



# Janus

The Newsletter  
of the  
North Carolina  
Fossil  
Club

1991 Number 3

## Calendar - Fall 1991

### September

- 10 N.C. State Museum of Natural Sciences  
Volunteer Orientation
- 15 Green's Mill Run - Greenville, NC  
Contact: Becky and Frank Hyne (919) 752-3284
- 21 Museum Work Day
- 28 ♦ Texasgulf Quarry - Aurora, NC  
Contact: Vince Schneider (919) 779-9338
- 29 Museum Work Day

### October

- 5 ★ Becker Sand and Gravel - Fayetteville, NC  
Contact: Jim Knowles (919) 851-0393
- 12 Martin-Marietta Quarry - Belgrade, NC  
Contact: Richard Tellekamp (919) 347-6361
- 19 Museum Work Day
- 27 ★ Giant Cement Company - Harleyville, SC  
Contact: Mike Hogan (919) 942-2877

### November

- 2 Martin-Marietta Quarry - Castle Hayne, NC  
Contact: Vince Schneider (919) 779-9338
- 9 Fossil Fair - N.C. State Museum of Natural  
Sciences, Raleigh, NC
- 17 Martin-Marietta Quarry - Jamestown, SC  
Contact: Becky and Frank Hyne (919) 752-3284
- 23 Museum Work Day

### December

- 7 Old Egypt Coal Mine - Sanford, NC  
Contact: Tom Burns (919) 776-8080
- 8 Museum Work Day
- 21 Museum Work Day

### January, 1992

- 4 Museum Work Day
- 18 Lower Neuse River - Arapahoe, NC  
Contact: Thelma Bennett (919) 249-1574

♦ Reservations required - see below

★ Tentative date - see below

Unless otherwise noted, trips start at 9:00

**Museum Work Days** are scheduled (Old Health Building at the corner of Jones and Dawson Streets in downtown Raleigh) to give you access to the N.C. State Museum of Natural Sciences' collection and reference works. You may prepare and catalog the Museum's specimens or your own. Call Vince Schneider (919) 779-9338 for details. Saturday sessions run from 9:00 AM to 1:00 PM. Sunday sessions are from 1:00 PM to 3:00 PM.

**Green's Mill Run** is a fascinating place. One shovelfull might contain a really old *Squalicorax pristodontus* tooth and the next have a much more recent *C. carcharias*. The common fossils are shark teeth and the cephalopod *Belemnitella americana*. In addition there is the occasional exotic find: mosasaur teeth, *Enchodus* teeth, coprolites, Indian arrowheads, golf balls, etc. You need a long handled shovel, a ¼" mesh sieve, and waders or sturdy shoes that can get wet. Attach floats to your sieve and you won't work as hard.

The **Texasgulf** trip is limited to 60 members (no guests). Those who have not been to Texasgulf in 1991 may call for reservations between 8:00 AM and 8:00 PM beginning September 14. Other members may make their reservations starting September 21. We have to make these restrictions since demand for this trip is always far greater than can be accommodated. Texasgulf is one of the premier collecting sites in the eastern U.S. Many marine species are represented including whale, porpoise, seal, walrus, bird, alligator, several types of fish, many species of shark (including LARGE *Carcharodon megalodon* teeth), and untold numbers of invertebrates (including the highly prized *Ecphora quadricostata* shells). Additionally, there are occasional land mammal remains and amber found. You can't go and fail to find something very interesting. This early in the fall it can be quite warm in the pit and it is easy to become dehydrated. Be sure to bring plenty of portable liquids (you ride a company bus and then hike to the collecting site).

The **Becker Sand and Gravel Pit** on NC 87 south of Fayetteville is a good source for petrified wood and an occasional piece of agate. You must provide your own hard hat. Be sure to call Jim Knowles between September 26 and October 5 for directions and to verify that the trip is still on - at this time there is uncertainty whether the pit will be open. You can drive close to the collecting site.

Variety is the word for the **Martin-Marietta Quarry, Belgrade**. Several types of shark teeth (*C. auriculatis* and large *C. megalodon*, etc.), alligator teeth, sawfish rostral teeth (on the "saw"), sting ray crusher plates and spines, whale and porpoise ribs and ear bones, seacow material, and occasional land mammals (mastodon teeth fragments, horse teeth and bones, wolf teeth) have been found here on past visits by the NCFC. This always a good trip and members and guests have a grand time.

