North America Research Group

NARG NEWSLETTER

Official Publication of the North America Research Group Spring-Fall 2020

Volume 9 Number 1

NARG Meetings Move to ZOOM due to Covid-19

Since the inception of NARG, we have never missed an official meeting, until now. Due to the Covid restrictions, the group has not been able to meet in-person since our March 2020 meeting. Fortunately, we are an adaptable crew and have had meetings via Zoom. It has been unique to observe amateur paleontologists in their natural habitats. We have been able to see how other members showcase their fossil collections and had show and tell from individual's living rooms. We have continued to hear from varied speakers who have prepared presentations for an on-line audience. For instance, Dr. Kerin Claeson shared from her home in Philadelphia via Zoom at our August meeting. She spoke about her study of Antarctic fossil fish from the Cretaceous to K-T boundary. Likewise, we had speakers from Florida, Northern California, Alaska, and Oregon who shared their paleontological interests at our recent meetings. In some ways, the Zoom meetings have broadened our abilities to connect with experts outside of Oregon. Another positive has been the ability to see members who live outside of easy driving distance but can still attend on-line.

However, we all look forward to meeting in-person again. Hopefully this will be soon. When we do, we will most likely be meeting in a different location at the Rice Museum. Instead of the "Living Room," we will be gathering in the Northwest Mineral Section building, seated under a skeleton replica of Bernie, the Thalattosaur. Please look for meeting up-dates on our NARG website and in emails to the NARG list.

Whale Braincase Found at Beverly Beach February 7-8, 2020 Part 1

by Greg Carr

February 8, 2020 was the annual Mark Hatfield Fossil festival at the Mark Hatfield Marine Science center in Newport, Oregon. My wife and I went down on the 7th to do a little fossil hunting on the beach the evening before. We stopped at Pacific City and a few other places before hitting Newport's Beverly Beach. The large storms in late January had moved a significant amount of sand off the beach. The bedrock north of the stream at Beverly Beach state park was exposed, the first time in a decade or so. There was also a dead Sperm Whale calf against the ocean cliffs north of the stream.

I wasn't finding too much stuff, but I did find a large bone, black, sticking out of the bench rock a few hundred yards out from the cliff. It looked like the end of a whale limb bone, so I carefully remembered where it was and planned to come back at low tide after Fossil Fest ended at 4PM. I actually got out to the beach about 4:30 PM since we closed up a little early. Here is what it looked like:

I was looking forward to collecting it as whale limb bones are very rare, much rarer than the skulls. Luckily the rock was soft, and I could get it out with about an hour's work. With a hammer and chisel I dug two parallel trenches on both sides of the long outside edges of the bone, then broke it loose by levering up underneath. It came out in multiple pieces, and though I tried to get all the small loose chunks some were lost.

When I got it home, I soaked it in fresh water for a couple of days. I used a hammer and chisel to remove most of the rock from the outside. Thankfully, most of the rock broke along a parting layer just outside the bone surface. Very quickly it became apparent it was not a limb bone, but it took a few hours to figure out that it was a whale braincase. The clincher was when I found the occipital condyle where the backbone attaches to the skull. Had to be the braincase! The big knob that was sticking out of the rock was one of the cheekbones, rounded off by wear.

Whale Skull Braincase Outlined – I found the part in red.

I used a combination of hammer + chisel, air scribe and vinegar acid to prepare this find. There was a thin (about 0.1mm) layer of hard rock on the outside of the skull that cannot be removed by acid. Even hydrochloric acid, which dissolves the bones, will not attack this layer. I am guessing that it is a calcium phosphate-silicate-based film, with calcium phosphate leached out from the bone combining with silica from the rock. The only way to remove it is with an air scribe.

So here it is with most of the outside matrix removed. This is from the back - the occipital condyle is right in the middle.

Here it is from the side, with the prominent ridge that the jaw muscles attach to crossing diagonally.

Here is the other side with the remnant end of the cheekbone still attached.

Here it is from the bottom. As you can see, both ear bones are still in place attached to the skull.

