M·A·P·S Digest

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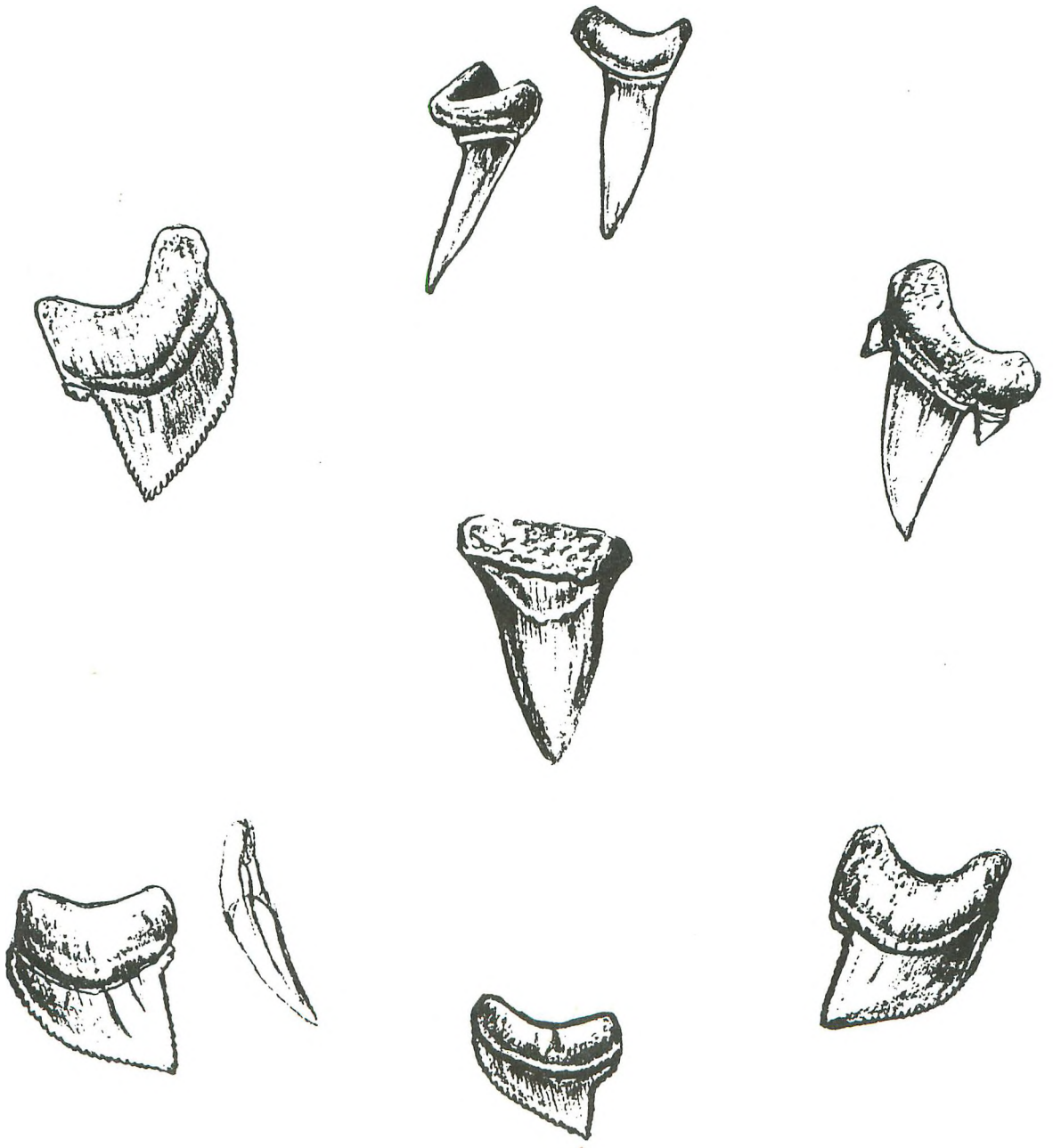

A LOVE OF FOSSILS BRINGS US TOGETHER

MARK YOUR CALENDARS

5 FEB MAPS MEETING. Augustana College, Rock Island, IL.

1:00 Board & General Meeting combined.
2:00 Program: Video program "Dinosaurs and Whales." Shows how dinosaurs are prepared and mounted and shows hunting in Peru and South Dakota.

5 MAR MAPS MEETING. Trowbridge Hall, University of Iowa, 123 N. Capital St., Iowa City, IA. The room number will be posted.

1:00 Board & General Meeting combined.

2:00 Program: Visit the Repository (tentative).

15 APR 1994 MAPS NATIONAL FOSSIL
16 EXPOSITION XVI
17

Fri., Apr. 15: 8am - 6pm (Keynote speaker: Dr. Donald Wolberg - evening)
Sat., Apr. 16: 8am - 5pm (Business meeting and auction following)
Sun., Apr. 17: 8am - 3pm (Morning seminar)

PLEASE NOTE: THE DATES ARE INCORRECT IN THE 1993 DIRECTORY

*** RETURNED CHECK CHARGE POLICY ***

Beginning immediately, there will be a $5.00 charge for returned checks. This policy is necessary because of a change in bank policy. Checks which are returned will be submitted a second time, and there will be a $5.00 charge or loss of 3 issues of the Digest each time the check is returned.

*** 94/02 DUES ARE DUE ***

Are your dues due? You can tell by checking your mailing label. The top line gives the expiration date in the form of year followed by month--94/02 means 1994/February. Dues cover the issue of the *Digest* for the month in which they expire.

We do not send notices but will let you know if you are overdue by highlighting your mailing label on your *Digest*. We carry overdues for two months before dropping them from our mailing list.

Please include your **due date** and **name exactly as it appears on your mailing label**--or include a label.

