

# reports

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## MY DESCENT INTO MADNESS



**(MARCH  
MAMMAL MADNESS, THAT IS)**

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**EDITOR**

Paul Oh

National Center for Science Education  
230 Grand Avenue, Suite 101  
Oakland, CA 94610  
phone: (510) 601-7203  
e-mail: [editor@ncse.ngo](mailto:editor@ncse.ngo)

**BOOK REVIEW EDITOR**

Glenn Branch

**PUBLISHER**

Amanda L. Townley

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# Dear NCSE Supporters,

We are full speed here at NCSE, and I am excited to share some of our success stories to counter the onslaught of distressing news we are all navigating. From building new partnerships and welcoming new members to our board to amplifying powerful voices for change, we are branching out further to grow our impact. If you have been reading our newsletters, you already know about our co-sponsorship of March Mammal Madness (MMM), but you may not know what it is or that it reaches over 45,000 classrooms worldwide! Blake Touchet and Wendy Johnson, our incredible Science Education Specialists, share about MMM and its impact in classrooms in this issue, so don't miss finding out what all the buzz is about!

Another story of success comes in the form of an unexpected partnership, as NCSE was selected to be a mutual aid partner by the Boston University Model United Nations in January 2025. I had the incredible opportunity to attend the event to deliver opening remarks and talk to high school students about the work that we do. I am thrilled to share more about that experience with you in these pages.

In addition to describing these amazing partner activities, we welcome four new members to our Board of Directors. Their diverse backgrounds, experience, and commitment to advancing science education promise to bring fresh perspectives and drive meaningful change as we continue into the coming years.

As you may know, last year, J. Marshall Shepherd joined us on the board. A leading atmospheric scientist and incredible human being, he has been recognized by many organizations for his formidable work in the sciences and in communicating science to the public. I had the pleasure of sitting down with him for Random Samples to learn more about his work, his efforts to combat climate change misinformation, and his shared passion for our mission! Don't miss it. He truly is a phenomenal communicator.

This issue also includes a review of *Climate Change Education*, a book focused on integrating climate science in education. Also reviewed is *Science v. Story*, a book on effective science communication. As we say often, every classroom is a climate classroom, so any support we can provide our teachers to include this critical topic in their curriculum, we will do so gladly! I hope you enjoy this issue, and I can't wait to share more with you about the new and important work we are engaging in this year.

**Amanda L. Townley**  
is the executive director of NCSE.  
[townley@ncse.ngo](mailto:townley@ncse.ngo)



# MY DESCENT INTO MADNESS



(March  
Mammal  
Madness,  
That Is)

## “I’ve been lied to my whole life!”

This was the exclamation I heard from my office as my wife and kids worked on completing their [March Mammal Madness](#) brackets on the Thursday leading up to the March 10th wildcard match. My wife was doing some research for the Aardvark vs. Bandicoot matchup. This was her first introduction to an actual bandicoot, which previously she had only experienced as a child through the Crash Bandicoot video games of the late 90’s. Far from the danger-loving, fearless character in video games, her research was revealing the real organism to be a cute, shy, mostly nocturnal marsupial. Although she ended up choosing the aardvark, the preconception of bandicoots as anthropomorphic adventurers made it difficult.

I’m sure that moments like this are common with players young and old, new to the tournament or seasoned veterans. March Mammal Madness, now in its 13th year and used by thousands of teachers and hundreds of thousands of students in about half of all US counties, is the highlight of my spring. I stumbled upon the tournament for the first time halfway through the 2016 season and immediately knew I had found my people. The nerdy trash-talking combined with factoids about animal behavior, ecology, evolution, and genetics is peak edutainment for me and many other science teachers, students, and curious learners. In the following years, I slowly began to incorporate the tournament into my spring semester biology courses to make learning about evolution and ecology more interesting and engaging for my students. From their shouts of anger at the honey badger

falling in the 2017 championship match to the squees of delight every time the pygmy hippo chalked up a W in 2018, I knew that there was something that rang true in the MMM slogan: “If you’re learning, you’re winning!”

I’ve talked to many teachers across the country who incorporate March Mammal Madness into their courses to different degrees. While some use the great lesson plans provided in the [LibGuide](#), I have also seen math teachers who use the tournament as an opportunity to teach about statistics and probability, elementary teachers who have their students learn about biomes by making postcards for a selected combatant, middle school teachers who have their students make Pokémon-style trading cards for the combatants, and many other modes of integration. For me, the tournament was a way to build a culture in my classroom that revolved around getting students curious and excited about biology and environmental science.

What began as simply having my students complete brackets and discussing the results of the previous day’s matches eventually led to former students coming back year after year to pick up brackets even after they had graduated and incoming students looking forward to the tournament having previously been initiated by older siblings who had taken my class. Eventually, most of the school became involved after hearing students talk about the tournament in other classes and seeing the bracket in the hallway outside my classroom. Overhearing a heated discussion in the cafeteria between my principal and one of the PE teachers about whether a vampire squid could



defeat a yeti crab is probably one of the funniest and most surreal moments of my time on lunch duty.

One of my favorite March Mammal Madness resources is the [Phylogeny of Contestants](#). Every year, a phylogenetic tree of the 65 combatants is created showing the evolutionary relatedness of the tournament pool. This has been compiled into an ever-growing tree of life that includes all combatants from the past. I have used this as a way to teach my students how to read and interpret phylogenetic trees using organisms that they are actually invested in because they are familiar with them from the tournament. I have also used current phylogenies from the year of the tournament to assess students' understanding of phylogeny. What could be a dry, boring assessment task becomes interesting once the students start recognizing species that they rooted for, or against, weeks before in the tournament. Call-backs like this are easy to insert into any lesson about evolution, ecology, or environmental science because the creators of the tournament are thorough in citing relevant scientific literature about the combatants, their habitats, and threats to the species. Old lessons that used to be hard to connect to students' interest can be made relevant by substituting in organisms, places, and situations that they had learned about during the matches.

