



Fossil Footnotes

Central Texas Paleontological Society

October 2006

President's Message

The new club is moving to the launching pad. The boards of APS and CTPS met on October 1 to start the process and agree on some final details.

There will be no CTPS meeting October 10. The organizational meeting of the Paleontological Society of Austin will be held at 7:00, October 17th at the AGMS clubhouse, 6719 Burnet Lane. Unless the membership decides differently, PSA will meet the 3rd Tuesday of each month at the AGMS clubhouse.

A slate of officers will be presented at the meeting with elections to take place in November. Please let me or John Hinte know if you would be willing to be an officer in the new club.

I am very optimistic about PSA. The talents of the two clubs will form a more vibrant organization.

The October field trip will be October 14 & 15 to the Lake Texoma area. Plan to meet at 8:00 at Eisenhower State Park. We will visit several sites in the area.

Ron Root

Oct 17th Meeting Tuesday night

The October meeting will be a joint meeting of the clubs at the **AGMS Clubhouse** on **Tuesday night October 17th** starting at 7:00 PM.

Meeting Calendar

October 17	Joint Meeting
November 3-5	Fossil Fest, CTPS Fossil Show at Old Settlers Heritage Association, Round Rock, Texas
December	Christmas Party (no meeting)

Hope to see you at the meeting!!

2006 Field Trips

October 14-15	Lake Texoma
November 18 th	Waco Pit
December	Christmas Party

The October field trip will be October 14 & 15 to Lake Texoma. We will meet at 8:00 Saturday morning at the entrance to Eisenhower State Park.

Directions: To get to the park take U.S. Highway 75 out of Dallas; take Exit #72 to State Highway 91 North to Denison Dam to FM 1310 W and travel 1.8 miles to Park Road 20 entrance.

If you are going to stay at a motel in Sherman or Denison, make your reservation now. The motels in the area are booked.

Call or email if you have questions,

Ron Root 497-6158

W E B P R O J E C T S

RECALLED TO LIFE

Extinction isn't forever, at least on the Internet. After vanishing briefly, a popular fossil encyclopedia known as Palaeos has reappeared as a user-written wiki.* Paleontology buffs Toby Young and M. Alan Kazlev launched the trove of information on life's history 4 years ago, exploring topics as diverse as systematics techniques and the Cenozoic era (65 million years ago to the present), when this mastodon stomped around North America. But Palaeos went offline this spring because it required too much work. Bloggers lamented, so Kazlev started a wiki. Users are invited to help transfer information from the old site and revamp the content. To browse the remains of the old Palaeos, go to www.palaeos.org.

Mike

New Species of Ancient Sea Creature Discovered -- Under Ping-Pong Table

Nicholas Bakalar
for [National Geographic News](#)
September 29, 2006

Canadian researchers have found a new species of ichthyosaur—big-eyed, fishlike reptiles that lived between 250 and 90 million years ago—and they found it under a Ping-Pong table.

Researchers at Edmonton's University of Alberta made the discovery when they came across a long-forgotten box of fossils in an undergraduate science lab.

The 100-million-year-old fossils had originally been discovered in 1971 in Canada's Northwest Territories, but the bones lay untouched and unexamined for 25 years "I did my undergraduate work here [at Alberta]," said Michael Caldwell, the co-author of the new find, "and I was studying specimens right on top of this table [as an undergrad]."

Caldwell graduated in 1986 and came back to the university as an assistant professor in 2000. Shortly after his arrival, he got some money to renovate the lab.

"We decided it was time for the Ping-Pong table to go," he said. "We lifted it up, and found all this marine reptile material underneath. We knew the boxes were there, but we didn't know what was in them."

The bones belong to two juvenile ichthyosaurs, one slightly larger than the other, and two adults, one of which has two embryos preserved near its vertebrae.

"It's important stuff," Caldwell said. "This is right at the end of the evolutionary history of the ichthyosaurs. They go extinct right after this."

