

# Nebraska Science News



Nebraska Academy of Sciences



Nebraska Association of Teachers of Science

***Serving Scientists and Science Educators Across the State of Nebraska***

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## FROM THE NAS PRESIDENTS' DESK

The 128th annual meeting of the Nebraska Academy of Sciences was held at the Nebraska Wesleyan University on April 21. The meeting featured 203 presentations of research by over 400 professionals, graduate students and undergraduate students from across Nebraska. Two Friend of Science Awards were presented to Kacie Baum-UMNC and Todd Young-WSC. Details of their careers can be found on page 5.

The Maiben Lecture featured Dr. Eileen Hebets, UNL biology professor. Her lecture was titled "Spider Adaptations/Behavior." She talked about sexually cannibalistic animals, how male fitness is influenced not only by successful mate acquisition and egg fertilization, but also by avoiding being eaten. In the cannibalistic nursery web spider, *Pisaurina mira*, the legs of mature males are longer in relation to their body size than those of females, and males use these legs to aid in wrapping a female's legs with silk prior to and during copulation. The elongated male legs and silk wrapping provided benefits to males, in part through a reduced likelihood of sexual cannibalism. She



paired females of random size with males from one of two  
Continued on page 3

## GREETINGS FROM THE NATS PRESIDENT

Wow, what an amazing school year! It is time to rejuvenate and recharge our batteries. Summer break isn't time off for most of us. My June is already booked with professional development opportunities, and I'm doing some serious soul-searching to decide what I need to choose to do in July. Like all things in life, it is a balancing act between bettering myself professionally, "chilling out" for a-while so that I can take on the challenges of a new school year, and spending time with my family. How do we set up these priorities and make the hard choices? How can NATS help in the decision-making process?

One way that NATS can assist in summer growth is by providing information about professional development opportunities. Recently, Scott King, the treasurer of NATS, has been making some updates and changes to the NATS website. Among the changes is the addition of a professional development page with links to many great opportunities for teachers as well as an NGSS resource page with some articles about using NGSS in the classroom. You can also find our upcoming and archived PLN webinars. As a board, we are striving to provide the NATS members with more resources. In the near future, we hope to provide a members only section on the website with even more opportunities.

I like to improve my teaching skills by doing some professional reading over the summer. The draft of the Nebraska College and Career Ready Standards for Science has been released. I encourage you all to take the time to read through them and complete the survey found at the Nebraska Department of Education website. If you would like to ask specific questions about the new standards, NATS will be hosting our last PLN Webinar this school year

May 22 at 4:15 pm CST with a question and answer session. Please complete the Google Form survey at <https://docs.google.com/forms/d/e/1FAIpQLSchKDAkfQ4S05H3HINQKxzoRO59asN92VGKBC5Gi-YOSWzXkQ/viewform?c=0&w=1> to help us prepare.

A part of a teacher's job as an educator is to know good science from pseudoscience. I have heard the frightening statistics about the percentage of teachers who wrongly believe that the cause of global climate change is still scientifically debatable. One of the titles on my summer reading list is "A Global Warming Primer" by Jeffrey Bennett. I requested a free copy from the National Center for Science Education. The Heartland Institute has been sending out misleading information about climate change to science teachers nationwide. It is our role as educators to be prepared to discuss the science with our students.

Most importantly, take the time to reflect this summer. What worked well for you this past school year, what did not, and what do you want to accomplish in the 2017-2018 school year? The NATS Board is also going to take time to do some reflection and planning this summer at our board retreat. We would like to hear from you. Share with us "[What can NATS do for you?](https://goo.gl/forms/a7NXpRxoDeMqWALh1)" survey at <https://goo.gl/forms/a7NXpRxoDeMqWALh1>

Attending a conference can be a great opportunity to connect with your peers, gain inspiration, and learn about new opportunities. This year the NATS/NATM conference is very early in the school year. I, for one, am very excited to start the year off with NATS/NATM conference which, will feature science, math, and combined STEM topics. Make arrangements to attend September 7 through 9 at the Younes Center in Kearney. Registration as well as call for presentations proposals are all available on the NATS website, [www.neacadsci.org/NATS](http://www.neacadsci.org/NATS). There is a team discount for a math teacher, science teacher, and administrator who all register for the conference from the same school. The executive chain has been working diligently on providing sessions that we know you teachers need and want as well as series of workshops for our administrators.

