out to search for material that we knew some researcher needed. This led to many life-long friendships, and that is how we became more knowledgeable about both Paleontology and Geology, by working with these people in the field. So, while we had no professional training as paleontologists, all the training we did get was by professional paleontologists. It is important to remember that paleontologists are people too, and sometimes things will not work out as you might have hoped or wished. Sometimes your connection will be a dead-end, it has happened to us too, but most of the time it will be a fantastic experience. And if you keep looking, you will always find more fossils!

We were never motivated by, or interested in, building a personal collection. We learned what might be scientifically important and tried to focus on collecting specimens that might contribute some new data, or specimens that were better than those already in museum collections. We have contributed specimens to museums not only in the U.S.A., but have also donated fossils to museums in Australia, Germany, Italy, Japan, Sweden, and Taiwan, to name a few. We also have gotten some criticism for this from people who feel that in some way we are sending abroad things that are part of the 'cultural patrimony' of Oregon or Washington. To us, this is ridiculous. The fossils are of animals that lived millions of years before any humans existed, much less before humans made up the present- day political boundaries that enclose where these fossils were found. What do the fossils have to do with human culture? And as we know, political boundaries tend to change through time anyway, measured in hundreds of years. Gail and I only cared that the fossils would be in an institution where they will be preserved and available for study, hopefully for perpetuity. And we have encouraged others to do the same and to think less provincially in considering where to donate their specimens. We have also tried to get people to understand what happens in museums and why the published study of a specimen can take so long. In fact, if you really want to understand why it can take so long for a fossil to get published, try to do it yourself. I did and have, and that is also quite an education. But, if you cannot accept criticism well, I'd advise that you do not attempt to write a scientific paper. It's an excellent process for revealing how much you don't know – both to yourself and to others!

Getting fossils published has always been our goal. So many amateur collectors say "why should I donate my fossil when it will just be in a drawer somewhere and likely never be displayed?". We reply with "why worry about a particular fossil will ever being publicly displayed?" If the specimen gets published and figured (and even better if a 3D scan is made available) in a scientific journal, the fossil is 'displayed' to anyone around the world with a computer, smartphone, or tablet – potentially millions of people – basically anytime, anywhere, forever! This always beats being in a museum display. Let the actual specimen rest safely in a drawer until it needs to be restudied.

I encourage all amateur paleontologists to participate in the science as fully as they are capable. Going beyond just being fossil collectors and actually working with paleontologists greatly enriched our lives, opened doors, and taken us to many places in the world that we probably never would have visited otherwise. I cannot name everyone we have worked with over the years, because I will invariably forget to include someone. We have also had the good fortune to work with a lot of other motivated amateur paleontologists as well. You all know who you are, and Gail and I are grateful for the friendships, tutoring, patience, hospitality, and good times over the decades. And again, thanks to all of you and the Paleontological Society for considering us to be worthy of this award.

Sincerely, Jim Goedert

Visualization of Insects in Columbian Amber

By Joe Cantrell

An extremely small insect in a piece of Columbian amber. The piece of amber is approximately 90 million years old. I have photographed it before, but used newer techniques to visualize it again. Much better detail.

Left: A 90 million year old friend I've shot before but never seen anything like this detail. Wow. 122 images stacked.

Right: Following image is a face portrait of this little gem. Overall, it is about 1mm long. About 1/25"

This critter is 'round about 90 MILLION years old. The last thing it sat on might have been fresh dinosaur poop. The spider looking thing above its face is stellar pollen. I've shown this one several years ago shot with an earlier setup, but this is by far the best detail I've ever gotten on it. The actual bug is about 1.5mm long, about 1/16".

Portland Region Gem and Mineral Show

By Dan O'Loughlin

This year's event took place at the Jackson Armory in Portland. The new venue proved to produce a beautiful show. Attendance was great, with vendors selling well. There seemed to be something for everyone. Demonstrators included Jerry Bartlemay, Steve Nelson, Darleen Wozniack, Cindy Yablok, Greg Carr, and Joe Cantrell. A special "Thanks" goes out to both Greg and Joe who managed to entertain the crowd and bottleneck the exhibit space in front of the NARG demonstration table.

