



VOLUNTEERS' ASSOCIATION NEWSLETTER



NEW MEXICO MUSEUM OF NATURAL HISTORY & SCIENCE

June-July 2012

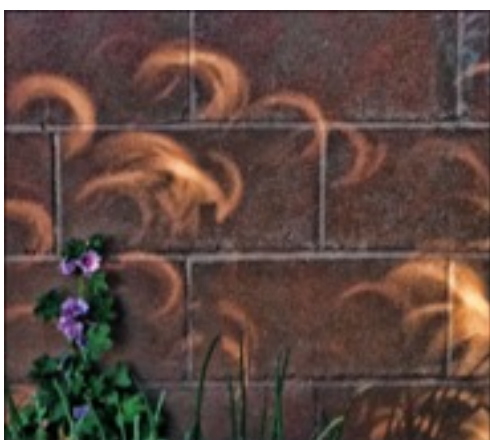


Eclipse

PHOTO BY JAMIE DIXON

PHOTOSOLAR ANNULAR ECLIPSE (MAY 20)

This summer two astronomical "close encounters" are taking place. On May 20, 2012, there was an unusual solar event called an "annular eclipse." During the annular eclipse, the moon covered most of the sun's disk leaving a thin ring of light - a ring of fire - around the edge--often called the ring of fire. Albuquerque was one of only a few places to see it in all its glory!



Eclipse reflection.

PHOTO BY DWIGHT HARRIS

TRANSIT OF VENUS: JUNE 5

Another solar event will take place on June 5. This event is a **Transit of Venus**, in which the planet Venus visibly and slowly moves across the disk of the sun. *This is the **ONLY** transit of Venus that will take place in the 21st century.* If you miss this, you will never see it again in your lifetime... and it is also viewed perfectly in Albuquerque.



To see a NASA history of the Transit of Venus, click the URL below, which will take you to <http://www.youtube.com/watch?v=OAx-juCq14>

DOCENT TRAINING...

Docent Training will be held in August and September, 2012.

The scheduled dates are as follows:

August 6, 8, 13, 15, 20, 22, 27, 29

September 4, 6, 10, 12, 17, 19, 25, 27, 28

Each date will be a distinct hall/topic/subject/practice and include reviews and exam at the end. Each date is currently planned to run from 9 AM to noon and 1 PM to 4 PM with a one-hour lunch break - although some dates may end early or include time with a mentor and/or self-study. *It is expected that the Docents-in-Training will plan to attend every session.*

Please sign up for this training with Chris Sanchez.

YOUR VOLUNTEER ASSOCIATION

Volunteers, the Volunteer Association is your association. Its elected officers for the present year, with contact information, are:

PRESIDENT	James Peavler 505-246-8775 imp@peavler.org
PRESIDENT ELECT	Dwight Jennison 505-229-839 d.r.jennison@gmail.com
SECRETARY	Mina Jane Grothey 505-323-6855 mgrothey@unm.edu
TREASURER	Tom Suazo 505-264-0565 tsuazo@unm.edu
PAST PRESIDENT	John McDonnell 505-352-8868 tmcdonnl@earthlink.net

THE VAN [Volunteer Association Newsletter]

The VAN is the bimonthly newsletter of the Volunteer Association of the New Mexico Museum of Natural History and Science (NMMNHS). Please feel free to submit appropriate articles. The final submission date is the 15th of the month preceding VAN publication. The submission deadline for the July/August issue, for example, will be June 15, 2012.

The VAN is currently edited by Louise Harris louise@goingourway.net. Please send submissions, in Word, Pages, or email format, to Louise, with a copy to and Chris Sanchez. Photographs are encouraged.

louise@goingourway.net
chris.sanchez@state.nm.us

Louise Harris, VAN Editor

EMERGENCY PROCEDURES

One Sunday morning last winter when I arrived at the Museum, two large tour buses were already parked out front and had disgorged about 100 older people. It was as busy an opening moment as I have had on Sunday mornings, and it was not long until we had a kind of minor crisis.

