

The Ecphora

QUARTERLY NEWSLETTER OF THE CALVERT MARINE MUSEUM FOSSIL CLUB

Volume 1, Number 2
Fall 1985

Whole No. 2

Editor: Sandy Roberts

Fall Schedule of Events

- October 2, Wednesday: "Fifteen Million Years of Local History: Fossils of Calvert Cliffs and the Formation of the Chesapeake Bay." A program to be presented by Dave Bohaska and sponsored by the Southern Maryland Audubon Society. 7:30 p.m. at the Environmental Center Bldg., Patuxent Naval Air Station, Patuxent River, Maryland.
- October 5, Saturday: Dr. W. Bruce Saunders, Professor of Geology at Bryn Mawr College, will present a Lincoln Dryden Memorial Lecture on the "Life and Times of a Living Fossil--the Chambered Nautilus." In addition to the lecture there will be slides and a 20-minute video show. 8:00 p.m. at the Calvert Marine Museum.
- October 11, Friday: Visit to the Smithsonian Institution. See article. Reservations necessary.
- October 12-13, Saturday and Sunday: "Patuxent River Appreciation Days." The Fossil Club table will include "hands on" exhibits, fossil identification, fossil preparation demonstrations, and free fossils (including find your own shark's teeth in sand for children). Be sure to drop by the table, or better yet, volunteer. 10:a.m. - 6:00 p.m. both days at the CMM. Parking is easiest in the mornings and especially congested during the parade starting Sunday at 1:00 p.m. Some North Carolina Fossil Club members may wish to visit PRAD or Calvert Cliffs. We could use some volunteers to escort them to the Cliffs if the need arises.
- October 26, Saturday: Jones Wharf field trip. Complete sand dollars and Isognomon (usually found broken) have been found at this Choptank Formation locality. Leave CMM at 7:30 a.m. to catch the low tide.

- November 2, Saturday: 10:00 a.m. - 12:30 p.m. "Identifying Shark Teeth," a CMM family program to be taught by Dave Bohaska. Introduction to identification of shark teeth and a field trip to Cove Point. \$1.00 fee for CMM members and \$2.50 for others.
- November 2, Saturday: 7:30 p.m. "The Natural History of the Diamondback Terrapin." Lecture by paleontologist Dr. Roger Wood.
- November 22, 23, 24, Friday - Sunday: Lee Creek, North Carolina. Leave CMM Friday morning for New Bern, N.C. Visit Lee Creek Mine Saturday 9:00 a.m. - 3:00 p.m. Return to CMM on Sunday. Reservations limited and required. Call CMM for details and motel information. (326-2042)
- December: No meetings. Happy Holidays!

Visit to the Smithsonian for the Opening of the "Jaws" Exhibit
(A reconstruction of the jaws of *Carcharodon megalodon*) Oct. 11

Through the courtesy of the Department of Paleobiology, Smithsonian Institution, the CMM Fossil Club and North Carolina Fossil Club have been invited to the opening of a new exhibit at the Smithsonian's Natural History Museum. The approximate schedule is as follows:

8:00 a.m. - Leave Calvert Marine Museum

10:00 a.m. - Meet Dr. Clayton Ray and the N.C. Fossil Club at "Uncle Beasley" (full size Triceratops in front of Natural History Museum). Escorted to Naturalist Center

10:10 a.m.-12:00 p.m. Lectures at Naturalist Center

1. Fossil birds
2. Trilobites (from a nearby locality) by Fred Collier (see new trilobite exhibit)

12:00-1:30 p.m. - Lunch, catered cold buffet, provided courtesy of the Smithsonian at the Naturalist Center.

1:30-3:00 p.m. - Show and Tell in Naturalist Center and/or lab tours, visits to collections, fossil identification, etc.

3:00-7:00 p.m. - Free time.

7:00-9:00 p.m. - (tentative) Exhibit opening.

You are encouraged to bring fossils for identification and "Show and Tell." A shark tooth identification poster is due to be available by the opening. Please make reservations for planning purposes.

(Club members are expected to be up bright and early the next day to help at PRAD.)

