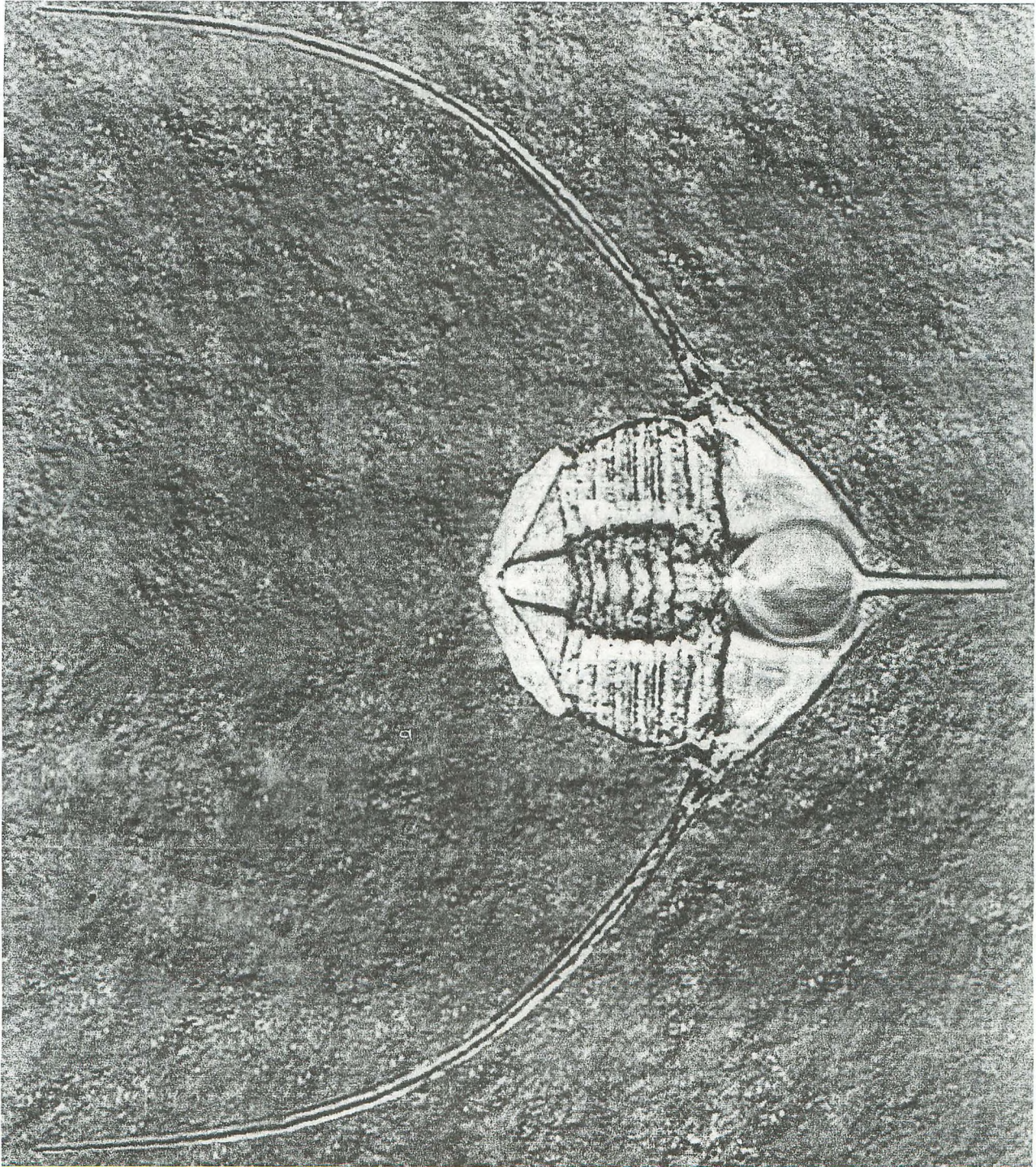


# M.A.P.S. *Digest*

Official Publication of  
Mid-America Paleontology Society

Volume 24, No 3  
March 2001



## MARK YOUR CALENDARS

### Apr 31 MAPS MEETING in conjunction with Expo.

7:00 p.m. Short General Meeting

### Mar 24-25 33<sup>RD</sup> ANNUAL BUFFALO GEM, MINERAL, FOSSIL SHOW

Sat., Mar. 24 10 am - 8 pm

Sun., Mar. 25 10 am - 6 pm

Theme "2001 Space Odyssey: Meteorites - Killer ROCKS from Outer Space?"