A portly, white-haired lady began complaining of severe pain in her chest. She didn't seem able to decide whether it was more on her left side or right side; it seemed to be down the middle. But she was in a lot of pain and the pain was in her chest, so, I decided to treat it as a medical issue. Luckily, a security guard was in the atrium at the time, and I reported her condition to him. It was not long before we had her sitting comfortably in a wheelchair with a blanket wrapped around her, had called 911 and made sure an ambulance was on the way.

Luckily, I happened to have followed the correct emergency procedures that docents and others are supposed to follow in the Museum. I discovered, or rediscovered, that the security officers review their emergency procedures on a regular basis. I think it would be difficult to get all the volunteers in for a periodic review of emergency procedures, but I think it's not a bad idea for us to review them occasionally and to provide information to our volunteers as to the proper procedures.



Volunteer President James Peavler

There are two basic kinds of incidents, the example above being a simple medical emergency. The proper response to a medical emergency is to immediately contact a security officer. You could do this by calling the security number at 1-2829, or send someone to find a security person. If there appears to be an

immediate health threat (such as unconsciousness, difficulty breathing, etc.) call 911 first and then call security. Volunteers are not supposed to take emergency action such as performing CPR. Injured persons should be stabilized so as not to cause further injury and made as comfortable as possible until help arrives.

Some emergencies threaten more than one person and often even the building. The most common such emergency we are likely to have is the fire alarm. If you hear a fire alarm it is not your responsibility to find or to fight the fire! A volunteer's



responsibility is to help evacuate the building. Volunteers should make sure that everyone in the part of the museum where they are working moves steadily and in a controlled fashion to one of the fire exit doors.

If it is safe, volunteers should walk through the rooms in the area where they have been working and help people find the exits. Normal procedure is to exit through the front door or the north doors into the parking lots. This policy is proper in the case of a power outage, a fire, a bomb threat, a suspicious object left in a hallway, water leaks, floods and other water damage, chemical spill, explosion, earthquake. . . all of these events require evacuation of the building.

There are probably many more emergency exits than most volunteers are aware of. There are 15 exits on the first floor, and nine on the second floor. I think it's a good idea for all volunteers to know where these exits are. Maps showing where the fire extinguishers, fire alarms, and fire exits can be found in the red Museum Emergency Procedure spiral notebook which is tacked to the Volunteer bulletin-board in the Volunteer Lounge. You can read the whole thing in 15 minutes, and I recommend you do so.

President James Peavler

HELP WANTED

Needed: Persons to help with the construction of a virtual tour of the Museum, to be attached to the website and Facebook pages. It will initially just include the Centennial Exhibit, then be extended to include the permanent exhibits, as a way to further attract visitors.

Needed: Persons to help with an exhibit entitled New Science, which will enable recent discoveries to be displayed in a timely manner.

If you would like to contribute to either of these projects, please contact Dwight Jennison at d.r.jennison@gmail.com or [505-270-6423](tel:505-270-6423).

President Elect Dwight Jennison

Outreach Opportunity! DINOSAUR EDUCATION IN SILVER CITY SEPTEMBER 25

Museum Educator Cirrelda Snider-Bryan (Prehistoric Preschool) is looking for two Volunteers who are already trained in interpreting Mesozoic life/dinosaurs (or who would be willing to be trained) to travel to an outreach in Silver City. **Travel time would be from Friday afternoon September 14 through Sunday early afternoon September 16, 2012.**

The Museum has been invited to set up in the Western New Mexico University's St. James Stadium for the Grant County Annual Red Hot Children's Fiesta, which occurs from 10:00 AM to 2:00 PM on Saturday. They expect around 2,000 attendees. Their theme this year will be NM Dinosaurs. Accommodations for both Friday and Saturday nights would be paid for by the sponsor, Grant County Community Health Council. The sponsor is also paying for all meals. Travel would be via state vehicle. Ability to help set up and tear down displays is needed along with the ability to interpret them to children, teens and adults.

If you are interested in this Outreach opportunity, please call Cirrelda at 505-841-2882 or email cirrelda.snider@state.nm.us by June 15th. We will be meeting in June and August to plan. Thanks for considering this opportunity.

EDUCATIONAL SEMINARS

Educational seminars will be held in the multipurpose room from 10:30 to 12:30 PM on **June 19 and July 17**. All volunteers, docents, and tour guides are invited to attend. Dessert and drinks will be served following the presentations. June 19 will feature Larry Crumpler Ph.D. - topic to be announced. As usual there will be a "whats new" presentation.

