



FLORIDA PALEONTOLOGICAL SOCIETY NEWSLETTER

VOLUME 30 NO. 1

WINTER 2013

Florida Paleontological Society, Inc. Fall Meeting – November 16-18, 2012 Marianna, Florida

Saturday morning turned out to be pleasant for mid-November, as members began to gather in the lobby of the Comfort Inn & Suites in Marianna, FL. The meeting and organization of the field trip went smoothly with the new field trip guidelines in place. We had 37 members registered for the entire meeting. A short caravan was formed and the group headed to the Brooks Quarry just northwest of town.

Brooks Quarry is located in an area that is well known for its karst topography. There are many sinks,

Ocala Limestone, the Bumpnose Limestone, and the Marianna Limestone.

Most of the collecting was done from spoil piles exposed by the mining operations. There were many species of echinoids to be had, including many different species of *Oligopygus*, *Clypeaster rogersi*, and even a unique occurrence of the regular sea urchin, *Lytechinus*. It was also difficult to miss the large and ubiquitous foraminifera, *Asterocyclina*. Some members got down close to the ground looking for the many tiny *Terebratulina* brachiopods. There were also many finds of the spiral worm tubes, *Rotularia vernoni*, and a few lucky members found parts of or nearly complete crabs.

After fossil collecting, members returned to Marianna for lunch or other activities. A couple of



FPS members at the Brooks Quarry, Marianna, Florida, after a productive morning of collecting.
Photo: Paul Roth & Harley Means

springs, and caves in the region. The most famous caves are found nearby in Florida Caverns State Park. Some of these karst features can also be observed in the Brooks Quarry where there are good exposures of Eocene and Oligocene sediments. These include the

people were lucky enough to catch a tour of the caverns. The meeting continued in the evening with an excellent dinner, informal discussion of Invertebrate Paleontology happenings, and silent auction at the Oaks Restaurant.

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.



Mary Jo Bopp proudly shows off her find, one of the few sharks teeth found on the trip. She also found a nice sea urchin, Lytechinus. This was a unique find and is the first record of the genus being discovered in the area. Other rare echinoids discovered that day include the Eocene seabiscuit, Amblypygus americanus. Some members were lucky enough to find the complete test, or shell, of the animal. Photo: Craig Samuel

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 the FPS newsletter, Florida Fossil Invertebrates, Fossil Species of Florida, and other random publications entitled to members.

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. Newsletter, at the address inside the front cover.



Members comb the surface in search of the tiny brachiopod, Terebratulina. These small creatures occur in the upper Ocala Limestone, which is exposed in the Brooks Quarry, Marianna, Florida. Brachiopods are extremely rare in the Florida fossil record, specimens collected on the trip will be used in a research project at the FLMNH.

Photo: Mike Hein

Florida Paleontological Society, Inc. Board Meeting - November 18, 2012 Marianna, Florida

The meeting was called to order by president, Wallace T. Ward. Those in attendance were: Mr. Ward, Michael Hein, Marge Fantozzi, Sara Morey, Roger Portell, Craig Samuel, Kevin Hutchenson, Paul Roth, Alex Kittle, and Marcia Wright.

The treasurer's report was given, although Phil Whisler was unable to attend the meeting. It was also reported that FPS no longer has the M. C. Thomas book, Beach and Bank Collecting in inventory and the printer unfortunately destroyed the master copy. Craig Samuel moved to accept the treasurer's report. That was seconded by Kevin Hutchenson. The motion carried.

Paul Roth reported on the "Fossils at the Fort" (Castillo del San Marcos, St. Augustine, FL) for National Fossil Day. Supported (\$1000) and manned by FPS members, it was a big success. Paul Roth moved that we do this annually; that was seconded by Kevin Hutchenson. The motion carried.

Discussion of possible sites for the spring 2013 field trip followed and a date was determined. Marcia Wright moved and Alex Kittle seconded the motion that we have the spring field trip at the SMR Mine in Sarasota, FL on May 18, 2013. The motion carried.

