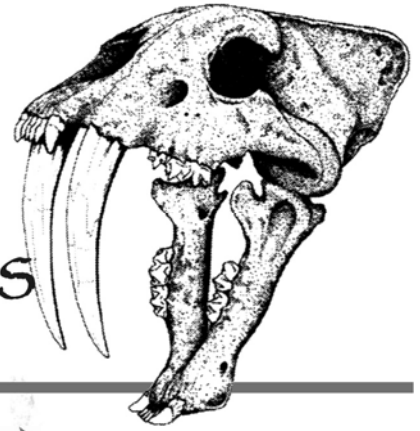


NEWS

Florida Fossil Hunters

Volume 18, Number 10

November 2008



Prez Sez:

We had a great fossil fair!

Thanks for all the hard work, everyone!!!

We will take a virtual trip to the Chesapeake Bay area for fossil collecting this month, thanks to John Jenks.

We need to officially vote this month and decide when the Christmas party/meeting will be.

Keep going to the Peace River while you can to collect fossils before it gets cold.

Vulcan Mine update- You can go any day during the week, just schedule it with Allan Pagels. Clubs will all be going in together on the second Saturday of the month. We planted some rods to make fulgarites with some luck maybe lightning will struck!

See you all soon!
Shelley Zimmerman

December Meeting
at Dave Dunaway's house

Next Kid's Blast Meeting
February 2009

Coming Events

November 19, 2008
7:00pm Mtg

December 17—tentative
7:00pm
Meeting at Dave Dunaways

January 21, 2009
7:00pm

February 18, 2009
6:00pm Kid's Fossil Blast
7:00pm Meeting

For more info...
www.floridafossilhunter.com

**Meetings held at the
Orlando Science Center**

Table of Contents

Piece on the Peace	2
Kids FossilBlast	2
Tiny Juvenile Dinosaur Fossil Sheds Light On Evolution Of Plant Eaters.....	3
Details Of Evolutionary Transition From Fish To Land Animals Revealed.....	4
Eight-Armed Animal Preceded Dinosaurs!.....	5
Membership Application	7
Calendar	8

Fragments

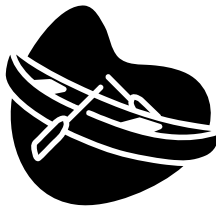
Elections for Club Officers for 2009, Jimmy Waldren has volunteered to be President for next year and Russell Brown said he'd be Vice President. We'll keep our hard working, wonder woman, Sara Morey as Treasurer. Joanne Maio will take over membership. If anyone else would like to toss their hat into the ring or volunteer for the Board, please let us know. The official voting will be held at the December meeting.

18th Annual Thomas Farm Dig or Hummingbird Challenge V, Florida Museum Of Natural History's Spring 2009 dig will focus on the small fossils to be found. It will be held from Tuesday, March 31st through Sunday, April 5th, 2009. Space is limited. For more information go to www.ufl.edu/ponyexpress or call Dave Steadman at 352-273-1968.

Fire Out of Africa, Archaeologists working at the Geshar Benot Ya'aqov site in Israel have discovered evidence of a series of ancient hearths with burned flint items that spanned a period of years. This site is dated at 790,000 years ago, pushing back previously accepted dates for man's fire-making ability by a half-million years. This certainly contributed to the success of Homo Erectus in colonizing sites in Europe and Asia.