On July 19 our speaker will be Jim Fassett MSc. Jim will present us with published data that is believed to establish that dinosaurs survived the KT boundary for at least 1.5 million years. His data is both radiometric and stratigraphic in support of this thesis. Additionally there will be a "whats new" session.

*Bud Hodgin, Coordinator
Educational Committee*

VOICES IN SCIENCE (& Spiketacular) June-July, 2012

Museum Adult and Family Educational Programs

Programs at a Glance

JUNE

June • Monday tour
Docent-led Exhibit Tour

June 3 • event
First Sunday

June 5 • special event
Transit of Venus

June 10 • event
Solar Sunday

June 14 • adult class
ABQ Geology

June 16 • tour
Bioscience Collections

June 16 • exhibit
Dino Century – new specimen

June 28 • Centennial Lecture Series
Tyrannosaurs of New Mexico

JULY

July • Monday tour
Docent-led Exhibit Tour

July 1 • event
First Sunday

July 1 • special event
Children of Time Family Event

July 8 • event
Solar Sunday

July 12 • Curator's Coffee
Natural History Exhibits

July 19 • Centennial Lecture Series
Albuquerque's Open Space and Urban-Wildlands Conservation

Centennial Lecture Series

The New Mexico Museum of Natural History and Science is proud to present: *The Centennial Lecture Series—100 years of Advances and Significant Discoveries in Natural History and Science in New Mexico*. New Mexico scientists highlight their science and how it has evolved over the past century.

Current Lecture

Tyrannosaurs of New Mexico

Thursday, June 28, 2012
7 PM – 8:30 PM

Thomas Williamson, Ph.D.
Curator of Paleontology,
NMMNHS

Until recently tyrannosaurs were known only by *Tyrannosaurus rex* and a few closely related species, all from the Late Cretaceous of North America and Asia.

Within the last decade the number of tyrannosaur species has grown to more than 20 and range back to the Middle Jurassic. They are now among the most intensely studied dinosaurs. These specimens have led to a much greater understanding of dinosaur evolution, anatomy, and other aspects of their biology including growth dynamics, population structure, feeding, locomotion, and biogeography. New Mexico was home to at least two tyrannosaurs,

Tyrannosaurus and *Bistahieversor* (aka, the Bisti Beast)—a recently discovered skull and partial skeleton that represents the most complete tyrannosaur ever found in New Mexico.

Tom Williamson received his Ph.D. from the University of New Mexico and has been a Curator of Paleontology at the New Mexico Museum of Natural History and Science for over 18 years. He is a vertebrate paleontologist who focuses his research on Cretaceous and Paleogene fossils of the San Juan Basin, northwestern New Mexico. Dr. Williamson has worked with colleagues to name three North American tyrannosaurs (including Bistahieversor).

All evening lectures are held at the New Mexico Museum of Natural History & Science
1801 Mountain Rd. NW, Albuquerque, NM 87104
• (505) 841-2800

Visit: www.nmnaturalhistory.org

\$6 (\$5 members, \$4 students)

Purchase in advance online to guarantee your seats, go to www.NMnaturalhistory.org or purchase tickets at the door before the talk. Doors open at 6:15 PM

Questions: August Wainwright
email: programs.NMMNHS@state.nm.us
call 505-841-2861

Centennial Lecture Series Lecture and Booksigning

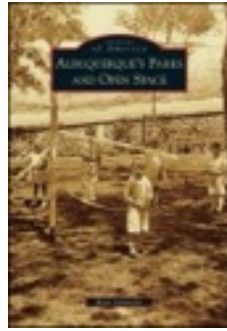
Albuquerque's Open Space and Urban-Wildlands Conservation

Thursday, July 19, 2012

Matt Schmader, Ph.D.
**Superintendent of the Albuquerque Open
Space Division**

Albuquerque has always attracted outdoor enthusiasts, such as Aldo Leopold, who helped to create parks and open spaces. Nearly 28,000 acres, in and around Albuquerque, are managed by Albuquerque Open Space in order to conserve natural and archaeological resources, provide opportunities for outdoor education, provide a place for high and low impact recreation, and define the edges of the urban environment.

