



# JANUS

The Newsletter  
of the  
North Carolina  
Fossil Club  
[www.ncfossilclub.org](http://www.ncfossilclub.org)

2017 Number 4

## 2018 Spring Calendar

## NCFC President's Column: 01-02-2018

### January

- 20 Ice Age Festival** <https://www.vmnh.net/ice-age-festival> Virginia Museum of Natural History: displays depicting giants of the Ice Age. Festival admission is only \$7 for adults ages 19-59, \$5 for children and youth ages 3-18, and for seniors ages 60+. FREE for museum members and children under 3. Visiting exhibitors and presenters: Museum of York County East Tennessee State University Appalachian State University North Carolina Fossil Club Southwestern Piedmont Chapter of the Virginia Master Naturalists And more! 9:00 am - 3:00 pm
- 21 NCFC Meeting** - NCMNS, 11 West Jones Street, Raleigh. 1:30 pm, Level A conference room. Speaker: TBA

### February

- 10 Ediacaran Fossil Field Trip, Jacobs Creek Quarry**, 2081 West Slate Mine Road, Denton, NC 28239. contact: Ruffin Tucker, email: [fossiler77@msn.com](mailto:fossiler77@msn.com). Minimum age is 16; hard hats & steel-toed boots required (02/11: rain/snow date)
- 24 Schiele Museum Fossil Fair**: 9:00 am - 4:00 pm. Spotlights all sorts of natural treasures from the earth including fossils, rocks, minerals, and the ancient stories these items tell. See museum and fossil club displays and purchase interesting specimens from vendors. Mine for gemstones including garnets, emeralds, and amethyst. Kids can meet animated prehistoric characters, see a full-sized *T-rex*, make a fossil fish print, search for tiny fossils from the Carolina coast, and much more. \$3 with Museum Admission

### March

- 10 Ediacaran Fossil Field Trip, Jacobs Creek Quarry**, 2081 West Slate Mine Road, Denton, NC 28239. Contact: Ruffin Tucker, email: [fossiler77@msn.com](mailto:fossiler77@msn.com). Minimum age is 16; hard hats & steel-toed boots required (03/11: rain/snow date)
- 18 NCFC Meeting** - NCMNS, 11 West Jones Street, Raleigh. 1:30 pm, Level A conference room. Speaker: TBA

### April

- 28 Norwood Arbor Day and Fossil Fair** will be held from 9:00 am to 4:00 pm near the new Norwood Town Hall on South Main St. (Hwy 52 South) in Norwood, NC. Contact: Ruffin Tucker, email: [fossiler77@msn.com](mailto:fossiler77@msn.com).

Happy New Year to everyone! Thank you for electing me as your new club president. As you know, our elections occur at our annual meeting during our fall Fossil Fair, and the new electees take office at that meeting. This time our Fair was early (October), giving us the opportunity to have a November meeting. That also meant that the learning curve for the new officers was very steep!

Linda McCall was our president for five years, and she did a fabulous job completing our non-profit status, finding additional quarry opportunities, negotiating with Martin Marietta officials to allow us to have a few more quarry trips while they solidified their new policies, expanding our horizons nationally both through the Paleontological Society and the FOSSIL Project, leading a week-long fossil trip to Texas, and making some presentations at professional meetings. Thank you, Linda! She will be a very hard act to follow, so I will appreciate everyone's help, ideas, and participation!

As I've begun my duties, I've been reminded of the long history of our club (since 1977!) and of the hundreds of club members who have helped it grow over the years into the successful organization that it is, with our focus on education and professionalism in our hobby. I look forward to continuing with this rich tradition!

*Diane Chapman Willis*



**Right: NCFC Meeting, November 19, 2017.**  
Our new President, Diane Willis, presents a report on the Club trip to Arizona, June 17-25, led by James Bain.

## Fossil Fair from the Eyes of a First-timer

Lynn Moore

I hoped if I waited long enough, the Fossil Fair might return to my part of the state, beautiful Ocean Isle Beach. This year I was rewarded as we presented at Cape Fear Museum. I saw dedicated exhibitors, eager to teach visitors about collecting, identifying and prepping.

