

BULLETIN



"An organization of people interested in the Natural Sciences"

March 2026; Vol. 80, #2

President's Message

The Rochester Academy of Science Annual Meeting & Spring Lecture is Monday, April 20, 7:00 p.m.

This live meeting (with Zoom remote) will be at the Rochester Institute of Technology's Golisano Hall,, Room 070, 54 Lomb Memorial Drive, Rochester, NY 14623. We will publish directions in the April *RAS Bulletin*. After a brief introduction and report, the Board of Directors election will conclude the business meeting. A ballot is included on page 6 and as a PDF on the RAS website. Please show us your support by mailing your completed ballot to RAS, P.O. Box 92642, Rochester NY 14692-0642. You will also be able to vote at the meeting or through the Zoom Chat function. **You must have renewed your membership by March 31st to vote.** We cannot take email ballots but will send proxy directions next month.

Renew Your Membership
 Unless you are a Life Member, note that your membership expired on December 31, 2025. Please renew your membership at your earliest convenience at <https://www.rochesterastronomy.org/2026-asras-membership-form/>

Spring Lecture – Climate Science

The Spring Lecture will follow the business meeting at 7:30PM. The lecturer will be Paleontological Research Institution Director Dr. Warren Allmon, speaking on "Natural History Museums and the Future of the World."



Dr. Warren Allmon

Natural history museums are sometimes seen as dusty anachronisms or little more than places to take the kids on a rainy day. On the contrary, they and the collections they contain are critical for addressing some of the most important challenges facing humanity today. They are essential tools for understanding the diversity and history of life and how the Earth works, and for educating people of all ages about the natural world and how we can sustain it.

The role of natural history museums is in addressing global challenges like climate change and the biodiversity crisis. He emphasizes that these institutions are not just repositories of the past but are critical for understanding the "future of the world" through education and scientific data.

They are essential for several reasons:

- **Climate Change Education:** Museums like the Museum of the

Earth use paleontology to show how rapidly humans are changing the climate compared to historical patterns. The fossil record is not merely a catalogue of extinct life but a critical *predictive dataset* for managing Earth's future. It offers millions of years of "natural experiments" where the Earth tested the very conditions—high CO₂, ocean acidification, and rapid warming—that we are creating today. By observing past rapid climate events in the fossil record, we can predict future ecosystem responses.

- **Scientific Evidence:** Natural history collections serve as the "final physical evidence" for the history of life, providing a baseline to measure future biological changes.
- **Digital Accessibility:** To remain relevant, PRI has expanded its online reach to over 1.2 million annual visitors, providing global access to its research collections.

Dr. Warren Douglas Allmon is currently the Director of the Paleontological Research Institution since 1992 and Adjunct Associate Professor in Cornell University's Department of Earth and Atmospheric Sciences in Ithaca, NY.

The lecture is free to the public. I hope you will come! Invite your friends.



Michael Grenier, RAS President

Events for March 2026

Mar 3 Tues: Fossil Members Meeting

7:00 p.m. – 9:00 p.m. The meeting will be held remotely via ZOOM and is open to all RAS Members and guests. At this meeting we will have the **Fourth Annual Samuel J. Ciarca, Jr. Memorial Lectures**. Our first guest is Dr. Derek Briggs, Professor at Yale University and Curator at the Yale Peabody Museum. He will speak on “*Exceptional preservation in the Silurian*.” He will discuss the amazing preservation of fossils in the Bertie Group, the Waukesha in Wisconsin, and the Herefordshire in England. Our second guest will be Dr. Roy E. Plotnick, Professor Emeritus at the University of Illinois, Chicago and renowned paleontologist. He will speak on “*Enigmatic Endostomas, Mysterious Metastomas, Terrifying Pterygotids: New Insights from the Ciarca Collection*.” Pterygotid eurypterids (Pterygotidae) are the largest marine arthropods of all time, with estimated maximum body lengths of ~2.5 meters. For meeting details and login info see the March *FossilLetter* or contact Michael Grenier at paleo@frontiernet.net.

Mar 4 Wed: Astronomy Board Meeting

7:00 p.m. – 9:00 p.m. Zoom only. Members welcome to attend. Contact Craig Kaplan at President@rochesterastronomy.org for details.

