



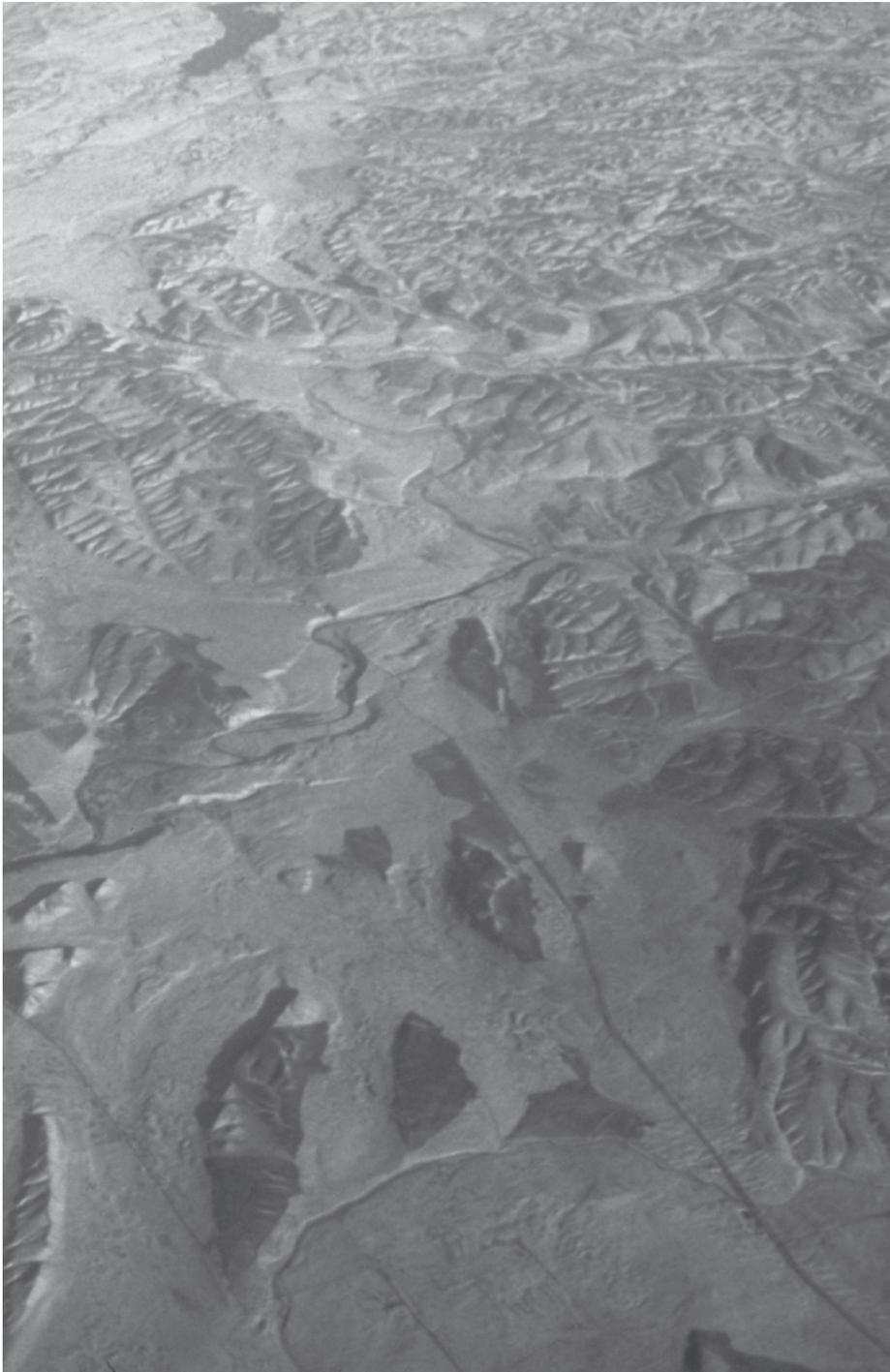
REPORTS OF THE

NATIONAL CENTER FOR SCIENCE EDUCATION

DEFENDING THE TEACHING OF EVOLUTION IN THE PUBLIC SCHOOLS

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Aerial view of the Channeled Scablands, Washington. © Marli Bryant Miller

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From time to time we like to report on what our members are doing. As the following list shows, they—and we—have a lot to be proud about!

Paul S Braterman and **John W Geissman** contributed “Whose foot in the door?” to the American Geophysical Union’s newsletter *Eos* (2011 May 3; 92[18]:153), addressing what they described as “the ongoing attempt by creationists to attain scientific respectability” by submitting abstracts to professional meetings—such as those of the AGU—and then boasting that the abstracts survived the scrutiny of the relevant scientific communities. “As things stand,” they explain, “abstracts based on material that is devoid of scientific merit can nonetheless become part of the documented record of the meeting. This opens the way to unacceptable abuse by such fringe groups, who would claim to be part of the scientific community, despite a very different view of natural processes.” They close by arguing, “AGU and other professional societies should establish, where they do not exist, and enforce objective acceptance guidelines for meeting abstracts that are based on high scientific merit. The enemies of science are well organized, well funded, and vigilant, and we ignore them at our and our children’s peril.” Braterman is Professor Emeritus of Chemistry at the University of North Texas and Honorary Senior Research Fellow in the Department of Chemistry at the University of Glasgow. Geissman is Professor of Geosciences at the University of Texas at Dallas and Professor Emeritus of Earth and Planetary Sciences at the University of New Mexico; he also serves as *RNCSE*’s associate editor for geosciences.