Dr. Schmader's book *Albuquerque's Parks and Open Spaces* was published by Arcadia Publishing in 2011. He will be available to sign the book after the lecture.



Dr. Matt Schmader is Superintendent of Open Space with the Parks and Recreation Department of Albuquerque, New Mexico. He holds degrees from the UNM (M.A. and Ph.D.), and his research focuses on petroglyphs and rock images, the 16th century Spanish exploration of the Southwest, early puebloan pithouse villages, and rock image site management and

conservation. He has been the principal investigator on more than 50 research projects in central New Mexico during the past 25 years.

All evening lectures are held at the New Mexico Museum of Natural History & Science
1801 Mountain Rd. NW, Albuquerque, NM 87104 •
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Visit: www.nmnaturalhistory.org

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Purchase in advance online to guarantee your seats, go to www.NMnaturalhistory.org or purchase tickets at the door before the talk. Doors open at 6:15 PM

Questions: August Wainwright
email: programs.NMMNHS@state.nm.us
call 505-841-2861

Natural History Exhibits: Past, Present, and Future

Thursday, July 12 • 9:30–11:00 AM

**Matt Celeskey, Exhibit Design
Manager, NMMNHS**

The New Mexico Museum of Natural History and Science has been open for 26 years, but it carries on a much older tradition of creating exhibits that explore and explain the natural world. What factors have influenced the evolution of natural history exhibits, and what will they look like in the future? Join Matt in a discussion and tour highlighting the experiments that are helping us plan for the exhibits of tomorrow.

Matt Celeskey has worked on exhibits for zoos and museums for nearly 20 years. He has been part of the Exhibits team at the NMMNHS since 1998, and his illustrations, designs, and computer interactives are part of many of the Museum's permanent exhibits and publications.

\$8 (10% discount for members)

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Pre-registration required. Limit 15 participants. To guarantee your place, register online, go to www.NMnaturalhistory.org

Questions: August Wainwright
email: programs.NMMNHS@state.nm.us
call: (505) 841-2861

Curator's Coffee

A Café Style Program



Join us for a casual discussion followed by a hands-on experience. Limited to 15 people and includes coffee, light refreshments, and Museum admission. All Curator's Coffees are held at the Museum.

Adult Class:

Albuquerque's Geological Landscape

Thursday, June 14 One session class
9:00 AM– 12:00 noon

Jayne Aubele

Albuquerque's landscape is a snapshot of the geologic past, and a record of the dynamic geology that formed our state. Do you want to learn more about where you live and why it looks the way it does? No prior knowledge of geology is required.

A copy of the Museum's Albuquerque Geoscape Poster (a \$10 value) is given to participants.

Jayne Aubele is Educator/Geologist at the museum. Her focus is volcanoes, and she has mapped and researched the geology of New Mexico and the Southwest as well as the Moon, Mars and Venus. She has authored or co-authored many technical articles and popular books/chapters about New Mexico geology, including the Field Guide to the Sandia Mountains; and was geologic technical advisor and on-camera geologist for the 2008 KNME-TV program, The Sandias.

\$35 (10% discount for members)

Pre-registration required. For more information or to guarantee your place in this class, register online, go to www.NMnaturalhistory.org

Questions: August Wainwright
email: programs@NMMNHS@state.nm.us
call 505-841-2861

First Sundays

FREE Admission to both the Museum and the Sandia Mountain Natural History Center for all New Mexico Residents!

Sundays, June 3, July 1
9:00 AM – 5:00 PM

On the first Sunday of every month, the New Mexico Museum of Natural History and Science is FREE to all New Mexico residents. (Bring NM ID or proof of residence. Regular admission fees for DynaTheater and Planetarium shows.)

FREE Admission to the Sandia Mountain Natural History Center

Gates open for the public • 9:00 a.m.–4:00 p.m.

Also open to all visitors, on First Sundays, is the Sandia Mountain Natural History Center (SMNHC), the Museum's off-site environmental education facility located in the Sandia Mountains. Attend a special natural history presentation, and experience geocaching, the bird blind, self-guided hikes, picnicking, and solar telescope viewing.

SMNHC Presentations

June 3

Transit of Venus

11 AM to 2 PM

Educational Transit Activities and info at NMMNHS...