Shauna Roberson, NATS President



## NJAS NEWS

The Nebraska Junior Academy of Sciences (NJAS) held the annual State Science and

Engineering Fair April 20<sup>th</sup>, 2017 at Nebraska Wesleyan University's Weary Center. The fair consisted of 69 students from 32 Nebraska schools that qualified from the six regional fairs held earlier this spring. The fair is designed

to promote science and technology in Nebraska by providing incentives for students to apply creativity and critical thought to solutions of science, technology, engineering, mathematics, and engineering problems. It offered an opportunity for students to meet, exchange ideas, and discuss career possibilities with scientists and engineers from colleges and industries.

Students developed a scientific research project, wrote an abstract of the project, and gave an oral presentation the day of the fair. Students competed in two divisions: Grades 6-8 in the Junior Division; and Grades 9-12 in the Senior Division. Judges nominated ten Senior Division projects to advance to the American Junior Academy of Sciences Conference next February in Austin, Texas. While there, students will present their research to scientists and peers from across the country, tour Austin-area STEM-related industries and academic facilities, attend sessions at the AAAS Annual Conference, and have their research published by AAAS. The Top 10 Senior Projects were:

- Marcella Jurotich, Wayne High School
- Sydney Williams, Central City High School
- Sydnie Reeves, Central City High School
- Daniel Stara, David City Aquinas High School
- Brittini McGuire, Omaha Zoo Academy
- Katie Bathke, Allen Consolidated Schools
- Abby Klammer and Sophia Conant, Adams Central High School
- Amirtha Arun, Omaha Marian High School
- Jarrod Blaser, Lakeview Community Schools
- Brock Vetick, Lyons-Decatur Northeast High School.

Jurotich and Stara have previously presented at AJAS.



Top 10 Junior Projects were:

- Leah Schartz, Lincoln Lux Middle School
- Seamus Cavanaugh, Omaha King Science & Technology Magnet
- Alexander Kyle, Omaha King Science & Technology Magnet
- Seth Daup, Gothenburg Middle School
- Samuel Aden, Gothenburg Middle School

- Isaac Davis, Wayne Community Schools
- Jacob Kneifl, Wayne Community Schools
- Christopher Woerdemann, Wayne Community Schools
- Arya Eladath, Sidney Middle School
- Carson Miller, Pender Public Schools



Harim is hoping to be a principal investigator on an interdisciplinary team to discover the mechanisms by which pathogens infect hosts at the transcriptional level and to develop new drugs or antibiotics for defeating those pathogens.

Eleven businesses and educational institutions provided awards including books, medallions, cash prizes and scholarships. As an affiliate of the Nebraska Academy of Sciences, all student participants received a certificate of Merit and a one-year membership to the Nebraska Academy of Sciences. Next year, the NJAS State Science & Engineering fair will be held April 19<sup>th</sup>, 2018 at Nebraska Wesleyan University Weary Center.

Randall Lienemann, NJAS President

### **NAS Annual Meeting** – continued from page 1

treatment groups—those capable of silk wrapping versus those incapable of silk wrapping. She found that males with relatively longer legs and larger body size were more likely to mate and were less likely to be cannibalized prior to copulation. Regardless of relative size, males capable of silk wrapping were less likely to be cannibalized during or following copulation and had more opportunities for sperm transfer (i.e. pedipalpal insertions). Her results suggest that male size and copulatory silk wrapping are sexually selected traits benefiting male reproductive success.

The 2017-2018 President-Elect is Dr. Todd Young, Wayne State College and our new Treasurer is Dr. Susan Weller, University of Nebraska State Museum. Karin van Dijk -UNL will take over as President.

Two collegiate scholarships for \$3000 were presented to Andrew Egger, UNL; and Harim Won, UNO. Andrew is planning a career in biomedical research revolving around the pharmaceutical application of Stabilin receptors.



