



Florida Paleontological Society, Inc. Newsletter

Winter 2021
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View of the shell pit in Charlotte County, southwest Florida

Fall Meeting 2021— by Jack Boyce

The FPS Fall 2021 meeting was held from November 19th - 21st. It was convened in Punta Gorda, Florida on the evening of November 19th with discussions over dinner at a Seafood Grill on Tamiami Trail.

On the morning of the 20th, following a short drive from the Holiday Inn parking lot through Charlotte County, attendees gathered to collect fossils from a Plio-Pleistocene quarry and shell pit in Charlotte County. Although lower, middle and upper Pleistocene deposits were exposed in the quarry, most of the shells were from the Lower Pleistocene Caloosahatchee Formation. The Ochopee Member of the Tamiami Formation is present in the quarry as well so upper Pliocene finds were possible.

The weather was almost perfect for hunting fossils on land in Florida. Temperatures averaged 72°F, with some brisk winds around 15 mph, and rain sprinkles holding off until the last 30 minutes.

Formations

Shelly sediments of Plio-Pleistocene age (Pliocene/Pleistocene) at surface, covers 93% of this area

Tertiary-Quaternary Fossiliferous Sediments of southern Florida - Mollusk-bearing sediments of southern Florida contain some of the most abundant and diverse fossil faunas in the world. The origin of these accumulations of fossil mollusks is imprecisely known (Allmon, 1992). The shell beds have attracted much attention due to the abundance and preservation of the fossils but the biostratigraphy and lithostratigraphy of the units has not been well defined (Scott, 1992). Scott and Wingard (1995) discussed the problems associated with biostratigraphy and lithostratigraphy of the Plio-Pleistocene in southern Florida.

Fall Meeting 2021, continued

These formations are biostratigraphic units. The formations previously recognized within the latest Tertiary-Quaternary section of southern Florida include the lower Pleistocene Caloosahatchee Formation, the middle Pleistocene Bermont formation (informal) and the upper Pleistocene Fort Thompson Formation. This section consists of fossiliferous sands and carbonates. The identification of these units is problematic unless the index molluscan species are recognized. Often exposures are not extensive enough to facilitate the collection of representative faunal samples to properly discern the biostratigraphic identification of the formation. In an attempt to alleviate the inherent problems in the biostratigraphic recognition of lithostratigraphic units, Scott (1992) suggested grouping the upper Pliocene through lower Pleistocene Caloosahatchee, Bermont and Fort Thompson Formations in to a single lithostratigraphic entity, the Okeechobee formation (informal). In mapping the shelly sands and carbonates, a generalized grouping as Tertiary-Quaternary shell units (TQsu) was utilized. This is equivalent to the informal Okeechobee formation. The distribution of the Caloosahatchee and Fort Thompson Formations are shown on previous geologic maps by Cooke (1945), Vernon and Puri (1964) and Brooks (1982). Lithologically these sediments are complex, varying from unconsolidated, variably calcareous and fossiliferous quartz sands to well indurated, sandy, fossiliferous limestones (both marine and freshwater). Clayey sands and sandy clays are present. However, the Okeechobee formation has not widely been accepted.

Tamiami Formation (Pliocene) at surface, covers 1 % of this area

The Tamiami Formation (Mansfield, 1939) is a poorly defined lithostratigraphic unit containing a wide range of mixed carbonate-siliciclastic lithologies and associated faunas (Missimer, 1992). It occurs at or near the land surface in Charlotte, Lee, Hendry, Collier and Monroe Counties in the southern peninsula. A number of named and unnamed members are recognized within the Tamiami Formation. These include: the Buckingham Limestone Member; an unnamed tan clay and sand; an oyster (*Hyotissa*) facies, a sand facies, the Ochopee Limestone Member, the Bonita Springs Marl Member; an unnamed limestone facies; the Golden Gate Reef Member; and the Pinecrest Sand Member (Missimer, 1992).

