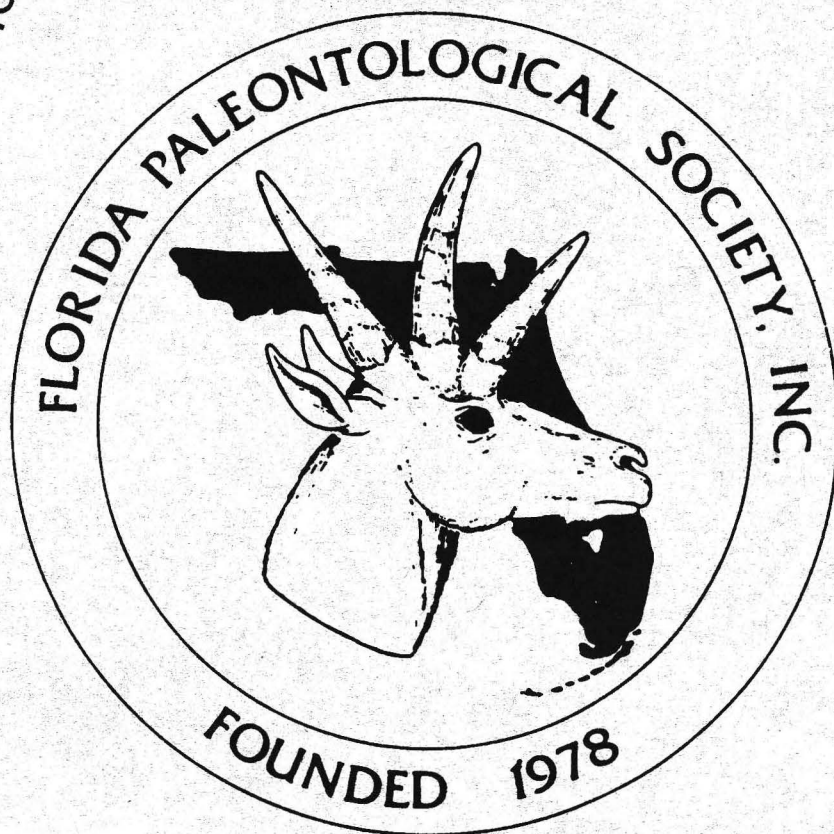


Florida Paleontological Society, Inc.
Newsletter

SPRING MEETING INFORMATION!



Volume 14 Number 1 Winter Quarter 1997

FLORIDA PALEONTOLOGICAL SOCIETY, INC.

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Barbara Toomey, Sanibel, 1998

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Please Address: Secretary, Florida Paleontological Society, Inc.
Florida Museum of Natural History
University of Florida
Gainesville, FL 32611

NEW! VOICE MAIL TO FPS! CALL 352-392-6828 AND ENTER CODE FPS-00

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**1997 FPS Spring Meeting
Saturday, May 3rd, 9:00 AM**

University of South Florida

Tampa, Florida

Hosted by the

TAMPA BAY

Fossil CLUB

Guest Speakers:

Larry Martin, Professor of Paleontology, University of Kansas
John Babiarz, Babiarz Institute of Paleontology, Tempe, Arizona

will present a joint talk on:

***Why Sabertooth? - a discussion of species of sabertooth cats,
why they developed sabers, and how they were used.***

Also featured:

- *Fossil Identification Session*
- *Local Museum visits*
- *Italian Buffet Dinner*
- *Fossil Auction (Bring your donations!)*
- *Talk by Mr. Dave Letasi on Carnivores*
- *Invertebrate collecting trip to the Vulcan Mine
in Brooksville on Sunday, May 4th.*

See pages 10-11 for more details

News Notes

News from the Florida Museum of Natural History

From the Secretary....

Just a reminder, if you haven't paid your 1997 dues, please do so as soon as possible. Delinquent members will not receive their newsletters, *Papers in Florida Paleontology*, and other special meeting announcements.

Powell Hall Now Open....

The Florida Museum of Natural History's new exhibition hall, Powell Hall, is now open on the University of Florida Campus, near the corner of SW 34th Street and Hull Road. The new 55,000 square-foot facility was dedicated in February. The initial feature display (through April 27th) is dinosaurs from Egg Mountain, Montana. The exhibit features animated robotic dinosaurs, articulated skeletons, and numerous hands-on activities. One of the permanent exhibit hall planned for the hall will be "Florida Fossils: Evolution of Life and Land". Access to the new facility is obtained by taking 34th Street in Gainesville north off Archer Road (SR 24), turn right onto Hull Road, then right again into the museum cul-de-sac.

1997 Gary S. Morgan Student Research Award Winner Announced...

The FPS's Gary S. Morgan Student Research Award was established to assist needy college-level paleontology students with some aspect of their research. An annual award of up to \$500 is granted based on a brief application and proposal. This year's award is presented to **Jay O'Sullivan**, a doctoral student of Dr. Bruce MacFadden at the University of Florida. Jay is studying the evolution of the dwarf fossil horse *Archaeohippus*, and plans to reconstruct the social structure of the Thomas Farm site population by counting the number of infants, juveniles, and adults present. Similar studies of *Parahippus* and *Pseudhipparion* are available for comparison of results. He also plans to use oxygen isotope analysis of tooth enamel to determine how long it took *Archaeohippus* to mature, and by comparing this data to tooth growth in *Miohippus*, determine whether a change in the timing of maturation resulted in the evolution of tiny *Archeohippus* from the medium-sized *Miohippus*.

From the Invertebrate Paleontology Division

As many of you already know, **Doug Jones** has taken over as Interim Director of the museum (as of last November) and his new administrative duties have been keeping him very busy. In addition, he has been teaching a new course called Paleontology (GLY 3603) to 37 undergraduate students during the spring semester.

Doug, along with **Anthony Randazzo** (UF Geology Department), co-edited a book entitled *Geology of Florida*, which will be published in May by the University Press of Florida. The book provides an up-to-date overview of Florida's geology and paleontology.

During the last week of January and the first week of February, Doug and **Roger Portell**, along with **Warren Allmon** (Paleontological Research Institution), **Gary Morgan** (New Mexico Museum of Natural History), and **Steve Emslie** and **Mark Stiger** (Western State College) conducted field work in the area of Antofagasta, northern Chile. Numerous fossil marine invertebrates (molluscs, echinoids, and barnacles) and vertebrates (aquatic mammals and birds) were collected in unnamed Pliocene units and in the Pleistocene La Portada Formation. These materials will be used in future research projects.

Several days after his return from Chile to Florida, Roger headed down to Jamaica for several more weeks of field work where he is finishing up his research with **Daryl Domning** (Howard University) and **Stephen Donovan** (University of the West Indies) on Eocene Chapelton Formation vertebrates (mainly sea cows) and invertebrates (mainly molluscs). The project was funded by National Geographic, with the help of some private donations. **Barbara** and **Reed Toomey** (Sanibel) joined the field party in Jamaica and were an immense help during excavations. Exciting new finds were unearthed by both Barbara and Reed.

Recently, Roger and **Jose Leal** (Bailey-Matthews Shell Museum) were the two scientific judges at the 60th Annual Sanibel-Captiva Shell Show held from

March 6th to 9th. The Sanibel-Captiva Shell Show is the longest running shell fair in the U.S. Several awards for fossil exhibits were given.

Roger, Amy Tobias, Greta Murray, and students Delene Beeland, Alex Mouat, Wendy Robinson, and Dana Ultsch continue to work on the curation of the Florida Geological Survey and Muriel Hunter collections. Irv Quitmeyer is busy assisting Doug with his research on the Jurassic oyster *Gryphaea*. Graduate Students Craig Oyen and Betsi Nemeth are steadily making progress toward completion of their advanced degrees. Hobart Swiggett is currently photographing fossil invertebrate specimens for Roger and Doug's book Fossil Invertebrates of Florida.

Upcoming Meetings and Talks....

- May 8-11 Annual meeting of the Florida Anthropological Society, Hyatt Regency, Miami, FL. Info: (305) 374-5699.
- May 17 Dr. Gordon Edmond will present a talk on preservation of fossils and bones at 2:00 PM at the Daytona Beach Museum of Arts and Sciences.
- Nov. 14-16 11th International Mineral, Gem, Jewelry and Fossil Exhibition, Hotel Royal Olympic, 28-32 Diakou St., Athens Greece, ph. Int. 30-1-9226-411.



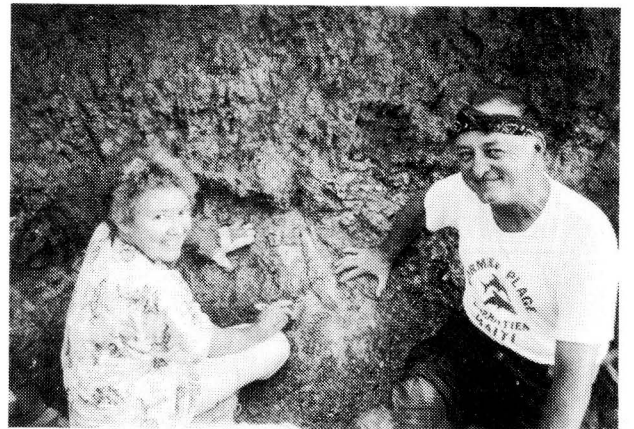
Doug Jones and Gary Morgan crouched next to a desiccated sea lion on the beach north of Antofagasta, Chile. Because of the lack of rainfall, this area is considered one of the driest in the world.



