

Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc., meeting in State College, Pennsylvania
Contact information on back page

January, 2021

Visit our web site: www.nittanymineral.org

Editor (see back page):

David C. Glick

January 20th Zoom meeting ONLINE:

Dinosaurs of Pennsylvania: What we know about them and their neighbors

Dr. Steven E. Jasinski
State Museum of Pennsylvania

The dinosaurs that lived in Pennsylvania during the Mesozoic Era left little direct evidence for us to find. The evidence they did leave is often indirect, and sometimes only hints at these iconic reptiles. However, the evidence we have found can still be used to help us understand who some of them were and what life was like in Pennsylvania during the Mesozoic. Our knowledge of Pennsylvania's dinosaurs is solely from the Late Triassic Period, approximately 230 Ma to 200 Ma. However, the neighbors of the dinosaurs that called Pennsylvania home are more well-known, particularly from the latter portion of the Mesozoic Era during the Jurassic and Cretaceous periods. These dinosaurs, and other fossils, allow us to gain a better understanding of Pennsylvania's dinosaurs and paint a clearer picture of life in Pennsylvania during the Mesozoic.

Please join us online for this presentation! The Zoom link will be e-mailed to all paid members who receive our e-mails; others can request it by e-mailing <xidg@verizon.net>. We'll plan to start at 7:30 p.m.; we can have informal discussions, then we can do any questions & answers and announcements, and plan to start the presentation at 8:00 p.m. We will have some information on the main page of the web site as well. *-Editor*

While We Can't Travel: Virtual Geo-Resources

Last month's presentation on Spherical Structures in Rhyolite by Daniel Bontempo can now be viewed via a link from the main page on our web site, along with earlier ones. Penn State's Earth and Mineral Sciences Museum has been adding many posts to their Facebook page, and videos to their YouTube channel. There's a link to that Facebook page, and many other online resources, on our web site. *-Editor*

From the Editor: Bulletin Printing Problems

As Editor, I have been printing color copies of this Bulletin for members who request it and for other organizations for quite a few years now. Recently my printers have had major problems. I still have some optimism about their working in the future, but for now we'll have some alternative, probably at least partially in black & white, as a stopgap.

The printed December issue went out in January to those who receive only the print version. Soon after those were printed, I was unable to print good copies to send to those who had already received it electronically. Black & white copies are enclosed with the January issue for those in that category.

Thank you for your understanding.

FEDERATION NEWS

Nittany Mineralogical Society, Inc., is a member of EFMLS, the Eastern Federation of Mineralogical and Lapidary Societies, and therefore an affiliate of AFMS, the American Federation of Mineralogical Societies. **The Federations and our Society strongly encourage all members to read the monthly Federation Newsletters, available on their web sites**, which are linked from our web site, www.nittanymineral.org. We present brief summaries here in order to encourage readers to see the entire newsletters. There's a lot there!

EFMLS leaders want **you** - the club member - to see the **Newsletter**. Please see it at <<https://efmls.org/newsletter>> (also linked from the NMS home page). The January issue announces that the Spring Wildacres workshops session is tentatively set for May 17-23. The many ways in which clubs and members can participate in Federation activities are listed. Club officers and committee chairs throughout the Federation are thanked for their efforts.

The **AFMS Newsletter** <<http://www.amfed.org/news/>> has no separate January issue. *-Editor*

Dinosaurs of Pennsylvania: What we know about them and their neighbors

Dr. Steven E. Jasinski

This month's talk will focus on the dinosaurs of Pennsylvania. While Pennsylvania has a long record of geologic research and fossil collection, much of the state's rock record dates to the pre-Mesozoic Era. Indeed, only portions of southeastern Pennsylvania, namely in the Piedmont and Atlantic Coastal Plain regions, have Mesozoic strata preserved. The majority of Pennsylvania's Mesozoic rock record dates to the

