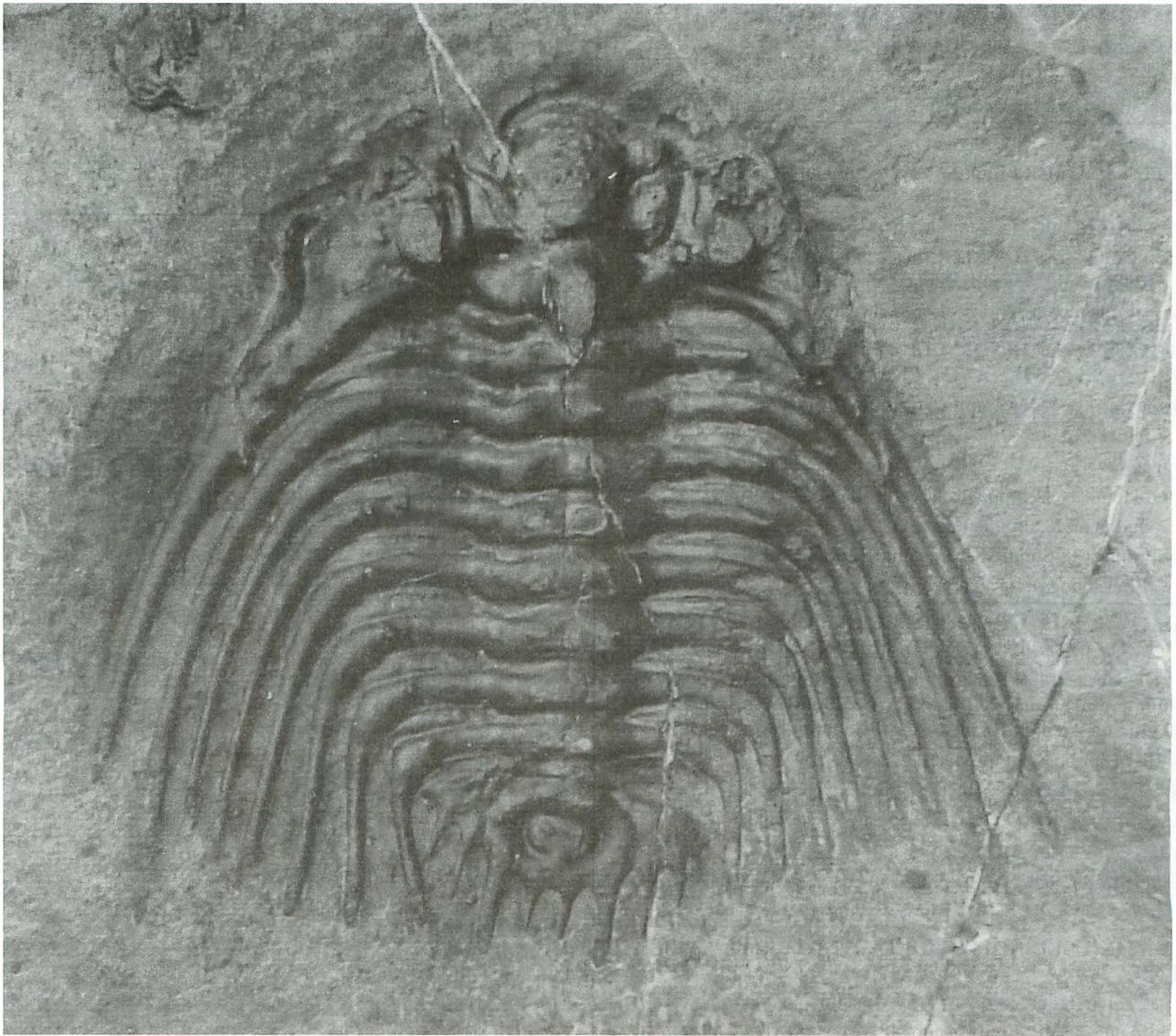


M.A.P.S *Digest*

Official Publication of
Mid-America Paleontology Society

Volume 25, Number 2
February 2002



MARK YOUR CALENDARS

Apr 12-14, 2002 MAPS NATIONAL FOSSIL EXPOSITION XXIV - TRACKS, TRAILS, and TRACES

Western Illinois University, Macomb, IL

Fri., Apr. 12 8 am - 5 pm Keynote Speaker @ 7:30

Sat., Apr. 13 8 am - 5 pm Meeting & Live Auction @ 7:00

Sun., Apr. 14 8 am - 12 noon

Information is included in the December issue.

