M·A·P·S Digest

Official Publication of
Mid-America Paleontology Society

Volume 24, No 2
February 2001

A LOVE OF FOSSILS BRINGS US TOGETHER

MARK YOUR CALENDARS

Apr 31 MAPS MEETING in conjunction with Expo.

7:00 p.m. Short General Meeting

Mar 10 "CREATURES FROM THE OLD LAGOON," Lecture by Elizabeth Humbert

Paleontological Research Institute, 1259 Trumansburg Rd, Ithaca, NY 14850. Noon. 607-273-6623. www.priweb.org

Mar 10 THE MAZON CREEK FOSSIL STORY

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

Andrew Hay, author, Earth Science Club of Northern Illinois member, and Associate Curator of the Mazon Creek Project at northeastern Illinois U., presents the development of plant life in the Mazon Creek area. Slide Show/Lecture. 2:00 pm — 60 minutes.

Free with Museum Admission.

Reservations Recommended: 630-833-1616

Mar 17 ALL DAY FIELD TRIP TO AMERICAN MUSEUM OF NATURAL HISTORY

6 am to Midnight. Transportation on chartered bus to the Museum in New York, admission to AMNH, and guided tours by the PRI staff. Meals on own. Preregistration deadline Mar. 10.

PRI Mbr: $60 (children $38); Nonmbr. $65 (children $43)

Paleontological Research Institute, 1259 Trumansburg Rd, Ithaca, NY 14850 607-273-6623. www.priweb.org

Mar 24-25 33RD 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.fallsoftheohio.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.

991/02 DUES ARE DUE

Are your dues due? You can tell by checking your mailing label. It reflects dues received by Feb. 5. The top line gives the expiration date in the form of "99year" followed by month--991/02 means 2001/Feb. 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

ABOUT THE COVER

by John McLeod, Allen, Texas

This month's cover photo is a 3" coiled nautiloid cephalopod *Metacoceras* from the Upper Pennsylvanian (Missourian) Wolf Mountain Shale of Wise County, Texas. The Wolf Mountain has yielded a diverse mollusk-dominated fauna, including nautiloids (*Metacoceras*, *Domatoceras*, *Liroceras*), ammonoids (*Glaphyrites*, *Shistoceras*, *Gonioloboceras*), and gastropods (*Worthenia, Trepospira*), as well as trilobites (*Ditomopyge*), plants and other fossils. The specimens are remarkable for their large size and interesting preservation, often forming the nucleus of reddish limonitic nodules or encrusting their exteriors.

A representative collection of the fauna can be seen at http://cageo.com/wm/wm/htm.

MAKE PLANS FOR EXPO

Expo is only a little over a month away, so we hope you have made your plans to attend. University of Iowa Professor John Adrain, who is our keynote speaker, is one of the leading authorities on trilobites. We think you will enjoy his Friday night speech on "Hot Deserts, Cold Deserts, and Black Bugs - the Field-Based Science of Trilobites."

We hope you are also planning to donate to the auction, which raises money for the Paleontological Society Scholarship fund and the Paleontological Research Institution, both of which are worthy recipients. Less expensive items will be sold at silent auction during the show, and a live auction will follow a short business meeting on Saturday night.

Expo is the place to meet old friends, make new ones, and see, buy, sell, or trade for a wide variety of fossils and fossil-related items. In addition to the usual specimens, this year's Expo will have a special display of a cast of the skull of the T-rex Sue, brought by Wendy Taylor and associates from Chicago's Field Museum. They are also planning some activities in conjunction with the exhibit. We hope you can come and join in the fun.

FROM THE PALEONTOLOGICAL RESEARCH INSTITUTION

Dear Karl (Stuekerjuergen),

I am pleased to acknowledge your financial support to PRI in 2000. As a donor to PRI's Annual Fund you are one of a dedicated group of friends who realize the value of unrestricted support. Funds contributed to PRI without restriction afford us the greatest flexibility in meeting our financial obligations. The support received this past year alone has resulted in a stronger organization, better equipped to actively focus on and execute our fourfold mission: education, collections, research and publications.

On behalf of the staff and Board of the Paleontological Research Institution, thank you for making an unrestricted gift to PRI. Your gift has made a meaningful difference.