At the top of the stairs to the museum's second floor, under our large club banner, a new volunteer, Dominique, welcomed guests and guided them to display galleries. With his lovely accent people were intrigued with what lay ahead.

In one gallery, I met Joanne, an accomplished micro hunter. She described her powerful lenses used to identify and sort these fossils almost too small to see. Complete with samples of her tiny collectables, she had full-sized illustrations so guests could see what they were viewing. Of course, each tiny jar was carefully covered so no errant sneezes would blow her hard work away!



Dave and Bob from The Smithsonian carefully listened to stories told by the young and the young-at-heart about where and when treasures were found. Using hand lenses, consultation, and years of experience, the experts identified and dated many lovely fossils...and rocks...and door stoppers. They wrote down names and dates or passed out reference sheets that visitors carried around like tickets to a magic world.



Who turned on the world with her pathological collection? Trish. She showed arthritis, bites, mistakes of nature, food hunting, and many other ways injury or disease showed in the fossil record. Collecting fossils was challenging enough, but looking for the mistakes or special ones took even more patience. Trish was just the collector to bring the topic to life.



Between teaching and her community and family work, Terry collected all her own fossils. Some members trade or share, but Terry preferred to see what she might want in another's collection and go out and find her own. She displayed invertebrates and vertebrates, large and small, and she had items from multiple locations all over North Carolina.



The Schiele Museum brought materials, puzzles, and activities for children of all ages. Anytime children used their hands to stay busy, they were happiest, and assembling puzzles made many smile. Also, taking home material to look at helped the experience last and carry on into another day.



Diane asked us to believe in her fossils. She didn't focus on the creatures, but the paths, footprints, burrows, nests, markings and poop they left behind. Her trace fossils reminded us not all collecting was teeth, shells, and bones, but the wonderful, fragile world around where the organisms lived. Seeing tiny footprints of a creature believed to resemble a lizard left plenty of room to imagine what the real one looked like.

In the second gallery, a small plastic mastodon included with bone fragments and other parts allowed children to get a focus on the parts viewed and where they came from. A little creature in most display boxes set Ruffin apart by letting his visitors relate quickly to the vertebrates he was exhibiting. As an educator, he learned the importance of drawing in his crowd and he used that skill perfectly.



Johnathan presented himself as one of the guys, a regular fellow. He then surprised visitors by launching into a detailed scientific explanation of one of his pieces. He was a story teller who used his humor to explain why he had certain pieces in his collection including a tale about black sand from Hawaii and babysitting his parents' cat.



Clear cups of Aurora matrix, a paper plate and tiny, sparkling eyes led me to James' tables. After washing and drying bucket after bucket of PCS material, James loaded, carried, and delivered the material to eager children and parents and volunteers. The area was never quiet and never empty as volunteers and James taught, pointed, smiled, engaged, and shared a bit of his knowledge with families.



The source of James' matrix came from Cindy's domain – Aurora. She had normal sized samples of items commonly found while digging and guests wished as we all do they could hunt at the mine. She shared the material with teachers, offered camps for children, and worked tirelessly to promote this famous quarry in our state. The Aurora Museums offer priceless fossils for all to see.



As a collector for many years and from locations too numerous to count, Don continued as a teacher and comrade to collectors of today. He shared site locations, encouraged new collectors to get out and start looking, and used items in his varied display to demonstrate fossils to seek. Don was an excellent guide for visitors with curiosity and an adventurous spirit.

As the author of the fourth book, part 2, of the fossil series our club published, Joy used her material to exemplify her writing. I didn't know about the inner ear parts and the connection to mammals but Joy's display and her precise explanation made the newly discovered relationship clearer. Joy drew in the children with a puzzle, then used her wealth of knowledge to discuss more about fossils.



I finished my day with FRANKEN-MEG, a wonderful compilation by Todd that made use of two half-meg teeth and some carefully crafted filler.

The Fossil Club deserved applause for the skill and generosity of the members exhibiting and volunteering. The key volunteer and host, John, provided contact information, set up, managed, and broke down the exhibit areas, provided publicity and billboard signage, and handled a myriad of details, all the while calmly shuffling exhibitors and equipment from floor to floor in his service elevator.