Caldwell's team published their findings in the September issue of the journal *Palaeontology*.

Newest Known Embryos

The embryos found with the specimens are by far the newest known—80 million years more recent than the oldest previously known ichthyosaur embryos.

Unlike dinosaurs, ichthyosaurs gave birth to live young. "Now we have the evidence from ... Cretaceous times [144 million to 66.4 million years ago] of live birth in ichthyosaurs," said Achim Reisdorf, a paleontologist at Switzerland's University of Basel who was not involved in the find. All the bones belong to members of the same species, according to the scientists, and the

specimens are so unique that they also constitute their own genus of ichthyosaur. Ichthyosaurs were streamlined aquatic reptiles that breathed air and are believed to have subsisted mainly on squid.

One of their most prominent characteristics is their enormous eyes, the largest eyes ever found on any animal. One specimen in Caldwell's study included the remnants of an eye, a notable find. "The orbits [eye sockets] include space for pieces of bone that fit behind the eyeball and keep it from collapsing from the pressures of deep diving," Caldwell said.

"You need a huge eyeball to accumulate and concentrate the minimal light at 200, 300, 400 feet [60 to 120 meters] of depth."

The largest of the specimens is about 5 or 6 meters (16 to 20 feet) long, according to Caldwell, who notes that none of the specimens were fully grown adults. Ichthyosaurs ranged in size from 3 feet (about 1 meter) to more than 60 feet (18 meters). In addition to the embryos and eye, the fossil find includes portions of a snout plus jawbones, skull bones, cheekbones, and teeth.

Maxwell and Caldwell named the new animals *Maiaspondylus lindoei*—"maia" meaning "good mother" because the fossil was found along with embryos, and "spondylus" meaning "vertebra" because the embryos were found near the spinal column.

The species name, *lindoei*, is derived from the name of the man who first collected the specimens in 1971, Allan Lindoe.

Dino-Era Bird Flew With Four Wings, Study Says

James Owen
for National Geographic News
September 28, 2006

Four wings were better than two for the earliest birds, which became airborne by spreading both their feathered arms and legs, a new study says.

The research suggests that the ancestors of modern-day birds first took to the skies by gliding down from trees. This study is based on well-known fossils from Germany of *Archaeopteryx*, the most primitive known bird (related news: ["Dinosaur-Era Bird Could Fly, Brain Study Says"](#) [August 2004]).

The fossils were re-examined by paleontologist Nick Longrich from the University of Calgary in Canada, who found that the flying dinosaur's leg feathers have an aerodynamic structure and likely acted as lift-generating "winglets."

Longrich said that his research "puts forward some of the strongest evidence yet that birds descended from arboreal parachuters and gliders, similar to modern flying squirrels." The study supports the "tree down" theory for the origins of avian flight.

This theory suggests that the immediate ancestors of birds were tree-dwelling dinosaurs that developed the ability to glide and paved the way for self-propelled flight.

The competing "ground up" hypothesis argues that species of terrestrial dinosaurs gave rise to birds by running at high speeds and evolving rudimentary wings that lifted them off the ground.

Stripped Fossil

Fossils of the dino-era bird *Archaeopteryx*, which lived some 150 million years ago, were first discovered in 1861. Eight further specimens were subsequently unearthed.

While researchers at the time noted feathers on the creature's hind limbs, they were generally thought to be used for insulation or display, not for flying. Longrich examined the structure and function of *Archaeopteryx*'s hind-limb plumage using the fossil record, including the so-called Berlin specimen. Found in 1877 and now on display at the Museum of Natural History in Berlin, the fossil bird had unusually long feathers around its legs. Some researchers broke ranks more than a century ago to suggest that *Archaeopteryx*'s leg feathers did play a role in flight.

But, Longrich says, the issue was later forgotten when much of the hind limb plumage of the Berlin specimen was destroyed.

"The specimen was prepared sometime in the late 19th or early 20th century," the paleontologist said. "Most of the hind limb feathers were removed from the right leg to expose the bones of the legs and pelvis."