Becky and Frank Hyne will lead the trip to the **Giant Cement Quarry at Harleyville, SC**. This Eocene site will be a new place for most of us. I have a pair of beautiful *C. auriculatis* teeth from there. If you find anything as good you will not consider the trip wasted. You should call Mike Hogan around October 1 to verify that the date is correct - at this time it is tentative. We will be allowed entrance at 8:00 AM and at 10:00 AM. Harleyville is close to 5 hours from Raleigh so allow plenty of travel time.

The **Martin-Marietta Quarry at Castle Hayne** contains the remains of the animals who lived in a shallow Eocene ocean. The primary fossils here are echinoids, perhaps as many as 10 species. Other invertebrates include beautiful limestone casts of molluscs, nautiloids, and brachiopods. A variety of older shark teeth can be found: *C. auriculatis*, *C. angustidens*, *Squalicorax*, *Lamna*, etc. Other possibilities include alligator teeth and horse teeth. With Interstate 40 complete from Knoxville to Wilmington, Castle Hayne is a reasonable trip for a majority of our members. Try it, you'll like it.

Becky and Frank will also lead the trip to the **Martin-Marietta Quarry - Jamestown, SC**. This is another Eocene site with many of the same types of fossils as Castle Hayne. Becky says that shark teeth (including *C. auriculatis*) are more common and that you might find one of the LARGE echinoids named after Pete Harmatuk (*Linthia harmatuki*). We will meet at Mary's Restaurant at the intersection of US 17A, SC 41, and SC 45 at 9:00 AM.

The spoil piles of the **Old Egypt Coal Mine** (active in the 18th and 19th centuries) which still remain contain Jurassic fossils, primarily fish scales and phytosaur teeth. This trip may include a visit to the nearby Pomona clay pit for some very nice plant impressions.

Winter tides remove a lot of the sand on the north bank of the **Lower Neuse River near Arapahoe** exposing a wide variety of fossils including shark teeth (rarely a large *C. megalodon*) and land mammal material (horse, bison, deer, mastodon, etc.) The water will be **COLD** - waders are essential.

## Fossil Fair

Last year's Fossil Fair was a tremendous success and we want the one this fall to be at least as good. Persons willing to volunteer to help should contact Vince Schneider (919) 779-9338. Those who want to exhibit collections should contact Mike Hogan (919) 942-2877. There will be representatives from the Smithsonian on hand to identify fossils and to judge outstanding exhibits.

## Museum Events

The N.C. State Museum of Natural Sciences will hold volunteer training sessions this fall. General orientation: September 10; training session for work in the "Living Laboratory" (Fossil Lab): September 14. Those interested should contact Mary Ann Brittain or Barbara Beaman at the Museum (919) 733-7450.

Volunteers are needed for the Museum's State Fair exhibit "Dynamation" (animated dinosaurs). For further information contact the N.C. Natural Sciences Society at (919) 733-7450.

## Aurora Fossil Museum

We have all seen the sign to the Fossil Museum in Aurora but how many of us have actually visited it? On the afternoon of our trip to Texasgulf the Museum's curator, Mary Weeks (a new member of the NCFC), will open it from 2:30 to 4:30 specifically for us. Please take advantage of this opportunity and express your appreciation for her effort.

## Welcome, John Timmerman

You will already have noticed the illustrations in this issue of *Janus*. They are the work of new member John Timmerman who, along with his wife Nancy, recently joined the NCFC. Ever since I became editor, I have hoped that someone would volunteer to illustrate general and specific topics and John is an answer from Wilmington if not from heaven. John is a professional artist specializing in wood sculpture with interests in "just about anything natural". A heartfelt Welcome! to Nancy and John.

## Duke Primate Center Articles

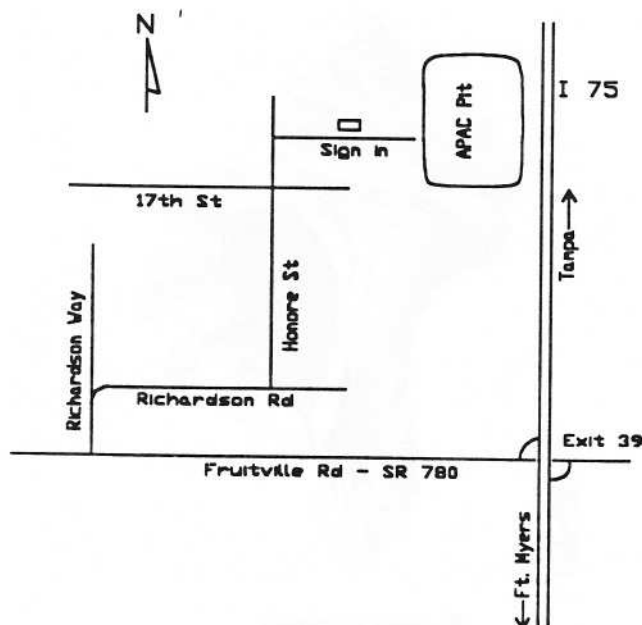
Trish Kohler has multiple copies of 18-20 scientific articles concerned with early primates and hominids by Dr. Elwyn L. Simons of the Duke Primate Center. Too many to list here, a couple of representative titles are *Ramapithecus* and *Hunting the "Dawn Apes" of Africa*. You can get a set for the cost of the postage as long as her supply lasts. Call her at (919) 383-6328 or write her at 706 C Constitution Drive, Durham, NC 27705.

