M·A·P·S Digest

Official Publication of
Mid-America Paleontology Society

Volume 23, No 6
July-September 2000

A LOVE OF FOSSILS BRINGS US TOGETHER

MARK YOUR CALENDARS

Oct 15 MAPS FIELD TRIP/MEETING

Conklin & Klein Quarries, Coralville, IA (Iowa City suburb)

9:00 Enter Conklin Quarry—Lock-in: all cars will enter at 9:00 and gate will be locked until the group leaves about 12:30-12:45. Location: I-80 to Coralville. Exit at #242 (First Ave). Go north to gate on right side of road just across from Heartland Inn.

12:45 or 1:00 Enter Klein Quarry—Lock-in as above. Leave at time to be determined by group.

Location: I-80 to Coralville. Exit at #240 (Hwy 965/Coral Ridge Rd). Go South to stop light, turn right on Hwy 6, left at Deer Creek Rd. (first road - gravel), proceed to gate on right.

Both are hard rock quarries. Hard hats, safety glasses and steel-toed shoes recommended. Mauls, rock hammers, chisels, etc. Find corals, brachs, bryozoans, trilobites, crinoids. Bring water and lunch (or pick up lunch when changing quarries).

Oct 14 CEDAR VALLEY ROCKS & MINERALS CLUB FIELD TRIP TO WENDLING QUARRY IN VINTON.

MAPS members attending the above trips are invited to this trip also. Call a Cedar Rapids Board member for details closer to the date.

Sep 16-17 6TH FALLS FOSSIL FESTIVAL

Falls of the Ohio State Park, Jeffersonville, IN

Sat. 9 am - 7 pm

Sun. 9 am - 5 pm

Fossil swap and sales; collecting rock piles, speakers, collecting workshops, identification, guided hikes, free educational materials.

Contact: Alan Goldstein, Falls of the Ohio State Park, P.O. Box 1327, Jeffersonville, IN 47131-1327 (812-280-9970)

Web Site: http://www.cismall.com/fallsoftheohio/festival.html

Oct 27-29 FOSSILMANIA XVIII

Somervell County Expo Center, Hwy 67 in Glen Rose, TX

Fri. & Sat. 9 am - 6 pm

Sun. 9- am - 12 noon

Fossil and fossil-related sale and trade show. Dealers from all over the country. Buy, swap or just look. Educational programs Fri. & Sat., fossils for all kids, door prizes, Sat. night auction.

Contact: Bill Lowe (817) 579-0955 <wslowe@granbury.com>

Dallas Paleo. Soc. Web Site: www.dallaspaleo.org

Nov 3-5 ROUND ROCK FOSSIL FEST 2000

Old Settler's Park, on Hwy 79, 3.3 miles east of IH 35, Round Rock, TX, Sponsored by Central Texas Paleo Soc.

Fri. 9 am - 5 pm

Sat. 10 am - 6 pm

Sun. 10 am - 5 pm

Dealers, Displays, Demonstrations, Activities for kids.

Contact: Michael Smith (512) 288-6582 <mksmith@acm.org>

Web Site: http://freeweb.digiweb.com/science/CTPS.

Nov 11-12 FLORIDA FOSSIL HUNTERS 9TH ANNUAL FOSSIL, MINERAL AND GEM FAIR

National Guard Armory, 2809 S. Ferncreek Ave., Orlando, FL

Sat. 9 am - 6 pm

Sun. 9 am - 4 pm

Contact: Bob & Bobbi Angell, 226 Palmyra Dr. , Orlando, FL 32807. 407-277-8978. FOSSILFAIR@aol.com

Nov 13-15 THIRD CONFERENCE on PARTNERSHIP OPPORTUNITIES for FEDERALLY ASSOCIATED COLLECTIONS, Austin, TX

Goals are to foster communication and cooperation among Federal and non-Federal managers of Federal collections, to create new and revive old partnerships, and to improve technical expertise related to managing Federally associated collections of all kinds.

Texas Association of Museums

3939 Bee Caves Road, Building A, Suite 1-B

Austin TX 78746

ph. 512-328-6812; fx. 512-327-9775; e-m. Tam@io.com

Web Site: http://museums.doi.gov/fedcoll/fedcoll3/

Mar 30-Apr 1, 2001 MAPS NATIONAL FOSSIL EXPOSITION XXIII—TRILOBITES

Western Illinois University, Macomb, IL

Fri., Mar. 30	8 am - 5 pm	Keynote Speaker J. Audrain @ 7:30
Sat., Mar. 31	8 am - 5 pm	Meeting & Live Auction @ 7:00
Sun., Apr. 1	8 am - 12 noon	

Information is mailed in the December issue

990/09 DUES ARE DUE

Are your dues due? You can tell by checking your mailing label. It reflects dues received by Aug 30. The top line gives the expiration date in the form of year followed by month--990/09 means 2000/September. 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

PROCEEDINGS OF THE BOARD

The MAPS Board met at the home of Karl & Lee Stuekerjuergen on July 10, following a field trip and pot luck.