Since it was naturally broken into about 5 pieces, I decided to make the extra effort and remove all the matrix from the inside of the skull, exposing the cavity where the brain sits. The is not easy as it's hard to air scribe and make holes. To speed things up, I decided to weaken the marix by drilling holes with a carbide bit. Thankfully I did not hit any bone (I was checking it every few mm). The drilled holes make it much easier to remove matrix as the air scribe have a place to break the rock into.

After removing a lot of matrix, I began soaking the bones in hot vinegar to help remove the matrix from the interior bone surface. It goes slow, but keeps the bone intact. There are some extremely fine bone spikes associated with the ear bones. I'll discuss this more in part 2 of the series. I put the vinegar in a crockpot to keep it warm – speeds up the process yet it doesn't seem to dissolve the bones any worse.

Here is a shot down into the brain cavity.

The week of March 18, I took the skull out onto my patio to photograph it in good sunlight. Disaster! The board I placed the skull on tipped over, spilling the bones onto the patio and breaking most of them. Here is what it looks like now:

So to prove the old adage, hurrying up doesn't save you any time. I should be able to reassemble it, but it will take quite a few hours more work. But there are two positives: 1) I can really clean out the matrix real well from the brain cavity and 2) I plan on taking one of the ear bones completely out of the skull for display. Whale ear bones actually have two parts - the Tympanic and the Periotic complex. The periotic complex contains the inner ear, including the semi-circular canals (for balance) and the cochlea, for hearing. The part normally sold as a 'whale ear bone' is just the Tympanic – the other bone is imbedded in a form-fitting hole in the skull. But since one side is so busted I can get all the normally-hidden parts of the ear bone out. Should make an interesting display. Since this is being written during the 2020 Covid-19 pandemic, I certainly have time to do the work.

Part 2 will show more of the finished bone, the ear bones and the associated hole in the skull, and will discuss whale hearing in more detail.

Whale Braincase Preparation part 2

At the end of part 1 we left our project in pieces. Definitely needed a lot of TLC to put it back together. After many hours we ended up with most of it re-assembled except for small flakes from the fracture edges that don't seem to have a home. Having it this fractured also enabled me to remove almost all of the matrix from the inside of the braincase. I left some matrix in the areas of the braincase floor where the bone is very thin. The thickness of the skull varies enormously! In some areas the bone is 1-2 inches think, in others it is less than 1/8 inch thick. This might be a good engineering study to determine the bone stresses, but why bother?

So, after the braincase was successfully reassembled into 4 main pieces, it was time to make an archival cradle to support it. I decided to NOT glue the 4 big pieces together – this would enable future study of the structure much easier. Instead, the skull would sit in the cradle in life position with thin sheets of plastic cushion between the parts to provide cushioning.

To make the cradle I chose to use the technique used by the Smithsonian where the fossil is placed in a sand box, upside down, and the cradle is built over the top. Then after the cradle is finished the whole arrangement is flipped over so that the cradle now supports the fossil. So first I made a temporary sandbox of 2x8s and 2x4s held together with screws, and filled it with a bag of sand from the store. The bones were arranged with the occipital condyle up, which enables the ear bones to be seen when the fossil is in the cradle. Did I mention that I prepared-out one entire ear bone so it can be studied easier?

Here's the braincase arranged in the sand bed.

Next, the bones are covered with a layer of plastic, and then a layer of cushioning, then another piece of plastic. Then a layer of Plaster of Paris, mixed with chopped fiberglass to strengthen it, is molded over the top to make the bed of the cradle. Putting these on is always a rather frantic 10 minutes since the plaster sets up so quickly!

I chose a very bright pink flannel as a temporary cushion. Since the fossil is in 4 pieces it is easy to move it around, and fit it back together in life configuration.

Assuming there is a Fossil Festival this summer, I will transfer this braincase to the U of Oregon Condon collection this summer after Fossil Fest. Otherwise it will go there after a NARG group meeting where all the attending NARG group members can see it.