The auction at Saturday night's banquet raised approximately \$200. Many thanks to Harley Means, Roger Portell, and, Alex Kittle for Saturday's field trip and banquet. Roger

will send holiday gifts, from FPS, to thank quarry owners that have recently allowed our club to hunt fossils on their property. Roger also mentioned that new images have been added to the FPS website.

Roger Portell moved that retired Assistant Florida State Geologist, Thomas Scott be made an honorary member of FPS. Craig Samuel seconded the motion which carried.

Fossils from the collections of Bonnie Cronin and Russell Brown are now on display in the FPS case at the Florida Museum of Natural History (Powell Hall).

Alex Kittle reported that orders for FPS publications from foreign countries must use bank drafts which are extremely expensive. Since the publications are usually ordered by researchers and other academics, and we usually receive a copy of their final work, we should send them the requests for free. Kevin Hutchenson moved and Marge Fantozzi seconded it that we allow Roger Portell and Alex Kittle to use their own judgment as to when to send publications at no cost. The motion carried.

Marge Fantozzi asked Alex Kittle to speak at the Florida Fossil Hunters (Orlando) meeting on the third Saturday in January, 2013. He graciously agreed and will present the Howard Converse Award to Russell Brown and Bonnie Cronin at that time.

Craig Samuel moved and Mike Hein seconded the motion to adjourn. It carried.

Respectfully submitted,
Marcia Wright, Secretary

**FLORIDA PALEONTOLOGICAL SOCIETY
OFFICERS AND BOARD**

President:	Wally Ward, 701 TC Jester Boulevard, Suite 8102, Houston, TX wtw3arb@aol.com
President-Elect:	Harley Means, Florida Geological Survey, Gunter Building MS 72, 903 West Tennessee Street, Tallahassee, FL 32304 Guy.Means@dep.state.fl.us
Past President:	Marge Fantozzi, 475 Newhearth Circle, Winter Garden, FL 34787 mmfantozzi@gmail.com
Vice President:	Paul Roth, PO Box 608, Waldo, FL 32694-0608 proth@windstream.net
Secretary:	Marcia Wright, 1550 Mizell Avenue, Winter Park, FL 32789 mmorganw@aol.com
Treasurer:	Phil Whisler, Florida Museum of Natural History Box 117800, Gainesville, FL 31611 treasurer.fps@gmail.com

BOARD OF DIRECTORS

Alex Kittle, Gainesville, 2013	Craig Samuel, Weeki Wachee, 2013
Kevin Hutchenson, Melbourne, 2013	Michael Hein, Gainesville, 2014
Joan Herrera, St. Petersburg, 2014	Sara Morey, Frostproof, 2014

COMMITTEES AND APPOINTMENTS

Book Committee:	R. Hulbert
Nominations:	M. Cole
Finance:	P. Whisler, R. Portell
Membership:	A. Kittle
Honorary Members and Awards:	B. Toomey
Board of Editors:	A. Kittle, J. Herrera, R. Hulbert
Resident Agent:	R. Portell

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Gary Morgan, Clifford Jeremiah, Gordon Hubbell,
Thomas M. Scott, David Webb

LIFE MEMBERS

Barbara Fite
Joan Herrera
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Roger Portell
James Toomey
Barbara Toomey

INFORMATION, MEMBERSHIP, AND PUBLICATIONS

Address: Secretary, Florida Paleontological Society, Inc.
Florida Museum of Natural History, P.O. Box 117800
University of Florida, Gainesville, FL 32611-7800
email: fps@flmnh.ufl.edu
website: <http://www.floridapaleosociety.com>

