

The Ecphora

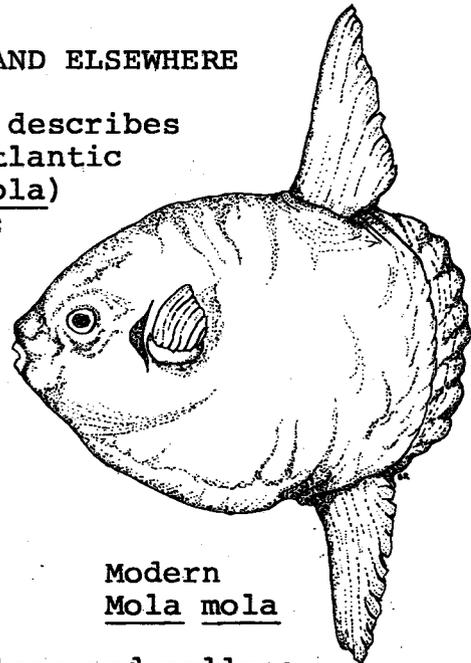
QUARTERLY NEWSLETTER OF THE CALVERT MARINE MUSEUM FOSSIL CLUB

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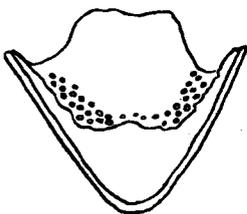
OCEAN SUNFISH FROM THE MIOCENE OF MARYLAND AND ELSEWHERE

A recently published paper by Robert E. Weems describes three species of fossil ocean sunfish of the Mid-Atlantic states: Miocene and Pliocene Molidae (Ranzania, Mola) from Maryland, Virginia and North Carolina (Pisces: Tetraodontiformes). Proceedings of the Biological Society of Washington 98(2) pp. 422-438. Ranzania grahami is a newly named species, so far found in units ("zones") 10, 11, 12 and maybe 13 of the Calvert Formation in Maryland and Virginia. Ranzania tenneyorum, a second newly named species the same age as R. grahami, is found in central Virginia. Weems reports that the last species, Mola chelonopsis, has been found in Unit 19 of the Choptank Formation of Maryland and in the Yorktown Formation of the Lee Creek Mine in North Carolina.



Modern
Mola mola

The ancestors of the Molidae were bottom dwellers and mollusc eaters. The diet of modern Ranzania, however, consists solely of seaweed and that of modern Mola is composed of a mixture of plant and animal material. Both species tend to be surface dwellers. Morphological changes seen in fossilized premaxillary beaks reflect this progressive change in habitat and diet.



Ranzania grahami
Ventral view, premaxillary beak

The internal skeleton of molids is largely cartilaginous and not normally found as a fossil. The most commonly found fossilized parts are the premaxillae (upper beak), the dentary (lower beak), the jugal or jugular plate, the nasal plate and dermal (skin) elements. The most diagnostic bone for the identification of species is the premaxilla. R. tenneyorum's teeth were in three pairs of well defined rows. R. grahami had teeth in poorly defined rows and patches and Mola chelonopsis was nearly toothless. Skin elements of R. grahami were very irregularly shaped polygonal plates. In the modern Ranzania the elements are of a regular shape. Modern Mola has only scattered dermal elements. One specimen of R. grahami had vertebral spines or branchial arch elements associated with it. Either would be very hard to identify if found as isolated fragments.



Jugular plate

CLUB ACTIVITIES

Field Trip to Lee Creek Mine

On the 4th of April a group of CMM Fossil Club members carpooled to North Carolina for a three-day field trip to Lee Creek Mine. We made the Econo Lodge in Washington, N.C., our headquarters and early the following Saturday morning met our guide, Becky Hyne, at the parking lot of the Texas Gulf Phosphate Mine. We all cheerfully piled, shoved and squeezed ourselves and our essential backpacks, trowels, shovels, barbecue tongs, cartons, buckets, and jugs of water and hampers of goodies and snacks into the seats and aisle of an ancient commuter bus and were soon barreling along the dusty road that led to the waiting fossils. For several bumpy miles the gallant old bus ground along and then with a sudden wheeze, gasp and groan it shuddered to a halt. We were all on our own. Estimates of the miles hiked to the collection site differ, from two to twenty miles depending on the amount of equipment carried by the estimator. However, Becky hitchhiked back to the main building and soon returned with a new bus, picked up all the stragglers and delivered them safe and sound to the spoil piles. For the rest of the trip everyone had a fine time. Several 4- and 5-inch Carcharodon megalodon and a nearly complete sea urchin were found. Squalodon teeth, fish, bird and seal material were collected and several whale vertebrae of impressive size and weight were carried out of the pit. Sandy Roberts even found a beautiful coal black $2\frac{1}{4}$ inch Carcharodon carcharias in the middle of the parking lot back at the main gate of the mine.