With Celeste A Askikainen and Wolfgang E Krumbein, **Lynn Margulis** edited *Chimeras and Consciousness: Evolution of the Sensory Self* (Cambridge [MA]: MIT Press, 2011). According to the publisher,

Chimeras and Consciousness begins the inquiry into the evolution of the collective sensitivities of life. Scientist-scholars from a range of fields—including biochemistry, cell biology, history of science, family therapy, genetics, microbial ecology, and primatology—trace the emergence and evolution of consciousness. Complex behaviors and the social imperatives of bacteria and other life forms during 3000 million years of earth history gave rise to mammalian cognition. Awareness and sensation led to astounding activities; millions of species incessantly interacted to form our planet’s complex conscious system. Our planetmates, all of them conscious to some degree, were joined only recently by us, the aggressive modern humans.

A Supporter of NCSE, Margulis is Distinguished University Professor in the Department of Geosciences at the University of Massachusetts at Amherst.

Glenn Branch is NCSE’s deputy director.

Kenneth R Miller contributed “Finding the key—cell biology and science education” to *Trends in Cell Biology* (2010;20[12]:691–694), arguing, in the words of the abstract:

No international research community, cell biology included, can exist without an educational community to renew and replenish it. Unfortunately, cell biology researchers frequently regard their work as independent of the process of education and see little reason to reach out to science teachers. For cell biology to continue to prosper, I argue that researchers must support education in at least three ways. First, we must view education and research as part of a single scientific community. Second, we should take advantage of new technologies to connect the research laboratory to the classroom. Finally, we must take the initiative in defending the integrity of science teaching, particularly when education is under attack for political or religious reasons.

Miller urged his fellow cell biologists to join NCSE, commenting, “This organization helps to coordinate efforts to defend quality science teaching, and has been extremely effective in countering efforts to compromise the teaching of evolution in the public schools.” A Supporter of NCSE, Miller is Professor of Biology and Royce Family Professor for Teaching Excellence at Brown University.

Randy Moore, Mark Decker, and Sehoya Cotner’s *Chronology of the Evolution–Creationism Controversy* (Westport [CT]: Greenwood, 2010) was named among the Outstanding Reference Sources for 2011 by the Outstanding Reference Sources Committee of the Reference and User Services Association of the American Library Association. NCSE’s **Glenn Branch** commented that the book “tells a fascinating tale. Their book is a salutary reminder that, when it comes to the evolution–creationism controversy, the old saying is true: ‘There is nothing new under the sun, but there are lots of old things we don’t know.’” A long-time member of NCSE who received its Friend of Darwin award in 2004, Moore is Professor of Biology at the University of Minnesota, Twin Cities.

Gregory S Paul’s *The Princeton Field Guide to Dinosaurs* (Princeton [NJ]: Princeton University Press, 2010) was named one of *Library Journal*’s best reference works for 2010. The journal’s reviewer commented: “Paul, a leading dinosaur illustrator and researcher who served as a consultant for the movie *Jurassic Park*, discusses 735 species, 130 with color life studies including scenic views and 450 with skeletal, skull, head, and muscle drawings. The species accounts are preceded by sections on dinosaur history, biology, and extinction.”

Donald R Prothero’s *Catastrophes! Earthquakes, Tsunamis, Tornadoes, and Other Earth-Shattering Disasters* (Baltimore [MD]: Johns Hopkins University Press, 2011) was published. The publisher writes:

Devastating natural disasters have profoundly shaped human history, leaving us with a respect for the mighty power of the earth—and a humbling view of our future. Paleontologist and geologist Donald R Prothero tells the harrowing human stories behind these catastrophic events.

Prothero describes in gripping detail some of the most important natural disasters in history:

- the New Madrid, Missouri, earthquakes of 1811–1812 that caused church bells to ring in Boston
- the 2004 Indian Ocean tsunami that killed more than 230 000 people
- the massive volcanic eruptions of Krakatau, Mount Tambora, Mount Vesuvius, Mount St Helens, and Nevado del Ruiz

His clear and straightforward explanations of the forces that caused these disasters accompany gut-wrenching accounts of terrifying human experiences and a staggering loss of human life.

Prothero is Professor of Geology at Occidental College and Lecturer in Geobiology at the California Institute of Technology, and the author of *Evolution: What the Fossils Say and Why it Matters* (New York: Columbia University Press, 2007).

Fish artist extraordinaire **Ray Troll**, whose illustrations regularly grace the pages of *RNCSE*, was recently doubly honored. First, he received the Rasmuson Foundation Distinguished Artist Award for 2011. According to a press release from the foundation,

Troll is the eighth Alaskan artist to receive the award, which was announced at a morning ceremony in Anchorage. The Distinguished Artist Award recognizes artists with stature, and a history of creative excellence and accomplishments in the arts with \$25 000 in unrestricted funds. ... His wildly imaginative work combines serious scientific study, a unique artistic esthetic, and a love of cheeseburgers for a style that is unmistakably his own.

Second, he and Kirk Johnson, a paleontologist at the Denver Museum of Nature & Science, were awarded a

Three Members of NCSE's Board Retire *Kevin Padian*

With mixed feelings we note the retirements from the NCSE board of directors of three people who have been integral parts of NCSE for a combined total of sixty years. The board works behind the scenes of NCSE to craft policy, advise, and make decisions about the overall direction and mission of the organization, and it is critical for us to have people as resources that executive director Eugenie Scott and the staff can turn to when needed.

John Cole has been with NCSE since the beginning—even before there was an NCSE, when there were the “Committees of Correspondence” that our founder, Stan Weinberg, organized and nurtured into the nascent form of the powerhouse that NCSE is today. John began as a director in 1986, and for many years he edited our *Creation/Evolution Newsletter*, which ultimately became *Reports of the NCSE*. John had taught at the University of Massachusetts and other institutions, and had been an editor of several major publications, so he has been a great resource as well as a tireless worker. He has

Kevin Padian is president of NCSE's board of directors.

enlivened every board meeting with his devastating wit and his hilarious stories of creationist foibles.