The individual members of the Tamiami Formation were not separately mapped on the geological map. Lithologies of the Tamiami Formation in the mapped area include: 1) light

gray to tan, unconsolidated, fine to coarse grained, fossiliferous sand; 2) light gray to green, poorly consolidated, fossiliferous sandy clay to clayey sand; 3) light gray, poorly consolidated, very fine to medium grained, calcareous, fossiliferous sand; 4) white to light gray, poorly consolidated, sandy, fossiliferous limestone; and 5) white to light gray, moderately to well indurated, sandy, fossiliferous limestone. Phosphate is present in virtually all lithologies as limited quantities of sand- to gravel-sized grains. Fossils present in the Tamiami Formation occur as molds, casts, and original material. The fossils present include barnacles, mollusks, corals, echinoids, foraminifers and calcareous nannoplankton.

Additional Formations:

Holocene sediments (Holocene) at surface, covers 5 % of this area
Undifferentiated sediments (Pleistocene/Holocene) at surface
Hawthorn Group, Peace River Formation (Miocene/Pliocene) at surface

<https://mrddata.usgs.gov/geology/state/fips-unit.php?code=f12015>

As it turned out, most of the attendees on the FPS trip were not there to marvel at the clays. They were more interested in the fossils of the lower Pleistocene Caloosahatchee Formation and middle Pleistocene Bermont Formation. Molluscan fossils are the most abundant encountered in the quarry, particularly in the limestones of the lower part of the section, but they are also locally abundant in some of the clayey sands. However, before you get to hunt, there are some rules and regulations (see image on page 3).

(report continues on page 10)



Members at the quarry with empty buckets, all are listening to Carmi Milagros Thompson discuss the geology and age of the site, and the types and diversity of fossils we are likely to find. A final reminder that we are guests on private property. We individually need follow the rules: wear protective equipment like hardhats and bright vests; stay far away from earth moving equipment and do not interfere with the employees currently working. Hunting in a quarry is a great gift. Let's all make sure the owner realizes that FPS members appreciate it.

Fall Meeting 2021, continued

What types of fossils were found?

Gastropods



Hystrivasum horridum



Diodora caloosaensis



Lobatus leidy

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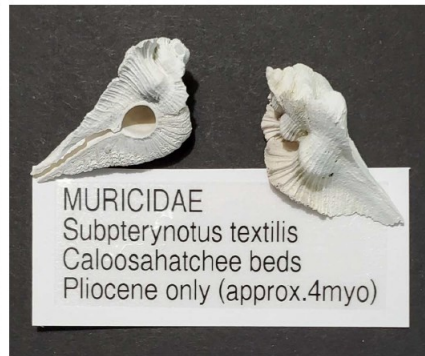
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CYPRAEIDAE
Siphocypraea problematica
 Caloosahatchee beds
 Pliocene only (approx.4myo)

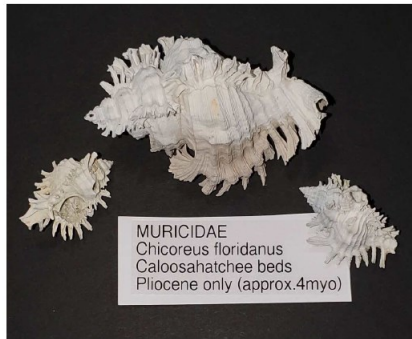
Juvenile

Siphocypraea problematica



MURICIDAE
Subpterynotus textilis
 Caloosahatchee beds
 Pliocene only (approx.4myo)

Subpterynotus textilis



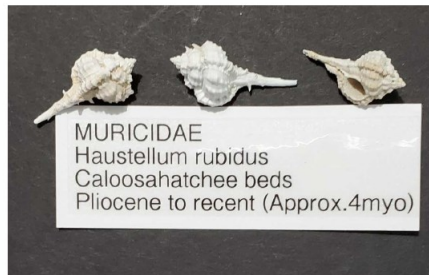
MURICIDAE
Chicoreus floridanus
 Caloosahatchee beds
 Pliocene only (approx.4myo)