Mar 23 FOSSIL COLLECTING FIELD TRIP

Lizzadro Museum of Lapidary Art, 220 Cottage Hill, Elmhurst, IL 60126

8:00-3:00 (9-Adult) \$25/Nonmember \$20/Member

Collect Mazon Creek fossils with members of ESCONI. Travel by motorcoach, take lunch, rain or shine. 3 new sites. Reservations required: 630-833-1616

Mar 24-25 BUFFALO SHOW—INCLUDES FOSSILS

Erie County Fairgrounds, Hamburg, NY

Sat. 10-7; Sun. 10-5

Contact Bob Hoffman 716-681-6875; RJH52089@earthlink.net

Apr 27 FOSSIL DIG

Lizzadro Museum of Lapidary Art, 220 Cottage Hill, Elmhurst, IL 60126

2:00-3:00 (5-Adult) \$3/nonmember; Free/member

Find out about fossils— where they can be found, what they look like, and how old they are, and take one home— with Don Auler.

Reservations recommended: 630-833-1616

May 3-5 CENTRAL ILLINOIS CLUB 50TH ANNUAL SHOW — INCLUDES FOSSILS AND DEMO OF FOSSIL PREP.

Macon County Fairgrounds, Decatur, Illinois

Fri & Sat: 9-5, Sun: 10-4

Contacts:

Robert Heim, 16 Hilltop Dr., Decatur, IL 5242, ph. 1 217-422-1075
heimhaus@springnet1.com

Jody Fronk, 138 South 18th, Decatur, IL 62521, ph 217-425-2696
Rocksndogs@msn.com

Jun 21-23 37TH ANNUAL GEM, MINERAL, FOSSIL SHOW & SWAP & JUNE MEETING OF THE MAPS INDIANA CHAPTER

Monroe County 4-H Fairgrounds, Bloomington, IN. Southwest of Junction of Ind. 37 & Ind. 45 S, 1 2/10 miles on Ind. 45, then 7/10 mile on Airport Road, west of Bloomington.

Fri: 10-7 (Set-up 8 am to 10 am)

Sat: 8-7 (Indiana MAPS meeting 2:00)

Sun: 8-4.

Contacts:

Margaret Karhs, 9145 W. U.S. Hwy. 50 East, Seymour, IN 47274-9401
Elmer Richter, 4741 St. Rd. 54 W., Springville, IN 47462

Jul 27 CENTRAL ILLINOIS CLUB TAIL GATE/SWAP AND PICNIC

Funk Prairie Home and Mineral Museum

For info and RSVP: Fred Bishop, 489 Megan Drive, Decatur, IL 62522, ph 217-422-1230

992/02 DUES ARE DUE

Are your dues due? You can tell by checking your mailing label. It reflects dues received by February 28. The top line gives the expiration date in the form of "99year" followed by month--992/02 means 2002/February. Dues cover the issue of the Digest for the month in which they expire.

We do not send notices but will let you know if you are overdue by highlighting your mailing label and stamping your Digest. We carry overdues for two issues before dropping them from our mailing list.

Please include on your check your due date and name exactly as it appears on your mailing label - or include a label.

Dues are \$20 per U.S./Canadian household per year. Overseas members may choose the \$20 fee to receive the Digest by surface mail or a \$30 fee to receive it by air mail. (Please send a check drawn on a United States bank in US funds; US currency; a money order; or a check drawn on an International bank in your currency.) Library/Institution fee is \$25.

Make check payable to MAPS and mail to:

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Cedar Rapids, IA 52404

ABOUT THE COVER

This month's cover photo of a new undescribed trilobite (*Kettneraspis* n.sp.) was sent by Lloyd F. Gunther, Brigham City, UT. The specimen is from the Devonian of Nevada. It was found recently by the Gunther family at a new locality.

EXPO DRAWS NEAR

Expo is only a few short weeks away now. **Marc Behrendt** reports that as of February 27, only 5 tables were left, but he will still take names to fill in for cancellations. And there are usually a few no-shows and people who use their table for only one or two of the days. So if you haven't made your table reservations, contact Marc.

