



JANUS

THE NEWSLETTER
OF THE
NORTH CAROLINA
FOSSIL CLUB

1998 NUMBER 1

Spring, 1998 Calendar

February

- 28 ♠PCS – Lee Creek Call-In
Contact: John Timmerman (910) 452-0943

March

- 14 ♠PCS Phosphate Mine – Aurora, NC
Contact: John Timmerman (910) 452-0943
26 ♥Martin Marietta Quarry – Castle Hayne, NC
Contact: John Everette (919) 847-4485

April

- 3-5 Tarheel Gem and Mineral Club Show
Kerr Scott Building, N.C. State Fairground
18 Beachcombing – Liverpool Point, MD
Contact: George Fonger (301) 977-0318

May

- 7 ♥Martin Marietta Quarry – Rocky Point, NC
Contact: John Everette (919) 847-4485
23-24 Aurora Fossil Festival, Aurora, NC
Contact: Candace Holliday (919) 322-4238

June

- 7 Martin-Marietta Quarry – Belgrade, NC
Contact: Richard Tellekamp (910) 347-6361
14 Green's Mill Run – Greenville, NC
Contact: Doug Meier (919) 872-0529

General Rules:

Trips begin at 9:00 AM at the site. Exceptions: the Martin Marietta quarries at Castle Hayne and Rocky Point (♥) restrict admission to afternoons only. Those two trips begin at 11:15 AM. They also require a hard hat and do not provide it. Be sure to bring one. Arrive ahead of time. If you are expected and late, you will delay everyone. Safety first is always the rule – **do not do anything to compromise your (or anyone else's) safety.** If you are injured at a site, fossil collecting will almost certainly be banned there in the future.

Special Notes:

♠Those of you who participated in the NCFC Fall Fossil Festival, either as exhibitors or as volunteers, may call to reserve your place at PCS - Lee Creek anytime between now and the regular call-in on Saturday, Feb. 28. If you have not contacted John by the regular call-in time, you have lost your advantage.

For the regular call-in: **do not contact John before 8:00 AM on Feb. 28.** This trip is limited to members only who

are 18 or more years of age, whose 1998 dues have been received. You may reserve no more than one place other than your own. No more than 15 positions are available to non-residents of North Carolina. You may use your own hard hat here, so long as it is not white.

Remember that John (as well as everyone else involved in keeping NCFC running smoothly) is a volunteer. Do not abuse him. If he tells you that there are no positions available, then there are no positions available. He cannot create them, PCS is very strict about the 70 person limit. This trip always has a waiting list. If you reserve a place and your plans change so that you are unable to attend, it is absolutely imperative that you call John and release your reservation. No-shows will not be allowed to reserve a place the next time they call in.

From the President,

14 February 1998

I was a little apprehensive to say the least about becoming the Club President for 1998, with a membership of 398, it is a great responsibility.

This task has been made easier because of the tremendous help from all the Board Members with their special skills in handling their office duties, along with the Trip Leaders who spend hours of preparation time to make our fossil finding adventures a pleasant and memorable experience. Remember to thank them when you see them; they are working for you

Share your fossil finds and knowledge by having Show and Tell's at the local schools, but remember, once you have done this there will be a BIG demand for your talents. Also, if some of the local organizations find out, you've had it (but most of them feed good).

My favorite group to perform a 'Show and Tell' for is Grades 3 - 5, either at their school or in the quarry The enthusiasm is so thick, you can almost touch it. They will also remember you for a lifetime. It is a Great feeling of accomplishment to experience this, so try it, either as a solo act or as a team with other fossil club members. You will enjoy it, believe me.

There will be a few changes in the By-laws this year, due to the fact the club has out-grown them; nothing earth shaking, however.

The Aurora Fossil Festival is coming in May and we can use all the help we can get. Read the *JANUS* for more information.