Club Activities

Visit to Mike Jarboe's Home and Pope's Creek, July 20

On July 20, twelve members of the Fossil Club went on a two-part field trip. The first part took us to Mike Jarboe's house in La Plata to see his collection. Mike and Susan were most gracious hosts, treating us to one of the largest private collections of Miocene fossils (and others), plus the finest collection of Indian artifacts we had ever seen. Mike has done a professional job of displaying his collections and the visit was quite a treat for the club.

Part two of our field trip took us to Pope's Creek for some fossil collecting. Norm Riker had the best luck, finding a two-inch Carcharodon, a partial porpoise skull and an Otodus tooth.

North Beach Festival, August 24

Nicki Byram and Norm Riker represented the Fossil Club and Museum at the North Beach Festival, bravely manning a table from 11:00 a.m. to 6:00 p.m.. The exhibit consisted of fossils from Calvert Cliffs and related modern material (shark and ray jaws, and a porpoise skull). Nicki and Norm demonstrated fossil preparation techniques on a recently collected cetothere skull. Scallop shells, Turritella and sharks' teeth were available as give aways. The booth was visited continually through the festival.

The club is invited to participate in several festivals each year. This was our second appearance at North Beach. October 12 and 13 will be our fifth appearance at Patuxent River Appreciation Days. Last March we sent exhibits and demonstrations to the Delaware Valley Paleontological Society's fossil fair at the Academy of Natural Sciences, Philadelphia, and to the Montgomery County Gem, Mineral and Lapidary Society Show at the Montgomery County fairgrounds. We have also sponsored two fossil fairs ourselves in 1982 and 1983. In addition to the positive public relations created by these efforts, it is rewarding to see the interest generated in the people who visit these exhibits. The participants are also rewarded by the opportunity to see displays by other organizations.

Please consider volunteering for future festivals.

Recent Finds at Calvert Cliffs

This summer has been a busy one with four cetothere (small baleen whale) skulls collected between the end of June and early August.

The first was a large nearly complete skull found by Chuck Erskine and Sandy Bell last fall. Both lower jaws were present below the skull close to their original positions in life. The rostrum appears to be fairly complete, unusual because this bone is thin and often destroyed before burial. Eleven members of the club were able to assist in the collection of the skull.

Wally Ashby found a cetothere skull (only 11-½ inches wide) consisting of the entire cranium. Thirteen vertebrae were also found surrounding the skull. Part of the crown of a shark's tooth is embedded in the bone showing that the baby whale was either attacked or scavenged by sharks.

Joe Turner spotted and uncovered a third cetothere skull near Parker Creek. At least seven vertebrae and one complete mandible are associated with this specimen.

Dr. Joseph Ciardi found a partial cetothere skull near Kenwood Beach.

While walking up the beach to collect the juvenile whale skull mentioned above, Wally Ashby stopped to check a fresh exposure. The result was the associated humerus and ulna of a small alcid (this seabird family includes auks, puffins, murre, dovekies, guillemots and razorbills). Bird bones are always good finds; finding two together is even more exceptional.

Visitors to the Museum

Dr. Heinz Lowenstam, Professor of paleoecology, emeritus, at the California Institute of Technology visited the museum and Calvert Cliffs on July 9. Dr. Lowenstam's speciality is biomineralogy, studying the composition and mode of formation of animal hard parts. Dr. Lowenstam was visiting the Carnegie Institute of Washington which made arrangements for his visit.

Dr. Bretton Kent (University of Maryland) dropped off a preliminary copy of his Tertiary Shark Teeth of Maryland, due to be published in the near future. The identification section of the manuscript is available in the museum library for fossil club members to try out. (Brett would appreciate comments on the book.) The book includes the Paleocene and Eocene sharks in addition to the Miocene ones.

Dr. Kent does research on fossil molluscs, his shark tooth project being a side interest. (Fossil club members may remember his lecture on fossil cockles of the Maryland Miocene.) He is currently working on the feeding habits and extinction of Ecphora.

The Trading Center

Occasionally the Museum receives letters from collectors interested in trading or exchanging fossils. If you would like to respond to any of these requests, names and addresses are listed below. Letters are on file at the Museum if you would like additional information. Our newsletter is received by various out of State fossil clubs. If you would care to participate in the "Trading Center" please send us your name, address and type of fossil that you are interested in exchanging.

