



JANUS

The Newsletter
of the
North Carolina
Fossil Club
www.ncfossilclub.org

2006 Number 2

President's Column

Greetings fellow North Carolina Fossil Club members! I hope this issue of *Janus* finds everyone doing well and enjoying the beginning of summer. Within this issue you will find information (along with an order form) pertaining to the Smithsonian's Lee Creek Series volume IV which is devoted to mammals both terrestrial and marine. This opportunity to preorder this volume will allow members to buy it at a discounted rate.

On another note, I recently met with Mrs. Richard Tellekamp (Suzanne) and a representative of the Onslow County Board of Education for the annual board meeting of the Richard Tellekamp Scholarship Endowment. During the meeting, it was brought to my attention that the endowment had not received any donations in 2005 and thus far, no donations have been made to the foundation this year. Also during this time Mrs. Tellekamp made the mention that due to the Foundation not having any activity, the family is considering closing it. I immediately showed concern and disapproval of closing this foundation. For those members that did not have the chance to meet or know Richard Tellekamp, he was one of a kind. Richard Tellekamp brought his love of fossils and knowledge of North Carolina paleontology to the children (both young and old) of North Carolina and to other people worldwide. Richard, a NCFC Past President and Honorary Member, always was eager to "talk fossils" and promote the NCFC everywhere he went. He introduced fossils and paleontology to thousands of people through various digs, festivals, fairs, school field trips, scout outings, classroom talks, and gatherings. He was and still is a perfect example of a person who exuded enthusiasm and devotion to spreading the word and introducing paleontology to people both young and old. Because of his dedication and promotion, we as people that also strive to help educate and introduce fossils and paleontology to the people of North Carolina, should not allow this foundation, set up to help children interested in paleontology to attend college, to be ended. With that said, I urge everyone that can, to make a donation to the Richard Tellekamp Scholarship Endowment. Send your donations to: Richard Tellekamp Scholarship Fund c/o North Carolina Fossil Club, P.O. Box 13075, Research Triangle Park, NC 27709.

One last note before ending this column is concerning the upcoming September meeting. At the beginning of this year, it was brought to my attention that The North Carolina Museum of Natural Sciences will be holding their annual and very popular Bugfest on the weekend that the NCFC would regularly hold the September meeting. Thus, we will be moving the September meeting to a different venue. With sincere thanks to Trish Kohler, the NCFC's September 17th meeting will be held at the Museum of Life and Science in Durham at 1:30pm. (**Note:** The July 16 meeting will be held at the usual location, the A-level classroom of the NC Museum of Natural Sciences in Raleigh.) Due to the area that will meet in, no refreshments will be served. Thus, some members will be meeting in the Museum's cafeteria a little after noon for lunch prior to the meeting, if you can make it early, come join us. The meeting will begin at 1:30 pm, upon arrival, members need to check in at the front desk and then will be directed to the meeting room. There will be a short meeting, followed by a talk given by a Museum staff member followed by a tour of the Museum. I am looking forward to visiting this museum, and a map to the Museum of Life Sciences is provided within this issue of *Janus*.

With all that said, I look forward to seeing you all at one of our functions or elsewhere this year. Until then, be safe and happy fossil hunting!

Cindy Muston

What is it???



This was found in the Martin Marietta Belgrade Quarry several years ago by Xan Dubrock. It's about 1/2" long. See the bottom of the next page for the answer.

Help Needed

Paws, Claws, Scales and Tales is the theme for the Wake County Libraries' children's' summer reading program this year. On the following dates, Jonathan Fain will be presenting a talk on prehistoric life followed by a fossil dig. We could greatly use people to help kids identify their finds. If you would like to help at one or more events or have questions please e-mail us: mary.fain@co.wake.nc.us or call us: 919-518-1591. Check out www.wakegov.com/libraries for maps and driving directions to each branch.

Thanks-*Jonathan and Kathy Fain.*

Wednesday, July 5	4:15 – 5: 15	Wendell Library	207 S. Hollybrook Rd.	Wendell, NC 27591
Thursday, July 13	4:30 – 5:30	East Regional Lib.	946 Steeple Square Ct.	Knightdale, NC 27545
Tuesday, July 25	4:30 – 5:30	Zebulon Lib.	1000 Dogwood Dr.	Zebulon, NC 27597
Monday, July 31	4:30 – 5:30	Wake Forest Lib.	400 E. Holding Ave.	Wake Forest, NC 27587

Opportunity to Preorder Lee Creek IV

During the Aurora Fossil Festival I had the opportunity to meet and talk with Dr. Lauck "Buck" Ward of the Virginia Museum of Natural History (VMNH). During our talk, he mentioned to me the opportunity for members of the North Carolina Fossil Club to pre-purchase copies of the upcoming Lee Creek Volume IV (LC IV). Dr. Ward has worked out an agreement with the VMNH will print the LC IV and it will be available for purchase. In order to get as large of an initial print run as possible, he is soliciting advance purchases. The opportunity of ordering this volume in advance will allow for two major benefits:

1) You will be guaranteed to get a copy(s) and at a cost that should be lower than that available later to the general public when they go on sale.