Take a Kid Fossil Hunting

Richard Tellekamp

**North Carolina Fossil Club, Inc.
Treasurer's Report – December 31, 1997**

| | |
|---|--------------------|
| Balance Brought Forward: 12-31-96 | \$4909.70 |
| Income: | |
| Dues | 4010.00 |
| <i>Neogene Fossils</i> (469) | 2371.00 |
| <i>Paleogene Fossils</i> (307) | 1567.00 |
| <i>Seal/Dolphin</i> (132) | 1347.00 |
| T-Shirts (84) | 846.00 |
| Vinac (24) | 71.00 |
| <i>Fossil Sharks – Kent</i> (25) | 175.00 |
| <i>Eocene Vertebrates – Ward</i> (43) | 324.00 |
| <i>Vertebrate Fossils – Kocsis</i> (59) | 885.00 |
| Total Income | <u>11,596.00</u> |
| Total | \$16,505.70 |

| | |
|--|--------------------|
| Expenses: | |
| Club Meetings | 75.12 |
| Fossil Fair | 229.17 |
| Aurora Fossil Festival | 36.85 |
| Misc. (Supplies, PO Box) | 213.79 |
| Printing (<i>Janus</i> , Memb. List) | 891.98 |
| Postage Costs | 1072.07 |
| <i>Fossil Vertebrates – Thomas</i> (100) | 375.00 |
| <i>Neogene Fossils</i> (500) | 1163.50 |
| <i>Seal/Dolphin</i> (1130) | 5809.45 |
| T-Shirts (96) | 659.80 |
| <i>Eocene Vertebrates – Ward</i> (50) | 367.50 |
| <i>Vertebrate Fossils – Kocsis</i> (90) | 1350.00 |
| Sieves for NC State Museum | 300.00 |
| Grant for Dinosaur Research | 1000.00 |
| Royalties (<i>Neogene</i> and <i>Seal</i>) | 1168.25 |
| Bank Service Charges 7 Checks | 32.04 |
| Total Expenses | <u>\$14,744.52</u> |

Balance on Hand, December 31, 1997: \$1761.18

Trish Kohler – Treasurer

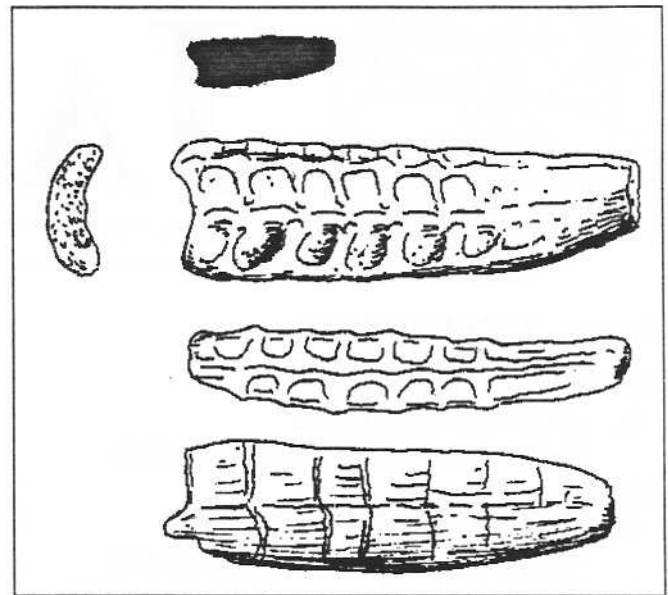
Membership Cards

Some of you have expressed concern over sending your dues payment and not yet receiving your membership card. These cards will be mailed, together with the list of current members, around the end of March.

Aurora Fossil Festival

Exhibitors are needed for the Aurora Festival, May 23-24. If you are interested, contact Richard Tellekamp at (910) 347-6361 no later than March 10 and let him know. Members who participate will be given a call-in advantage for the Fall trip to PCS - Lee Creek.

Mystery Fossil



No, really, we don't know what this is. Candace Holliday recovered the illustrated fossil from PCS Phosphates, Inc. reject. The solid black image is the actual size of the specimen. It appears to be something invertebrate, not an accident of geology or the phosphate process. She has shown it to the paleontologists at the Smithsonian Institution and many private collectors. We would like to know what it is. If you have any ideas, you may contact the editor of this news letter or Candace directly at:
Aurora Fossil Museum
PO Box 352
Aurora, North Carolina 27806-0352
Phone: (919) 322-4238

Discovering a Valuable Resource

(Sort of a Book Review)

by John Timmerman

Vertebrate Fossils: A Neophyte's Guide

by Frank A. Kocsis

The following are my impressions of *Vertebrate Fossils: A Neophyte's Guide* published by Frank Kocsis in 1997. Frank gave a copy of his new book to me. I cannot remember my excuse for not immediately putting it to memory but know there was some reason I could not give it the attention it deserved.