Contact: Robert Hoffman, 388 Townline Rd, Lancaster, NY 14086  
716-626-1080 (days), 716-681-6875 (evenings), 716-626-1214 (fax)

### Mar 30-Apr 1 MAPS NATIONAL FOSSIL EXPOSITION XXIII—TRILOBITES

Western Illinois University, Macomb, IL

Fri., Mar. 30 8 am - 5 pm Keynote Speaker J. Adrain @ 7:30

Sat., Mar. 31 8 am - 5 pm Meeting & Live Auction @ 7:00

Sun., Apr. 1 8 am - 12 noon

Information is included in the December issue.

### Apr 28 FOSSIL COLLECTING FIELD TRIP

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

Trip to Braidwood, IL, to collect Mazon Creek Fossils at Pit 11. Led by Don Auler. Travel by motorcoach, take lunch, wear old clothes. Rain or shine. Ages 9 - Adult — 9:00 to 3:00.

Members/\$15; Others/\$20

Reservations Required: 630-833-1616 (Call Early)

### Sep 22-23 THE FALLS OF THE OHIO FALL FOSSIL FESTIVAL

web site can be reached from <http://www.falloftheohio.org>

Sat., Sep. 22 9 am - 7pm

Sun., Sep. 23 10 am - 5 pm

For more information contact Alan Goldstein, Falls of the Ohio State Park, P.O. Box 1327, Jeffersonville, IN 471341-1327 (812) 280-9970 ext. 403.

### Apr 12-14, 2002 MAPS NATIONAL FOSSIL EXPOSITION XXIV - TRACKS AND TRAILS

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 will be included in the December issue.

## ABOUT THE COVER

by Lloyd, Val, and Glade Gunther

This month's cover was sent by Lloyd, Val, and Glade Gunther. It is *Ampyx* n. sp.? from the Ordovician SW of Eureka, Nevada. A new discovery, it was collected by the three Gunthers.

## 991/03 DUES ARE DUE

Are your dues due? You can tell by checking your mailing label. It reflects dues received by Mar. 5. The top line gives the expiration date in the form of "99year" followed by month--991/03 means 2001/Mar. 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:

Sharon Sonnleitner, Treas.

4800 Sunset Dr. SW

Cedar Rapids, IA 52404

## REGULATORY-PROHIBITIONISTS HAVE BEEN AROUND FOR A WHILE

excerpt from *Testimony of the Rocks - 1857*, by Hugh Miller  
with comments by B. L. Stinchcomb

*I ran into this and thought it might be appropriate to put in the Digest. It seems the regulatory-prohibitionists never stop. Hugh Miller was a popular writer on geology in the 19<sup>th</sup> century. He wrote when the basic tenets of geology were being "unearthed."*

I was tickled with the idea of a fossil preserve which coupled itself in my mind, through a trick of the associative faculty, with the idea of a great fossil act for the British empire, framed on the principles of the game-laws and, just wondering what sort of disreputable vagabonds geological poachers would become under its deteriorating influence, I laid hold of the pickaxe and broke into the stonefast floor; and thence I succeeded in abstracting,—feloniously, I daresay, though the crime has not yet got into the statute-book—some six or eight pieces of the *Pinites Eiggensis*, amounting in all to about half a cubic foot of that very ancient wood—value unknown. I trust, should the case come to serious bearing, the members of the London Geological Society will generously subscribe half-a-crown a-piece to assist me in feeing counsel. There are more interests than mine at stake in the affair. If I be cast and committed,—I, who have poached over only a few miserable districts in Scotland,—pray, what will become of some of them,—the Lyells, Bucklands, Murchisons and Sedgwicks,—who have poached over whole continents?

## PROCEEDINGS OF THE BOARD

**EXPO:** Bill Simpson, from Chicago's Field Museum, will present a program on Sue during the show at 2:00 or 3:00 on Saturday.

Publicity has been sent to Western Illinois U's University relations department. Cedar Valley Rocks & Minerals Society mailed show flyers to all clubs in the Midwest Federation and Kentucky. David Board will be asked to post the show information from the December issue and publicity about Sue on our Web page. (Check it out.) We will submit publicity to Chanel 8 in the Macomb area.

Tables were selling fast. Maggie Kahrs has sent the Expo *Digest*, with 110 pages, to the printer and was adding a late-arriving article. Frank Perry, who will be awarded MAPS's Richardson Award, will not be able to attend Expo. Wanda Aldred, Randy Faerber, and Carl Bazan will be asked to handle the silent auction again. One award will be presented by MAPS during Saturday's short business meeting.