2) This front money will allow the VMNH to run a bigger print, which will lower costs for everyone and will result in having more copies available to purchase.

So, in conjunction with Dr. Ward, here is what the North Carolina Fossil Club can do to help you secure your advance copy. The prepay cost is \$50. It will have a regular cost of somewhere around \$70 (this is my personal guess and not Dr. Ward's). The North Carolina Fossil Club is willing to have members send in payment by way of a check for their copies (made payable to The North Carolina Fossil Club) and records will be kept of who and how many were ordered. When you send in your money please completely fill out the order form below and send that in as well. This will help make this process run a little smoother for the people who will be keeping track of the payments and member information. Please attempt to fill out the form as legibly as possible. Funds (in the form of cash or check only) and order forms will also be collected at the July meeting. The July meeting will be the only opportunity to pay using cash. PLEASE DO NOT SEND CASH IN THE MAIL. The NCFC will not be responsible for cash that is sent through the mail, so again, if you want to order by mail, please send only the check form of payment.

The reason for the checks being made payable to the North Carolina Fossil Club is:

1) This will help make the whole process less complicated for Dr. Ward. This way he gets one check from the NCFC that he knows is good versus the headache of numerous checks and the possibility of some having insufficient funds.

2) The intent of this method will be to simplify the number of orders and checks that will be sent to the VMNH for this pre-run offer. We do not want to swamp the VMNH with 100's of individual requests; we need to keep this streamlined wherever possible.

Background of the Lee Creek Series and a brief Q & A

The Lee Creek series was an intended four volume series dedicated to the geology and paleontology of the Lee Creek mine. The volume was named for the small Lee Creek that exists close to the mine and feeds into the Pamlico River, on whose southern bank the mine exists. The books do focus only on the specimens found at the Lee Creek mine. However, the books are valuable not only for identification of finds from Aurora but have a great value to collectors who's interest are that of the entire Atlantic coastal plain since the same fossils found in Aurora have been found from New Jersey all of the way to Florida in the same Miocene and Pliocene beds exposed at the mine. The series was originally part of the Smithsonian Press. As you may or may not be aware, the Smithsonian Press has disbanded and their free publication series is, at least for the foreseeable future, no more. The most recent Lee Creek volume was on the shark, rays and birds found in the mine. The Lee Creek series has quickly run out of copies in the past due to the limited run and although when originally offered were free to the public have now become quite

desirable (just check Ebay and see what a copy, if available, is selling for).

Q & A

Q: What is the subject matter included in book?

A: Mammals only; both land and marine.

Q: Who are some of the authors?

A: Ray, Eshelman, Whitmore, Bohaska, Kaltenbach, Kohno, Koretsky, Barnes, Ward

Q: Is it soft or hard cover? Glossy pages?

A: Soft cover, glossy---same look, size and format as Lee Creek I, II, and III

Q: Is it Lee Creek exclusive or does it contain research sections on other places?

A: Lee Creek only

Q: Does it contain scans, photographs, illustrations or all three? Are the images in color or B/W?

A: Half-tones, line drawings, no color

Q: How many pages and how many plates?

A: Best guess right now: 600 pp and 120 plates

Q: How much per copy for a pre-run price?

A: \$50

Q: When do I need to get a check to you by?

A: The deadline date for orders through the mail will be Saturday July 15. Please have your check and order form in the mail and postmarked before that date. If you reside a great distance from Raleigh, NC, please try to send your order in earlier than the deadline. We will need to have the funds deposited and then one check sent to Dr. Ward by the end of July. If you will be paying by cash, bring your order form and payment to the meeting on July 16.

Q: When do you anticipate it going to print?

A: Currently, by August; definitely by Nov 1st.

Q: How will I receive my copy(s)?

A: Once available, it will be mailed by the VMNH to the address you provided on the order form with no additional mailing or handling fees.

I hope all the above information answers any questions or concerns you may have. If you have any additional questions, please send me an email at: fossilgal@hotmail.com

Another note: A very appreciative "Thank You" goes out to Paul Murdoch who came up with this method of getting the pre-run order opportunities of this volume available to all interested. Thanks Paul!!

Cindy

Order Form on Next Page.

What is it??? (page 1)

This is an incredible specimen of a foetal (or very juvenile) sawfish rostral tooth, almost certainly *Anoxypristis fajumensis*. The foetal rostral teeth of some modern species of *Pristis* occasionally have a small hook. As the fish ages it abrades its rostral teeth by digging in the bottom for crustacea. The hook quickly wears off and as the teeth are not replaced the only specimens having a hook would be from very young individuals.