Sincerely, Warren D. Allmon, Director

(P.S. *Thank you so very much for MAPS' continuing support!*)

OZARK OUTLIER FOSSILS

by Bruce L. Stinchcomb, Ferguson, Missouri

Scattered piecemeal over the Ozark Uplift, an extensive area of Precambrian and early Paleozoic strata, are small remnants of late Paleozoic and Mesozoic rocks. These are "outliers" or remnants of younger strata which, before they were eroded, were considerably more extensive in their occurrence. They show on the Missouri geological map as small areas of Devonian, Mississippian, Pennsylvanian and even Cretaceous age deposits surrounded by vastly older rocks. Some of these rocks are fossiliferous, and the fossils which they can contain are often unusual. Some of the most abundant of these remnants are of Mississippian or Lower Carboniferous age, and many of these are nicely fossiliferous. Pennsylvanian strata, often preserved in sinkholes, are probably the most widespread of the outliers; however, few fossils are present in these beds. The few fossils that have been found are peculiar fern-like plants differing from the more common coal floras.

At the edge of the Ozarks are limestones and cherty limestones of Mississippian age which contain an abundant and fairly well-studied fauna, often characterized by abundant crinoids. The same age sediments deposited in the Ozarks were a product of shallower seas, and outliers or remnants of once more extensive beds may represent places where waters were deeper than normal and could act as localized "refuges" during periods of stressful low tide. These stressful periods would occur when the shallow water would become too salty (hypersaline) as a consequence of evaporation in the equatorial sun. These "refuges" were possibly depressions developed through solution of the underlying much-older Cambrian limestones or dolomites. If the right "pocket" can be found, it can be a fossil bonanza.

Ozark outliers often harbor a greater-than-normal number of fossil mollusks than do the limestones and cherts deposited at the margin of the uplift. Many of these mollusks, compared with those from same age strata which are not outliers, are unusual, and sometimes they are rather large. Perhaps the large size came from feeding on widespread mats of algae or cyanobacteria (Bluegreen algae) which can be abundant in this sort of environment.

In the days of the model T Ford field-vehicle, Josiah Bridge, E.O. Ulrich and others did fundamental geo-logic mapping in the Ozarks. Much of this was map-ping of large areas for the first time, which produced some "landmark" works on the early Paleozoic, including much about paleontology. These geologists actively sought out to discover and determine the geologic age of these outliers. Determination of the ages, based upon enclosed fossils, of various outliers enabled these workers to gain some

understanding of the geologic history of the Ozarks. Their work, focusing on these outliers, was published in the Journal of Geology and the Pan-American Geologist in the early 1920s, and little work has been done on them since then. (See bibliography)

Fossils collected from the outliers proved to be problematical! What Bridge thought were very peculiar clams have turned out to be rostrochonchs, a now extinct class of bivalved, hingeless Paleozoic molluscs. Large gastropods were and are also present in the outliers, as were a number of peculiar corals. Mississippian outliers in the Ozarks can also yield crinoids, usually consisting of the calyx (head) but without the arms or stem. The crinoid "heads" pop out of chert and are preserved as internal molds, or steinkerns. Like other aspects of the fauna, these crinoids are often of peculiar genera, some of which are apparently not described in the scientific literature. Some of the sandstones of the outliers have preserved some non-calcareous parts of the animals such as the "lids" or opercula of snails. In limestones, these organic hard parts generally are not preserved.

Devonian outliers yield cephalopods, some of primitive types. Primitive cephalopods and other molluscs found in these Ozark outliers are forms suggestive of those which go back to the time of the early Ordovician and even to the late Cambrian. Late Paleozoic fossil molluscs of these outliers represent a kind of faunal anachronism. The Ozarks, however, are better known for their cultural anachronisms rather than paleontologic ones. Colorful cultural holdouts from the 19th and even late 18th century are still to be found. These fossils, in a peculiar way, seem to be conveying a characteristic of the region going back even to the remote time periods of the Paleozoic era!