Dues are $15 per U.S./Canadian household per year. Overseas members may choose the $15 fee to receive the *Digest* by surface mail or a $25 fee to receive it by air mail. (Please send a check drawn on a United States bank in US funds, US currency, a money order, or a check drawn on an International bank in your currency.) Library/Institution fee is $25.

Make checks payable to MAPS and mail to:
Sharon Sonnleitner, Treas.
4800 Sunset Dr. SW
Cedar Rapids, IA 52404

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ABOUT THE COVER
by Eric Kendrew, Valrico, Florida

This month's cover depicts Cretaceous Chondrichthyes found in Florida *(see article on pages 3-8).*

I want to thank the late Bill Smith for bringing these fossil shark teeth to me for identification. Bill Smith was instrumental, along with his young friend Scott Bartle, in collecting these shark teeth. Bill had been a good friend and had contributed much to the scientific community in paleontology.

I want to thank Scott McPhilliamy, from St. Clairsville, Ohio, for collaborating with me on these fossil shark teeth.

I also want to thank DJ Bethea for her beautiful job on drawing the pictures of these Cretaceous shark teeth and for depicting every aspect of the tooth form.

Last but not least, I want to thank my wife, Sandy, for putting up with my frustrating moments while I was working on the paper and for the typing of the manuscript.

EXPO XVI--DINOSAURS

April and EXPO XVI are just two months away now. Table sales are brisk. Remember that we like to have exhibits, too. We hope you've made your plans to attend.

A special note about the live auction held at EXPO: the proceeds of this auction go to the Paleo. Society to provide scholarships to graduate and post graduate students for research. For the last two years we have been able to provide two $500 scholarships. We depend on donations of quality specimens from the membership to make the auction a success. We ask all exhibitors at EXPO to contribute and also welcome contributions from members who are unable to attend EXPO. Specimens can be sent to Auction Chair, Paul Rechten, 7405 Shields, Harvard, IL 60035, (315) 943-4178. Please provide pertinent information about the specimen along with the donor's name.

Although the show runs through 3:00 pm Sunday, many people leave by noon because of travel time, etc., so if you can only attend EXPO on Sunday, it's best to arrive early.

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LIVING GRAPTOLITE DISCOVERED?

from *The Fossil Collector*
pub. by The Fossil Collectors Assn. of Australasia, Sep. 1993, p.32-33.
Frank Holmes, ed.

During the 1989 French Calsub Expedition, the submersible 'Cyana', working in deep water off New Caledonia, half way between Brisbane and Fiji, brought to light an extant pterobranch (a colony-forming hemichordate) that has an astonishing physical resemblance to graptolites, a group considered to have been extinct since the Carboniferous. The pterobranchs were found encrusting the surface of the coral *Vermiliopsis* associated with *Dendrophyllia*.

The new species of pterobranch, named *Cephalodiscus graptolitoides* by Dr. P.N. Dilly from the Department of Anatomy, St. George's Hospital Medical School, London, is of considerable interest because it has long needle-like spines extending perpendicularly from the coenecium (the tubular exoskeleton of colonies of pterobranches). These spines are reminiscent of the spine-like structure called the nema, which are a feature of several groups of extinct graptolites.

According to Dilly, this is the first time this feature has been described in the pterobranches and could resolve the long-standing arguments among palaeontologists as to how the fossil graptolites produced their extra-corporal homes. In the past, the general hypothesis has been that the graptolite zooids could not have constructed the nema because they were somehow passive prisoners in their cell-like tubes (theca) being attached to others in the colony by soft tissue. Indeed, in many late graptolite species the external aperture to each theca is constricted.

Dilly believes that with *Cephalodiscus graptolitoides*, the zooid (the soft bodies individual inhabiting the coenecial tube, or theca in the case of graptolites) squeezes through the restricted aperture of its coenecial tube to construct, with other zooids, a spine up to 30 times its own length. As an individual zooid climbs up the spine, it leaves a thin trail of material on the surface, much like a snail track, and when it's at the tip it secretes a globule of material from its cephalic shield, thus extending the length of the spine. This oval globule then provides the template upon which more spine material is deposited during the next zooidal trip. The spines seem to function as a pole from which the zooids can feed in water away from the surface of the sessile colony.

Based on the overall study of *C. graptolitoides*, Dilly considers "There is little if any reason for not considering *C. graptolitoides* as a living fossil and a member of the graptolites previously thought to be extinct for over 300 million years."

Continued on page 9.

OUR CONDOLENCES TO:

Andrew Hay, Norridge, Illinois, on the passing of his wife of 44 years, Josephine. Both were MAPS members.

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CRETACEOUS CHONDRICHTHYES FOUND IN FLORIDA

by Eric S. Kendrew, Valrico, Florida

Unusual, yes, but it's true!

Bill Smith, member of the Bone Valley Fossil Society, brought some shark teeth to me for identification during one of our club meetings. As I was going through the teeth, I found four species of Cretaceous shark teeth. I suspected right away that these particular teeth could not have possibly come from Florida. These shark teeth are found only in the Cretaceous beds throughout the world.

Being very curious, I asked Bill, "Where did you find these teeth?" His reply, "I found them during our club excavation at the Pleistocene site at 4-Corners Phosphate Mine, (4-Corners Mine being Grace Phosphate Mine at the time the teeth were found, now owned by I.M.C., located on the corner of Hillsborough, Polk, Manatee, and Hardee County area) back in the summer of 1988." He continued on, saying that he and his young friend, Scott Bartle, found the Cretaceous shark teeth while hunting a spoil pile during one of our afternoon breaks. I asked Bill if he had any more of these teeth. He said, "yes," and indeed he did! There were some 15 *Cretolamna appendiclata*, 150 *Squalicorax kaupi*, 1 *Striatolamia macrota*, 1 unidentifiable tooth.