## MAPS EXPO IS RIGHT AROUND THE CORNER

By the time you receive this *Digest*, Expo will be only days away. We are eagerly awaiting the gathering in Macomb of people from all over the U.S. and several other parts of the world.

We encourage you to catch the program on Sue; Chicago's Field Museum's T. rex, attend Friday night's award presentation by PRI and our keynote address by University of Iowa Professor John Adrain on "Hot Deserts, Cold Deserts, and Black Bugs - the Field-Based Science of Trilobites;" and save some energy for Saturday night's live auction. Please be generous in your donations to the auction, which raises money for Paleontological Society Scholarship fund and the Paleontological Research Institution, both of which are worthy recipients.

Come enjoy the show, meet old and new friends, and take home those specimens you just can't live without. Expo is a good time for all.

## FOSSILS ON FEDERAL AND INDIAN LANDS—PART IV

Report of the Secretary of the Interior, May 2000

<http://www.doi.gov/fossil/fossilreport.htm>

*This report of will run in several installments*

### V. RECOMMENDATIONS FOR FURTHER ACTION

#### Tribal Land

The consulting agencies have no recommendations concerning the management of fossils on Indian lands, since this should appropriately be addressed by tribal governments.

#### Federal Land

As a result of this Congressionally mandated assessment of federal fossil management, the consulting agencies have concluded that a coordinated approach to the appropriate protection and management of fossil resources would greatly enhance federal stewardship of these resources. Toward that end, the agencies recommend that future Congressional and administrative actions regarding fossils on federal land be governed by the following principles

#### **Principle 1: Fossils on Federal Lands are a Part of Americas Heritage**

Americans share in a unique natural legacy. This country, alone in the world, is home to icons such as Allosaurus,

Deinonychus, Pentaceratops and Stegosaurus. Other fossils, less vivid in the public imagination than dinosaur skeletons, are no less wonderful and no less our own. Perfect leaves and flowers from Colorado and Utah, a delicate tracery of dinosaur tracks on a 165-million-year-old beach, schools of fish (perfectly filleted by scavengers and decay) that swam in what is now the desert landscape of Wyoming, forests of ancient redwoods in New Mexico, the oldest known parrots from tropical Montana - all of these are preserved in the care of the nation. We are enriched by their collective ownership and impoverished in many ways by their loss.

We are particularly fortunate in receiving a legacy on federal lands that has not been squandered by earlier generations or scattered to the corners of the globe. Thomas Jefferson made clear to Lewis and Clark that some of their discoveries would have commercial value, but that some were to be brought back to the East and preserved for study. Part of their collection has survived for nearly 200 years. Jefferson himself studied a fossil ground sloth that he kept in the East Wing of the new White House.

Even this emphasis on preservation and study would have limited effect on the study of fossils if all of North America were covered by lush vegetation. The steep, arid and deeply

eroded terrains on federal lands in the West are the places where fossils are best preserved and most often found.

The earliest trappers and traders sent fossils East, and well before the Civil War, the predecessors of the U.S. Geological Survey had arrived to collect them in great numbers for safekeeping in the Smithsonian Institution. The combination of a national inclination to explore, a perfect landscape, a fascination with science, a desire to preserve and the money and leisure to pursue these goals, brought 19th century Americans into the 20th century with this natural heritage largely intact.

Fossils are elements of the human environment. Although they are not crucial to existence, like water and air, they offer intangible gifts to imagination and curiosity in the same ways that art and music enrich our lives. They remind us who we are, and how we might have come to be. Unlike archaeology, which seems near and familiar because we are studying ourselves, paleontology offers a pilgrimage to deep time. It lets us study what natural systems were like before human influence.

The fossil record always begins with a finite number of organisms that have any chance of being preserved, and only a few of them become fossils. The odds against preserving any plant or animal as a fossil are tremendous. Many factors must act together in order to preserve a specimen millions of years after its death. These factors include:

- protecting the remains from scavengers and decay,
- rapid burial by soft sediments like volcanic ash or mud,
- presence of parts that can be preserved easily,
- limited movement of the remains, either by running water or trampling by animals, and
- limited chemical and physical changes after burial.

Preservation alone is not enough. In order to be discovered, the fossil must be:

- exposed to view,
- seen by a human being,
- recognized for what it is, and
- collected appropriately.

We know only a little about the fossil record, and it consists mostly of gaps that remain to be filled. Unique and significant assemblages of fossils need to be protected as a national treasure for the enjoyment of all.

Federal agencies' current management practices further the paramount scientific and educational values of fossils. Efforts to regulate the collection of significant fossils, foster partnerships with educational groups and inform the public about opportunities on federal lands are part of each agency's goals.