I was overwhelmed by the sheer volume of photographs included in this volume, especially Pleistocene mammals. In North Carolina, Pleistocene mammal fossils are relatively rare. There are a few sites where they can be collected but I don't regard horse teeth as "back yard fossils," the way I have heard Frank refer to them. In my experience they are the most plentiful Pleistocene mammal tooth found in North Carolina so I can see how they could be thought of as common. I am very interested

in modern mammal bones, particularly skulls, so am familiar with many of the fossil bones and teeth that are perplexing to fellow collectors. The book covers these topics in depth for the uninitiated. I ignored the title and Preface. The book was created by "nonprofessionals for nonprofessionals." I kept looking for detailed text and descriptions about fossils but found little. The book is intended as a pictorial guide, a mission it excels at. After all, most of us look for the illustrations even when reading complex scientific treatises.

When North Carolinians do find Pleistocene mammals fossils in our "back yards" we are often at a loss for a reference to learn what they are. This book is best used as a careful visual reference. I watched Frank readily identify a fossil horse cannon bone and point out the identifying features on the photograph in his book. With this bit of information in mind I began to look at his book differently. For instance, I did not suspect there were so many different kinds of elephant molars to be found, much less how to differentiate them. I still hope to find all of them some day but first must find my first one. When I do this reference will be the first step to learn which species it is. If I want to read more I will have the identification to aid in looking up the exact information.

Finally, anyone who has the pleasure to meet Frank will find him a genuine friend and more than willing to help the collector beginning or experienced with Paleontology. His book is invaluable if for no other purpose to understand what he is talking about when speaking of Gomp teeth or Five Humpers.

This book is available from Joy Pierce at many NC Fossil Club trips and meetings. It is well worth the investment. She sells them at cost, Sorry, no mail orders with this item.

Old Book

CONDRICTHYES II. Mesozoic and Cenozoic Elasmobranchii, by Henri Cappetta (in English)

Gustav Fischer Verlag, 1987.

This very useful book on fossil sharks can now be bought for half price, 150 DM (about \$85) if you pay with a credit card (\$100 if you pay by check). It is available from

Verlag Dr. Friedrich Pfeil
Wolfratshauser Straße 27
81379 München GERMANY

The above prices include surface postage. Airmail costs about \$30 more, clearly not worth it. I ordered my copy to be shipped by surface and received it about two weeks after sending my order (by airmail, of course).

DATE: November 21, 1997
RE: Richard Tellekamp
George Fonger
Bill Little
Becky Hyne
Frank Hyne
FROM: Larry Winsor

Dear Mr. Tellekamp,

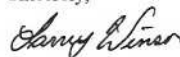
I am writing you today in regards to the above mentioned names. These individuals need to be recognized within your meetings and news letters.

These individuals most recently put a fossil collection together for a school in Greensboro. I asked Richard and George if they could help me put something together for this request. T must say at the time T accepted this request, I had a little time put toward this project. Boy! Was T wrong. I became very busy at both sites. I had no time to think about putting something together, much less finding the different fossils and artifacts. Once again, I was rescued by the members of the NC Fossil Club. Richard involved Bill, Frank and Becky at this time. In a very short time, the five volunteers had the corner of my office filled up with boxes, buckets, and a display case. You are really blessed to have good people like this to represent your club. I am also blessed to have friends like this to help me in my time of need. You will never know how much this means to me and helps Martin Marietta keep a good standing with schools in their efforts to educate the generations of our future.

I must also inform you about the duties Bill and Richard have taken on since I have been at this location. It was the duty of my Foreman or myself to take the school groups on tour of the quarry before they commenced in their mission to seek and find all buried treasures. Once again, after the hurricanes we have been very busy. This is our second consecutive year of breaking all sales records. Bill and Richard took over all of the school activities and other fossil seekers. This is a great relief in itself. This relieves myself and my foreman to attend to our job functions.