After checking the location out on a topographical map and visiting the site locality, we found it to be all under reclamation. So there was no chance of collecting any matrix samples from the site for analysis. Since all we had were the teeth and since I was up to date on the fossil fauna and geology of the area, another approach to the problem we were facing had to be established. This was, of course, to find some substantial evidence to this most unusual fossil find. **"HOW DID THESE CRETACEOUS TEETH BECOME DEPOSITED IN A MIO-PLIOCENE STRATA?"** You might say these Cretaceous Shark Teeth were spread out of the stratigraphic record...

We know that the Cretaceous zone in Florida is at a depth of 8,000 feet (see fig. 1, Florida Geological Survey, Olsen & Janson, Feb. 1957). Within the 4-Corners Mine the digging depth is between 45 ft. and 65 ft. levels. So it would be impossible to dig into the Cretaceous zone in Florida.

The only theoretic issue would be that these teeth were redeposited into a Mio-Pliocene zone from a Cretaceous bed some 10 to 16 million years age.

It was ruled out that perhaps these particular species of sharks had evolved into the Mio-Pliocene time frame, since there were four species found and many of the same species.

During the period of time of redeposition of these fossils, the Cretaceous bed was much closer to the surface. Based on Florida's Paleolatitude, it was close to Florida's Plateau edge or shore line (see fig. 2 & 3 & Florida Plateau), some 225 to 250 miles out in the Gulf of Mexico (see fig.4).

So the question now is, **"HOW DID THESE SHARK TEETH BECOME REDEPOSITED?"**

In the last few years there have been many studies into an Asteroid impact in the Caribbean, some 65 million years ago. This impact would create a massive tsunami. It would rip up the seabed for 600 miles around and push up rocks and boulders, then redeposit them to higher ground. Large waves from the impact would redeposit these rocks and boulders.

Could these shark teeth have been redeposited in a higher area from and asteroid impact? If so, how could they have been redeposited again into a Mio-Pliocene zone? Perhaps a catastrophe, such as a hurricane, could have been the culprit. A most unique coincidence, but whatever the case may be, this find is most unusual and most significant to **FLORIDA'S FOSSIL HERITAGE.**

ANALYSIS OF SHARK TEETH FOUND

There were 15 *Cretolamna appendiclata* found (80% of which were broken), 150 *Squalicorax kaupi* found (80% of which were broken), 1 *Striatolamia macrota*, and 1 unidentified shark tooth (the only part of the tooth present was from the medial labial forearm through the base to the apex).

Cretolamna appendiclata	Size ranging from 17 mm to 22 mm
Squalicorax kaupi	" " " 11 mm to 16 mm
Striatolamia macrota	" 11 mm
unidentified tooth	" 11 mm

GENERAL MORPHOLOGY

Without discussing the dentation of selachians in general, I will discuss the general morphology of type species found, except the unidentified species found.

CRETOLAMNA APPENDICLATA

This genus is a medium size Anterior tooth with a triangular crown that is rather broad at its base and one pair of well developed lateral cusplets. The crown is thin with smooth enameloid. The root lacks a groove and has a well marked lingual protuberance; the root lobes are short, elongated in lateral teeth. The marginal edges of the root are straight in lateral teeth and the basal edge is medially concave.

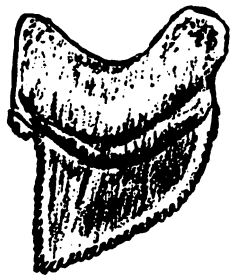
CLASS - Chondrichthyes
ORDER - Lamniformes
FAMILY - Lamnidae
GENUS - Cretolamna (Gluckman 1958)
SPECIES - appendiclata (Agassiz 1843)

SQUALICORAX KAUPI

This genus is a medium size Anterior tooth and has an increasingly blunt apical angle, a gradually smaller heel in relation to the cusp, with the disappearance of the notch separating the heel from the distal cutting edge of the cusp, a progressive enlargement and a more and more marked labiolingual flattening.

The cusp is slanted toward the rear. The dentation is considerably increased by acquisition of serrated cutting edges. The serration may be simple as in *Carchardon*, or double, the rather large main serrations being themselves serrated, as in *Galeocerdo curier* which show, since they are not closely connected phyletically, a very strong dental morphological convergence.

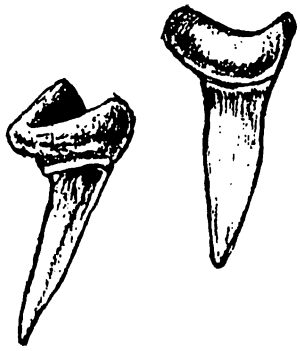
CLASS - Chondrichthyes
ORDER - Lamniformes
FAMILY - Anacoracidae
GENUS - Squalicorax (Whitley 1939)
SPECIES - kaupi (Agassiz 1843 B)



STRIATOLAMIA MACROTA

This genus is a lateral tooth that reveals a clear tendency toward size increase, accompanied by widening of the crown, a feature that is particularly clear in the last representatives of *S. marcrota*; the lateral cusplets tend to be reduced on the anterior teeth and commonly disappear completely; in the lateral files, by contrast, they widen considerably and may show a pectinated aspect; the folds on the lingual face of the crown, tend to fade and shorten especially in the lateral files where they may disappear completely (Cappetta). The tooth found was missing both the basal edges of the root and both cusplets.

CLASS - Chondrichthyes
ORDER - Lamniformes
FAMILY - Odontaspididae
GENUS - Striatolamia (Gluckman 1964 B)
SPECIES - macrota (Agassiz 1843)



UNIDENTIFIED TOOTH

CRETACEOUS FORMATION IN FLORIDA

Florida's oldest vertebrate was recovered during the summer of 1955 by the Amerade Petroleum Corporation during the course of drilling operations near Lake Okeechobee. A well core, containing a partial skeleton of an aquatic turtle was brought up from a depth of 9,210 feet from the Glen Rose Formation of the early Cretaceous. (Fig. 1)

The most upper part of the upper Cretaceous is approximately 5,000 ft. below the surface (Banks, 1964).