EXPO NEWS: Marv Houg presented his prototype for an Expo flyer. The flyer will be sent to other clubs, Tucson, etc. Since Doug DeRosear has moved to Colorado, he will be replaced as Expo co-chair by Gil Norris. Doug will, however, still handle Expo tables. Renowned trilobite expert and University of Iowa professor Jonathan Audrain will be the Expo keynote speaker.

Word from Jim Wyatt, who organized the hotel show held in Macomb at the same time as EXPO, is that he will require dealers to stay through Saturday.

OLD BUSINESS: Marv Houg shared a booklet on Federal Regulations that he had received, and he will try to secure copies for the Board.

NEW BUSINESS: The Board approved the following donations from the 2000 Expo Auction proceeds:

$2000 to the Paleontological Society (PS) for scholarships
$500 to the Paleontological Research Institute
$100 to the PS for the Strimple Award fund.

ABOUT THE COVER

This month's cover is a Chinese crinoid from the collection of Karl Stuekerjuergen. The specimen measures 14" across.

Traremato crinus sp.

Triassic

Guizhou Providence, China

A WEB SITE TO NOTE

Karl Stuekerjuergen recommends the following web site as an excellent source for links to paleo sites:

http://dizzy.library.arizona.edu/users/mount/paleont.html

LETTERS TO THE EDITOR

To the Editor:

A special Thank you to all the officers, directors, editors, and committee members of MAPS who work so hard and long to make the MAPS Show a successful event. Your efforts are truly appreciated by us for all the work, coordination, planning and dedication that goes into the show. Thanks so such for a job well done.

Sincerely,
George and Wanda Aldred
Shoals, IN

Sharon,

It was surprising to see the article on Chemical Fossil Cleaning in print in the Dec./Jan. issue of the MAPS DIGEST. The article came from The Rockfinder, via The Tully. I am vice-president of the Dry Dredgers (Cincinnati, OH), and we provide a lot of material for fossil collectors in the area.

The article was one of ours. It was originally prepared by Roger Laib, a member and former president of the club, about 20-30 years ago. I revised the article into its present form in 1994 (01/30/94, according to the date on my computer file) for distribution at the Cincinnati Gem and Mineral show that year. In fact, we have been distributing copies of it at the show for the last seven years, at least.

It was good to see that someone thought enough of it to print it in their bulletin.

Rich Fuchs
V.P. - Dry Dredgers
Cincinnati, OH

To the Editor:

The "Letter to the Editor" in MAPS Digest, May-June 2000, by Richard Hill touched on some salient topics. First the confusion associated with the word amateur is considerable, and amateur often has different meanings. In its original meaning, amateur meant someone who does something for the love of it. Also in its original meaning, the word amateur refers to a person who has a "calling" and acts out of love for something rather than for financial gain. Amateur in the current vernacular has come to represent someone who does something in an incomplete and inferior manner, a meaning originally not associated with the word. Associated with the current meaning of the word "amateur" is the implication that such a person is far below a "professional" in knowledge, performance, concern, etc. In the current debate on paleontology, amateur is sometimes interpreted in this more derogatory way, even though some "amateurs" have a level of knowledge of a specific group of fossils which may transcend that of "professionals." True, some amateurs are "half-baked" and shallow, but true also is that some "professionals" are shallow and trite and regard an amateur with contempt for no particularly good reason.

In light of the above, I might, however, make a comment on the statement in Mr. Hill's editorial "Today it seems to be the feeling of some (many) in the professional community that a fossil left to rot in the field is better than one collected by amateurs." As a Ph.D. geologist who teaches and has been involved in paleontology for many years (both amateur and professional), I have rarely encountered that attitude among degreed professionals, with the exception of some people in vertebrate paleo. Persons whom I've known professionally usually admire the amateur in paleontology and realize that it is often from such persons that significant new discoveries come.

Opposition to amateur paleontology seems to come from an uninformed periphery who often make the logical assumption that

if something is tens or hundreds of millions of years old, it must be rare and valuable, either scientifically or monetarily. Following are some lines of thinking or attitudes I've encountered in opposition to amateur paleontology and where they came from.

1. *Fossils are rare and belong to everyone when on public land (and sometimes when not).* This sometimes originates from bureaucrats, land managers and rangers concerned with public lands. Also in this regard it might be noted that the relative wisdom regarding paleontological collecting on National Forest and BLM lands is usually absent when concerned with state, county or municipal lands.

2. *All natural history collecting is wrong! The Earth is a fragile "museum," look but don't touch!* This view appears to be swallowed, hook, line and sinker, by those who want to be politically correct, including the numerous "Soccer Moms" who outnumber us all. This viewpoint is also a misguided by-product of the environmental movement. When it comes to natural history, collecting (which really would include hunting and fishing as well as collecting insects, plants, etc.), common sense should be the guideline.

3. *Over-zealous law enforcement personnel who are suspicious of anything different and at the same time staunch advocates of "letter of the law."* This scenario is exemplified by a recent encounter with a law officer who snarled that collecting rocks (or fossils) from a road cut was "theft of state property" and could be prosecuted as such.