Mar 6 Fri: Astronomy Members Meeting

7:00 p.m. – 9:00 p.m. RIT, Carlson Building, Room 1125. The speaker will be Valerie Rapson. Topic: “Hubble Space Telescope”. Contact Craig Kaplan at

President@rochesterastronomy.org for details.

Mar 11 Wed: Herbarium

12:00 p.m. - 3:00 p.m. The Life Sciences section will hold a workshop at the RAS Herbarium, located in the basement of the Rochester Museum and Science Center (RMSC). We will be continuing to organize plant specimens in preparation for digitizing the collection. If you plan to attend, please send an RSVP to rasherbarium@gmail.com. At RMSC go to the front desk to meet other participants. For more information, contact herbarium curators, Tim Tatakis and Steven Daniel, by emailing rasherbarium@gmail.com.

Mar 14 Sat: Astronomy Messier Marathon

Contact Craig Kaplan at President@rochesterastronomy.org for details.

Mar 18 Wed: RAS Board Meeting

7:00 p.m. - 9:00 p.m. Pittsford Community Center, room 207. For details, contact Michael Grenier at mgrenier@frontiernet.net.

Mar 21 Sat: Annual Family Science Day at the University of Rochester

11:00 a.m. – 3:00 p.m. Hirst Lounge, Wilson Commons. Astronomy Section and Fossil Section will have exhibits and additional volunteers are needed. Each section hosts a booth where grade school students and parents can participate in an experiment or hands-on activity. For more information, contact David Bishop dbishopx@gmail.com 455-5715 (ASRAS) or John Handley jhandley@rochester.rr.com 802-8567 (Fossil).

Mar 24 Tues: Mineral Section Meeting

7:30 p.m. Zoom only. Dr. Glenn Dolphin from the University of Calgary will present "The quest to understand the age of the Earth." Virtual guests welcome. Contact Jutta Dudley, juttasd@aol.com

Mar 25 Wed: Astronomy Forum

7:30 p.m. – 9:00 p.m. Zoom only. Speaker: Jim Porter. Topic: “TBA.” For details, contact Craig Kaplan at President@rochesterastronomy.org for details.

Mar 26 Thurs: Life Sciences Meeting

7:00 p.m. The meeting will be held remotely via ZOOM and is open to all RAS Members and guests. Our featured speaker will be Dr. Andrew Hoffman, Assistant Professor at St. John Fisher University with some of his students. They will speak on the spatial ecology of amphibians at Mendon Ponds Parks. Please see more information on page 5. Zoom details will be sent to all Life Sciences members and to any others who request it. For details, contact Michael Grenier at mgrenier@frontiernet.net.

OUTSIDE RAS EVENTS:

Mar 14-15: Buffalo Geological Society Gem, Mineral and Fossil Show

Sat. 9:00 a.m. - 6:00 p.m., Sun. 10:00 a.m. - 5:00 p.m. Erie County Fairgrounds Grange, Market, and New York State Police Buildings in Hamburg, NY.



This has something for everyone—astronomy and meteorites, fossils, paleobotany, minerals, physics, chemistry, and even primates leading to anthropology!

This will be a series of articles exploring what we know about the end-Cretaceous extinction, one of the “big five” extinction events in the past five hundred million years of earth’s history¹. It is seemingly the one with the greatest public interest. It has been known as the Cretaceous-Tertiary (K-T) extinction but is now called the Cretaceous-Paleogene (K-Pg) extinction, since the notion of “the Tertiary” has fallen out of favor². In this series, I will discuss what we know about the extinction event, and the research that has demonstrated the veracity of each aspect of the event as it unfolded.