THE FLORIDA PLATEAU

The Florida Plateau is a relatively flat platform that forms the eastern side of the Gulf of Mexico basin. (Fig.4, modified from Uchupi 1967, Ed Lane 1986). The emergent part of this plateau is Peninsula Florida. The plateau's boundaries are placed at water depths of 300 feet. At Ft. Myers, its edge lies some 100 miles offshore; at southeast Florida near Miami, it only lies two to three miles offshore. Geologically, this platform is a layer-cake of rock units. Older, deeper rocks are predominantly carbonates, while younger, shallower units are mixtures of clastic (sands, clays, gravels) and carbonates (Banks,1964).

Available evidence indicates that the floor, or "basement," upon which these thousands of feet of sedimentary strata have been deposited are granites, basalts, or similar types of volcanic or metamorphic rocks (Applin, 1951), some of which have been dated as old as 634 million years old (Milton, 1972). At some time during that ancient era, carbonate rocks began to accumulate on top of the basement rocks that formed the floor of a shallow sea, much like the reef environment of South Florida today. While these carbonates were being deposited, the basement rocks of this proto-Florida were slowly subsiding. Conditions similar to these persisted from millions of years, because conditions, indicating that depositional rates approximated subsidence rates (Banks, 1967). These rocks and the deposited marine fossils also show evidence for many rises and falls of global sea levels, between then and now.

OTHER REDEPOSITION OCCURRENCES IN FLORIDA

We see examples of this throughout Florida. Venice Beach on the east coast of Florida is famous for fossil shark teeth of Miocene and Pliocene age. The teeth are constantly being washed up from the phosphoric clays hundreds of feet off shore and redeposited along the shore line.

In the river beds of Florida we see deposits of eroding beds of several different ages that have been redeposited and mingled to produce a simple bed. This has caused much difficulty geologically in determining ages.

Also, we find quartz pebbles that are not native to Florida. We find these in the rivers and phosphate mines mostly. These were washed down from the Appalachian Mountains some 5 to 10 million years ago.

LEACH ZONE STRATA OF THE 4-CORNERS AREA

First off, the Leach Zone within the Bone Valley Formation is a lens unit of poorly preserved phosphoric pebble mixed in a stiff bedded lens of clay and sand. This deposit was laid down during the late Miocene and early Pliocene period between 10 to 16 million years ago. It originated in the mouth of rivers and tidal flats. The sea level at this time stood 80 to 120 feet above its present level.