After seeing Bill and Richard's display, I felt that the children and adults benefit from this more. I believe it started their engines. I have been there on occasions where some of the kids found something and they were told what it was and their faces would light up in great surprise of what they found. It was here that I learned what a P.O.R. was: just a "plain old rock". I did not dare show my ignorance to this until the child ran off in search of another find. I asked Bill what it was. He finally told me after a little fun.

Sincerely,



Larry Winsor
Plant Manager

Board Minutes

The N.C.F.C. Board Meeting was held Sunday, February 15, 1998 at the Onslow County Museum in Richlands. The meeting was chaired by President Richard Tellekamp

1. The Board was unanimous in voting John Everette an Honorary Lifetime Member of the N.C.F.C.

2. Treasurer's Report was presented by Richard Tellekamp. Balance on hand as of February 14, 1998, is \$2,711.18.

3. Joy Pierce reported on fossil books on hand. It was agreed to order 500 additional copies of the Neogene book.

4. Royalties to John Timmerman on the fossil books were discussed. \$500 was allocated for March 1998 with additional monies determined by future book sales.

5. Upcoming trip schedules will be announced in the next Janus, as well as a call-in date for the P.C.S. trip.

Carcharocles vs. Carcharodon

Richard Chandler

There has been a lot of argument lately both on an electronic bulletin board and summarized by Jim Bourdon on his Lee Creek WWW page concerned with the evolution of the white sharks. Long-time readers of *Janus* know this is one of my favorite topics, and while having my own beliefs on the subject, I thought I would attempt to summarize the arguments on both sides of the fence. In fact, there are two main bodies of belief here, each having proponents with impeccable credentials. This means, of course, that there are strong arguments favoring each side; it also means that this problem is not likely to be settled in the near future.

The traditional view is that all sharks commonly called *white* belong to one genus which (because of precedence) is *Carcharodon*. It should be noted that some traditionalists do assign a distinct genus, *Palaeocarcharodon*, to the pigmy white shark. Revisionists argue that the modern white shark, *Carcharodon carcharias*, is descended from the makos rather than the fossil white sharks. Since the genus *Carcharodon* is thus different from that of the fossil white sharks, they must have their own genus, *Carcharocles*. Revisionists thus assign three genera to the white sharks: *Carcharocles*, *Carcharodon*, and *Palaeocarcharodon*.

Before proceeding further, we must get some mouth directions straight:

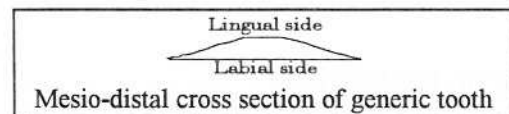
distal: away from the midline of the jaw.

mesial: toward the midline of the jaw.

labial: pertaining to the lips.

lingual: pertaining to the tongue.

These last two may seem unnecessary as sharks have neither lips or tongues, but we use them in describing the sides of teeth. The labial side of a tooth is the side which is oriented toward the lips, *i.e.*, toward the outside of the mouth. The lingual side is oriented toward the inside of the mouth. One of my early surprises was to discover that in shark teeth the 'curved' side of the tooth is the lingual side while the 'flat' side is the labial side:



We also need a diagram of a typical lamnid jaw so that we know teeth position terminology. The following has been redrawn from an article by S. Applegate and L. Espinosa-Arrubarrena.

6. Candace Holliday reported that 15 tables will be available to N.C.F.C. members for the Aurora Fossil Festival. The Smithsonian Institute and Museum of Natural History will also have displays at the Festival.

Club books and T-shirts will be available to purchase during the Festival.

7. Candace Holliday reported that the Aurora Museum will have space available for the N.C.F.C. to display fossils on perhaps a rotating basis when the new section of the museum is finished.

Dedication of the new museum section is tentatively scheduled for the Friday of the Festival.

8. N.C.F.C. members will receive their membership cards in March, along with the new membership list.

9. Vince Schneider presented a letter from James Lamb, recipient of the N.C.F.C. scholarship, studying Gulf Coast dinosaurs, thanking the N.C.F.C. for their generous support. \$500 was voted by the members toward this research with possible future funds available at a later date.

10. Ramona Krailler is now handling T-shirt sales for the N.C.F.C. \$330 for their purchase was approved by the board.

A request for \$330 for their purchase was approved by the board.

