



JANUS

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

2014 Number 3

2014 Fall Calendar

September

- 21 NCFC Meeting** – NCMNS, 11 West Jones Street, Raleigh. 1:30 pm, Level A conference room. Volume II roll-out party. Speaker: Dr. Lyle Campbell, “Fossil Marine Faunas in the Carolinas”.
- 20 Green’s Mill Run** – Contact: Gustavo Pierangelini 919-886-1259 or gpierangelini@gmail.com. Meet 9:00 at Elm Street Park- see map on next-to-last page.
- 25 Hanson Quarry** – Contact Linda McCall 512-422-2322 (Indmccall02@yahoo.com). Limit 12, at least 12 years old.
- 27 Mini Fossil Fair** – Rankin Museum, 131 W. Church St., Ellerbe, NC 9:00 - 4:00. Set-up 8:00 - 9:00. Contact: Ruffin Tucker (704) 784-1672 or fossiler77@msn.com.

October

- 3 Castle Hayne** – Contact Dave Sanderson at 919-469-2812 (dsanderson@ptautocare.com). Meet 10:00; Hardhat! (Rain date: Oct 31.)
- 10-13 Alabama, Union Chapel Mine** – Pennsylvanian trackways and Mississippian marine fossils. Contact Jim Mahoney at 336-483-5138.
- 11 Discovery Place, Charlotte** – Fossil Day 10 am – 5 pm. Contact Chris Eckart at ChrisE@discoveryplace.org.
- 13-19 Oklahoma trilobite trip** – Contact Linda McCall 512-422-2322 (Indmccall02@yahoo.com)
- 17 Belgrade** – Contact Libby Smalley (esmalley36@gmail.com). Meet 9:30; Hardhat!
- 18 Aurora Fossil Museum** – National Fossil Day Celebration
- 29 Hanson Quarry** – Contact Linda McCall 512-422-2322 (Indmccall02@yahoo.com). Limit 12, at least 12 years old.

November

- 1 NCFC Picnic, Cookout, Party** – Aurora, NC in front of Museum. See below for details, RSVP.
- 7 Castle Hayne** – Contact Dave Sanderson at 919-469-2812 (dsanderson@ptautocare.com). Meet 10:00; Hardhat! (Rain date: Nov 21.)
- 15 *NCFC Fossil Fair and Board Meeting*** – NC Museum of Natural Sciences, 11 West Jones Street, Raleigh. Brief meeting of NCFC (Elections) to follow. Contact 512-422-2322 (Indmccall02@yahoo.com)
- 21 Hanson Quarry** – Contact Linda McCall 512-422-2322 (Indmccall02@yahoo.com). Limit 12, at least 12 years old.

December

- 6-8 Florida with Mark Renz & Rucks Pit** – Contact Linda McCall 512-422-2322 (Indmccall02@yahoo.com)

January

- 18 NCFC Meeting** – NCMNS, 11 Jones Street, Raleigh, 1:30 PM, Level A conference room.

Hanson Quarry is a new place for many of you. Address is 10471 NC 97 West, Rocky Mount NC and Mapquest finds this correctly. **In Google Maps:** search for 10471 Cool Spring Road,

President’s Message

Linda McCall

Fall is coming! And to start it out right we will roll out the release of “Fossil Mollusks”, Volume II of our IV part series at the September meeting on September 21st. Dr. Lyle Campbell will be our speaker presenting his talk on “Fossil Marine Faunas in the Carolinas”, and it is a talk you won’t want to miss.

The cool air is on it’s way – and with it more opportunities to hit the field. Luckily for us, Belgrade is open for collecting again. We also have the addition of Hanson Quarry as well, and Castle Hayne will be letting us in twice this season. There will also be a trip to Alabama, led by Jim Mahoney and a trip to Oklahoma, led by me – back-to-back in October – as well as a trip to Florida in December. I hope everyone who wants to will have a chance to avail themselves of a trip or two, or an outreach event or two. This November 15th is our largest outreach event of the year – Fossil Fair at the North Carolina Museum of Natural Sciences in Raleigh. I will reiterate that outreach events are open to everyone in the club and we don’t have nearly enough folks volunteering for these wonderful opportunities to educate the public on what fossils and paleontology are all about. It doesn’t take a lot of knowledge to display, or to help out – just a passion for the hobby (which we all share – that’s why we’re here!). I hope to see more members volunteering for outreach in the future.

At the risk of being redundant I want to re-iterate our clarification on how attendance on field trips is addressed. Club members LOVE field trips, and we are a BIG club. At about 200 memberships, that’s about 300 people. Quarries let in between 15 and 30 people a trip. You see the problem. We only have a small number of sites. To make sure the maximum number of folks have the opportunity to go on trips, we have to change things up a bit. Sometimes it will be whoever comes to the meeting that gets to sign up first, sometimes it will be posted on the internet first so those who watch their computer the most will be first in line. Sometimes it will be board members, and/or volunteers and field trip leaders who get first dibs – and I don’t feel at all guilty rewarding those who give of their time and effort for the club by giving them first crack at a site now and then. If others want that privilege, please step up and help too. I hope everyone understands. Any members who know of any additional sites we can go to as a club (in-state or out), we would love to expand our list of places to go.