Roger Portell wrapping giant barnacles in toilet paper. These specimens were excavated from an un-named Pliocene unit in the desert north of Antofagasta.



Daryl Domning carefully excavating a partial pelvis from a newly discovered genus of sea cow in Eocene sediments of western Jamaica. Unlike sea cows today, these most primitive sea cows had fully functional hind limbs.



Barbara and Reed Toomey with one of their many fabulous fossil sea cow finds.

**New
Edition!**

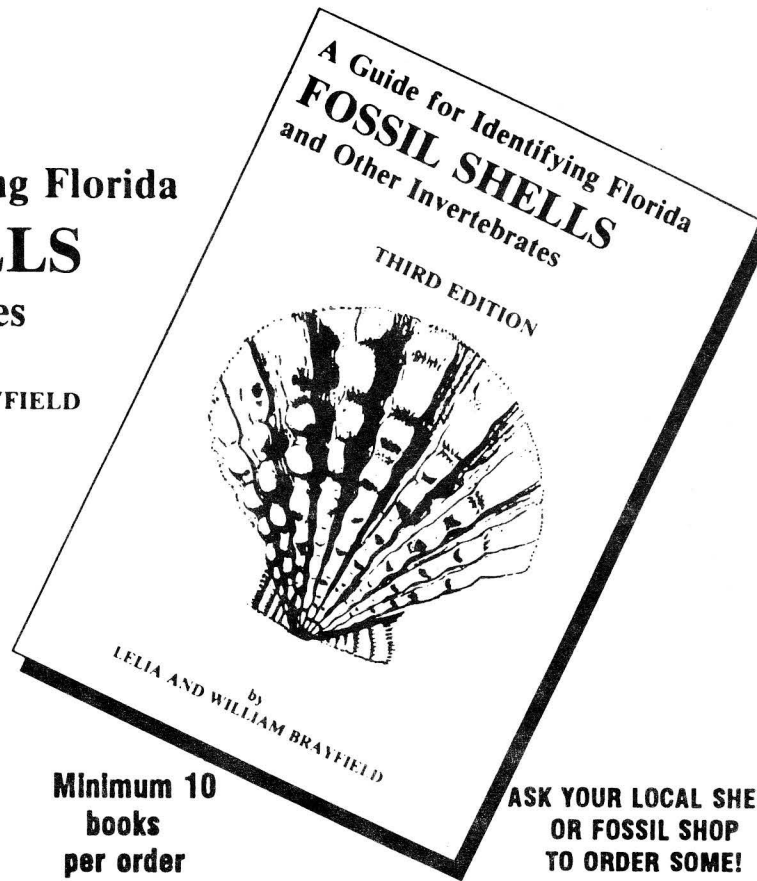
**A Guide for Identifying Florida
FOSSIL SHELLS
and Other Invertebrates**

by
LELIA AND WILLIAM BRAYFIELD

Updated by the staff of the Invertebrate Paleontology Division, Florida Museum of Natural History.

"Our hope is that collectors of Florida fossils will continue to enjoy the Brayfields' book, find this edition more useful than ever in identifying their specimens, and feel that we have been faithful to the authors with our revision."

Dr. Douglas S. Jones, Roger W. Portell and Kevin S. Schindler.



**Minimum 10
books
per order**

**ASK YOUR LOCAL SHELL
OR FOSSIL SHOP
TO ORDER SOME!**

FLORIDA PALEONTOLOGICAL SOCIETY, INC.
FLORIDA MUSEUM OF NATURAL HISTORY
UNIVERSITY OF FLORIDA
GAINESVILLE, FLORIDA 32611

PURCHASE ORDER NO. _____ DATE _____

BILL TO:

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QUANTITY (Min. 10 Books)	DESCRIPTION	UNIT PRICE	TOTAL
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1	A Guide for Identifying Florida Fossil Shells and Other Invertebrates (Third Edition)	\$5.97	
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SHIPPING AND HANDLING (Based on charges at time of shipping) _____

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MINIMUM 10 BOOKS PER ORDER**

Our First Twenty Years as the Florida Paleontological Society, Inc.

by

S. David Webb

Curator of Fossil Vertebrates
Florida Museum of Natural History

Editor's Note: Dr. Webb is a professor of Zoology and Geology at the University of Florida and is the Founding President and Honorary Member of the Florida Paleontological Society. These remarks are modified and serialized from Dr. Webb's talk during the plenary session of Paleofest96.

Ladies and gentlemen and Members of the FPS, welcome to the 21st Annual Meeting of this wonderful organization. I want to thank Drs. Doug Jones and Bruce MacFadden, organizers of this Paleofest96, for this opportunity to reminisce about the history of our wonderful organization. I also want to acknowledge our editor, Frank Rupert's excellent "Historical Highlights of the FPS", published in last summer's issue (vol. 13, no. 3) of the FPS Newsletter. That article is an excellent foundation for these remarks.

In some broad sense our organization was inevitable. We have a large population with bright eyes, leisure time, and a benign climate, and Florida certainly provides a great abundance of valuable fossils. The result is just as predictable as dissolving sodium and chloride ions in a solution: you will surely precipitate salt. In Robin Brown's outstanding book on Florida paleontology the first chapter is titled "Florida: A Great Place to Find Fossils". Just so, we have the right ingredients in Florida for world-class paleontology (Figure 1).

Figure 1: The Inevitability of the FPS

Question: *Why does Florida have so many fossils?*

Answer: *Because it has so many fossil collectors.*

Question: *Why does Florida have so many fossil collectors?*

Answer: *Because it has so many fossils.*

I have divided our history into the following four periods:

I. Early Development (1966-1975)

II. Formative Period (1976-1983)

III. Blue Period (1984-1987)

IV Mature Period (1987-Present)

When I came to Florida in June, 1964 I was overwhelmed by the heat and intimidated by the lack of evident exposures. In the Mojave Desert and Great Basin I had worked in 120 degree heat, but that dry heat had never left me so bushed, and in that western terrain one could see the geological exposures (often fossiliferous) by the mile. When I began to explore the Florida paleontological frontier I was fortunate to receive excellent orientation from Jesse Robertson and Sue Hirschfield, two outstanding graduate students in the zoology department. Jesse is now provost of Jacksonville University, and Sue is now a Professor of Zoology at the California State University in San Jose. As I began to pursue various field operations, especially in the Miocene of the Bone Valley Phosphate District, the McGehee Farm, and the Plio-Pleistocene of the Santa Fe River, I realized how important our avocational friends were to the present and future success of our state's paleontology program. We started with ten cabinets of fossil bones in the basement of the old Seagle Building in downtown Gainesville. And we knew that we had to build a much bigger foundation, if we were to live up to our state's potential. The answer was twofold: to work very hard, and to enlist good collaborators.

Our first effort to build a constituency and at the same time to educate amateur paleontologists was a series of short publications about Florida fossils, called *The Plaster Jacket*. Dr. Walter Auffenberg, my department chairman, and I served as the first editors. Norm Tessman, then a new graduate student, wrote the first issue on *Fossil Sharks of Florida* in September, 1966. We tried to produce about four issues per year, and to consider the commonest fossils that people most frequently asked about. It cost about \$100 to mimeograph and mail about 500 copies to our amateur friends. We figured that this effort actually saved us time, since we then spent less time identifying groups like sharks and turtles. But more importantly, it was very well received by young and old collectors alike who really wanted to learn more about paleontology.

Of the many wonderful people around the state who helped us get started in the 60's and early 70's, I remember Ben Waller, Joe Larned, Peg Thomas and Frank Garcia most vividly. All four were remarkable personalities, deeply dedicated to Florida paleontology. Ben Waller and my museum assistant, Robert Allen, taught me to SCUBA dive and introduced me to the Santa Fe River Blancan sites. Dr. Pierce Brodkorb had just named the extinct giant bird from South America *Titanis walleri*, but thought it was just late Pleistocene. Working at the Santa Fe, it became evident that this giant bird had to be as old as the diagnostic large mammals from those sites, namely from the very early Pleistocene, and that it was part of the Great American Interchange that brought ground sloths and many other large animals from South America. Ben was really thrilled with that idea and so he helped us dive and dredge the Santa Fe each summer during the mid and late sixties. I could not have had a better diving instructor, and on his side it was evident that he totally enjoyed the constant flow of new fossil discoveries. The FPS later elected him to the Presidency, and we all miss one of the true founding fathers of Florida Paleontology.