Paleontologists realize the correctness of the scenario presented by Richard Hill: *fossils can be common—many sedimentary rocks are made of them*; those not knowledgeable of geology usually don't understand this. Prohibition of their reasonable collection is not only silly, but rare forms are sometimes collected (salvaged would be more appropriate) by seriously interested amateurs and then find their way into science and the scientific literature. Threat to our interest comes mostly from those peripheral to paleontology who don't know about or understand geology, and fossils and paleontology are a geologic matter! This "battle" appears to be more about wisdom than anything else, and wisdom often seems to be lacking in current politics and legal issues.

Bruce L. Stinchcomb, Ph.D.

FALLS OF THE OHIO FOSSIL FESTIVAL

Sept. 16-17

Saturday, Sept. 16 — 9:00 am - 7:00 pm.

9:00 - 11:30 Hike on outer fossil beds, guided by educator and author Kenny Karem

9:30 - 10:45 Indiana Geology Workshop, (pre-registration required), Jeff Kirby, Indiana Geological Survey

11:00 - 12:15 KY Geology Workshop, (pre-registration required), Don Chesnut, Kentucky Geological Survey

1:00 - 1:45 Common Fossils of Indiana and Kentucky, Dan Phelps, Kentucky Paleontological Society and Margaret Kahrs, Indiana Society for Paleontology

2:00 - 2:45 Discovery on the Outer Fossil Beds, Don Munich, Life-long Falls Enthusiast

3:00 - 3:45 Behind the scenes at the Falls of the Ohio (Learn about the aquariums, park's collections, education efforts, etc.), offered by Park staff.

4:00 - 4:45 Central Kentucky Minerals Bill McKenzie, Noted Lexington KY Collector

5:00 - 6:00 The Paleo Society Keynote Presentation: The Ancient Geography of the Devonian, Dr. William A. Oliver, Jr., U. S. National Museum, Washington, D.C.

Sunday, Sept. 17 — 9:00 am - 5:00 pm.

9:00 - 11:30 Hike on outer fossil beds, guided by Paul Olliges, 1998 park "Volunteer of the Year"

10:00 - 10:45 Common Fossils of Indiana and Kentucky, Dan Phelps, Kentucky Paleontological Society and Margaret Kahrs, Indiana Society for Paleontology

12:00 - 12:45 Mineral Collecting Tips, Steve Garza, Leavenworth, IN

1:00 - 1:45 Fossil Collecting Tips, Charles Oldham, Crestwood, KY

2:00 - 2:45 A Mineral Tour Around Arkansas, Dr. J. Michael Howard, Arkansas Geological Commission

3:00 - 4:00 Techniques for Photographing Minerals and Fossils, Mark Schneider, professional photographer, Louisville, KY

4:00 - 5:00 Keynote Presentation: Remarkable Fossil Preservation Dr. Chris Maples, Dept. of Geosciences, Indiana University

Speaker schedule may be changed due to unforeseen circumstances. Any changes will be announced during the Falls Fossil Festival.

See Calendar for contact, etc.

TURTLES OF THE CATHEDRAL BLUFFS MEMBER OF THE WASATCH FORMATION

by David A. Hutchison
1622 Rocky Ford Road, Powhatan, Virginia 23139-7217
***(Permission granted for a one-time publication of this paper in the MAPS* Digest)**

Introduction

An extensive and possibly the largest known deposit of fossil pond turtles of the genus *Echmatemys* has been discovered in the Great Divide Basin east of Farson, Wyoming. As Shown in Figure 1, this deposit extends a distance of 7 miles from Sec. 13, T25N R101W through Sec. 19, T25N R100W to Sec. 33, T25N R101W (Joe Hay Rim 6.5' Quad) along the east side of Joe Hay Rim and into the headwaters of Parnell Creek.

On closer study of the area, it was discovered that two distinct types of pond turtles were present, each in its own well-defined stratum separated by about 53 vertical feet. The lower, less extensive stratum near base level extended from SE SW Sec. 18, T25N R100W south southeast to NE NE Sec. 30, T25N R 100W and contained many dozens of fragmented shells. The upper, more extensive stratum extended from NE NE Sec. 13, T25N R101W southeast to NE NW Sec. 30, T25N R100W and then southwest across the continental divide to a large isolated bluff in the NW SW Sec. 33, T25N R101W. This stratum contained hundreds of fragmented partial shells. Below, between and above these strata were scattered remains of other types of freshwater turtles. This paper will endeavor to help answer some of the many questions inspired by this discovery, such as: what formation and time is represented by the rocks containing these turtles; how many types of turtles are present and how do they interrelate; and what conditions caused so many turtles to become fossilized in *this* relatively small area?

