NEWS
Florida Fossil Hunters

Volume 19, Number 7 August 2009

Prez Sez:

It's August, and that means that the carefree days of summer will soon give way to the carefree days of fall. Anyone still looking to beat the heat should get their snorkels and swimtrunks and head out to one of the Sunshine State's gorgeous fossil-rich rivers!

The kids are getting ready to go back to school, and if you're still searching for one more way to end your summer with a blast, then join us for Kid's Blast--Saturday, August 15th at 6:00 PM at Orlando Science Center. We'll meet in the Learning Labs on the 2nd Floor. Bonnie will showcase another spectacular study of Florida's way-back wildlife. Don't Miss It!

The General Meeting will begin at 7:00 PM in the same room. This one will be big! Our Fossil Fair will be here before we know it, and we'll need the help of each and every one of you to pull off a successful event! Join us this month, and let your voice be heard!

Good luck, and good hunting!

- Jimmy Waldron
President, Florida Fossil Hunters

AUGUST
club meeting

August 15, 2009
6:00pm Kids Blast
7:00pm Meeting

2009 Fossil Fair
October 10 & 11
See page 3
for more info

Coming Events

MEETINGS
SATURDAY
at the Orlando Science Center

August 15, 2009
6:00pm Kids Blast
7:00pm Meeting

Additional Meetings dates and times tba

October 10 & 11, 2009
Florida Fossil Fair
See page 3 for more info

For more info...
www.floridafossilhunter.com

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Fragments

Piece on the Peace

The water level at the Zolfo Springs gauge was at 6.5 ft. during the first week of August. You can find places to dig when the river is this high. Do check the water level before you drive down there....one rain event can cause the river to go up 2 to 6 ft.

Kids' Fossil Blast

Come join us as we explore the mysteries of the giants from South America: the Ground Sloth, the Giant Armadillo and the Glyptodont. We will meet at 6:00 pm on Saturday, August 15th in the Learning Lab on the 2nd floor at the Science Center.

To discover the more interesting parts of this subject, join us on Saturday, **June 20th at 6 pm** at the Orlando Science Center.

Fossil Fair

October 10th and 11th

Our Fossil Fair is only two months away! This year we are using the entire building instead of just half so we will have plenty of room for displays and activities as well as more vendors.

You can volunteer to help out in many areas:

- Kids' Fossil Dig Pit: helping the kids, handing out info, identifying fossils
- Silent Auction: helping folks to make bids, soliciting donations from the vendors
- Membership table: handing out information, answering questions, taking applications, selling t-shirts
- Admissions table: taking admission fees, selling chances for the raffle
- We'll also need volunteers to help clean up Sunday afternoon after the fair.
- Please donate fossils for the Kids' Pit and fossils and related items for the Silent Auction.
- We'd like the older "kids" to volunteer at the demonstration tables and kids' pit.
- Also, we'll be having food for the volunteers and vendors. Please bring your special casserole, salad or dessert to share with everyone.

We'll have more information and sign-up sheets at the August and September meetings.

Discovery of Elephants' Oldest Known Relative

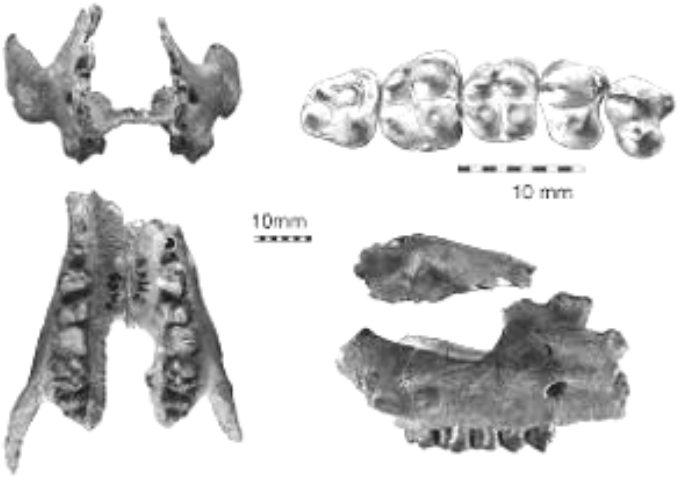
ScienceDaily (July 30, 2009) — Emmanuel Gheerbrant, paleontologist at the Paris Museum [(1)], discovered one of the oldest modern ungulates related to the elephant order.

The beginnings of the radiation (diversification) of the modern mammals (placental orders) remain poorly known because of fossil gaps, and especially in some key Southern continents such as Africa. Emmanuel Gheerbrant, researcher at the CNRS [(2)], reports[(3)] the discovery of one of the oldest known modern ungulates in Paleocene beds from Morocco. Dated to about 60 millions years ago, this fossil mammal belongs to a new species called *Eritherium azzouzorum*. It comes from the same Ouled Abdoun phosphate basin which yielded*Phosphatherium escuilliei* [(4)], which was until the *Eritherium's* discovery the oldest and most primitive proboscidean found. This is the oldest known African ungulate (called paenungulates), and among them the oldest known member of the elephant order (proboscideans) [(5)].