Special talk by Dr. Larry Crumpler, NMMNHS, about Venus at 1 PM)

@Sandia Mountain Natural History Center (Talk about Venus at 11 AM).

July 1

When Albuquerque Was an Ocean

No Registration Required. For directions to the center, go to www.NMnaturalhistory.org

Information: www.NMnaturalhistory.org

Questions: August Wainwright
email: programs.NMMNHS@state.nm.us
call: (505) 841-2861

Monday Museum Tours

Guided Tours of the Museum Public Exhibits

Every Monday 1:30–2:30 PM

Take a fact-filled, fun, guided tour of the Museum exhibits.

Limit 14 people ages 13 and up.

Free (with Museum Admission)

Questions: August Wainwright
email: programs.NMMNHS@state.nm.us
call: (505) 841-2861

No registration required. Tours are 45 to an hour in length, and first-come, first served.

Museum Collections Tours

Join us for behind-the-scenes tours of our Bioscience and Geoscience collection areas.

Geoscience Tours

Saturday, July 21 • 1:00 – 2:00 PM

See the largest collection of fossils in New Mexico and learn about important fossils collected from across the state. Tours allow participants to see fossils actively being prepared for exhibits and research.

Limit 20 people. Children under 13 must be accompanied by an adult.

Free (with Museum Admission)

Questions: August Wainwright
email: programs.NMMNHS@state.nm.us
call: (505) 841-2861

No registration required. Tours are 45 minutes to an hour in length, and first-come, first served.

Bioscience Tours

Saturdays, June 16 • 1:00–2:00 PM

Bioscience Collections Manager, Patricia Gegick, will conduct a tour of the Museum's biological collections, which includes plants, insects, mammals, mollusks, and birds. Learn the importance of museum collections, how they are used, and how they are preserved and maintained. Tours are 45-60 minutes in length.

Limit 12 people. No strollers or children under the age of 7. Children must be accompanied by an adult.

Free (with Museum Admission)

Questions: August Wainwright
email: programs.NMMNHS@state.nm.us
call: (505) 841-2861

No registration required. Tours are 45 to an hour in length, and first-come, first served.

Special Events – Albuquerque Solar Events

Tuesday, June 5, Transit of Venus

On June 5, a *Transit of Venus* will occur, where the planet Venus visibly and slowly moves across the disk of the sun. This is the ONLY transit of Venus that will take place during the remainder of the 21st century. If you miss this, you will never see it again in your lifetime...and it is also viewed perfectly in Albuquerque.

Solar viewing glasses or special filters are needed for safe viewing. Watch the Transit by webcast in the comfort of our Planetarium.

Schedule :

JUNE 3: (First Sunday) **11 AM to 2 PM**

Educational Transit activities and info at *NMMNHS*..

At the Museum: Special talk by Dr. Larry Crumpler about Venus at 1 PM)

At Sandia Mountain Natural History Center: Talk by Jayne Aubele about Venus at 11 AM

JUNE 5: 3 PM to 8 PM SPECIAL EVENT...

View the Venus Transit...

Live webcast in the comfort of our planetarium....Fun activities for the whole family. Talk by Dr. Larry Crumpler, Planetary Geologist, 6 PM.

Free with Museum Admission

(June 3 events are FREE, no admission required)

No registration required for more information, go to www.NMnaturalhistory.org

Questions: August Wainwright
email: programs.NMMNHS@state.nm.us
call: (505) 841-2861

Other Viewing Opportunities

The New Mexico Museum of Natural History and Science is offering numerous public educational and viewing activities, along with our Albuquerque coalition partners, the National Park Service,

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Petroglyph National Monument, City of Albuquerque Open Space and Special Events, Balloon Museum and Fiesta Park, UNM Astronomy Department and Observatory, The Albuquerque Astronomical Society (TAAS), Albuquerque Convention and Visitors Bureau (ACVB), US Forest Service, and Bernalillo County Open Space. Go to www.ItsATrip.org/ABQSolarEvents for more information from all of the Albuquerque coalition members, including planned viewing sites. Go to www.NMnaturalhistory.org for information about Museum solar events.

VIEW with SAFETY...