(You can also read more about how other teachers are celebrating MMM with their students [here!](#))

This year, the tournament featured a whole division titled "Same & Different" which contained organisms that exhibit different convergent traits such as grass eating, fig eating, grub digging, and gliding. This aligned with NCSE's activity "[Nature's Doppelgangers](#)" which features some of the diggers and gliders along with other examples of convergent evolution. Additionally, NCSE's new evolution Story Short "[The Origin \(and Conservation\) of a Species](#)" features an investigation of what a species is and whether the Alabama sturgeon should be classified as a unique species. Although the starry sturgeon in this year's tournament was a different species, the connection may be of interest to teachers and students. There is no wrong way to incorporate March Mammal Madness into a science classroom, whether it's just discussing the matches with students, or creating lessons or assessment activities based on the tournament. Have fun, be creative, ask students what

they would like to explore and find a way to connect it to the standards and content you are teaching!

If you are interested in following along with the tournament next year, here are some tips to help you make a bracket that won't fall apart after the first round of the tournament. These were some things that some of the newer players in our NCSE staff competition learned the hard way! When researching the combatants, pay attention to three things: physical adaptations, behavior, and habitat. Focusing only on one of these doesn't give the whole picture of an organism or how it will interact with another combatant in any given match.

The MMM team assigns rankings within each division based primarily on physical adaptations. Does it have sharp canines and claws to take down prey? Does it have armor or antlers for fending off predators or other members of its own species? Can it fly, swim, climb, or run efficiently? How large is it? Does it produce toxins or venom? These are all important questions that help give an organism its initial ranking, but don't always help out of context. The next thing to consider is behavior. Often, a combatant's temper (is it aggressive, calm, or easily spooked?) can greatly affect its progression through the tournament (for good or ill). A few examples from this year's tournament include the Thorold's deer losing to the much lower, ranked gelada because the deer is rather skittish and ran from an unfamiliar threat in round two, and the quokka unexpectedly beating the higher, ranked marsh mongoose because the quokka doesn't have any natural predators in its habitat so it was too derpy to even consider running away. This untroubled attitude got it eaten in the next round when it came face to face with the puma. The final, and perhaps most important, consideration is habitat. As the old dad joke goes: A shark can swim faster than me, but I can run faster than a shark, so in a triathlon, it would all come down to who is the better cyclist. For the first three rounds, the higher, ranked combatant gets home habitat advantage. This year, that allowed the number two ranked narwhal to easily breeze through to the fourth round. For the last 3 rounds, habitats are chosen at random, which is why I chose the amphibious polar bear as my champion (which turned out to be the eventual winner).

I could go on and on with stories about March Mammal Madness like the first (and only) time I ever had a student flip a desk in my classroom because his chosen champion, the markhor, lost in the first round to the tiny tenrec. Or the fact that my wife still complains about her chosen champion, the elephant, losing to the bee in round one over a year later.

# COMINGS AND GOINGS ON NCSE'S BOARD OF DIRECTORS



**NCSE** is pleased to announce that Fouad Abd-El-Khalick, Leonardo Banchik, Tom Matzzie, and Eric Rothschild have joined NCSE's board of directors. At the same time, NCSE bids a fond farewell to **Jo Handelsman, Michael Lubic, and Michael E. Mann.**

**Fouad Abd-El-Khalick** is Provost and Senior Vice Chancellor for Academic Affairs at the University of Massachusetts, Amherst. He is an elected Fellow of the American Association for the Advancement of Science and recipient of the Distinguished Contributions to Science Education through Research Award from the National Association for Research in Science Teaching. His research program has focused on teaching and learning about nature of science in K-12 science classrooms and science teacher education settings.

**Leonardo Banchik** is Investment Director at Voyager, an early-stage climate and deep-tech venture fund. He is a former founding Climate Tech Partner at Global Founders Capital and McKinsey alumnus focused on sustainable investing and energy transition strategy. He was product innovation lead at Sandymount and a founder of startup

OleoSep. He received his Ph.D. in mechanical engineering from MIT as an NSF Fellow, and previously served as a scientist at two US national labs and a researcher at the Department of Energy.

**Tom Matzzie** is founder and Chief Executive Officer of CleanChoice Energy, a renewable energy developer and independent power producer providing clean energy to homes and businesses. He is also chair of the Coalition to Power America, a clean-tech industry advocacy and education organization. Prior to founding CleanChoice, Matzzie led advocacy and political efforts on behalf of various causes and campaigns. He studied economics at the University of Notre Dame.

**Eric Rothschild** is Litigation Director at the National Student Legal Defense Network (Student Defense), a non-profit that works through litigation and other advocacy to advance students' rights to educational opportunity and to ensure that higher education provides a launching point for economic mobility. In 2005 he served as lead counsel in *Kitzmiller v. Dover Area School District*, the landmark case that established that the teaching of "intelligent design" in

public school science class violates the First Amendment principle of separation of church and state.

Jo Handelsman, Michael Lubic, and Michael E. Mann all left the board at its February 2025 meeting when their terms of office expired. "NCSE is incredibly grateful to all three of them," commented NCSE Executive Director Amanda L. Townley. "Handelsman for her insight into education as well as a broad array of environmental issues, Lubic for his legal acumen, and Mann, of course, for his tireless commitment to promoting the understanding and acceptance of climate change, and defending the science against its detractors."

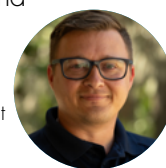
The new members of the board, Abd-El-Khalick, Banchik, Matzzie, and Rothschild, officially joined the board at its February 2025 meeting, joining Kenneth R. Miller, Michael Haas, Sarah George, Prosanta Chakrabarty, Maya Garcia, and Joseph L. Graves Jr., J. Marshall Shepherd, and Emily Mendoza Sims.