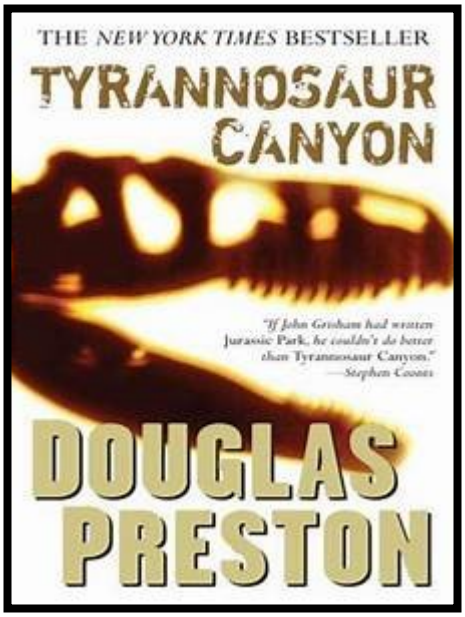
Sincerely, Greg Carr May 1, 2020

***Obviously, we were not able to have Fossil Fest this Summer. Looking forward to sharing it with NARG members when we can meet in-person.*

Book Review: Tyrannosaur Canyon

by Robert Rosé

I just finished reading an adventure novel by Douglas Preston called **Tyrannosaur Canyon.** This novel is written for fossil collectors and dinosaur lovers.



The book starts out with some verbatim descriptions of Apollo 17 astronauts gathering moon rocks. How this is tied in to finding a *Tyrannosaurus rex* fossil in New Mexico you will not find out until the end of the book. In the middle are vertebrate paleontologists, horse people, an ex-CIA monastery novitiate, a gun-totting convict, a female museum scientist, US military and a New Mexico canyon country backdrop where intrigue and murder happen. They do discover and retrieve the body of the female *T-rex* in the end but it's not easy.

I did find one error in the paleontology where he refers to Cenozoic trilobites!!

This is a good story where almost everyone ends up getting what they deserve. Enjoy!

To purchase, use Amazon Smiles and choose "North America Research Group" to receive donations. https://smile.amazon.com/Tyrannosaur-Canyon-Wyman-Ford-Book-ebook/dp/B000O76NN2/ref=sr_1_1?dchild=1&keywords=tyrannosaurus+canyon&qid=1608325115&sr=8-1

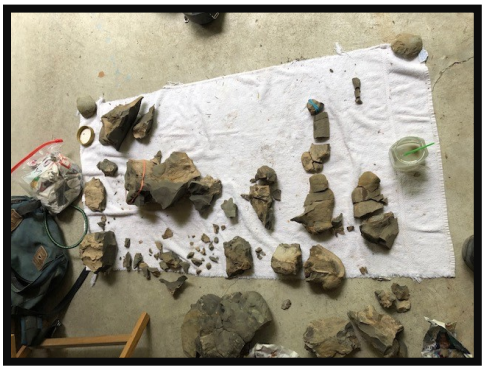
Whale Fossils Found by NARG Members Prepared in Taiwan

by Bruce Thiel

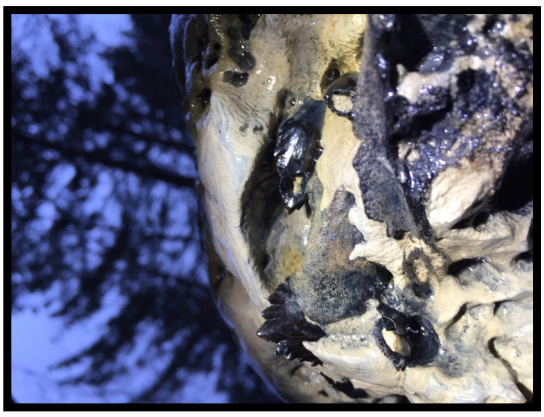
A request was sent to the NARG board and membership asking for financial assistance to prep whale fossils found by Jim Goedert and sent to C.H. Tsai, now at National Taiwan University. Tsai and Bobby Boessenecker both received their PhD's in New Zealand. Tsai was at The Burke a couple years ago and met up with Bobby and expressed interest in studying the whale skull that Jim is holding and which Jim personally carried to Taiwan last year. This spring Jim shipped another skull that Terry Iversen, Jim's friend found. Jim's comments are below, followed by comments and pictures of another skull he sent to Bobby.

"That thing I am holding is the whole specimen, although much is missing. It is quite a small whale, but also quite early (very earliest Oligocene). The part of the skull we could see is quite different from aetiocetids, at least that are so far known."