If you don't want to mutilate your copy of Janus, you can print this form from the NC Fossil Club's website:
<http://www.ncfossilclub.org/LeeCreekIVPub.htm>

Lee Creek IV Order Form

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____

Email: _____

Number of Copies: _____

Send this form and payment (CHECK ONLY!!) to:
North Carolina Fossil Club
Attn: Lee Creek IV Order
P.O. Box 13075
Research Triangle Park, NC 27709

DEADLINE FOR MAIL ORDERS: Saturday, July 15, 2006.

Orders using cash **will only be accepted** at the NCFC meeting on Sunday, July 16 at the North Carolina Museum of Natural Sciences.

Papers in Paleontology

I would like to call your attention to two articles in paleontology of which I am a coauthor. The first is a study of *Hemipristis serra* teeth and statistically models three measurable variables: the distal edge length, the ratio of tip length to total edge length, and the age of the tooth. The study found that as the teeth move forward through the Miocene the length increases and the ratio decreases. This paper is published electronically: Quantifying a possible Miocene phyletic change in Hemipristis (Chondrichthyes) teeth: *Palaeontologia Electronica* (2006#1) (with Karen Chiswell and Gary Faulkner) and can be found online at http://palaeo-electronica.org/toc9_1.htm

The second announces three new echinoids and one new ophiuroid (brittle star) which have recently been found in the PCS - Lee Creek mine: Additional echinoderms from the PCS (Lee Creek) phosphate mine, near Aurora, Beaufort County, North Carolina, *Southeastern Geology*, v. 44, No. 2, 2006, p. 73-83 (with Trish Weaver and Dick Webb). I'm sure I also speak for Trish and Dick when I say a heartfelt "Thank you!" to Pat Young, Judy Stiles, and Eric Sadorf for donating their specimens to the NC Museum of Natural Sciences. Pat contributed the ophiuroid and a singular specimen of *Agassizia scrobiculata*, Judy provided two specimens of *Arbacia* sp. cf. *A. sloani*, and Eric furnished an example of *Encope macrophora*.

I will be glad to furnish a .pdf copy of either paper to anyone who wants one. You can email me at chandler@math.ncsu.edu
Richard Chandler

Dolphin or Porpoise?

Eric Sadorf

When I started collecting fossils from the reject piles from the Lee Creek Mine (PCS), I would occasionally find small teeth that my various references identified as dolphin or porpoise teeth. My collection of these teeth grew over the years and I began to wonder how to further identify these teeth. Which teeth belonged to dolphins and which belonged to porpoises? Different collectors that I asked gave different answers so I decided to do some research on the subject.

Dolphins and porpoises belong to the suborder Odontoceti, commonly referred to as the toothed whales. Today there are 10 families within the toothed whales. The family Delphinidae, commonly referred to as the true dolphins or ocean dolphins, contains at least 33 species alive today. Two species that can be seen in North Carolina waters are the Atlantic Spotted Dolphin (*Stenella frontalis*) and the Common Bottlenose Dolphin (*Tursiops truncatus*). Porpoises belong to the family Phocoenidae. There are 6 species of porpoises alive today. The Harbor Porpoise (*Phocoena phocoena*) is the only species that can be found in North Carolina waters.

The physical characteristics that differentiate modern dolphins (Delphinidae) and porpoises (Phocoenidae) include tooth shape. Dolphins have long conical teeth that are circular in cross section while porpoises have compressed spade shaped teeth (Figure 1).