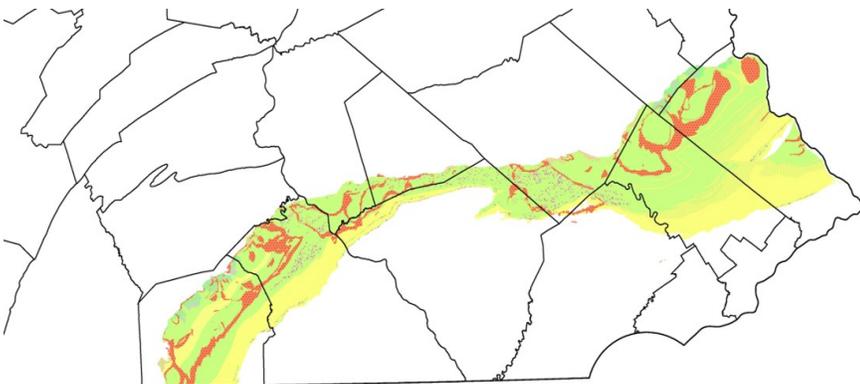


Figure 1. Late Triassic and Early Jurassic strata in southeastern Pennsylvania.

Upper Triassic and Lower Jurassic epochs. There are also some incredibly rare and limited Cretaceous outcrops, although these are small and restricted enough that little is known about them.

During the time of the dinosaurs, particularly when they were first evolving, the Atlantic Ocean was just opening up. Sediment from the Appalachian Mountains was eroding and flowing down into the rift and eventually the ocean itself. This sediment flowed into multiple basins during the Late Triassic and into the Early Jurassic in eastern North America. In Pennsylvania, two major basins filled with sediment, providing the Early Mesozoic rocks we currently find in the state. The western portion of the Triassic-Jurassic rocks are part of

the Gettysburg Basin, while those in the east are part of the Newark Basin. During this time, we also have the Central Atlantic Magmatic Province providing magmatic material and diabbases that can be found throughout various portions of these basins.

Fossils have been collected from the Upper Triassic strata in Pennsylvania, and these help provide a clearer picture of the ecosystems and paleoenvironment in Pennsylvania during this time. However, while these provide us with information on some of the Late Triassic organisms of Pennsylvania, our knowledge of the dinosaurs within these ancient ecosystems is mostly lacking. The fossil record of dinosaurs from the Early Mesozoic of Pennsylvania is made up completely of ichnotaxa and fossil footprints that have been attributed to dinosaurs. The majority of these have been attributed to the ichnotaxa *Grallator* and *Atreipus*.

The only body fossils, or actual fossil bones, previously identified as dinosaur were named by Edward Drinker Cope in 1878 as *Thecodontosaurus gibbidens*. This animal was later restudied and moved to a new genus, making *Galtonia gibbidens*. More recent study, however, has further re-identified this animal as a pseudosuchian,



Figure 2. Outcrop of the Gettysburg Formation in the Gettysburg Basin in Adams County, Pennsylvania.



Figure 3. Fossil pes footprint of *Grallator* (SMP VP-186, State Museum of Pennsylvania) from the Locketong Formation in eastern Pennsylvania.

a group of relatively large reptiles that lived alongside early dinosaurs. This means no fossil bones of dinosaurs have yet been found in Pennsylvania. Body fossils of other animals that shared their environment with dinosaurs are known, including small reptiles, phytosaurs, and temnospondyl amphibians.

So, if we don't have any other direct evidence of the dinosaurs that lived in Pennsylvania, how are we to learn more about them? While the evidence isn't direct, we can infer the dinosaurs that called Pennsylvania home by those found in neighboring states. The dinosaurian fossil record of nearby states can be used to help us determine Pennsylvania's dinosaurs, and this in turn allows us to get a much clearer picture of the dinosaurs and their ecosystems. New Jersey is especially useful for inferring this information as it is so geographically close, but we can still look at the possible biogeography of others for a potentially better understanding. This paints a picture of a thriving and diverse ancient ecosystem of Pennsylvania throughout the Mesozoic, one full of dinosaurs and other animals, showing Pennsylvania to be a major part of the dinosaurs' realm.