A good collection of these outlier fossils is not an easy thing to come by! The fossils are very localized! A lot of combing steep hill sides, searching gulleys at the head of a valley and searching the tops of knobs, often with their panoramic views (a plus which can compensate for one's lull in finding fossils) is a necessary prerequisite for obtaining a collection. As is the case with fossils of many areas, a trained eye is required to spot likely fossiliferous boulders, which then have to be cracked open with a sledge hammer. Sometimes also, rewards come infrequently, but when they do come, the peculiarity of the fauna and its preservation in flinty chert, sandy chert or sandstone, often covered with a fine coating of small quartz crystals (druze), makes the quest worthwhile. Sometimes the fossils are preserved in red-blue hematite an some are preserved with barite, which makes them interesting as mineral specimens as well as fossils.

There is, at least with the Middle Mississippian and Devonian outliers, a regional variation in the fauna. The large molluscs and peculiar corals seem to be found in those outliers at the northern part of the uplift. Outliers in the southern part of the uplift have a fossils fauna more like that associated with strata found in Arkansas. A few outliers have also yielded petrified logs of different types, and one of the Devonian outliers, a quartzite outcrop, has in the quartzites what appear to be impressions of psilophytes, or primitive leafless plants.

Each one of the outliers has its somewhat unique faunal signature and each occurrence is a sort of surprise package, often set in a scenic setting. A surprise package which opens only with diligent collecting and which contains unexpected and puzzling fossils, be it either fauna or flora.

Bibliography

Bridge, Josiah, 1917. A study of the faunas of the residual Mississippian of Phelps County (Central Ozark Region), Missouri. Journal of Geology, Vol. 25, pp. 558-575.

Bridge, Josiah and B. E. Charles, 1922. A Devonian Outlier near the crest of the Ozark Uplift; Journal of Geology, Vol. 30, pp. 450-458.

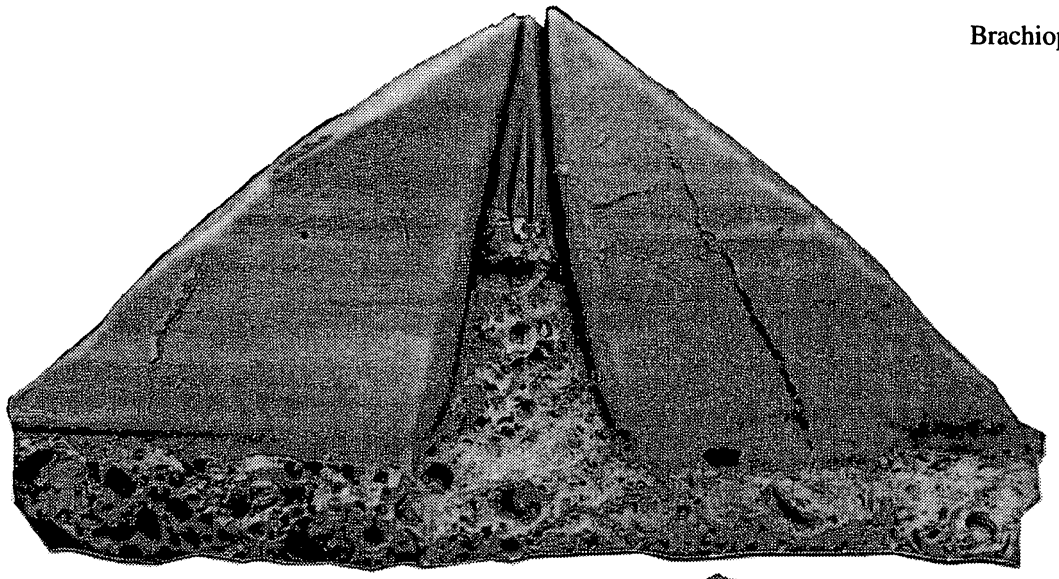
Keyes, Charles Rollin, 1922. Late Paleozoic Fossils on Summit of the Ozarks. Pan-American Geologist, Vol. 38, pp. 263-265.