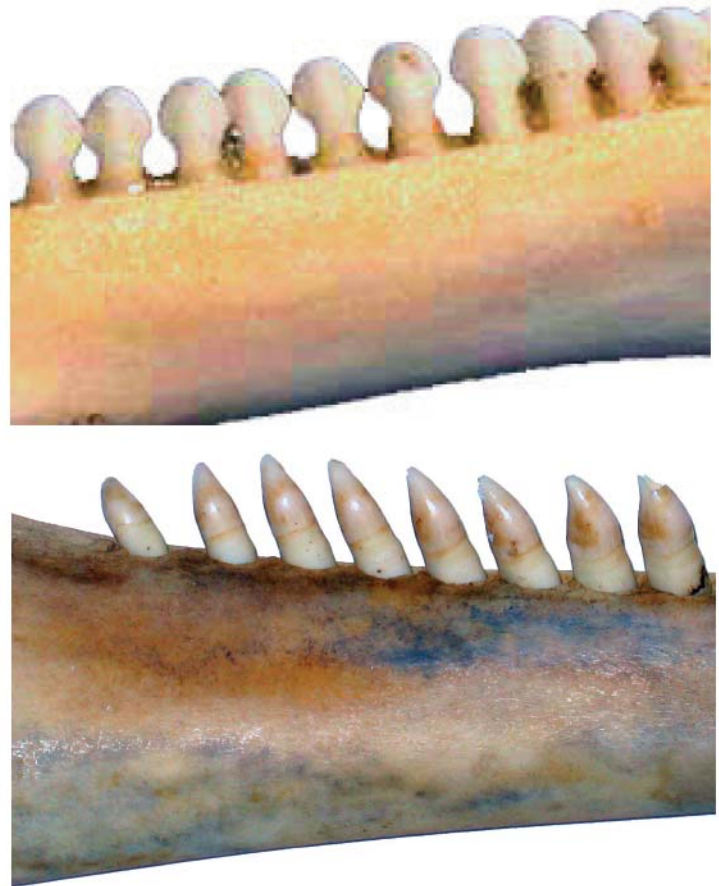


Figure 1. Modern porpoise teeth (unidentified species)(top) and modern dolphin teeth (*Tursiops truncatus* from the North Carolina Museum of Natural Sciences in Raleigh) (bottom).

Another characteristic is the dorsal fin. Most dolphins tend to have a high, curved dorsal fin and porpoises have a small, triangular dorsal fin. Two species of dolphins lack the dorsal fin entirely. Another characteristic is the shape of the snout. Many

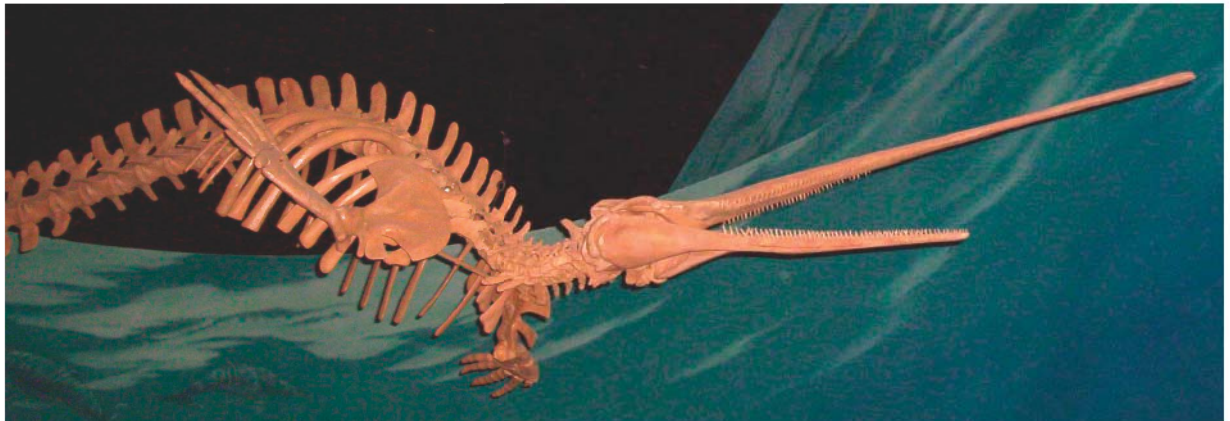
dolphins have an elongated “beak” but porpoises do not have this feature. Porpoises are smaller than most dolphins and have more of a rounded shape. Fossil dolphins and porpoises can be distinguished by certain skeletal characteristics, particularly on the skull (Ichishima and Kimura, 2005).

This answers the question for the families Delphinidae and Phocoenidae, but what about the other living and extinct families of small toothed whales? What about the fossil remains that are found in the Lee Creek Mine? Most, if not all, of the fossil teeth that I have collected from within the mine were collected from the middle Miocene Pungo River Formation (see Figure 2 for several examples). Most of the teeth are peg like and have a long conical crown and are circular in cross section, similar to modern day dolphin teeth. A few of my fossil teeth are somewhat spade shaped similar to modern day porpoises, but several teeth in my collection don't resemble modern day dolphin or porpoise teeth at all.

Trying to classify my fossil teeth led me on a literature search of several papers written by various paleontologists. I found that the oldest fossils from the family Delphinidae are from the later Middle or early Late Miocene and earliest fossil evidence for the family Phocoenidae is from the Late Miocene (Fordyce and Barnes, 1994). These postdate the Pungo River Formation which is Middle Miocene, so no true dolphins or porpoises are to be found in the Pungo River Formation. Six true dolphin genera have been found in the Pliocene Yorktown formation above the Pungo River at PCS (Whitmore, 1994), but no true porpoise fossils have been found in any sediment from the Atlantic (Barnes, 1985).