Dr. Jasinski tells us about himself:

I received my B.S. from Pennsylvania State University where I focused on early theropod dinosaurs and, in particular, their biomechanics. I then went to

East Tennessee State University for my M.S. where I focused on Cenozoic turtle evolution, while also doing projects involving fossil snakes, armadillo biomechanics and morphometrics, and Cenozoic carnivoran mammals and their faunal dynamics, among others. I more recently finished up with my Ph.D. at the University of Pennsylvania, where I focused on theropod dinosaurs and turtle evolution. I grew up in south-central Pennsylvania, and began volunteering and working at the State Museum of Pennsylvania just after getting my B.S. After the previous curator retired, I stayed on to head the department, and I currently run the section. This

has allowed me to further investigate Pennsylvania's ancient past, including the quest for more evidence of its previous dinosaurian residents and visitors.

Geo-Sudoku

by David Glick

This puzzle contains the letters AHOPRSTUY; one row or column spells a small reptile contemporaneous with dinosaurs. As usual, if you've read this issue, you've seen it. Each block of 9 squares, each row, and each column must contain each of the nine letters exactly once. The solution is on page 8.

S	A			U		O	Y	T
		Y						
O	U			Y		P	H	S
Y			O					H
A	T		H			R	S	
		H				Y		A
U						S	A	
T		S			O			U
	R	A						

January is Anthracite Mining Heritage Month

A regional observance of Anthracite Mining Heritage Month will take place online during January. The annual event focuses on the history and culture of the anthracite region of Northeastern Pennsylvania. See the main page of our web site for a link to the schedule of events.

Some Upcoming Shows and Meetings

Our web site <http://www.nittanymineral.org> has links to more complete lists and details on mineral shows and meetings around the country. See www.mineralevents.com for more.

Most upcoming events have been canceled.
Verify show schedule before traveling!

March 27-28, 2021: Che-Hanna Rock & Mineral Club 51st Annual Show. March 27 9:00-5:00, March 28 10:00-4:00. Wysox Volunteer Fire Company Social Hall, 111 Lake Street, Wysox, PA. Exhibits, door prizes and dealers selling minerals, fossils, lapidary and jewelry. Admission adult \$3, students \$1, under 8 free. Contact Bob 570-928-9238; website: www.chehannarocks.com

NMS BOARD MEETING NOTICE

NMS members are invited to attend Board of Directors meetings, which are generally held at 7:00 p.m. about two weeks prior to the general monthly meeting, although we do not meet every month. **The next date has not been set.** Members who would like to attend should contact president David Glick to verify time and place; those who would like to have their discussion item placed on the agenda should contact him at least one week in advance of the meeting.

Geo-Sudoku Solution

S	A	R	P	U	H	O	Y	T
P	H	Y	T	O	S	A	U	R
O	U	T	A	Y	R	P	H	S
Y	S	P	O	R	A	U	T	H
A	T	U	H	P	Y	R	S	O
R	O	H	S	T	U	Y	P	A
U	Y	O	R	H	T	S	A	P
T	P	S	Y	A	O	H	R	U
H	R	A	U	S	P	T	O	Y

INVITE A FRIEND TO JOIN THE SOCIETY

The Nittany Mineralogical Society prides itself on having among the finest line-up of speakers of any earth sciences club in the nation. Everyone is welcome at our meetings. If you'd like to be part of our Society, dues are \$20 (regular member), \$7 (student rate), \$15 (seniors), \$30 (family of two or more members, names listed). Those joining in March or later may request pro-rated dues. Your dues are used for programs and speakers, refreshments, educational activities, Bulletins, and mailing expenses. Please fill out a membership form (available at www.nittanymineral.org), make checks payable to "Nittany Mineralogical Society, Inc." and send them in as directed, or bring your dues to the next meeting.

We want to welcome you!

CONTACT INFORMATION

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The **Bulletin Editor** will welcome your submissions of articles, photos, drawings, cartoons, etc., on minerals, fossils, collecting, lapidary, and club activity topics of interest to the members. Please contact:

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Newsletter submissions are appreciated by the first Wednesday of the month. Photographs or graphics are encouraged, but please do not embed them in word processor files; send them as separate graphics files. (TIF, or good to highest quality JPEG files, about 1050 pixels wide, are preferred). Please provide captions and name of photographer or artist.

Visit us at www.nittanymineral.org