Five high school scholarships were awarded this year. Laura Box, Lourdes Central Catholic, Nebraska City received the Loren Eiseley scholarship for \$500. The Robert S. Kubicek scholarship, \$500, went to William Castner from Sidney High School. Celeste Kenworthy, Bellevue High School received a \$300 scholarship from Lincoln Gem and Mineral. Thanks to monies donated by C. Bertrand and Marian Othmer Schultz two scholarships each for \$1000 were awarded to Miguel Garcia, Bryan High School, Omaha; and Emma Clausen, Millard North High School in Omaha.

Two \$500 awards were presented to Dalton Hegeholz, Nebraska Wesleyan University for the outstanding presentation in undergraduate research in Biology; and Kari Heck, University of Nebraska–Lincoln for outstanding research in Biomedical Sciences. These awards are funded by UMNC. The Nebraska Geological Society awarded two students for best paper in the Earth Science section. Mei Liu and Claire Richardson, both from UNL received these awards.

Randall Lienemann, NAS President

## ACADEMY WEB SITE UPDATES

The NAS website is being renovated!

If you haven't checked it out recently, the NAS website has been undergoing some changes. Most of the work has involved cleaning up the pages and removing unused portions of the site. In the coming weeks we will be looking at adding features, updating the graphics and redesigning the layout.

If you have thoughts about the website, we would like to hear them. Fill out the survey at: <https://goo.gl/sMwbx5>

## NATS Letter of Support for the Nebraska College and Career Ready Standards for Science

The Nebraska Association of Teachers of Science, NATS, is proud to endorse the new Nebraska College and Career Ready Standards for Science. These new standards, written by 50 science educators from all across Nebraska, ask students to "think like a scientist" as they learn. These standards are consistent with, or even surpass, the standards recently passed in other states and ensures our students will be leading the way in the nation. Like many other states, Nebraska's new standards are based on the best-practices and lessons learned from the Framework for K-12 Science Education. These practices include the Three Dimensions of Learning which requires students to engage in scientific practices and enables them to see how the lessons learned in the classroom directly apply to the world in which they live. Further connections between the classroom and their state are also highlighted through Nebraska-specific examples. NATS stands behind the new standards and are proud of the work done by our science educators to improve science education in the state of Nebraska.

## GREETINGS FROM THE NATS PRESIDENT-ELECT

As president-elect of NATS, I am very pleased to announce that we will be combining our conference with the Nebraska Association of Teachers of Mathematics (NATM). This year we have made the difficult decision to move the annual fall conference from Camp Calvin Crest to the Younes Center in Kearney on September 7-9. Although the decision was difficult, we are looking forward to the opportunity to work with the members of NATM. This is an exciting time to be involved in NATS; we are working on creating a partnership with NATM and the draft of the new standards has just been released. The Nebraska College and Career Ready Standards for Science, the link for these

standards, can be found in a variety of different places such as our Facebook page.

I understand that it is difficult to start to think about the next school year but it will be here before we know it. With that, I want to share a little about the new and exciting things that our fall conference will contain. The hope of the planning team is to provide something for everybody who attends. There will be five strands and each strand will focus on specific topics.

The elementary strand will look into how to implement science through literacy. The middle school will focus on science through superheroes, determining if it is science or is it science fiction? The high school strand will have an emphasis on evidence based science. Other areas of focus will be on STEM and this year we will have space for our vendors to present.

Registration for the fall conference has opened and can be found on our web page. This year we are encouraging schools to bring a team, administrator, science, and math teacher to the conference. A school that wishes to bring a team will have a discounted rate of \$270 for the team. We are looking forward to another wonderful conference and are excited about building relationships with many educators from across Nebraska.