## APAC Shell Pit, Sarasota, FL

If you are planning a trip to Florida a visit to the APAC quarry near Sarasota is worthwhile. It is a large pit so there is little danger of being crowded by other collectors. No reservation is required for access and you are allowed to drive your car into the pit. A friend who lives near Sarasota reports that APAC is open year-round but that there are rumors of it's closing for a couple of years. At this time it is open but it would be wise to call before you plan a trip there.

The deposit is Early to Late Pliocene with some Pleistocene material. Law will not allow mining below a certain depth. Thus the Early Pliocene, which is at the bottom of the pit, is not likely to become more exposed in the future. Fossils are primarily molluscan with some vertebrates. I have found alligator, turtle, seal, whale, and other unidentified mammal bones in addition to huge quantities of shells. After visiting this pit, the number of shells at Texasgulf will seem poor. The number of species, mostly tropical and subtropical, is immense also. If you are at all interested in mollusks, which is the forte of this pit, you owe it to yourself to see so many fossils in one place. **John Timmerman**

- Pit is open for collecting every Saturday, 8:30 AM - 2:30 PM, September through June.
- An entry fee of \$3.00 is charged at the gate.
- A visitor's release and waiver form must be signed before entering the pit.
- No one under 18 years of age is allowed in the pit.
- Hard hats are not required.
- There is no protection from the sun which, in southern Florida, can be fierce. Protect yourself.
- Pit guide is Adam A. Nosal - ☎ (W) (813) 371-6921  
☎ (H) (813) 955-1982



## Eighth Annual "BVFS Florida Fossil Fair" 1991 The South's Largest International Fossil Fair Fossils, Minerals, Gems, and Artifacts

Sponsored by the Bone Valley Fossil Society, Inc.  
Affiliated with the Eastern Federation and American Federation of Mineralogical Societies

Location: Best Holiday Trav-L-Park, 7400 Cypress Gardens Blvd., Winter Haven, FL (2 miles east of beautiful Cypress Gardens). An excellent location for browsers and dealers alike.

Hours: Friday October 4 9:00 AM to 5:00 PM  
Saturday October 5 9:00 AM to 5:00 PM  
Sunday October 6 9:00 AM to 3:00 PM

Exhibits: Placed in the Recreation Hall. Tables provided. Please let us know if you could help us and provide an exhibit. Contact Exhibit Chairman, Ed Holman 813/665-3426.

Pot Luck Supper: Friday Night at 6:00 PM in the Recreation Hall.  
All Dealers are WELCOME! Please bring a covered dish.

Slide Program: Saturday night at 6:00 PM in the Recreation Hall.

Auction: Saturday night at 7:00 PM in the Recreation Hall.

Lodging: Camping at our host location, Best Holiday Trav-L-Park. Full hook-ups available. Camping information and reservations call toll-free 1-800-323-8899. All camping and tail-gate fees will be paid to the Best Holiday Trav-L-Park. There are many quality motels in the area for those who do not wish to camp.

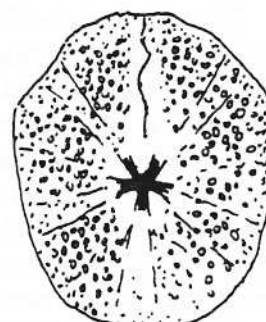
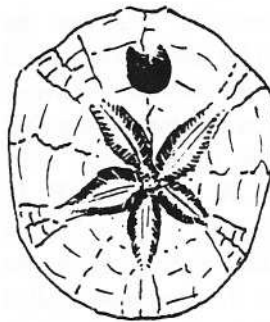
Fees: Daily tail-gaters, including anyone who comes in the park selling or trading, will pay a \$10 DAILY Fee. Payable to the Best Holiday Trav-L-Park. Campers- The daily fee is included in your camping fee.

Recreation: Swimming pool, tennis courts and games in the Rec. Hall are all within a short walking distance.