FIGURE #1

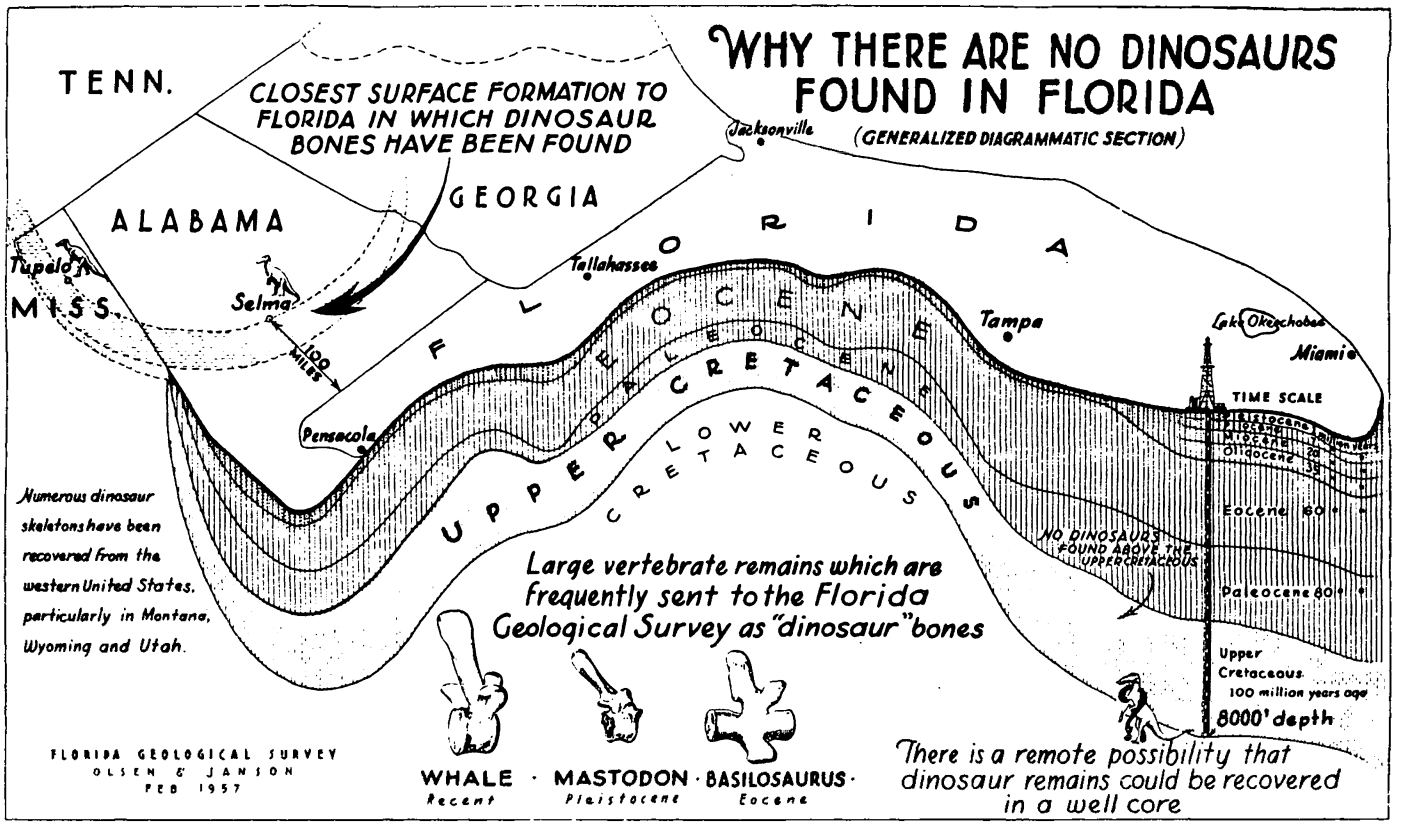
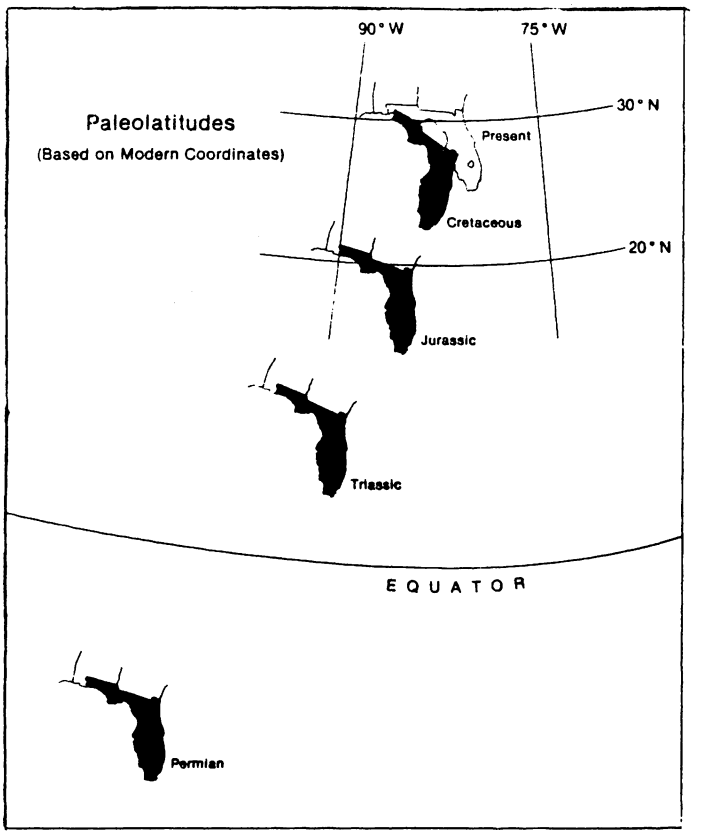
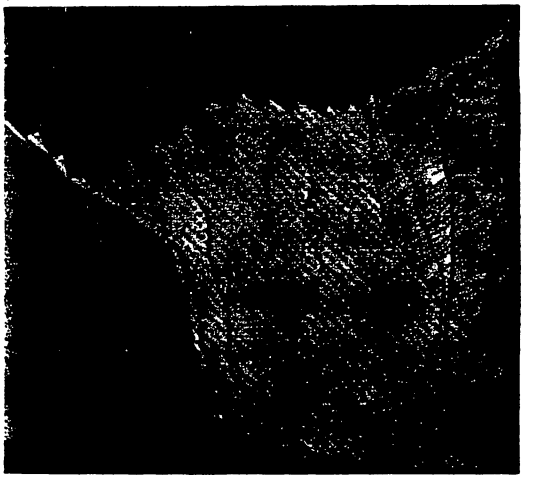


FIGURE #2



McElhinny 1973

Paleogeography of the Eastern Gulf during Cretaceous Time[1]



Approximately 110 million years ago.

- Approximate location of a bank or reef
- Mainly shelf terrigenous clastics
- Carbonate and evaporite
- Deep marine terrigenous
- Shallow marine carbonate
- Deep marine carbonate

Bryant et al. 1969.

FIGURE #3

The Cretaceous map shows major features in the Florida area 70 to 110 million years ago. The terrigenous sediments were carried from the Appalachian mountains, which were more rugged than today. Most of what is now the Florida peninsula was the site of deposition of marine carbonate sediment (e.g., shells and shell fragments, largely microscopic in size); there was also deposition of evaporites (such as anhydrite), due to the high air temperature and very shallow water.

FIGURE #4

FLORIDAN PLATEAU

The Floridan Plateau is encompassed by the 300 - feet depth contour line (modified from Uchupi, 1967)