Joe Larned was the person who helped orient me to the Bone Valley. In those days as you entered Bradley Junction, in the heart of the phosphate mining district, you were greeted by a big sign with an arrow to his home and museum proclaiming "FOSSIL MAN OF BRADLEY JUNCTION". He had large collections of excellent fossils. This was partly because he hunted a lot, and also because, as a

dragline mechanic, he had access to fresh cuts and wells all over the mining properties of the American Cyanamid Company. Joe, and his wife and daughter, were wonderful people and we spent many evenings looking through his collections and swapping tales. I'm sure I saw virtually all of his material. I asked him to donate only a few key specimens, which he did proudly, but I knew that he also relied on selling sharks teeth and other material to pay for his gas and museum overhead. He had a very sharp mind and never forgot the scientific names of the fossil animals. His museum exhibits were accurate yet creative. The one that cracked me up, however, was an archaeological case in which he had two human skulls, one fully mature and one adolescent. They were obviously excavated from dark soil from, as I recall, somewhere in Polk County. In order to spice up the exhibit case he claimed to know their names: one was Chief Osceola and the other was Osceola as a young man. I could never get Joe to change the sign, and on several occasions, I watched helplessly as wide-eyed tourists took in this information as if it were the gospel truth. Dr. Cliff Jeremiah, as historian/archivist for the FPS, produced a colorful tape of Joe reciting his own adaptation of the famous Langdon Smith poem that begins "When you were a tadpole and I was a fish, in the Paleozoic time." It is an absolute classic that should be played at FPS memorial occasions.

One of the very first people to clearly articulate the need for an amateur-professional interface in Florida paleontology was Margaret Thomas from Venice. Her first book was a very brief one called *Let's Find Fossils on the Beach*, much less sophisticated than her later one, still proudly distributed by the FPS. Yet her enthusiasm carried it through. She regularly sent queries up to Gainesville and also referred many of her friends in Sarasota County to the museum in Gainesville. Her vital role continued to grow as she promoted first the concept of a society and later the reality of the FPS.

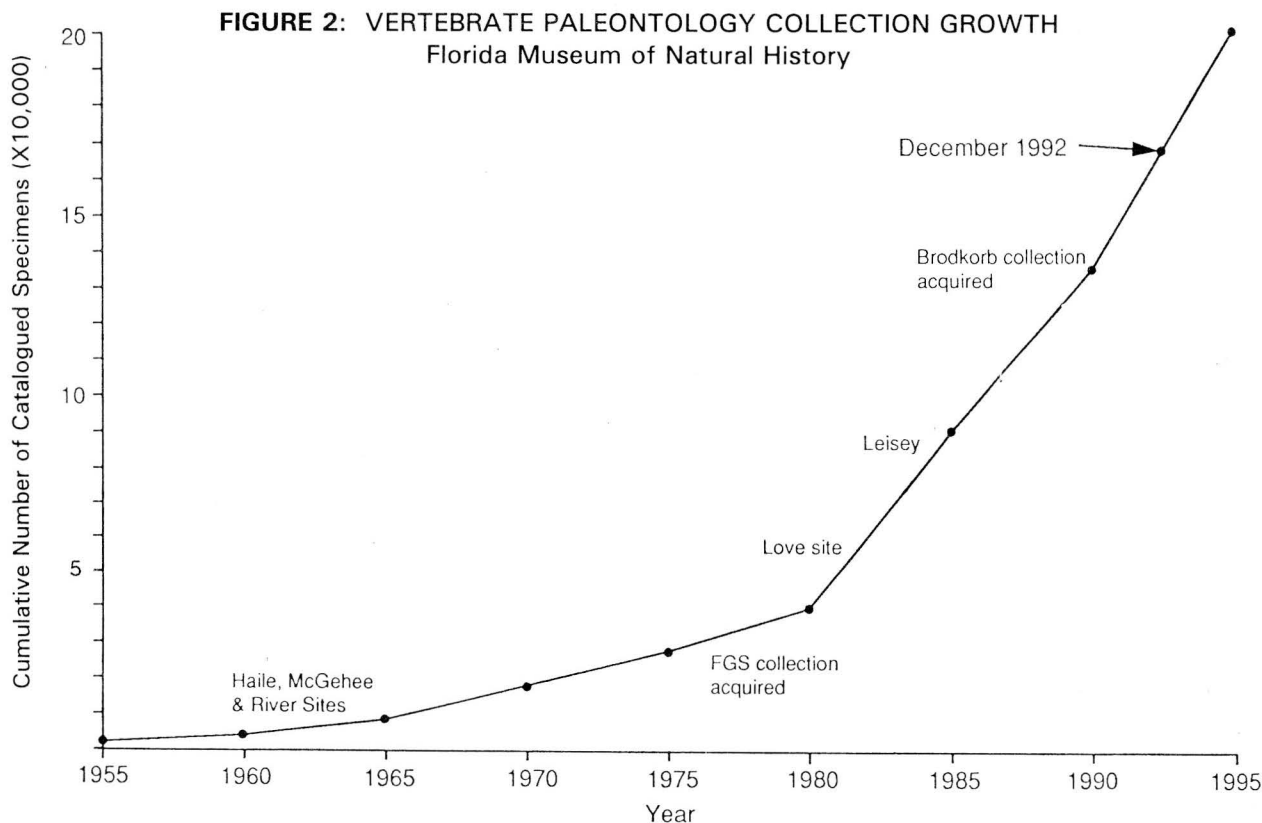
And last but not least came Frank Garcia. With his uncle he came to the museum in 1970 to show me some freshly-collected fossils from the Bone Valley. They included some very rare fossil pronghorn material. He generously contributed them and I proudly named one of them *Subantilocapra garciae*. Thus began one of the most productive alliances between an outstanding collector and a museum curator. I sincerely believe that this relationship,

leading from that pronghorn through *Kyptoceras amatorum* (the horned wonder on Bone Valley, discovered by Frank and named by me) and culminating in the Leisey Bone Bed project, is a model of how the amateur/professional symbiosis can and should operate. The name amatorum, incidentally, was given in honor of all amateur paleontologists, but is also a Latin pun emphasizing that we are all "lovers" of fossils.

These thriving collaborations between amateur and professional paleontologists placed Florida on the map. the Florida State Museum's vertebrate paleontology collections became the most actively growing in the country. in 1970, with a major grant from the National Science Foundation, the new museum building was constructed in the center of the University of Florida campus. That new facility gave even greater visibility to the museum and its collections. It also produced the first substantial, permanent, public exhibition of Florida fossils. The overall trajectory of the vertebrate paleontology collection at the University of Florida is shown in Figure 2.

Also with the construction of the new museum facility in Gainesville, the vertebrate paleontology division was authorized to add a fossil preparator. I was very fortunate to hire one of our own Florida amateur paleontologists, Howard C. Converse, Jr. Not only had he a variety of engineering expertise as an employee of Sperry/ Rand Corporation, but also he had conducted outstanding work as an amateur paleontologist at the West Palm Beach Site, including almost single-handedly mounting a mastodon skeleton at the science museum there. It is appropriate that at this Paleofest96 we give the ninth Converse Award to Dr. Robin C. Brown, recapitulating the tradition of excellence that defines our society.

I hope this brief account has conveyed a few highlights of the first decade of paleontological collection growth and professional-amateur affiliation that built the foundation for the Florida Paleontological Society. In the next issue our Newsletter I hope to reminisce about the formative years of our society, including its formal incorporation in 1978.



Minutes
Florida Paleontological Society
General Membership Meeting
November 9, 1997, Gainesville, FL

The meeting was called to order by President Susan Pendergraft at 3:10 P.M.

Phil Whisler presented the Treasurer's Report for the past year, and it was accepted by the membership.

Roger Portell reported on the current status of the Hulbert Plaster Jacket book which is currently undergoing final review prior to being submitted to the University of Florida Press for publishing. Some small additional costs may be incurred as part of this process. Roger also reported on the Papers in Florida Paleontology series which saw two issues this year after a several-year-long hiatus. He anticipates another two issues in 1997.

Our attempt to merge the funds from our scholarship program with the funds the museum has in the Britt Memorial Scholarship program failed because the U of F Foundation would not allow us to have control over the award.

The current slate of officers was elected without dissent and installed. New President Gordon Hubbell then took over and appointed a Spring Trip Committee of Susan Pendergraft, Barbara Toomey, Terry Sellari, Virginia Vierra, and Joyce Poulton. The committee was charged with attempting to find a location on the west coast where invertebrates would be available to collectors.

Following some discussion, it was decided to authorize Eric Taylor to locate and contract for a display board for the FPS to use at Fossil Fairs. One thousand dollars was allocated for this project.

President Hubbell suggested that the defunct concept of a Fossil Coordinator needed to be looked at again. This area will be investigated at the next Board meeting.

A concerted effort was directed towards the separation of our scholarship funds from the Society's general accounts. President Hubbell appointed two committees to handle this area. The Scholarship Committee is Phil Whisler, Steven Jacobsen, Barbara Toomey, Steve Manchester and Susan Pendergraft. The Finance Committee (which is charged with designing a more appropriate investment strategy for the Society's funds) consists of Frank Rupert as chairman, Phil Whisler, Jim Toomey and Roger Portell.