Periodically, and in the course of this report, there have

been some proposals to expand the use of fossils on federal land to include commercial uses. However, the great majority of comments received from the public strongly oppose such a change to existing policy. Two major professional paleontological societies, representing more than 3,000 members, issued a joint statement in October 1999, agreeing that, "because of the dangers of overexploitation and the potential loss of irreplaceable scientific information, commercial collection of fossil vertebrates on federal lands should be prohibited as in current regulations and policies." As a result, the consulting agencies have concluded that the broadest public benefit is derived from the use of fossils for their scientific, educational and, where appropriate, recreational values.

*Recommendation: Future actions should reaffirm the current use of federal fossils for their scientific, educational and, where appropriate, recreational values.*

### **Principle 2: Most Vertebrate Fossils Are Rare**

"Rare" and "common" are subjective terms. In order to give them objective meaning when discussing fossils, we might start by thinking of relative rarity and absolute rarity. One comment noted that there can be thousands of microscopic fossils - such as foraminifera and diatoms - in a single teaspoon. These fossils might be seen as absolutely common worldwide, in certain rocks deposited on the ancient ocean floors. Similarly, invertebrate and plant fossils are relatively more common than vertebrates.

However, imagine the entire surface of the earth. Most of it is covered with water. Much of the land is covered by soil, trees and thick vegetation, and even where bare rock is exposed, it is often basalt, granite, or some other rock that yields no fossils. Where sediments are exposed, they commonly contain no fossils at all, or only a few. Finding fossils is the exception, not the rule.

We often fail to take this into account because Americans, especially in the West, have become so accustomed to places like Dinosaur National Monument that we believe this is the norm. In these few fortunate spots, vertebrate fossils are indeed relatively common, and we celebrate them only because such places are the exception. Only a few kinds of vertebrate fossils - fish scales, conodonts - are relatively common. Even seemingly worthless fragments may be of great interest to science, and removing them from the surface may mean that whatever lies beneath will not be collected. A few comments suggested additional efforts to track vertebrate fossils once they have been collected, but the difficulty and expense of implementing these approaches is unfeasible at the present time.

At issue is the public perception that many vertebrate fossils are so common that they should be made available for unrestricted collection. Several comments described the fossil fishes of the Green River basin in southwest

Wyoming, in support of this argument.

Eocene (50 million years old) fish fossils from the Green River Formation do occur in large numbers, concentrated in a few layers of sediment and virtually absent from the rest. However, such deposits are extremely rare. There are only three such accumulations of Eocene fossil fishes in the world - in the Green River Formation, Wyoming, near Monte Bolca, Italy and at Messel, Germany. The majority of the productive layers are deeply buried, and the fossils can only be removed where the layers are eroded and accessible at the earth's surface. No doubt billions of fossil fishes exist in this "rare assemblage of common fossils," but only a fraction are accessible without tremendous effort. Illegal collection on federal lands has damaged hundreds of acres in the Green River Formation.

One comment received from a paleontologist also refuted the claim that fossil fishes from Southwest Wyoming are so common that they are not in need of protection. He referenced a single specimen and pointed out that even "After excavation of well more than a million fishes over the last 140 years, this specimen is the first [pike] ever found in the [Green River] Formation (and the only complete [pike] skeleton known from the Eocene of North America)!"

A few other comments also attempted to make the case for a wealth of vertebrate fossils by describing great accumulations of bones. Regrettably, these are the exception and not the rule. Relatively few such accumulations, representing 500 million years of geologic time, are known in the entire world. A fraction of them are on federal land in the United States. Rather than agree to their exploitation, we should be astonished by their existence and treat them with the respectful awe reserved for the very old.

The restriction of vertebrate fossil collection to qualified personnel is one example of a unified federal policy. Some commenters requested a reconsideration of this long-standing federal approach. However, in light of the scientific value of these resources outlined above, and the majority of comments we received from the public, the consulting agencies agree that the policy should remain in place.

***Recommendation:** Future actions should reaffirm the restriction of vertebrate fossil collection to qualified personnel, with the fossils remaining in federal ownership in perpetuity.*

### **Principle 3: Some Invertebrate and Plant Fossils are Rare**

In general, invertebrates and plants are relatively abundant in the fossil record, and are more likely to be preserved than vertebrates. However, there are some kinds of plants and invertebrates that lived in environments so limited, or that

survived such enormous odds against preservation and discovery, that they are just as rare as the rarest vertebrates. In west central Nevada, 15-million-year-old lake beds preserve delicate wasps, lacewings, beetles and ants in shales so thin they are called "paper shales." Leaves of the ironwood tree, which now lives only on the Channel Islands of California, occur in the same place. This area is managed as one of the BLM's Areas of Critical Environmental Concern (ACEC). Other locales with notable non-vertebrate fossil accumulations, such as Petrified Forest National Park and Florissant Fossil Beds National Monument, are managed by the NPS.