Talk by Dr. Jerry MacDonald on Saltville, Virginia, Quaternary Localities

In May, Dr. Jerry MacDonald, Associate Professor of the Department of Geography at Radford University in Radford, Virginia, presented a talk at the Calvert Marine Museum entitled "Late Quaternary Environments, Extinct Mammals and Paleo-Indians at the Saltville, Virginia Locality."

Fossil vertebrates have been known from Saltville, in southwestern Virginia, since 1782. Jerry has been Director of Research at Saltville since 1980. The site is unusual for the eastern part of the United States in that the Quaternary is found in river and lake deposits instead of the usual cave locale. Fossils found date from 15,000 years before present and include extinct musk oxen, other large mammals and concentrations of twigs thought to be fossil elephant manure. Tooth marks on bones give evidence of large carnivores. Jerry exhibited some of his finds during his lecture.

Volunteers are used during the excavations and will be sought for further work in 1987.

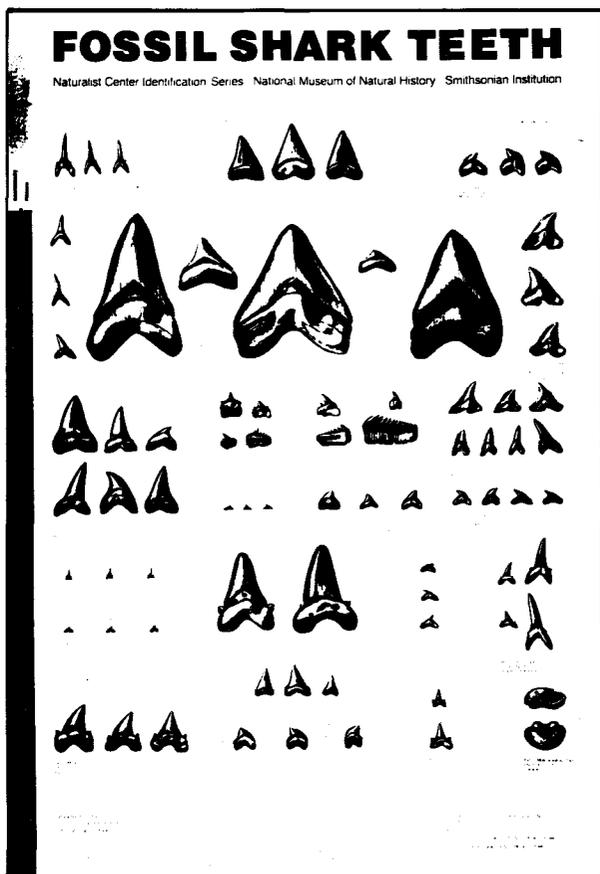
Big Brook Fossil Trip - June 7, 1986

As the group headed north along the New Jersey Turnpike we were filled with anticipation, thinking about the treasures that awaited our discovery. The night before Dave Bohaska, Donna Richardson, and Bob Novotny stayed at Gene Hartstein's house in Wilmington, Del. Last minute business had forced Larry Decina, Sandy Roberts, and Bob Wiest to cancel out. We swapped fossil stories, devoured pizza, and ate Roz's fresh strawberry pie. Rising early to guarantee a long collecting day, we made our last-minute preparations for the trip. Mercifully, Bob Novotny awakened by himself at 6:00 a.m., saving us the dangerous task of waking him up. By 7:45 a.m. we had been joined by Ed Lauginiger of the D.V.P.S. and we were on our way. As we approached the Camden area the skies began to darken. Further north the dark gave way to an intermittent drizzle and by the time we met Billy Beal in Freehold a steady rain was falling. Arriving at Big Brook we were informed by the local constabulary that parking is no longer permitted on the roadway. We obtained permission to stow our vehicles at a nearby swim club and headed upstream.