Ask the Paleontologist, Starting in our December issue, we will have a new column where you can have your questions answered by a Paleontologist. Just submit your question by the first of the month via email to info@floridafossilhunters.com

Diggin' on the Peace, In spite of some chilly weather and overcast skies, there was a good turnout of club members on Sunday, November 2nd to help Dr. Glynn Hayes and his Geology students on the Peace River. Shelley Zimmerman, Dave Cass, Dave Dunaway, John Jelks, Valerie First, Marge Fantozzi, Bonnie Cronin and Russell Brown brought their extra screens, shovels, some boats and their expertise to make the students' day a successful one. *Thanks to all of you for your great support.*



Kids' Fossil Blast

Yes, we did have a blast looking at the collection of bones on the table and imagining what the creature could have looked like and learning how the old myths could have gotten their start from fossil finds. We take a break for December so our **next kids' program will be on February 18th at 6pm.**

Fossil Fair

For all your fossils for the Dig Pit....."thanks"

For all your patience and expertise in identifying fossils and answering questions....."thanks"

For all the time you volunteered....."thanks"

For all the delicious food....."thanks"

For all the incredible things to look at...."thanks"

Thanks to all of you (especially Valerie First!) for all that you do and donate making the Fossil Fair the success that it is

Mineral and Fossil Shows:

Withlacoochee Rockhounds will have their 34th Annual Mineral & Gem Show on Dec. 5th through 7th at 13383 County Line Rd, Spring Hill, Florida (Hernando County.) For more info call 352-688-9399 or email LauParaMin@aol.com

The Fossil Club of Lee County will hold its Fossil Show 2008 on Saturday, December 6th, from 9 am to 5pm at the Calusa Nature Center, 3540 Ortiz Ave., Ft. Myers. There will be a kids' fossil dig, raffles, silent auctions and talks by Dr. Charles O'Connor. Admission is \$2 for adults, \$1 for children. For more info go to www.fcolc.com

The Tomoka Gem and Mineral Society will hold their show at the Volusia County Fairgrounds in DeLand on January 17 & 18th, 2009.

The Mid America Paleontology Society (MAPS) will hold its National Fossil Exposition on April 3rd thru 5th at the Western Illinois University in Macomb, Illinois. For more information go to www.midamericapaleo.org

New Books

Mark Renz has some new CD books and Marissa Renz has some limited edition prints. For more information go to www.paleopress.net or www.floridatimeforgot.com

Don't forget to get your copy of *Roadside Geology of Florida* at the local bookstores or on line.

And remember, if you don't want to part with money to read the latest books, see Kathy Munroe at one of the meetings and check out the club library to see what's available.

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VULCAN FIELD TRIP

December 13th, 2008

You must be a member to attend! More info on website.

Tiny Juvenile Dinosaur Fossil Sheds Light On Evolution Of Plant Eaters

ScienceDaily (Oct. 24, 2008)

One of the smallest dinosaur skulls ever discovered has been identified and described by a team of scientists from London, Cambridge and Chicago. The skull would have been only 45 millimeters (less than two inches) in length. It belonged to a very young Heterodontosaurus, an early dinosaur. This juvenile weighed about 200 grams, less than two sticks of butter.

In the Fall issue of the *Journal of Vertebrate Paleontology*, the researchers describe important findings from this skull that suggest how and when the ornithischians, the family of herbivorous dinosaurs that includes Heterodontosaurus, made the transition from eating meat to eating plants.

"It's likely that all dinosaurs evolved from carnivorous ancestors," said study co-author Laura Porro, a post-doctoral student at the University of Chicago. "Since heterodontosaurs are among the earliest dinosaurs adapted to eating plants, they may represent a transition phase between meat-eating ancestors and more sophisticated, fully-herbivorous descendents."

"This juvenile skull," she added, "indicates that these dinosaurs were still in the midst of that transition."

Heterodontosaurus lived during the Early Jurassic period (about 190 million years ago) of South Africa. Adult Heterodontosaurus were turkey-sized animals, reaching just over three feet in length and weighing around five to six pounds.

Because their fossils are very rare, Heterodontosaurus and its relatives (the heterodontosaurs) are poorly understood compared to later and larger groups of dinosaurs.

"There were only two known fossils of Heterodontosaurus, both in South Africa and both adults," said Porro, who is completing her doctoral dissertation on feeding in Heterodontosaurus under the supervision of David Norman, researcher at the University of Cambridge and co-author of the study. "There were rumors of a juvenile heterodontosaur skull in the collection of the South African Museum," she said, "but no one had ever described it."