11. Possible speakers at the N.C.F.C. meetings were discussed. This will be studied further by Richard Chandler and Vince Schneider.

12. The N.C.F.C. By-Laws and Rules of Procedure were discussed for possible revisions. It was decided that a Board Meeting dedicated to this issue will be May 3, 1998, at 1:00 p.m., at the Museum of Natural Sciences, in Raleigh.

13. Richard Tellekamp will present a fossil display to Onslow Quarry Manager Ben Brown from the N.C.F.C. Copies of the Cretaceous and Neogene books will also be presented.

Meeting Adjourned

Judy Stiles

New Book:

DISCOVERING FOSSILS. How to Find and Identify Remains of the Prehistoric Past

Frank Garcia and Don Miller

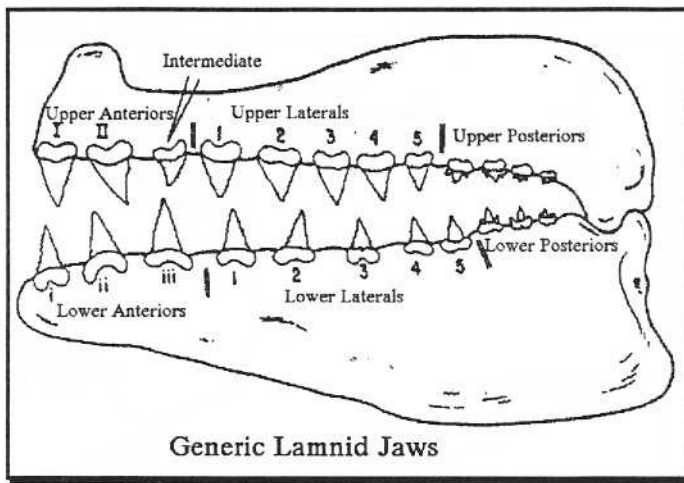
\$15.95 ISBN 0-8117-2800-5

Published by Stackpole Books

5067 Ritter Road

Mechanicsburg, PA 17055

If someone would write a review of this, I would be more than happy to publish it in the next issue of *Janus*. (Hint!)



The diagram above is meant to convey general ideas regarding terminology and does not provide specific information as far as numbers of teeth, shapes of teeth, etc.

Perhaps the most controversial point in this argument concerns the so-called intermediate tooth. This tooth is located between the last anterior and the first lateral tooth in the upper jaw, and is usually noticeably smaller than either. Some species have it and some do not. The modern sharks, *C. carcharias* (great white), *Isurus paucus* (long fin mako), and *Isurus oxyrinchus* (short fin mako), all have it as the third tooth from the midline of the jaw. "Ah ha!" say the revisionists, "reason enough to classify the great white with the makos." "Not so!" return the traditionalists, "in the two makos this tooth usually points distally, while in the great white it usually points mesially." The major problem in trying to extrapolate this information from modern sharks to fossil sharks is the total absence of any 'articulated' fossil remains (that is, remains where the teeth are still in place) for any lamnid species, with the exception of *C. carcharias*. The best we have are sets of associated teeth: teeth found together and believed to be from one individual shark, but disarticulated so that individual tooth positions cannot be known with absolute certainty.

Whether or not a particular fossil species had an intermediate tooth is a question that finds much disagreement among the experts. David Ward has recently studied a large associated set of *Otodus obliquus* teeth from Morocco and states unequivocally that this species lacked the intermediate tooth. Would this destroy the firm belief of most revisionists that this species is the ancestor of the large toothed white sharks, *C. auriculatus*, *C. angustidens*, *C. megalodon*, etc.? No, since the revisionists believe that none of these species had an intermediate tooth. In Becky Hyne's associated set of *C. megalodon* teeth found in 1992 there were a couple of teeth smaller than the rest which Applegate and Purdy thought were intermediate. Here is the major problem with associated sets: how do you know that every one of the teeth came from the same individual? There are lots of *C. megalodon* teeth found at Lee Creek. Could a strange tooth or two have made its way into Becky's

set? Certainly. Could they all be from one individual? Of course. Will we ever know with surety? Probably not.