The idea that there was an end-Cretaceous extinction was first proposed by the French zoologist Georges Cuvier in 1825³. This was

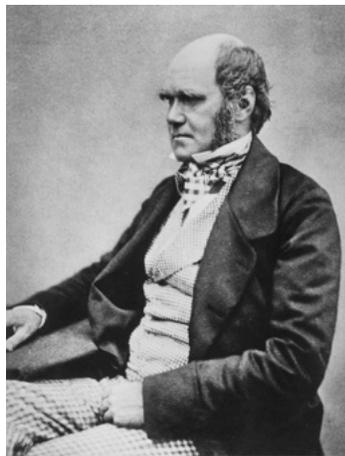


The French zoologist **Georges Cuvier**. Cuvier, often called the “founding father of paleontology.” Wikipedia

only one year after the Rev William Buckland was the first person to describe a non-avian dinosaur (*Megalosaurus*) in a scientific journal⁴. This was a trivial event as it

was considered just a one-of-a-kind very large lizard. Cuvier recognized from marine deposits that there were major fauna changes between the Mesozoic and Cenozoic eras and concluded that many species had suddenly disappeared in a distinct, catastrophic shift in Earth's biologic history. He speculated that a sudden “revolution” or catastrophe, possibly a drastic drop in sea levels, destroyed the characteristic fauna of the Cretaceous.

In 1854, Charles Darwin noted the extinction of ammonites at the end of the Mesozoic as “wonderfully sudden,” though he generally viewed extinctions as gradual⁵.



Charles Darwin, c. 1854, when he was preparing *On the Origin of Species*. Wikipedia.

For over a hundred years, paleontologists struggled to find the cause of the extinction, which most famously destroyed the dinosaurs. In 1990, Michael Benton documented 68 distinct theories on what drove the dinosaurs to extinction that were published in the 20th Century⁶. Many are untestable, so not scientific. In the scientific method, hypotheses must be testable—they must have predictable observable consequences. If a hypothesis cannot be tested, it cannot be falsified, and it becomes a matter of faith not science. Any hypothesis must explain as many of the observed events as possible—the principle of parsimony.

Suggested causes meeting these criteria include gradual or rapid changes in oceanographic, atmospheric, or climatic conditions due to factors such as a magnetic reversal; a nearby supernova; and the flooding of the ocean surface by fresh water from a postulated arctic lake. Other theories included mammals eating all their eggs, eggs unable to hatch in cold climate, plagues, over specialization, and other untestable and even bizarre speculations.

Many things occurred at the end of the Cretaceous whose magnitude and significance far transcended the mere extinction of dinosaurs. Any theory on the dinosaurs must also explain the extinction of many mammals, birds, lizards, insects, teleost fish, sharks, and plants, and all the pterosaurs, plesiosaurs, mosasaurs, ammonites, rudist clams, and many genera of plankton. It is estimated that about 50% of all genera and 75% or more of land and sea species on Earth vanished. 88% of land vertebrate species and 10% of marine vertebrates were extinct.

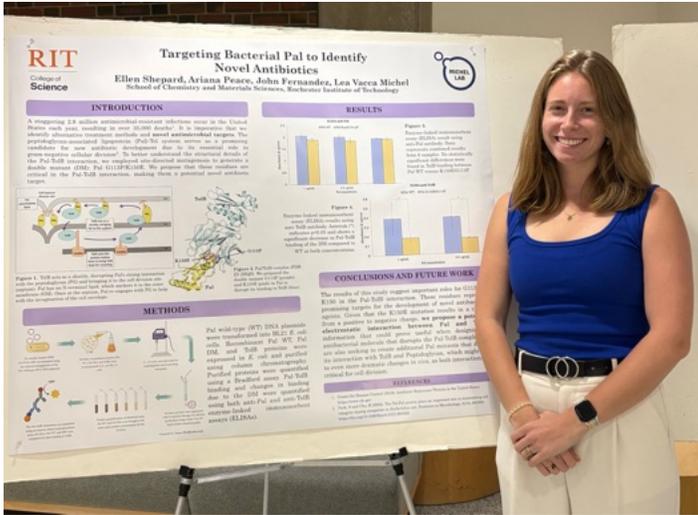
Next month—the Asteroid!

References

1. Raup, D. M., & Sepkoski Jr, J. J. (1982). Mass extinctions in the marine fossil record. *Science*, 215(4539), 1501-1503.
2. Gibbard, P. L., Head, M. J., Walker, M. J., & Subcommittee on Quaternary Stratigraphy. (2010). Formal ratification of the Quaternary System/Period and the Pleistocene Series/Epoch with a base at 2.58 Ma. *Journal of Quaternary Science*, 25(2), 96-102.
3. Cuvier, G. (1825). *Recherches sur les ossements fossiles* (Vol. 4). Dufour-D'Ocagne.
4. Buckland, W. (1824). XXI.—Notice on the *Megalosaurus* or great Fossil Lizard of Stonesfield. *Transactions of the Geological Society of London*, 1(2), 390-396.
5. Darwin, C. (1859). On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life. *London: Murray*.
6. Benton, M. J. (1990). Scientific methodologies in collision: the history of the study of the extinction of the dinosaurs. *Evolutionary Biology*, 24(37), 371-400.