Chicoreus floridanus



MURICIDAE
Phyllonotus globosus
 Caloosahatchee beds
 Pliocene to Pleistocene (approx.4myo)

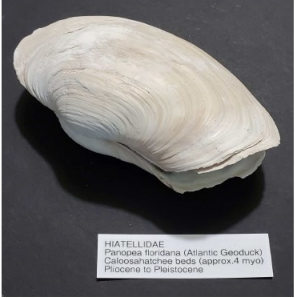
Phyllonotus globosus



MURICIDAE
Vokesimurex rubidus
 Caloosahatchee beds
 Pliocene to recent (Approx.4myo)

Vokesimurex rubidus

Bivalves



Panopea floridana



Noetia ponderosa



Anadara crassicosta



Stralopecten caloosaensis



Mammals

In a small section of the quarry, there were mammal fossils including vertebrae, long bones, and teeth plus a few shark teeth including *Carcharodon carcharias* (Great White Shark), *Carcharhinus leucas* (Bull Shark), and *Carcharodon hastalis* (Mako Shark). The vast majority of fossil finds in this quarry were shells.

In the photo below, 4 *Equus* sp. Teeth (2 uppers, 2 lowers), 3 *Nannippus peninsulatus* teeth (1 upper, 2 lowers), a camel tooth, a Great White tooth, and a partial deer leg bone.



Xenosmilus is an extinct species of the Machairodontinae, or saber-toothed cat. Two fairly intact specimens were found by amateur fossil collectors in 1983 in the Haile Limestone mines in Alachua County, Florida. The fossils were of Irvingtonian age (1.8—3.0 Ma). Physically, the cat measured between 1.7-1.8 m (5.6-5.8 ft) long with a highly muscular body and probably weighed around 230-400 kg (510-880 lbs), making it similar in size to the fellow machairodonts: *Machairodus horribilis* and *Amphimachiarodus kabir*.

Before their discovery, all known saber-toothed cats fell into two general categories. Dirk toothed cats had long upper canines and stout legs. Scimitar toothed cats had only mildly elongated canines and long legs. *Xenosmilus* broke these groupings by possessing both stout muscular legs and body, and short broad upper canines [8]. Unlike most other saber-toothed cats, **all of *Xenosmilus*' teeth were serrated, not just its fangs and incisors.**



Cindy Lockner had the distinct pleasure of finding a lower right I3 (3rd incisor) of this extremely rare cat and, in the tradition of FPS members on FPS field trips, promptly donated this SIS (Significantly Important Specimen) to the University of Florida Museum of Natural History Vertebrate Research Laboratory. [Way to go, Cindy!](#)



Top and Bottom Views of the Charlotte County Shell Pit



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 cooperations 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 X

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.

Section 10. Members shall not discard any foreign materials (such as emptying buckets/bags from a previous collecting trip) that would cause cross contamination at any site, potentially endangering future research data.

After both an enjoyable and successful morning of fossil hunting, FPS members participating in the field trip retired to the Holiday Inn to sort a few of the best finds, take a Shower, and relax prior to reconvening for a banquet and auction at Lashley’s Crab House in Punta Gorda that overlooks the Peace River. The menu choices included Steak, Shrimp, Fish and Chicken Alfredo. After a scrumptious repast, Graduate Student Carmi Thompson provided an excellent presentation on the stratigraphy and paleoecology of fossil invertebrates found within the pit. The presentation was followed by a silent auction to benefit the Gary S. Morgan Award for Student Research. Money raised will provide future scholarships to worthy Paleontology graduate students (state-wide) in order to conduct research (1-2 awards each year based on auction proceeds). The auction during the Fall 2021 meeting raised nearly \$600. Many of the vertebrate fossil casts (made by Sue and Steve Hutchens) and the paleontology books were contributed by the estate of the late FPS Secretary Marcia Wright. A beautiful ammonite wood carving was made and donated by FPS member Bernie Peterson. Bernie and Carol Peterson also donated several books. Boxes and display cases were provided by FLMNH Invertebrate Paleontology. Thanks to all who donated items to the auction and also to all who outbid their friends to win these valuable

items. All members are encouraged to enthusiastically support future auctions.