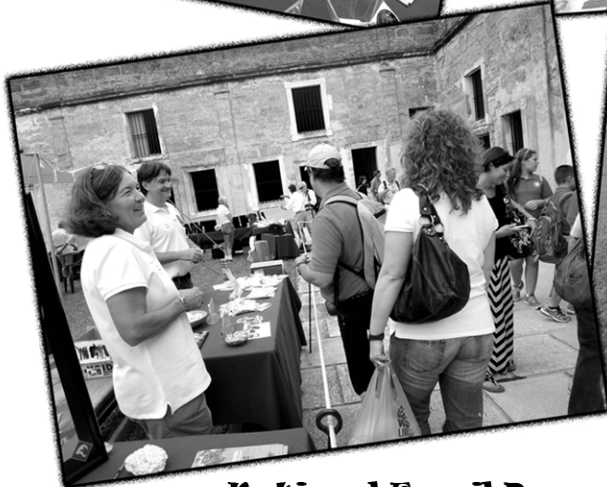
National Fossil Day - October 17th, 2012, "Fossils at The Fort" - Castillo de San Marcos, St. Augustine, Florida Submitted by Paul Roth

I am pleased to announce the success of our 2012 National Fossil Day Program; we had a great turnout on a mostly overcast day. We arrived at the Castillo around 7am on a cool morning to start setting up our display tables in the oldest masonry and only extant 17th century fort in North America.

The theme "Fossils at The Fort" was created for visitors to learn about coquina's use as a construction material and the fossils that are contained within the fort's walls. Assistant State Geologist, Harley Means, gave talks on the geology of the Anastasia Formation and the City Archeologist for St. Augustine, Carl D. Halbirt, gave talks on coquina's use in building the fort. Roger Portell and Alex Kittle answered questions throughout the day about the Anastasia fossils and the myriad of other invertebrates they brought from the FLMNH collections. Russell Brown and Bonnie Cronin brought their famous setup for all to see.

In all, we saw around 800 visitors from 7 countries and 21 states, a truly global reach, with about 100 kids participating in the "Junior Paleontologist" program run by the National Park Service, where they earned their Junior Paleontologist Badge after completing an activities booklet. We gave out numerous specimens of coquina, shark teeth, petrified wood, brachiopods, and miscellaneous other fossils. The kids said it was like Christmas had come early. It was great to see the positive impact we were having.

I want to thank all the volunteers that came out to help that day: Russell Brown, Bonnie Cronin, Roger Portell, Alex Kittle, Harley & Tammy Means, Marge Fantozzi, Marcia Wright, Sara Morey, and Carl Halbirt. I also want to thank the staff of the Castillo: Gordie Wilson - Superintendent, Jon Burpee - Chief of Interpretation, and Amy Mest - Education Coordinator for all their help and for allowing use of the venue and the opportunity to serve such a diverse group of participants. I also want to thank the Lakeview Dirt Company for providing coquina specimens, John Huntley for a current research poster presentation into the Anastasia, and all those who provided fossil specimens for donation; Russell Brown, Bonnie Cronin, Craig & Laurie Samuels, Dave Cass, Barbara Fite, and probably a few others I have forgotten to mention my many, many thanks to you.



National Fossil Day - "Fossils at the Fort"

New ancient shark species gives insight into origin of great white

Danielle Torrent

GAINESVILLE, Fla. — The great white shark is one of the largest living predatory animals and a magnet for media sensationalism, yet its evolutionary history is as misunderstood as its role as a menace.

Originally classified as a direct relative of megatooth sharks, the white shark's evolutionary history has been debated by paleontologists for the last 150 years. In a study appearing in print and online today in the journal *Palaeontology*, University of Florida researchers name and describe an ancient intermediate form of the white shark, *Carcharodon hubbelli*, which shows the modern white shark likely descended from broad-toothed mako sharks. The study deviates from the white shark's original classification as a relative of megatooth sharks such as the extinct *Carcharocles megalodon*, the largest carnivorous shark that ever lived.

Based on recalibrated dates of the excavation site in Peru, the study also concludes the new species was about 2 million years older than previously believed.