Whether followers of the tournament are angry, sad, joyous, braggadocious, or fawning with adoration, the fact is they are engaged! They are engaged with science in a way that is rarely seen in today's society where science is often viewed as elitist or as some kind of political tool.

In this way, the goals of March Mammal Madness closely align with the vision of NCSE which is that one day, students of all ages will be scientifically literate; teachers will be prepared and empowered to teach accurate science;

and scientific thinking and decision-making will ensure all life can thrive and overcome challenges to our shared future. This is why NCSE was proud to collaborate with the March Mammal Madness team this year. MMM creator Katie Hinde was our featured speaker at the annual NCSE/NABT Darwin Day webinar and NCSE co-sponsored MMM 2025!

**Blake Touchet** Blake Touchet is a Science Education Specialist at NCSE. [touchet@ncse.ngo](mailto:touchet@ncse.ngo)



# BOSTON MODEL UN EMBRACES NCSE'S CLIMATE LITERACY MESSAGE



Photo courtesy of BosMUN

**NCSE** was excited to be selected as the “mutual aid partner” for the Boston University Model United Nations (BosMUN) in February 2025, the 25th anniversary year of their national event. As a result, we were the recipient of a fundraising effort among the participants and I was given the opportunity to address an excited and engaged group of about 2,000 high school students.

As we at NCSE know, scientific literacy and critical thinking are intimately interwoven. Collaboration, evidence evaluation, and problem-solving are key to understanding the world around us and using that understanding to address the challenges we face. It is even more important to foster scientific literacy and thinking skills in those in positions of leadership, especially in political arenas, because these are individuals who influence policies that shape the world: evidence-based decisions lead to more beneficial and sustainable outcomes.

The BosMUN conference provides high school students with an unparalleled opportunity to engage in diplomacy, global issues, and international relations on a grand scale. A cornerstone event in the Model United Nations community, the BosMUN conference is known for its educational rigor and commitment to fostering diplomatic skills among young participants. BosMUN encourages students to develop and practice leadership, critical thinking, and public speaking skills while engaging with people of other cultures, regions, and experiences. BosMUN is one of the largest Model United Nations events and has grown over two decades to include over 2,000 students. The conference covers a wide range of topics, including human

rights, climate change, peace and security, and international trade. Through detailed committee sessions and even midnight crisis convening, students are encouraged to think critically about the issues at hand and develop solutions that consider the interests of multiple stakeholders. Ultimately, BosMUN provides students a unique opportunity to cultivate skills essential for future leaders.

NCSE was first approached in the fall of 2024 about a partnership with BosMUN because of our focus on climate change, sustainability, and scientific literacy — the Model United Nations has specific sessions on climate and sustainability and a Conference of the Parties model.

As the BosMUN mutual aid partner for this year, NCSE was able to share the work that we are doing on climate change education. It was a privilege to speak at the opening ceremony to the thousands of students, parents, teachers and advisors at the event and later to have the opportunity to talk to so many bright minds of the next generation about their passion for policy and making the world a better place for all of humanity. In addition to our mission, I tried to emphasize the importance of collaboration and partnerships across organizations to bring about change and reach shared goals, actions that align with the spirit of the Model United Nations.

On behalf of our organization and supporters, I also commended the students and their mentors for their commitment to critical thinking and tackling global issues head-on, drawing direct connections to our efforts to promote and protect science education, the vital importance of engaging with evidence, and the role of scientific



NCSE is delighted to congratulate **Laurie R. Godfrey** of the University of Massachusetts, Amherst, a former NCSE board member, who was named as the recipient of the Charles R. Darwin Lifetime Achievement Award from the American Association of Biological Anthropologists (AABA) for 2024. “Godfrey,” according to the AABA’s citation, “has been a leader in the fields of primate evolution, paleobiology, and evolutionary ecology for over 40 years. As emphasized by her nomination, she has championed and advanced our understanding of the extinct ‘subfossil’ lemurs of Madagascar through dental microwear, isotopes, histology, ontology, computed tomography, scanning electron microscopy, ancient DNA, and many other methods. With infectious enthusiasm she has inspired early career scholars and peers to study a diverse array of research topics in Madagascar and beyond.” Godfrey served on NCSE’s board of directors from 1990 to 1994. She edited *Scientists Confront Creationism* (1983) and, with **Andrew J. Petto**, its sequel *Scientists Confront Creationism: Intelligent Design and Beyond* (2008).

NCSE is pleased to congratulate **Michael E. Mann** on his [election](#) as a foreign member of the Royal Society, the United Kingdom’s national academy of sciences. A former member



of NCSE’s board of directors, Mann is Presidential Distinguished Professor in the Department of Earth and Environmental Science, and Director of the Penn Center for Science, Sustainability and the Media, at the University of Pennsylvania. His most recent book is *Our Fragile Moment: How Lessons from Earth’s Past Can Help Us Survive the Climate Crisis* ([reviewed](#) by Spencer Weart in *RNCSE* 43:4).