Duane Jeffrey was also present as a director when NCSE was conceived in 1986, and after a brief hiatus from the board, returned to active duty in 1994. As a professor of genetics in the Department of Biology at Brigham Young University, and a respected member of the Church of Jesus Christ of Latter-Day Saints, to which he has given a great deal of time and service over the years, “Jeff” has had his hands full. Among his many activities, Jeff wrote a weekly newspaper column for many years in which he explained the concepts of genetics and evolutionary biology to a lay audience with mostly strong religious sentiments. He has been a trusted and genial advisor who has always been ready with an ear to listen and a hand to lend.

Elizabeth Stage joined the Board in the same year that Jeff returned to it, and her role and presence are truly irreplaceable. Elizabeth's experience in science and science education begins with her own advanced degrees in chemistry and in science education, and extends to her long service as a staff member

and in recent years Director of the Lawrence Hall of Science at the University of California, Berkeley. But fewer NCSE members know that she also played a key role as a Curriculum Commissioner for the State of California in the late 1980s and early 1990s, during which time she shepherded the development and publication of the landmark *1990 California Science Framework for K–12*. She also served a stint in the administration of the National Academy of Sciences in Washington DC. Elizabeth's knowledge of the national science education scene has been invaluable to the board and staff of NCSE, and we have always been able to count on her for great insight, help, and practical experience.

John, Jeff, and Elizabeth have given a great deal to develop NCSE into the organization that it is today. Certainly all our members will join our board and staff in thanking and congratulating them for all their help and service! ■

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joint Fellowship in the Science Writing category from the John Simon Guggenheim Memorial Foundation to support work on their new book *Cruisin' the Eternal Coastline: The Best of the Fossil West from Baja to Barrow*. The fellowship will provide Troll and Johnson with \$50 000 that will support the completion of their project, a followup to their previous book *Cruisin' the Fossil Freeway* (Golden [CO]: Fulcrum, 2007; reviewed in *RNCSE* 2010;30[4]:31–32).

Reacting to House Bill 368—later dubbed “the monkey bill”—in Tennessee, **George Webb** wrote a column for *The Tennessean* (2011 Mar 1), commenting, “I find the most recent effort to compromise the quality of science teaching in the public schools ... both curious and disquieting.” Acknowledging that it is useful to discuss historical scientific controversies in science classes, he emphasized that the “controversial” topics itemized in HB 368—including evolution—are not scientifically controversial; to claim otherwise “reveals an inadequate grasp of the history and practice of science.” Moreover, he argued, “If teachers are expected to examine these so-called controversies in the science classroom, they will obviously have less opportunity to discuss the topics included in the Tennessee Science Framework.” Observing that the Framework reflects the consensus of the scientific and science education communities, he remarked, “It is difficult to imagine how teaching less science so that so-called controversies may be included in the curriculum will result in greater scientific knowledge.” Webb is Professor of History at Tennessee Tech University and the author of *The Evolution Controversy in America* (Lexington [KY]: University of Kentucky Press, 1994).

Jason Wiles returned to his native Arkansas to speak on “Seeing the light of evolution: An Arkansan’s journey toward understanding and acceptance of biological

change” at the University of Central Arkansas’s Darwin Day event on March 3, 2011. Assistant Professor of Biology at Syracuse University, Wiles discussed the state of evolution education in Arkansas in his “Is evolution Arkansas’s ‘hidden curriculum?’” (*RNCSE* 2006;25[1–2]:32–36).

Anila Asghar, **Jason R Wiles**, and **Brian Alters** published “The origin and evolution of life in Pakistani high school biology” in the *Journal of Biological Education* 2010;44(2):65–71, explaining, in the words of the abstract:

This study seeks to inform science education practitioners and researchers in the West about apparent attempts to reconcile science and religion in Pakistan’s public school curriculum. We analysed the national high school science curriculum and biology textbooks (English) used in the Government schools in Pakistan, where Islamic faith is the cornerstone of the national curriculum, and we found that both religious and scientific perspectives are treated in relation to the origin and evolution of life. The religious text presented in the curriculum draws on the relevant Quranic verses about creation, while the scientific text discusses naturalistic, evidence-based theories about the biochemical origin of life and evolution. Evolution by natural selection is discussed in detail along with the evidence supporting the scientific understanding of evolutionary history. Interestingly, where scripture is presented in the biology textbooks, it is generally interpreted to be compatible with evolutionary understandings of the living world.

Wiles is Assistant Professor of Biology at Syracuse University; Alters, who serves on NCSE’s board of directors, is Professor of Education at Chapman University. ■

STEVEN G GEY DIES

Steven G Gey, a nationally recognized scholar of constitutional law, died on June 9, 2011, at the age of 55, according to *Florida Today* (2011 Jun 10). Born in Pensacola, Florida, on April 6, 1956, Gey earned a BA in philosophy from Eckerd College in 1978 before receiving his JD at Columbia University, where he was articles editor of the *Columbia Law Review*, in 1982. After a brief stint at the New York City law firm of Paul, Weiss, Rifkind, Wharton, and Garrison, he became a professor of law at Florida State University in 1985; he became the David and Deborah Fonvielle and Donald and Janet Hinkle Professor of Law in 1999. A specialist in religious liberties and free speech, he compiled the casebook *Religion and the State* (2001, second edition 2006), coauthored *The First Amendment: Cases and Theory* (2008), and wrote dozens of articles

on religious liberties, free speech, and constitutional interpretation. In a tribute to Gey published in the *Florida State University Law Review* in 2008, Erwin Chemerinsky, the dean of the University of California, Irvine, School of Law, described his work on the Establishment Clause as “among the best scholarship in the area in recent years.”