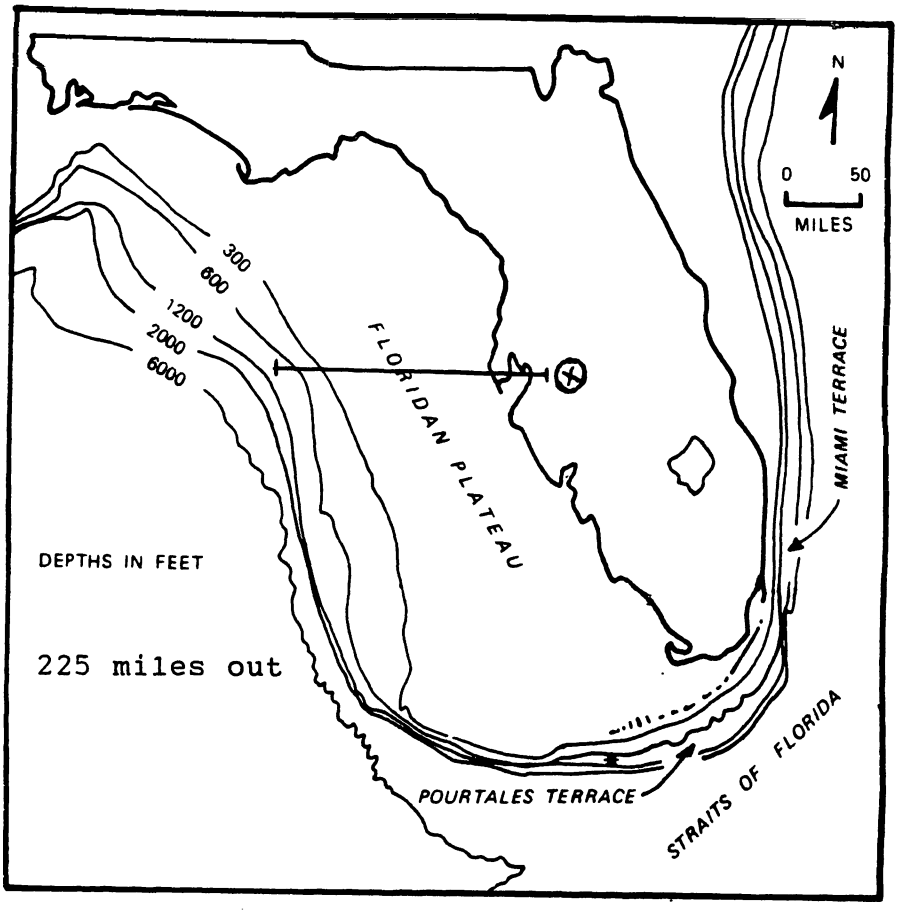
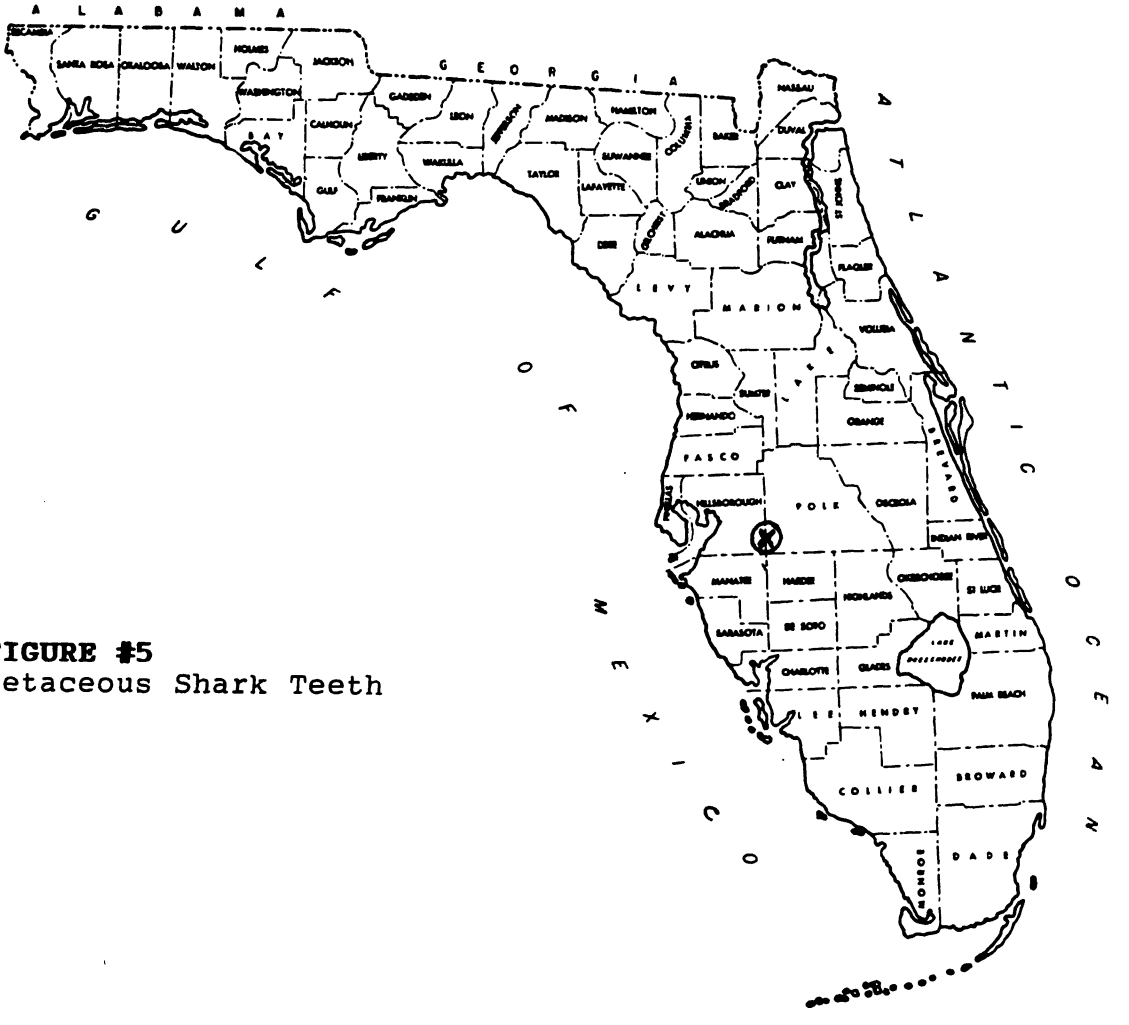


FIGURE #5
Locality of Cretaceous Shark Teeth



When this particular deposit was formed, it went through a environmental climatic change. After deposition took place, several times it became exposed to the surface, where the elements played havoc on the fossilization process. The fossils within this zone became porous, brittle, and chalky. Many shark teeth lost their pulperous insides and only the outside enamel structures of the teeth were left to become fossils. Some fossils, however, that were deposited in this layer continued their fossilization process because they were embedded in a clay layer within this zone and not exposed to the elements. The Leach Zone fossils are denser and lightweight. Coloration on bones is white, and teeth are almost always a gray to blue in color. But in extreme cases, some teeth have been found to be black and orange in color due to the nature of the minerals and coloration of the embedding clays.

In the 4-Corners area the Leach Zone matrix consists of a sand layer of phosphoric pebble (Leached), gray-white and gray-black in a stiff bedded lens.