*The Scopes Trial: An Encyclopedic History* (2022) by **Randy Moore**, a professor of biology at the University of Minnesota and a previous recipient of NCSE’s Friend of Darwin award, and Susan E. Brooks, a great-grandniece of John Scopes himself, was named to the 2024 Outstanding

References Sources List, an annual list selected by experts of the Collection Development and Evaluation Section of the Reference and User Services Association, a division of the American Library Association. Reviewing the book for *Skeptical Inquirer*, NCSE Deputy Director **Glenn Branch** [described](#) it as “clearly organized, copiously illustrated, and lucidly written.”

literacy in building a better future for all of us. Many were surprised to hear that there are places where topics such as evolution and climate science are not being taught, or are taught with a “spin” or otherwise inaccurately, and that legislation is being proposed regularly to attempt to weaken the science that reaches science classrooms. It was good to be reassured that they were learning about evolution and climate change in their own classrooms — but not so good to realize that the challenges to science education elsewhere haven’t made it onto their radar. I am hopeful that the message that these are battles we are still fighting and that we need their help to fight far into the future will travel with them as they continue their educational journeys. Although BosMUN is not focused on science as NCSE is, the shared commitment to education, advocacy, and empowering young people to be critical thinkers who are actively engaged is clear.

We are so thankful to the organizers of BosMUN for selecting NCSE to be their mutual aid partner for 2025. While this is a one-time partnership, our appreciation is lasting. We received a substantial donation from the attending students and the opportunity to share the work that NCSE is doing to protect their scientific education and ensure science literacy for generations to come. These bright young minds from across the country, and even around the world, will benefit our world with their blend of scientific knowledge, critical thinking, global issues focus, and diplomatic skills. It was an inspiring experience to be present at the 2025 BosMUN conference. Seeing so many young people coming together to learn and experience the processes of communication, cooperation, and problem-solving gives me hope for the future of our society.

**Amanda L. Townley**

is the executive director of NCSE.  
[townley@ncse.ngo](mailto:townley@ncse.ngo)



# UPDATES

Are there threats to effective science education near you? Do you have a story of success or cause for celebration to share? E-mail any member of staff or [info@ncse.ngo](mailto:info@ncse.ngo).

## COLORADO

Colorado's Senate Bill 14, which would authorize local school districts to grant a high school diploma endorsement in climate literacy, was signed into law by Governor Jared Polis on May 23, 2024. The seal of climate literacy would be granted "to graduating students who demonstrate mastery in climate literacy and attain green skills or technical green skills."

Climate literacy is defined in the new law as "an understanding of the essential principles of the earth's climate system, assessing scientifically credible climate information, learning to communicate about the climate in a meaningful manner, and making informed and responsible decisions regarding actions that may affect the climate."

Support for the bill was spearheaded by "a network of high school sustainability clubs that call themselves Good Trouble," according to the *Durango Herald*. High school senior Aisha O'Neill, who organized the Good Trouble network, commented, "[W]e all have a power and responsibility to make an impact on environmental legislation."

## FLORIDA

"Textbook authors were told last month that some references to 'climate change' must be removed from science books before they could be accepted for use in Florida's public schools, according to two of those authors," the *Orlando Sentinel* reported in July 2024.

Kenneth R. Miller, coauthor of a popular high school biology textbook (and president of NCSE's board of directors) told the *Sentinel* that the state department of education asked him to defend his textbook's statements that human activity is responsible for recent climate change.

Meanwhile, he added, all references to earth science — including those addressing climate change — were removed from a 90-page section of a high school chemistry textbook issued by its publisher, Savvas, before it was approved.

Although three publishers submitted textbooks for high school

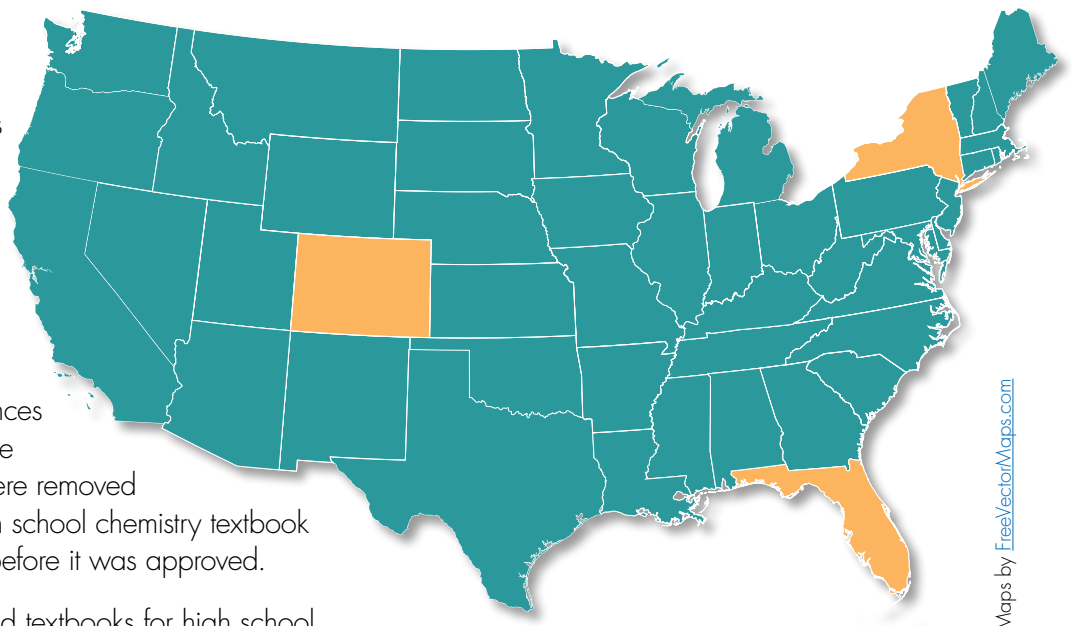
environmental science classes for state approval, which would be expected to include extensive discussion of climate change, none of these appeared on the list of approved science textbooks.

NCSE Deputy Director Glenn Branch told the *Sentinel* that the department's actions will 'make Florida climate education even worse than it is,' adding, "These ill-considered actions are going to cheat Florida students."

Brandon Haught, a high school environmental science teacher in Volusia County (and a recipient of NCSE's Friend of Darwin award), emphasized that Florida's students need more information about climate change, not less.