Who to Contact for Information:

Publicity Chairman: Eric Kendrew, 4436 Tevalo Drive, Valrico, FL 33594  
813/681-4350

Best Holiday Trav-L-Park: Joe Hofmeister, 7400 Cypress Gardens Blvd., Winter Haven, FL 33884 (1-800-323-8899)



*Hardouinia mortonis*  
Castle Hayne



## In The News

Did a comet impacting the earth 65 million years ago cause the extinction of the dinosaurs? The July 1, 1991 issue of *Time* has a major 2 page article dealing with this question. First proposed in 1980 by Luis Alvarez and his son Walter, this controversial hypothesis accounted for the demise of the dinosaurs with a giant collision, the resulting debris causing devastating climatic changes. The Alvarazes were led to their theory by the discovery of a very high percentage of iridium in the clay which forms the boundary between Cretaceous and Tertiary formations in many localities world-wide. Iridium is rare in the earth's crust but plentiful in some asteroids and comets. This clay layer with its high iridium content could have been formed by the fallout of the debris ejected into the atmosphere by the collision.

One reason this theory has not received universal acceptance in the scientific community has been the absence of an impact crater of sufficient magnitude. One of the right age is now suspected under 3600 feet of limestone at the northern tip of the Yucatan Peninsula by William Boynton and Alan Hildebrand. They believe the 112 mile wide crater was formed by the impact of a comet 5 miles in diameter, resulting in 400 cubic miles of material being blasted into the atmosphere. In contrast, the explosion of Mount St. Helens on May 18, 1980 ejected an estimated 1/4 cubic mile of debris into the atmosphere and the eruption of Indonesia's Mt. Tambora in 1815 which caused "the year without a summer" (1816) and killed more than 12,000 people threw up an estimated 20 cubic miles of material.

New evidence suggests that the clay at the Cretaceous-Tertiary boundary consists of two parts: a thin layer overlying a more substantial one. Two collisions? A well-known impact crater 22 miles across near Manson, Iowa has been radioactive dated at 65 million years old.



The Cretaceous-Tertiary extinction was not the greatest. That distinction is owned by one that occurred about 250 million years ago at the boundary between the Permian and Triassic periods when more than 90% of the animal species on earth were lost. The Associated Press reports that A. R. Basu and P. R. Renne have proposed that a volcanic eruption in Siberia might have been its cause. Using Potassium-Argon dating they have determined that the lava flow called the Siberian Lava Traps and which covers more than 100,000 square miles (larger than North Carolina and Virginia combined) is the right age.



The August, 1991 issue of *Life* has a glossy but rather superficial article on modern sharks. It does have

some interesting if gloomy statistics: In 1980, 504 tons of shark were caught off the coast of the southeastern U.S. In 1989 that figure was 7,850 tons, more than 15 times as much. While shark meat might bring a commercial fisherman only 50¢ a pound, shark fins command as much as \$14.50 a pound. As a consequence they are frequently harvested solely for their fins. The National Marine Fisheries Service estimates that as much as 89% of the commercial catch is discarded. They are currently drawing up a plan to set quotas on 39 species, including sandbars, blacktips, dusksies, spinners, whites, tigers, lemons, and makos.



The March 1991 issue of *Wildlife in North Carolina* has an article entitled "What the Bones Tell" which is concerned with extinctions. There is a discussion of some of the Cretaceous, Pleistocene, and recent animals which occurred in North Carolina and are now extinct.

## Renewal and Dues

Some of you are renewing your membership before you need to. I put the renewal notice in each issue to make it convenient for prospective new members. When people inquire about the NC Fossil Club Trish Kohler sends them a sample copy of *Janus*. Then, if they want to join, all they need to do is fill out the form and send it in with their dues. It also makes it convenient for you to encourage your interested friends to join. If you have paid dues for 1991 (and if you received this issue of *Janus* via a mailing label you have) you need to renew sometime between December, 1991 and January, 1992. Use the renewal form which will appear in the 1991 #4 issue.



*Ecphora tricostata*  
Texasgulf, Aurora, N.C.

## Quarterly Shark Report

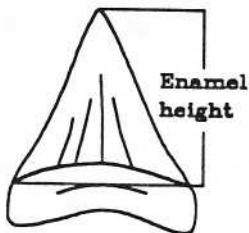
In the last issue of *Janus* we discussed the similarities and differences between the front teeth of the four species of fossil great white sharks found in this area. One thing I should have mentioned: the teeth of all 4 of these species have cutting edges which are strongly serrated. (The drawing program I used to sketch them was not up to that kind of fine detail without a lot of work on my part.) In this issue let's look at other characteristics of *Carcharodon carcharias*, the only one of the four which still survives.