Jodi L. Bahr, NATS President-Elect

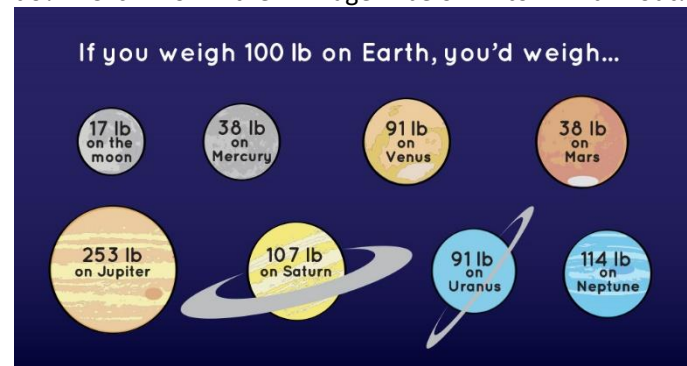
## OTHER NEWS AND EVENTS



[What's new at NASA Space Place](#)

## What is gravity?

Gravity is the force by which a planet or other body draws objects toward its center. The force of gravity keeps all of the planets in orbit around the sun. What else does gravity do? Click on the image below to find out!



## 2017 FRIEND OF SCIENCE AWARDS



Kacie Baum is the Events and Science Outreach Coordinator at UNMC/Nebraska Science Festival Coordinator, where she brings science to the state through different outlets including Science Cafes, The Nebraska Science Festival, and much more.

She holds a BA in Journalism from UNO. How she went from wanting to write about celebrities to planning science events – most notably Science Cafes and The Nebraska Science festival (featuring past keynote’s Bill Nye, LeVar Burton, Reed Timmer and Jeff Corwin) - is still a mystery. Throughout the year you can also find her judging elementary science fairs or making DNA bracelets with the public, all in the name of science.

In 2009 the Public Relations Society of America awarded her Science Café program an Award of Merit for Public Service Programs. That year she also presented at the Omaha Young Professionals Summit on “How we made science sexy” to a packed crowd of young professionals explaining how she helped create the science café program in Omaha. In 2014, the Association of American Medical Colleges awarded the festival an Honorable Mention in the Special Events – Community Relations category. In 2015, the AAMC awarded her program, Science Café, with the Award of Excellence in the Shoestring Budget Category for Special Events - Community Relations.

Kacie has previously served as secretary of Joslyn’s Young Art Patrons and on the Omaha Community Playhouse’s Act II guild. Currently she serves on the Omaha Performing Arts ‘40 Below’ advisory board and is the secretary for the Omaha Girls Rock board. In her free time, she also teaches fitness classes at gyms around Omaha.



Dr. Todd Young hails from Minnesota and received his undergraduate degree in Physics and English from the University of Minnesota–Morris, his Master’s degree in Physics from Purdue University, and his Ph.D. from the University of Nebraska–Lincoln in Astrophysics. He has worked at Wayne State College since receiving his doctorate in 1998 and is currently a full professor of physics and astronomy. He teaches a variety of courses at Wayne State College, including university physics, astronomy, general education science, and astrophysics.

In 2008, he became the director of the Fred G. Dale Planetarium, which has been a passion since that appointment. The planetarium is currently one of the most technologically advanced and educationally versatile in the state, and was recently noted by the Omaha World Herald as one of the top 50 places to visit in Nebraska. He has provided over a thousand planetarium shows and astronomy lessons to tens of thousands of people over the years. In 2010, he brought the Nebraska Science Bowl competitions to Wayne State College to help make sure that opportunities like the science bowl continue in order attract young people to science and mathematics; and as Todd is both a fan of trivia contests and a "certified" science nerd, it was a perfect fit. He is currently the coordinator of the Rural Health Opportunities Program which guides students from rural Nebraska to a career as a health provider, like doctor, dentist, pharmacist, and nurse, in order to return to serve rural Nebraska. This program has been a collaborative effort with the University of Nebraska Medical Center since 1990. He also continues to be active with the Nebraska Junior Academy of Science - Northeast Regional competition, including being the lead coordinator of the event for a few years.

In 2008 he received the George Rebensdorf Teaching Excellence Award for the Nebraska State College System. In the supporting materials for his nomination, it was noted that Dr. Young "constantly stresses the importance of physics as a tool for learning about the world around us" and continuously explores and investigates methods to better educate his students. He also receives great reviews from his students regarding the rigor of his classes and his commitment to their success.