"We can look at white sharks today a little bit differently ecologically if we know that they come from a mako shark ancestor," said lead author Dana Ehret, a lecturer at Monmouth University in New Jer-

sey who conducted research for the study as a UF graduate student. "That 2-million-year pushback is pretty significant because in the evolutionary history of white sharks, that puts this species in a more appropriate time category to be ancestral or kind of an intermediate form of white shark."

Most ancient shark species are named using isolated teeth, but analysis of *C. hubbelli*, also known as Hubbell's white shark, was based on a complete set of jaws with 222 teeth intact and 45 vertebrae. The species was named for

Gainesville resident Gordon Hubbell, a collector and honorary FPS member, who recovered the fossils from a farmer who discovered them in the Pisco Formation of southern Peru in 1988. Hubbell donated the specimens to the Florida Museum of Natural History in December 2009.

"The impetus of this project was really the fact that Gordon Hubbell donated a majority of his fossil shark collection to the Florida Museum," Ehret said. "Naming the shark in his honor is a small tip of the hat to all the great things he has done to advance paleontology."

Ehret and co-authors published an initial study describ-

ing the shark specimens in the *Journal of Vertebrate Paleontology* in 2009, but dates for the site reflected information from a 1985 study about the Pisco Formation, he said. With Hubbell's hand-drawn maps and



Dana Ehret analyzes a 4.5 million year old fossil the Gordon Hubbell's gallery in Gainesville, FL. Photo: Jeff Gage

descriptions of the landscape, researchers returned to the site and found the exact spot the fossils were discovered.

Scientists extracted more accurate age estimates from mollusk shells in the fossil horizon to determine the shark species was from the late Miocene, about 6.5 million years ago, rather than the early Pliocene, about 4.5 million years ago. The new dates will also be useful for better understanding other fossils found in the rich Pisco Formation, which include new whale, marine sloth and terrestrial vertebrate species.

“The thing that was remarkable to me was that these fossils came from right out in the desert and this was before GPS, so Dana had only an approximate notion of where it was,” said Florida Museum of Natural History Director Douglas Jones, a study co-author who conducted strontium isotope dating of the fossils. “But after a few days of looking, we were able to find this deposit and Dana found the rest of the missing shark’s teeth.”

Researchers determined Hubbell’s white shark was related to ancient broad-toothed mako sharks by comparing the physical shapes of shark teeth to one another. While

modern white sharks have serrations on their teeth for consuming marine mammals, mako sharks do not have serrations because they primarily feed on fish. Hubbell’s white shark has coarse serrations indicative of a transition from broad-toothed mako sharks to modern white sharks.

These evolutionary relationships have been hypothesized for decades, and researchers who interpret modern white sharks as being more closely related to megatooth sharks say it is “a friendly disagreement,” according to Michael Gottfried, an associate professor in geological sciences at Michigan State University.

But shark expert David Ward, a research associate at the Natural History Museum, London, said “fewer people believe the big megatooth sharks are related to the great white sharks than believe the Earth is flat.”

“Everyone working within the field will be absolutely delighted to see this relationship formalized,” Ward said.

Study co-authors include Bruce MacFadden of the Florida Museum, Thomas DeVries of the Burke Museum of Natural History and Culture in Seattle, David Foster of UF and Rodolfo Salas-Gismondi of Museo de Historia Natural Javier Prado in Lima.

New test adds to scientists’ understanding of Earth’s history, resources

Danielle Torrent

GAINESVILLE, Fla. — A new study co-authored by the new Jon L. and Beverly A. Thompson Chair of Invertebrate Paleontology, Michal Kowalewski, provides the first direct chronological test of sequence stratigraphy, a powerful tool for exploring Earth’s natural resources.

The model allows geologists to better understand how sedimentary rocks are related to one another in time and space and predict what types of rocks are located in different areas. The information may help scientists more reliably interpret various aspects of Earth’s history such as long-term climate changes or extinction events, and also benefit companies searching for the best locations to drill for oil.

The study published in *Geology* uses extensive numerical dating of fossil shells to verify key predictions of the sequence stratigraphy model. Al-

though used successfully for more than 30 years as a theoretical framework for interpreting and exploring rock bodies, the model had never been proven quantitatively by direct numerical dating.