The acknowledgment that some invertebrate and plant fossils are rare does not mean that the public cannot enjoy them. For example, the NPS tries to ensure that all visitors to parks and to fossil repositories are able to see the fossils for which park units were created by allowing the collection of fossils for scientific or research purposes, and by specifying that all collected specimens remain in federal ownership.

Those who enjoy paleontology as a hobby are welcome to collect and retain a wide variety of plant and common invertebrate fossils on lands administered by the BLM. No permit is required, although there are some limitations (see Table 1), and the fossils may not be bartered or sold. Recreational use of BLM-administered lands is an increasingly important function, and limited casual collecting of petrified wood, invertebrates and plant material is a low-impact hobby that can be enjoyed by almost anyone on lands designated for such a purpose.

The consulting agencies received some input to indicate that the differences in collection policies for plant and invertebrate fossils may be confusing to the public. However, the agencies believe that the policies are in conformance with agency missions, and do not jeopardize the protection of scientifically significant fossils. At the same time, agencies have concluded that they should improve public understanding of their goals in the management of plant and invertebrate fossils.

***Recommendation:** Future actions should reaffirm mission-specific agency approaches to the management of plant and invertebrate fossils.*

### **Principle 4: Penalties for Fossil Theft Should be Strengthened**

Fossils from federal lands are used primarily for scientific and educational purposes. However, similar fossils on the open commercial market often have high monetary values. Those that play on our most basic impulses - appeal of the extraordinary, delight in beauty - may also play on our desires to own them and our willingness to pay dearly for the privilege. Thick catalogs and well-attended fossil shows make available a wealth of fossils that can be legally collected from private lands, and from state trust lands in a

few Western states.

Escalating commercial values mean that increasingly, unauthorized collecting activity is spilling over onto federal lands. The loss of parts of the fossil record means the loss of important scientific and educational information about the history of life. These losses occur as a result of ignorance of the law or deliberate theft. In a study commissioned by the Forest Service, it was found that almost one-third of the paleontological sites surveyed in the Oglala National Grassland showed evidence of unauthorized collecting. In 1999, the NPS conducted a Servicewide survey identifying 721 documented incidents of paleontological resource theft or vandalism, many involving multiple specimens, in the national parks between 1995 and 1998. The NPS and the BLM can issue citations under their regulations, but the fine imposed is usually no more than \$100.

Two federal laws currently target the illegal collection or destruction of fossils. The Archaeological Resources Protection Act of 1979, 16 U.S.C. §§ 470aa-470mm (ARPA), authorizes penalties for illegal collections of paleontological resources. However, ARPA applies only to paleontological resources that were found in an archaeological context. The Federal Cave Resources Protection Act of 1988, 16 U.S.C. §§ 4301-4309 (FCRPA), authorizes misdemeanor-level penalties for illegal collections of paleontological resources from significant caves. Because these authorities address a limited subset of fossils, laws penalizing the theft or depredation of government property (18 U.S.C. § 641 and § 1361) now offer the primary protection for fossils on federal lands. However, establishing the monetary value of a fossil, or damage done to a fossil, can be difficult.

Relatively few people, even within the federal judiciary, know how costly fossils have become, or how these high prices may persuade an unscrupulous few to collect illegally from federal lands. For most people, the idea that a single skeleton could bring as much as \$7.6 million at an auction is incredible or absurd. Even scraps of dinosaur bone, sold in plastic bags, cost \$3 a large collection of these seemingly worthless bits might bring thousands of dollars to the seller. Additionally, potential expert witnesses can be reluctant to testify on the governments behalf as to the value of a stolen fossil because they believe that their testimony would further escalate commercial fossil prices. As a result of these factors, the fines currently imposed on fossil thieves are usually low compared to the lost resources. For example, one man who had stolen fossils from a national park over a period of years was fined a total of \$50.