I can't wait to see how we top this show next year.



## What a Week in Florida!

George W. Powell Jr. - August 20, 2017

What a great way to spend time with so many very nice folks in Florida, looking at – and talking about – fossils for four days. It all started a few weeks earlier when I applied for a spot in the 2017 Fossils for Teachers Professional Development Program by the MyFossil Project. This would take place at the University of Florida and the Florida Museum of Natural History Museum in the Dickinson Hall classroom for three and a half days (August 2–5, 2017). I would have fly to Florida on August 1 and then home on August 6. All of it would be funded by a grant from The National Science Foundation. While I was at the Friends of the Aurora Fossil Museum annual meeting May 26 in Aurora, NC, the night before the 24th annual Aurora Fossil Festival, Dan Furimsky came over to me and introduced Jeanette Pirlo. She told me I had been solicited by the MyFossil Project to go to Florida and help with a group of K-12 teachers to come up with Paleo units to take back to their schools to teach their students about the world of Paleontology.

I was one of a group of members of other fossil clubs from all over the country that were asked to participate in this program. This is a way for amateur and professional paleontologists to come together to teach others. I enjoyed meeting and working with so many very nice folks from all over the United States and India.

Well, keep in mind I had not been on an airplane since 1996, so my wife said she would go with me to the airport. On August 1st a friend, my wife and I went to the Pitt/Greenville, NC airport at 9 :00 am to take the 10:54 am flight to Charlotte, NC, only to be told that my flight was canceled until the next day. They suggested I go to the New Bern, NC airport and take the 11:00 am flight. It was important to me to get to this event on time, so the agent gave me boarding passes and off to New Bern I went. I had no idea where the airport was, but I knew how to get to New Burn and my wife looked up the airport on her phone GPS while I drove. We arrived with 10 minutes to spare. When I landed in Charlotte after a 1 hour and 23 minute flight I had to go all the way to the other end of the airport for the connecting flight; when I got there they said it's time to load the plane and off to Gainesville, Florida we went. It would only be a 1 hour and 33 minute flight there.

When I arrived in Gainesville the weather felt just like home – 90 degrees with 80 percent humidity. I called the Holiday Inn for the shuttle and after waiting an hour and no shuttle, a cab pulled up and the driver looked over at me and then drove away. About 20 minutes later a man walked up and asked if I was waiting on the shuttle and said that it had broken down and he was to take me to the hotel in his cab (he was the same cab driver that stopped and looked at me a few minutes earlier). After a very nice ride to downtown Gainesville I checked in at the hotel, dropped off my stuff in the room, and then found a place to get something to eat. At 11:45 pm my roommate came in and said sorry, but his plane was late getting in.

We had 19 teachers (10 whom are also fossil club members), eight fossil club members, and eight scientists, for a total of 35. They came from 12 states as far away as California, Minnesota, Texas and in states in between, and were members of 23 fossil clubs, groups and 18 schools. One of the teachers came all the way from India.

The first day of class (August 2) I got up at 6:00 am, dressed, had breakfast, then waited for the shuttle to the Museum to begin working with the teachers. We started off with introductions by everyone and then Dr. Bruce MacFadden and Jeanette Pirlo explained the expectations for this project. The first of many speakers was Jen Bauer who spoke of her experience of bringing fossils to the classrooms. Thousands of fossils were brought to the classroom for us to sort out. The teachers were told to take all the fossils they wanted back to their schools. (These particular fossils had no pertinent information on them, but they are a great way to teach what they are and what they came from.) Note: I did not take any of these fossils for my collection.



After more sorting we stopped for the nice lunch that was brought in for us. Then Eleanor Gardner talked about how the MyFossil could be used as a learning tool. We began brainstorming how to make the fossil kits and lessons. At 4:00 pm we were given a VIP tour of the Museum's collections downstairs by two of the Museum staff -- Roger Portell and Sean Moran. Sean asked me if there was anything I would like to see and that he would personally show me. Wow! Off the two of us went. He showed me lots of sharks' teeth and seal bones, and then we went back to the group so I could see the other fossils. That was the end of day one and a few of us went out for dinner.