As part of her research, Porro visited the Iziko South Afri-



can Museum, Cape Town, to examine the adult fossils. When she was there, she got permission to "poke around" in the Museum's collections. While going through drawers of material found during excavations in the 1960s, she found two more heterodontosaur fossils, including the partial juvenile skull.

"I didn't recognize it as a dinosaur at first," she said, "but when I turned it over and saw the eye looking straight at me, I knew exactly what it was."

"This discovery is important because for the first time we can examine how Heterodontosaurus changed as it grew," said the study's lead author, Richard Butler of the Natural History Museum, in London. "The juvenile Heterodontosaurus had relatively large eyes and a short snout when compared to an adult," he said, "similar to the differences we see between puppies and fully-grown dogs."

A specialist on the mechanics of feeding, Porro was particularly interested in the new fossil's teeth. Heterodontosaurs, which means "different-toothed lizards," have an unusual combination of teeth, with large fang-like canines at the front of their jaws and worn, molar-like grinding teeth at the back. In contrast, most reptiles have teeth which change little in shape along the length of the jaw.

This bizarre suite of teeth has led to debate over what heterodontosaurs ate. Some scientists think heterodonto-

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sauurs were omnivores who used their differently-shaped teeth to eat both plants and small animals. Others contend that heterodontosaurs were herbivores who ate only plants and that the canines were sexually dimorphic--present only in males, as in living warthogs. In that scenario, the canines could have been used as weapons by rival males in disputes over mates and territories.

Porro and colleagues found that the juvenile already had a fully-developed set of canines.

"The fact that canines are present at such an early stage of growth strongly suggests that this is not a sexually dimorphic character because such characters tend to appear later in life," said Butler.

Instead, the researchers suspect that the canines were used as defensive weapons against predators, or for adding occasional small animals such as insects, small mammals and reptiles to a diet composed mainly of plants--what the authors refers to as "occasional omnivory."

The study created a new mystery, however. With the aid of X-rays and CT scans, Porro found a complete lack of replacement teeth in the adult and juvenile skulls.

Most reptiles, including living crocodiles and lizards, replace their teeth constantly throughout their lives, so that sharp, unworn teeth are always available. The same was true for dinosaurs. Most mammals, on the other hand, replace their teeth only once during their lives, allowing the upper and lower teeth to develop a tight, precise fit.

Heterodontosaurus was more similar to mammals, not only in the specialized, variable shape of its teeth but also in replacing its teeth slowly, if at all, and developing tight tooth-to-tooth contact. "Tooth replacement must have occurred during growth," the authors conclude, "however, evidence of continuous tooth replacement appears to be absent, in both adult and juvenile specimens."

The research was funded by the Royal Society, Cambridge University and the Gates Cambridge Trust.

Adapted from materials provided by University of Chicago Medical Center, via EurekAlert!, a service of AAAS.

Details Of Evolutionary Transition From Fish To Land Animals Revealed

ScienceDaily (Oct. 15, 2008)

New research has provided the first detailed look at the internal head skeleton of Tiktaalik roseae, the 375-million-year-old fossil animal that represents an important intermediate step in the evolutionary transition from fish to animals that walked on land.

A predator, up to nine feet long, with sharp teeth, a crocodile-like head and a flattened body, Tiktaalik's anatomy and way of life straddle the divide between fish and land-living animals. First described in 2006, and quickly dubbed the "fishapod," it had fish-like features such as a primitive jaw, fins and scales, as well as a skull, neck, ribs and parts of the limbs that are similar to tetrapods, four-legged animals.

The initial 2006 report did not describe the internal anatomy of the head, because those parts of the fossil were buried in rock. In the October 16, 2008, issue of Nature, the researchers describe this region and show how Tiktaalik was gaining structures that could allow it to support itself on solid ground and breathe air.