Use special solar glasses or filters
Do NOT look directly at the sun using eye, binoculars, camera, cell phone, or telescope (without special solar filters)

Planned Viewing Sites in Albuquerque ***For the Transit of Venus***

ABQ Balloon Museum
UNM Observatory
New Mexico Museum of Natural History and Science (Planetarium)

Go to www.ItsATrip.org/ and search For Solar Events for more information

Special Event

“Children of Time”

Family Activities and Booksigning
Sunday, July 1, 1 - 3:00 PM

Join Matt and Anne for an afternoon of story telling and engaging family activities designed for children and their families.

The book *Children of Time: Evolution and the Human Story* was recently published by UNM Press, written by Santa Fe paleoanthropologist and educator **Anne Weaver**, with illustrations by

Matt Celeskey, NMMNHS Exhibit Designer.



The book brings our distant ancestors to life through the eyes of their children. Each chapter is based on an actual child fossil ranging from 2.5 million years to 13,000 years old (found in Africa, Europe, Israel, and Clovis, New Mexico). The children’s stories are imagined and recreated from accompanying finds of stone tools, ashes, beads, and even footprints.

Materials courtesy of Maxwell Museum and ABC Libraries.

Thank you *Community Science Connections*.

A book signing will follow family activities—copies of the book are available for purchase at NatureWorks.

Free. No registration required

More information: www.NMnaturalhistory.org

Questions: August Wainwright

email: programs.NMMNHS@state.nm.us

call: (505) 841-2861

Special Centennial Exhibit **- Dinosaur Century -**

Celebrate New Mexico’s 100 years of statehood with the New Mexico Museum of Natural History and Science, Dinosaur Century, Centennial Exhibit

Important dinosaur discoveries have been made in New Mexico since the 1880s. Dinosaur fossils from New Mexico have pushed forward the frontiers of dinosaur science. This exhibit highlights 100 years of significant fossil finds in New Mexico that have previously only been seen by research scientists. New specimens will be added each month on the dates listed, visit throughout the year to see what’s new...

JUNE 16 Giant Duckbills

JULY 21 New Mexico’s State Fossil

Free (*Dinosaur Century* is included with Museum Admission)

No registration required.

Questions: August Wainwright

email: programs.NMMNHS@state.nm.us

call: (505) 841-2861

Community Science Connections

Museums, Libraries, and Families: Working in partnership to bring fun-filled educational events to the community!

CSC is funded by a grant from the Institute of Museum and Library Services. Look for CSC events at <http://libguides.cabq.gov/CSC>

Albuquerque Bernalillo County Library's Summer Reading Program, June 1-July 20, 2012, for more info www.cabq.gov/library or 311.

CSC Programs are funded by the *Institute of Museum and Library Services (IMLS)* and managed by the New Mexico Museum of Natural History and Science.

Solar Sundays

Sundays, June 10, July 8
12:00 Noon–3:00 PM

Solar Sunday is the place to be! This great family event is becoming more popular every month. Don't miss out! Telescopes, sun, and bilingual, hands-on activities for the whole family.

Planetarium Presentation at 11:00 AM (regular fee applies)

Free (with Museum admission)

No registration required

Information: www.NMnaturalhistory.org

Questions: August Wainwright

email: programs.NMMNHS@state.nm.us

call: (505) 841-2861

Young Explorers Summer Science Camp 2012

Attention Young Explorers! Join us for the 28th year of the Young Explorers Summer Science Camp Program. Experience an adventure with the New Mexico Museum of Natural History and Science this summer! Discover the biology, geology, paleontology, and ecology of our State. Week-long, full-day or half-day camps for children entering Kindergarten through 6th grade. **Sessions begin July 16, with 3 different camps each week for 3 weeks.**

Preregistration is required. Register online at www.NMnaturalhistory.org

Information: www.NMnaturalhistory.org

Questions: August Wainwright

email: programs.NMMNHS@state.nm.us

call: (505) 841-2861

SPECIAL SEMINAR

The Origin and Early Evolution of Dinosaurs

Tuesday, June 5, 10:30 AM,
The Sandia Room

Steve Brusatte

The American Museum of Natural History
New York, New York

*Steve is the author of *Stately Fossils, Dinosaurs, Field Guide to Dinosaurs*, and most recently *Dinosaur Paleobiology*, and numerous technical articles. He has worked or works with some of the leaders in the field, including Paul Sereno, Mike Benton, Mark Norell, Xu Xing, Phil Currie, and our own Tom Williamson.*