It was while at Paul, Weiss that Gey helped to litigate *Edwards v Aguillard*, which ended in 1987 when the Supreme Court ruled that teaching creationism in the public schools is unconstitutional. His concern with the constitutional issues surrounding the teaching of evolution continued, culminating in the law review article “Is it science yet? Intelligent design, creationism, and the Constitution,” coauthored with Matthew J Brauer and Barbara Forrest, published in the *Washington University Law Quarterly* in 2005. Citing

the absence of objective scientific support for “intelligent design”, evidence of strong links between “intelligent design” and religious doctrine, the use of “intelligent design” to limit the dissemination of scientific theories perceived as contradicting religious teachings, and the fact that the irreducible core of “intelligent design” is what the Court has called the “manifestly religious” concept of a God or Supreme Being,

the article concluded that “intelligent design theory cannot survive scrutiny under the constitutional framework used by the Court to invalidate earlier creationism mandates.” (The prediction was of course confirmed in *Kitzmiller v Dover*.) A member of NCSE’s legal advisory committee, Gey received NCSE’s Friend of Darwin award in 2007.



Kevin Padian

We are pleased to introduce a new feature—“NCSE and me”—in which we interview our favorite people—members of NCSE’s board of directors, Supporters of NCSE, recipients of NCSE’s Friend of Darwin award, and the like—about their experiences with and thoughts about NCSE and its work defending the integrity of science education. Appropriately, our first interview is with the president of NCSE’s board of directors, Kevin Padian.

Kevin Padian has served as president of NCSE’s board of directors since 1995. Professor of Integrative Biology at the University of California, Berkeley, and Curator of Paleontology at the University of California Museum of Paleontology, he is the author of over 100 scientific articles. He has received numerous awards and academic honors and appointments, including the Carl Sagan Award for the Popularization of Science, and has served as a Distinguished Lecturer for Sigma Xi and as a Visiting Professor at the Collège de France, the Université de Paris, and the Muséum National d’Histoire Naturelle. In 2008 he was elected a Fellow of the American Association for the Advancement of Science and was named Western Evolutionary Biologist of the Year.

In 2005, Padian testified for the plaintiffs in *Kitzmiller v Dover*. In his decision, Judge John E Jones III wrote:

A series of arguments against evolutionary theory found in [*Of Pandas and People*] involve paleontology, which studies the life of the past and the fossil record. Plaintiffs’ expert Professor Padian was the only testifying expert witness with any expertise in paleontology. His testimony therefore remains un rebutted. Dr Padian’s demonstrative slides, prepared on the basis of peer-reviewing scientific literature, illustrate how *Pandas* systematically distorts and misrepresents established, important evolutionary principles.

The judge also noted that “Padian bluntly and effectively stated that in confusing students about science generally and evolution in particular, the disclaimer makes students ‘stupid.’”

How is your scientific work related to evolution? What are you working on now?

The work that we do in our lab is all about how “major changes” in evolution get started. This means the “big ideas” or “inventions” in the history of life—mostly vertebrates, in our case. We study things like how animals came out of the water onto land, how dinosaurs took over from other animals, how flight evolved in birds and other animals, how the growth and physiology of birds and mammals evolved, and why antelope evolved such elaborate headgear. In short, we study the

evolution of things that creationists claim either never happened or cannot be investigated by science.

Of your activities to promote the teaching of evolution, what do you consider to be the most important?

I like to publish popular articles on evolutionary topics that otherwise wouldn’t be explained to the general public. I particularly like to work with K–12 teachers, because I used to be one, and because they take new information right to the classroom. In the late 1980s, Elizabeth Stage (a former NCSE board member) and I did a lot of work on the *California K–12 Science Framework*, which became something of a model for other states. In it, our committee established a central organizing theory for each of the divisions of science (life, earth, and physical), and, of course, for biology the central theory was evolution.

But unquestionably the role that NCSE played in the Dover “intelligent design” (ID) trial was our high water mark. It was hugely gratifying to be involved in crafting the scientific strategy for the plaintiffs, to work with the talented people who gave so much time to the effort, and to be called as one of the expert witnesses. The victory was so one-sided that it left no question that ID was not science but crypto-religious fraud, and the Discovery Institute hacks, the main purveyors of ID, were revealed for what they are.

I think that all our members should understand that in writing his opinion, Judge Jones could not have been provided with the testimony and the information he needed to address these very complex questions in the depth that he did without the constant and thorough involvement of NCSE’s staff. He produced a courageous and incredibly nuanced decision that did not provide one sentence of comfort for the other side. No other organization could have filled that role—and the attorneys for the victorious plaintiffs will be the first to confirm that assertion.

How did you originally become involved with NCSE?

I was involved with NCSE before it was NCSE—when Stan Weinberg, the Iowa biology teacher who eventually founded NCSE, was coordinating a nationwide network called the Committees of Correspondence on Evolution. Stan circulated news, information, resources, and strategies about combating anti-evolutionists and their misrepresentations. When I came to California in 1980, I was soon involved with BACC-Science, the Bay Area Committee of Correspondence. In 1986, led by science writer Bill Bennetta, we roundly criticized K–12 science textbooks recommended for adoption by California, because they were just terrible in so many ways. There were no scientists involved at all in the textbook adoption process, and this was the rule, not the exception, in states across the country. We were instrumental, I think, in getting better science and

more scientific involvement in later books, although it's a perpetual struggle. Around this time Stan got a large grant from the Carnegie Foundation to set up what became the NCSE, and we were on our way.