The project to establish a new member manual was discussed. Frank Rupert noted that one has been in the works for a couple years, and needs only to be finished as time permits.

Susan Pendergraft moved that the Society pay the expenses of a designated member to attend national meetings such as SVP. After discussion, the motion was tabled pending a formal proposal.

The meeting was adjourned at 5:10 P.M.

Respectfully submitted.

Eric G. Taylor
Secretary

Minutes
Florida Paleontological Society, Inc.
Board of Directors Meeting
November 9, 1996, Gainesville, Florida

Following adjournment of the general membership meeting, little time remained for a full Board meeting as an abbreviated session was convened immediately.

Two items were discussed. One was the problem of time to hold a Broad meeting when a full membership meeting preceded it. It was decided to try and hold the most important Board meeting in conjunction with the Spring meeting instead of the Fall meeting.

Dean Sligh presented the Board with a proposal for the FPS to collect and disseminate a series of rules or laws regarding access to collecting sites. Specifically, he related the problems his group has had in overcoming the fears of pit and land owners regarding allowing a group access to their property and their stated reasons regarding rules on natural resources such as archeological sites and so forth. Dean thought that a handbook could be developed that would allow those who wished to gain access to show the landowners that their fears were not grounded in fact.

After some discussion, it was decided that a thorough look at the ramifications of this proposal was needed and Dean was appointed to chair a committee on access. Other members were Joyce Bode, Steve Hutchens, Terry Sellari and Barbara Toomey.

Out of time, the meeting was adjourned.

Respectfully submitted,

Eric G. Taylor
Secretary

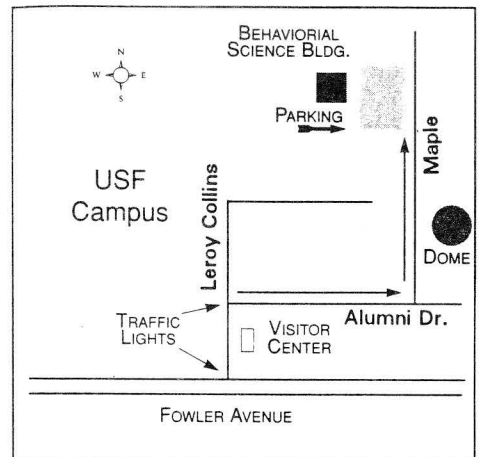
1997 FPS Spring Meeting

Saturday, May 3rd, 9:00 AM

University of South Florida

Behavioral Science Building, Room 103

Tampa, Florida



Tentative Schedule of Events:

Saturday, May 3rd:

9:00 AM-12:00 PM

Opening remarks and featured talk:

Why Sabertooth? - a discussion of species of sabertooth cats, why they developed sabers, and how they were used, by Dr. Larry Martin and John Babiartz.

12:00 -12:30 PM

Fossil Identification Session

12:30 - 1:00 PM

FPS Board Meeting

1:00 - 5:00 PM

Afternoon free for museum visits, socializing, or whatever. Groups will be visiting the following:

Museum of Science and Industry - Dinosaur Exhibit:
"Ceratopsians - Life and Times of the Horned Dinosaurs"
(\$8 adults, \$5 children, extra for MovieMax movie).

Life on Easy Street - Large and Rare Cat Exhibit
(free admission, but donations are appreciated).

5:00 - 8:00 PM

Italian Buffet Dinner, catered at the meeting room, featuring chicken parmigiana, salad, pastas, sauces, and veggies, followed by a Fossil Auction. Cost: \$14 adults, \$8.00 children under 12. *Please pre-pay with attached form.*

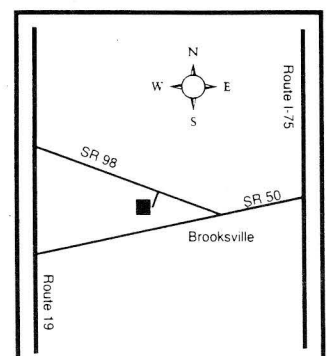
8:00 - 9:00 PM

Tampa Bay Fossil Club Meeting, with a talk by Dave Latasi on *Carnivores*. FPS members are welcome.

Sunday, May 4th:

10:00 AM

Invertebrate collecting trip to the Vulcan Mine, Brooksville (see map). Meet at the mine.



[Vulcan Mine Location >](#)

**Florida Paleontological Society
Spring Meeting 1997
Reservation Form**

**University of South Florida
Tampa, FL, May 3rd & 4th, 1997
(Please complete form and mail ASAP if you plan to attend)**

I (we) plan to attend the following portions of the Spring Meeting:

	Yes	No	Number of people
<u>Saturday, May 3</u> <i>(place checks/numbers in appropriate blanks)</i>			

Buffet Dinner:	_____	_____	_____
----------------	-------	-------	-------

Please enclose proper prepayment:

_____ Adults X \$14.00 plus _____ children under 12 yrs. X \$8.00 = _____ Total

	Yes	No	Number of People
<u>Sunday, May 4</u>			
Collecting trip to Vulcan Mine	_____	_____	_____

Please return form by ***April 23rd*** to:

Phil Whisler, Treasurer
Florida Paleontological Society
Florida Museum of Natural History
University of Florida
Gainesville, FL 32611



Prep Talk

by Russ McCarty

Greetings from the bone lab. The weather, of late, has been perfect for getting out in the field. Too bad I don't have a productive site full of interesting new and well preserved critters; a site located in easy-to-dig, soft, friable sand, and one that is located under some shady trees close enough to the ocean to have a cool, refreshing breeze blowing constantly over it. Oh! I almost forgot---I'd like it to have a wonderful little restaurant situated nearby, one that serves great food and ice cold beer. Gee! I don't want much do I? But if that site exists some where outside of my dreams, or the "Great Boneyard in the Sky", I wish some kind soul out there would tell me know where it is.

Hello Dolly!

For the past few weeks the scientific community has been abuzz with news of the first true cloning of a higher vertebrate. Dolly, a 6 month old sheep is basking (actually, it's very hard to bask in Scotland during the winter) in her unique fame in the UK, a perfect duplicate of the donor sheep which provided the genetic material for the egg from which Dolly grew. A feat of this magnitude, heretofore found only in science fiction stories, was bound to carry a lot more baggage with it than mere scientific curiosity. Fueled by reports and speculations headlining the media and supermarket tabloids, theologians, philosophers, and social commentators of every ilk---including bartenders and barbers joined the fray. You see, they knew, as we all know, just what happens when you place Pandora's Box, or the Tree of Knowledge (choose your metaphor) in front of those inquisitive primates called *Homo*

sapiens. The box will be opened, the apple will be eaten---that's the way we are. So stay tuned for announcements of the first cloned human. It won't be long.

Can this mean that Jurassic Park is a lot closer than we think? I think so, or at least some variation of that theme. The methods used to clone Dolly could certainly be used to restore some extinct species, but the success of such a project would necessarily depend on the recovery of viable, complete, and intact DNA. A few intriguing possibilities might include such things as frozen mammoths and bison found in the permafrost of Siberia and Alaska, or mummified ground sloths from the Andean caves of South America. Dried skins of recently extinct birds, and mammals are also possible sources of DNA for cloning. Perhaps clones of frozen humans such as the Iceman found in the Alps a few years ago, or of the tannin preserved Bog People who are periodically recovered from Western European bogs will wake up to the 21st Century. In the old 1940s "Curse of the Mummy" movies, it took 12 "tanna" leaves to bring Karis the mummy back to life, and even then, he was a raggedy old thing with a pronounced limp. Just think what cloning could do for Karis and Princess Ananka, now

Cave Collecting in Florida

The state of Florida is a vast karst region. Karst, named after an area near Trieste in Yugoslavia, is an area where the underlying rock is primarily carbonate in nature, either limestone or dolomite. Groundwater and carbon dioxide which combine to produce a weak solution of carbonic acid, will, over long periods of time dissolve and carve out numerous voids in the carbonate rock. These voids may be called, variously, caves, sink-holes, solution tubes, or other named features of carbonate rock. Anyone who has ever visited a cave or limerock quarry is familiar with numerous, interlocking fissures, voids, and channels which can be seen in exposed limestone walls.

In Florida, the oldest limestones, which underlie the entire state, are the Eocene limestones laid down more than 40 million years ago. In a few areas, younger limestones, such as the Suwannee limestone which dates from the Oligocene, lie on top of the Eocene limestone. Since, cave formation, and other limestone dissolution features are ongoing processes, we can find caves and other features which date from Pleistocene all the way back to the Eocene. Caves, sinkholes, solution tubes and other karst features attract animals in numerous ways. Some animals such as snakes, bats, birds, rodents, and raccoons, and many predators find shelter in them. Others hunt for food in the caves. There are even unintentional visitors to caves---those who fall into them---and those who are dragged there as dinner.