## **DATES TO REMEMBER:**

[NATS PLN-Q&A](#) NE College & Career Ready Standards  
For Science, May 22<sup>nd</sup>, 4:15 CST

[PIE Grant 3rd Quar App Deadline – July 7, 2017](#)

[Registration Link for NATS Fall Conference – Sept 7-9](#)

[Presenter Proposal Link for Science Focus](#)

[August 21, 2017 – Total Solar Eclipse](#)

[September 7 – 9, NATS-NATM Fall Co-Conference](#)

## **PIE GRANTS REPORT**

NAS has been approved to administer another three year grant cycle for the Nebraska Environmental Trust Public Information and Education Minigrant program. We are honored to be able to continue this very worthwhile program which provides small grants up to \$3000. These grants support the presentation and dissemination of information and perspectives that will stimulate enhanced environmental stewardship in any category eligible for Nebraska Environmental Trust (NET) funding. These categories are habitat, surface and ground water, waste management, air quality, and soil management. The grant expands dialogue on important current conservation topics and provides information on emerging or highly useful conservation methods. All Nebraska individuals, private organizations, and public entities are eligible to apply for these funds.

NAS received 11 applications for the second quarter of 2017. Applications were received from the Nebraska Recycling Council - Annual Awards Luncheon and Workshops; Omaha by Design - Neighborhoods USA Conference: Growing Green Neighborhoods Track; UNL - Students Promoting Diversity (in tree plantings); UNL - Fostering Future Foresters; NE Game and Parks Commission - Distribution of "The Fishes of Nebraska" to Schools; Prairie Pines Partners - Prairie Pines Nature Preserve "Second Saturdays" Nature Experience and Education Project; The Groundwater Foundation - Groundwater Education and Technology; Elkhorn Valley Museum - Our Wild Neighbors; Community Crops - Greening Your Home Workshop Series; Friends of Heron Haven - Environmental Education at Heron

Haven, an Urban Wetland; and the Nature Conservancy - Prairie Perspectives: Seeing Nature with Drones. Evaluations are currently underway and grant recipients will be announced in June.

The Nebraska Legislature created the Nebraska Environmental Trust in 1992. Using revenue from the Nebraska Lottery, the Trust has provided over \$250 million in grants to over 1,700 projects across the state. Anyone – citizens, organizations, communities, farmers and businesses – can apply for funding to protect habitat, improve water quality and establish recycling programs in Nebraska. The Nebraska Environmental Trust works to preserve, protect and restore our natural resources for future generations. <http://www.environmentaltrust.org>

Third quarter 2017 applications are due July 7, 2017.

Grant forms and information can be found on our website, [www.neacadsci.org](http://www.neacadsci.org). Click on NAS and then click on Grants and Scholarships.



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## 2017 30<sup>th</sup> SCIENCE OLYMPIAD TOURNAMENT



Nebraska Science Olympiad is sponsored by the volunteer state committee, UNL and CASNR, NAS, NJAS, the Henry Doorly Zoo and Aquarium, and ESU No. 9, 10, and 16.

Students may win individual medals in an event and the top six teams win trophies for the school and plaques for the coach.

Additionally, there were six trial events for the middle school and four for the high school divisions. In trial events, the students compete for medals, however their score does not get added into the team score to determine the state winner. Congratulations to Lincoln Southwest High School and their coaches, Jason Thomsen and Greg Cooper for winning the high school division; and to Bellevue Mission Middle School and their coaches Norma Thompson, Iris Woolery, and Matt Thompson for winning the middle school division.

Thirty-four middle school Science Olympiad teams and thirty-four high school teams came together on the East Campus of the University of Nebraska–Lincoln to compete in the 30<sup>th</sup> anniversary Science Olympiad tournament on Saturday, April 22, 2017.

Teams competed in 23 regular competition events in the high school and 22 events in the middle school to determine which team would represent the Nebraska schools at the National Science Olympiad tournament at Wright State University in Dayton, Ohio May 19 – 20<sup>th</sup>.

Schools brought teams of up to fifteen students and alternates to compete in the events. These events range from building/engineering challenges, such as Hovercraft, Tower building, and Electric vehicle to study events, such as Anatomy Physiology, Crime Busters/Forensics, and Invasive Species.