If the evidence supplied by the presence or absence of the intermediate tooth is so ambiguous, general tooth morphology (shape) seems to favor the revisionists. The early *C. auriculatus* – *sokolowi* are very similar in overall shape to *Otodus obliquus*, only with serrations. There is an apparent intermediate species, *Otodus subserratus*, very finely serrate. There is a very natural and gradual progression: *O. obliquus* → *O. subserratus* → *C. auriculatus* – *sokolowi* → *C. angustidens* → *C. chubutensis* – *subauriculatus* → *C. megalodon*.

On the other side, *C. megalodon* teeth greatly resemble those of the extinct mako, *Isurus hastalis*, only with serrations. There is an apparent intermediate species, *Isurus escheri*, very finely serrate. There is a very natural and gradual progression: *I. praecursor* (wide tooth form) → *I. hastalis* → *I. escheri* → *C. carcharias*.

Trying to see similarities in the tooth morphology of the fossil large tooth white sharks and *C. carcharias* is more difficult. The teeth are all triangular and serrate. In the modern great white one can see the old axiom, 'Ontogeny recapitulates Phylogeny' beautifully illustrated. Juvenile teeth in some jaw positions are frequently partially serrated (or not serrated at all) and frequently have cusplets. Serrations are thought to be a derived characteristic and thus should be missing in ancestral forms and present in evolved forms. Cusplets, on the other hand, are thought to be a primitive characteristic and thus should be present in ancestral forms and missing in evolved forms. The eventual acquisition of serrations and loss of cusplets is present in all scenarios so that here again the evidence is ambiguous.

Differences in tooth morphology are easier to see. *C. carcharias* teeth, like those of *I. hastalis* and *I. escheri*, are labio-lingually compressed, especially those from the upper jaw. They lack a bourlette (or chevron) at the base of the lingual enamel. *C. carcharias* teeth are usually coarsely serrated. Teeth of the fossil white sharks all are labio-lingually expanded (some greatly so) all possess a bourlette, and all are usually finely serrated.

One final piece of evidence is also ambiguous. A comparative analysis of mitochondrial DNA sequences of *C. carcharias*, *I. oxyrinchus*, and *I. paucus*, indicates that the nearest common ancestor occurred at least 40 – 45 million years ago. This too is consistent with both theories. The revisionists would identify this ancestor as *Isurus praecursor*, an Eocene species, while most traditionalists believe this ancestor to be some species of *Cretolamna*, a genus which persisted into the Eocene.

What to believe? Neither the traditionalists nor the revisionists have an overwhelming argument for either theory. I guess "you pays your money and you takes your choice."

NORTH CAROLINA FOSSIL CLUB, INC.
(FOUNDED 1977)

| | | | |
|---------------------------------|--------------------------|----------------|-------------------|
| PRESIDENT | Richard Tellekamp | (910) 347-6361 | Jacksonville, NC |
| VICE PRESIDENT | Doug Meier | (919) 872-0529 | Raleigh, NC |
| IMMEDIATE PAST PRESIDENT | John Timmerman | (910) 452-0943 | Wilmington, NC |
| TREASURER | Trish Kohler | (919) 383-6328 | Durham, NC |
| SECRETARY | Judy Stiles | (919) 249-2817 | Aurora, NC |
| MEMBERSHIP CHAIRPERSONS | Mike Milton/Barbara Shaw | (919) 471-6361 | Durham, NC |
| EDITOR, JANUS | Richard Chandler | (919) 851-2153 | Raleigh, NC |
| BOARD | Steve Ames | (919) 735-3585 | Goldsboro, NC |
| | Richard Aultman | (704) 396-7444 | Granite Falls, NC |
| | Mike Hogan | (919) 942-2877 | Chapel Hill, NC |
| | Ramona Krailler | (919) 460-8725 | Morrisville, NC |
| | Joe Magura | (919) 954-1592 | Raleigh, NC |
| | Joy Pierce | (919) 489-8149 | Durham, NC |
| | Sam Schmidt | (919) 494-1128 | Franklinton, NC |
| | Vince Schneider | (919) 779-9338 | Garner, NC |
| | Robert Story | (919) 544-2017 | Durham, NC |