Day two started out with Scott Flaman talking to us about experience with fossils in the classrooms. Then Victor Perez brought out some matrix from Alabama and Lee Creek. The Alabama matrix was brought in by one of the club members and the Lee Creek matrix was brought back by Victor and Jeanette



from the Aurora Fossil Festival. Then we started to put the fossil kits together and do a lot more brainstorming on the lessons. Again lunch was brought in for us and after lunch Patricia Gronert talked about NGSS 101 which is the Next Generation Science Standards that might not have been implemented in all states yet. Then we all went by shuttle to the main museum from 3:30 – 5:00 pm for a VIP tour by Bruce in Powell Hall, (it was so nice of them to name it for me, well it could have happen). That was the end of day two.

Day three began with Stephanie Killingsworth talking to us about field notebooks and the Webinars that MyFossils does. We did a lot more work on the planning of their lessons for the classroom. Next, Monika Mishra – the teacher from India – told us about the fossils in India and the impact they have there. Lunch was brought in again and afterwards one of the paleontologists in the class talked about diversity and role models in paleontology. We then completed the lesson planning and the work on the 3 foot by 5 foot posters.



Day four (the last day of class) was four hours. We wrapped up the class by putting up the posters that had been printed overnight by the University of Florida. Bruce and Jeanette gave some closing remarks and told us that anyone that would like to go fossil collecting that afternoon with her and Victor to be in the hotel lobby by 1:00 pm for the shuttle to Rattlesnake Creek in Gainesville. Boy, I was ready to do some fossil collecting. And even though the weather was again in the 90's with 100 percent humidity and a light rain, it couldn't stop us. I collected for three hours and gave all of the fossils I found (a lot of small shark teeth) to the other collectors, and had a great time doing it.



On August 6 I said my good-byes to all of them. All the way home I thought of the many ways we (the fossil club members) had given back over the last four days. Hopefully what happened

in Florida will not stay in Florida. This small yet mighty group of teachers will go home and pass their experiences and fresh knowledge on to their schools and to their students. I have already heard from some of the teachers that their students are looking forward to learning about paleontology. Who knows how far this will go!

It was great to see old friends, make new friends, and go fossil collecting. I hope they enjoyed the past four days as much as I did.

A big Thank You to the University of Florida and the Florida Museum of Natural History staff – Roger, Sean, Eleanor, Victor, Jeanette and Bruce – for all they did for us there and for all they do for the MyFossil Project. A big Thank You also to Jeff Gage, photographer for the Florida Museum of Natural History.



Dear Tooth Fairy,

I've been good: I carried the tools  
 Timmerman said I should;  
 I've volunteered at the Fossil Fair;  
 I've worn hard hats which smushed my hair;  
 I've aided others up the hills;  
 When they were lucky, I shared their thrills;  
 I've sloshed about at Castle Hayne  
 in knee-deep mud/and freezing rain;  
 I've been to Onslow (without a Marine)  
 but an irate MP is all I've seen;  
 I've worked hard without success  
 from Venice, Florida to PCS  
 And, Tooth Fairy, you know I'm not the sort  
 to act as if fossils were a competitive sport  
 I'll keep working hard but to tell the truth  
 it's high time you brought my 6" tooth.  
 Love,

**Betty Hamill**

(First published in *Janus* 1997#4)

**Note** on collecting days at the **Martin Marietta Belgrade and Onslow** quarries on the first page here. These are not collecting dates negotiated by the Club. They are "open" days at the quarries. Anyone 18 and over may collect; hard-hat, steel-toed boots, safety glasses required.