“Paleontologists and geologists are well aware of the fact that you should not take the fossil record at face value because you will then see changes through time that may not be meaningful,” said study co-author Michal Kowalewski. “However, by using dating to quantify how the resolution changes through time, we can improve quality control on our data and develop better strategies for reconstructing the history of life more accurately.”

In the study, researchers used racemization, a technique in which amino acid ratios are obtained to estimate the age of fossils from the most recent geological record. Relative age estimates were calibrated using radiocarbon to date about 250 mollusk shells extracted from cores drilled in the Po Plain in northern Italy. The technique, developed over the last 30 years, has made dating of large numbers of shells affordable and efficient, Kowalewski said.

Kowalewski is principal investigator on the National Science Foundation-funded project, a four-year study involving a team of scientists from the University of Bologna and Northern Arizona University.

“We were thrilled to learn that sedimentary rocks assemble through time exactly as predicted,” said Kowalewski, who recently relocated from Virginia Tech and is the Jon L. and Beverly A. Thompson Chair of Invertebrate Paleontology at the Florida Museum. “The results are not only a direct validation of the sequence stratigraphic model, but also provide us with direct numerical estimates of changes in the resolution of the fossil record as a function of relative changes in sea level.”

As the model predicted for the geological setting of the Po Plain, the sediments accumulated at an increasingly slower pace during initial phases of sea level rise, culminating with horizons that formed so slowly that shells from multiple millennia were mixed within the same sediment layers. Following the sea level rise, sediment was deposited at an increasingly faster pace.

“We are pretty confident that the primary driver of sea level changes in this time frame was climate, but that’s not always the case in the geological record,” Kowalewski said. “We can now provide a more informed constraint on timing of the most recent sea level rise in the northern Adriatic.”

Because the Po Plain contains young sediments dating to about the last 10,000 years, part of the cycle researchers tested includes changes occurring today, said Carlton Brett, a geology professor at the University of Cincinnati. As sea level rises quickly, sediment accumulates in bays and river mouths, leaving little sediment offshore, Brett said.

“I think what they’re doing is groundbreaking in the sense that they’re testing a model that



Shells and fragments found in sediments in the Po Plain, Italy, show the abundance and diversity of the area’s fossils. Photo: Daniele Scarponi

is one of the most important models in sedimentary geology that has ever come down the pipe,” Brett said. “As one who uses that model a lot and makes those assumptions about why we are getting shell beds offshore, the fact that they have put numbers on the tests gives us very good confidence that we’re on the right track.”

The team plans to continue working in the Po Plain, a well-understood system that records the most recent millennia of the region’s geological history.

The project can help researchers better understand human-induced changes because the Po Plain sediments document the fossil record of ecosystems that directly predate what many geologists refer to as the Anthropocene Epoch, the new geologic era of human modification of the natural world.

Study co-authors include Daniele Scarponi and Alessandro Amorosi of the University of Bologna, and Darell Kaufman of Northern Arizona University.

Bonnie Cronin and Russell Brown Receive Prestigious Florida Museum of Natural History's Howard Converse Award

The Converse Award is presented yearly to recognize an individual or individuals from the non-professional paleontological ranks who have made outstanding contributions to Florida paleontology. The award is named in honor of Howard Converse, an avocational paleontologist and former Florida Museum of Natural History (FLMNH) fossil preparator. Award recipients are selected by the FLMNH paleontology staff and awardee's names are inscribed on a large permanent plaque which hangs in Dickinson Hall, the museum's collections and research building in the center of campus at the University of Florida.

Bonnie Cronin and Russell Brown are the 2012 recipients of the Converse Award. Bonnie and Russell are very familiar faces in the central Florida paleontological community and they are recognized for their outreach efforts throughout the state, promoting and educating the public about the science of Paleontology.