One surprise I found was that different authors used different terms for the same animals. For example, some authors would refer to the genus *Eurhinodelphis* as porpoises (Kellogg, 1925), while others referred to them as dolphins (Lambert, 2004). I contacted two paleontologists currently working with fossil toothed whales and asked them for some guidance on the proper terminology for these fossils. David Bohaska from the Smithsonian Institution's Natural History Museum referred me to a Smithsonian publication (Mead and Gold, 2002) that stated that in Europe, the term porpoise is applied only to the family Phocoenidae and all other small toothed whales are called dolphins. In North America, the family Phocoenidae is referred to as a porpoise but for other small toothed whales, the terms porpoise and dolphin are used interchangeably. Olivier Lambert of the Royal Institute of Natural Sciences (Belgium) responded to my question by saying that the term porpoise is usually restricted to members of the family Phocoenidae and the term dolphin is sometimes used outside its strict taxonomic definition of belonging to the family Delphinidae. He suggested that when the term dolphin is used outside the family Delphinidae, it can be used with another specific term. Examples would be: “long-snouted dolphins” for the Eurhinodelphinidae and “river dolphins” for the families Platanistidae, Iniidae, Pontoporiidae and Lipotidae.

Figure 3. A model of *Eurhinodelphis* from the Calvert Marine Museum. *Eurhinodelphis* is a common Miocene long-snouted dolphin.



If we are to use the naming convention that Dr. Lambert described, what would be the term used for the Pungo River specimens? Dr. Lambert suggests the term “fossil dolphin” might be an acceptable name for unidentified small toothed whale teeth. Another acceptable term to use would be “odontocete” or “fossil odontocete”. This term includes all the toothed whales of the suborder Odontoceti.

References:

- Barnes, L.G.**, 1985, Evolution, Taxonomy and Antitropical Distributions of the Porpoises (Phocoenidae, Mammalia). *Marine Mammal Science*, 1(2): 149-165.
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- Kellogg, Remington**, 1925, On the occurrence of remains of fossil porpoises of the genus *Eurhinodelphis* in North America. *Proceedings of the United States National Museum*. 66(26):1-40.
- Lambert, Olivier**, 2004, Systematic revision of the Miocene long-snouted dolphin *Eurhinodelphis longirostris* Du Bus, 1872 (Cetacea, Odontoceti, Eurhinodelphinidae). *Bulletin De L'Institute Royal Des Sciences Naturelles De Belgique, Sciences De La Terre*. 74:147-174.
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- Whitmore, F.C. Jr.**, 1994, Neogene Climate Change and the Emergence of the Modern Whale Fauna of the North Atlantic Ocean. *Contributions in Marine Mammal Paleontology Honoring Frank C. Whitmore, Jr.* *Proceedings of the San Diego Society of Natural History*, (29):223-227.



Figure 2. Various small odontocete teeth found in the Miocene aged Pungo River Formation.

Norris Lake Fossils

Alan Lipkin

Just over the border in eastern Tennessee lies the Tennessee Valley. During the Great Depression, the Tennessee Valley Authority was established to build a series of dams in order to control severe periodic flooding of the area. Today it is the site of a string of beautiful lakes situated in the heart of the Hill and Valley region of the state.

Norris Lake is one of the jewels of the area. Damming the Powell and Clinch Rivers, its waters are among the highest quality of the TVA lakes. Having filled relatively narrow valleys, it snakes through the countryside north of Knoxville between steep, heavily forested slopes.

To the east are the Smokey Mountains and to the west the Cumberland Plateau. Just to the north is Cumberland Gap National Park, the Gateway to the Cumberlands and the vast coal fields of Kentucky, and western Virginia. Middlesboro, KY is nestled in an ancient Precambrian meteor crater that is about 10 miles across, one of only a handful of towns worldwide located in known impact craters. The area is fraught with caves and fossils are abundant.

Ordovician and Cambrian fossils can be found all along the shores of Norris Lake. The lake is normally filled to capacity in April and is lowered slightly during summer months. This leaves a denuded bank around the lake that is perfect for fossil hunting. Indian artifacts are often found in the area as well.

There are many small iron-bearing stones that look suspiciously like tektites from the nearby meteor impact. Tektites are small molten fragments sprayed from volcanoes or impacts. If you visit the area I'd be interested in opinions.

Around the lake are large numbers of ancient sponges, bryozoans, stromatolites, shellfish, and crinoids. Their age is impressive, about half a billion years old, twice as old as the oldest dinosaur ancestors and nearly ten times older than early mammals of the Cenozoic. Life had not yet invaded land.

What You May Find

Bryozoans are probably the most common fossil of the area. These "soft coral" colonial animals formed branched stalks from less than an inch long to about a foot or longer. They come in a variety of shapes from snaky branches to fan-shaped fronds.

Small spherical (about one inch in diameter), stockless sponges called *hindia* are also plentiful. They are not obvious unless they're broken, exposing the dense, narrow canals that radiate from the center of the sphere. Once you've found a couple it's easier to see whole specimens since tiny pores are readily evident. They were probably "free swimming" in that they allowed currents to bounce them along the bottom. They often got wedged between rocks, distorting their otherwise round shape.