With all this biological traffic occurring in and out of caves and other karst features, it is not surprising that these locations have become rich repositories for fossils. Sediment cones formed from silt and soil runoff from surface openings into caves, sink-holes, and solution tubes invariably produce many fossils, large and small. A cave near Newberry, in Alachua County, has sediment cones which have yielded many late Pleistocene animals. One particularly large cone is beneath a blocked opening that once led to the ground surface. In the sediments of this unique cone were found the usual tortoises and armadillos, animals which seem overly prone to such mishaps, but in this particular case the sediments yielded some surprising visitors---several baby mastodons that had fallen into the opening.

Fossils are found in other areas of caves as well as sediment cones. A Pleistocene bear, dire wolf, or cat that had once used the cave as a den could have left its own bones there to be covered by silts and organic detritus which find their way into caves. In the limestone, itself, can be found both invertebrate and marine vertebrate fossils.

As well a variety of locations where fossils are found in caves, there are also various kinds of

fossil preservation found within a cave. Late Pleistocene fossils recovered from sediment cones of Florida caves may be composed of collagen-rich sub fossil bone that is soft, punky and often very damp. Other bones may be exposed to the drip of calcium rich water in some caves and become extremely hard and highly mineralized. Preservation of invertebrates and marine vertebrates found in the limestone is generally quite good.

Each type of fossil preservation may require its own special collection techniques. The silty sand and clays found in sediment cones is usually friable and can be dug with small hand tools. Protective jackets made with plaster bandages work well for removing bones from the sediment cones. Since bones from these deposits tend to be very soft, it might be necessary in some cases to apply a consolidant to harden the bone before removal. As a rule, the damp specimens and high humidities found in Florida caves preclude the use of acetone based hardeners such as Butvar 76 or Acryloid B-72. Instead, water based resins such as Rhoplex or Acrysol are most compatible with the damp bone. Acrysol is especially good as a damp environment consolidant since it can be easily re-dissolved later with acetone or plain ethanol. At that point, a routine hardener such as Butvar or Acryloid B-72 can be applied to the specimen.

One method developed by Dan Chaney, from the Smithsonian, to collect extremely fragile fossils is the PEG method. It is a method of last resort, because once PEG is applied to a specimen, no other glues or hardeners will adhere to it or be absorbed. PEG or polyethylene glycol, also called Carbowax, is a water soluble wax used to preserve wooden artifacts. It also has a very low melting temperature, ca. 115 degrees F. Chaney melted PEG in a small can over a Sterno heat source, then brushed or poured the melted wax over the fragile specimen. The wax cools in minutes and a plaster jacket is then applied. The specimen is then flipped over, matrix removed, and more hot wax applied, and more plaster

bandage to complete the jacket. Back in the lab, excess wax can be removed by placing absorbent paper towels over the specimen and heating in an oven.

Collecting the harder, more mineralized specimens from the limestone, or the calcified, or silicified specimens under drip or moving water will require use of hammer, chisel, and protective goggles, techniques used in surface collecting. Common sense would suggest that only specimens which can be removed from a cave should be excavated. Like the proverbial boat built in the basement, excavating and jacketing a mammoth skull in a cave is an exercise in futility if the entrance to the cave is barely large enough for a person to exit.

Caving can be dangerous. Individuals who want to collect fossils in caves should be trained in the rules and procedures of safe caving. Contact a branch of the Florida Speleological Society (P.O. Box 12581, Gainesville, FL 32604-2581) for more information. Remember that caves, as well as being unique, irreplaceable geological features, are fragile ecosystems that can be permanently harmed by your activities. Leave them as you found them.

Butvar, Acrysol, Acryloid B-72, and Carbowax are available from:
 Conservation Materials Ltd.
 1165 Marietta way
 Sparks, NV 89431 Tel: (702) 331-0582

Here are some helpful references:

Chaney, D.S. 1988. Techniques used in collecting fossil vertebrates on the Antarctic Peninsula. GSA Memoir 169.21-24.


Grady, Frederick. 1994. "Collecting in Caves" in Vertebrate Paleontological Techniques, Vol. 1, Edited by Patrick Leiggi and Peter May, Cambridge Univ. Press.

----- 1981. The Hamilton Cave Jaguar. Potomac Caver 24(4):3.

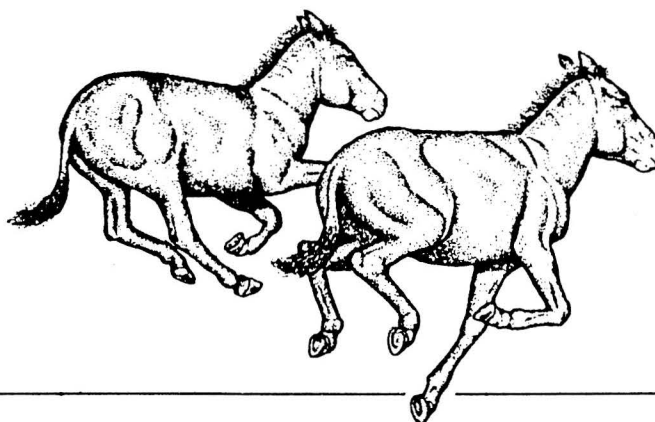
----- 1981. Saber toothed cats from West Virginia caves. D.C. Speleograph 37(9):9

Questions, comments, and suggestions should be directed to Russ McCarty at the VP Prep Lab, Florida Museum of Natural History, University of Florida, Gainesville, FL 32611. Telephone: (352) 392-1721. Email: Cormac@flmnh.ufl.edu

An FPS Exclusive...

HANDBOOK OF PALEO-PREPARATION TECHNIQUES	FLORIDA PALEONTOLOGICAL SOCIETY, INC. FLORIDA MUSEUM OF NATURAL HISTORY UNIVERSITY OF FLORIDA GAINESVILLE, FLORIDA 32611			Minimum 10 books per order
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1st Annual
Pony Express
Lab Session



Thursday evening, 19 June to Saturday 4 PM, June 21, 1997

Return the Form Below to Reserve Your Place in the Lab

We are planning our first Lab Session to process the fossils discovered during the Thomas Farm spring digs. With this session we will be able to keep up the curation of the greater volume of fossils generated by our third field session and have it finished before 1998.

This will be an exciting new experience for many of you. We will sort, identify and paint stripes on the fossils thus preparing them for quick and easy cataloging. Russ McCarty is planning a prep-lab detail, and for those who like micro-fossils, there will be matrix sorting as well.

In order to provide individual attention in these activities we must limit this session to 15 participants. Accommodations and meals (except those stated) are up to participants. We will provide a list of affordable hotels and restaurants. The session will begin with a welcome social (Thursday evening) followed by a full Friday and 3/4 of Saturday to spend in the Lab. Friday night we'll have one of Bruce's famous Bar-B-Ques.

Note:

- The cost for the lab session is \$100 per person
- Send no money now, you will be asked to send a deposit in May.
- Your completing the attached form represents a non-binding statement of intent to allow us to plan.

Number of Reservations _____

Name(s) _____

Phone: _____

Address _____

Special Requests _____

Detach and return this form to: *Pony Express*, Florida Museum of Natural History,
University of Florida, Gainesville FL 32611-7800 (use the envelope if you so desire)

Send no money now!

Whose Tooth Is This?

The Perissodactyla

by
David Thulman

The Perissodactyla (ungulates with an odd number of toes) in Florida's fossil record included the Equidae (horses), the Tapiridae (tapirs), the Rhinocerotidae (rhinoceroses), and the Chalicotheriidae (chalicotheres). The heyday of perissodactyls in Florida was in the Miocene when dozens of species roamed the landscape. The rhinos and chalicotheres disappeared from Florida by the very early Pliocene, and by the end of the Pliocene only three genera of horses (two hipparions and one equine) and one genus of tapir remained. By the end of the Pleistocene, all the perissodactyls were gone from Florida.

Even though tapirs and horses both chew from side to side there are major differences in their dentitions. While perissodactyls probably evolved from a common browsing ancestor, horses eventually made the shift to grazing on grass. Munching on tough abrasive grasses tends to wear teeth quickly so horses compensated by evolving continuously growing, high-crowned teeth which only become rooted later in life. Meanwhile, tapirs continued to browse on succulent aquatic and low-growing terrestrial plants and so did not require the same evolutionary changes their as cousins the horses.

Tapiridae

Two tapirs were present in the Pleistocene of Florida: *Tapirus haysii* (early to early middle Pleistocene) and *Tapirus veroensis* (late middle to late Pleistocene). *T. haysii* was the larger of the two and their teeth can only be differentiated from *T. veroensis* through statistical analysis of a sufficiently large sample. *The Checklist of the Fossil Vertebrates of Florida*, by Richard C. Hulbert, Jr., remarks that all late Pleistocene occurrences of *T. haysii* are now considered large individuals of *T. veroensis*. The tapir tooth formula is I 3/3, C 1/1, P 4/3 or 4, M 3/3. Tapir teeth have thick enamel crowns with no

cementum which often survive intact. Their tough teeth coupled with their life near the water makes tapir teeth a common find in Florida's rivers.