Have a great fall and hope to see you in the field soon.

→ Rocky Mount NC or use the map on the inside last page here. heavy duty shoes, hard hats, safety vest, and safety glasses.

Jim Mahoney is taking a “scouting” trip to the **Union Chapel Mine in Alabama** over the Columbus Day weekend and has a few slots available to Club members. Contact him (336-483-5138) for further information.

The **Florida Mark Renz and Ruck’s Pit** trip will have an extra cost: Mark, \$35/day and Ruck’s, \$40/day.

For the **Belgrade** trip: those on last spring’s wait list have priority.

CHITONS David Grabda

I gave a fossil talk years ago at a shell club meeting. It the end I try to answer questions. I was packing up my fossils when one member came up and asked if I'd ever found any chitons? Chitons, chitons, I thought? Weren't they pig parts that poor country folk ate?!! Maybe not! "No" I said "I don't think I'd ever found chitons"! He smiled and walked away. But why hadn't we found any? Oh! Oh! He got my curiosity perked! When I got home out came the shell guide, after all the question arose at a shell meeting. There they were on two pages that we generally whiz by. Chitons are a group of primitive mollusks resembling limpet like snails but lack tentacles and cephalic eyes. The shell is divided into eight hard valves. Looking at the pictures it was evident the valves would be what I'd have to look for and were added to the list of fossils to pick out of the Aurora reject material. After discarding several hundred barnacle parts over several months I finally found a disheartening small chiton valve. They can best be described as a small fingernail clipping. The valves overlap each other which leaves a smooth area on the inside arc that helps with identifying fossil as part of a chiton. The smallest chiton in the shell guide manual is the Common Eastern Chiton which may or may not be this specimen. After some persuasion the Smithsonian accepted the first chiton as a gift (accession 2046384) on 27 October 2007. I don't think they knew what a chiton was either. In June 2014 I found a fourth valve which led to this article. This is one more fossil to add to the Lee Creek Mine list to get a better fauna picture. Good Hunting!

Editor's Note: As far as I am aware, this is the first report of chiton remains from the Lee Creek Mine. They have been found in the Waccamaw Formation in Columbus County (see *Fossils, Volume II*, hot off the press). In addition to being small, as David says, the valves are largely made of aragonite, the less stable form of CaCO_3 .



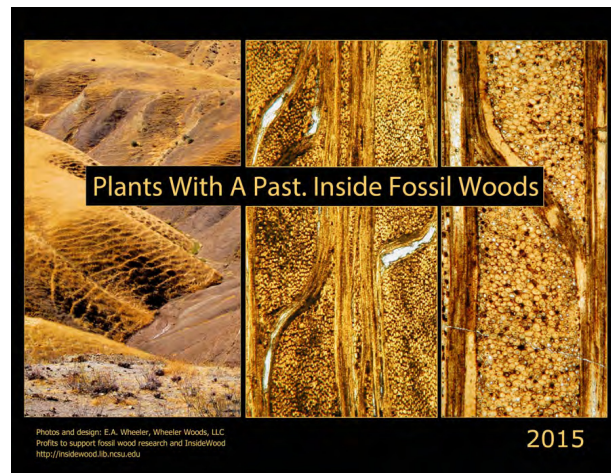
5 mm

2015 CALENDAR - PLANTS WITH A PAST

Description -- A different view of trees. This calendar features the internal structure of ancient and modern trees. Wood anatomical patterns are among nature's most pleasing. Some fossil woods are beautifully preserved and show anatomical details that allow studying their relationships to present-day woody plants. Each month features a different fossil wood locality or woody plant group.

Dates for Arbor Days around the world are provided to ensure you never miss an opportunity to celebrate trees (and their wood - secondary xylem). Other important days to observe, for example, Chocolate Cake Day, Pi Day, Bugs Bunny's birthday, are also noted.

Profits from the sale of this calendar go to support fossil wood research and curating the InsideWood web site. <http://insidewood.lib.ncsu.edu>



CALENDARS AVAILABLE FROM LULU PRESS

<http://www.lulu.com>

\$16.25 + postage, check for sales on the Lulu home page.

To preview and / or order go to lulu.com, search for "Fossil Wood"



The Falls of the Ohio State Park's Digging the Past is Saturday September 13 from 10:00 a.m. to 4:00 p.m. It combines Archaeology Day and Earth Discovery Day into a single event that promotes interests in archaeology and earth science. Activities for visitors of all ages are located around the parking lot behind the Interpretive Center.

You will enjoy learning about human history and the Earth's past with nearly 20 different activities.

- Archaeology – throw a dart with an atlatl and use primitive tools, make clay pottery, get dirty finding "artifacts" in a mock dig, play games, and more.
- Geology – Dig for fossils and minerals in our refreshed collecting piles*, explore the fossil beds, examine micro-fossils with a microscope, make an egg carton geology collection, children's craft area to make gem trees, weather rocks, are some of the highlights.
- What do I have? Get your unknown artifacts and rocks identified by experts.