Stromatolites which formed large reefs throughout the area are abundant. These layered, colonial bacteria are the oldest organized life on the planet. They are the only fossils found for over 85% of the time that life has existed. There may be found in small pieces to large chunks that can barely be lifted. Although living stromatolites exist today, they are rare and found only in locations where snails and other animals that graze them do not live.

With a little luck you might find one of the ancestral ammonites, "octopi" with chambered shells. They became very prolific during the Mesozoic (Age of Dinosaurs), and were extinct at the end of the Era. *Endoceras* and *Actinoceras*, an inch or two long, had long, conical shells and are not uncommon.

Crinoids, or Sea Lilies, are plantlike animals that still exist today. Their stem rings are very common, but the heads are rare. Portions of the stalks several inches long may be found.

Occasionally *polyps* up to two or three inches long can be found. It is thought that they buried themselves in the sea bottom with tentacles extended and were often quickly covered with sediment preserving them in great detail, a rare occurrence with soft bodied creatures.

How To Get There

Take I-40 west. Expect to drive all day to Knoxville from Raleigh. The drive through the mountains is spectacular and food and lodging is plentiful both along the way and in Knoxville. From I-40 in Knoxville, head north on Highway 33 towards Tazewell. It's mostly a two lane road that winds through the lovely countryside. You'll hit the shores of Norris Lake in about 20 miles and you'll see it most of the way to Tazewell. Boat rentals are available, but lodging is not common. Anyplace that you see a bare shoreline is a possible fossil location and side roads to the lake are plentiful.

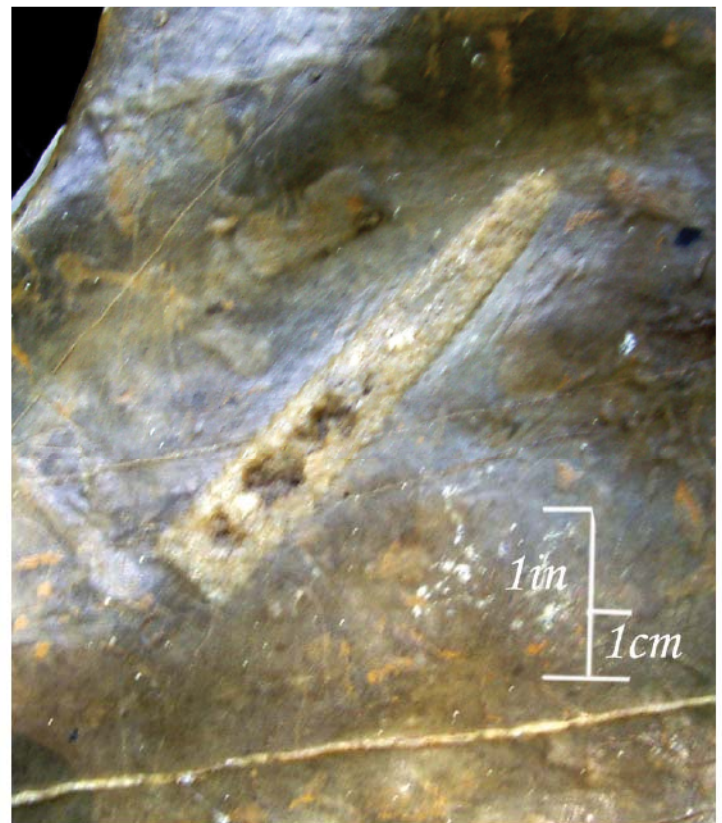
When To Go

Norris Lake is a popular vacation spot. Boating and swimming make it a wonderful place to enjoy during summer months. Fossils may be found, but the bare ring around the lake is minimal.

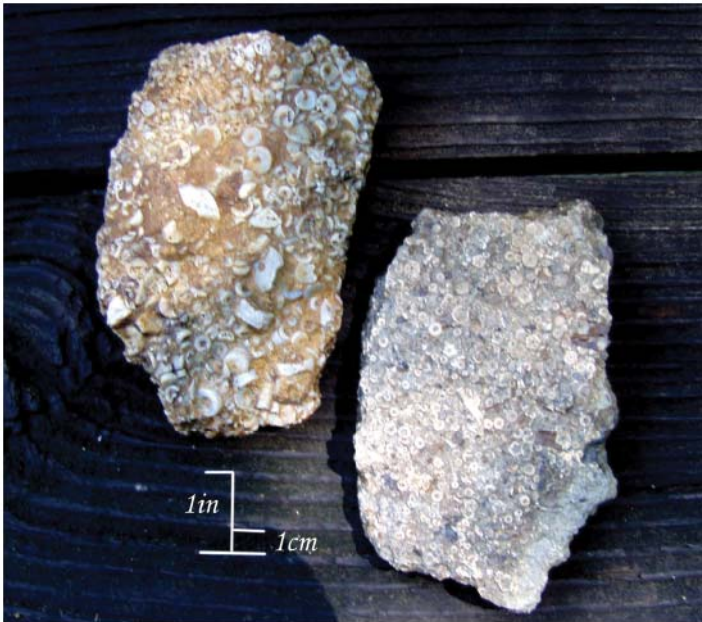
However, in January and February the lake is drained in readiness for the spring floods. The level of the lake may drop 50 feet. At this time the denuded area around the lake is very large and has been conveniently washed by the weather for weeks. It is perfect for fossil hunting. But the water is mighty cold!