Tapir cheek teeth are bilophodont which means they have two parallel ridges which in tapirs run buccal-lingual (cheek-tongue). **Figure 1** is a set of upper cheek teeth, p^1 (arrow) - m^3 . The ridge pattern is highlighted on m^2 . **Figure 2** is a set of lower cheek teeth, p_2 - m_3 . The ridge pattern is also highlighted on m_2 . When the ridges are intact, uppers and lowers are easily distinguished because the ridges on the upper teeth are connected while the ridges on the lower teeth are separate. **Figure 3** shows two lower cheek teeth and the separation of the ridges. The roots of the uppers and lowers are also different. On the lowers the two roots under each ridge are fused as highlighted on **Figure 3**. In the uppers, the buccal-side and lingual-side roots, respectively, are fused, perpendicular to the orientation of the ridges on the crowns.

Figure 4 shows lower incisors (i_1 , i_2 and i_3) and the canine (arrow). The canine has two distinctive flanges. **Figure 5** shows typical heavy wear patterns on the cheek teeth. At this point it is difficult to tell whether these are upper or lower teeth. **Figure 6** shows three lower cheek teeth from a modern manatee (*Trichechus manatus*) which superficially look like worn and unworn tapir teeth. The difference is size. This specimen is about half the size of *T. haysii*.

I have not included pictures of *T. veroensis* since the teeth look the same, however, I included dimensions of a specimen in the Vital Statistics section at the end of the article.

Equidae

Horses of all sizes scampered about Florida in the Miocene. Their numbers and diversity

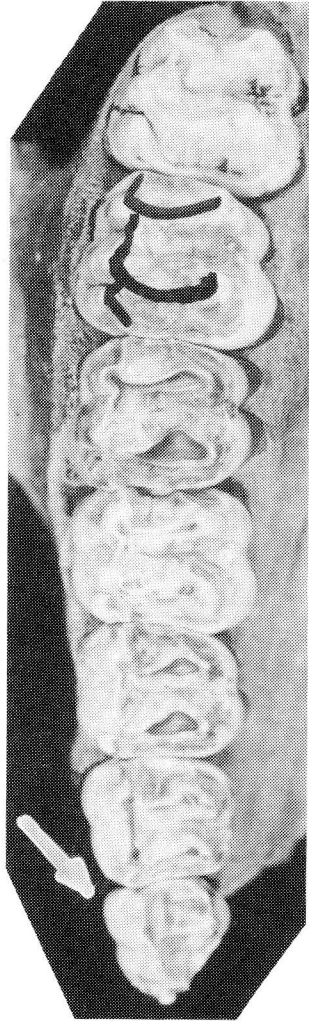


Figure 1.



Figure 2.

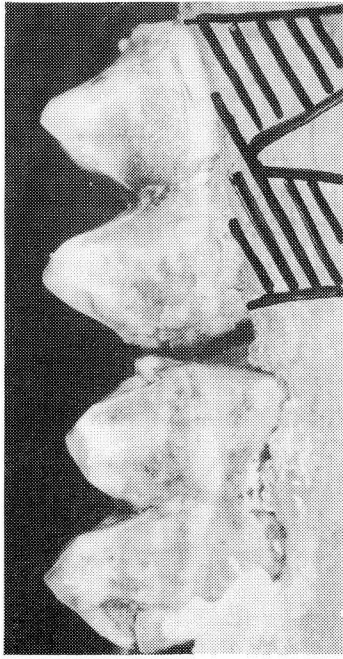


Figure 3.

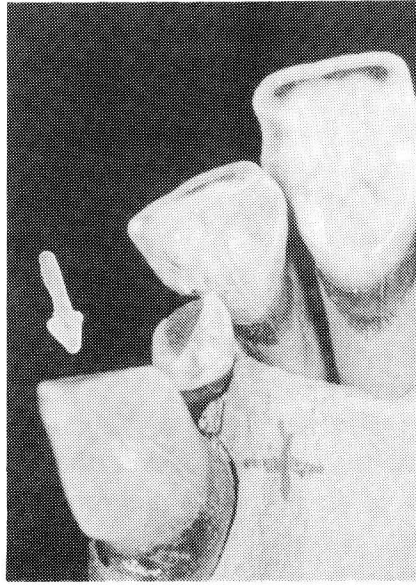


Figure 4.

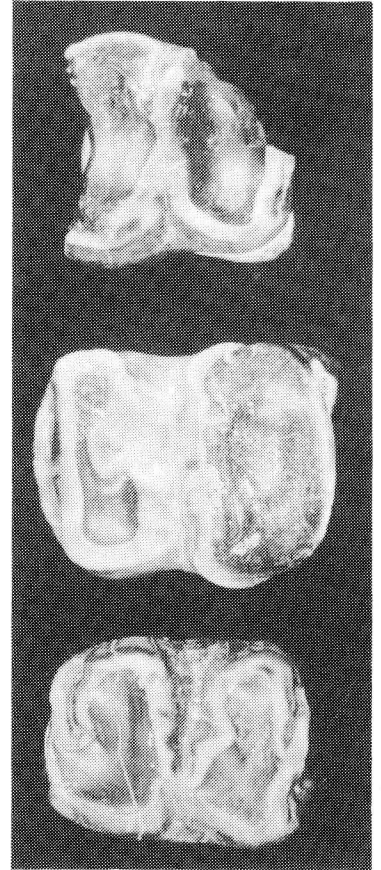


Figure 5.

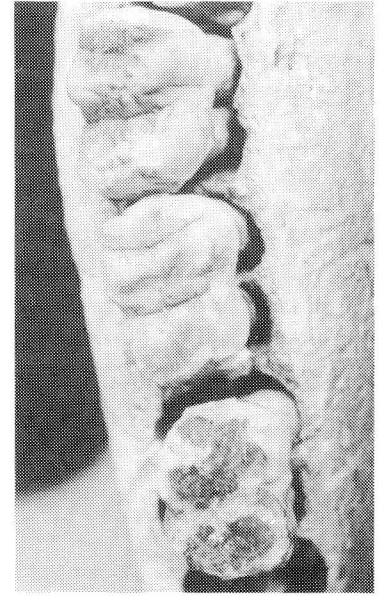


Figure 6.

have been likened to the antelopes and other artiodactyls which populate the African plains today. Even by the end of the Pleistocene when only *Equus* survived in Florida, they must have formed huge herds, if the number of *Equus* fossil teeth found today are any indication.

I have included two hipparions (three-toed horses) and one equine (single-toed horse) in this article: *Cormohipparion emsliei* and *Nannippus peninsulatus*. The teeth of hipparions present some interesting comparisons with *Equus* and *N. peninsulatus* is sometimes found in conjunction with early Pleistocene *Equus*.

These Plio-Pleistocene horse teeth are hypsodont, which means they are high-crowned. There is a layer of cementum over the entire tooth. The enamel patterns can change considerably as the animal ages. Since crown wear is a function of age and an abrasive diet, I did not include any crown height measurements in the Vital Statistics section. Canines are typically found in males but may be absent from the females. The first premolar, or wolf tooth, is rudimentary and frequently missing.

Cormohipparion emsliei

C. emsliei is found from the very late Miocene through the late Pliocene. **Figure 7** shows a maxillary fragment with $p^3 - m^2$ (arrow). The protocones, which are features in the enamel pattern, are highlighted on all the teeth. **Figure 8** are two mandibular fragments with left $p_3 - m_1$ and right p_2 (arrow). The black arrow points to infoldings of the cusps on the lower teeth which I refer to as the "bowtie" and "notch."

Nannippus peninsulatus (*N. phlegon*)

N. peninsulatus was an antelope-like hipparion with long slender legs and a small skeleton. It is found in the very late Miocene through the early Pleistocene. **Figure 9** is a mandibular fragment with $p_3 - m_2$ (arrow). The figure has the "bowtie" and "notch" features highlighted on all the teeth. The differences between the bowties shows how radically different tooth wear can affect the crown enamel patterns.

Equus sp.

Equus teeth are commonly found almost everywhere in Florida, which is a testament to the abundance of this animal and the toughness of its teeth. **Figure 10** is a complete set of lower cheek teeth, p_2 (arrow) - m_3 . The bowties and notches are all highlighted. **Figure 11** is a complete set of upper cheek teeth, p^2 (arrow) - m^3 . The protocones are all highlighted. **Figures 12 and 13** are the upper and lower incisors and canines, respectively. The arrows indicate the first incisor. The canines are easy to identify because they have a buccal crest which overlaps the lingual crest. This is highlighted in **Figure 13**. **Figure 14** demonstrates how crown height shortens with age. All the teeth are lower second premolars, the shortest is from the oldest animal. **Figure 15** is the crown of an unerupted cheek tooth. The highlighted crown pattern is entirely different from the worn tooth patterns in **Figures 10 and 11**. **Figure 16** is a set of upper cheek teeth showing how they are rooted in the skull.