David J. Kaplan has been co-chairing publicity with **Tom Witherspoon**, sending out e-mails to all the Paleontological Societies and magazines informing them of our show. So with that publicity and the Madagascar Exhibit **Wendy Taylor** and crew are bringing from Chicago's Field Museum, we can probably expect a big crowd. Hope to see **you** there.

DIG FOR DINOSAURS!

from *Dry Dredgers*, Greg Hand, Ed. 2/02

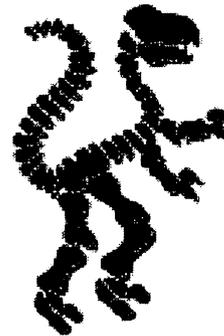
Cincinnati Museum Center is offering a unique dinosaur-collecting trip for paleontology fans. Dr. Glenn Storrs, curator of vertebrate paleontology at Museum Center will lead a summer expedition to Montana to excavate Diplodocus bones for study and exhibit. The fossils come from a Jurassic graveyard near Billings that is now a Museum Center special research project. Museum Center field school offers participants the opportunity to learn the basics of dinosaurs and dinosaur collecting, western history and ecology, and regional geology while enjoying the adventure of a lifetime.

Three separate week-long sessions will be available in late August 2002. Program fees are \$1150 for museum members and \$1250 for non-members. Training, local travel, collecting supplies, and food and lodging at the Yellowstone-Bighorn Research Association camp in Red Lodge, Montana, are included. Trip participants are responsible for their travel to Montana. No experience is necessary, but this program requires moderate exertion. An adult must accompany children 13-16. Call Information & Reservations at 513-287-7000 for additional information and availability.

ROCK AND ROLL DINO

summarized by *The Breccia* 2/02,
from an article in *Discover* 1/02
via *Dinny's Doin's* 3/02

And they say dinosaurs have no taste in music! A group from the University of Utah had a portable stereo to help them endure the 100-degree days in Madagascar. The stereo pumped out rock and roll, frequently *Brothers in Arms* by Dire Straits.



Every time they played that tune, they found more and more bones from a dinosaur from the late Cretaceous Period. If they didn't play the song, they wouldn't find the fossils.

The team unveiled their find — a two-legged predator about six feet long and three feet tall that weighed about 80 pounds.

It had front teeth that protruded straight out from the jaw, which is something unique among dinosaurs so far. The closest living creatures to this type tooth location are the modern shrews, which use their front teeth to stab prey.

The team figured that their dinosaur probably used his teeth the same way and would have been a vicious predator.

They named the creature *Masiakasaurus knopfleri*, or vicious lizard of Knopfler, in honor of the lead singer of Dire Straits. When Knopfler, 51, learned of the unusual accolade, he said, "The fact that it's a dinosaur is certainly apt, but I'm happy to report that I'm not in the least bit vicious."

FROM CROCODILES TO DINOSAURS: FACT TRUMPS MYTH

by Jean C. Florman

Just call him "Crocodile Brochu." Chris Brochu, assistant professor of geoscience, is quite enamored of the ancient, craggy, eerie reptiles.

"I like them," Brochu says. "They have an unappreciated diversity. There are horned crocodiles, giant crocodiles, hoofed crocodiles, and crocodiles whose noses take up half their faces."

Although his heart lies with crocodiles, Brochu's mind also focuses on evolution. Or, to put it in a geologist's nutshell, "the phylogenetic perspective to temporal issues in paleontology and evolutionary biology."

As an undergraduate geology student at The University of Iowa, Brochu worked with geology professor Nancy Budd on Central American reef corals. To satisfy his curiosity about evolution-or biological change through time-Brochu studied the anatomy of living and fossil crocodiles during his graduate studies at the University of Texas. He decided that the best way to approach the evolutionary changes in crocodiles was to get inside their heads. Quite literally.

"I look at crocodile brain cases," says Brochu, who joined the College of Liberal Arts and Sciences faculty in January 2001. "You learn a lot just from painstaking description. And from comparing crocodile skull anatomy to that of other animals."

This comparative approach helps Brochu unravel the complex evolutionary threads that tie together all living organisms. He also clearly enjoys the company of crocodiles and alligators in the wild and even has taught himself to communicate with them.

"That's the alligator juvenile's distress call," he says, emitting a sound that's a cross between a grunt and a chirp.

But while Brochu's heart may beat faster when he sees a pair of alligator eyeballs swimming toward him in the Florida swamps, he also has spent a lot of time with Sue.