Responding to the initial posting of the *Sentinel's* story, a spokesperson for the department of education e-mailed a statement to the newspaper, which, however, "did not directly address questions about science textbooks and climate change."

A satiric opinion column in the *Palm Beach Post* subsequently applauded the department's actions on behalf of FOOLS — Floridians Organized to Obstruct Learning Science — and called upon the department to demand further revisions.



Maps by [FreeVectorMaps.com](https://FreeVectorMaps.com)



Among the column's suggestions: requiring publishers to explain that "God is wiping out frogs to let us know that we have to do a better job of banning books in school libraries and diverting more public money to religious schools."

A subsequent opinion column in the *Sentinel* complained, with reference to the department's censorship, "Florida is now approaching science and education like a 2-year-old: If you don't like something, just pretend it doesn't exist."

The *Sentinel* column concluded, "And when those raising red flags about scientific censorship include the president of the board of the National Center for Science Education, that's reason to be concerned."

## NEW YORK

When the 2023–2024 session of the New York legislature ended on June 7, 2024, no fewer than seven climate change education bills died in committee.

Assembly Bill 851 would have required the state commissioner of education to "create and establish a comprehensive and accurate climate change and sustainability curriculum which shall be taught in grades kindergarten through twelve in all public and charter schools."

Senate Bill 287 would have required the state commissioner of education to "make recommendations to the board of regents relating to adjusting curricula for social studies, economics, geography, and government classes in New York schools to include requirements for climate change education."

Senate Bill 278 would have required the state commissioner of education to "establish a model environmental curriculum on climate change to be taught in all public elementary and secondary schools," to be included in the standards of instruction for not only science but also history, social studies, health, and mathematics.

(Amended versions of Senate Bill 278 and Assembly Bill Senate Bill 243 would have required the state commissioner of education to offer "recommendations to the board of regents relating to the adoption of instruction in climate science in senior high schools," including "the effect and impact of greenhouse gasses" and New York's commitment to reducing greenhouse gas emissions."

Assembly Bill 1866 would have established a climate change education grant program "to award grants to eligible applicants to support climate change education grant programs for young people or to provide optional teacher training or professional development programs relevant to the advance of climate change literacy in young people."

Senate Bill 5661 would have required "climate change instruction within the current established science curriculum for grades one through twelve in all public schools." Correspondingly, school authorities would have been required to support such instruction.

At the end of the 2021–2022 legislative session, eight climate change education bills introduced in the New York legislature likewise died in committee.



## WHAT WE'RE UP AGAINST

### A Congress Teeming with Climate Change Deniers

According to a July 18, 2024, analysis from the Center for American Progress, "123 elected officials are climate deniers — 23 percent of 535 total members. These 100 representatives and 23 senators wield significant influence on public perceptions of climate change as well as on the speed and direction of climate policy in the United States." The analysis observed, "The 123 climate deniers in the 118th Congress collectively received about \$52 million in lifetime contributions from the oil and gas and coal mining industries."

There are signs of progress: "The number of outright climate deniers in Congress continues a downward trend from 150 in the 116th Congress, 139 in the 117th, and now, 123 in the 118th Congress." But often the legislators have shifted to different rhetorical tactics, such as "redirecting responsibility for addressing the climate crisis, such as deferring U.S. actions to reduce greenhouse emissions until other countries act first; portraying climate activism as alarmism; or spreading misinformation."

— GLENN BRANCH



“There is no Planet B for humanity, so we better understand this one well,” says J. Marshall Shepherd, a leading science communicator on weather and climate and the Georgia Athletic Association Distinguished Professor of Geography and Atmospheric Sciences at the University of Georgia. NCSE Executive Director Amanda L. Townley spoke with Shepherd, an NCSE board member, about his extensive and lifelong work making climate science understandable to the general public, and his efforts to combat climate misinformation and misconceptions.

“I’m in probably the highest level of honor you could achieve as a scientist or an engineer, and yet I still tweet and I still write articles and I still go on TV ... I push back on this narrative when a colleague comes up to me and says, ‘How do you do all this extra stuff?’ I don’t view it as extra. I view it as fundamental to my scholarship.”



Watch the interview

“I just try to kind of meet people where they are, and their value system, their level of understanding as audience, and shape and form the narratives appropriately.”



## When “Madness” is a Good Thing in the Classroom



A crowd of young people cheer, groan, shout, and laugh. Excitement is in the air! No, this isn't a sporting event or a concert, but a biology classroom in March. They are among the thousands of

students around the country participating in [March Mammal Madness](#) (MMM), a fictional, but scientifically-accurate tournament that pits 65 species against each other. The event is beloved by teachers and students alike, and is marked by the saying, “If you're learning, you're winning!” Many students and teachers (including my current colleague and former teacher Blake Touchet; see page 3) consider MMM the highlight of the school year. Students learn about organisms they have never seen before, exclaiming, “What even is this thing?” and “This looks like something out of a horror movie!” Teachers capitalize on this engagement for learning, but also for fun, often setting up elaborate school-wide competitions and prize structures.

MMM, [co-sponsored this year by NCSE](#), is modeled after March Madness, the NCAA Division I basketball tournament. Similar to the

basketball tournament, MMM involves a series of battles between two species. However, MMM is not a team sport! The battles consist of individual combatants who encounter each other in a scientifically accurate fictional story and their battlefield is a specific habitat that is predetermined. Although war terminology such as “battle” and “combatant” are used (and some matches do contain #CARNAGE), organisms do not always die in these fictional encounters. In fact, combatants may not even physically interact with each other in the story. The individual holding the field at the end of the battle is declared the winner, and battles often end with the loser simply fleeing or hiding. The stories are written by scientists using three resources: the latest scientific literature about the organisms and their habitats, imagination, and a random number generator that is loaded with estimated probabilities of victory for each combatant.