There are a few rules of thumb for distinguishing between the teeth of hipparions and equines. In general, equine teeth are almost always larger than the hipparion teeth. In the lower teeth, the bowties of hipparions are generally more rounded while the bowties in equines are more angular (at least until very late in wear when the equines also become more rounded). Compare **Figures 9 and 10**. The notches in hipparions generally intrude closer to the bowtie than in equines. In the upper teeth, the protocones in hipparions are separate and rounded while in equines the protocone is angular and connected to rest of the enamel pattern. Compare **Figures 7 and 11**.

Vital Statistics

All measurements are in millimeters and measured Length of crown x buccal-lingual Width of crown x Height of crown unless otherwise noted.

Figure 1: (UF 84190) p^1 20x21x20, p^2 21x25x20, p^3 22x28x20, m^1 23x30x20, m^2 27x34x20, m^3 24x33x20.

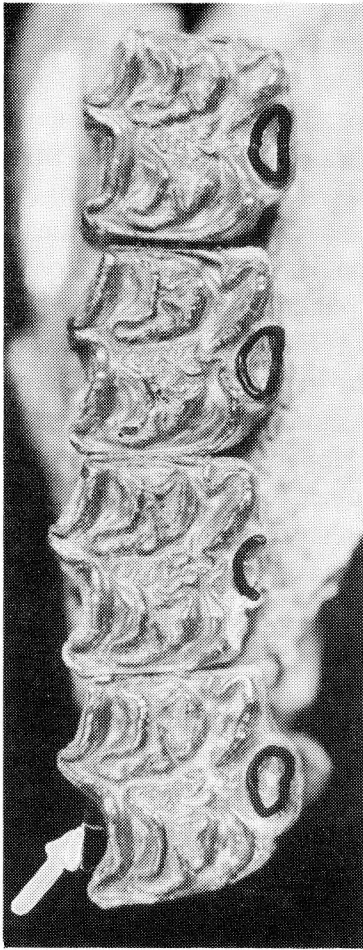


Figure 7.

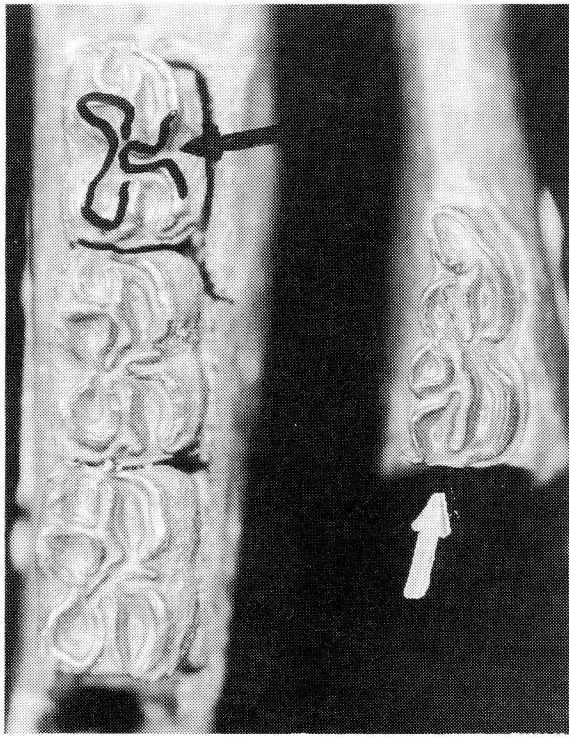


Figure 8.

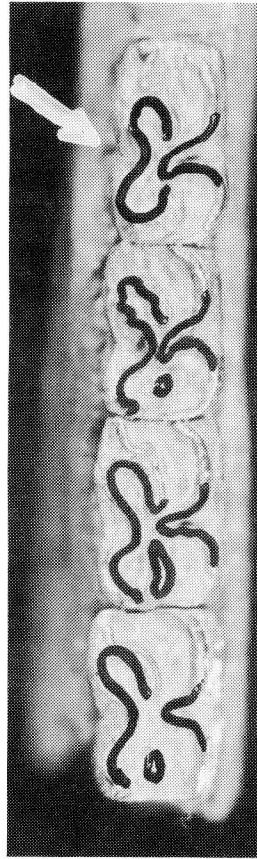


Figure 9.

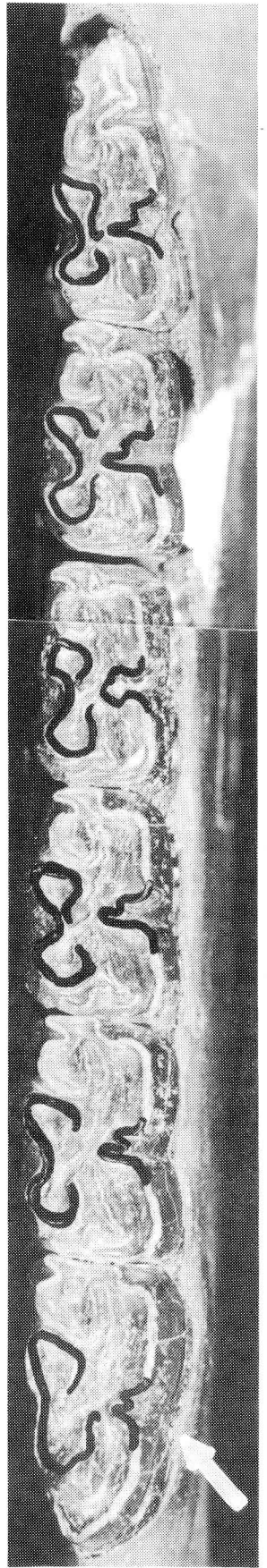


Figure 10.

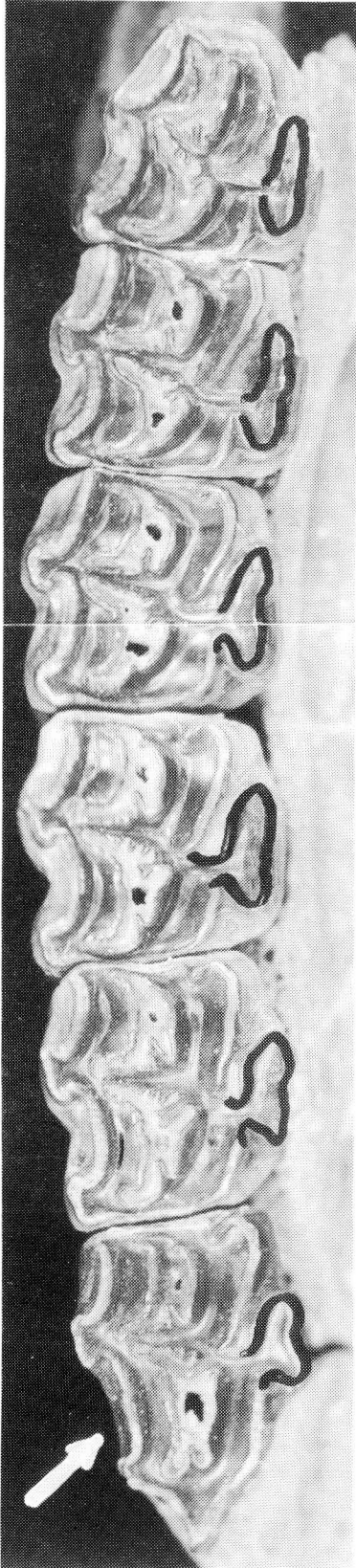


Figure 11.

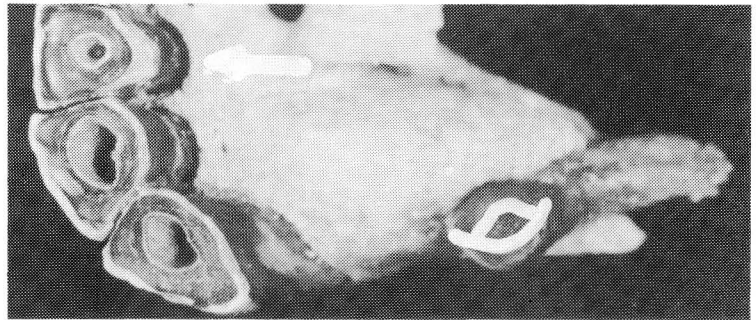


Figure 13.

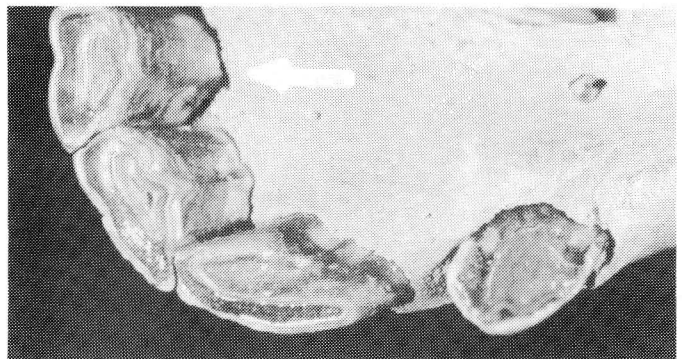


Figure 12.