## Clams Resist Attack

Eric Sadorf

While picking through some Pliocene Yorktown Formation material that I had collected this summer, I noticed a large number of clams had been drilled by predatory snails. Naticid gastropods (moon snails and their relatives) and muricid gastropods (*Murex* and their relatives) use a combination of a rasping radula (Figs. 1 & 2) and chemical secretions to drill a hole through the shell of their prey. After examining many clam shells with the drill holes, I began to notice that several have partial holes that did not completely penetrate the shell. Almost all of these incomplete holes were in the same genera of clam-*Corbula*. I wondered if *Corbula* had some method of preventing predatory gastropods from drilling through their shell. After doing a quick literature search on Google, I had my answer. The Corbulids have a shell structure of alternating layers of aragonite and an organic layer called conchiolin. The conchiolin layer is resistant to acid dissolution and may be the reason for some incomplete drill holes. This shell structure didn't save all the corbulids in my sample. Many were found with penetrating drill holes but quite a few had one or more incomplete holes.

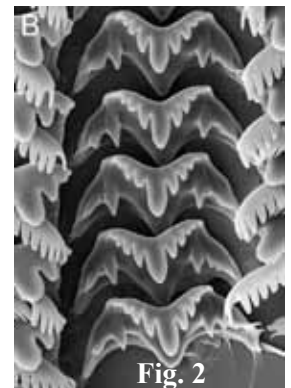
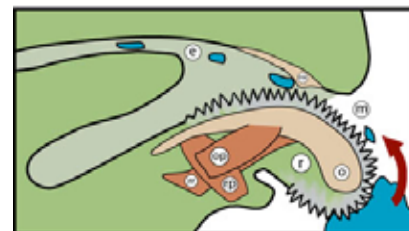
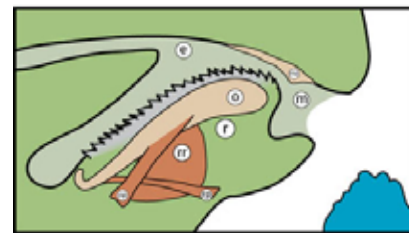
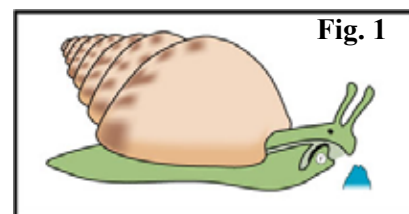
Fig. 3 shows four Corbulid shells with incomplete drill holes. These holes were probably drilled by muricid gastropods which have steep walled drill holes. Notice the stepped pattern on some of the holes where the organic layer stalled the progress of the drilling process. Fig. 4 shows two corbulid clams partially drilled by naticid gastropods. Naticid gastropods have bowl shaped drill holes. Fig. 5 shows a successfully drilled hole through the shell of a corbulid clam by a naticid gastropod.

Campbell, L. D., 1993. Pliocene Molluscs from the Yorktown and Chowan River Formations in Virginia. *Virginia Division of Mineral Resources Publication 127*, Charlottesville, Virginia.

Harper, E. M., 1994. Are Conchiolin Sheets in Corbulid Bivalves Primarily Defensive? *Palaeontology*, Vol. 37, Part 3, pp. 551-578.

Kardon, G., 1998. Evidence from the Fossil Record of an Antipredatory Exaptation: Conchiolin Layers in Corbulid Bivalves. *Evolution*, Vol. 52, No. 1, pp. 68-79.

Kelly, P. H., 1988. Predation by Miocene Gastropods of the Chesapeake Group: Stereotyped and Predictable. *Palaios*, Vol. 3, pp. 436-448.



## Greens Mill Run Trip Report 10-28-17

Rick Trone

Despite a chilly start to the morning we had a good turnout. After some debate among some of the group regarding waders we set off to the creek. As usual, some people immediately took off to find a good spot to dig while others remained in a loose group for digging and socializing.

Finds came slowly but some nice specimens were found, including a Pleistocene era horse tooth, a few nice Great White shark teeth, mako shark teeth, a partial sperm whale tooth, cetacean vertebra, a gigantic (2 1/4") *Enchodus* fish tooth, etc. I was not able to get pictures of all of the finds, unfortunately.

Every person present had a good time. One of the best aspects of these trips is simply hanging out with people sharing tales of fossils and past fossil trips. We all look forward to next time.



Castle Hayne: 12/01/2017

Photos: Trish Kohler



An outstanding *Otodus auriculatus*!