After careful examination of the Cretaceous Shark Teeth, it was determined that these teeth were redeposited in the Leach Zone due to the distinctive fossilization of the teeth. The shark teeth are all light in weight and gray to blue enamel with a white root.

SYNOPSIS

The determination of the age of the shark teeth was concluded by the data presented in H. Cappetta Book on Chondrichtheyes, from Montpelier, France, on the Mesozoic and Cenozoic Elasmobranchii.

The *Squalicorax kaupi* have only been found in the upper and lower Cretaceous beds; whereas, *Cretolamna appendiclata* have been found from the lower Cretaceous to the lower Eocene.

The bedding zone which these teeth came from could have been from a lower to upper Cretaceous bed. But, more probability suggests they came from the middle Cretaceous bed of Eagle Ford Age, some 100 million years old. Many Cretaceous shark teeth of the ones in question have been found in the Eagle Ford Beds of Texas. The question also arises of the extent of fossilization change. If the fossilization impact in the Miocene, Pliocene Leach Zone was the dominant fossilization occurrence of the Cretaceous shark teeth, in what state were the shark teeth before their occurrence in the Miocene, Pliocene Leach Zone? The answer to this lies within their state of preservation before washing out of their Cretaceous bed.

Since we know about the karst process in Florida and the many submarine springs and underground streams, it is possible that this Cretaceous bed was part of or close to one of these areas. The seas were not as salty during the Cretaceous, as studies have shown. An influx of spring water would give the necessary minerals to cause a mineralization process on bones and teeth to almost preserve them in their natural state. This would leave the shark teeth in a soft state of preservation and white in color. This would also answer that question of why so many of these teeth were broken up when washed to shore. Once deposited in the Miocene, Pliocene strata, the fossilization process would then take a totally new route.

No matrix or other material was collected at the site in which the Cretaceous shark teeth were found to correlate any other areas of study at this time.

REFERENCES CITED

1. Florida State Natural History Museum, PJ #14, October 1, 1970, Fossil Vertebrate Deposits in Florida, by T. H. Patton and D. S. Webb
2. Fossil Mammals of Florida, S. J. Olsen, 1959, Special Pub. #6
3. Florida State Natural History Museum, PJ #1, Cenozoic Sharks of Florida
4. Florida Geological Survey, Sp. Pub. #29, Karst in Florida, by Ed Lane
5. Handbook of Paleoichthyology. Vol. 3B, Chondrichthyes II, by H. Cappetta
6. Cretaceous Splash Down, Discover Magazine, Sept. #1990
7. What Killed the Dinosaurs?, American Scientist, Vol. #78, July 1990
8. Demise of the Dinosaurs: A Mystery Solved?, Astronomy Magazine, July 1991

INDIANA FOSSIL PARK OPENED
by Alan Goldstein, Louisville, Kentucky

The world's newest fossil park opened to the public January 25, 1994. While some might think it should be called "Devonian Park" in reference to the well-known book and movie, this Indiana State Park is called "Falls of the Ohio State Park." Technically, the park has been around for four years, but the new five million dollar Interpretive Center opened on January 25. The Interpretive Center will feature very high quality exhibits designed and built be fellow MAPS member Terry Chase, of Chase Studios.

The park sits above one of the world's largest natural exposures of Middle Devonian coraliferous limestone. Originally some 220 acres, the fossil beds cover "only" 170 acres today. The Falls have been famous fossil collecting grounds for over 200 years. Museums world-wide have specimens from here

The coral beds, the largest part of the fossil beds, are only exposed during autumn. The upper fossil beds, which hug the river bank, are exposed for much of the year. Some 350 species of corals, brachiopods, mollusks, trilobites, etc., have been described from the Falls area.

Fossil collecting from the fossil beds is strictly prohibited without a permit (which is given for accredited research only). For those people that want to collect fossils, there are alternatives. The fossil-bearing limestone is exposed in many road cuts and quarries in the region.

The Interpretive Center will be open year round--even when the fossil beds are underwater. Limestone boulders "oozing" corals and other fossils will be placed for visitor examination, providing examples of the rich fossil heritage which cannot be seen when the river level is high.

Naturalist programs will be available covering a variety of topics, including fossils (of course), life during the Devonian Period, Pleistocene and general geology, birds, wild flowers, local history, river history, and many other topics. Special programs and materials will be developed for students, teachers, and the general public. A small gift shop will contain relevant items, including fossils, books and other geology-related products.

MAPS members will find this to be a refreshing change from your typical park, because fossils are such a strong focus to programs and exhibits. This is a day-use park, with picnic grounds and hiking. There is no camping in the park, though a KOA facility is located about a mile away. There are numerous hotels and motels nearby, too. Although the park has a distinctly "rural" flavor, it is located in the heart of the Louisville metropolitan area.

ed. note: Alan is the Naturalist/Assistant Property Manager at the Park.

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GRAPTOLITES

Continued from page 2.

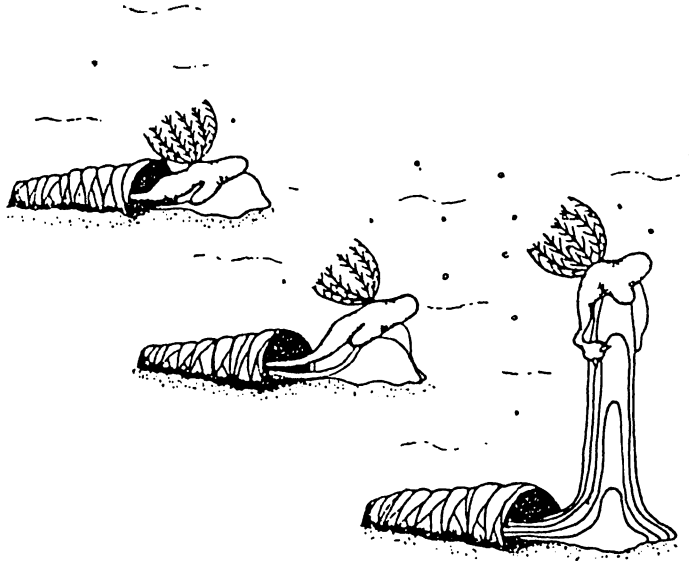

Diagram suggesting the mechanism for the secretion of the spines by the zooids during excursion from their coenecial tubes. (from Dilly, P.N., 1993. *Journal of the Zoological Soc. of London* 229, p.76)

References:

Dilly, P.N., 1993. *Cephalodiscus graptolitoides* sp. nov. a probable extanct graptolite. *Journal of the Zoological Society of London* 229:69-78.