*A March Mammal Madness bracket on a hallway wall of teacher Jeff Grant's school*

Students play along by completing a single-elimination tournament bracket to choose a winner of each battle

before the tournament begins. They follow the results by reading the stories or watching video recaps of the battle stories. From the students' perspective, they are just having fun and trying to win points by correctly predicting the winners. However, win or lose, they are learning a lot of biology along the way. In order to make informed predictions about the outcomes of the battles, students research the species and their habitats and think about features that would give them advantages or disadvantages. The battle stories themselves also teach lessons about organismal, evolutionary, and ecological concepts in a fun and engaging way.

NCSE Teacher Ambassador [Jeff Grant](#) teaches biology at Downers Grove North High School near Chicago. The science teachers at his school distributed over 1,000 MMM brackets to their students this year. Students fill out the brackets and turn in a copy to their teachers before the tournament begins. They follow along with battles throughout the tournament by watching the tournament's video recaps in their science classes, referring to the giant bracket on the wall in the hallway (see image left). Grant loves to hear the “science smack talk” among students and witness the emotional aha moments such as, “This is ridiculous! Humans ruin everything!” when there is human interference in a battle.

# Star Trek Podcrawl Raises \$20,000 for NCSE

The Star Trek universe may be science fiction, but that didn't stop one of the creators of the popular Star Trek podcast [The Greatest Generation](#) from launching a campaign to support NCSE and "reality-based education" — a fundraiser that netted nearly \$20,000.



Benjamin Harrison and his podcast partner, Adam Pranica, have been hosting fundraisers for NCSE for several years. But this year, Harrison and his team decided to enlist the help of six other Star Trek-focused podcasts for a "podcrawl" that featured special episodes from each: [The Greatest](#)

[Generation](#), [The 7th Rule](#), [Open Pike Night](#), [SyFy Sistas](#), [Mission Log](#), [Women at Warp](#), and [Star Trek: the Next Conversation](#). They all encouraged listeners to donate to NCSE and more than 350 people took up the call.

"The mission of NCSE is really aligned with what Adam and I believe in," Harrison said when asked what motivates him to fundraise for NCSE. "We're big admirers of the kind of optimistic vision of the future that is portrayed in *Star Trek*. And we think that can't happen without excellent science education. So it seems like a great match."

Harrison added that his mom was an elementary school teacher for 30 years "so education in general is a big, important thing for us."

NCSE Executive Director Amanda L. Townley was overwhelmed by the ingenuity, effort, and generosity of this year's podcrawl effort. "We are so fortunate to be supported by such a thoughtful, science-loving community that recognizes the importance of an education free from ideological interference," Townley said. "I proudly admit that I am a big fan of *Star Trek* as well, so that makes this fundraiser that much more special for me."

The *Greatest Generation* podcast has been holding fundraisers for NCSE since 2016, but the \$20,000 donated this year far eclipses what has been raised in the past.

"There's a lot of work to be done out there," Harrison said of his podcast's altruism over the years. "I think things like this fundraiser help strike a balance between a show's need for escapism and not ignoring the problems in the world that we face today."



Paul Oh is NCSE's Director of Communications. [oh@ncse.ngo](mailto:oh@ncse.ngo)

Grant increases the excitement by awarding trophies, offering prizes, and pitting classes against each other in team competitions. The class section that gets the most points earns a doughnut party, any student that beats his score wins a prize, students with the top five scores in the school win a prize pack, and the school-wide winner gets their name added to a giant trophy housed in the school trophy case. The teachers also have their own tournament, complete with a trophy and bragging rights.

Marie Wadas teaches at a much smaller school, but the excitement there for MMM runs just as high. Her tiny rural school in Arcadia, Nebraska, serves students PreK–12, and Wadas is the only secondary science teacher. She has about 50 students in grades 7–12, and describes MMM as the highlight of the year. Similar to what occurs at Downers Grove North High School, MMM also takes over

the hallway as Wadas hangs student-made fact sheets for each species above the lockers. Her students each choose an organism to research, and if their choice becomes the winning species they receive the grand prize. However, Wadas also has elaborate schemes that allow students to become winners in many different ways to keep them engaged throughout the tournament, even once the organism they chose to win is knocked out.

Wadas develops deep relationships with her students because she is their science teacher every year. For example, last year every one of her high school students was also part of her Science Olympiad team. The running jokes developed because of MMM get folded into all the science fun they have. You can hear the excitement in her voice as she recounts the time the Science Olympiad team visited a restaurant

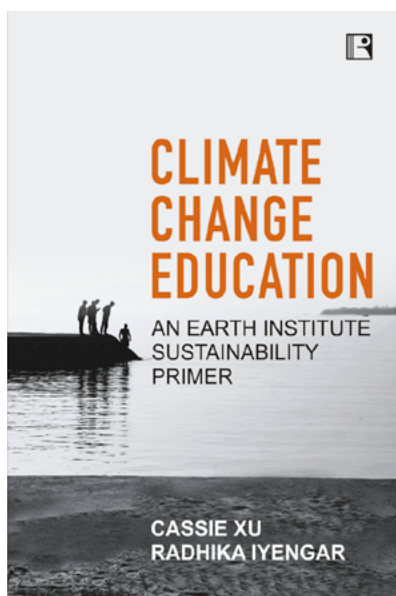
while traveling for a competition and they spotted a stuffed dik-dik, a small antelope they were first introduced to through MMM. "The conversations don't just last during MMM, but they continue to refer to the animals all year long," she gushes.

Wadas deeply believes that science should be fun. It is clear that she incorporates fun throughout the school year, and MMM allows her the perfect avenue for building relationships with her students while sharing the joy of science. All her classes have popcorn on Fridays during the tournament as they watch the video recaps of the battles. She says the time is well spent: "Sometimes you just have to have fun so that kids love to come to science."