*Collecting is prohibited at the Falls of the Ohio; however, local quarries donate 30 tons of fossil-bearing Silurian Waldron shale and Devonian limestone residuum. Dig for brachiopods, bryozoans, corals, crinoids, cystoids, snails, clams, and trilobites in our collecting piles. Search the mineral pile from Rosiclare, Illinois for fluorite, sphalerite, barite and calcite. **We can direct your club to other localities in the area to collect fossils. This would be an ideal weekend field trip. We hope members of your group will be able to attend!**

Regards,

Alan Goldstein, Interpretive Naturalist / Event Coordinator
Falls of the Ohio State Park

201 West Riverside Drive
Clarksville, IN 47129-3135 USA

(812) 280-9970 ext. 403

www.fallsoftheohio.org

www.facebook.com/fallsoftheohio

Proposed Amendments to the NCFC By-Laws and to the Rules of Procedure

This transmission, no later than **September 6, 2014** by **Janus 2014#3**, notifies the membership of the pending vote to accept or reject the proposed amendments to the By Laws and to the Rules of Procedure of the NCFC at the Club meeting on **September 21, 2014** where you may vote in person or by proxy.

I. Proposed Amendment to the By-Laws:

Add Article X – MEMBER/NON-MEMBER HONORARY AWARD

Members and/or non-members may be considered for The Chandler Award as established in the Rules of Procedure.

Ia. Proposed Amendment to the Rules of Procedure:

Add Article VII – THE CHANDLER AWARD

Members and/or non-members may be given The Chandler Award for their significant educational contributions to the Club, or for aiding the Club's educational pursuits. The Chandler Award does not affect Club membership, or membership privileges. This award honors Richard Chandler; who as Editor led Club members and non-members in developing a series of printed and digital publications covering fossils found in North Carolina. Nominations may be made by any member to the Board of Directors, with supporting written evidence, based on the spirit of the nominee's educational contributions for the Club. This includes, but is not limited to, the preparation of educational materials and contributing to the educational advancement of Club members or to a broader community through outreach. Honorees are selected by a majority vote of the Board of Directors. (Club member nominations shall be conducted in secret.) Awards are limited to at most one a year.

II. Proposed Amendment to the By-Laws:

RE: COMPLIMENTARY MEMBERSHIP

By-Laws

Article II – MEMBERSHIP

1. CURRENT VERSION:

Section 2.

c. Complimentary: Membership conferred for significant assistance to the Club in carrying out its objectives.

RECOMMENDED CHANGE:

Section 2.

c. Complimentary: A limited-rights membership conferred for significant assistance to the Club in carrying out its objectives. This membership's only benefit is a subscription to the Club's newsletter, without requiring a written application or payment of dues.

Ia. Proposed Amendment to the Rules of Procedure:

Rules of Procedure

Article I – Membership

2. CURRENT VERSION:

Section 3. A Complimentary member is elected for one (1) year by a majority of the Board of Directors.

RECOMMENDED CHANGE

Rules of Procedure

Article I – Membership

Section 3. A Complimentary Member may be designated by the Board of Directors for the duration of significant service to the Club.

III. Proposed Amendment to the By-Laws:

Re: Use of Profits

BY LAWS

CURRENT VERSION

Article I – PURPOSE AND GUIDELINES

Section 2. From time to time the Club will fund and publish educational materials related to fossils for distribution to the public directly and through retail outlets. Any excess generated by the sale of such products will be donated to museums and other North Carolina state agencies and instrumentalities. Other activities, such as sales of Club clothing or educational materials published by entities other than the Club, will be handled as group purchases and sold to members at cost, so as not to constitute retail sales.

Proposed Amendment

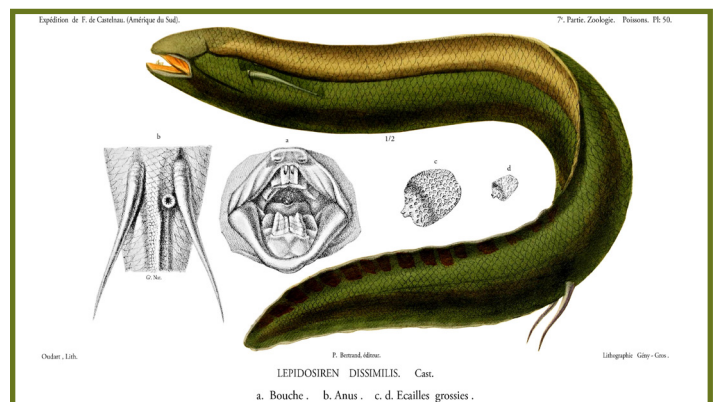
Article I – PURPOSE AND GUIDELINES

Section 2. From time to time the Club will fund and publish educational materials related to fossils for distribution to the public directly and through retail outlets.