Which of NCSE's accomplishments have you been the most proud of?

The most visible, probably, are the struggles in Dover, Kansas, Texas, and many other places that are responses to what the staff calls "flare-ups". Some are bigger than others. But through all the hundreds of flare-ups over the years, NCSE has established itself as the premier, and really the only, organization in the country that people turn to for information and help with issues about the creationism/evolution controversy, the nature of science, and so on. Everyone realizes the success that NCSE's executive director Eugenie Scott has had putting together and developing a great staff; it's the envy of the non-profit world!

Do you have any personal experiences with NCSE and its staff that you'd like to share?

Well, we've come a long way. In the early days, the board of directors used to meet at Jack Friedman's house in Syosset, Long Island, and we would crash all over their house. We were treated like family—an exceptionally weird family, maybe, but still. Jack and Betty would feed us until we burst, and when things got slow, we'd take turns at the pinball machine in the corner. But things never really got slow—not just because we had so much to do, but also because our sides would be splitting from the ridiculously funny stories about creationist foibles from the likes of Duane Gish and Henry Morris that Fred Edwards, Bob Schadewald, and John Cole would keep topping each

other with. Our staff was miniscule in those days, and our budget microscopic. But somehow it all got done.

How do you urge your friends, family, and colleagues to support NCSE?

Usually, bamboo splints under the fingernails works well, but failing that, I make them listen to old Wayne Newton records non-stop. Seriously, though, we have an amazing cross-section of members and donors. Most of our supporters may not realize that we don't get any federal money. The "e-word" is still too controversial in some congressional quarters, and the possibility of political reprisals on government agencies that might fund NCSE is not something we're comfortable with. So we have relied on private foundations and on the support of our members and some generous donors to keep us going.

Those donors cross the economic, political, and social spectra of American society; for them, the issue has many aspects: First Amendment rights, the integrity of science, and the quality of education for our children. It's interesting and perhaps counterintuitive that although we get tremendous support from the educational community, very few K–12 science teachers and educators are NCSE members—although our founder was a science teacher! This speaks to the great economic difficulties that face today's teachers, who struggle to get by and, in the face of decreasing funding for education, increasingly have to subsidize their own classroom supplies. It's also interesting to note that our basic membership fee—which we have just raised after more than a decade with no increases—does not really cover the costs of our operation. For that we have turned to grants and donations. So to all of our supporters, I would offer the thought that any gift you give us above the basic membership is a gift indeed! 🙏

WALTER FITCH DIES

The distinguished evolutionary biologist Walter M Fitch died on March 11, 2011, at the age of 81, according to The Panda's Thumb blog (2011 Mar 13). Born in San Diego, California, on May 21, 1929, Fitch attended the University of California, Berkeley, where he received his bachelor's degree in chemistry in 1953 and his PhD in comparative biochemistry in 1958. After a series of postdoctoral appointments, he joined the School of Medicine at the University of Wisconsin, Madison, where he was a professor from 1962 to 1986. He then returned to his native California, spending three years at the University of Southern California before becoming a professor of ecology and evolutionary biology at the University of California, Irvine, in 1989. A pioneer in

molecular evolution, Fitch was proudest of his work on phylogenetics, especially "Construction of phylogenetic trees" (coauthored with E Margoliash), published in *Science* in 1967. He was the first president of the Society for Molecular Biology and Evolution and the founding editor-in-chief of its journal *Molecular Biology and Evolution*. His honors included election to the American Academy of Arts and Sciences and the National Academy of Sciences.

A long-time member of NCSE, Fitch was active in efforts to promote the teaching of evolution; he was a member of the working group that produced *Evolution, Science, and Society: Evolutionary Biology and the National Research Agenda* in 1998, and contributed "Evolution is fact" to *Evolutionary Science and Society: Educating a New Generation* in 2005, for example. He

was also concerned with creationism, giving a plenary address on "Creation science: An oxymoron" to the Southern California Academy of Sciences in 2002; developing a class on creation and evolution at the University of California, Irvine, for students not majoring in biology; and even engaging in public debates with creationists on occasion (see, for example, the report in the *Daily Pilot* for May 15, 2006). At the time of his death, he was finishing a book on the creationism/evolution controversy, which NCSE Supporter Richard E Dickerson of the University of California, Los Angeles, describes as "the final word of a major player in the field"; *Logic, Rhetoric, and Science: And Why Creationism Fails at All Three* is expected to be published by the University of California Press in 2012.

from THE STAFF

A sampling of what we at NCSE headquarters have been doing to defend the teaching of evolution in the public schools—and beyond.

GLENN BRANCH writes: I'm not a lawyer and I don't play one on TV, but occasionally I'm asked about a legal issue relevant to the teaching of evolution. And I'll try to answer to the best of my ability, while making it clear that I'm not a lawyer and I'm not attempting to provide legal advice. (When necessary, I'll consult with NCSE's legal advisory committee, a group of attorneys who have provided invaluable assistance to us over the years.) I'll also keep in mind the lesson I learned early from my mother, a veteran reference librarian: the questions that people ask are not always the questions that they really want to ask! The results are sometimes interesting, as three examples will show.

After we posted a brief summary of a *New York Times* editorial expressing the view that Kentucky's decision to provide tax incentives for Ark Encounter, the proposed creationist theme park in northern Kentucky, "pushes the constitutional envelope," a gentleman from Massachusetts e-mailed with a correction. Quoting the First Amendment, he emphasized that "Congress shall make no law respecting an establishment of religion" and claimed that the state could do whatever it wanted as long as it was consistent with the state's constitution.