Undergraduate Student Research Grant Award

Student Abstracts Presented at the 2025 Fall Paper Session

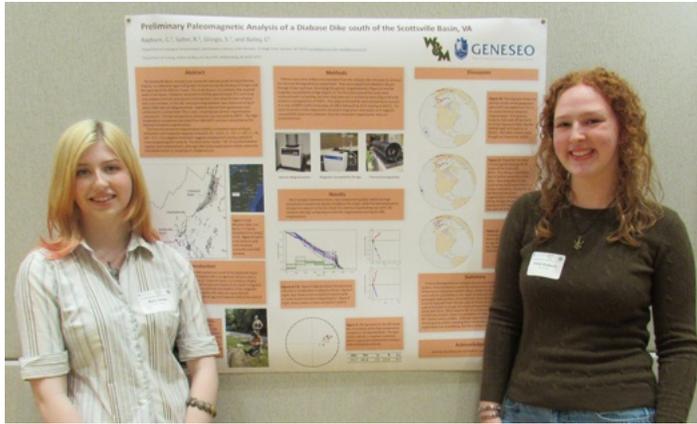


Ellen Shepard won an RAS Student Grant award for her project as announced in our February issue. Ellen is a student at Rochester Institute of Technology in the School of Chemistry and Materials Science. Her advisor is Dr. Lea Vacca Michel. Photo credit: Dr. Michel.

Abstract:

Targeting Bacterial Pal to Identify Novel Antibiotics

The global healthcare system faces a critical challenge with the rise of antibiotic resistance, particularly among Gram-negative bacteria. Gram-negative bacteria are exceptionally difficult to treat due to their double membrane structure, which contributes to their ability to resist antibiotics. As a result, there is an urgent demand for new broad-spectrum antibiotics capable of overcoming these defenses. With that in mind, our research targets the peptidoglycan-associated lipoprotein, Pal, that plays a key role in maintaining outer membrane integrity and mediating cell division in Gram-negative bacteria with both TolB and peptidoglycan (PG). Pal's overlapping binding sites with TolB and the PG present the possibility of disrupting one or both of these interactions. Our research aims to better understand the role of specific amino acid residues in Pal's interactions, with the goal of identifying small molecules that disrupt these essential contacts. We have employed site-directed mutagenesis, SDS-PAGE, enzyme-linked immunosorbent assays (ELISA), and other biochemical methods to map the Pal-TolB and Pal-PG interaction sites. Results from preliminary work point to several distinct amino acids between the 110th and 125th residues of Pal that are critical for TolB and/or PG binding. Our discoveries begin to map Pal's binding pockets and make these residues ideal targets for antibiotic development.



Chloe Rayburn (right) and Rory Salter (left) are students in SUNY Geneseo Geological Sciences. Advisor is Dr. Scott Giorgis. Photo credit: M. Grenier.

Abstract:

Preliminary Paleomagnetic Analysis of a Diabase Dike in the Scottsville Basin, VA

The Scottsville Basin, located near Scottsville and just south of Charlottesville, Virginia, is a Mesozoic-aged half graben formed during the breakup of Pangea and the opening of the Atlantic Ocean. This study focuses on a diabase dike exposed within the basin. Fieldwork consisted of drilling approximately 30 1-inch long core samples from an outcrop and orienting each core using Brunton compass and a sun compass. In the lab, remanent magnetization was measured using an AGICO JR6A Spinner Magnetometer. Stepwise thermal demagnetization was conducted in a Schonstedt TSD-1 oven, revealing two distinct magnetization components. The low-temperature component was removed by 400°C. The high-temperature component persisted from 400-600°C and was interpreted as the thermal remanent magnetization. The thermal remanent magnetization exhibits a consistent east-northeast declination and moderate negative inclination (N = 13/15, D = 73°, I = -42°, k = 24, $\alpha_{95} = 8.7$). The negative inclination suggests emplacement during a period of reversed geomagnetic polarity. The declination implies ~90° of clockwise rotation post-emplacement, although alternative explanations include systematic orientation errors or sampling of a displaced outcrop. (Editor note: Remanent magnetization (or remanence) is the magnetization left behind in a ferromagnetic material (like iron or rock) after an external magnetic field is removed.)