Attendees of the Fall 2021 Field Trip

ANNUAL DUES for the FPS are \$10.00 for Associate Membership (persons under age 18) and \$20.00 for Full Membership (persons over age 18) and Institutional Subscriptions. Couples may join for \$25.00, and Family Memberships (3 or more persons) are available for \$30.00. Persons interested in FPS membership need only send their names, addresses, and appropriate dues to the Secretary, Florida Paleontological Society, Inc., at the address on page 2. Please make checks payable to the FPS. Members receive (free) the FPS e-Newsletter and any Florida Fossil Invertebrates published during their subscription (membership). FPS Special Papers are offered (at a reduced price) to members in good standing. Additionally, there are FPS sponsored fossil collecting trips, auctions, and presentations in conjunction with our society's biannual meetings.

NEWSLETTER POLICY: All worthy news items, art work, and photographs related to paleontology and various clubs in Florida are welcome. The editors reserve the right not to publish submissions and to edit those which are published. Please address submissions to the Editors, Florida Paleontological Society, Inc. Florida Museum of Natural History, P.O. Box 117800, University of Florida, Gainesville, FL 32611-7800

Converse Awardee



The 2019 recipient, Gunter Lobisch of Port Charlotte, exemplifies the meaning of outstanding contribution. Gunther kindly donated many significant specimens to the Invertebrate Paleontology Division at the FLMNH. His gift of rare and common echinoids and crabs totals nearly 2,000 specimens. Gunther's FLMNH collaboration began in 2009 when he offered the Museum several very large and complete *Petrochirus* (giant marine hermit crab) claws collected from the Pliocene Tamiami Formation in a quarry of his home county. Later he donated many buckets of unprepared echinoids (mainly *Encope tamiamiensis*) for a world-wide predation study being conducted at the FLMNH. Other notable fossils donated include the most exquisite specimens of Florida Pliocene *Xenohelix* isp. (burrow trace fossil) ever seen by FLMNH Collection Director Roger Portell. In addition to his specimen contributions, Gunther has participated in many education outreach activities (such as National Fossil Day) and recently assisted UF graduate student Carmi Milagros Thompson (FPS Secretary) with her thesis field sampling. Gunther's willingness to help, his enthusiasm and passion for paleontology are greatly appreciated by all.

The Howard Converse Award, presented nearly every year since 1988 by the FLMNH, recognizes outstanding contributions to Florida paleontology. Individuals are nominated for the award by FLMNH staff from the Invertebrate Paleontology, Vertebrate Paleontology, and Paleobotany divisions.

(Belated) Congratulations to Strimple Awardee Linda McCall



Linda McCall is the 2020 Strimple Awardee from the Paleontological Society. This is a national award given to an avocational paleontologist who has made outstanding contributions to the discipline. Linda currently serves on the Paleontological Society for Governmental affairs and is a member and contributor to numerous clubs and organizations. She has authored numerous publications and conference papers and has a crab and echinoid named after her! A huge congratulations for this outstanding achievement.

(Belated) Congratulations to the 2019 Morgan Award Winner—Jeanette Pirlo

Tusk variation and Paleocology of Gomphotheriidae across the Great American Biotic Interchange (GABI) By Jeanette Pirlo

The Great American Biotic Interchange (GABI) is one of the greatest known natural experiments in paleobiogeography. The late Miocene (10.3-5.3 Ma) provides a window into exploring the evolution of the involved taxa immediately preceding the event. The recently discovered Montbrook Fossil Site (MFS) in Levy County, Florida, preserves fauna from this time. It is suggested that MFS was an inland river with some marine incursion, substantiating the claims that climatic fluctuations directly affected Florida's coastlines, changing its terrestrial habitats. This study provides an opportunity to understand the transitional paleoenvironment in the southeastern US by examining the preserved ecological signature in mammal teeth and temporal changes to the environment.