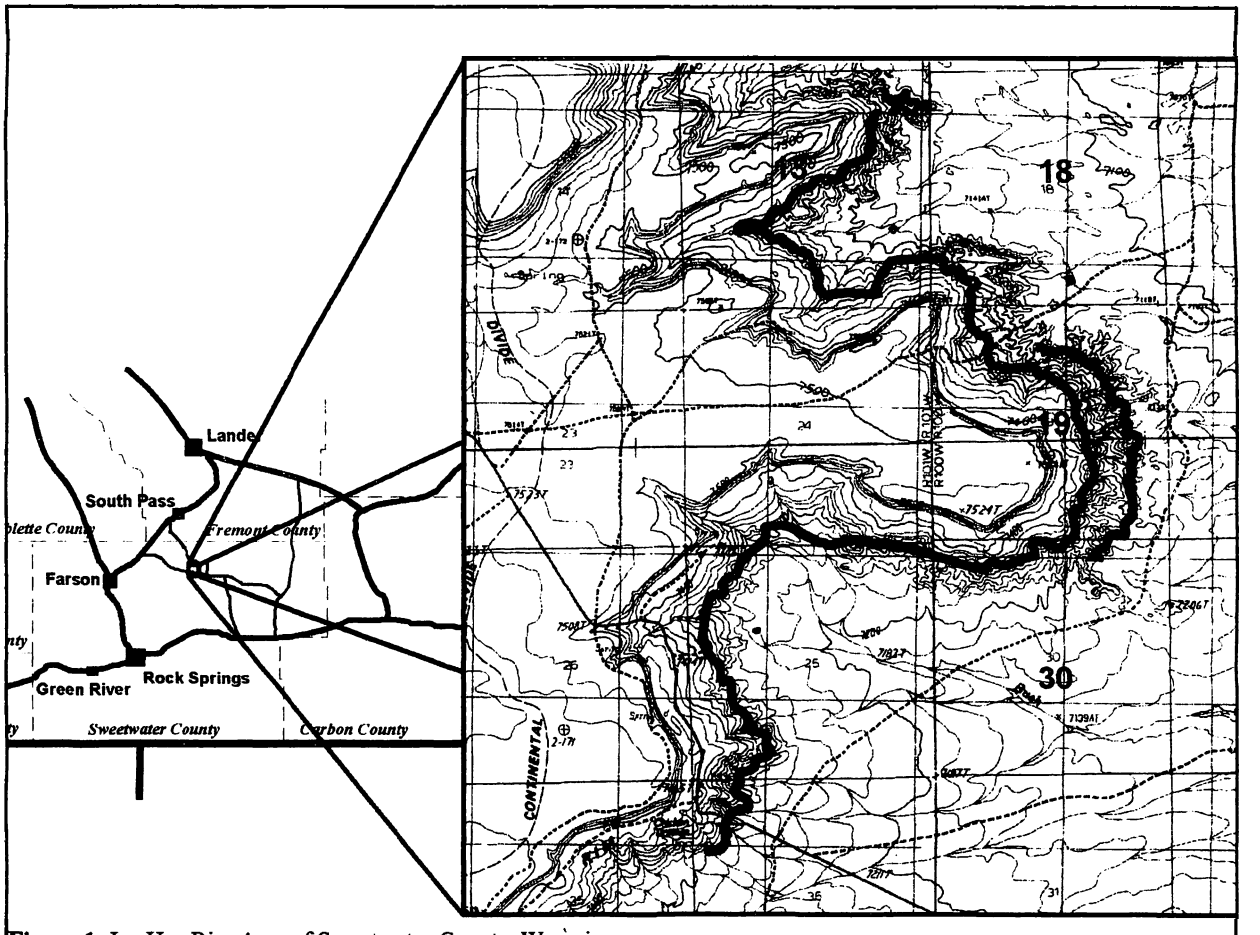

Figure 1: Joe Hay Rim Area of Sweetwater County, Wyoming

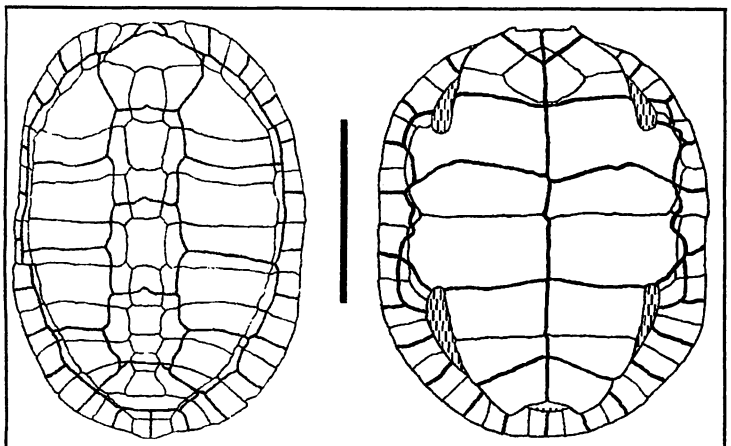

Figure 2: Cathedral Bluffs lower stratum *Echmatemys sp.*, carapace and plastron, DAH 50137, bar = 10 cm.

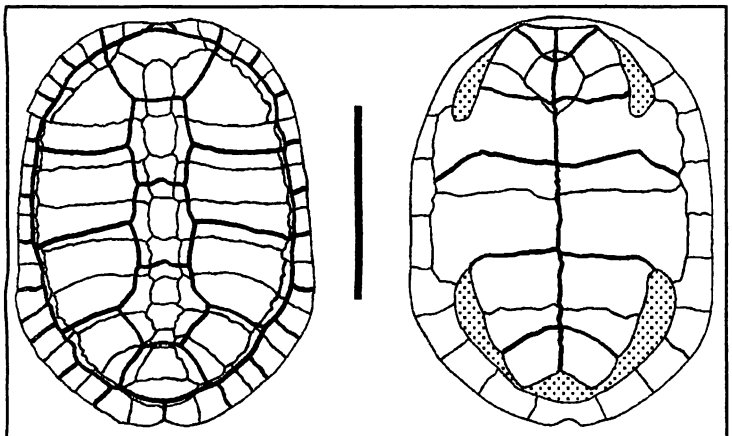

Figure 3: Cathedral Bluffs upper stratum *Echmatemys sp.*, carapace and plastron, DAH 50139, bar = 10 cm.