Life Sciences Section

The next meeting of the Life Sciences Section will be on Thursday, March 26, 2026 at 7:00 p.m. The meeting will be held remotely via ZOOM and is open to all RAS Members and guests. Our featured speaker is Dr. Andrew Hoffman, Assistant Professor at St. John Fisher University with some of his students. They will speak on the spatial ecology of amphibians at local parks.

One of his students, Dayana Gonzalez, made a presentation at the 2025 RAS Scientific Paper Session on **Comparing Audio Logger Data to Trap Capture Data for Frogs at Vernal Pools**. She notes that amphibians are the most endangered vertebrate group on the planet, and the study of their populations is crucial to protect them and their habitats. Since they are sensitive indicators of ecosystem health, studying fluctuations in their reproductive patterns can give insight into environmental health. Her research focused on spring peepers (*Pseudacris crucifer*) and wood frogs (*Lithobates sylvaticus*). Audio loggers were placed at different wetland sites in Mendon Ponds and Powder Mills Parks to collect data on calling intensity.

Another, Sara Miller, spoke at the Paper Session on **Variability in capture rates of amphibians within and between wetlands in Monroe County, NY**. She reports that being able to effectively sample amphibian populations will be critical to their conservation. Many amphibians breed in wetlands and studies that focus on better understanding their populations often define wetlands or ponds as discrete sites or populations. However, wetland size can vary from an isolated bathtub-sized pool to an expansive seasonally flooded forest spanning many interconnected acres. She used trapping stations and standardized dip-nets to sample amphibians within multiple wetland complexes at Mendon Ponds, Powder Mills, and Tinker Parks.

Zoom details will be sent to all Life Sciences members and to any others who request it. For details, contact Michael Grenier at mgrenier@frontiernet.net.



Sara Miller uses a water quality probe, with nearby nets used to trap tadpoles and salamander larvae.

Credit: <https://www.sjf.edu/news-and-events/news-archive/fall-2025/summer-stories-water-quality-on-amphibians/>

Bylaws Changes to Be Voted at 2026 Annual Meeting

Your ballot in this issue for voting for officers also includes voting for three Bylaws changes announced last year. These are important to bring us into compliance with NY State law. They allow us to do much of what we currently are doing since COVID. PLEASE help the RAS by voting for these. The ballot may be found on the next page.

The Bylaws and Constitution of the Academy can be found on our web site at <https://rasny.org/about-us>. These proposed changes were read to the attendees at the Annual Meeting on April 22, 2025, as required by our Bylaws.

First, the opening line of Chapter 10, section 1 on notifications needs to be changed, particularly to allow us to use email for notifications.

Second, a new section needs to be added to Chapter 10 to allow us to hold electronic meetings by Zoom or other such means.

Third, our Bylaws have nothing about meeting quorums. NYS Law requires quorums. We propose to add the following new section to Chapter 10. This is taken directly from New York State Law, with some editing.

Please vote for these. Thank you.

Michael Grenier

RAS Member Images



Triceratops AMNH - Photographed at the American Museum of Natural History on 2025-11-01 by Michael Grenier. *Triceratops horridus* lived in the late Cretaceous North America from 68 to 66 million years ago, right up until the Chicxulub asteroid impact mass extinction. Although a relatively common dinosaur fossil, very few mostly complete specimens have been found. This one is actually put together from the remains of six different but similar-sized partial specimens, including AMNH 5116, the skull collected in 1902.