About the Author

Dr. Lipkin is a retired professor of chemistry and natural science. He has taught at small colleges throughout the Southern Appalachian Mountains and has lived on Norris Lake. Favorite fossils are from the Ordovician and Cambrian as well as Paleozoic Plants. Email questions, comments, or fossil talk to neoguru@aol.com.



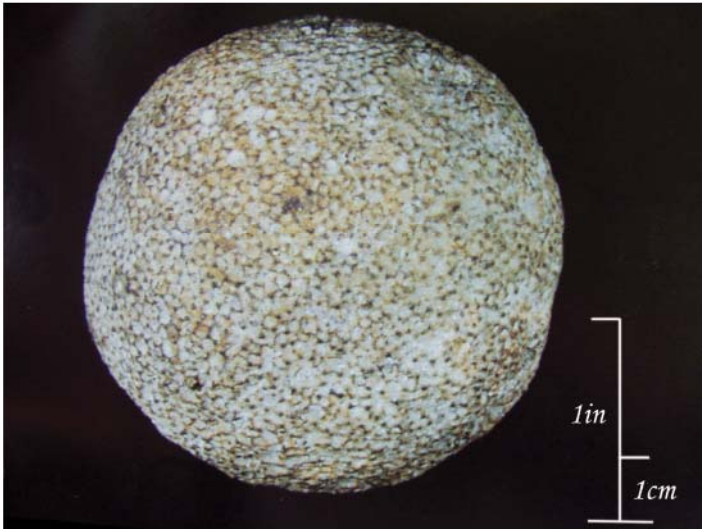
Actinoceras (Ordovician)
An ancient ancestor of the ammonites



Crinoid Stem Segments (Ordovician)
Usually mixed with bryozoans and shellfish



Stromatolite (Cambrian)
Left: Interior – Layers evident. Right: Exterior



Hindia (Ordovician)
A “free swimming” sponge



Polyp (Ordovician)
Soft bodied fossils are normally very rare



Stromatolite (Cambrian)
Entirely intact. As it appeared when living.

***Hardouinia kellumi* Needed**

NCFC friend George Phillips wants to study the echinoid genus *Hardouinia* in Mississippi. As you probably know, three species of that genus are found in North Carolina: *aequoria*, *mortonis*, and *kellumi*. And you also know that *Hardouinia kellumi* is probably the most sought-for echinoid in North Carolina. Even confirmed shark-teeth-only collectors (like me) are thrilled to find one. Well, George needs a half-dozen or so *kellumi* for his project. If you have one or two you can spare, send them to: George Phillips, Paleontology, Mississippi Museum of Natural Sciences, 2148 Riverside Drive, Jackson, MS 39202-1353.

Peedee Regular Echinoids Needed

While on the topic of Cretaceous echinoids, Trish Weaver at the NC Museum of Natural History is trying to locate something even scarcer than *Hardouinia kellumi*: a regular echinoid found in Peedee Formation sediments. The only specimen she knows of was donated to the Museum by Becky Hyne, found years ago at Castle Hayne. Regular echinoids, e.g., *Arbacia*, *Coelopleurus*, or *Psammechinus*, are pentamerous with 5-fold radial symmetry. (Irregular echinoids, e.g., *Hardouinia*, *Linthia*, or *Echinolampas*, have only bilateral symmetry.) If you have found *any* regular echinoids in Peedee sediments, please contact Trish Weaver: 919-733-7450, ext. 724 or by email: Trish.Weaver@ncmail.net

Early in May John Timmerman visited Shackleford Banks in search of modern shells. While beachcombing he made a pair of remarkable discoveries. While neither was a fossil, both bear directly on fossils we find at PCS - Lee Creek. These black and white reproductions do not have anywhere near the impact of the color originals of John's photographs, especially those of the dolphin.

Sturgeon

Sturgeons are cartilaginous fish. Unlike sharks they have no calcified bony elements in their skeleton. The spine, skull, ribs, etc., are pure cartilage. When the animal breaks down, the internal skeleton dissolves. However the dermal scutes more than make up for the softness of the internal skeleton. The scutes are very dense bone. They are also remarkably ungreasy, unlike most bones associated with fish.

In living sturgeons the dermal scutes are not as evident as in this dead specimen, which is why it was so remarkable for study. This specimen is bleached out in death, making the scutes very evident.