"We used to think of this transition of the neck and skull

as a rapid event," said study author Neil Shubin, PhD, of the University of Chicago and Field Museum and co leader of the project, "largely because we lacked information about the intermediate animals. Tiktaalik neatly fills this morphological gap. It lets us see many of the individual steps and resolve the relative timing of this complex transition."

"The braincase, palate, and gill arch skeleton of Tiktaalik have been revealed in great detail by recent fossil preparation of several specimens," said Jason Downs, PhD, a postdoctoral research fellow at the Academy of Natural Sciences and lead author on the new study. "By revealing new details on the pattern of change in this part of the skeleton, we see that cranial features once associated with land-living animals were first adaptations for life in shallow water."

"The new study reminds us that the gradual transition from aquatic to terrestrial lifestyles required much more than the evolution of limbs," said Ted Daeschler, PhD, of the Academy of Natural Sciences and co-leader of the team that discovered Tiktaalik. "Our work demonstrates

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that, across this transition, the head of these animals was becoming more solidly constructed and, at the same time, more mobile with respect to the body." These changes are intimately associated with the change in environment.

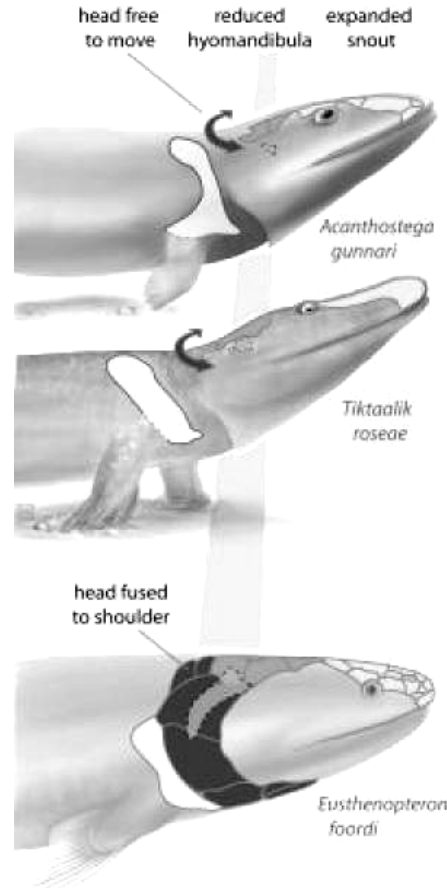
Fish in deep water move and feed in three-dimensional space and can easily orient their body in the direction of their prey. A neck, seen for the first time in the fossil record in Tiktaalik, is advantageous in settings where the body is relatively fixed, as is the case in shallow water and on land where the body is supported by appendages planted against a substrate.

Another important component of this transition was the gradual reduction of the hyomandibula, a bony element that, in fish, coordinates the cranial motions associated with underwater feeding and respiration. In the transition to life on land, the hyomandibula loses these functions and the bone becomes available for an eventual role in hearing.

In humans, as in other mammals, the hyomandibula, or stapes, is one of the tiny bones in the middle ear. "The bony part of Tiktaalik's hyomandibula is greatly reduced from the primitive condition," said Downs, "and this could indicate that these animals, in shallow water settings, were already beginning to rely less on gill respiration."

The discoveries were made possible by laboratory preparators Fred Mullison and Bob Masek, who prepared the underside of the skull of specimens collected in 2004. This painstaking process took several years. This work showed the underside of the skull and gill bones "beautifully preserved," said Shubin, "to a degree unlike any creature of its kind at this transition."

Having multiple Tiktaalik specimens enabled the re-



searchers to prepare the fossils in ways that showed the bones of the head in "exceptional detail," Downs said.

The team discovered Tiktaalik roseae on Ellesmere Island, in the Nunavut Territory of Canada, 600 miles north of the Arctic Circle. Though this region of Nunavut is now a harsh Arctic ecosystem, at the time that Tiktaalik lived, the area was much further south and was a subtropical floodplain ecosystem.