LUNGFISH

Richard Chandler

Although they were known from fossils, scientists first learned of modern lungfish in 1836, when Johann Natterer sent two specimens he had found near the mouth of the Amazon to Leopold Fitzinger, Curator of Reptiles at the Imperial Museum in Vienna. Fitzinger named it *Lepidosiren paradoxa* (paradoxical



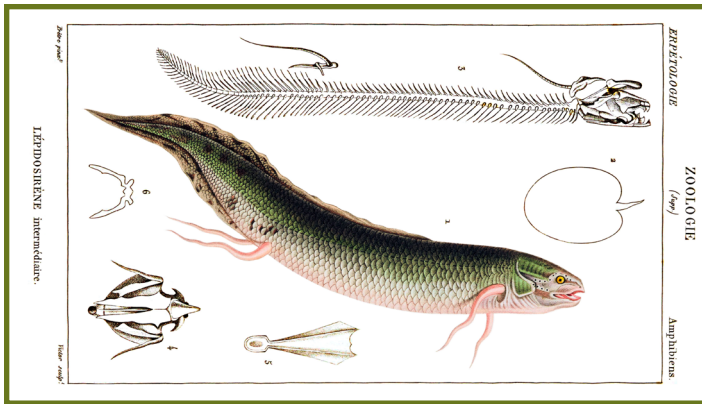
de Castelnau, *Expédition dans les Parties Centrales de l'Amérique du Sud* (1855):
LEPIDOSIREN DISSIMILIS (now *Lepidosiren paradoxa*, the South American lungfish)

scaled siren) when he published it in *Isis* in 1837.

In June of 1837 Thomas B. Weir presented to the Royal College of Surgeons (London) two specimens he had found in West Africa. Richard Owen originally proposed the name *Protopterus anguilliformis* (first <i.e., embryonic> fin; eel-like) but withdrew it on discovering Fitzinger's paper, using instead *Lepidosiren annectens*, as it connected West Africa to South America. Today it is known as *Protopterus annectens*.

Early in 1870 William Forster presented a new fish to Gerald Krefft, Curator and Secretary of the Australian Museum. Krefft, on April 28, 1870, read a paper entitled "Description of a gigantic amphibian allied to the Genus *Lepidosiren*, from the Wide-Bay district, Queensland" to the Zoological Society of London. Krefft observed that, while the specimen was similar to *Lepidosiren* in several aspects, its teeth more nearly resembled fossil teeth figured by Agassiz (*Recherches sur les Poissons Fossiles*, 1837) under the name *Ceratodus* (horn tooth). Krefft proposed the name *Ceratodus forsteri* (now *Neoceratodus forsteri*).

Krefft provided a detailed illustration in his paper (next page). It affords a view of the lower jaw with its very odd, paired dental



P. Gervais, *Atlas de Zoologie, ou Collection des 100 Planches* (1844)
LEPIDOSIRENA ANNECTENS (now *Protopterus annectens*, the West African lungfish)

plates in place. These interlock with a plate in the upper jaw to provide a masticating apparatus few fish can match. Aquarium specimens have been observed to use a rapid, repeated suck-and-chew technique which quickly reduces their food (frogs, tadpoles, minnows, small invertebrates, and plant material) to an easily swallowed mouthful.

Nineteenth Century scientists had a great deal of difficulty classifying the lungfish: is it an amphibian or is it a fish? The quandry is expressed very explicitly by its German name: *Molchfisch* = newt-fish. It can also be seen in the characterization in Gervais' plate (right) where it is listed as an amphibian although depicted as a fish.

T.H. Huxley, in an 1881 essay on evolution said this about the Australian lungfish:

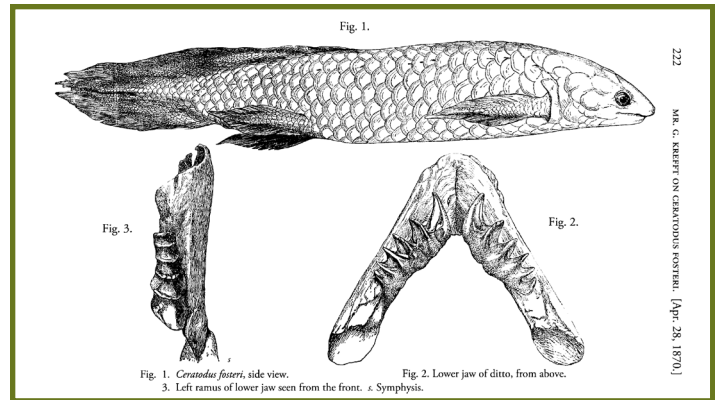
This wonderful creature seems contrived for the illustration of the doctrine of Evolution. Equally good arguments might be adduced for the assertion that it is an amphibian or a fish, or both, or neither—the reason of this being that, as it appears to me, *Ceratodus* is an extraordinarily little-modified representative of that particular stage of vertebrate evolution of which both the typical Fishes and the typical Amphibia are special modifications.

Richard Owen, in describing the first British specimen of "*Lepidosiren*" *annectens*, summed up his conclusions to the question in this rather amusing way:

In the organ of smell we have, at last, a character which is absolute in reference to the distinction of Fishes from Reptiles. In every Fish it is a shut sac communicating only with the external surface; in every Reptile it is a canal with both an external and an internal opening.