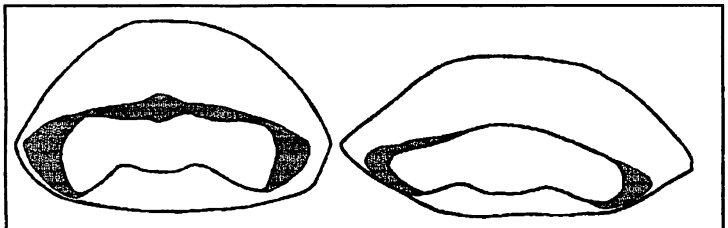

Figure 4: Front Profile, Cathedral Bluffs *Echmatemys sp.*, left - lower stratum, right - upper stratum, bar = 10 cm.

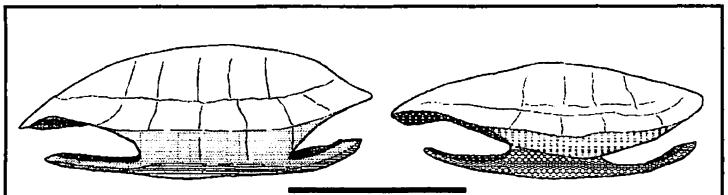

Figure 5: Side Profile, Cathedral Bluffs *Echmatemys sp.*, left - lower stratum, right - upper stratum, bar = 10 cm.

Cathedral Bluffs Member of the Wasatch Formation

Extensive literature searching on Eocene turtles revealed many papers describing turtles found in the Blacks Fork Member of the Bridger Formation (Bridger "B"). Clearly, all but one of the turtles from this site were similar to turtles found in the western Bridger Basin and described over one hundred years ago by Cope and Marsh and expanded upon and summarized by Hay (1).

It was assumed that this site was of Bridgerian age until discovery of a thesis by Simnacher (2) describing the geology of the Parnell Creek area. Tracking the turtle stratigraphy southwest into the Parnell Creek headwater area proved that the upper, more extensive turtle stratum was in the upper Cathedral Bluffs Member of the Wasatch Formation and not the Bridger Formation.

Extensive correlations of Eocene rock units (3) shows the Cathedral Bluffs member to be the latest Wasatch Formation unit present in both the Washakie and Green River Basins and is directly overlain by the Laney Shale Member of the Green River Formation. The Blacks Fork Member of the Bridger Formation usually overlies the Laney Shale. Mammal fossil correlations would indicate that the Wasatchian-Bridgerian North American Land Mammal Age (3) boundary lies within the upper Cathedral Bluffs Member at 50.2 Ma. Considering the Laney Shale of Lake Gosiute, the Blacks Fork Member of the Bridger Formation dates to about 49.7 Ma or about 500,000 years younger than the upper Cathedral Bluffs Member. For reference, the Fossil Butte National Monument fish beds of Fossil Lake date to about 51.5 Ma.

A Chelonian Census

Family BATAGURIDAE
Genus *Echmatemys*

To date, no literature references have been found describing the turtles of the Cathedral Bluffs Member of the Wasatch Formation. This new area is characterized by two strata containing hundreds of fragmentary pond turtles of the genus *Echmatemys*. Reconstruction of specimens from each stratum clearly shows these turtles to be distinct from each other.

The specimens from the lower layer shown in Figure 2 average about 25 cm (9.75") long, are more robust with thicker shell bones, and have a greater height/width ratio to the shell and are more domed in profile, whereas the specimens from the higher layer shown in Figure 3 average

about 23 cm (9") in length, but are more gracile with thinner shell bones and have a flatter, less domed shell profile as shown in Figures 4 and 5. These turtles would be similar in outward appearance and are probably ancestral to modern slider turtles (genus *Trachemys*). Turtles of the genus *Echmatemys* in the Cathedra Bluffs Member of the Wasatch Formation rarely exceed 27 cm (10.5") carapace length and 25 cm (9.75") plastral length as compared to those in the Bridger Formation which commonly have a carapace length of 33 cm (13") and a plastral length of 27 cm (10.5"). *Echmatemys* is a very common genus in Eocene rocks of Wyoming with 21 species described by hay and Gilmore, 5 from the Wasatch Formation; but reduced to 19 species by Roberts (4). Personal observation indicates no specimens resembling the Cathedral Bluffs species are commonly found in the Bridger. Statistical analysis of the many individuals of these two Cathedral Bluffs types will eventually prove that they represent either unknown, new species or new subspecies of known *Echmatemys* species. The latter possi-bility has a modern parallel (5,6) in that individu-als of the emydid turtle *Trachemys scripta scripta* (yellow-bellied turtle) from southern Florida have highly domed and rugose shells, where west and north in Florida, Georgia and Alabama *Trachemys scripta elogans* (red-eared turtle) has a lower, thinner and less rugose carapace.