William F. Ray
10 Tamwood Circle
Simpsonville, SC 29681
(South Carolina fossils)

Bruce Gibson
10047 Lakeside Drive
Cincinnati, OH 45231
(Fossils from the Ordovician of
Cincinnati and Silurian of Indiana)

Growth Rates of the Chesapecten Scallops

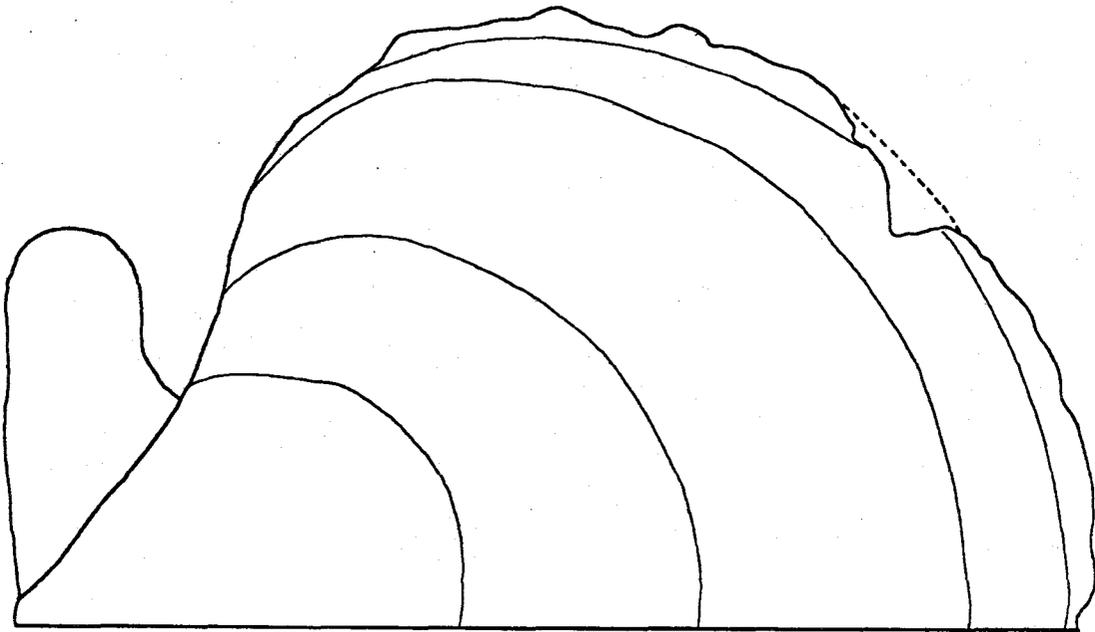
David Krantz
Marine Science Program
University of South Carolina
Columbia, SC 29208

Some of the most common and visible fossils found in the formations of the Chesapeake Group are the scallops of the genus Chesapecten. Individual specimens of these scallops can achieve extremely large sizes, with some specimens taken from the Sunken Meadow Member of the Yorktown Formation in Virginia exceeding 8 or 9 inches across the widest part of the shell. Well preserved scallop specimens typically have lines or rings on the exterior of their shells which suggest annual growth. Our research uses a specialized geochemical technique to unlock the growth histories of these molluscs, and to help interpret the formation of the periodic rings.

The basic ideas behind our technique are actually quite simple. As the scallop grows, it deposits calcium carbonate (CaCO_3) along the shell margin. The ratio of two stable (nonradioactive) isotopes of oxygen, ^{18}O and ^{16}O , incorporated into the CaCO_3 varies with the temperature. This $^{18}\text{O}/^{16}\text{O}$ ratio is related to an international standard in parts per thousand (‰) and is recorded in the notation $\delta^{18}\text{O}$ (‰). As the scallop adds new shell material throughout the year, the temperature changes with the season, and the $\delta^{18}\text{O}$ values in the shell change with the temperature. Therefore, the cycles in the $\delta^{18}\text{O}$ values from the shell are recording the passing of the seasons and can be used to determine the number of years a given scallop grew. This idea is demonstrated in the figure which shows the oxygen isotope profile of a Chesapecten nefrens specimen collected from Zone 19 of the Choptank Formation.