Sue is the nickname for the most complete Tyrannosaurus rex skeleton ever found. Recognizing Brochu's experience detailing crocodile bones, Chicago's Field Museum of Natural History invited him in 1988 to thoroughly examine and describe Sue's skeleton. The postdoctoral

position provided an opportunity to put another piece into the evolutionary puzzle taking shape in Brochu's mind.

Brochu devoted three years to analyzing the massive T. rex bones. Much of what he discovered countered public legends that had been bubbling since Sue was discovered. To begin with, Brochu found little to support the assumption that Sue was a she.

"There's simply not enough information to determine the gender of this specimen," says Brochu, who steadfastly refuses to call Sue anything but "it."

The litany of myths that Brochu's work deflated includes claims of bite marks visible on the skull, teeth from another T. rex embedded in the skeleton, ribs broken at death, and a broken and rehealed fibula.

"There aren't any teeth in the rib cage," Brochu says. "And although there are many healed rib fractures-if you weigh five tons and you fall over, you're bound to break ribs-all of these injuries had healed by the time of death. At most, the leg bone might have evidenced a hairline fracture," Brochu says, "which certainly never crippled this individual."

What Brochu did find, however, is equally fascinating. An endocast of the inside of the brain case reveals a brain a foot long and olfactory bulbs the size of grapefruit.

"They really are enormous," Brochu says about the smell-detecting structures that rest between the nose and the brain. "Each one is larger than the rest of the cerebrum."

Brochu will publish his "map" of Sue's cranial nerve pathways soon.

"Working on Sue exposed me to a new group of animals I'd never studied before," Brochu says. "It provided an important teaching tool that I can use when I talk to my students about modern crocodiles, which are, of course, the closest living relatives of dinosaurs."

Jean C. Florman is an Iowa City freelance writer.

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THE FLYING REPTILES, GIANTS OF THE MESOZOIC SKIES

by Derek J. Main

from *The Fossil Record*, Derek Main, Ed. 2/02

Long before modern birds, great giants of the ancient Earth dominated the skies. These great beasts were neither related to birds nor to dinosaurs, they were flying reptiles. The flying reptiles, or pterosaurs, were winged reptiles that lived millions of years ago during the age of dinosaurs, the Mesozoic era. The flying reptiles lived at the same time as the dinosaurs. However they were not dinosaurs, this is a common misconception. Dinosaurs are by definition terrestrial organisms, they neither swam nor flew. Last summer's latest installment of the ever popular Jurassic Park movie series featured some pterosaurs. They were of course portrayed as mere monsters in the movie, rather than the magnificent animals that they were. This article will cover some of the basics of the great flying reptiles.

The first pterosaurs evolved in the late Triassic period, the last became extinct at the end of the Cretaceous period with the dinosaurs. The pterosaurs had some truly unique evolutionary adaptations that granted them access to the skies over the Mesozoic Earth. The pterosaurs were the first vertebrate animal to evolve wings for flight. This fact alone makes them really quite marvelous. The pterosaur wings were composed of an extended finger with a stretched skin membrane attached to the end. Their bones were incredibly light and versatile for their great size. Their thin and hollow bones provided for greater lift when taking off and while soaring through the Mesozoic skies. Along with thin, hollow bones that allowed for greater lift, the pterosaurs had a reinforced rib cage. Their rib cage consisted of a set of ribs attached to a series of fused dorsal vertebrae called a notarium. The notarium prevented the chest cavity from being compressed during flight. Thus the animal could put forth great pressures upon its chest as it heaved its wings to gain altitude. A pretty cool adaptation if you're one of the worlds largest flyers.

Cosimo Collini discovered the first pterosaur in 1874. It was found in the famous lithographic limestones of Solnhofen, Germany (The Flying Dinosaurs, Currie

and Sovack 1991). The lithographic limestones of Solnhofen are famous for producing numerous vertebrate fossils. The most famous of these being the first specimen of *Archaeopteryx*, another early flier. When Collini first worked with pterosaurs, he misidentified the fossil as a marine reptile. It wasn't until French anatomist Cuvier reviewed the pterosaur fossil that it was identified as a flyer. It was then German zoologist Johann Wagler that for the first time linked pterosaurs to flying reptiles (The Flying Dinosaurs, Currie and Sovack 1991).