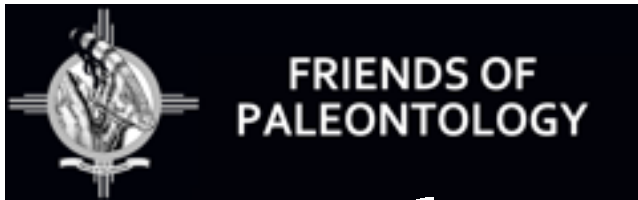
ABSTRACT Much of my field and research work has focused on Triassic dinosaur evolution, and this talk provides a synopsis of our current understanding of the first 50 million years of dinosaur history.

Dinosaurs dominated terrestrial ecosystems for more than 100 million years in the Jurassic and Cretaceous, and their great diversity, range of bizarre skeletal features, and (in some species) enormous size have made them icons of prehistory to the general public. How, then, did dinosaurs become so successful?

To answer this question we must examine the evolutionary radiation of dinosaurs: the earliest phase of their evolution during the Triassic Period (250–200 million years ago). Dinosaurs are part of the larger radiation of archosaurs, the major group that includes crocodiles and birds, which originated in the immediate aftermath of the Permo–Triassic mass extinction. However, the rise of dinosaurs (and archosaurs more broadly) did not happen suddenly. Early dinosaurs and their closest relatives were small, rare, and not very diverse in a taxonomic (richness) or morphological (disparity) sense. Both richness and disparity gradually increased during the Triassic, but during this time dinosaurs were less diverse than the crocodile-line archosaurs. It was only after the seemingly sudden extinction of many crocodile-line

archosaurs at the end of the Triassic that dinosaurs spread around the world, evolved to enormous size, and became the most diverse and disparate terrestrial vertebrates in most ecosystems. This argues strongly against the long-prevailing idea that dinosaurs out-competed crocodile-line archosaurs during the Triassic and suggests that Mesozoic dinosaur dominance was contingent on a major mass extinction.

Steve will be available in the cafe for informal discussions after his talk. His past and recent work can be found at <http://sites.google.com/site/brusatte/>



SUMMARIES OF PREVIOUS FOP MEETINGS:

FOSSIL AMPHIBIANS (From February, 2012)

The February, 2012, FOP meeting lecture was an overview of amphibian evolution from the Pennsylvanian through the Cretaceous periods in New Mexico. Preparation Lab Manager Larry Rinehart brought together past analysis of several amphibian genera and just-completed research to be released this summer. All data are for the Temnospondyli Order, which means “cut vertebrae” due to the three piece vertebrae found in early forms. The familiar name for these animals is Metoposaurs.

The Pennsylvanian amphibian *Eryops*, the largest predator of its time, was found in El Cobre

Canyon, NM, and *Diplocaulis*, with its characteristic boomerang shaped skull, marked the Permian in the Cutler Group. Metoposaur development peaked in the Triassic Chinle Basin in Southwestern United States when *Koskinodon* (formerly known as *Buettneria*) was the dominant amphibian, and *Eocyclotosaurus*, found in the Anton Chico formation, was the longest at about five meters. A few species continued into the Jurassic and Cretaceous periods in other countries.

Most amphibians had a two-stage life history - birth in water, life on land. They were terrestrial as juveniles, but adults stayed near ponds and streams for living and egg laying. Their main characteristics were a flat head, many teeth of various sizes, long, wide tails for swimming, and occipital condyles at the back of the skull that enabled them to raise their heads slightly. Their flat, heavy bodies compressed their short, straight ribs and made breathing difficult, so guccal breathing evolved to literally pump air into the lungs. Lateral line grooves can be seen in the scaly skin on the top of adult skulls, which are thought to sense water motion caused by prey or possibly other adults. All genera had many teeth, up to 100, both curved and straight; some had four to six large fangs that protruded through holes in the top of the skull when the mouth was closed. It is thought that the teeth evolved to cope with scaly Coelacanth prey when pre-temnospondyli lived in the sea during Ordovician time.