This fish, at about 6 feet long, was mid-sized for the species. Atlantic sturgeon have been recorded at lengths of over 10 feet.

The species is now protected from fishing.

Atlantic sturgeon spend their lives in salt and brackish water, entering rivers to spawn.

Bottle-nosed Dolphin

However gruesome this find is, I found it very instructive as to the course of how many of the fossil bones we find at PCS have scratches and bite marks on them from shark feeding.

Observe the edges of the bite marks. Some show actual teeth marks, particularly the cut in the throat of the animal. The dorsal and lateral bites undoubtedly struck bone of the ribs and dorsal processes of the thoracic vertebrae. The throat bite likely struck the side of the jaw as it is completely exposed in the wound. The hyoid bones in the throat of the animal were likely ingested by the shark, based on their expected location and the depth of the bite taken out of that region of the dolphin.

I expect this dolphin was dead when the shark found it. The bite marks appeared to be quite fresh but the dolphin had signs of decay. However, fluid red blood leaking out of the core of the carcass seems to indicate a fairly recent death. The carcass had a decay odor to it but nowhere near the ferocious degree that such a large carcass will eventually take on.

The largest local gull, great black-backed gull was feeding on the carcass when I first approached it. They are the bird tracks around the carcass in the sand. They were also feeding on the sturgeon when I first found it. In that case they can be seen sitting in the background of the photo I made of me with the fish. Due to the toughness of large carcasses like this I expect that the largest gulls would be best able to feed from it. I have never seen turkey vultures on Shackleford, a bird much better suited to this sort of carcass feeding.

In coastal Georgia it is not uncommon to see turkey and black vultures feeding on such carcasses on the ocean beaches. Though such birds are not likely to leave marks on bones, they ingest smaller bones, thus removing from a skeleton some of the content to lesser extent, much the way sharks do. Gulls also ingest bones from carcasses.

One final thought. It is remarkable to fathom the size of a shark capable of this size of a bite patrolling our coastal NC waters.

John



Spring Trip to Utah = Trilobites!

Nine members of the North Carolina Fossil Club, Inc., hunted for marine fossils in Millard County, west-central Utah, on April 21st and 22nd, 2006. We found lots of trilobites, including *Elrathia*, *Peronopsis*, and *Asaphiscus*, and a few brachiopods in the Middle Cambrian Wheeler Formation at the commercial U-Dig Fossils quarry and at several sites on public lands elsewhere in the House Range, including Walcott's classic location, Wheeler Amphitheater. We also collected diverse marine invertebrates in the Mississippian Chainman Shale at Conger Spring.

James Bain



The Cambrian brachiopods we found in Wheeler Amphitheater were small and resembled shiny fish scales. This one measures 6 mm across.



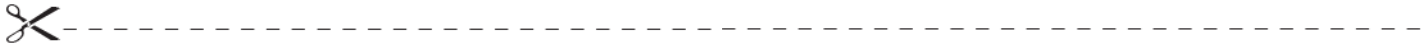
Amid plentiful sign of wild horses, we crawled around on the ground in the high desert in the Mississippian Chainman Shale at Conger Spring. Marine invertebrates we collected included horn corals, tabulate corals, brachiopods, and crinoids.

Who can resist trilobites? After many decades of collecting, the shales of Wheeler Amphitheater are still giving up plenty of 'bugs.' We risked getting snowed out by making this trip so early in the year, and one of our scouts was snowed on at this site just days before the main group arrived. But our risk was rewarded with many trilobites, freshly weathered from the clay and shale by winter and spring storms. These 'bugs' range from 7 to 28 mm in length.



NORTH CAROLINA FOSSIL CLUB, INC.
(Founded 1977)

PRESIDENT	Cynthia Muston	(252) 830-8897	Hubert, NC
VICE PRESIDENT	David Sanderson	(919) 469-2812	Cary, NC
IMMEDIATE PAST PRESIDENT	Richard Olsen	(252) 247-4762	Atlantic Beach, NC
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2006 MEMBERSHIP APPLICATION - NORTH CAROLINA FOSSIL CLUB

NAME(s) _____
 ADDRESS _____
 CITY, STATE, ZIP _____
 PHONE(S) (INCLUDE AREA CODE) _____
 E-MAIL ADDRESS _____

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

Children of NCFC members who are dependent minors and living at home may accompany parents on any trip *EXCEPT* PCS–Lee Creek or where otherwise noted.

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.

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 13075, RESEARCH TRIANGLE PARK, NC 27709

North Carolina Fossil Club
P.O. Box 13075
Research Triangle Park, NC 27709



Nine members of the North Carolina Fossil Club visited Utah. They included (from left) Dick Stober, Jim Mahoney, George Eia, Jeff Cohn, Sandra Cohn, Scott Hertenstein, Carolynne Hertenstein, Mike Malaska, and James Bain (photographer, not shown).