The formal scientific name for the new species, "Tiktaalik" (tic-TAH-lick), was derived by the Elders Council of Nunavut, the Inuit Qaujimajatuqangit. The Inuktituk word means "a large, shallow-water fish." The paleontology team works in Nunavut with authorization from the Department of Culture, Language, Elders and Youth. All fossils are the property of the people of Nunavut and will be returned to Canada after they are studied.

The fossil research in Nunavut is carried out with authorization from the Department of Culture, Language, Elders and Youth, Government of Nunavut. All fossils are the property of the people of Nunavut and will be returned to Canada after they are studied.

A cast of Tiktaalik, along with a fleshed-out model of the animal, are on display in the Evolving Planet exhibition at Chicago's Field Museum, where Shubin serves as Provost.

The research was supported by private donors, the Academy of Natural Sciences, the Putnam Expeditionary Fund (Harvard University), the University of Chicago, the National Science Foundation, and the National Geographic Society Committee for Research and Exploration.

Adapted from materials provided by University of Chicago Medical Center.

Eight-Armed Animal Preceded Dinosaurs!

Jennifer Viegas, *Discovery News*

Oct. 30, 2008 -- An eight-armed creature that looked more like a modern party favor than a living animal colonized a large section of the world's oceans over 300 million years before the first dinosaurs emerged, suggests a new study.

The findings represent the first comparable animal fossils from the Ediacaran Period, 635 to 541 million years ago, which appear in two drastically different preservation environments -- black shale of South China and quartz rock of South Australia.

(Continued on page 7)

Eight-Armed Animal Preceded Dinosaurs!

Jennifer Viegas, *Discovery News*

(Continued from page 5)

"According to paleogeographic reconstructions, South China and South Australia were close to each other at the time, belonging to a supercontinent called Gondwana," lead author Maoyan Zhu told *Discovery News*.

Zhu, a scientist at the Nanjing Institute of Geology and Paleontology at the Chinese Academy of Sciences, first helped to make the China/Aussie connection two years ago during a Beijing conference. He showed a photo of the unusual eight-armed creature, called *Eoandromeda octobrachiata*, to co-author James Gehling of the South Australia Museum.

"He was so surprised and immediately opened his laptop and showed me images of new fossils uncovered from a new locality at the Flinders Ranges of South Australia," Zhu said. "We wondered if these were the same fossils."

Zhu, Gehling and their colleagues collected eight compressions of the animals from the Doushantuo Formation at Wenghui, China. They then traveled to Flinders Ranges, Australia, and collected seven specimens, leaving 31 others on two excavated and reassembled beds.

The findings are published in the November issue of *Geology*.

There is no question the creature, believed to represent one type of animal, had a lot of arms.

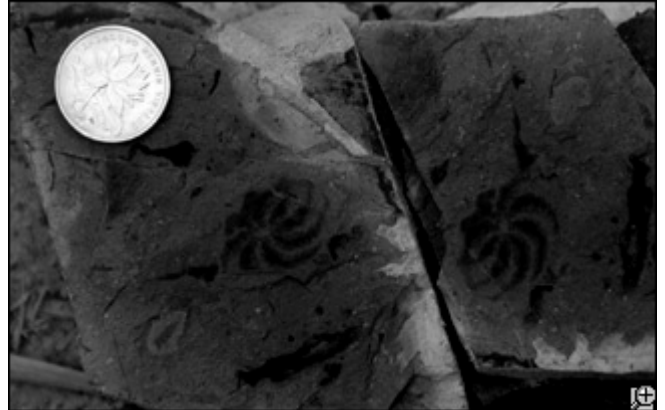
"The eight arms are clearly preserved in our specimens," Zhu said, adding that the arms were tubular and in close contact with each other, but not joined.

He and his colleagues believe the animal was a soft-bodied, dome-shaped organism that lived on seabeds and fed by absorbing dissolved nutrients from the ambient environment.