In the late nineteenth century, field crews working for Marsh discovered what was then considered to be the largest of the flying reptiles, *Pteranodon*. The unearthing of *Pteranodon* was one of Marsh's greatest discoveries. It wasn't until a century later that a larger flying reptile would be discovered. In the early 1970s a University of Texas at Austin geology graduate student, Doug Lawson, discovered the world's largest flying reptile in the deserts of far west Texas. Within the Cretaceous rocks of Big Bend National Park, Lawson discovered a behemoth pterosaur that had an estimated wingspan of greater than 40 ft.! This animal had wings greater in size than a World War 2 fighter plane and most modern jets! The pterosaur was named *Quetzalcoatlus* and to date is the largest flying creature known to science.

Since the extinction of the flying reptiles, no flying organism has developed either the size or the grandeur of the pterosaurs. They dominated the skies over the Earth for nearly 150 million years. The skies of the Earth may never again see an animal with wingspans as great as those of the flying reptiles. For now and perhaps ever more, such may only be found within the rocks of the Earth.

For further reading:

The Flying Dinosaurs, Currie and Sovack 1991.

Prehistoric Life, the Rise of the Vertebrates,

Norman 1994.

FLUORITE-REPLACED FOSSILS — CAVE IN ROCK, ILLINOIS

by Alan Goldstein

from *Paleo Newsletter*, Jean Wallace Ed., 2/02

When fluorine-bearing solutions permeated the limestone or calcareous sandstone, the calcite fossils may be replaced before the grains in the stone, because of their purity (i.e. minimal amounts of silica, clay). Around the periphery of the fluorite orebodies the amount of fluorine was low enough to replace the crystalline fossils and not the surrounding rock. In cases where the fossils were already partially silicified, the fluorite would encrust the fossil instead of outright replacement.

The type of fossils one can find is related to the location both in the strata (i.e. Levias Limestone or Rosiclare Sandstone) and the distance from the most intense mineralization. You can't often find fossils where big fluorite crystals are found because the entire strata has been replaced! Sometimes you can find isolated chunks of original matrix which might have fluorite-replaced fossils. I did find the impression of a decent-size *Orthotetes* brachiopod on the back of a solid mass of purple fluorite. It is most visible when the angle of illumination is low.

My three best fluorite-replaced fossils are: (1) a large *Lithostrotian harmonites* coral colony consisting of purple tubes in penetrating orange sandstone (this is the specimen that got me interested in replacement back in 1986); (2) a *Diploblastus glaber* blastoid of a lavender color attached to the corner of a light purple cube; and (3) a silicified *Perditocardia dubia* brachiopod protruding from a dark purple fluorite crystal which I found a couple of years ago.

In addition to fluorite, you can find fossils with other minerals associated (though not replaced) such as sphalerite. I recently found smithsonite-replaced fossils at a quarry in Cave in Rock, but the deposit (described recently in *Mineral News*) is highly localized and these fossils are not terribly exciting to look at!

The Annabel Lee mine was a source for Upper Mississippian Bethel? sandstone with carbonized plant material that was often associated with fluorite and sphalerite. I've got some large rocks in my garden made of such material. They typically don't make great "keeper" specimens because there is a lot of framboidal pyrite in the carbonized plant remains, which mean they actively decompose and give off acidic vapors and efflorescences which are not good for wood or paper storage boxes.

Other fluorite areas associated with sedimentary rocks (most Mississippi-Valley-type ore deposits) should have replaced fossils. It depends on the nature of the rock. Even the Corydon, Indiana, quarry produces fluorite replaced snails and brachiopods on occasion — they are only found as cross-sections in the limestone.

Other minerals more commonly replace calcified fossils as well — quartz, pyrite and gypsum being among typical. I have only studied those replacements unique in the Illinois - Kentucky fluorite district.

HADRICIDUYN WUI

from *Dinny's Doin's*, summarized by Sharon Otilige,

sources: articles in *Discover*, 1/02; *Dinosaur*, *Special Issue*, and *The Breccia*, 2/02

Known as TINYSAURUS, this tiny shrew-like mammal probably weighed no more than a paper clip. Looking somewhat like a triangular paper clip, its dime sized skull was discovered by Wu Xiao Chun, a reptile paleontologist. In 1985, in Lufeng Basin in Southwestern China, Wu thought he had found a part of a lizard. Years later after extricating the bone from its' matrix, Wu realized he had unearthed a tiny skull.