1998 MEMBERSHIP APPLICATION - N. C. FOSSIL CLUB

NAME(s) Trish

ADDRESS _____

CITY, STATE, ZIP _____

PHONE(S) (INCLUDE AREA CODE) _____

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

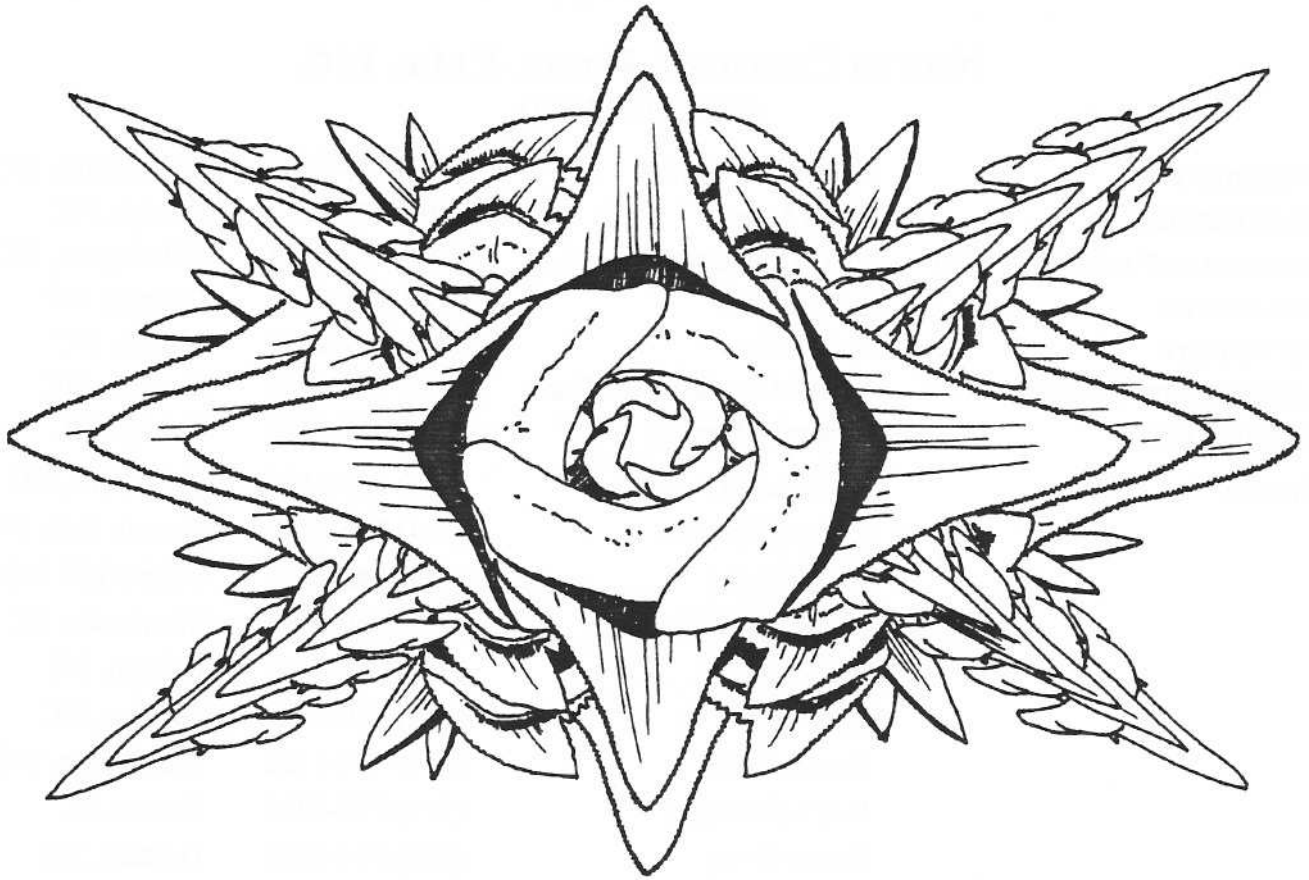
SIGNATURE _____

DATE _____

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. Only 15 positions on the PCS-Lee Creek trip are available to members who reside outside of North Carolina.

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 27715



Teeth – John Timmerman

NORTH CAROLINA FOSSIL CLUB
P. O. BOX 2777
DURHAM, NC 27715