All that remains of those feathers are photographs, a cast, and a counter slab of limestone bearing an imprint of the feathers. "What remains of the plumage on the main slab is not nearly as impressive," Longrich added.

Still, closer analysis of the fossil revealed to Longrich that the feathers have features needed for flying, such as curved shafts and asymmetrical vanes, which would have acted as airfoils to help generate lift.

Writing in the current issue of the journal *Paleobiology*, Longrich notes that several living species use their hind legs as airfoils to glide from trees, including types of lizards and frogs.

The use of all four limbs while airborne is likewise seen in tree-dwelling animals such as flying squirrels.

Setting the Stage

But, the researcher said, the main reason *Archaeopteryx* was initially overlooked as a four-winged bird was because the idea seemed "just too improbable, too foreign." "Everybody knows that birds don't have four wings, so we overlooked them even when they were right under our noses," he said.

That changed when several fossils of a new four-winged dinosaur were discovered in China in 2002, prompting researchers to reassess *Archaeopteryx*'s leg feathers.

Chinese fossil experts suggested that the species, *Microraptor gui*, used its plumed limbs and a long, feather-fringed tail to glide between trees (read ["Four-Winged Dinosaurs Found in China, Experts Announce"](#) [January 2003]).

"I never would have considered the idea of four-winged birds," Longrich added. "But after the Chinese four-winged dinosaurs shattered my preconceptions, I was willing to say, Why the heck not?"

Archaeopteryx may mark a transitional evolutionary stage between *Microraptor*-like dinosaurs and modern birds, Longrich says.

"The other possibility is that *Archaeopteryx* represents the ancestral condition," he added, with one branch of the family tree leading to advanced birds with reduced hind wings.

"The other branch—*Microraptor* and allies—went off in the other direction and evolved even larger hind wings." The new study apparently undermines the "ground up" theory to explain the origins of bird flight.

"'Ground up' seems to be more popular these days," Longrich said. "I think the reasoning goes that birds descend from dinosaurs, dinosaurs were terrestrial, so birds must descend from terrestrial animals."

"However, a lot of people feel that an arboreal origin makes a lot more sense, and not all paleontologists are so quick to rule out the idea that birds could come from arboreal dinosaurs."

Joel Cracraft, curator of birds at the American Museum of Natural History in New York, said Longrich's research "will be studied and talked about in all discussions dealing with the evolution of avian flight."

He said the study "nails" the idea that *Archaeopteryx* had an airfoil on its hind limbs and agrees that it suggests the primitive bird was a good glider.

But, Cracraft added, "whether [the study] also nails the 'tree down' hypothesis is another matter, mainly because the dichotomy between 'tree down' and 'ground up' is too simplistic for my mind."

"Clearly components of flight evolved in [running] dinosaurs," he added. "Our knowledge should increase as more fossils are studied."

Central Club Contacts, 2006

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Club Information

The Central Texas Paleontological Society is a scientific, non-profit, community-based organization devoted to the study of fossils, advancing the state of the science, educating the public, and collecting fossil specimens. Most of us are amateurs, fascinated by fossils, who love to collect.

Meetings are held on the second Tuesday of each month at the LCRA building, 3700 Lake Austin Blvd. (between Redbud Trail and Enfield Ave.) at 7:00 PM in the LCRA Offices Board Room of the Hancock Bldg. **The public is cordially invited** to attend these meetings as well as our field trips held throughout the year.

Annual dues are: \$15 per person or \$18 per family, which includes a subscription to this newsletter, membership in the South Central Federation of Mineral Societies, and liability insurance coverage for club activities. Associate membership is \$10 per year and includes a subscription to this newsletter.

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About the Newsletter

Fossil Footnotes is distributed once a month prior to each meeting. Contact the Membership Chair to subscribe or obtain a sample-issue. If your mailing-label has a date marked with a colored pen, it means your membership has or is about to expire. Please send your check to the club Membership officer or bring it to a meeting.

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