Decades later and after many tests, scientists revealed that the skull had belonged to the smallest mammal discovered from the Mesozoic. *Hadrocodium wui*, named after its discoverer, may also be the oldest known ancestor of mammals, having roamed the early Jurassic of 195 million years ago.

The large brain and the middle ear of Tinysaurus are typical of modern mammals. Zhe-Xi Luo, a vertebrate paleontologist at the Carnegie Museum of Natural History in Pittsburgh, Pennsylvania says, "it has been a challenge for scientists to trace the origins of these important mammalian features in the fossil record." Previously, the earliest known mammalian predecessor was from the late Jurassic, 150 million years ago. *Hadrocodium* predates this by 45 million years.

Scientists believe the large brain indicated high metabolism, which required an almost continuous feeding on insects and worms. "Mammals, even tiny ones, need big brains just to coordinate all their bodily systems." states Luo. The large brain of Tinysaurus did not mean a high intelligence.

MICROPALEONTOLOGY AND THE ENVIRONMENT

Edited by Virginia Friedman

from *Geotimes*, 1/00, via *Paleo Newsletter*, Jean Wallace, Ed. 3/00

It was 1877, long before exploration geologists started using foraminifera to find energy resources, when these microfossils were used to date strata in a water well near Vienna, Austria. Years later, in 1911, J. A. Udden in Illinois started using microfossils to correlate aquifers. Udden later went to work for the Texas Bureau of Economic Geology, where he no longer used microfossils to study water, but to find petroleum. In the last decade, micropaleontology has embarked on a new research path: environmental geology.

The fossil record typically has been viewed as incomplete — and therefore flawed — at least since the time of Lyell and Darwin. Only recently have biologists and paleontologists realized the record's relative completeness and its potential as a tool for evaluating and monitoring environmental disturbances, both natural and anthropogenic. Such studies have important implications for the industry and government-funded environmental remediation, and for understanding the history of biodiversity and its application to conserving and managing ecosystems.

Environmental geology — using geology's traditional disciplines to understand current changes in the environment — is therefore an evolving field. The environmental applications of micropaleontology are incredibly diverse, as are the taxa used (foraminifera, dinoflagellates, diatoms, pollen, ostracodes and thecamoebae).

Some important applications include:

- 1) Basic stratigraphic and paleoecological studies of seismic hazard sites and their histories.
- 2) Correlating aquifers that are discontinuous in time and location.

- 3) Engineering, including aligning the Chunnel connecting England and France as it was being excavated from both sides of the English Channel, and siting the Thames River flood control barrier.
- 4) Evaluating indicator species, abnormal morphologies and cellular defense mechanisms in response to pollution.

This last one is probably the most important application nowadays. The creatures that leave behind microfossils often have short life spans (weeks to months) and thus, respond quickly to environmental changes. They are frequently abundant in small time-averaged samples of only a few cubic centimeters. Thus microfossils are ideal for evaluating the environmental changes time-averaged assemblages may document. For example, understanding local, rather than regional, climatic and geologic controls on rates of sea-level change is of obvious ecological and economic importance.

Micropaleontology offers also, subtle but far-reaching clues to the states of environments before anthropogenic influences — making it easier to compare environments and measure how humans affect them. Research suggests that entire regions have experienced permanent changes after human settlement and, with the worldwide increase in population, this has tremendous applications. Using microorganisms and microfossils to understand environmental changes is nowadays a hot research area. Micropaleontology has embarked on a new research path: environmental geology.

References

Martin, Ron, "The Environmental Stories of Microfossils", *Geotimes*, January 2000

ADVERTISING SECTION

Ads are \$5.00 per inch. Send information and checks payable to MAPS to : Mrs. Gerry Norris, 2623 34th Avenue Ct., Rock Island, IL 61201. Phone: (309) 786-6505
This space is a \$5.00 size.

I am looking for two large DISPLAY QUALITY FOSSILS and will either pay cash for them or trade some excellent vertebrate material. The first is the glass sponge *Hydroceras sp* found in the Eastern USA's Late Devonian, typically found as a cast. (European specimens of this genus extend into the Carboniferous.)

The second is a really nice Cycad fossil for a cabinet. The species and locality are not important.
856-785-0001 <cpsgo40@aol.com>
Chris Sheridan, PO Box 180, Port Elizabeth, NJ 80348

To extend currently running ads, please send request and remittance to Editor by the 15th of the month. We do not bill. Ads do not run in the EXPO issue (April). Ads can be printed in different sizes of type to fit a 1" space.