The foliage in Big Brook shielded us from most of the rain which fell intermittently throughout the day. The cool rain wasn't totally unpleasant, especially compared to the hot and muggy weather just a few miles south. We spent little time working the sand bars. Instead we proceeded upstream to the main tooth outcrops in the Wenonah Formation (Campanian age-Late Cretaceous). Most of the teeth in the Wenonah Fm. are concentrated in a small band 6-10 inches thick. After successfully working out a small but very productive section of the outcrop we proceeded upstream about 200 yards to find about 75 feet of outcrop slumped clean and ready for the taking. Again the outcrop was very productive. In my estimation the six of us collected a total of 500 to 1000 shark, ray, and fish teeth. The most common teeth were Squalicorax kaupi, S. pristodontus, Scapanorhynchus texanus, Plicatolamna arcuata, Cretolamna appendiculata, Odontaspis sp, and Enchodus ferox. Rarer finds included teeth and rostral spines of the sawfish Ischyrhiza mira (eat your heart out Fonger), crushing teeth of the ray Brachyrhizodus wichitaensis, teeth of the angel shark Squatina hassei and various other shark and fish remains. Finds of the day included three small mosasaur teeth (found by Bohaska, Beal, and Hartstein) and a beautiful cephalic hook from a hybodont shark (Beal).

We had originally intended to collect in the Miocene deposits nearby, but collecting was so good that we decided to stick with the Cretaceous. (Dave, you must publish the words to the fossil song you tried to teach us.) About 4:00 p.m., when none of us could lift another sieve of fossil matrix, we trekked the two miles downstream. At the entry point we decided to head downstream about 300 yards to the Mt. Laurel Fm. outcrop to obtain at least one belemnite for Donna. After achieving this objective, we left the stream bed. Dirty, wet and sore, we loaded our cars with equipment and treasures to begin our journey home. Following a food stop at the nearby Jersey Freeze Drive-in we said our goodbyes and headed home for a hot bath and a good night's sleep.

(We thank Roz and Gene Hartstein for their hospitality, and Gene for this comprehensive report. This is the 4th trip Gene has led for us.)



NATURALIST CENTER IDENTIFICATION SERIES POSTERS

The Naturalist Center of the Smithsonian Institution recently released two more of its Identification Series Posters. The first, "Fossil Shark Teeth," mentioned in a previous Ecphora, depicts eighty teeth of shark species prevalent from the Cretaceous through the Tertiary. Bob Purdy's research and Mary Parrish's excellent illustrations will help collectors identify specimens in their own collections.

The second poster, "Fossils of the Atlantic Coastal Plain," depicts thirteen fossils, both common and rare, found in the geological deposits of the eastern coastal plains of the United States. Mary Parrish's illustrations are accompanied by Raymond Rye's descriptive text. CMM Fossil Club members will recognize familiar fossil specimens from Calvert Cliffs, particularly a crocodile jaw (Thecachampsia antiqua), a cast of which is on display at CMM, and the seal femur (Leptophoca lenis), and the heart urchin (Echinocardium marylandiense Kier).

Posters may be ordered from: Smithsonian Institution Press
P.O. Box 4866, Hampden Station
Baltimore, MD 21211
(301) 338-6963

Posters are \$5.00 each plus \$1.75 postage and handling. All orders are to be prepaid by check or money order. Please allow 4-6 weeks for delivery. The posters are also available from the CMM Gift Shop.

BOOK REVIEWS

We would like to thank Robert Wiest for drawing our attention to a recently released publication which might be of interest to Club members: Stratigraphy and Characteristic Mollusks of the Pamunkey Group (Lower Tertiary) and the Old Church Formation of the Chesapeake Group - Virginia Coastal Plain, by Lauck W. Ward. It covers the Brightseat, Aquia and Marlboro Clay formations of the Paleocene, the Nanjemoy and Piney Point formations of the Eocene and of special interest, the Old Church formation of the Oligocene. One listed formation is an abandoned "kaylorite" pit in Calvert County. USGS Professional Paper #1346, it is available from:

Open Files Service Section
Branch of Distribution
USGS Box 25425
Federal Center
Denver, Colo. 80225

Cost - \$20.

Published in 1941 and still available is A Stratigraphic Study of the Mollusks of the Calvert and Choptank Formations of Southern Maryland by L. M. Schoonover. Unfortunately, this is not now available as a separate; you must buy the entire Volume 25 of the Bulletin of American Paleontology. The article is 134 pages long and contains 12 photographic plates. Volume 25 costs \$25.00. Order from:

Paleontological Research Institution
1259 Trumansburg Road
Ithaca, NY 14850-1398

Include number ISBN 0-87710-254-6 with your order, but don't include money. You will be invoiced for cost and postage and handling and the order will be shipped after payment.