Wendy Johnson is a Science Education Specialist at NCSE. [johnson@ncse.ngo](mailto:johnson@ncse.ngo)

# THE RNCSE REVIEW



## *Climate Change Education: An Earth Institute Sustainability Primer*

*authors* Luo Cassie Xu and Radhika Iyengar

*publisher:* Columbia University Press

*reviewed by:* Karolyn Burns

Luo Cassie Xu and Radhika Iyengar's book serves as an essential primer for teachers and administrators on climate change education, skillfully bridging the gap between complex scientific research and everyday understanding. Collaborating with physical and social scientists, they explore educational contexts ranging from formal classrooms to community learning environments. They emphasize the critical role of structural inequalities in shaping how climate change impacts different populations, offering a comprehensive and inclusive approach that resonates across all levels of society. This book highlights these disparities and provides actionable strategies for integrating climate education into diverse settings.

The book begins by defining systems thinking, emphasizing that climate change is a multifaceted issue shaped by history, culture, policy, science, and economics. This interconnectedness makes climate change complex, and systems thinking is essential for understanding this complexity. By encouraging viewing natural, social, and economic worlds as interrelated and

dynamic, Xu and Iyengar promote an interdisciplinary learning model that aligns with current educational trends, moving away from siloed subjects.

Addressing the politicization of climate change in the United States, Xu and Iyengar discuss the range of beliefs from denial to acknowledgment without behavior change. They criticize scare tactics in education, which can create fear rather than foster actionable solutions. Instead, they advocate for practical, solutions-oriented education to motivate meaningful behavioral change. Knowledge alone is insufficient to drive change, as explained by the [Knowledge, Attitudes, and Behavior \(KAB\) framework](#). Emotional connections and a sense of purpose are essential. Integrating social-emotional learning into climate education can shape attitudes and connect climate action to traditional ways of life and community well-being, creating a holistic approach that overcomes psychological and ideological barriers.

The United Nations Education for Sustainable Development (ESD) framework is presented by the authors as a model for active, interdisciplinary learning. ESD promotes critical thinking and social critique, integrates sustainability across the curriculum, and involves teacher development, student leadership, and campus sustainability.

This approach aligns with the sustainability elements of the Next Generation Science Standards (NGSS) and underscores the importance of embedding sustainability into all aspects of school life.

Xu and Iyengar also emphasize the need to address climate education within the context of disparities in access to quality education, both within the US and internationally. Integrating climate education with efforts to make education more equitable and inclusive is essential. The COVID-19 pandemic has highlighted the importance of social-emotional learning (SEL) for student success in a world increasingly filled with stress and conflict; encouraging empathy and teamwork is crucial for addressing complex issues like climate change.

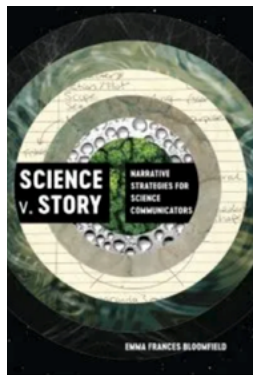
The book advocates for a series of approaches to climate change education that offer opportunities to tackle real-world problems, work with peers and community members, and acknowledge lived experiences. Effective strategies are highlighted as project-based learning (PBL), collaborative learning, and inquiry-based learning. PBL allows for interdisciplinary exploration, mirroring real-world problem-solving. Collaborative learning brings diverse

perspectives, fostering creativity and innovation. Inquiry-based learning helps students understand the scientific method and develop greater trust in science. Service learning is another effective method, integrating climate education into K–12 schools by combining classroom instruction with community service. This approach promotes civic responsibility and empowers students to make tangible impacts, reinforcing the importance of sustainability.

Case studies, such as Dublin’s “Creating Futures” module and New Jersey’s comprehensive climate change education program, demonstrate the benefits of interdisciplinary teaching and real-world application. Tackling real-life issues usually involves subject-matter knowledge, clear verbal and written communication, and interdisciplinary educational approaches that teach students to apply different types of skills and modes of thought. These case studies align with the ESD framework’s goals and highlight the importance of fostering a deeper understanding and personal connection to climate issues.

Xu and Iyengar conclude by emphasizing the importance of diversity, equity, and inclusion in addressing social and environmental justice within climate education. To truly address the pressing challenges of climate change, it is essential for us to prioritize climate justice and the inclusion of marginalized populations in our research and policy initiatives. The fight against climate change is inseparable from broader social justice issues, and our education systems must adapt to reflect this complexity in order to create a more equitable and sustainable future.

The Columbia Climate School’s contributions to climate change



## Science v. Story: Narrative Strategies for Science Communicators

author: Emma Frances Bloomfield

publisher: University of California Press

reviewed by: Zen Faulkes

**S**cience v. Story has an unfortunate title. It reinforces the misconception that “science” means “real” and “story” means “made up.” But the title of the last chapter, “Science and Story” (emphasis in original) better describes what Emma Bloomfield has in mind: improving communication about science using storytelling.

The invention that Bloomfield hopes will improve storytelling is the “narrative web.” Imagine a circle sliced into six pieces. Each piece represents part of a story: character, action, sequence, scope, storyteller, and content.

Now imagine the outer circle has two smaller circles nested within it, like a dartboard.

Each part gets one dot on one of those three circles. If part of the story is concrete and specific, a dot goes on the ring closest to the center. But if that part is abstract and general, the dot goes on the ring closest to the edge. If it’s in between—you guessed it—middle ring. Those six dots form a “constellation” that characterizes a story. (See the figure on page 15.)