One could argue that the specimens found in these Cathedral Bluffs strata are simply smaller examples of *Echmatemys* species already described from Bridger sediments. Since turtles exhibit determinant growth, it would be highly improbable that the large populations in the two strata from the Cathedral Bluffs were entirely juveniles or young adult specimens of species common in the lower Bridger as much larger animals, when small specimens of the Bridger species are uncommon among the very common large adults. Only one juvenile of the Cathedral Bluffs upper stratum turtle, an exact miniature replica (10 cm carapace length), was found among the hundreds of much larger adult specimens.

Family DERMATEMYDIDAE
Genus *Baptemys*

The genus *Baptemys* is present very locally (SE SW Sec. 18, T25N R100W(in strata just above the upper *Echmatemys* layer and infrequently in strata just below the lower *Echmatemys* layer. These specimens appear to be *B. wyomingensis* as shown in Figure 6, confirming the observations of Hay (1) that . *Wyomingensis* existed in the Wind River, Wasatch and Bridger Formations.

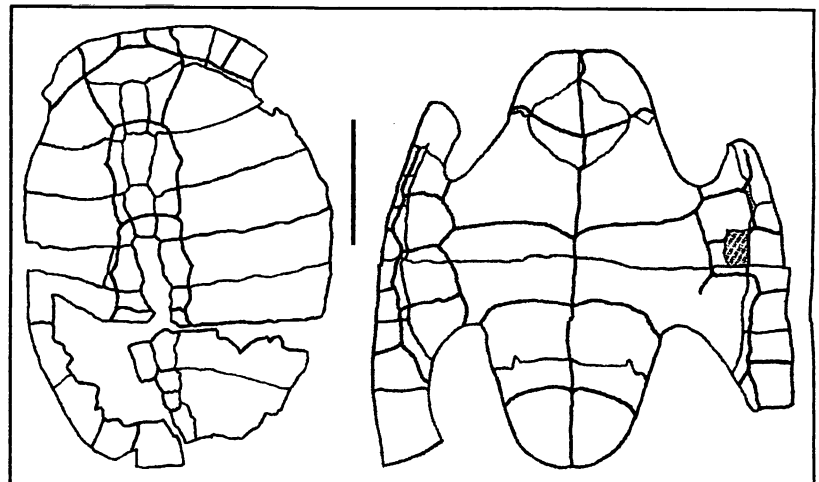

Figure 6: *Baptemys wyomingensis*, carapace and plastron, DAH 83021, bar = 10 cm.

Family TRIONYCHIDAE
Genera *Aspideretes, Amyda,* and *Plastomenus*

Scattered widely just below the lower *Echmatemys* layer and in between the two *Echmatemys* strata were found several fossil soft-shelled turtles of the family Trionychidae repre-senting the genus *Plastomenus* and two subgenera of *Trionyx, Aspideretes* and *Amyda* as shown in Figure 7 and Table 1.

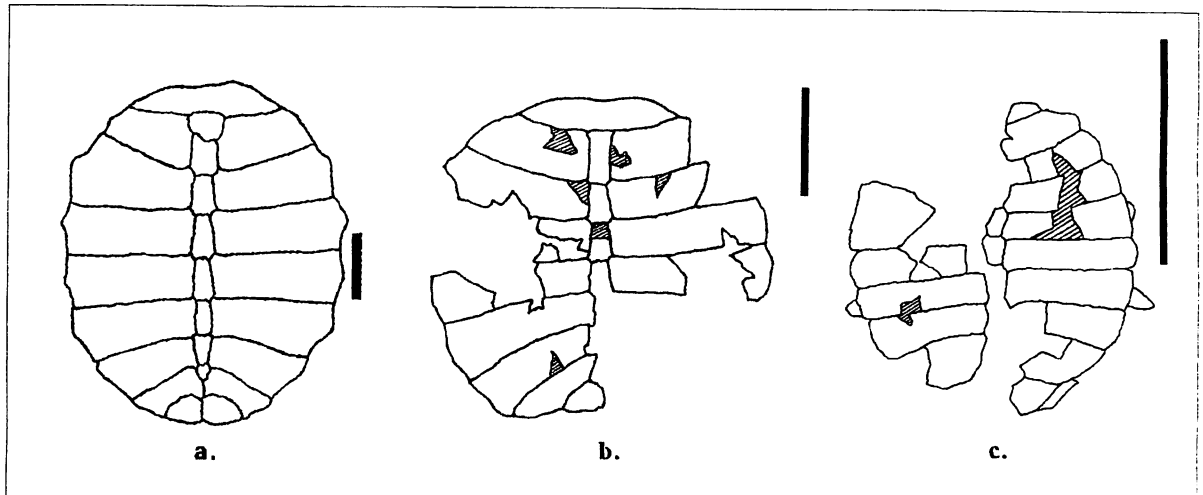

Figure 7: a. *Aspideretes ellipticus*, carapace, DAH 82015; b. *Amyda egregia*, carapace, DAH 82010; c. *Plastomenus thomasii*, carapace, DAH 83019; bars = 10 cm.