Visitors brought a number of interesting pieces for us to view. A unique piece of petrified wood encrusted in basalt from The Dalles area was shown to us. In addition, a MHRC member showed us a turtle shell from the Astoria formation, a piece of petrified wood with a cache of nuts from the Deschutes area, and a very large Aturia from the coast. One of the MHRC displays had a large plate an unknown fossil plant from McDermitt. NARG members Bill and Linda Harvey put a lot of time finding this venue and selling space for venders. Linda Frenette and Greg Gentry were vital to many aspects of the show including school tours and raffle and door prizes. Matthew Porter and his two sons volunteered for the kid's corner again this year. Jerry Dodson even sat in at the NARG demo table to answer questions. NARG members filled 8 cases for the event and walked away with three awards. I would like to thank the Portland Regional Board for all the long hours they invested. Rumor has it that next year may be back at the new Washington County Fairgrounds.

Dan O'Loughlin -Petrified wood

Dan O'Loughlin -Hungarian stromatolites

Greg Gentry -Glendonites

Greg Gentry -Stonerose plants

Larry Purchase -Crinoids

Larry Purchase -Brachiopods

Greg Carr -3D printed side-toothed salmon

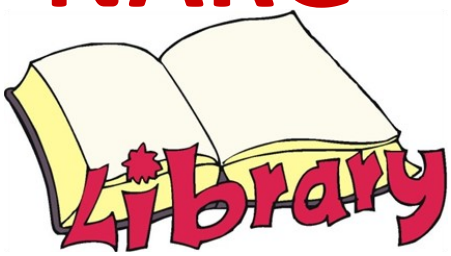
Cindy Yablok (representing TVRC) -Crystals

President's Choice Award – Dan O'Loughlin – Hungarian stromatolites

People's Choice Award – Dan O'Loughlin – Hungarian stromatolites

Northwest material – Greg Gentry - Glendonites

NARG



The NARG library has just become easier for members to use. The 430 books can be viewed by using the link below. Once you find a book you want, click on it and find its "index" number. Requests for books using the index number are made to danolough@aol.com. He will notify you if the book is already checked out. If it is not, he will bring it to the next NARG meeting. Members can check out 2 books at a time and should return them at one of the following 2 meetings.

http://cloud.collectorz.com/danolough/books

NARG Membership

NARG's membership dues for 2020 are due January 1, 2020

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Individual Membership = $25

Family Membership = $40

Student Membership = $10

You may pay for your membership by:

* Bring your money to our next NARG meeting..

* You can mail your payment to:

NARG
Margaret Johnson
2220 179th Ave E
Lake Tapps, WA 98391

* You can pay your dues thru Pay Pal. You don't need a Pay Pal account to pay this way. You can pay using a credit Card.

Fossil Calendar 2020

Newport Fossil Fest	Feb. 8	Hatfield Marine Science Center, Newport, OR
Field Trip to the beach (weather permitting)	Feb. 9	Moolack Beach or near-by, Newport, OR
Summer Fest	Aug. 1-2	Rice Museum, Hillsboro, OR
NARG FossilFest	Aug. 8	Rice Museum, Hillsboro, OR

For a listing of local gem and mineral shows check out: http://www.mineralcouncil.org/shows.

http://orerockon.com/ Click on Portland Area Rock Clubs, includes PNW Clubs)

NARG Officers:

President:	**Aaron Currier**	**(503) 364-2979**
Vice President:	**Dan O'Loughlin**	**(503) 866-5997**
Secretary:	**Tami Smith**	**(503) 620-5317**
Treasurer:	**Peg Johnson**	**(253) 370-8892**
Directors:		
Garret Romaine		**(503) 591-8622**
MacKenzie Smith		**(503) 403-8941**
Robert Rosé		**(541) 367-2052**
Linda Harvey		**(503) 310-3036**
Debbie Shannon		**(503) 887-7423**
Honorary Directors:		
Michael Santino		**(503) 981-8902**
Larry Purchase		**(360) 254-5635**
Committees:		
Newsletter:	**Tara Baker**	
	Aaron Currier	
	Dan O"Loughlin	
FossilFest:	**Linda Harvey**	
	Dan O'Loughlin