Both are active members of the Florida Fossil Hunters (FFH) and the Florida Paleontological Society (FPS). Russell served FFH for the past eight years as either president or vice president and Bonnie serves as a board member of the club, handling membership, producing a monthly newsletter, and leading the education committee. Both are instrumental in organizing field trips for the FFH and producing their

monthly meetings, which involve a program of speakers and every other month a Kid's Fossil Blast.

Each year Bonnie and Russell help organize and participate in two of the FFH's major annual events. In the spring they construct displays for the Orlando Science Center's Fossil Fest. During this event, visitors to the science center learn about Florida fossils through exhibits, hands-on activities, and interactions with FFH club members. In the fall they work hard to ensure that the clubs Fossil Fair is a huge success.

In addition to all that they do for the FFH, they make displays and give monthly presentations to school groups, organizations, home schooled children, and at community events and festivals. They also organize and assemble Florida Paleontology exhibits for the Orlando Science Center and have produced six traveling display cases that rotate between schools in Orange and Seminole Counties. Currently, Bonnie and Russell have a nice display of fossils in the FPS case in Powell Hall (the FLMNH Exhibits and Education facility). Their displays use specimens that they discovered or acquired throughout many years of collecting and attending local fossil shows. Additionally, Russell and Bonnie have donated several very unique fossils they discovered to the FLMNH paleontology collections.

Recently, Russell enjoyed some celebrity after appearing on "How to do Florida," a travel and cooking show where he served as a prehistoric guide during a segment on ancient Florida and fossil collecting in the Peace River. He is also an accomplished artist, producing many illustrations for fossil identification, and was a featured Florida paleo-artist in the FLMNH exhibit "Cruisin' the Fossil Freeway."



Bonnie and Russell were presented with the Converse Award at the January FFH meeting. Photo: Sara Morey

Record diversity of ancient crustaceans may provide clues for fate of today's reef crabs

Danielle Torrent

A University of Florida scientist has discovered a record biodiversity hotspot in Spain for 100-million-year-old crustaceans with possible implications for present-day species living in reefs, which are declining worldwide.

Decapod crustaceans, including crabs, shrimp and lobsters, are vital parts of the food chain, contributing to reef health and serving as food for many larger marine organisms. Study of their early evolution may help researchers better understand how present-day species are affected by reefs declining due to changes such as ocean acidification and coral bleaching, which also threaten the animals they support.

A study published online Wednesday in *Cretaceous Research* reports 36 species from the abandoned Koskobilo quarry located in a fossil reef in northern Spain, including eight new species and the oldest-known spider crabs.

“The reef in Spain died soon after many decapods were still around. Something must have happened in the environment that caused reefs in the area to vanish, and with it, probably many of the decapods that were living in these reefs,” said study author Adiël Klompmaker, a postdoctoral researcher at the Florida Museum of Natural History. “Not many decapods are known from the time after the reefs disappeared in the area.”

The fauna of the locality in Spain exhibited a higher diversity than previously known, and included fossil crabs, hermit crabs and squat lobsters, said Klompmaker, who began research for the project as a graduate student at Kent State University. The fossils represent all dominant decapod groups found in reefs today, except true lobsters and shrimp, which may not have been preserved.

“Today’s decapods can adapt to a new environment without reefs, migrate elsewhere or go extinct,” Klompmaker said. “By documenting what happened in the past, we may provide clues as to what could happen to decapod crustaceans such as crabs, shrimp and lobsters in today’s deteriorating reefs.”

Klompmaker researched 20 localities worldwide to determine the Koskobilo quarry is the most diverse locality for decapods in the Cretaceous period 145 to 66 million years ago. The research also shows that ancient decapods living within reefs are more diverse than those living in other parts of the ocean, which is similar to diversity patterns today.

“This shows that reefs were a popular place to feed, mate and seek shelter for decapods,” Klompmaker said. “Thus, not much has changed from this perspective since the Cretaceous. Decapods still really like living in coral reefs, although today many different decapod families inhabit them.”