According to this test, the *Lepidosiren* is a Fish: by its nose it is known not to be a Reptile: in other words, it may be said that the *Lepidosiren* is proved to be a Fish, not by its gills, not by its air-bladders, not by its spiral intestine, not by its unossified skeleton, not by its generative apparatus, nor its extremities, nor its skin, nor its eyes, nor its ears, but simply by its nose; so that at the close of our analysis we arrive at this very unexpected result, that a Reptile is not characterized by its lungs nor a Fish by its gills, but that the only unexceptionable distinction is afforded by the organ of smell.

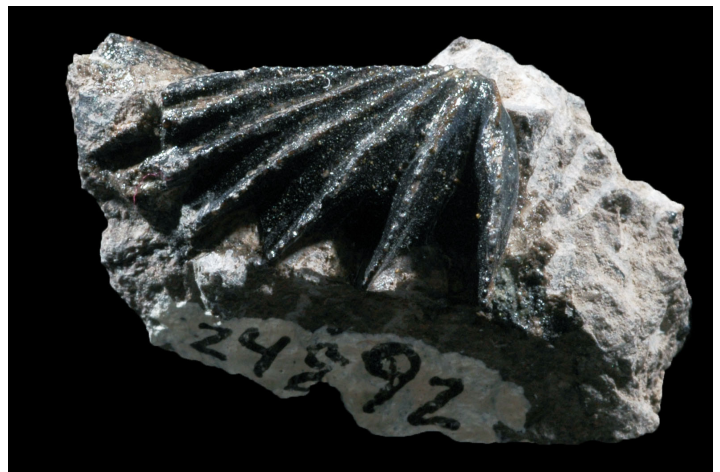
There are three genera of extant lungfish, comprising six species: *Lepidosiren paradoxa* (South America); *Protopterus aethiopicus*, *amphibius*, *annectens*, and *dolloi* (Africa); and *Neoceratodus forsteri* (Australia). What about fossil species? Lungfish skeletons are largely cartilaginous, so little beyond the dental plates and braincases fossilizes. Remains more than four hundred million years old have been found in Canada, Siberia, and Australia. In North Carolina these very distinctive tooth plates have been found (rarely) in the Late Triassic Cumnock Formation of the Deep River Basin. It is possible that two species of *Arganodus* are present, a small one and an even smaller one.



G. Krefft in *Proceedings of the Zoological Society of London* (1870)
Ceratodus forsteri (now *Neoceratodus forsteri*, the Queensland lungfish)



Upper tooth plate of an Australian Lungfish
 Photo: Mark McGrouther © Australian Museum



Arganodus sp. right lower tooth plate - 21 mm
 Cumnock Fm - (NCSM #24892)

O frabjous day! Part II!!

Richard Chandler

Volume II (Mollusks), by John Timmerman and me, is now available! The Editorial Board had originally hoped that the roll-out party would be at the July meeting. However, as time got very tight, I was not sure I could have it ready in time. The experts, Lyle and David Campbell, had provided extensive and thorough reviews (38 pages from Lyle, 11 very dense pages from David at first, and then 5 more as a follow-up). The Editorial Board decided to go for a September roll-out but to make a concerted effort to have Volume II available for the Conchologists of America (COA) convention in Wilmington (August 9-15). Lyle Campbell was one of the featured speakers there and used some of my photographs in his talk, in exchange for giving the book a plug. We felt that this was an opportunity to access a "captive" market, not ordinarily available to us (modern shell collectors).

I think it was a correct decision: Roxada Story and Linda & Bruce McCall sold \$1515.00 worth of NCFC publications, including 17 copies of Volume II, on Tuesday, August 12 (which coincidentally happened to be Suzanne's and my 53rd anniversary ☺).

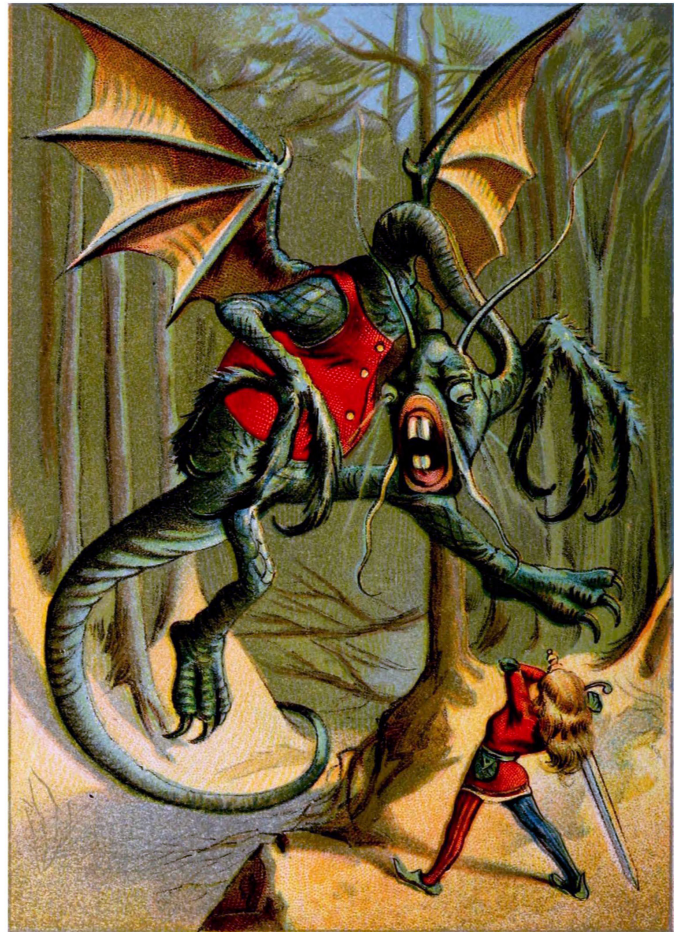
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As you can see, there are more than 260 12"× 9" pages, most of them containing four photographs of mollusks. Within the two main Classes, Bivalvia and Gastropoda, the organization is by Family. Each Family is headed by a photograph of a modern representative of that Family, chosen from the western Atlantic, if possible, and with preference given to shells personally collected by John and me. The cover has three watercolors of representative mollusks by Rick Bennett.