How big does it grow? No one is quite sure. There are references to a 19th century specimen which was 39 feet long. Reports of a specimen 21 feet long and weighing 7300 lbs caught near Cuba in 1945 are now disbelieved since a modern evaluation of its photograph indicates that it couldn't have been longer than 5 meters (about 16½ feet). There is a report in *World Magazine* #25 of one caught in the Mediterranean off the coast of Malta in 1987 which was 7 meters long and weighed 3 tons. Specimens measuring in excess of 6 meters (19½ feet) and weighing up to 5000 lbs have been caught near Australia. Many of you will remember the specimen exhibited at the N.C. State Fair a few years ago which weighed around 2000 lbs.

There is a fairly good relationship between the height of the enamel (measured in inches) on the largest front tooth and the length of the shark (measured in feet):  $9.5 \times \text{enamel height} = \text{length}$ . Thus the 2½" tooth I found in Green's Mill Run a couple of years ago and which has an enamel height of 2" came from a shark about 19' long. If this same relationship holds for *Carcharodon megalodon* (and some authorities believe it may need adjusting) then the 5¼" tooth (enamel height: 4½") Trish Kohler found this spring at Aurora came from a giant about 42½ feet long.

It was originally believed that the evolution of the great white sharks followed the sequence:

*Cretolamna ?*  
 ↓  
*Paleocarcharodon landenensis*  
 ↓  
*Carcharodon auriculatis*  
 ↓  
*Carcharodon angustidens*  
 ↓  
*Carcharodon megalodon*  
 ↓  
*Carcharodon carcharias*

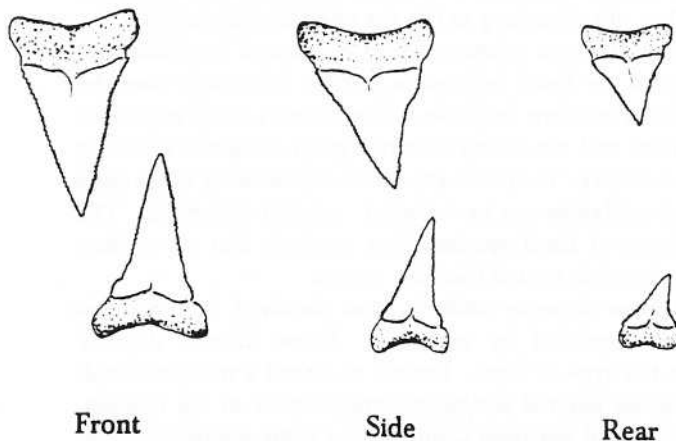


Many authorities now think that there were 3 distinct lines of development:

*Cretolamna ?*  
 ↓  
*Paleocarcharodon landenensis*  
 ↓  
*Otodus obliquus*  
 ↓  
*Carcharodon auriculatis*  
 ↓  
*Carcharodon angustidens*  
 ↓  
*Carcharodon megalodon*  
 ↓  
*Isurus hastalis*  
 ↓  
*Isurus escheri*  
 ↓  
*Carcharodon carcharias*

*Isurus hastalis* was more or less contemporary with *Carcharodon megalodon* (Miocene - Pliocene), *Isurus escheri* was a Miocene species, and *Carcharodon carcharias* began in the Miocene and persists to the present.

Early investigators inferred many more species of both fossil and contemporary white sharks than are recognized today. This was due, in part, to the differing tooth shapes, depending on the age of the shark and the placement of the tooth in the jaw. Front teeth tend to be large and symmetric, side teeth are smaller and asymmetric with the tip of the tooth pointing more to the back of the jaw, and rear teeth are small and compressed. Also, an upper tooth tends to be much wider and more nearly convex than the lower tooth it opposes (see below). Most authorities now believe there is only one species alive today, distributed worldwide throughout the temperate waters of both northern and southern hemispheres.



## Mollusk Fossils of Eastern N.C.

John R. Timmerman

Many fossil sites in eastern North Carolina contain abundant mollusks. At some sites their numbers are so great that it can become easy to ignore them. Mollusks represent a part of the ancient fauna giving a better understanding of ancient seas. I find that this interest does not compete with my search for other fossils such as vertebrates. Instead, it adds another dimension to an already exciting field. With a small amount of training the collector can recognize many different species.