Ward, L.W., and G.L. Strickland (1985). Outline of Tertiary Stratigraphy and Depositional History of the U.S. Atlantic Coastal Plain, in C.W. Poag's Geologic Evolution of the United States Atlantic Margin. Van Nostrand Rheinhold Company, 135 West 50th St., New York, NY 10020. Unconfirmed price of entire volume is \$62.00. The authors may have limited numbers of reprints of this chapter.

This is a good summary of regional geology from Paleocene through Pliocene. It contains photographs of localities and numerous interesting maps of the areal extent of the formations and some members, showing the marine pulses through time. Correlation charts show the Late Oligocene--Early Miocene Old Church formation in Maryland. They also put the Calvert Beach member ("Zone 16") in the Calvert formation and the Conoy member ("Zone 20") in the St. Marys formation, thereby reducing the Choptank to three members (down from five).

BOOK REVIEWS continued -

Frederiksen, N.O., and K. Krafft (1984). Cretaceous and Tertiary Stratigraphy, Paleontology, and Structure, Southwestern Maryland and Northeastern Virginia. 247 pages. \$15.00 from Dr. Robert T. Clarke, AASP Foundation, Mobil Research and Development Corp., P.O. Box 819047, Dallas, Texas 75381. This is a field trip guide stressing microfossils.

Ward, L.W. and K. Krafft (1984). Stratigraphy and Paleontology of the Outcropping Tertiary Beds in the Pamunkey River Region, Central Virginia Coastal Plain. 280 pages. \$20.00 from the Department of Geological Sciences, Old Dominion University, Norfolk, VA 23508. This is another field trip guide. It contains illustrations of fossils and applies to Maryland as well as to Virginia. Of special interest are the chapters pertaining to Paleocene, Eocene and Miocene vertebrates--bony fish, sharks, birds, sirenians, cetaceans, seals and land mammals. Several fossil vertebrates from Maryland are illustrated and members of the CMM Fossil Club acknowledged. Reprints of some articles are available from the Smithsonian authors.

Scott, T.M., and S.B. Upchurch (1982). Miocene of the Southeastern United States. 319 pages. Special Publication No. 25, The Florida Department of Natural Resources, Division of Resources Management, Bureau of Geology, Tallahassee, Florida, \$2.00. Chapters on the paleoenvironments of Maryland and North Carolina, diatoms of the Chesapeake group and predation on Miocene molluscs will probably be of most interest to CMM members.

All of the above publications are available for examination at the Calvert Marine Museum library.

SUMMER SCHEDULE OF EVENTS

August 16, Saturday: 8:00 p.m. Introductory lecture on "Calvert Cliffs and the Formation of the Chesapeake Bay," by Dave Bohaska at the Point Lookout State Park Museum and Nature Center. (Located at the campgrounds). Free.

August 23, Saturday: Volunteers are needed to man our table at the third annual North Beach festival, "Bay Fest '86." We will leave the CMM at 9:00 a.m. to set up our exhibit. The festival is open to the public from 12:00 - 6:00 p.m. We will have fossils on display, give-aways and a fossil preparation demonstration. (Bring a second set of clothes; there is a fossil locality nearby.) The CMM's membership picnic will be in full swing when we get back, so plan to unwind with us there.

September 6, Saturday: Fossil Club field trip to Calvert Cliffs (several localities). Meet at 8:00 a.m. at CMM.

November 4-8, Thursday-Monday: The Society of Vertebrate Paleontology will have its annual meeting at the Academy of Natural Sciences in Philadelphia. Pre-meeting field trips and courses start on November 4. Regular meetings will run from the 6th through the 8th of November. Meetings of the SVP are not often this close by. Contact Dave Bohaska at the CMM for details (326-2042).

December 6 and 7, Saturday and Sunday: Tentative. Field trip to Lee Creek.

NEWS OF SPECIAL INTEREST

Club members Dr. Ralph Eshelman and Dr. Peter Vogt have completed a manuscript synthesizing the geological story of Calvert Cliffs. It will be included in an upcoming volume to be published at the end of the year describing all sites of geological interest along the eastern coast of North America.

SPECIAL THANKS TO:

Ed Lauginiger for his excellent illustrations of the Big Brook Cretaceous fossils that appeared in our last issue.

NOTICE OF REDUCTION IN FOSSIL CLUB DUES

Starting in July, 1986, Fossil Club yearly dues are being reduced to \$7.00 per family. If it is time to renew your membership a red "X" will appear beside your Ecphora mailing address. Checks should be made out to:

The Calvert Marine Museum
Attn: Fossil Club
P.O. Box 97
Solomons, Maryland 20688

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