Even if a stolen fossil can be recovered, crude collecting techniques may reduce its value through a loss of data, or damage to other specimens. Often, the most pronounced damage is the loss of the context and other significant scientific data, which is difficult to evaluate in monetary terms. In addition, theft and vandalism often cause other

environmental impacts, including the loss of other significant resources. Although there is no way to recover such losses, penalties for inflicting the damage should at least be high enough to enhance the deterrent effect. The NPS is beginning to apply the Park System Resources Protection Act, 16 U.S.C. § 19jj, to fossil thefts for that very purpose. Although the agency has been successful in using innovative economic models to reach court-approved settlements under the Act, it remains to be seen whether these models adequately reflect the losses to science and education caused by fossil thefts.

To build more effective cases under the government property laws, managers, prosecutors, the public and the judiciary need to be better informed about commercial values, about the relative rarity of fossils that drives prices up, and about the scientific and educational values of fossils. Furthermore, the public can be made aware of successful prosecutions and penalties commensurate with the gravity of the offense. Public awareness is essential because it deters potential violators, and because it increases the public's sense of affiliation with the agencies that are protecting these resources.

The successful prosecution of individuals for theft or damage to fossils, using theft of government property laws, dates back only a few years. It is therefore reasonable to expect a long learning curve before all elements of the legal system work successfully in deterring and punishing these crimes. The consulting agencies are encouraged by two recent cases in which three individuals were convicted of theft of fossil fish worth approximately \$10,000 from BLM-administered lands in Wyoming. Two of these three people were also convicted of aiding and abetting in the thefts.

The consulting agencies are also beginning to cooperate on joint efforts, including interagency training, that are designed to shorten the learning curve. These efforts, modeled after those used to protect archeological resources, bring together scientists and law-enforcement specialists from the federal land management agencies to facilitate coordination and consistency.

However, the consulting agencies agree that, despite such efforts, fossils will continue to be lost unless more rangers, paleontologists and other trained personnel are made available to land managers at the field level.

*Recommendation: Future actions should penalize the theft of fossils from federal lands in a way that maximizes the effectiveness of prosecutions and deters future thefts. Penalties should take into account, among other factors, the value of fossils themselves, as well as any damage resulting from their illegal collection. Future program strategies should emphasize education of federal managers, prosecutors, law enforcement personnel and the judiciary regarding the value of fossils and the techniques for the appropriate protection of fossil resources.*

## THE WORLD'S BIGGEST TRILOBITE

from *Dry Dredgers*, Greg Hand, Ed. 9/00

A team of Canadian paleontologists working along Hudson Bay in northern Manitoba has discovered the world's largest recorded complete fossil of a trilobite, a many-legged, sea-dwelling animal that lived 445 million years ago. The giant creature is more than 70 cm long, 70 percent larger than the previous record holder. "This is an important and amazing find," says Bob Elias, a professor in the department of geological sciences at the University of Manitoba, and a 1979 Ph.D. recipient at the University of Cincinnati. "It looks like a huge bug!"

Trilobites are an extinct group of arthropods with hard, jointed external skeletons, distantly related to crabs, scorpions, and insects. They are among the most familiar fossils of the Paleozoic Era, about 545-250 million years ago. "The majority of trilobites were between three and ten centimetres long," notes Dave Rudkin, assistant curator of paleobiology at the Royal Ontario Museum in Toronto. "Their fossil remains are eagerly sought by amateur and professional paleontologists alike."

The record-setting trilobite was found and recovered during a long-term field project investigating fossils along an ancient marine coast of Late Ordovician age exposed near Churchill, Manitoba. "Four hundred and forty-five million years ago, this now frozen and windswept area was a thriving tropical haven for life along what was then the Earth's equator," says Graham Young, associate curator of geology at the Manitoba Museum of Man and Nature and an adjunct professor at the University of Manitoba.

The giant trilobite represents a new species of the genus *Isotelus*. Elias notes: "This remarkable discovery adds to our knowledge of biodiversity following the Ordovician evolutionary radiation, one of the greatest diversifications in the history of life. The huge species existed just before the end of the Ordovician Period, when *Isotelus* and many but not all other trilobites disappeared in a great mass extinction. Studies of these events help us understand more about global environmental changes and their effects on the biosphere."

This research project is led by Graham Young and Bob Elias; the trilobites are being studied by Dave Rudkin. Financial support was provided by the Natural Sciences and Engineering Research Council of Canada, the

University of Manitoba, the Manitoba Museum Foundation, and the Royal Ontario Museum Foundation.

In 1996, Graham Young and Bob Elias began a long-term field project investigating the geologic record and fossil life along a spectacular Late Ordovician tropical marine coast exposed near Churchill, Manitoba. They are particularly interested in the abundant and diverse coral fauna. For the 1998 field season, the team included trilobite specialist Dave Rudkin, Janis Kiapecki (collections manager, Manitoba Museum of Man and Nature), Ed Dobrzanski and David Wright (volunteers, MMivIN), and Curtis Moffat (student, University of Manitoba).