As indicated, the roll-out party will be at our regular September 21 meeting. Unfortunately, John will not be able to attend because our meeting and his N.C.Shell Club's annual festival are in conflict. Our main speaker will be Dr. Lyle Campbell, one of the reviewers: "Fossil Marine Faunas in the Carolinas". Dr. Campbell has been for many years a major figure in Atlantic Coastal Plain paleontology, especially with regard to mollusks. His son David, our other reviewer, will accompany him. David earned his Ph.D. from UNC under Joe Carter's direction in 2000.

Copies of both Volume I and II will be available at the meeting. Both books are \$60 each and include a copy of the CD (for Club members). CD's alone are \$15 and all prices include NC sales tax.



"Beware the Jabberwock, my Son."

A wonderful color version of the battle with the Jabberwock by John Tenniel (from *Through the Looking Glass*).

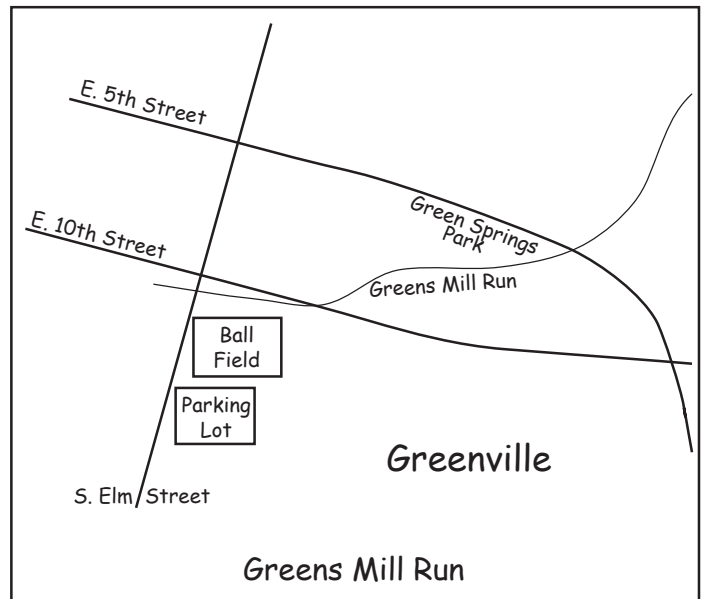
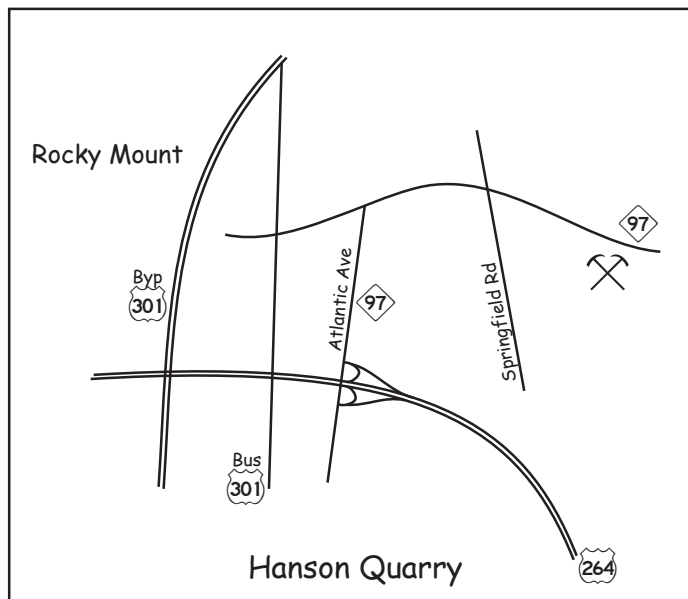
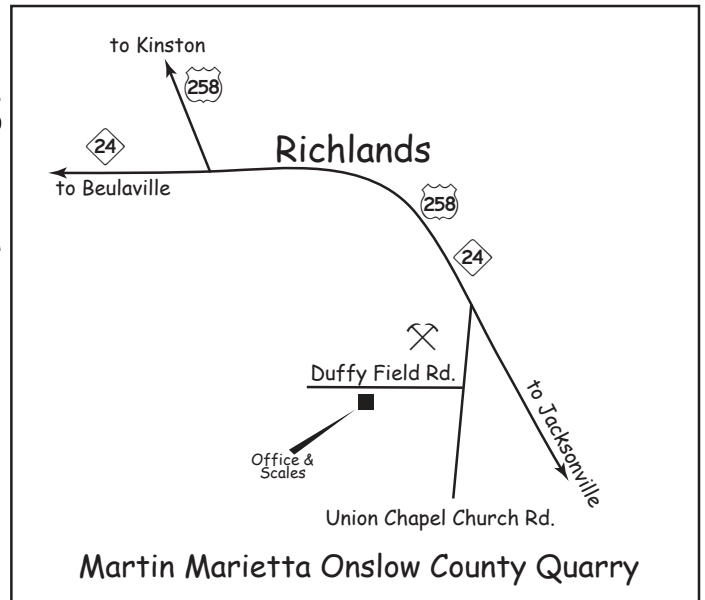
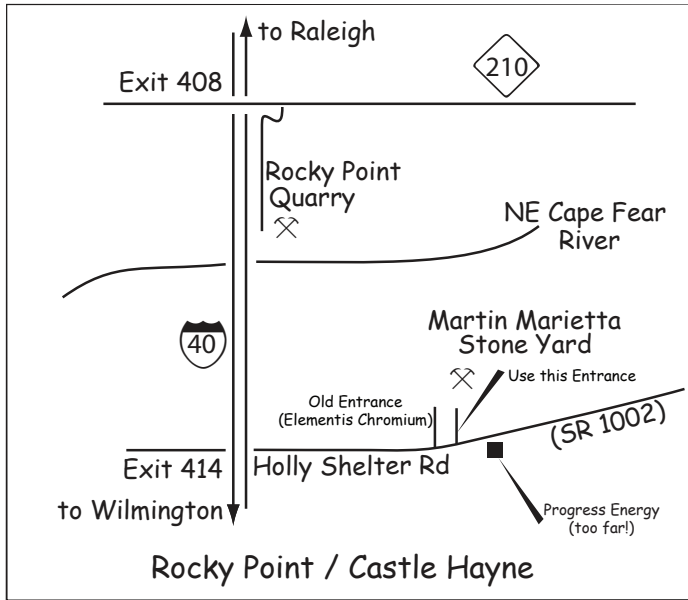
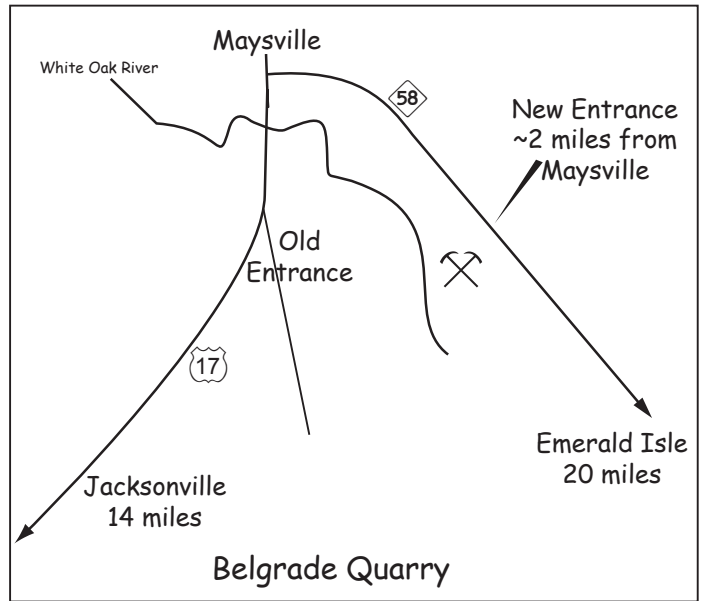
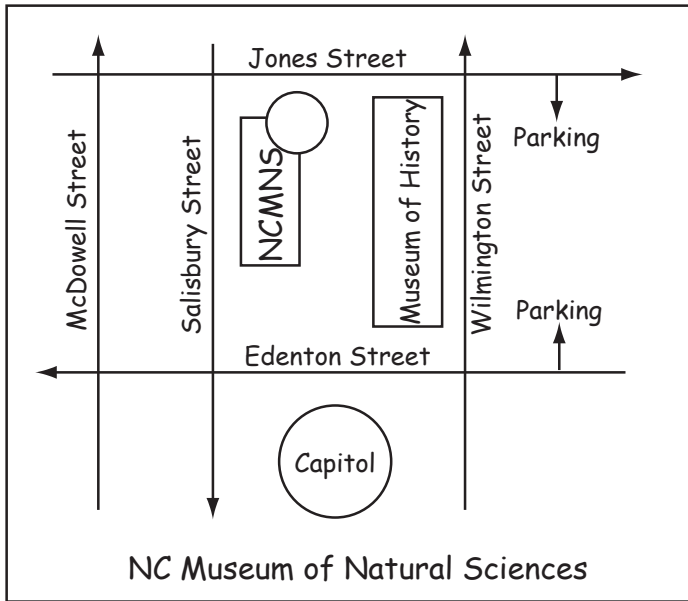
Fossil



Mollusks



Volume II of IV
North Carolina Fossil Club



NORTH CAROLINA FOSSIL CLUB, INC.