"Attached are some photos of Terry's whale. {recently sent to Taiwan} Unfortunately, this is all {the pictures} I seem to have. The main skull part has the rubber band around it. For the size of the skull, it had ridiculously small teeth (in my hand). This was just the initial unpacking, there is much more to the specimen."



Here is another one, sent to Bobby. He doesn't let them sit around. Attached is a before, during, and after preparation. A new species at least, and possibly – but most likely not – new genus. Murdock Creek, lower Pysht Formation, late early Oligocene, or early late Oligocene.



Continuation of Whale Fossils Prepared in Taiwan:

The NARG board and members at the October Zoom meeting voted to contribute to the preparation of a whale skull and partial skeleton that Jim Goedert, NARG advisor sent to Taiwan for study. Dr. Tsai is also working on a whale skull that Jim had collected and placed in storage at The Burke, which Jim hand-carried to Taiwan earlier. Both are early important finds that Jim feels need to be researched. Dr. Tsai hopes to return that skull to The Burke someday and he would also like to visit and examine the NARG whale at the fossil barn.

Dr. Tsai received his PhD in New Zealand (along with Bobby Boessenecker) and did post-doc research in Japan. He was fortunate to secure a tenure-track position in Taiwan two years ago as an assistant professor to continue research on vertebrate paleontology - fossil whales in particular.

After the NARG meeting, we sent him news of the grant and invited him to join us on Zoom, and he replied:

> *Many thanks for the contributions!*
> *Yes, I would love to share what I have done and have been working on, with NARG members next year when the COVID issue is over.*
> *Please take care of yourself! I much look forward to meeting all of you there!*
>
> *Regards*
> *Tsai*

When our advisor Jim Goedert heard about NARG's $500 donation to help Dr Tsai prepare the fossil whale , Jim wrote back saying:

> *Wow - Very nice! Thanks for your efforts in this regard. It will be used wisely.*
>
> *I just finished preparation of a little skull that I collected and donated to the LACM back in the 1980's. Nothing had ever been done with it. So, I borrowed it with the understanding that Tsai and I would work on it together – it is the second specimen of a whale called Borealodon osedax (I collected and prepared the holotype too). The 'new' specimen has parts the holotype did not preserve, so it will be a redescription and reassessment of this little whale's position in classification. As soon as I get permission, I plan to FedEx the specimen to Tsai, as he can get a 3D scan made of the specimen for free (and we hope to make that scan part of our paper, available for download). He will then either ship it back to LA, or hand carry it when he eventually gets here for field work – which will hopefully result in a trip to see the NARG whale from the Empire Formation (and get a paper on that thing done).*

Coffee Table Display Idea

by Bruce Thiel

This clever way to display fossils was posted on Facebook. Andrew Cox from the United Kingdom used an old glass top coffee table to display his collection of trilobites.

"An old Victorian table top glass cabinet (top taken off for the photo) containing a few of the fossil trilobites in my collection, most are self-collected and all but two are from my home county of Shropshire, England."

NARG Members in Publications

Recent publication authored by current member, ***MacKenzie Smith,*** *a paleontology graduate student at University of Florida in Gainsville.*

CT-scans of capsules from the Clarno Formation (Oregon, USA) reveal an extinct Eocene theaceous taxon

MacKenzie A. Smith and Steven R. Manchester

ABSTRACT

The economically important but relatively small family Theaceae can be traced back to the Late Cretaceous and is found today in the Western Hemisphere and Asia. Theaceous fruits are generally loculicidal capsules and have been found as fossils throughout the Northern Hemisphere. Using reflected light and µCT-scanning, we recognize *Anubiscarpon andersonae MA Smith et Manchester* gen. et sp. nov. from the middle Eocene Clarno Formation of north central Oregon, based on five-valved, loculicidal capsules with a central columella, persistent perianth and pedicel, preserved as impressions in lacustrine shale. Its most distinctive feature is its apically clefted valves which are not seen in any other species of the family. Anubiscarpon augments our understanding of former morphological diversity in the Theaceae.

Smith, MacKenzie et al. "CT-scans of capsules from the Clarno Formation (Oregon, USA) reveal an extinct Eocene theaceous taxon." Acta Palaeobotanica, 2020, pp. 251-258. doi:10.35535/acpa-2020-0013.