_____, 1922. Devonic Outlier on the Missouri Highlands. Pan-American Geologist, Vol. 38, pp. 263-365.

Illustrations

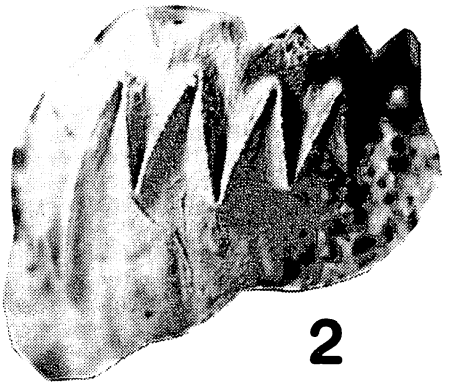
1. Brachiopod-*Syringothyris* sp. X1.5. A large spiriferid brachiopod with a huge cardinal area. Locally abundant in Mississippian outliers around Rolla, Missouri.
2. Brachiopod? Impression of *Cararotoechia* sp. X1.5. Impressions of this brachiopod? are often associated with rostrochonchs. Rolla, Missouri, outliers.
3,4. Rostrochonch-*Conocardium* sp. (3) X1.2, (4) X1.5. These representatives of an extinct molluscan class can be locally abundant in the Rolla, Missouri, outliers.
5. Gastropod-*Platyceras* cf. *unguiforme* X1.5. Steinkerns of these peculiar gastropods can be common in Mississippian (Osagian) outliers of the norther Ozarks.
6. Trilobite-(pygidia) *Phillipsia* sp. X3. The "tails (pygidia), of this bumpy surfaced trilobite can be locally abundant in norther n Ozarks Mississippian outliers.
7. Gastropod-*Platyceras* cf. *tribulosum* X2. Another varient on the highly variable gastropod genus *Platyceras*.

Brachiopod? Impression of *Camarotoechia* sp. X 1.5



Brachiopod-*syringothyris* sp.

1



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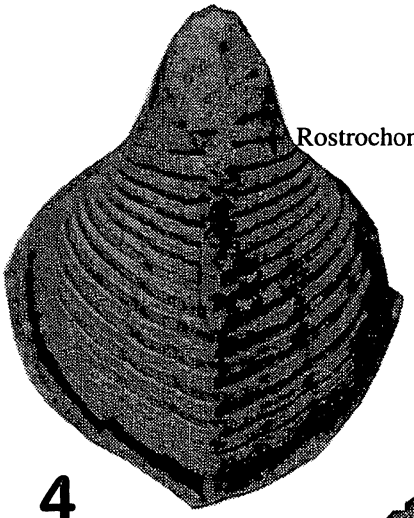
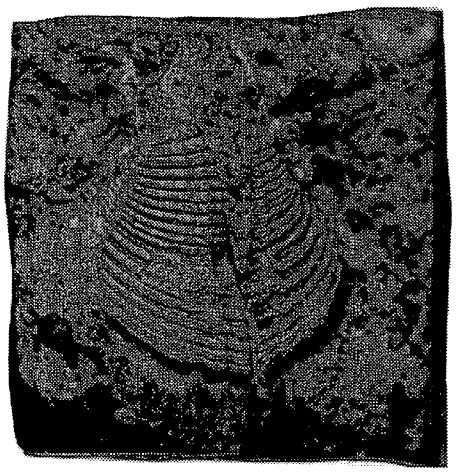
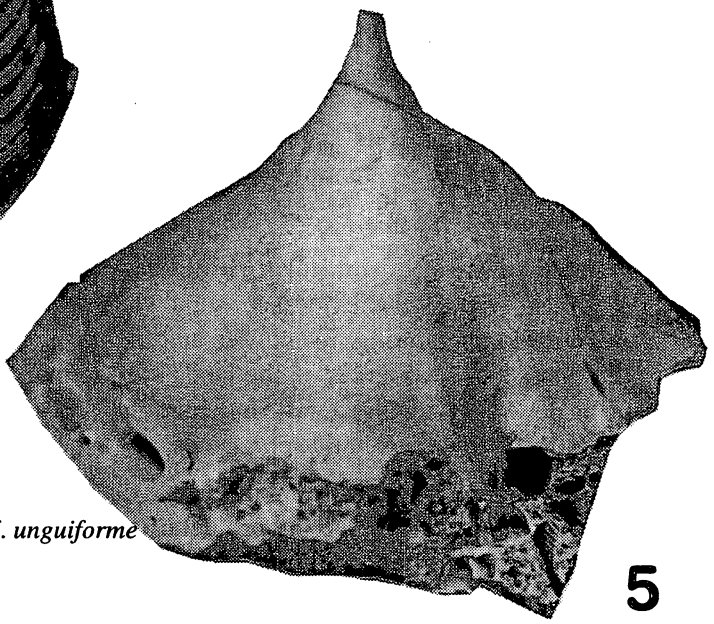


Rostrochonch-*Conocardium* sp.