Before the latest fossils were found, some researchers identified the creatures as lichens or fungus-like organisms, but Zhu and his team suspect that at least some Ediacara fossils represent now-extinct diploblastic animals, or creatures that possess only two cellular layers separated by a jelly-type substance.

"Diploblastic animals are common creatures on present day Earth," he said, mentioning that jellyfish, corals and sea anemones belong to the group.

"These animals (display) radial symmetry but lack complex organs, as shown by *E. octobrachiata*," he added.



The multi-armed creature, and several other early life forms, went extinct around 542 million years ago, which Zhu said, "left empty niches for the subsequent Cambrian explosion of complex animals." Representatives of nearly all existent animals emerged at this time, when a rapid increase in oxygen made respiration and metabolism possible.

In a separate paper, Shuhai Xiao, a researcher in the Department of Geosciences at the Virginia Polytechnic Institute and State University, and colleague Marc Laflamme provide an overview of Ediacara fossils.

In the paper, which has been accepted for publication in the journal *Trends in Ecology & Evolution*, Xiao and Laflamme agree that, "Ediacara biota bridges the cryptic evolution of multicellular life in the early Ediacaran and the extraordinary radiation of animals in the Cambrian period."

In addition to the eight-armed creature, they describe other early living things that looked like leaves, shells, stars and something almost akin to a peace symbol.

Xiao and Laflamme hope that as the Ediacara fossil database grows ever larger, more mysteries about these very early organisms will be solved.

Florida Fossil Hunters

is a fun and educational group whose goal is to further our understanding of the prehistory of Florida. We encourage family participation and welcome explorers of all ages.

Membership is \$17 per year. Other household members may be included at no charge.

Meetings are held the third Wednesday of each month at 7:00pm, check the website for the location.

Officers:

- President Shelley Zimmerman (407) 891-1260
- Vice President Paul Bordenkircher (407) 687-3843
- Secretary
- Treasurer Sara Morey (407) 353-8675

Chairs:

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- Field Trips Shelley Zimmerman (407) 891-1260
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Membership Application

Names: _____

Associate Members: _____

Address: _____

City: _____

State: Zip: _____

e-mail: _____

____ New ____ Renewal

Please list any interests, experience, talents or just plain enthusiasm, which you would like to offer to the club:

Membership is \$17 per year. Our membership year runs from January to December. All renewals are done in December and January.

Please make your checks payable to:

Florida Fossil Hunters
Post Office Box 540404
Orlando, Florida 32854-0404

Associate members are people in the same household, included at no extra charge, 2 adult votes per household.

Newsletter Policy

Articles must be submitted by the first of the month to be included in that month's newsletter. These can be mailed to the above Post Office Box or e-mailed to: elise@liseydreams.com. Articles can be sent as text in the e-mail or in Microsoft Word files (*.doc).

Florida Fossil Hunters Mark Your Calendar

Wednesday, November 19

7:00pm Meeting

December 5 - 7

*Withlacoochee Rockhounds
34th Annual Mineral & Gem Show*

December 6

*The Fossil Club of Lee County
2008 Fossil Show*

Wednesday, December tba

7:00pm Meeting

Vulcan Field Trip dates:

December 13th, 2008

January 17 & 18, 2009

The Tomoka Gem and Mineral Society Show

Wednesday, January 21, 2009

7:00pm Meeting

February 18, 2009

6:00pm Kid's Fossil Blast

7:00pm Meeting

March 31 - April 5, 2009

*18th Annual Thomas Farm Dig or
Hummingbird Challenge V*

April 3 thru 5, 2009

*The Mid America Paleontology Society (MAPS)
National Fossil Exposition*

More information on these events on page 2

Visit us online at www.floridafossilhunters.com

Articles and comments should be sent to: elise@liseydreams.com

Florida Fossil Hunters

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Florida Fossil Hunters News