Eritherium azzouzorum is small (4 to 5 kg) and extraordinarily primitive. It exemplifies the emergence of a modern order of ungulates at a very primitive stage, which is illustrated by a likeness among proboscideans within primitive groups such as some condylarths [(6)] (louisinines, extinct) and non-paenungulate afrotherians (elephant shrews, Eocene to Present). Its primitiveness indicates the rapid evolution of the proboscideans at the Paleocene-Eocene [(7)] transition (e.g., with increasing size), and the rapid radiation of the African ungulates after the Cretaceous-Tertiary crisis (65 millions years ago), probably in relation to the colonization of the herbivorous African free niches.

Eritherium is a new major find, and one of the oldest known calibration point of the phylogeny of the placental orders. It is especially important for the fine tuning of the placental molecular trees.

(1) UMR 7207 (MNHN/CNRS/Université Pierre et Marie Curie), Center for Research on Paleobiodiversity and Paleoenvironments ;



View of the type specimen (skull) of the primitive proboscidean Eritherium azzouzorum. (Credit: Copyright MNHN, UMR 7207, C. Lemzaouda et P. Louis)

(2) Centre National de la Recherche Scientifique

(3) Paleontological research Agreement MNHN-OCP-Ministry of Energy and Mines (Rabat)-University Cadi Ayyad (Marrakech)-University Chouaib Doukkali (El Jadida).

(4) 55 millions years discovered in 1996 by the same team

(5) The elephant order or Proboscidea includes only 3 living species, but it has a very long and rich evolutionary history which is illustrated by 180 fossil species.

(6) Archaic ungulates which evolved at the end of the Cretaceous and the beginning of the Tertiary, and which includes the stem groups of the modern ungulates, as well as many extinct herbivorous lineages.

(7) The transition between Paleocene and Eocene occurred approximately 55 millions years ago.

Adapted from materials provided by CNRS (Délégation Paris Michel-Ange).

Down Under Dinosaur Burrow Discovery Provides Climate Change Clues

ScienceDaily (July 11, 2009) — On the heels of his discovery in Montana of the first trace fossil of a dinosaur burrow, Emory University paleontologist Anthony Martin has found evidence of more dinosaur burrows – this time on the other side of the world, in Victoria, Australia. The find, to be published this month in Cretaceous Research, suggests that burrowing behaviors were shared by dinosaurs of different species, in different hemispheres, and spanned millions of years during the Cretaceous Period, when some dinosaurs lived in polar environments.

"This research helps us to better understand long-term geologic change, and how organisms may have adapted as the Earth has undergone periods of global cooling and warming," says Martin, a senior lecturer in environmental studies at Emory. Martin is also an honorary research associate at Monash University in Melbourne.

In 2006, in collaboration with colleagues from Montana State University and Japan, Martin identified the 95-million-year-old skeletal remains of a small adult dinosaur and two juveniles in a fossilized burrow in southwestern Montana. They later named the dinosaur species *Oryctodromeus cubicularis*, meaning "digging runner of the lair."

The researchers hypothesized that, besides caring for young in their dens, burrowing may have allowed some dinosaurs to survive extreme environments – throwing a wrench in some extinction theories.

A year after the Montana find, Martin traveled to the Victoria coast, which marks the seam where Australia once snuggled against Antarctica. Lower Cretaceous strata of Victoria have yielded the best-documented assemblage of polar dinosaur bones in the world.

During a hike to a remote site known as Knowledge Creek, west of Melbourne, Martin rounded the corner of an outcropping and was astounded to see, right at eye level, the trace fossil of what appeared to be a burrow almost identical to the one he had identified in Montana. "I stared at it for a long time," recalls Martin. "In paleontology, the saying, 'where luck meets preparation' really holds true."

The probable burrow etched into the Early Cretaceous outcrop is about six-feet long and one-foot in diameter. It gently descends in a semi-spiral, ending in an enlarged chamber. Martin later found two similar trace fossils in the same area.

Last period of global warming

The Victoria fossils are about 110 million years old, around the time that Australia split with Antarctica, and dinosaurs roamed in prolonged polar darkness along forested southern Australia river plains. It was one of the last times the Earth experienced global warming, with an average temperature of 68 degrees Fahrenheit – about 10 degrees higher than today.

During the polar winter, though, the temperature could plunge below freezing. Previously, researchers theorized that the small dinosaurs in the region survived harsh weather by sheltering beneath large tree roots or in hollows. Martin's find, however, indicates that they may have dug into the soft banks of rivers flowing out of the rift valley.