ROCHESTER ACADEMY OF SCIENCE
BALLOT FOR JUNE 2026 – MAY 2027 OFFICERS

OFFICE	NAME	√	Write-In Candidate
President:	Michael Grenier		
Vice President:	Jeff Gutterman, P.E.		
Treasurer:	Tim Tatakis, Ph.D.		
Secretary:	Helen Downs Haller, Ph.D.		
Member, Board of Directors (2026-2029)	Karen Wolf		
Member, Board of Directors (2026-2029)	Douglas Kostyk		

BALLOT TO VOTE FOR OR AGAINST PROPOSED BYLAWS CHANGES

<p>Shall the proposed Bylaws change to Chapter 10 Section 1 correcting the notification period be made? Under CHAPTER X. Meetings. The first section will be changed by deleting the phrase “38 but not more than 08 days prior to the date thereof,” and replacing it with “ten days but not more than fifty days before the date of the meeting.” Further, a statement has been added noting that delivery is to be “by First Class mail or by electronic mail” such that the paragraph reads: “1. At least ten days but not more than fifty days before the date of the meeting, a notice shall be sent to every Active Member by First Class mail or by electronic mail stating the time and place at which a regular meeting is to be held. If mailed by any other class of mail, it shall be given not less than thirty nor more than sixty days before such date. The Annual Meeting shall be held at the first public meeting of the Academy each calendar year.” <i>The notification period is taken directly from New York State Law, with some editing.</i></p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>Shall the proposed Bylaws addition to Chapter 10 allowing us to hold electronic meetings by Zoom or other such means be made as new Section 4? <i>The following new section will be added. This is taken directly from New York State Law, with some editing.</i> 4. Any meeting of members may be held partially or solely by means of electronic communication and the electronic service and/or platform by which the meeting is held shall be the place of the meeting if a meeting is held solely by means of electronic communication. Meeting leaders will verify that each person participating electronically is a member or a proxy of a member. Each member participating electronically will be given reasonable opportunity to participate in the meeting, including an opportunity to propose, object to, and vote upon a specific action to be taken by the members, and to see, read or hear the proceedings of the meeting substantially concurrently with those proceedings. Meeting leaders will record and maintain a record of any votes or other actions taken by electronic communication at the meeting.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>Shall the proposed Bylaws addition to Chapter 10 setting meeting quorums as required by NYS Law be made as new Section 5? <i>The following new section will be added. This is taken directly from New York State Law, with some editing.</i> 5. A Quorum at any meeting of members will be the lesser of either the number of members entitled to cast a) one hundred votes (including proxies) or b) the votes of one-tenth of the total number of members. <i>(This means that if we have over 1000 members then 100 members have to be represented in person or by proxy, but since we have only 270 members as of 3/31/2025, only 27 members have to be represented in person or by proxy, since that is 10% of the total.)</i></p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Rochester Research in Review.

(These are Hot Links which when clicked lead to the press release on the Science Daily and other science websites.)

[A breakthrough that could make ships nearly unsinkable. University of Rochester; January 30, 2026](#)

[Universe may end in a “big crunch,” new dark energy data suggests. Cornell University; February 16, 2026.](#)

[This breakthrough could finally unlock male birth control. Cornell University; February 14, 2026.](#)

[People who switched to cannabis drinks cut their alcohol use nearly in half. University at Buffalo; February 17, 2026.](#)

[Nearly all women in STEM secretly feel like impostors. Binghamton University; January 5, 2026.](#)

[Scientists just proved the moai could walk, solving a 500-year mystery. Binghamton University; October 8, 2025](#)



White-winged Scoter (*Melanitta deglandi*), an uncommon winter visitor on Irondequoit Bay, February 8, 2026. Photo: R. Crumrine

ABOUT THE ACADEMY

The Rochester Academy of Science™, Inc. is an organization that has been promoting interest in the natural sciences since 1881, with special focus on the western New York state region. Membership is open to anyone with an interest in science. Dues are minimal for the Academy and are listed in the [membership application online](#). Each Section also sets dues to cover Section-related publications and mailings. We are recognized as a 501(c)3 organization.

For information, contact President Michael Grenier at (585) 671-8738 or by email paleo@frontier.com.

The Academy Internet website is <http://www.rasny.org> or see us on Facebook at <https://www.facebook.com/Rochester-Academy-of-Science-792700687474549>.

This “BULLETIN” is produced monthly, except January and August, by the Rochester Academy of Science™. Submissions are due by the 10th of the previous month and may be emailed to the Bulletin Editor Robert Crumrine at bob.crumrine@gmail.com.

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