Table 1
Turtle Species Present in the Cathedral Bluffs Member of the Wasatch Formation

Family BATAGURIDAE McDowell 1964
Echmatemys sp. Hay 1906
Family DERMATEMYDIDAE Gray 1870
Baptemys wyomingensis Leidy 1870
Family TRIONYCHIDAE Bell 1828
Subfamily TRIONYCHINAE Lydekker 1889
Tribe CHITRINI Gray 1870
Subtribe AMYDINA Loveridge 1942
Amyda egregia Hay 1908
Tribe ASPIDERETINI Meylan 1987
Aspideretes ellipticus Hay 1908
Tribe TRIONYCHINI Fitzinger 1856 (Meylan 1987)
Subtribe TRIONYCHINA Fitzinger 1826 (Meylan 1987)
(No Specimens of this Type Found, eg., *Apalone* (*Platypeltis*))
Subfamily PLASTOMENINAE Hay 1908
Plastomenus thomasii (Cope 1873)

Paleoecology

What conditions caused this large number of turtles to perish and fossilize at this site? Examination of the lower stratum sediments shows a definite coarsening of the sediments and increased fragmentation of fewer shell pieces from the NE corner of Sec. 19, T25N R100W north and northwest across the SW corner of Sec. 18, T25N R100W to and beyond the NE corner of Sec. 13, T25N R101W northwest to near Oregon Buttes. The sediments grade from a fine green-gray mudstone to a coarse, sandy mudstone containing rounded quartz pea gravels. The sediments terminate at the south end in a lens of fine gray mudstone in NE NW Sec. 30, T25N R100W. Most of the less fragmentary fossils are found in the last few hundred meters near the southern terminus. The specimens consist mostly of shell material, randomly oriented, with few other associated bones. A few of the broken shells found *in situ* were in large pieces and inverted. One specimen consisted of the front half of one individual and the offset rear half of a second individual, both broken after and before the fifth costal pairs.

The upper stratum sedimentology was less definitive. The specimens are found in high frequency in distinct areas separated by over two miles. The greatest concentration was found in the eastern half of Sec. 19, T25N R100W and in the SE SW Sec. 18 T25N R100W. Specimens were much less frequent in the headwaters of Parnell Creek. All turtles were in fine green-gray mudstones with no grading to coarser sediments int he area of study. Again, the specimens consisted mostly of shell material with few large bones present. No skulls, neck or tail vertebrae, or phlanges were found with one exception from the Parnell Creek area where a shell had a few associated cervical vertebrae and phlanges. Some fragments of shell bones from the upper stratum showed holes, some partially healed over, due to attack from parasites such as boring leeches. The lack of complete skeletons in these many specimens would probably rule out these turtles' dying in a clam, lacustrine (lake) environment and quietly sinking into the mud at the bottom of the lake upon death as is the case in the Green River Formation Fossil Lake sediments. Evidence would suggest these turtles may have lived in a temporary lacustrine environment and died under more unusual circumstances near a fluvial (river) environment.

Roehler (7) described the Cathedral Bluffs sediments as mostly variegated mudstones, formed from soils either well-drained (red mudstones) reflecting an oxygenated environment or poorly drained or water saturated (gray/green mudstones) reflecting an oxygen poor, more stagnant environment. These sediments were deposited by a river flowing roughly southwest from the Sweetwater Arch over relatively flat land, and eventually entering Lake Gosiute to the south. Interbedded in these mudstones are a few very thin beds of gray limestone and algal limestones of lacustrine origin. Rivers meandering over flat land often pinch off channels creating crescent or oxbow lakes as happens in the lower Mississippi Valley. In times of drought, these oxbow lakes, initially up to a few miles long, could dry up slowly, concentrating their aquatic life such as turtles and crocodiles into pools a few hundred yards across. When these pools dried, the trapped animals would die and be scavenged by birds and small mammals. This author has observed that recent turtles, having been trapped between railroad tracks and died, are scavenged by birds which leave only some limb bones inside the shell, removing the tail, feet, neck and head,

a condition very similar to that of the Cathedral Bluffs specimens. Upwardly warped costal shell bones have been observed in several upper stratum fossil specimens. Upward shell bone warping occurs in recent deceased turtles when the costal bones are exposed to drying conditions in hot sun.

These scavenged shells would have lain on the surface until the drought ended, the nearby river swelled, burst its levee and flooded the dry oxbow lake. The inrushing water would carry both fine and coarse sediments washing down the dry lake bed carrying and fracturing the turtle shell pieces as it went. As the water slowed and released its sediment load, only the finer sediments would remain suspended and the water could no longer completely destroy the shells, but rather just move and break some into large pieces, eventually covering all the remaining shells intact in fine muddy sediments which eventually compacted into mudstones.

The river continued to meander, eventually covered the muddy sediment containing the *echmatemys* and deposited the better oxygenated red/brown fluvial sediments which entombed the occasional trionychid and dermatemydid turtle. Modern trionychids prefer a well oxygenated, moving water environment and only the brown mudstone strata below and between the two green-gray *Echmatemys* mudstone layers contains the trionychids described above. The single living dermatemydid (genus *Dermatemys*, the Central American river turtle) is completely aquatic and also prefers oxygenated environments such as large rivers and lagoons. The presence of the fossil dermatemydid genus *Baptemys* in brown mudstones above the strata containing these *Echmatemys* would also suggest that eventually the area returned to the more well-oxygenated main channel fluvial environment in the normal course of the river meanders, burying the oxbow lake sediments and the turtles it contained.