Tropical temperatures dominated the Cretaceous period and sea levels were extremely high worldwide. The quarry, which would have been underwater at the time, is now about 35 miles from the Atlantic Ocean in northern Spain, Klompmaker said. The locality’s age was determined based on ammonite fossils, ancient squid-like animals with external shells.



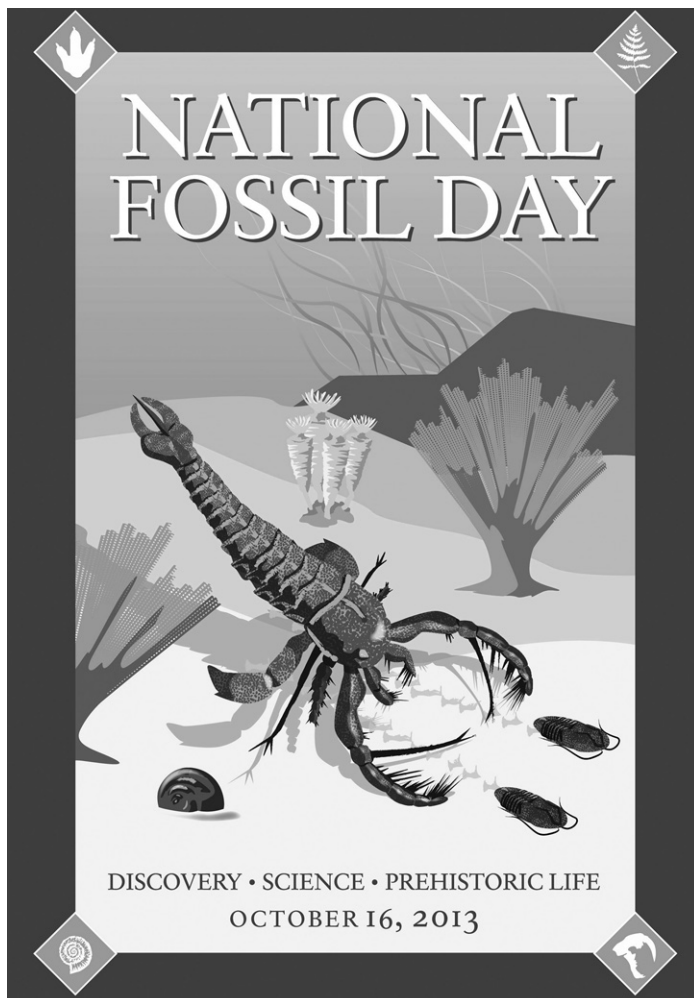
This fossil carapace is one of the two oldest-known spider crabs, *Cretamaja granulata*, and it is one of eight new species described in the study. Photo: Adiël Klompmaker

The study is important for understanding decapod evolution because multiple species were grouped within the same genus, rather than just one, said Francisco Vega, a paleontologist at the Universidad Nacional Autonoma de Mexico.

“We would not expect such a high diversity at that time because there are very few records of crabs then,” Vega said. “Also, by that time, the group was represented by so many species in a reef environment, and the number of species today is about the same, which is very significant since the diversity of the communities has prevailed ever since.”

Klomp maker collected fossils in the Koskobilo quarry during three field trips in 2008, 2009 and 2010 with a team of researchers from Spain, the Netherlands and the U.S. New species were identified by analyzing the morphology, or physical characteristics of the fossils, which include three-dimensional impressions of the decapod shell.

“We went there in 2008 and in the first two hours found two new species,” Klomp maker said. “That’s quite amazing — it just doesn’t happen every day.”