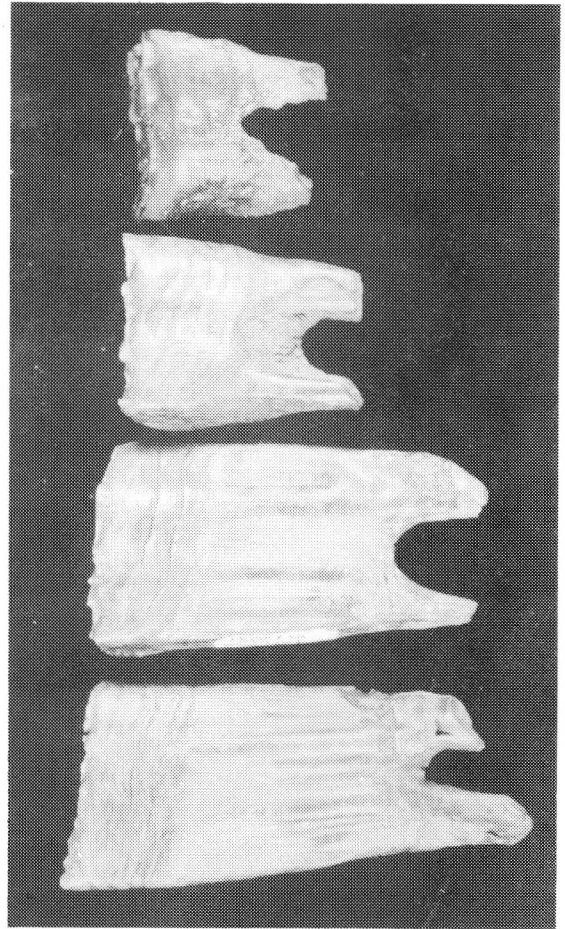


Figure 14.

Figure 2: (UF 80973) P₂ 28x17x17, p₃ 22x18x17, p₄ 24x20x17, m₁ 25x22x17, m₂ 26x21x17, m₃ 28x21x17.

T. veroensis measurements. All crown heights are 11mm-14mm: Upper cheek teeth (UF V277) P¹ 17x15, p² 18x23, p³ 19x25, p⁴ 18x27, m¹ 25x26, m² 25x29, m³ 26x29. Lower cheek teeth (UF 140644) P₂ 21x14, p₃ 24x18, p₄ 23x20, m₁ 23x18, m₂ 25x20, m₃ 23x20.

Figure 4: I₁ 13x13x18, i₂ 13x11x12, i₃ 5x7x13, c 13x7x17.

Figure 5: (UF 86940), (UF 86941), (UF 87468).

Figure 6: 11x13

Figure 7: (UF 124200) P³ 17x18, p⁴ 17x18, m¹ 18x18, m² 18x18.

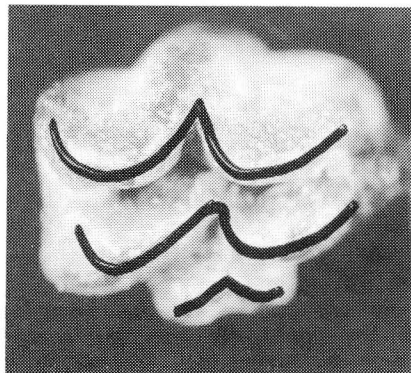


Figure 15.

Figure 8: (UF 124198) P₃ 16x12, p₄ 17x13, m₁ 16x11, (UF 124198) p₂ 22x10.

Figure 9: (UF 7259) P₃ 14x9, p₄ 14x9, m₁ 14x10, m₂ 14x10.

Figure 10: (UF 80089) P₂ 33x18, p₃ 28x18, p₄ 28x18, m₁ 26x16, m₂ 27x17, m₃ 32x16.

Figure 11: (UF 80850) P² 32x22, p³ 25x25, p⁴ 24x26, m¹ 22x26, m² 20x26, m³ 22x22.

Figure 12: (UF 81372) I¹ 12x12, i² 17x12, i³ 18x11, c 12x9.

Figure 13: (UF 83449) I₁ 15x8, i₂ 18x8, i₃ 20x8, c 14x8. The length of the enamel on the anterior edge of the incisors is about 40mm in this specimen.

Figure 14: (UF 85940) 53mm tooth length, (UF 84504), (UF 85939), (UF 65449) 16mm tooth length.

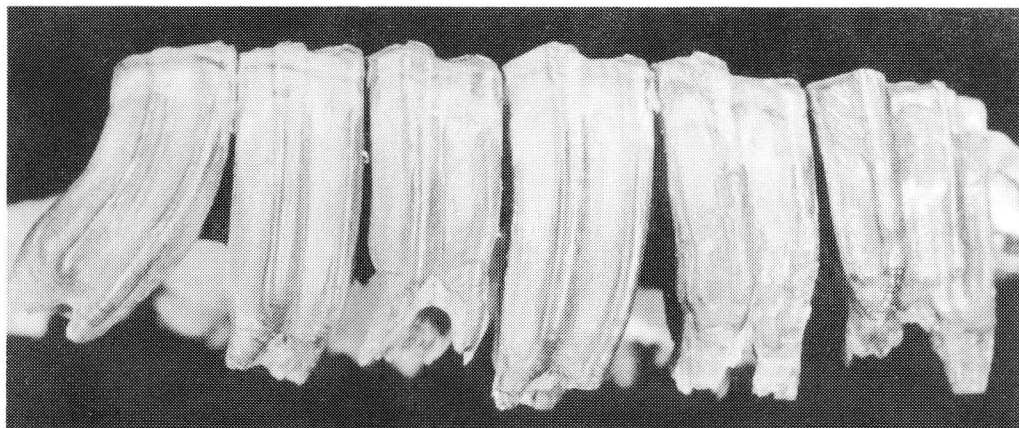


Figure 16.



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TYPE OF MEMBERSHIP

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PLEASE COMPLETE PERSONAL FACT SHEET BELOW IF NEW OR CHANGES
HAVE OCCURRED SINCE PREVIOUS YEAR.

NOTE!!! MEMBERSHIPS ARE FOR A CALENDAR YEAR AND ARE DUE NO LATER THAN
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<u>VERTEBRATE</u>	<u>INVERTEBRATE</u>	<u>BOTANY</u>	<u>MICRO</u>
PLEISTOCENE _____	_____	_____	_____
PLIOCENE _____	_____	_____	_____
MIOCENE _____	_____	_____	_____
OLIGOCENE _____	_____	_____	_____
EOCENE _____	_____	_____	_____
EARLIER _____	_____	_____	_____

4. LIST ANY PREFERRED TYPES (Horses, Sloths, Echinoids etc.) _____

5. LIST ANY PUBLISHED WORKS ON PALEONTOLOGICAL SUBJECTS.

6. DO YOU BUY _____ TRADE _____ FIND _____ FOSSILS?

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PLEASE USE AN ADDITIONAL SHEET IF REQUIRED! THANK YOU!

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FLORIDA PALEONTOLOGICAL SOCIETY, INC.

As stated in the Articles of Incorporation, "The purposes of this Corporation shall be to advance the science of Paleontology, especially in Florida, to disseminate knowledge of this subject and to facilitate cooperation of all persons concerned with the history, stratigraphy, evolution, ecology, anatomy, and taxonomy of Florida's past fauna and flora. The Corporation shall also be concerned with the collection and preservation of Florida fossils." (Article III, Section 1).

CODE OF ETHICS

ARTICLE IX

- Section 1. Members of the Florida Paleontological Society, Inc., are expected to respect all private and public properties.
- Section 2. No member shall collect without appropriate permission on private or public properties.
- Section 3. Members should make a sincere effort to keep themselves informed of laws, regulations, and rules on collecting on private or public properties.
- Section 4. Members shall not use firearms, blasting equipment, or dredging apparatuses without appropriate licenses and permits.
- Section 5. Members shall dispose of litter properly.
- Section 6. Members shall report to proper state offices any seemingly important paleontological and archaeological sites.
- Section 7. Members shall respect and cooperate with field trip leaders or designated authorities in all collecting areas.
- Section 8. Members shall appreciate and protect our heritage of natural resources.
- Section 9. Members shall conduct themselves in a manner that best represents the Florida Paleontological Society, Inc.

ANNUAL DUES for the FPS are \$5.00 for Associate Membership (persons under age 18) and \$15.00 for Full Membership (persons over age 18) and Institutional Subscriptions. Couples may join for \$20.00, and Family memberships (3 or more persons) are available for \$25.00. A Sustaining membership is also available for \$50. Persons interested in FPS membership need only send their names, addresses, and appropriate dues to the Secretary, Florida Paleontological Society, Inc., at the address inside the front cover. Please make checks payable to the FPS. Members receive a membership card, the FPS newsletter, the Papers in Florida Paleontology, and other random publications entitled to members.

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