Rigby, S., 1993. Graptolites come to life. *Nature* 232: 209-210.

ADVERTISING SECTION

Ads are $5.00 per inch (6 lines x 1 column--43 spaces). Send information and checks payable to MAPS to: Mrs. Gerry Norris, 2623 34th Avenue Ct., Rock Island, IL 61201. Phone: (309) 786-6505. This space is a $5.00 size.

To extend currently running ads, please send request and remittance to **Editor** by the 15th of the month. We do not bill. Ads do not run in the EXPO issue (April). Ads up to 8 lines by 54 spaces can be printed in smaller type to fit a 1" space.

Museum Quality Fossils, Wholesale Cat. & updated list - send $3.00. Buy by the piece or in large quantities. 90% self collected. Professionally prepared by Eric. Many marketed items for the shop owner. Large collection of kit fossils available; ask for details.
Eric Kendrew, The Fossil Store, 4436 Tevalo Dr., Valrico, FL 33594. 813-681-4350

What's your favorite tiny insect? **Dominican amber** with complete and identified fauna and flora for sale. Prices start under $10.00. Write or call: **Y.R. Goldman**, 4416 Osage Ave. Apt. C5, Philadelphia, PA 19104 (215) 662-0236.

Please ADD the Following NEW OR REJOINING MEMBERS to Your Directory:

John Lofquist
17104 So. Angeline Way N.E.
Suquamish, WA 98392
206-623-3408 19940124

International seafood broker. May trade. Major interest marine fossils of WA and OR. Wants to learn more about fossils and their preparation.

Michael J. Long
HCR 61 Box 303
Thayne, WY 83127

Furniture builder/preparator. Will trade. Major interest all fossils, but esp. vertebrate. Will negotiate custom preparation. Has for trade Green River Formation fossil fish. Wants to further his knowledge of all fossils.

Barry and Margarita Nichols
7004 Ethan Allen Way
Louisville KY 40272
502-583-5835

BSN = Biologist; MSN = Palebotamist. Will trade. Want to learn more about paleontology, fossil collection and preparation.

Debra Peel
2863 Hanois Ct.
Cincinnati, OH 45251

Environment, health and safety professional. Major interest in collecting invertebrate fossils of the midwest area. Has curiosity for fossils from other areas.

Tim Treadway
1637 Errel Dowlen Rd.
Pleasant View, TN 37146
615-746-3353

Mason. Will trade. Major interest invertebrates (particularly crinoids) with growing interest in vertebrates (particularly their teeth). Has for trade invertebrates, especially brachiopods and crinoids (many slabs with multiple specimens). Wants to talk with others who believe in the preservation of fossils.

PLEASE NOTE THE FOLLOWING CHANGES OF ADDRESS OR CORRECTIONS:

Leslie R. Adler
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5521 Gibbs Rd
Andover, OH 44003
216-293-7995

Paleontologist. Master preparator/collector. Will sell or trade. Major interest Paleozoic invertebrates and vertebrates; eurypterids, scorpions, trilobites, phyllocarids, crinoids, blastoids, cystoids, fish bones & teeth, brachiopods & bryozoans, Silurian & Devonian plants and algae, all genus micro to macro, also related books and meteorites. Interested in paleoenvironments & stratigraphy.

Mrs. Jean G. Valey
13934 W. Timberlane Ct.
Lockport, IL 60441-4189
708-301-4189

Mark Van Heel
217 S. Jackson
Mason City, IA 50401
515-424-6213

Meter Reader. Will trade. Interested in fossils in general. Has for trade nice brachiopods, trilobites, corals, etc. I will help others who might want to hunt fossils in my area.

The Mid-America Paleontology Society (MAPS) was formed to promote popular interest in the subject of paleontology; to encourage the proper collecting, study, preparation, and display of fossil material; and to assist other individuals, groups, and institutions interested in the various aspects of paleontology. It is a non-profit society incorporated under the laws of the State of Iowa.

Membership in MAPS is open to anyone, anywhere who is sincerely interested in fossils and the aims of the Society.

Membership fee: One year from month of payment is $15.00 per household. Institution or Library fee is $25.00. Overseas fee is $15.00 with Surface Mailing of DIGESTS OR $25.00 with Air Mailing of DIGESTS. (Payments other than those stated will be pro-rated.)

MAPS meetings are held on the 1st Saturday of each month (2nd Saturday if inclement weather). October & May meetings are scheduled field trips. The June meeting is in conjunction with the Bloomington, IN, Gem, Mineral, Fossil Show & Swap. A picnic is held the fourth weekend in July. November through April meetings are scheduled for 1 p.m. in the Science Building, Augustana College, Rock Island, Illinois. One annual International Fossil Exposition is held in the Spring.

MAPS official publication, MAPS DIGEST, is published 9 months of the year--October through June.

CYATHOCRINITES

MID-AMERICA PALEONTOLOGY SOCIETY

FIRST CLASS MAIL

Mrs. Sharon Sonnleitner
MAPS DIGEST Editor
4800 Sunset Dr. SW
Cedar Rapids, IA 52404

Dated Material - Meeting Notice