Knowledge of fossil mollusks can aid the collector in placing a specific age to a deposit. Some mollusks are used as guides to specific deposits. Perhaps the best known guide fossil is *Ecphora quadricostata*, whose presence indicates Early Pliocene formations, the Yorktown Formation in northeastern North Carolina. To fossil mollusk collectors this species is a great prize. *Ecphora* is unmistakable. It's shape is round with four strong axial cords encircling the shell. It is calcitic, often a rich translucent brown colour. Even fragments are easily seen on the gray marls in which it often occurs. There are several recognized species of *Ecphora* found in North Carolina. It became extinct at the end of the Early Pliocene.

Living at the same time as the *Ecphora* were the *Chesapecten*, some of which reached the size of a small dinner plate. Their sculpture is bold, simple, and beautiful. *Chesapecten jeffersonius septenarius*, a relatively small species, has pronounced ribs giving it a striking appearance. The number of ribs vary in each species. Shape of the ribs is an easy way to distinguish three common species which occur in the Yorktown Formation at Texasgulf.

Mid Pliocene to Early Pleistocene deposits often contain very striking mollusk fossils. Many forms are similar to modern species, some having living relatives in waters off the Carolina coast and others have relatives as far away as Australia. Most of these "fossils" are not fossils in the truest sense, being the preserved original shell, sometimes even retaining some of the original markings. When some of these fossils when viewed under ultraviolet light (long and short wave) their pigmented areas will fluoresce. Freshly exposed specimens may not fluoresce well; long exposure to the sun or soaking in chlorine bleach enhances the reaction. Such treatment will damage the fossil so should not be done to your choicest specimens. Fossil mollusks will fluoresce regardless of age so long as it is the original shell material.

Many deposits represent deep or tropical environments. This gives the fossil collector a distinct advantage over the collector of modern mollusks. One doesn't need expensive equipment and the ability to travel great distances to collect exotic mollusks. From one site fossils representing fauna from a variety of depths can be collected - another advantage. The abundance of fossil species often exceeds that of modern species found in coastal Carolina waters.

In some deposits mollusks have dissolved but have not yet been replaced by minerals. Some Eocene deposits contain this type of fossil. Instead of a shell a mold is found, showing the internal and/or external features of the mollusk. An example of this from Castle Hayne is the internal mold of a *Pleurotomaria*, or slit shell. This primitive mollusk's name

derives from a slit that starts at the aperture and continues one third to one half the way around the shell. The gills open through this slit. This genus still lives at great ocean depths on rocky bottoms. They are vegetarian so they are difficult to lure into traps and are difficult to dredge because of the bottom they live on. Thus the modern form is out of reach for most collectors. The fossil form is the way many students can collect an example of this genus through their own efforts.

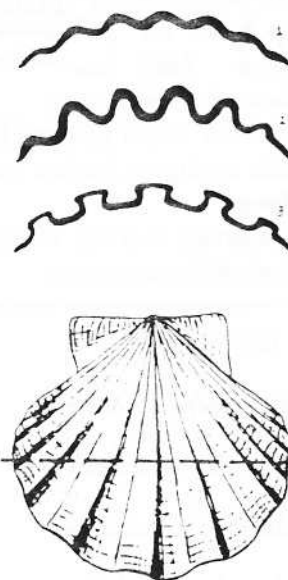
Many fossil mollusks are fragile and care is needed to ensure that they survive the trip from the field to the cabinet. Some specimens are best transported with substrate left on them. I have had good luck doing this with *Chesapecten*. I consider the extra weight worth the successful collection of this often fragile species. Some large gastropods such as *Busycon adversarius* can weigh several pounds when full of marl. An advantage to leaving the marl in them is that it often contains numerous tiny mollusks. I pick through the marl at leisure in the comfort of my home away from the heat of the fossil pit. There are many species of fossil mollusks which grow no larger than 10 millimeters long.

For the mollusk collector an exciting world waits, full of beauty and scientific interest. They are worth a second look the next time you visit a fossil site.