Recent publication describing a new crab species, Amphoranina blandi n. gen., n. sp, discovered by NARG founder and past president, ***Andrew Bland****. The crab is named after Bland who found the fossils more than 14 years ago.*

A new fossil frog crab (Brachyura, Raninoidea) from the Paleogene of northeastern Pacific

ABSTRACT

One new genus and two new species of fossil frog crabs from the Eocene to Oligocene deposits of Washington State (USA) and Vancouver Island (British Columbia, Canada) of the north-eastern Pacific are described, based upon several well- preserved specimens. The studied specimens are herein described as ***Amphoranina blandi* n. gen., n. sp.** and *A. multispinata* n. gen, n. sp. (Raninidae De Haan, 1839) respectively. *Amphoranina* n. gen. appears to be endemic to the middle to upper Paleogene of the northeastern Pacific.

Nyborg, Torrey, et al. “A new fossil from crab (Brachyura, Raninoidea) from the Paleogene of northeastern Pacific.” Neues Jahrbuch für Geologie und Paläontologie - Abhandlungen, 2020, pp. 87-101(15). doi.org/10.1127/njgpa/2020/0936.

NARG members *are thanked for field work assistance in the acknowledgements of this recent paper describing the paleo-history of the Herren Beds here in Oregon.*

The paleobotany and paleoecology of the Eocene Herren Beds of North-Central Oregon, USA

Acknowledgements

We thank Elaine Hachler for access to the East Birch Creek locality and Christine Helberg and Travis Whitman of the USFS Ukiah, Oregon, Ranger Station for assistance with permits to collect fossils in Umatilla National Forest. Ellen Bishop introduced us to the East Birch Creek localities, and Hannah Ginn, Don Hopkins, and **NARG members assisted with fieldwork.** Lindsey Constenius assisted with collection of samples for isotopic dating.

Jijina, Anthony, et al. “The paleobotany and paleoecology of the Eocene Herren Beds of North-Central Oregon, USA.” Palaios, 2019, pp. 424-436. Doi.org/10.2110/palo.2019.014.

Cataloging Your Fossil Collection(s)

by Robert Rosé

Over the last few months I have been documenting fossils collected and purchased over the decades. My fossils come from148 sites collected over more than 50 years including every geologic age. So how to get started?

Over the years I have made a list of my collecting sites by name, giving each a four letter designation (such as GABL for Gable Creek in Oregon). This designation was then inked onto each fossil or fossiliferous slab. I used a 005 Micron pen and then covered the letters with a coat of Paraloid B-72 once the ink is dry. Then the fossils from a certain site were numbered randomly and the identification of each fossil was listed under the name of the fossil site. I made a listing of all fossils from each site with descriptions of the fossil or its scientific name if available.

But, before any of the above can be done each fossil has to be cleaned enough to identify. This cleaning is generally done under a microscope using dental tools and pneumatic tools. This can take lots of hours of work but is very rewarding. It's great to see a fossil come to life after sitting in a drawer for years and years under a coating of sand or clay. Next comes the real challenge—identification!

Showing are limestone slabs with Triassic ammonites from Fossil Hill in Nevada

Two different styles of documenting fossils. Inking on rock or on paint.

Since my collection spans decades and covers many geologic ages it is daunting to have to find fossil identification information for Jurassic bivalves or ammonites one day and Silurian trilobites the next. Another difficulty lies in the fact that some of the fossils are from countries other than the United States. Obtaining paleontological literature on overseas localities can be difficult. I have many publications to help me but they do not cover the full range of geologic ages necessary. The internet is some help but a lot of the monographs needed are not online.

At the present time fifty sites have complete documentation. This documentation includes the title of the locality with its four letter designation; a description giving instructions on how to reach the locality; and then the fossil-by-fossil listing of the specimens. All scientific names are italicized and put in bold type. Since my list of fossil sites is also on my computer I can change the black type of the sites to red when I have completed documentation.