It’s a complicated way to show “low, medium, high” for six aspects of a story. Moreover, Bloomfield often calls the levels the “micro-ring,” “meso-ring,” and “macro-ring”; the academic Greek doesn’t make picturing constellations from her descriptions any easier.

education are highlighted as a significant example. Established as the nation’s first climate school, it offers interdisciplinary programs and initiatives that support innovative research and connect academic work to real-world applications. The school engages in K–12 education initiatives, professional learning opportunities, and pre-college programs, making climate education accessible at various levels and fostering a culture of sustainability and inclusion.

*Climate Change Education* is a must-read for educators, policymakers,

and anyone passionate about climate change and education. It offers a compelling and thorough exploration of how to seamlessly integrate climate education across diverse settings, championing a holistic, interdisciplinary approach that drives real, meaningful change.

**Karolyn Burns** is the Education and Curriculum Manager for the CLEO Institute, where she oversees the Teachers Network and the CLEO Speakers Network. She focuses on integrating climate education into state standards and developing lesson plans on climate and environmental justice. [Kburns@cleoinstitute.org](mailto:Kburns@cleoinstitute.org)



The narrative web is also a little non-intuitive to use. At first, Bloomfield says the three levels represent the range from “specific” to “abstract” for all story parts, but not all six work that way. For example, the “storyteller” part is rated not by specificity, but by the audience’s trust in the storyteller.

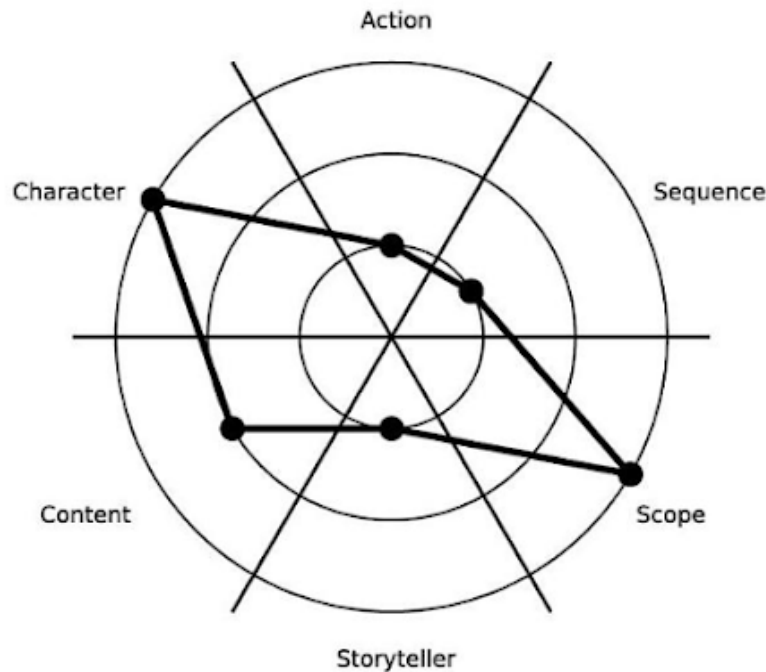
The subtitle, “Narrative Strategies for Science Communicators,” suggests this “how-to” book is for science communicators, but the narrative web tool and the writing style doesn’t seem well-suited for journalists, museum staff, or public information officers crafting stories about science. It seems better suited for academics analyzing stories about science.

Narrative webs’ use in analysis is obvious, but it’s not so clear how to use them to create effective stories. What constellation does a compelling story create on the narrative web? One might think that a good storyteller would cluster the points in the middle, like a sharpshooter. The saying goes, “The death of one is a tragedy” (specific, inner ring, strong story); “the death of many is a statistic” (abstract, outer ring, a mere fact). But Bloomfield says the inner rings are not always better. She encourages experimenting with bigger, more abstract concepts, pushing some dots closer to the edge of the web.

Bloomfield uses her narrative web to analyze stories of climate change, evolution, vaccines, and COVID-19. Her coverage of them is thorough,

although skewed to the US. But her focus on these controversies undercuts the book’s goal.

Someone reading this book probably wants to learn how to use stories to convince people. But the Scopes trial is nearing its centenary, climate change and vaccination fights have gone on for decades, and rhetoric attacking the science relevant to COVID-19 seems to be becoming less rooted in science, not more. Science has not lacked good storytellers all that time, so there must be other reasons why these controversies persist.



Bloomfield explores those reasons—she is thorough—but it would have made her book more compelling to compare cases where opinion remains stubbornly stuck to cases where communication resulted in wins for science. For example: rockets went from being seen as weapons to vehicles for space exploration; Rachel Carlson’s *Silent Spring* convinced people pesticides were risky; people almost entirely stopped smoking in public spaces;

legislation was passed that stopped acid rain and shrunk the ozone hole.

In all these cases, there were rival narratives like those deployed in opposition to climate change, evolution, and vaccination. Corporations foretold economic disaster if pesticides were regulated, as they did again with regard to fossil fuels. Smokers extolled the virtues of personal choice, much like anti-vaccine advocates. Without comparisons, it’s hard to know why some stories work but others stall.

If the narrative web is a general tool, what does the constellation for *Science v. Story* look like?

The dots for character, action, and sequence might rest in the middle ring: the book describes specific examples, but usually to illustrate bigger trends.

The scope dot goes on the outer ring, because Bloomfield aspires to show principles that apply to any story.

The storyteller dot sits firmly in the trusted innermost circle, because Bloomfield’s is a trusted

narrator whose scholarship and thoughtfulness is unquestioned.

Finally, the content dot for relevance might sit in the middle ring, because it seems unlikely that all science communicators will find all the book’s material equally helpful throughout.

**Zen Faulkes** is a biologist and science blogger. After nearly two decades as a professor, he now works in science policy. His website is [doctorzen.net](http://doctorzen.net). [doctorzen@gmail.com](mailto:doctorzen@gmail.com)



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