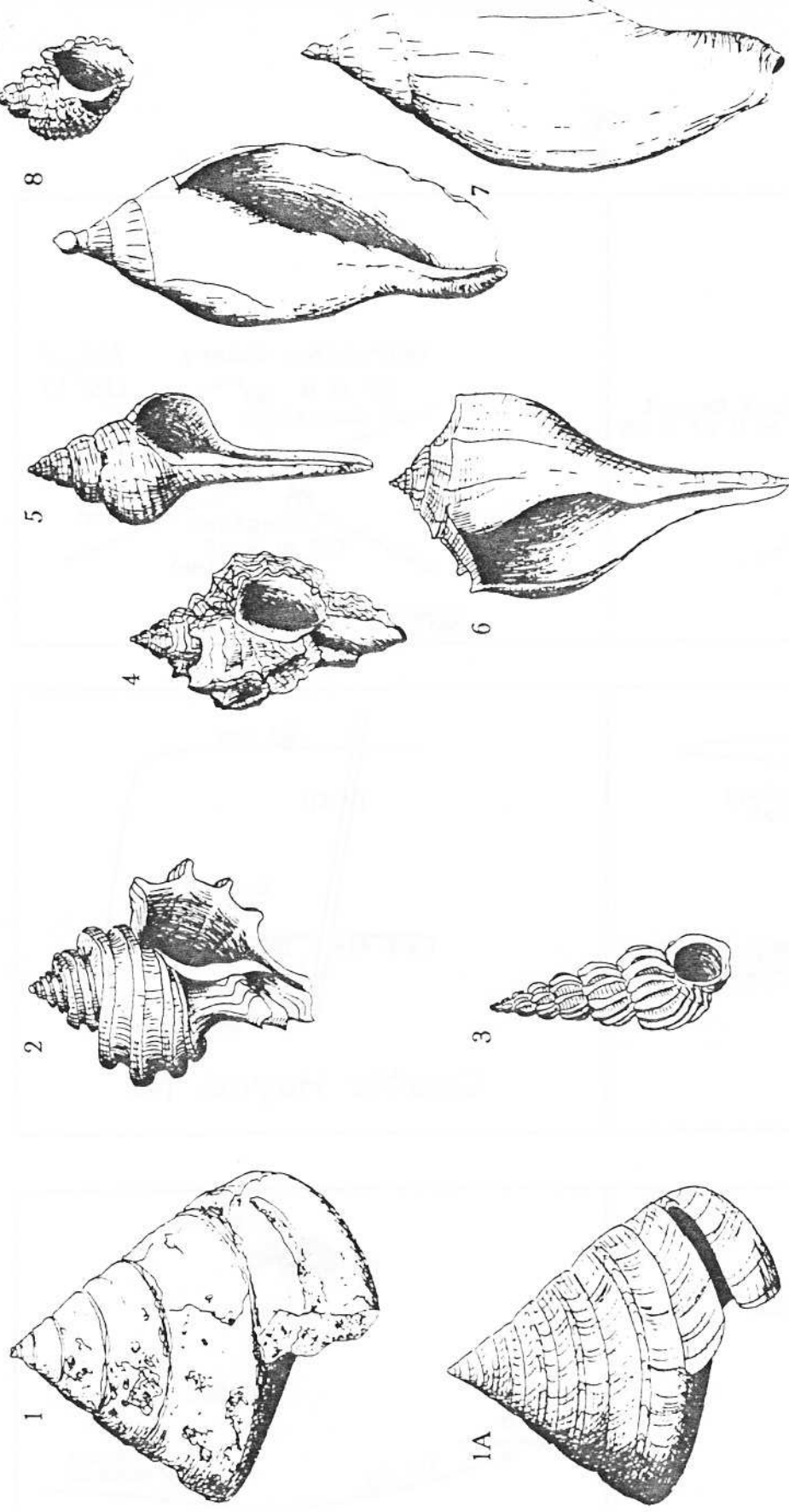
### References

*Geology and Paleontology of the Lee Creek Mine, North Carolina*, II. Smithsonian Contributions to Paleontology, #61, Clayton E. Ray, Editor. Smithsonian Institution Press, Washington, D.C., 1987.

*Fossil Collecting in North Carolina*, Bulletin 89. J. G. Carter, et al., Dept. of Natural Resources and Community Development, Division of Land Resources, Geology Section Survey, Raleigh, N.C., 1988.



Cross sections Showing rib shape of 3 *Chesapecten* species  
1. *C. madisonius* 2. *C. jeffersonius jeffersonius*  
3. *C. jeffersonius septenarius*



1. *Pleurolomaria* sp., 110 mm, Eocene - Castle Hayne Formation 1A. *Pleurolomaria hirasei*, Modern - South China Sea
2. *Ecphora quadricostata*, 50 mm, Early Pliocene - Yorktown Formation 3. *Epitonium fractum*, 40 mm 4. *Pterorhynchus conradi*, 45 mm
5. *Heilprinia caloosensis malcolmi*, 80 mm 6. *Busycon adversarius*, 210 mm 7. *Voluvisusus typus*, 120 - 170 mm 8. *Trigonostoma* sp., 30mm
- 3, 4, 7, 8 are Early Pleistocene - James City Formation, 5 is Mid to Late Pliocene (?), 6 is Late Pliocene - Early Pleistocene - Chowan River - James City Formations