Documenting the location of the fossil sites is easy if you were there yesterday and you remember how you got there. Can you hold that same information in your head for a year or ten years? I cannot. That is why I have always taken notes when I fossil hunt so the exact location can be looked up in my notes. This information is important if you ever want to donate your collection(s) to a university or museum. A documented collection is much more valuable than random fossils of unknown location. Also, if you donate your fossils to NARG it would be nice to have everything documented. Take pity on your fellow NARGIES!!!

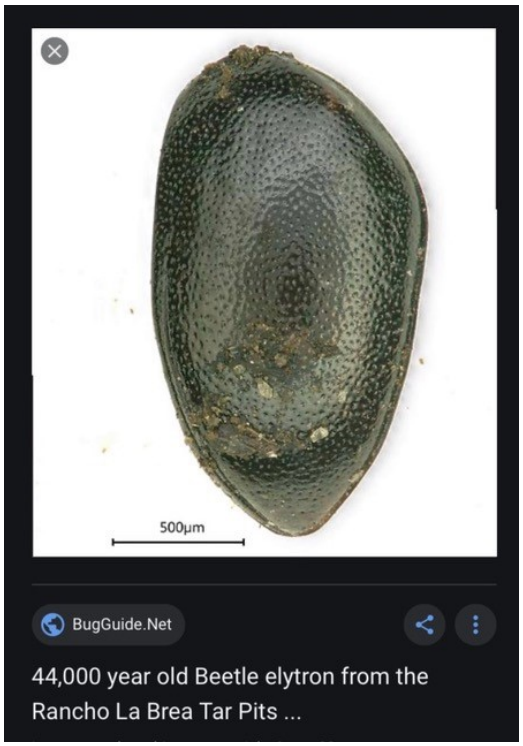
Drawer with Devonian fossils and appropriate labels giving location of collection.

Elytra- “New” Things to Look for in Marine Fossils

by Bruce Thiel

While looking at a beach-rolled nodule that contained plant material and a few fish scales among the Oligocene rocks at the Strait of Juan de Fuca, NARG advisor, Jim Goedert saw what looked like part of a beetle wing or elytron. It had a surface texture that he was familiar with, but only partially exposed, so he sent it to me to prepare. After changing the eyepieces on my microscope to a second pair I rarely use to get maximum magnification I studied the small rock from all sides and could see a bug-wing resemblance and a surface texture that was different, but unfamiliar. I started to work the matrix down from the top so the scribe would be perpendicular and not be working at an angle, but coming down directly on top of what might be an intact insect. Looking from above, it looked like the left side of a wing, and I was disappointed to find that it was not connected to anything or that the rest of the beetle was not there. Just to be sure, I kept working all the way around, going lower and raising the wing on a pedestal. I packaged it and mailed it back to Jim, thinking he would be disappointed in that I had not found the rest of the insect. Jim however was pleased with the detail that was uncovered and hopes to get it identified and published as it is his first insect find in a deep-water marine deposit. Jim found one on Sucia Island from very shallow water, with a terrestrial gastropod when he discovered the leg-bone segment from Washington’s only dinosaur, which resides in The Burke Museum in Seattle. Jim also remembers seeing such things in the personal collection of Guy Pierson in Newport, that Guy found between Schooner Creek and Yaquina Head in little nodules with plant detritus.

Here is an unmagnified picture of me holding the rock with the wing situated close to the edge and a similar but not identical elytron showing the surface texture found in the La Brea Tar Pits. (Picture from Wikipedia.)



For more detailed information about elytra see the article in the NARG 2016 Winter Newsletter, page 14 by David Ellingson “Beetles from a Late Pleistocene Bog in Oregon, showing several examples with close-up pictures by Joe Cantrell.