Even crocodiles were definitely contemporaries of these turtles, evidence does not support the scenario that the majority of the *Echmatemys* shells are the remains of crocodilian meals. A crocodile would crush and dismember any small pond turtle shell and either leave remains randomly scattered throughout the area or concentrate the remains in a midden near their nests. Definitive evidence of crocodilian attack such as punctured shells and missing oval-shaped shell sections does exist in trionychid specimens from Green River and Bridgerian sediments.

Conclusions

The largest known deposit of fossil chelonians, genus *Echmatemys*, is reported from the Eocene Cathedral Bluffs Member of the Wasatch Formation of northeastern Sweetwater County, Wyoming. Hundreds, perhaps thousands, of specimens of *Echmatemys* shells can be found in two distinct mudstones representative of temporary lacustrine environments. Associated fluvial sediments contained *Baptemys wyomingensis* and three types of trionychid chelonians. This is the first comprehensive report of chelonian material from the Cathedral Bluffs Member representing latest Wasatchian time. This chelonian population is similar to, but distinct from, the slightly younger and much better known population from the Blacks Fork Member of the Bridger Formation, earliest Bridgerian time.

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A WORD OF WARNING MAY BE BENEFICIAL

Tisha Stevens, Rock Talk and Hidden Treasures
from American Lands Access Association, Inc., Electronic Newsletter

As a Wyoming native with strong roots in the Big Horn Basin, I was appreciating our great Wyoming beauty. We grew up camping and fishing and rock hunting in the Big Horn Mountains. My parents purchased a cabin near Tyrell ranger station above Deer haven, and my Grandparents are native ranchers in Ten Sleep, their mountain range is also close-by in the big Horns. We were raised to respect the land. Never litter. Make sure the campfire is out, without a doubt. Only leave footprints. If you're going to fish, bring your license. My parents were raised the same way, and my children, although young, already understand the importance of these things.

I want to warn other rock-hunters like ourselves that we are the new breed of criminals here in our great state. Believe me when I say we were treated like common criminals during an incident this past summer. My father often hikes into canyons to go fishing, and during one of these trips he had noticed pretty rocks in the bottom of one particular canyon. One sunny afternoon, we decided to hike several steep miles down to the area he remembered. Boy, do I wish we hadn't!

Ultimately, there were three forest ranger vehicles so they would be sure to surround us; we were marched back to our vehicle, our rocks were confiscated, and there we waited for the "specialists" to come and have a look at our stash. No folks, not our stash of drugs or a dead body. ROCKS!

Did you know you need a permit to go rock hunting? That is what these particular Forest Service rangers told us. After some checking, we learned the cost is $15 per person, per year. Only good for that particular National forest, and only good for "boulder, or gravel sized" rocks.

Purchasing one was also a little easier said than done. I would recommend not bothering! After calling about 6 different government offices, I finally had an in-depth conversation with the Archaeologist covering this area. I was ultimately told "there is probably no place on the Big Horn that is not some sort of protection." Just to make sure that I understood what he was saying, I asked him if he was telling me there is NO PLACE that the public can go to look for pretty rocks on the Big Horn? I had understood him Loud and Clear. The whole conversation was quite interesting, actually.

After requesting information as to how one might obtain a map of the archaeological area in question, or any other located in the Big Horns, I learned that those maps are "sensitive" material, CONFIDENTIAL! We don't make those maps available to the public! When I asked him why there are not signs posted on several entrances to this area, I was told that the Forest Service does not legally have to SIGN anything". In fact, most archaeological areas DON'T have a sign. That makes it a little difficult for the public to know where these areas are, now doesn't it?

We wonder why the ranger couldn't have hiked down to where we were rock hunting that day and kindly said, "you know, you probably aren't aware that you are in the process of criminal activity, but why don't you discard your rocks and please leave the vicinity." We feel that a warning would have been appropriate for first time offenders.

Quite to the contrary of receiving a warning, 3 weeks later we received our papers in the mail telling us we had been charged, and ordered to appear in court. Punishable by up to 2 years in prison and a $20,000 fine. In addition to extensive attorney fees, we ended up paying a large fine.

My grandmother wonders how she could have lived in Washakie county for 80 years as an avid rock hunter, and had never heard a word about needing a permit to hunt rocks. Since the Forest Service has failed to educate the public, I want to give my fellow "CRIMINALS" out there fair warning. On any other day, my mother and grandmother and little girls would have been with us, and the ranger could have really had a heyday writing citations! What is this world coming to ?!?!

Since our ordeal, we have heard tell we are not alone, as there seem to be many others who have experienced the joys of meeting the Forest Rangers on the Big Horn Mountains. We believe that our parks are for PEOPLE , and it appears the authorities monitoring the Big Horns have forgotten that. They need to move to Chicago or L.A., where they might have REAL criminals to worry about. Until then, rock hunters beware.

(Note to editors: My (Tisha's) phone number is 307-864-2984 if you wish to speak with me)

via Agate Explorer (to us via The Shawmish Roktawk)

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