Recent and still unpublished work by Rinehart and others dealing with leg and tooth strength and structure has shed new light on some functional morphologies. Allometry studies, which deal with relationships of body size to shape and other physical factors, determined that leg strength declined as body mass increased, hence adults lived close to water because their leg anatomy could not carry their weight. The enamel in teeth has shown to be completely enfolded in the dentin, which made for tooth strength. The size and curved tooth shape proved to be ideal for keeping prey from escaping from the mouth. Other studies proved that the jaw muscles of these animals could produce high crushing power.

*Dick Yeck
VP for FOP Programs*

PALEOCLIMATES: END PERMIAN TO END EOCENE

(From March, 2012)

Dwight Jennison, guest speaker for the March 19, 2012, FOP meeting, provided a comprehensive overview of how the earth's climate has changed over the past millennia and how those changes relate to the major extinctions of the Permian, Triassic, Cretaceous and Paleocene periods and the Paleocene-Eocene Thermal Maximum (PETM).

The key points start with defining weather and climate. Weather is what is happening now, which is chaotic, while climate is defined as happening over time and is not chaotic. Heat is a very important element of climate. It is produced within the earth, by the ocean, which covers two-thirds of the earth's surface [and has three thousand times as much heat capacity as does the atmosphere], by external solar influx, by rotation of the earth's axis, and by the dominant winds. With these factors in mind, it is evident that stable climates foster evolutionary stagnation, while major climate changes can cause major extinctions.

Green house gases were the major player in all extinctions. The Permian extinction was caused by about 700k years of volcanic activity that created the Siberian Traps flood basalts in Russia that extinguished about 90% of sea life and 70% of terrestrial life due to global warming, low oxygen and a CO₂/SO₂ glut. The Triassic experienced a similar carbon/sulfur effect. A recent study of the Cretaceous simulated the positions of the land geography, oceans and current flows at that time, which indicated that the CO₂ would have been about five times higher than normal with excessive salt, which sank to the bottom and extinguished almost all ocean life. There is mounting evidence that the Deccan Traps volcanic eruptions in India, smaller in size and shorter in duration than the Siberian Traps, contributed to atmospheric conditions about the same time as the asteroid impact on the Yucatan peninsula.

The PETM, which lasted approximately 150 – 170k years, was caused by biogenic release and suspected deep sea “methane ice.” This caused

deep ocean circulation changes resulting in a significant increase in green house conditions in less than one thousand years that took about 100k years to reverse. Water was also warm, partly due to no ice in Antarctica and a closed Australia-Antarctica strait. The Eocene to the Holocene periods were the last ice ages, starting about 3mya when the Panama bridge emerged and changed the weather flow to the north, which lasted to about 10k years ago.

Hence paleoclimates explain paleontology. Much of this data is made possible by the new and more powerful computing technology available today. A conclusion to be made from this data is that the earth is due for another ice age. Or the positive (fast) and negative (slow) climate feedback loops can be interpreted to indicate that another solar maximum is in store. Also, there are new weather studies of modern climate activity such as El Niño and La Niña that affect New Mexico. But the general consensus of most climatologists is that the earth is warming and that CO₂ has increased in the last 300 years.

*Dick Yeck
VP for FOP Programs*

Monthly calendars follow:



June 2012



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
First Sunday	Monday Tour	Transit of Venus The Origin & Early Evolution of Dinosaurs				
10	11	12	13	14	15	16
Solar Sunday	Monday Tour			ABQ Geology		
17	18	19	20	21	22	23
	Monday Tour Bioscience Tour Dino Century	Ed Seminar TBA				
24	25	26	27	28	29	30
	Monday Tour			Tyrannosaurs of NM		

July

2012



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
First Sunday <i>Children of Time</i> Family Event	Monday Tour					
8	9	10	11	12	13	14
Solar Sunday	Monday Tour			Curator's Coffee Natural History Exhibits		
15	16	17	18	19	20	21
	Monday Tour	Ed Seminar Dinos & KT Boundary		ABQ's Open Space at Urban- Wildlands Conservation		Geoscience Tour Dino Century
22	23	24	25	26	27	28
	Monday Tour					
29	30	31				
	Monday Tour					