4

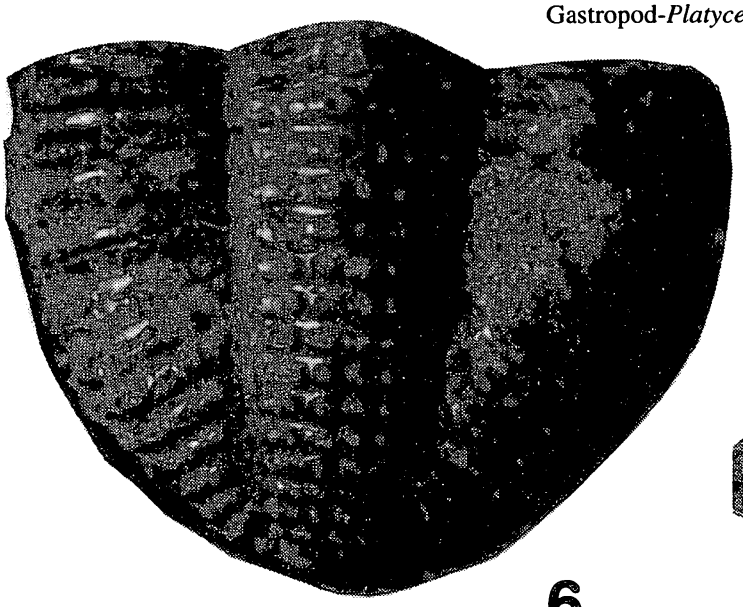


Rostrochonch-*Conocardium* sp. 3



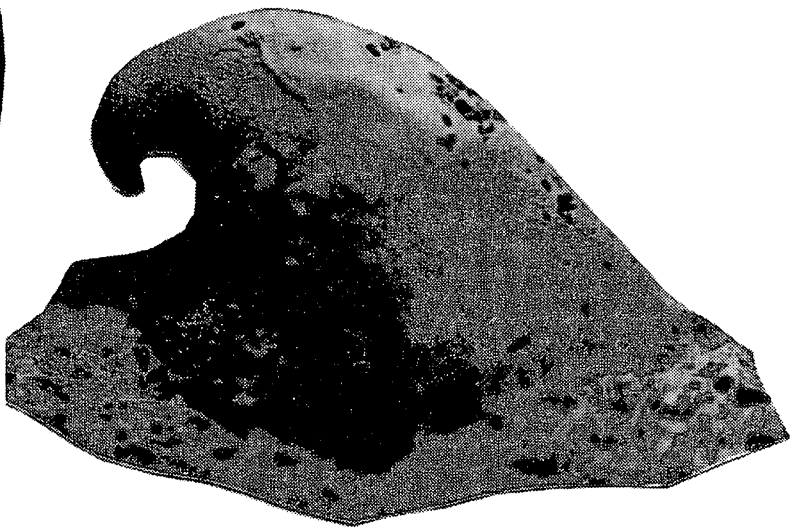
Gastropod-*Platyceras* cf. *unguiforme*

5



6

Trilobite- (pygidia) *Phillipsia* sp.



Gastropod-*Platyceras* cf. *tribulosum* 7

FOSSILS ON FEDERAL AND INDIAN LANDS—PART III

Report of the Secretary of the Interior, May 2000

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

This report of will run in several installments

IV. MANAGEMENT OF FOSSILS ON FEDERAL LANDS

Fossils are non-renewable resources. The consulting agencies' principal existing goals for the management of fossils from federal lands are to safeguard their intellectual and educational values and to promote their public benefits.

To explain to the public how the consulting agencies' management of fossils furthers these goals, the agencies developed a background paper prior to the June 21, 1999, public meeting. The management components described in the background paper included:

- field inventory, monitoring and protection,
- collection requirements,
- storage and preservation, and
- information management.

The background paper is summarized briefly below. In addition, Appendix A contains a summary of agency-specific policy and practice.

Field Inventory, Monitoring and Protection

The consulting agencies take somewhat different approaches to performing inventories and monitoring the condition of fossil resources on the lands they administer. Varying levels of acreage, staff and funding, as well as different mandates, make this appropriate.