I replied, "I think that you're overlooking the doctrine of incorporation, whereby the protections of the Bill of Rights are understood to apply to the states. With reference to the Establishment Clause of the First Amendment, the central case is *Everson v Board of Education*, 330 US 1 (1947). So while there is certainly room to argue whether the tax incentives are indeed constitutional or not, there is not room to argue, under the current case law, that Kentucky is free to violate the Establishment Clause."

No answer from him ...

A gentleman from Oregon e-mailed to ask, "There are teachers at our school who say Darwin's *Origin of Species* cannot be used in a public school science classroom. Can you provide me with information on this subject?" And that was all he said—no indication of whether the question was provoked by a controversy over how evolution is taught there or just idle curiosity. I was worried, though: creationists sometimes like to argue that the passing references to religion in the *Origin* would debar it from use in the classroom.

Replying, I said that there was no case law, as far as I knew, about using the *Origin* in particular in the public school classrooms; that it would be unlikely that there would be a plausible case against the constitutionality of

doing so, given the current case law; and that whether I would recommend using the *Origin* would depend on the circumstances. I asked, of course, "Is this a live dispute, where someone is using, or considering using, the *Origin* in class and is encountering opposition, or just a matter of academic interest?"

Fortunately, while there was a proposal to use the *Origin* in the school, there wasn't any opposition to it: the teachers were just concerned about a potential problem.

And a gentleman from New York e-mailed to report, "My daughter recently was assigned to read *Darwin's Black Box* by her high school AP Biology teacher," who (the e-mail added) expressed his personal doubts about evolution to the class. He asked, "Has [the teacher] violated the law, and is there any way to keep him from doing this in the future?" By the way, the school was in a wealthy suburb of New York City—not, as the prevalent stereotype of creationism might suggest, the impoverished boondocks.

In my response, I summarized the decision in *Kitzmiller v Dover*, the 2005 case establishing the unconstitutionality of teaching "intelligent design" creationism. But I stressed, "your first step shouldn't be to find a lawyer to sue, or even to threaten to sue; rather, you should follow the chain of command." I recommended requesting a meeting with the principal, ideally in the company of other concerned parents, and provided a list of talking points and resources for their discussion.

The principal was shocked to hear that the teacher was espousing creationism, and vowed to take action immediately. No lawyers were required!

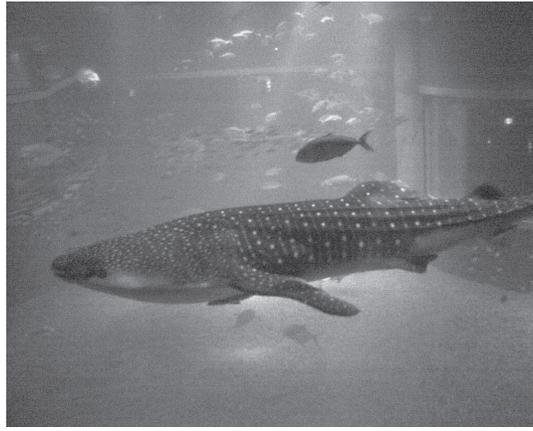
EUGENIE C SCOTT writes: There must not be very many Eugenies in science.

At least three or four times every year, someone addresses me as or confuses me with the famous ichthyologist Eugenie Clark—"the Shark Lady"—sometimes in quite amusing ways. We even have a section in our famous NCSE bathroom wall (where we put the "fun" correspondence, whether hate mail or the opposite) dedicated to Shark Lady sightings: mail intended for me or NCSE, but accidentally addressed to Eugenie Clark. There have even been a couple of times when I've been introduced as a speaker—as an expert on the creationism/evolution controversy, not on sharks—and the moderator has had a slip of the tongue and said, "So let's welcome Eugenie Clark."

Once at a conference, a woman came up to me, saying, "You won't remember this, but about ten years ago, my middle-school daughter called you up because she had to interview a scientist." (Well, yeah, which call from a student would that have been?) "She was just thrilled that you would talk to her and answer her questions. She got so *much* information from you, and it was all so clear and understandable." (I'm feeling pretty pleased with myself now.) "I'll have to tell her I met you—she



Eugenie Clark in 2010.
Photograph: David Shiffman.



Whale shark at the Osaka Aquarium, 2005.
Photograph: Bobak Ha'Eri. Wikimedia Commons.



Eugenie C. Scott in 2010.
Photograph: Jeanine Hill.

still remembers how gracious you were to spend a half hour of your busy time with a student. I never forgot how kind you were to a kid.” (I’m feeling very good here.)

“Do you still dive?”

Uh-oh. Another sighting of Eugenie Clark. So after all those nice things she said, how do I explain the situation without her feeling embarrassed? Well, I gently pointed out that our two names seem to confuse people, but although I’ve answered a lot of student calls like her daughter’s, she had spoken to the Shark Lady, not the Evolution Lady. Mom was a bit flustered, but since I obviously hadn’t taken offense, and laughed it off, so could she.

Incidents confusing the Evolution Lady with the Shark Lady abound. Teachers use a lot of National Geographic Society videos, and the charismatic Eugenie Clark, swimming fearlessly with such fearsome creatures as sharks, really gets students’ attention. And I’ve had my share of *NOVA* appearances, I’ve been in various other documentaries, and there’s a bunch of Youtube videos of me, so when at the National Association of Biology Teachers meeting, a teacher comes up and says, “I love

your videos—I use them every year in my class,” I have learned to feel around for a little more information, just in case this is another sighting of the other Eugenie. Sometimes it is, and sometimes it isn’t: teachers like marine biology, but they also need to deal with creationism, and I’m always gratified when videos or podcasts or anything else from NCSE can help students understand this issue.