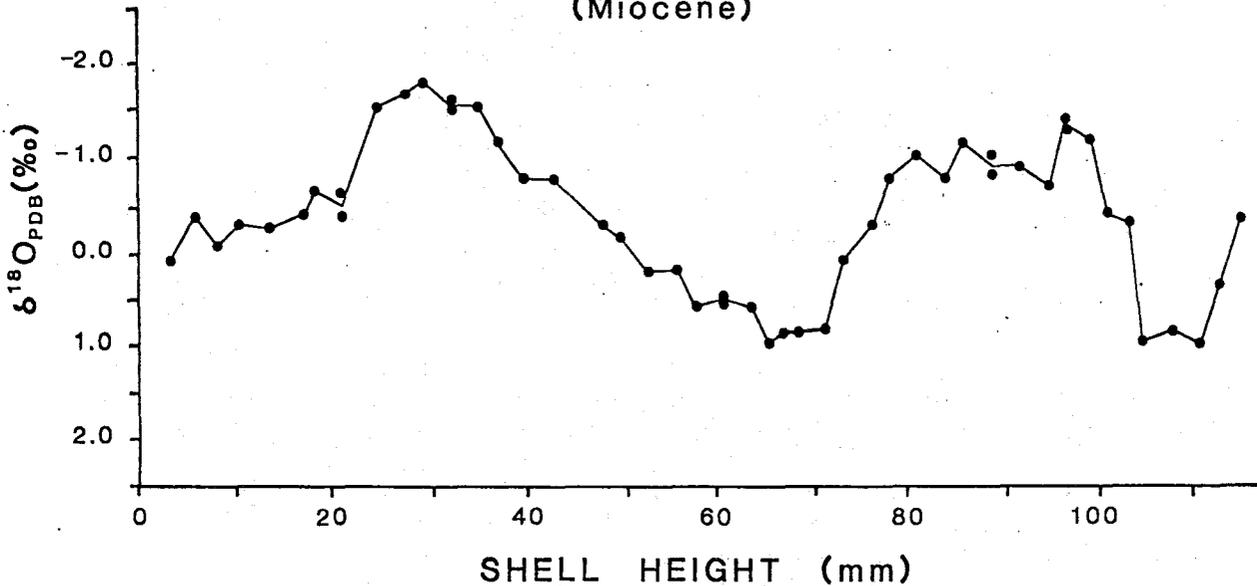
In the figure, $\delta^{18}\text{O}$ is plotted on the vertical axis so that warmer temperatures are "up" and cooler temperatures are "down". This particular specimen of Chesapecten nefrens completed two years of growth and was just beginning a third year. Summers are indicated by the "warm" $\delta^{18}\text{O}$ values at 30 and 90 mm shell height, and winters occur at 65 and 110 mm. Four distinct rings were formed on the exterior of the scallop shell and are illustrated in the diagram over the graph. Contrary to our original belief that these rings were formed annually by the scallop, they appear to mark both summer and winter. The summer rings are slightly different from the winter rings, and one objective of our research is to try to visually distinguish between the two. It is interesting to note that this Chesapecten specimen grew very quickly, over 100 mm (approximately 4 inches) in two years. This growth rate is 2 or 3 times faster than Placopecten magellanicus, the sea scallop which presently lives on the mid-Atlantic continental shelf. We intend to use this same approach on quite a few more Chesapecten specimens which we have collected from each formation from the Calvert up through the Yorktown, and possibly relate shell growth characteristics to changing environment and climate.

David Krantz is a graduate student in the Marine Science Program at the University of South Carolina at Columbia, S.C.



Chesapeakea nefrens

(Miocene)



Of Interest

Fossilized bones recently found in Antarctica appear to be those of an unknown dolphin-like mammal. Ewan Fordyce of Otago University said that the fossil remains were assembled into the head and upper jaw of an animal estimated to be 4 million years old. This is the first time that a relatively young fossil has been found in Antarctica. Other significant finds have been of fossils at least 40 million years old. Fordyce spent weeks putting together the 26-inch skull and jaw. The creature appeared to have been approximately 11 feet long.

Newsletter Policy

All news items related to Paleontology in Maryland are welcome. The deadline for each issue is the first day of the last month of each quarter. The editor reserves the right not to publish submissions and to edit those which are published. Send articles to "The Ecphora" c/o the Calvert Marine Museum, Box 97, Solomons, Maryland 20688.