On the third day of the 1998 expedition, Rudkin discovered what would later prove to be the world's largest recorded complete trilobite fossil. "I can recall my first words but I can't repeat them," he laughs. Rudkin quickly brought over the rest of the team. Elias remembers: "There sure was a lot of excitement! There was also a lot of suspense because only a small portion of the trilobite was visible. We didn't know if the specimen was complete or if it was what I call 'trilo-trash' - the usual fragmentary remains."

Adding to the suspense, the advancing tide of Hudson Bay submerged the trilobite before it could be collected. The team returned that evening, waiting impatiently for the water to retreat. By the time the fossil reappeared, however, there was too little sunlight to permit collecting!

Following a seemingly endless night, the team arrived for low tide the next day. "This time, we knew we had to get it out. The minute it was exposed we went in and got the whole thing out in an hour and a half," recalls Young. "And as the trilobite was uncovered during excavation, we realized we had the whole body of the beast," adds Elias.

The world's biggest trilobite can be seen at the Manitoba Museum of Man and Nature in Winnipeg. A replica will be on display in the department of geological sciences at the University of Manitoba, beginning September 2000.

**AMMONITES AND THE OTHER CEPHALOPODS OF  
THE PIERRE SEAWAY: AN IDENTIFICATION GUIDE**

by **NEAL I. Larson, Steven D. Jorgensen,  
Robert A. Farrar, and Peter L. Larson**  
with photographs by **Edward A. Gerken**  
Geoscience Press, Inc., 148 pages

review by **Lee J. Cary**  
from *Bone Valley Fossil News*, Ed Metrin, Ed. 2/01

Over 90 species, 32 genera, and 13 families of cephalopods that lived in the Pierre Seaway from about 82 million to 69 million years ago are clearly and fully described in this very fine identification guide. During the Cretaceous period the Pierre Seaway divided the interior of North America from the Arctic Ocean to the Gulf of Mexico. The Pierre Shale which formed here is probably best known for both the number and the fine condition of ammonites it contains. This guidebook focuses on the late Cretaceous, particularly the entire Campanian stage and the lower Maastrichtian stage.

After a brief introduction, the guide offers a helpful chart showing the position of the Pierre Shale in geologic time along with four maps of North America showing the present day outcrops of Pierre Shale as well as maps showing the approximate extent of the Seaway 80 MYA, 73 MYA, and 69 MYA. This is the time period covered by this book. There are at least three important features of this guide: (1) it is written for general understanding; (2) it brings together considerable cephalopod information which, until now, has only been available in technical journals; and (3) it provides clear and specific information in identifying specimens.

Twenty-three pages are devoted to baculites. Some 32

baculites are described along with a side view of a section of each specimen, a cross section, and a suture pattern. This is followed by a simplified identification chart giving brief information on the baculites covered in greater detail earlier. Next comes fifty pages on eight families of ammonites with photographs and descriptions of some 26 genera and numerous species. The next few pages provide information on other cephalopods such as belemnites, squid, and quite possibly an ancestor to the chambered nautilus. This is followed by five pages of double-columns listing the full range of the macrofossils of the Pierre Seaway. Next is a five-page glossary and this is followed by a very extensive (twenty-six page) bibliography on the geology and paleontology of the Pierre Seaway. An index of the cephalopod species and a chart of the known range of the ammonite species complete the guidebook.

This is a good reference work, a good identification guide, and a good field book on the cephalopods of the Pierre Seaway. It is easy to read and understand. There also are good clear photographs by Edward Gerken. The authors are associated with the Black Hills Institute of Geological Research, Inc. Peter Larson is president and founder of the Institute. His brother Neal is vice-president and Robert Farrar is the Institute's secretary/treasurer. They also are responsible for developing the Black Hills Museum of Natural History. Steven Jorgensen is currently an Environmental Geologist in Omaha, Nebraska.

Peter Larson and his brother Neal, probably are best known to the general public because of all the publicity surrounding their discovery of and their efforts to keep custody of Sue, the most famous *Tyrannosaurus rex* of all. A new book has just been published about the Larsons' experience with Sue, including their long legal battles and the auction at which Sue became the property of Chicago's Field Museum of Natural History. . .