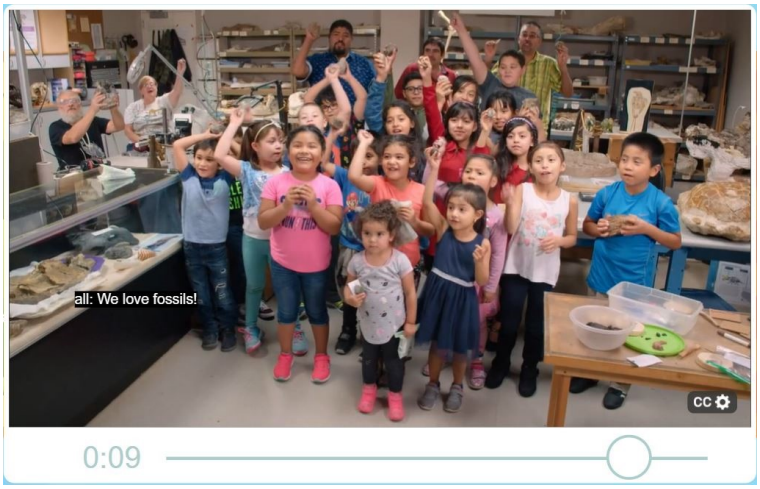
NARG in the News

"Dinosaur Train" on PBS

NARG members, Sue Brown and Greg Carr, spend many hours in the Paleontology Lab at the Oregon Museum of Science and Industry (OMSI). They have been able to prepare a variety of fossils while on-view for visitors. Additionally, Sue and Greg participate in science education and outreach, working with many who have never seen a fossil "in the wild." One such outreach activity was filmed as part of the PBS youth show, "Dinosaur Train." A description of the 1.5 minute video from the web-site:

"Kids Can Be Paleontologists Too!

Education comes alive at the Oregon Museum of Science and Industry, where students can help clean fossils using the same tools and information that paleontologists use. It's a hands-on experience and an opportunity to make your own discoveries!"



To see Sue and Greg working with students and families in the Lab, go to https://pbskids.org/dinosaurtrain/videos/ and then click on "CLIPS." Scroll down the left hand column, then click on "Kids Can Be Paleontologists too!"

"On the Go with Joe" on KPTV

Greg Carr also volunteers his time and donates specimens to the Rice Museum. In September, Joe Vithayathil, a reporter with KPTV, visited the museum to get a look at the plastic replica of Bernie the Thallatosaur that hangs from the ceiling in the Northwest Mineral Section. He filmed his visit along with an on-line interview with Greg, then presented it as part of his "On the Go with Joe" series. Greg describes discovering and preparing the bones of the Thallatosaur. Joe seems mightily impressed when Greg explains how he put together his own 3-D printer from parts purchased on eBay so he could print the replica that now hangs in the Rice Museum.

To watch the 4 minute video, go to https://www.kptv.com/joe-v-meets-bernie-at-the-rice-museum-a-replica-of-the-oldest-vertebrate-ever/video_3603119c-c902-5b95-b038-58ee4e162479.html.

To learn more about the discovery and preparation of Bernie the Thallaosaur from Central Oregon, you can check out Greg's blog at https://bernietheichthyosaur.blogspot.com/

In September, wild-fires raged through much of Oregon. One NARG member's home in Molalla was saved by a volunteer fire crew. Bob Oblack, a long-time NARG member, photographed the rescue of his home and others in their community by this "red-neck crew." Some of his photos and a few of his quotes made it in to an article in the Canby First newspaper.

All-Volunteer, 'Redneck Crew' Credited with Saving Molalla Neighborhood

By Tyler Franke with photos by Bob Oblack

Much to his surprise, Bob Oblack's home on Dickey Prairie Road in Molalla was not destroyed by a raging wildfire Friday.

When he found it intact the following day, he wondered what had happened. He soon found out in a text from a neighbor: "A 100% redneck fire crew rolled through here yesterday. They stopped the fire a mile from my house."

"They saved this property as far as I'm concerned," said Oblack. "I'm just so blessed and so humbled by the support of the neighbors around here."

For more of the story and pictures, go to https://canbyfirst.com/all-volunteer-redneck-crew-credited-with-saving-molalla-neighborhood/?fbclid=IwAR2by1uH5DglUZ3HTE-dw9W_t49HGaRSH4NgyAVyGLYZkEbXAPJytgOOXtM

In Memoria: Richard Keniston

On April 24, 2020, NARG member, Richard Keniston, passed away unexpectedly. Richard attended almost every monthly meeting taking great interest in Show and Tell and seminars. He was one of the first persons to speak to me at my first meeting four years ago. I remember asking him what "concretion" was. After about a 15 minute very detailed explanation by Richard, I figured I knew what they were, how they were made, and where they could be found. We also worked together on parking duties at the Fossil Fests, where he was a dependable volunteer. He was a long-time Boy Scout leader and volunteer. He was able to combine his love of fossils and educating his young charges by bringing them to a meeting this past year. His presence will be missed by many.