Gomphotheres, an extinct family of four-tusked proboscideans found throughout North and South America during the GABI, are well represented in the MFS fauna. The gomphothere genus *Rhynchotherium* is characterized by a spiraling enamel band on the upper tusks. Further identification of MFS specimens to *R. edense* is ambiguous due to morphological discrepancies between *R. edense* and MFS gomphotheres. There are gomphothere representatives from the entire growth series (juvenile to geriatric) at MFS, which is unprecedented. No other late-Miocene site in the United States demonstrates an assemblage of so many gomphotheres, making this site unique for studying a population of proboscideans that were dispersed across a large temporal and geographic distribution. Well preserved gomphothere upper tusks have been excavated from MFS, providing an ample supply for taxonomic study. Isolated teeth, containing ontogenetic information of these proboscideans prior to burial, have also been recovered. The tooth enamel records the dietary and climate record and can be recovered through Stable Isotope Analysis (SIA). It is expected that Montbrook had a closed forested environment based on *Rhynchotherium* tooth morphology (browsers), but climatic changes may have altered the ecosystem. Analysis of tooth calculus and enamel will provide a more complete understanding of the environment. MFS provides a snap-shot into the population dynamics of this unique genus leading up to the GABI and will be the anchor for understanding sources of phenotypic variation within populations.

Using a non-invasive, novel approach on these delicate fossils, I will elucidate group dynamics prior to the GABI, examining taxonomic, isotopic, and stratigraphic constraints that affect dispersal.

This study will be the first to examine the taxonomic placement of the MFS *Rhynchotherium* and will contribute to the understanding of the evolutionary history within Gomphotheridae throughout their range in North America. I propose to use this new gomphothere population to answer the questions: Was gomphothere diet evolving due to changing environment? Are there significant variances between the MFS population of *Rhynchotherium* from the rest of the genus? Is the MFS population of *Rhynchotherium* a new species? The answers to these questions will help us understand the population dynamics of MFS *Rhynchotherium*, the environment of Montbrook, and more broadly, how this ecology informs the evolution of gomphotheres prior to their dispersal into Central and South America.

Jeanette is a graduate student at the University of Florida in the Departments of Natural History and Biology. She plans to graduate in Spring 2022, with her PhD



Roger Portell awarding Jeanette Pirlo the Gary Morgan Award. The Gary S. Morgan Award is funded by the FPS and the Florida Fossil Hunters and provided to outstanding students (undergraduate or graduate) at any Florida University or College for promoting paleontology through new research discoveries.

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Fossil Species of Florida

- Number 1, *Mammut americanum* \$1.00
- Number 2, *Tapirus veroensis* \$1.00

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T-shirt (Small - XL) Bright Yellow (Field) \$12.00

Coffee Mug \$4.00

Sales Tax (Florida residents) add 6.5%

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<http://floridapaleosociety.com/publications> or contact:
fps@flmnh.ufl.edu or contact by mail: Treasurer Florida Museum of Natural History Box 117800 University of Florida Gainesville, Florida 32611-7800

*******ATTENTION*******

Please fill out your annual Fossil Permit report on vertebrate fossils that you've collected on state lands this past year. This is a requirement to renew your State of Florida permit.

www.flmnh.ufl.edu/vertpaleo/amateur-collector/fossil-permit

REMINDER: If you have not submitted your 2022 FPS dues...Now Is The Time!!!



MARK YOUR CALENDAR!



The Spring Field Trip is scheduled for March 26th, at Jackson Bluff on the Ocklocknee River—mark your calendars and check your inbox for additional info in early spring. And, make sure ***your dues are paid—field trips available only to paid members.*** We hope you can attend! Field trip spaces are limited.

MARK YOUR CALENDAR!



Stay tuned for information on National Fossil Day. Typically it is celebrated in October.