**North Carolina Fossil Club, Inc.**  
(Founded 1977)

President	Vince Schneider	(919) 779-9338	Garner, NC
Treasurer and Membership Chairman	Trish Kohler	(919) 383-6328	Durham, NC
Secretary	Allison Chambers	(919) 489-8156	Durham, NC
Board	Michael Allen	(919) 879-3173	Ramseur, NC
	Tom Burns	(919) 776-8080	Sanford, NC
	Richard Chandler	(919) 851-2153	Raleigh, NC
	Michael Hogan	(919) 942-2877	Chapel Hill, NC
	Becky Hyne	(919) 752-3284	Greenville, NC
	Jim Knowles	(919) 851-0393	Raleigh, NC
	Joe Milkovits, Jr.	(919) 876-0650	Raleigh, NC
	Judy Schneider	(919) 779-9338	Garner, NC



**1991 Membership Application - N. C. Fossil Club**

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

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

PHONE \_\_\_\_\_

INDICATE TYPE(S) OF MEMBERSHIP(S)	INDIVIDUAL (NEW)	\$20.00 _____
	INDIVIDUAL (RENEWAL)	\$10.00 _____
	SPOUSE (NEW OR RENEWAL)	\$ 5.00 _____

SIGNATURE \_\_\_\_\_

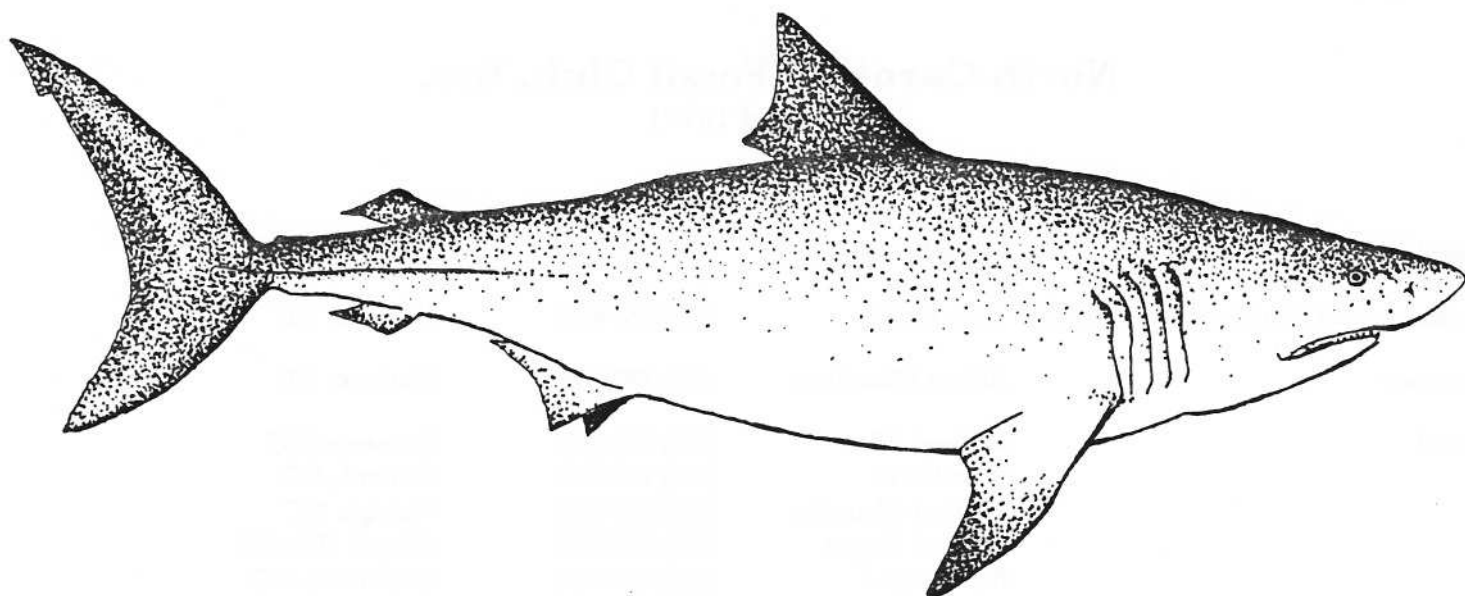
DATE \_\_\_\_\_

Children of NCFC members who are dependent minors and living at home may accompany parents on any trip *EXCEPT* Texasgulf 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.

**MAIL TO:** NC FOSSIL CLUB, P.O. BOX 2777, DURHAM, NC 27705





Modern Great White Shark - *Carcharodon carcharias*

North Carolina Fossil Club  
P. O. Box 2777  
Durham, NC 27705