In early June, the phone rang, and the caller asked for Eugenie Clark. I chuckled as I picked up the phone and explained that Eugenie Clark is the Shark Lady, but if he wanted to talk about creationism or evolution, then Eugenie Scott is the right person, and I’d be happy to chat. There was a pause.

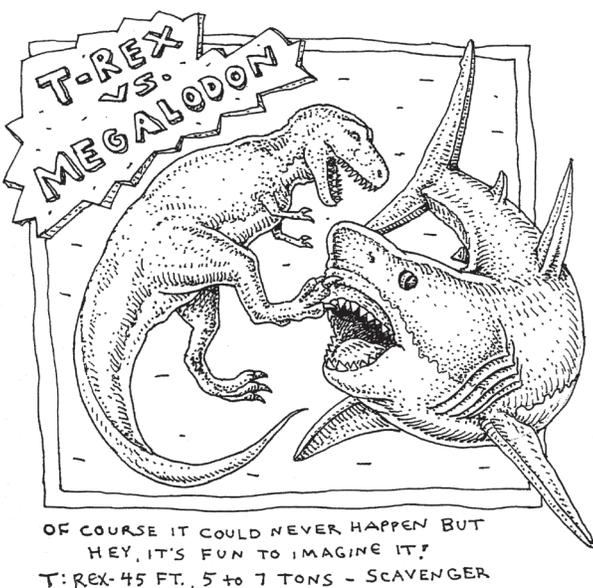
“I want the Shark Lady.”

Well, that’s a change. I explained that she wasn’t here, that she lived on the East Coast somewhere. “Do you have her phone number?” Well, no, but I’ll see if I can find it. I dug around a bit, gave him the number for Clark’s Mote Marine Research Institute, and he thanked me and hung up.

A bit later, I realized what might have precipitated the caller’s search. The June 2011 issue of *Smithsonian* magazine featured Clark’s research on whale sharks: gentle plankton-eating giants that can grow to over 45 feet long. In the article, she recalls how, when she was beginning to study whale sharks, she hitched a ride on a dorsal fin, and accompanied the huge fish as it went deeper, and deeper, and deeper still—until she realized she had better let go. (Whale sharks can dive over a mile deep!) The article related:

Clark, who is 89 and continues to do research, recalls the ride with impish delight. At one point, as we sit in her Florida office, she casually mentions a recent dive, then catches herself. “Don’t mention how deep I went,” she whispers. “I’m not supposed to do that anymore.” Then she explodes in laughter.

I don’t think I mind being confused with someone like that. ■



The Defeat of Flood Geology by Flood Geology

There is no trace of the Genesis Flood in the geologic record

Phil Senter

The discipline that calls itself “Flood geology” is the young-earth creationist discipline in which researchers seek to reconcile geological data with the biblical account of a worldwide flood as recorded in Genesis. Within that paradigm, the Flood of Noah is considered to have happened as described in chapters 7 and 8 of Genesis. The account describes a flooding event in which water rose for 40 days and receded for the rest of a single year, during which recession the planet was completely submerged for 150 days.

In 1961 Whitcomb and Morris published *The Genesis Flood* and presented the hypothesis that the Flood was responsible for the deposition of all Phanerozoic sedimentary strata stratigraphically below the Quaternary. They also questioned the validity of the stratigraphic principles upon which the geologic column—the sequence of time divisions to which geological deposits are assigned—is based. Their publication was not the first to espouse these views but its popularity precipitated a deluge of Flood-related research by young-earth creationists in an attempt to find support for the book’s conclusions. Ironically, that outpouring of research has ultimately led to the falsification of most of the book’s geological interpretations.

Through its history Flood geology has had four main foci:

- (1) searches for geological evidence of ancient catastrophe or high-energy water activity;
- (2) descriptions of hypotheses of geologic causes of the Flood;
- (3) attempts to reconcile the biblical description of the Flood with contradictory physical evidence such as appearances of long passages of time; and
- (4) attempts to locate or narrow down the pre-Flood/Flood boundary or Flood/post-Flood boundary in the geologic record.

However, Flood geologists disagree as to which portion of the geologic column represents the year of the Flood. Several Flood geologists have presented geologically sound reasons why strata assigned to specific parts of the geologic column *cannot* have been deposited during the Flood year or at least during the part of it when the entire planet was allegedly submerged. In fact, a review of such studies by the Flood geologists themselves shows that, taken as a whole body of literature, Flood geologists

have carefully eliminated the *entire* geologic column as preserving any evidence of a worldwide Flood.

The research rules out, one after the other, particular sections of the geologic column based on the stratigraphic distribution of desiccation cracks, raindrop impressions, continental basalts, *in situ* plant fossils, glacial erosion, fossil charcoal, eolian deposits, paleosols, dinosaur nests and eggs, fossil trackways, fossil communities that grew for generations, stromatolites, and lacustrine and fluvial deposits. All of these features represent deposits that could not have been made or preserved during the time when the entire earth was supposedly under water.

If the superposition of sediments that formed the geological column is accepted, then Flood geologists have ironically demonstrated that there is no sedimentological evidence at all for a worldwide Flood. The very camp that has long sought sedimentological evidence for the Genesis Flood, by applying sound principles of sedimentology, has ironically confirmed that there is no such evidence in the geologic record.

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Paul Kammerer | 1880–1926

Randy Moore



Paul Kammerer studied music at the Vienna Academy, but eventually graduated with a degree in biology. His area was Lamarckian inheritance, and he claimed that many genetic traits had been suppressed by animals' lifestyles. Kammerer claimed many successes, and biologists from throughout Europe visited his lab.