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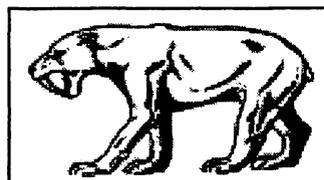
The World
Of Fossils
And
Natural
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Online

LISTING OF PLEISTOCENE VERTEBRATES

Published by Oklahoma Geological Survey

by Cindy L. Gordon, Oklahoma Museum of Natural History, 2401 Chautauqua, Norman, OK 73072-7029
from *Paleo Newsletter*, Jean Wallace, Ed. 11/00

A brief listing of Pleistocene vertebrates of Oklahoma, reviewed based on published reports, was recently released by the Oklahoma Geological Survey to serve as a resource to professionals and



amateurs alike who are interested in the geologic past of the State. The Pleistocene mammals are the most commonly encountered fossil vertebrate remains in Oklahoma, and often are found and collected by private citizens, amateur rock-hunters, and professional paleontologists alike.

(Continued on next page)

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shop: 660754-6443

Sheffler Rock Shop. Buy and sell geological material. Enjoys preparing fossils. Has been interested in paleontology since 1977. Main interest Paleozoic fish, echinoids, conulariids, trilobites, crinoids.

(Continued from page 7)

The new [article is from 11/00] 36-page book is Bulletin 147, *A Synopsis of the Pleistocene Vertebrates of Oklahoma*. The OGS is a state agency for research and public service, and is located on the Norman Campus of the University of Oklahoma.

Although much has been written about these fossils, a significant amount of this information is in sources of limited distribution. Authors Kent S. Smith and Richard L. Cifelli, both with the Department of Zoology and Oklahoma Museum of Natural History at the University of Oklahoma, hope this listing will be helpful even though it does not list many unpublished specimens and collections, a massive project which remains a goal of both authors. In publishing this work, they consulted all published sources known to them as well as a relevant master's thesis completed through the School of Geology and Geophysics at OU.

This book includes a number of archeological sites that possess a diverse assemblage of extinct species or that differ from present-day faunal composition, such as Burnham, Domebo, and Hajny. Geographically, most of the major sites yielding Pleistocene vertebrates in Oklahoma are in the western and panhandle counties. The local faunas included in the book range from early Pleistocene to Latest Pleistocene, and cover the state of Oklahoma. For each important fossil locality, the authors present an historic overview, faunal list, and commentary where relevant.

The first published record of Pleistocene vertebrates from Indian Territory (now Oklahoma) came in 1852, with additional reports coming 39 years later when a new taxon of a saber-tooth cat was published. From 1925 on, knowledge of Oklahoma's Pleistocene increased dramatically through the rest of the 20th century.

To order Bulletin 147, write the OGS at 100 B. Boyd, Rm. N-131, Norman, OK 73019-0628; call OGS Sales at 405/360-2886; or e-mail ogssales@ou.edu. The price is \$3, plus \$2 postage. The sales office is located at 1218-B West Rock Creek Road, in Norman.

The Mid-America Paleontology Society (MAPS) was formed to promote popular interest in the subject of paleontology; to encourage the proper collecting, study, preparation, and display of fossil material; and to assist other individuals, groups, and institutions interested in the various aspects of paleontology. It is a non-profit society incorporated under the laws of the State of Iowa.

Membership in MAPS is open to anyone, anywhere who is sincerely interested in fossils and the aims of the Society.

Membership fee: \$20.00 per household covers one year's issues of DIGESTS. For new members and those who renew more than 3 issues past their due date, the year begins with the first available issue. Institution or Library fee is \$25.00. Overseas fee is \$20.00 with Surface Mailing of DIGESTS OR \$30.00 with Air Mailing of DIGESTS. (Payments other than those stated will be pro-rated over the 9 yearly issues.)

MAPS meetings are held on the 2nd Saturday of October, November, January, and March and at EXPO in April. A picnic is held during the summer. October through March meetings are scheduled for 1 p.m. in Trowbridge Hall, University of Iowa, Iowa City, Iowa. One annual International Fossil Exposition is held in April.

The MAPS official publication, MAPS DIGEST, is published 9 months of the year—October through April, May/June, and July/August/September. View MAPS web page at <http://midamericapaleo.tripod.com/>

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Dated Material - Meeting Notice

CYATHOCRINITES



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