Currently, the BLM and the FS rarely have funding for inventory work prior to receiving project proposals. These agencies therefore conduct paleontological resource inventory and monitoring on a case-by-case basis. When notice of a proposed land use is received, a determination is made whether significant resources may be impacted, and whether a field survey is necessary to locate them. Fossils may be collected, documented and sent to a repository before or during a project.

Similarly, the NPS has no Servicewide funding source for paleontological resource inventory and monitoring. As a result, only a few national park units (of the 130 known to have significant paleontological resources) have completed comprehensive paleontological resource inventories. These inventories address land managers day-to-day concerns, such as fossil resource protection, interpretation, curation and research. Yet the fact that so few inventories have been completed means that the fossil resources in many park units are unknown and unprotected.

The Bureau of Reclamation conducts paleontological inventories as targeted by resource management plans.

The consulting agencies are now developing cost-effective strategies, using new technology for identifying areas that are most likely to contain significant fossils. After existing data have been compiled, reconnaissance fieldwork can be planned and implemented. In some cases, amateur paleontologists might be partners in paleontological inventories through participation in the supervised search for, excavation, preparation and curation of fossils from federal lands.

In order to maximize the scientific and educational value of fossils from federal lands, managers must also take into account the natural processes of erosion. Monitoring the condition of fossils and fossil localities provides a picture of how these resources change as they become exposed. However, no comprehensive study has been done to document the contribution of erosion to the loss of the fossil record, the variation in rates of loss and the best methods of addressing such loss.

The public appetite for owning part of the fossil record, fueled in part by large commercial shows and sales on the Internet, shows no sign of decreasing. While there are laws that deal with theft and vandalism, these crimes increasingly affect fossils and have become a problem on federal lands. Land managing agencies, in addition to gathering baseline and follow-up data, investigate and prosecute incidents of resource theft and vandalism.

Collection Requirements

The policies for collecting scientifically significant fossils on federal lands are premised on the paramount values of research and education. When such fossils are collected by inexperienced people, or when collectors fail to maintain precise information on the original location, rock type, or other conditions of a fossil occurrence, the fossils can be damaged or they can lose their context and much of their value as objects of study. Even when fossils are collected by qualified personnel, agencies must consider the potential impact of the collection process upon other significant resources, such as threatened and endangered species and cultural resources. (See, for example, the discussion of Sacred Site considerations at the end of this section.) These are the main reasons why federal agencies regulate fossil collecting on federal lands.

Tables 1 and 2 explain each agency's policies that govern fossil collecting. The variations in policy summarized in Tables 1 and 2 reflect the different legal mandates and missions of the consulting agencies. That is, the NPS is preservation-oriented, and its policies keep all fossils in the public trust and only allow collection for scientific and educational purposes. On the other hand, the BLM has a multiple use mission. Therefore, some fossils (vertebrates) are preserved for scientific study, while other fossils (plants and common invertebrates) are generally available for recreational and educational use. These collection policies are generally appropriate to the agency and bureau-specific missions, and make it possible for agencies to meet a variety of needs for research, public education and recreation. These differences largely preclude a single federal fossil collection policy. The exception is the restriction of vertebrate fossil collecting to qualified personnel.

Table 1: Practices of the DOI for collecting fossils

Agency	Invertebrates	Vertebrates	Petrified Wood	Other Fossil Plants
BLM	Reasonable amounts for personal use, no permit required	Must have a permit	Up to 25 lbs/day/person + 1 piece; not to exceed 250 lbs/year, for noncommercial use. BLM treats petrified wood as a mineral material	Reasonable amounts for personal use, no permit required
BOR	Permit required; scientific purposes only	Permit required; scientific purposes only	Permit required; scientific purposes only	Permit required; scientific purposes only
FWS	Special Use permit required; scientific or educational purposes only	Special Use permit required; scientific or educational purposes only	Special Use permit required; scientific or educational purposes only	Special Use permit required; scientific or educational purposes only
NPS	Permit required; scientific or educational purposes only	Permit required; scientific or educational purposes only	Permit required; scientific or educational purposes only	Permit required; scientific or educational purposes only