**MIDDLE EOCENE CLAIBORNE GROUP  
INVERTEBRATE FOSSILS**

from **Stone City Bluff Burleson County, Texas**

by **John and Barbara Emerson**

Members of Houston Gem & Mineral Soc. Paleo Section

136 page identification guide

2 species/page; outline descriptions;

individual photos (2"x3" to 3"x3");

identification references with each species.

from *Paleo Newsletter*, Jean Wallace, Ed. 2/01

A study of Middle Eocene invertebrate fossils from Stone City Bluff locality on the Brazos River in Burleson County, TX, revealed a large fauna, including 61 species recorded for the first time from this famous site. Four Phyla (Anelida, Bryozoa, Coelenterata and Mollusca) including

72 families, 128 genera, and 220 species. One illustrated but unidentified brachiopod specimen is included.

This study represents the first attempt to collect, categorize and illustrate the entire invertebrate fossil fauna from Stone City Bluff. It will be a useful reference for collectors and scientist studying Middle Eocene localities in Texas and the central Gulf Coastal Plain.

Book—\$20.00 + postage/handling:

1 book —\$1.50 (TX resident); 0 (non-TX resident)

2-5 books—\$2.00 for all

6-10 books—\$2.25 for all

Send name, address and check or money order to:

John H. Emerson

2227 Briarwest Blvd.

Houston, TX 77077-5636

jab77077@hal-pc.org



**TAR PIT REMAINS  
HELP REWRITE LA'S HISTORY**

Fordahl, Matthew (AP). *The Daily Courier*, Prescott, AZ.  
8/29/00. p 7A

Norbert Labuguen squeezes a turkey baster to suck up globs of asphalt while Gary Takeuchi uses dental picks and brushes to remove flaky sand from an ancient bison bone that last saw light 28,000 years ago.

It's grueling, uncomfortable work made more difficult by 90-degree temperatures and the clumpy, smelly oil that sticks to clothes, skin and everything else that makes its way into one of the city's fables La Brea Tar Pits.

Though researchers have been pulling ancient bones out of La Brea sites for nearly a century, the latest excavation, which has been slowly proceeding every summer since 1969, is the most precise and complete excavation ever.

"Back when they originally found fossils here, they were just digging bones out of the ground," said Takeuchi, a senior excavator. "They weren't carefully analyzing the bones. We're able to reconstruct them and find out how bones are related."

The approximately 1,000 bones pulled each year from Pit 91 — as tourists watch from a platform above — are helping paleontologists rewrite the early history of the area that would become Los Angeles.

Though new species are rarely discovered among the bones of wolves, camels, bison and land sloths, each new fragment helps fill in the picture of Southern California life at the end of the last Ice Age, said project manager Christopher Shaw, of the George C. Page Museum of La Brea Discoveries.

"We're capturing information that wasn't captured before, mostly from fossils that are tiny, things that were ignored or not caught in the early days," he said. "We can better interpret past climates and habitats."

Old ideas have been cast out: The best picture of Southern California at the end of the Pleistocene Epoch now resembles today's Monterey Peninsula rather than the African Savannah depicted in paintings based on older research.

The cast of known species has grown to 650, with the biggest jump seen among smaller creatures whose bones were missed or ignored by early diggers using big shovels and chisels.

Hapless animals did not sink into the tar like quicksand. In most cases, they were trapped like flies on flypaper and died of dehydration, starvation or shock. And forget about dinosaurs — they disappeared 65 million years before the first tar pit tragedy.

Since 1907, millions of bones have been extracted from the sticky ponds wedged between museums, office buildings and condo towers not far from Beverly Hills.

Contrary to some depictions, the "pits" are just shallow puddles

of water and seeping asphalt. The "tar" is actually asphalt formed by decaying marine plankton that live millions of years ago. (Tar comes from ancient woody materials like coal or peat.)

... "The asphalt itself is a preservative," Shaw said. "It saturates the bones and keeps water from petrifying or destroying it."

The current dig is about 14 feet below the surface, with another 5 to 8 feet to go before the last deposits will be reached. This year's work started in July and will continue into September.

The 28-foot-by-28-foot excavation is divided into 3-foot-square grids to help record the exact position of each fossil. Besides brushes and dental picks, the researchers use small chisels and trowels to extract their finds.

Large fossils are placed in containers marked with the find's exact location and sent to the nearby paleontology museum. Sediment is screened for microfossils.

In the lab, fossils are cleaned, repaired if necessary, identified and labeled. Other researchers visit the lab to help identify species.

"The real value of our collection is that we have so much and the preservation is so good," said Shelley Cox, the laboratory's supervisor. "We're the reference and the source of comparison for fossils in this time period for anywhere in the world."

<b>ADVERTISING SECTION</b>
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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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