(Founded 1977)

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	Jonathan Fain	(919) 518-1591	Raleigh, NC
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	Eric Sadorf (2014)	(919) 466-8484	Cary, NC
	David Sanderson (2014)	(919) 469-2812	Cary, NC
	Ruffin Tucker (2015)	(704) 784-1672	Concord, NC
	Diane Willis (2015)	(919) 967-1008	Chapel Hill, NC



2014 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.

The Fossil Club's newsletter, *JANUS*, is mailed out four times a year and is available online for members. Please let us know how you'd like to continue receiving *JANUS*. If you choose to download it from the website, you will receive an email when a new one is published.

☐ I will download *Janus* from website (www.NCFossilClub.org) ☐ please continue to send a paper copy via US Mail

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.

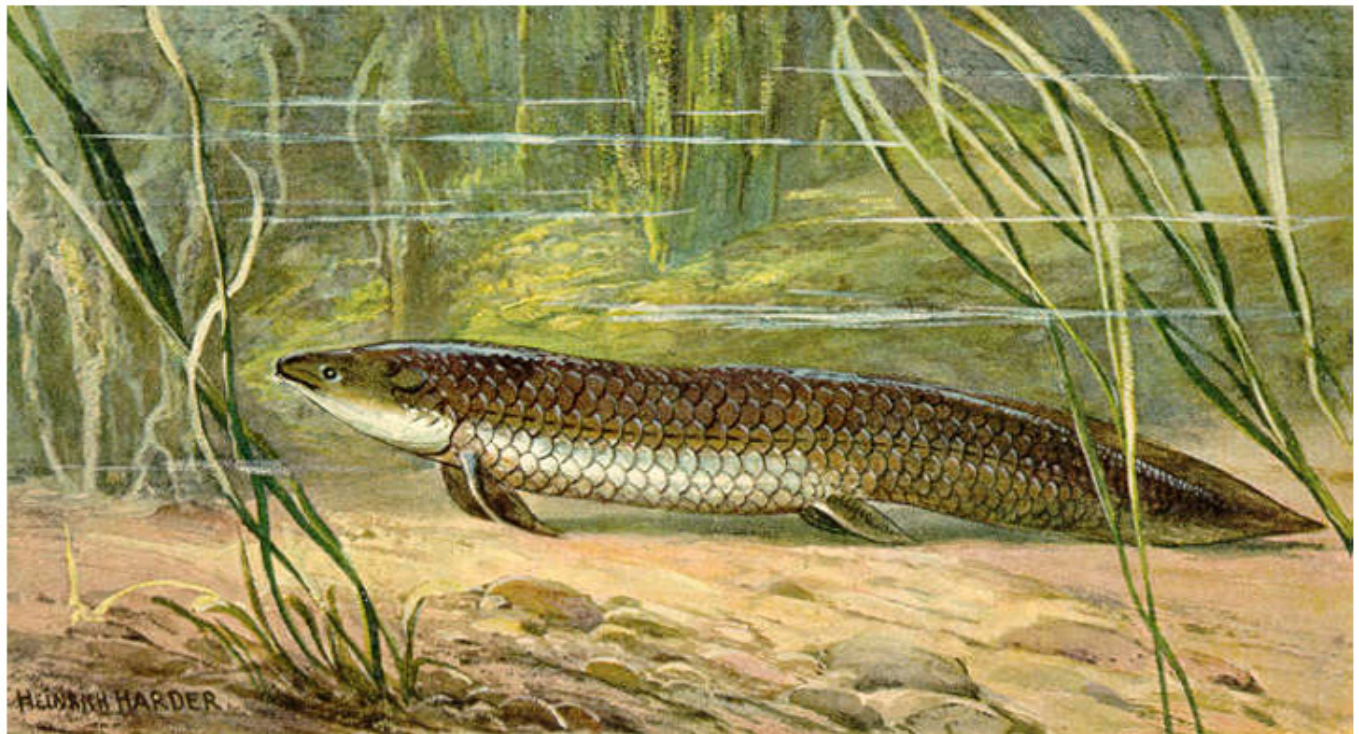
Name _____ Signature _____ Date _____

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

**Proposed Changes to
By-Laws and Rules of
Procedure: see page 3**



Molchfisch Ceratodus.

Heinrich Harder: *Molchfische Ceratodus* (1916) Reichardt Cocoa Company Trading Card
Tiere der Urwelt (Animals of the Prehistoric World) Series I^a (modeled on *Neoceratodus forsteri* ?)