4 *Hardouinia mortonis*, a section of *Sphenodiscus lobatus*, and the cast of a carrier shell *Xenophora*.

More Castle Hayne: 12/01/2017



A gigantic hill of Peedee sand! How many *Hardouinias* lie concealed below the surface???

Belgrade: 11/03/2017



The huge hunting area at the Belgrade quarry!!



What about this very nice *Flemingostrea* oyster!



An unusually good portion of a stingray spine!



*Hardouinia kellumi* stuck to a *Flemingostrea* cluster



Outstanding *Galeocerdo casei* (named to honor Jerry Case)



And speaking of *Hardouinia kellumi*!!



Can you find the two shark teeth here?



# NORTH CAROLINA FOSSIL CLUB, INC.

(Founded 1977)

<b>PRESIDENT</b>	Diane Willis	(919) 967-1008	Chapel Hill, NC
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<b>GENERAL CONTACT</b>	NCFossilClub@gmail.com	(984) 212-6232	



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## 2018 MEMBERSHIP APPLICATION - NORTH CAROLINA FOSSIL CLUB

NAME(s) \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

PHONE(S) (INCLUDE AREA CODE) \_\_\_\_\_

E-MAIL ADDRESS \_\_\_\_\_

<b>SELECT ONE TYPE OF MEMBERSHIP</b>	<input type="checkbox"/> INDIVIDUAL (NEW)	<b>\$20.00</b>
<b>(ENCLOSE CHECK OR MONEY ORDER</b>	<input type="checkbox"/> INDIVIDUAL (RENEWAL)	<b>\$15.00</b>
<b>FOR THE INDICATED AMOUNT.)</b>	<input type="checkbox"/> HOUSEHOLD (NEW)	<b>\$25.00</b>
	<input type="checkbox"/> HOUSEHOLD (RENEWAL)	<b>\$20.00</b>

Children of NCFC members who are dependent minors and living at home may accompany parents on any trip *EXCEPT* when otherwise noted. Some sites (out of liability concerns) require collectors to be 18 years of age or older.

Memberships are effective from January through December of the year (or portion of the year) of the date of application. For example, persons joining in August will need to renew their membership 5 months later in January.

The Fossil Club's newsletter, JANUS, is mailed out four times a year and is available online for members. You will automatically receive a paper copy. You may also download it from the website (and opt out of the paper copy if interested) by creating a member login on the website. If interested, please send an email to [ncfossilclub@gmail.com](mailto:ncfossilclub@gmail.com) with "newsletter" in the subject line.

### NCFC Liability Statement

The Undersigned hereby acknowledges his/her understanding that fossil collecting is an inherently dangerous activity which can result in serious bodily injury or death, and/or property damage and hereby confirms his/her voluntary assumption of the risk of such injury, death or damage.

The Undersigned, in return for the privilege of attending field trips Related to the collection of and/or study of fossils, or any other event or activity conducted or hosted by the North Carolina Fossil Club (NCFC), hereinafter collectively and individually referred to as "NCFC Events", hereby releases the NCFC, NCFC Board members and officers, NCFC Event leaders or organizers and hosts, landowners and mine or quarry operators from any and all liability claims resulting from injury to or death of the undersigned or his/her minor children or damage to his/her property resulting from any cause whatsoever related to participation in NCFC Events.

The Undersigned agrees to comply with any and all rules and restrictions which may be communicated to the undersigned by the NCFC Event leader and/or landowner and mine or quarry operator and acknowledges that failure to comply will result in immediate expulsion from the premises.

The Undersigned acknowledges that this release covers all NCFC Events and will remain in effect at all times unless or until it is revoked by written notice to the current President of the NCFC and receipt of such revocation is acknowledged.

The Undersigned further attests to his/her intent to be legally bound by affixing his /her signature to this release.

Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

**MAIL TO: NORTH CAROLINA FOSSIL CLUB, P.O. Box 25276, RALEIGH, NC 27611-5276**

North Carolina Fossil Club  
P.O. Box 25276  
Raleigh, NC 27611-5276



Incredible walrus tusk from Greens Mill Run - found by Julie Niederkorn