Table 2: Requirements for Obtaining a Scientific Collecting Permit

Agency	Qualifications	Permit Types	Other	Repository
BLM	Graduate degree in paleontology or related topics; or equivalent experience with one who meets that standard	Survey/limited surface collection (<1 sq m disturbance;) or excavation (1 sq m surface disturbance or more)	Reports required annually and at the end of project. Work in Special Mgmt Areas requires additional reviews	Designated by permit applicant; must meet DOI/BLM standards
BOR	Similar to BLM	Scientific collecting permit	None	Designated by BOR or permit applicant; must have letter from repository showing intent to accept specimens
FS	Same as BLM	Varies with forest unit, from survey and inventory to excavation and collection	Reports required annually and at the end of project. Work in Wilderness Areas may be restricted	Designated in application for Special Use Permit; must meet FS standards. Standards added to permit
FWS	Related to nature of work	Special Use permit required for survey or collection	Reports required at the end of the project	Similar to BLM
NPS	In revision; qualifications and experience to conduct scientific study or represents reputable scientific or educational institutions or state/federal agencies	Scientific research and collection	Reports required annually	At NPS units, or in an approved repository designated by permit applicant; must meet DOI/NPS standards

Indian Sacred Sites

All federal agencies with jurisdiction over federal lands must also be in compliance with the Presidents Executive Order on Sacred Sites (E.O. 13007, May 24, 1996). The Executive Order states that each executive branch agency with statutory or administrative responsibility for the management of federal lands shall, to the extent practicable, permitted by law and not clearly inconsistent with essential agency functions: (1) accommodate access to and ceremonial uses of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites. Collecting fossils on federal lands may impact Indian sacred sites. Therefore, collectors must comply with the Executive Order, agency policies, or procedures developed pursuant to this Executive Order. See Department of the Interior Manual, Part 512, Chapter 3: Departmental Responsibilities for Protecting/Accommodating Access to Indian Sites.

Storage and Preservation

Fossils collected by scientists from federal lands are placed in museums to:

- keep them safe,
- maintain their physical condition,
- keep fossils and information together, and
- make the fossils and their context available for scientific study and for current and future educational and interpretive programs.

Land managing agencies work through the permitting process to ensure that fossils collected by scientists from federal lands are available for exhibit, research and public education. Fossils collected by scientists under permits issued by the various agencies remain the property of the federal government, and as such, are the property of all Americans. Many comments received at the public meeting on June 21, 1999, and in written format, strongly supported the current practice of keeping fossils collected under a permit in the public trust. Many natural history museums are undergoing a surge of building and renovation, and are able to provide excellent levels of care for both specimens and data. However, some institutions are concerned about their continuing ability to curate specimens properly and make them available to the public through display and education.

The Department of the Interior sets and maintains standards for the storage, preservation and care of collections under Departmental Manual 411. Other documents, such as NPS Museum Handbooks and the NPS Natural Resources Management Reference Manual, add specific direction. The Smithsonian Institution, with decades of experience and extensive resources, is an excellent source of expertise on fossil storage and preservation.

Information Management

Although all the consulting agencies have developed approaches to information management including Geographic Information Systems (GIS) and Hypertext Markup Language (HTML), there is no current structure for a systematic approach to sharing information across agencies. Many databases are accessible on the Internet. Repositories that hold federal collections must meet certain standards for maintaining not only specimens, but also the contextual information that accompanies them. However, these institutions often lack sufficient resources to share information among themselves or with the broader public. Although many museums have put some of their catalogue information in digital databases, much more could be done with additional funding to maximize the usefulness of fossils to a wider audience, including the general public, students, land managers and researchers. Despite funding limitations, many institutions have developed creative educational programs in which the public can learn about fossils collected from federal land.

TRILOBITE-MICROBIAL TEAMWORK

By David Bradley

Discovery. com News, via *Dry Dredgers*, Greg Hand, Ed. 9/00

June 6, 2000 — Ancient scuttling sea creatures known as olenid trilobites may have thrived in conditions that would have normally killed them by partnering up with special bacteria.

According to paleontologist Richard Fortey of the U.K.'s Natural History Museum, the 500-million-year-old trilobites survived on toxic, sulfide-rich seafloors by cultivating bacteria that could convert these toxins into a useable fonn.

Fortey presents his results in the current issue of the Proceedings of the National Academy of Sciences.