The age, size and shape of the likely burrows led Martin to hypothesize that they were made by small ornithopod dinosaurs – herbivores that were prevalent in the region. These ornithopods stood upright on their hind legs and were about the size of a large, modern-day iguana.

"It's fascinating to find evidence connecting a type of behavior between dinosaurs that are probably unrelated, and lived in different hemispheres during different times," Martin says. "It fills in another gap in our understanding of the evolution of dinosaurs, and ways they may have survived extreme environments."

An eye for subtle clues

A specialist in trace fossils – including tracks, scat and burrows – Martin is known for detecting subtle paleontology clues. He also identified the first tracks of a large, carnivorous dinosaur in Victoria, and the first fossil crayfish burrows from the same area.

Martin teaches a seminar at Emory on modern-day animal tracking, a skill that he says aids him in finding signs of prehistoric life. "It's important to do as much field work as possible, because it gives your mind a better library of search images," he says.

Adapted from materials provided by Emory University.

Pterosaur Features Defy Comparison

Tissues show creature had three-foot wingspan, complex flying membrane

By Jennifer Viegas Discovery News

updated 2:29 p.m. ET, Wed., Aug 5, 2009

A well-preserved pterosaur with soft tissues reveals this dinosaur-age flying reptile had hair, claws and wings that were unlike anything seen on today's living animals, suggests a new paper.

Analysis of the remains, which date to around 140 to 130 million years ago, indicate pterosaurs were warm-blooded insect eaters that may have lived in trees and possessed sophisticated flying skills.

"Pterosaurs are unique in their bone construction and our study also shows that some of the soft tissues of these creatures differ from anything known today," lead author Alexander Kellner told Discovery News.

Kellner, a paleontologist at the National Museum in Rio de Janeiro, and colleagues made the determinations after studying the remains of the adult pterosaur Jeholopterus ningchengensis, found in Late Jurassic orEarly Cretaceous layers of the Daohugou Bed in China.

Wing tissues show the pterosaur had a nearly three-foot wingspan with a complex flying membrane located between the animal's body and each of its large fingers. The membrane consisted of up to three layers containing structural fibers, with fibers in each layer oriented in a different direction, forming a reticular pattern.

"We conclude that this pterosaur might have been able to adjust the wing membrane during flight in order to enhance flight capability," explained Kellner, who said the construction might have also permitted pterosaurs to position the wings as desired when not flying. The fibers also gave strength to the wings, preventing tears.

The study, published in the latest issue of the Proceedings of the Royal Society B, further describes hair-like structures that covered the pterosaur's body, including part of the wing membrane. The "hairs," previously theorized to have been feathers or protofeathers, consisted of "comparatively thick filaments, differing in structure from mammalian hair."

"Now, what were they?" asked Kellner. "This is the point: (They were) a completely different structure that is not known in any living organism today."

The researchers additionally found a "horny covering" on the pterosaur's claws, "showing that the claws were much longer in life."

A model of a pterosaur. By studying a well-preserved skeleton of a pterosaur, researchers have discovered that the pterosaur's wings, claws and hair are unlike any creature found on Earth today.

"This corroborates with the hypothesis that these animals were good climbers and could have been living in trees," Kellner said.

Italian paleontologist Fabio Dalla Vecchia, one of the world's leading experts on pterosaurs, told Discovery News, "The presence of up to three layers with differently oriented actinofibrils (in the wing membrane) is the most surprising thing in this study."

"They were not observed in other well-preserved specimens and could mean that not all the pterosaur actinopatagia (wing structures) were built the same way," Dalla Vecchia added.

He also said it's important that the new paper has better defined the pterosaur hair-like structures, and their distribution on the body, since this too wasn't known before.

"This is a remarkably well-preserved specimen, showing the importance of the Chinese deposits to understand different aspects of extinct organisms," Kellner concluded. "Hopefully more such specimens will come to light to enable us to understand a little more about how such strange animals, the pterosaurs, were functioning."

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:		
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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

August 15, 2009
6:00pm Kid's Blast
7:00pm Meeting and Auction

Additional Meetings dates and times tba

2009 Fossil Fair

Central Florida Fairgrounds

Florida Fossil Hunters present the
Seventeenth Annual Fossil, Mineral, and Gem Show
Saturday, October 10, 2009 - 9:00 - 5:00pm
Sunday, October 11, 2009 - 10-00am - 4:00pm

Newsletters Going Green

We are gearing up to *email* the newsletter each month. If you want to participate, just email Bonnie at bjrb48@netzero.com or sign up at the meeting. If you want to continue to receive a paper newsletter in the mail, you don't have to do anything.

Visit us online at www.floridafossilhunters.com

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

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