Richard Chace Keniston

June 23, 1947 - April 24, 2020

Whether taking Scouts on a camping adventure, presenting medical research at a national conference or enabling a Rwandan girl to buy a goat and help her family grow food, Richard Chace Keniston lived an abundant life. The Beaverton resident died April 24, 2020, at the age of 72 after a brief illness.

Richard was born June 23, 1947, in Corvallis to Robert and Ruth Keniston. He was gifted with a brilliant, inquisitive mind attuned to science and nature. As a child, he loved helping his dad, a forestry professor at Oregon State University, work outdoors on research projects in Eastern Oregon. For years he rose early to deliver The Oregonian in Corvallis, earning top Junior Dealer honors.

After graduating from OSU in 1969 with a bachelor's degree in microbiology, Richard enlisted in the U.S. Army, serving the first two years of a long military career. He then earned a medical degree at Oregon Health & Science University and completed a pathology residency at Madigan Army Medical Center in Tacoma. Richard served as an Army pathologist for 20 years and also did medical research, specializing in nutrition, fetal maturity testing and occupational medicine. The retired lieutenant colonel had more than 40 publications and book chapters.

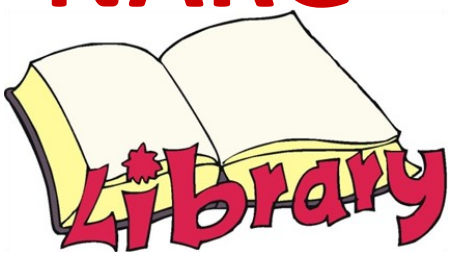
He wed Janet Young in 1976 and they welcomed children Amy, Jacob and Stephen during their 28-year marriage. As a longtime active and enthusiastic leader in Boy Scouts and its Venturing program, Richard was proud of his sons' achievements in Scouting. He also volunteered with the Hillsboro Elks Lodge, Red Cross and a summer camp for foster children. He was active in Beaverton Christian Church and sponsored children through Compassion International. Ever enjoying life, Richard was fond of analyzing data, discussing history and reading all manner of nonfiction as well as collecting toy animals and dreaming up silly stories to share. He joined a paleontology club and recently began studying Hebrew.

Survivors include his children, Amy, Jacob (Amy) and Stephen (Rachel); grandchildren, Ashley, Oliver and Sophia; sisters, Anne DeHaven (Larry) and Katherine; brother, Jim (JoeLynn); and a niece and nephews.

Memorial service plans are pending. Richard would have appreciated donations to the OSU Foundation for the Robert F. and Ruth C. Keniston Memorial Scholarship Fund.

Published in the Oregonian from May 8 to May 10, 2020. https://obits.oregonlive.com/obituaries/oregon/obituary.aspx?n=richard-chace-keniston&pid=196163234

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 2021 are due January 1, 2021

.

Individual Membership = $25

Family Membership = $40

Student Membership = $10

You may pay for your membership by mailing it 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.

Use the following links:

Family Membership $40 https://www.paypal.com/webapps/hermes?token=02B16871LE462890G&useraction=commit&mfid=1608708869406_38e2b9635cc59

Single Membership $25 https://www.paypal.com/webapps/hermes?token=6TU30928A8430812D&useraction=commit&mfid=1608708913265_a8f31bac9a8d0

Student Membership $10 https://www.paypal.com/webapps/hermes?token=3TP31412EK4238444&useraction=commit&mfid=1608708943484_6d99ac05f2720

Fossil Calendar

Because of COVID-19, in-person meetings and events are cancelled.
Please check the web-site and emails for any changes or alternatives.

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

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

NARG Officers:

President:	**Aaron Currier**	**(503) 364-2979**
Vice President:	**Greg Carr**	**(503 754-6392**
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**
Dan O'Loughlin	**(503) 866-5997**

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
NARG Auction	**Linda Harvey**

NARG's Mission Statement

To encourage responsible stewardship of earth's paleontological resources; to promote scientific research, communication, and public education.