If that was indeed the case, the trilobites provide the earliest known example of an animal enlisting microbes to help it overcome hostile chemical conditions.

The trilobites died out 250 million years ago, but the sulfur-processing bacteria are still around today and several creatures living near sulfur- spewing undersea vents employ them.

Some types of shrimp graze directly on the sulfur-detoxifying bacteria, which process dissolved sulfur in the water to release edible, energy-rich ions. Other creatures grow the bugs on their bodies.

Fortey has taken a close look at the trilobite fossils and believes certain distinctive features — like mouths too small to take in sufficient food--can only be explained if the animals absorbed the bacterial products through their body surface.

Their wide upper bodies, thin shells and large number of segments may also have provided a massive acreage on which trilobites could have cultivated bacteria, added Fortey.

"I buy Fortey's ideas," said Euan Clarkson of the University on Edinburgh. He added that other studies of trilobite mouth parts suggest that they were not feeding directly, but rather relying, on food processed by bacteria.

"The (trilobites) certainly seem to have specialized in inhabiting dark anaerobic sulfur-rich benthic muck, and are also known for some of the morphological oddities Fortey describes," said trilobite expert Sam Gon III Director of Science for the Nature Conservancy's Hawaii Field Office in Honolulu.

"Complex symbioses are very important in the modem marine realm think of reef corals," Fortey said. "They enable animals to colonize parts of the sea floor which would otherwise be barren. It's very important to know how long these ecosystems have been in existence."

PLEASE ADD THE FOLLOWING NEW OR REJOINING MEMBERS TO YOUR DIRECTORY:

Irene Broede
2510 Forest Ave
North Riverside IL 60546
708-447-5295

Retired Teacher, Museum Volunteer. Major interest dinosaurs, Mazon Creek fossils. Will not trade. Member of ESCONI, Glen Ellyn, IL. Enjoys collecting fossils and wants to learn more on preparation, etc.

Anthony George
N2020 County Road H Lot 215
Lake Geneva WI 53147
262-249-1113
tony-arlene@elknet.net

Retired. Major interest trilobites, ammonites, shark teeth. Will not trade at this time (01). Wants to participate in field trips.

Charles Goldsmith Jr.
9532 Frederick Rd.
Ellicott City MD 21042

Dave Lochhaas/Cindy Lochhaas
7501 N NWY VV
Columbia MO 65202-7532
573-874-2432
lochhaas@midamerica.net

Electronics Tech./Laboratory Study Director. Major interest MO fossils, fossil turtles, dino tracks. Will trade. Have fro trade Devonian corals, Carbonaceous period brachiopods. Wants to meet others with similar interests.

Vickie Wyant
16219 280th Ave
South English IA 52335
319-667-5457

Home Health Aide. Major interest Ice age, but almost all prehistoric life. Has lots of brachs, but very little of what she has is prepped. Interested in fossil collection and preparation.

PLEASE NOTE THE FOLLOWING CHANGES OF ADDRESS OR CORRECTIONS:

Frank O. & Joan Crane
1603 Twilight Ridge
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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.

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.

CENTRAL ILLINOIS FOSSIL SHOW
Macomb Inn (Days Inn)
1400 N. LaFayette, Macomb, Illinois

HOURS: Wed., March 28 ..... 1:00 p.m. until late evening
Thurs., March 29 ..... 9:00 a.m. until late evening
Fri. & Sat., March 30-31 .... By appointment during MAPS show times & evenings

The intent of this show is to enhance MAPS Expo and to allow dealers who need it more selling space.
For show info, contact: **Dan Damrow 715-457-6634**
Chuch Warren 517-439-5632
To reserve a selling room contact Macomb Inn at: 309-833-5511

BRAND NEW WEB SITE
One of the largest Fossil Sites on the Net.
Fossils of all Varieties
Old Paleontology Books, Antique Bottles, Indian Artifacts, and Minerals
Go to:
www.geocities.com/fossilstore/

The **M**id-**A**merica **P**aleontology **S**ociety (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/

Dated Material - Meeting Notice

CYATHOCRINITES

Mrs. Sharon Sonnleitner
MAPS DIGEST Editor
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Cedar Rapids, IA 52404

FIRST CLASS MAIL

MID-AMERICA PALEONTOLOGY SOCIETY