FPS Product Sales

**Prices are for current FPS members only
Shipping and Handling Extra**

Hulbert, Fossil Vertebrates of Florida	\$31.00
Olsson & Harbison, Pliocene Mollusca	\$15.00

Florida Fossil Invertebrates

Part 1, Eocene Echinoids	\$7.00
Part 2, Oligocene and Miocene Echinoids	\$7.00
Part 3, Pliocene and Pleistocene Echinoids	\$7.00
Part 4, Pliocene and Pleistocene Decapod Crustaceans	\$7.00
Part 5, Eocene, Oligocene, and Miocene Decapod Crustaceans	\$7.00
Part 6, Larger Foraminifera (Introduction)	\$7.00
Part 7, Larger Foraminifera (Common Taxa)	\$7.00
Part 8, Brachiopods	\$7.00
Part 9, Mollusca (Shoal River Formation)	\$12.00
Part 10, Mollusca (Anastasia Formation)	\$10.00
Part 11, Eocene and Oligocene Corals	TBA

Part 12, Mollusca (Fort Thompson Formation)	\$10.00
Part 13, Mollusca (Bermont Formation)	\$10.00
Part 14, Cephalopoda Eocene to Middle Miocene	\$10.00

Fossil Species of Florida

Number 1, <i>Mammut americanum</i>	\$1.00
Number 2, <i>Tapirus veroensis</i>	\$1.00

T-shirt (Small - XL) \$14.00

Coffee Mug \$4.00

Sales Tax (Florida residents) add 6.25%

To purchase the above items, please visit our website at:

<http://floridapaleosociety.com/publications>

or contact: fps@flmnh.ufl.edu

or contact:

Treasurer
Florida Museum of Natural History
Box 117800
University of Florida
Gainesville, Florida 32611-7800

**FLORIDA PALEONTOLOGICAL SOCIETY, INC.
APPLICATION FOR MEMBERSHIP**

Mail completed form to :

Florida Paleontological Society
University of Florida, Box 117800
Gainesville, FL 32611-7800

New _____ Renewal _____

Name _____

Address _____

City _____ State _____ Zip Code _____

Email address _____ Phone Number _____

TYPE OF MEMBERSHIP

- | | |
|--------------------------------------|---------------------------------------|
| 1. INDIVIDUAL ACTIVE (\$20.00) _____ | 2. INSTITUTIONAL (\$20.00) _____ |
| 3. COUPLES (\$25.00) _____ | 4. FAMILY (3 or more \$30.00) _____ |
| 5. LIFE (\$500.00) _____ | 6. ASSOCIATE (under 18 \$10.00) _____ |

NOTE!! MEMBERSHIPS ARE FOR A CALENDAR YEAR AND ARE DUE NO LATER THAN JANUARY 1 EACH YEAR!
PLEASE RENEW ON TIME!

BIOGRAPHICAL FACT SHEET

1. NUMBER OF YEARS OF INTEREST IN PALEONTOLOGY _____
2. WHICH BEST DESCRIBES YOUR STATUS: COLLECTOR ___ OCCASIONAL DEALER ___ FULL TIME DEALER ___ PROFES-
SIONAL POSITION ___ JUST STARTING ___

3. PRIMARY AREAS OF INTEREST:

	VERTEBRATE	INVERTEBRATE	BOTANY	MICRO
PLEISTOCENE	_____	_____	_____	_____
PLIOCENE	_____	_____	_____	_____
MIOCENE	_____	_____	_____	_____
OLIGOCENE	_____	_____	_____	_____
EARLIER	_____	_____	_____	_____

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

5. LIST ANY PUBLISHED WORKS ON PALEONTOLOGICAL SUBJECTS.

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

7. LIST ANY SKILLS OR ABILITIES THAT MAY BE OF USE TO THE SOCIETY'S PROJECTS (RESTORATION, PERPARATION, COM-
PUTER USE, GRAPHICS SKILLS, SPEAKING, PHOTOGRAPHY, PUBLIC RELATIONS, WRITING, FUND RAISING, ETC.).

8. LIST ANY UNUSUAL SPECIMENS FOUND, CIRCUMSTANCES UNDER WHICH THEY WERE LOCATED AND THEIR DISPOSITION.

PLEASE USE AN ADDITIONAL SHEET IF REQUIRED. THANK YOU!

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