Kammerer's most famous claim involved midwife toads (*Alytes obstetricians*). Most toads mate in water and have black, scaly nuptial pads on their hindlimbs that help them cling to each other while they mate in their slippery environment. However, midwife toads mate on land and lack these pads. When Kammerer forced midwife toads to mate in water, he reported in 1919 that they laid fewer eggs and developed the black pads. Kammerer's apparent confirmation of Lamarckian inheritance made front-page news throughout the world. Because his claims were consistent with Lysenko's Lamarckian version of genetics, Kammerer accepted a job offer in Moscow.

Originally hailed as a successor to Charles Darwin, his star began to fade when other biologists could not replicate his work. The situation was further complicated by the loss of his original research during World War I. Subsequent examination of one of Kammerer's preserved toads showed that the black pads—that is, the “acquired trait” that had allegedly been inherited—were nothing more than black ink that had been injected into the toad's foot. Kammerer's reputation was destroyed.

Kammerer claimed to be astonished by these accusations, and denied any wrongdoing. However, six weeks later—on September 23, 1926, just before he was to begin work in Moscow—Kammerer committed suicide. While on a walk in the Theresien Hills, he shot himself in the head.

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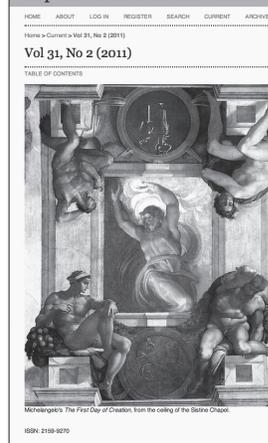


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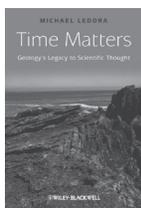
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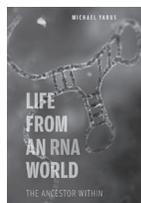
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Time Matters by Michael Leddra (Oxford: Wiley-Blackwell, 2010; 269 pages). *Time Matters* describes the development of, and the controversies surrounding, the concept of geologic time, with a focus on events in Britain. While appreciating “Leddra’s willingness to put himself in the minds of people long ago and his efforts to convey that attitude to the reader” and the copious illustrations in his book, reviewer **Steven Dutch** regards *Time Matters* as “severely compromised by almost exclusive reliance on secondary sources, some problems of organization, and a few startling and egregious errors.” A chapter is devoted to creationism, but only three pages are allotted to creationism in the United States, mostly on the Scopes trial.



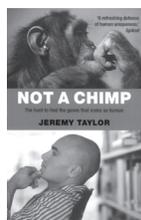
Summary of *RNCSE* 2011;31(3):3.1–3.3; the full text is available from: reports.ncse.com/index.php/rncse/article/view/36/38

Life from an RNA World: The Ancestor Within by Michael Yarus (Cambridge [MA]: Harvard University Press, 2010; 208 pages). “Yarus takes on an ambitious task,” reviewer **Arthur G Hunt** explains, “to summarize the excitement and curiosity of RNA research for a broad audience that includes the informed lay public as well as life scientists. On top of this, he is faced with the unenviable but inescapable task of explaining some of the fastest-moving and -changing areas in science. But Yarus succeeds in explaining the remarkable nature of RNA, and how this singular molecule ties together the present and the very distant past.” A chapter addressing creationist objections to the RNA world and evolution in general is interesting but not as informative as treatments elsewhere.



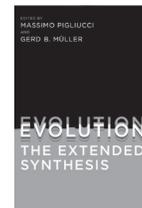
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Not a Chimp: The Hunt to Find the Genes that Make Us Human by Jeremy Taylor (New York: Oxford University Press, 2009; 256 pages). Reviewer **Jonathan Marks** summarizes, “Jeremy Taylor argues that (1) we are genomically more different than the 98–99% datum has indicated; (2) we are cognitively and behaviorally more different than the inhabitants of the post-Goodall world have been led to believe; and (3) the elision of human and chimpanzee, as animal-rights advocates have promoted, is unwarranted. He documents all three points admirably.” A weakness of Taylor’s argument, Marks adds, is that it fails to address the question “Why should we suppose that genetic relationships are ‘realer’ or just ‘more important’ than other kinds of relationships?” and thus “takes the privileged position of genetics for granted.”



Summary of *RNCSE* 2011;31(3):5.1–5.3; the full text is available from: reports.ncse.com/index.php/rncse/article/view/38/30

Evolution: The Extended Synthesis, edited by Massimo Pigliucci and Gerd Müller (Cambridge [MA]: MIT Press, 2010; 504 pages). According to reviewer **Anya Plutynski**, “This engaging volume surveys novel empirical and theoretical advances in biology since the Modern Synthesis, some of which add to, and some challenge, its central tenets.” The project is to extend the synthesis to include patterns and processes often considered to be at the margins of the theory, such as epigenetic inheritance, niche inheritance, facilitated variations, plasticity, and evolvability; the review focuses on the last two of these. Plutynski concludes, “Anyone interested in becoming aware of both what we know now and what theoretical advances may come from this new data for evolutionary theory should take a look through Pigliucci and Müller’s superb collection.”



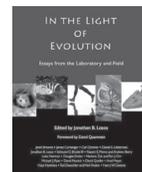
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Written in Stone: Evolution, the Fossil Record, and Our Place in Nature by Brian Switek (New York: Bellevue Literary Press, 2010; 320 pages). Reviewer **Pat Shipman** regards the individual chapters of *Written in Stone* as good, particularly the opening chapter on the overselling of *Darwinius masillae*: “For a student wanting to brush up quickly on, say, human or horse evolution, this book will be a treasure trove.” But she laments the lack of any overarching structure or theme to unify them. “The result is a choppy book, good in parts, but without any overall insight into our ideas of missing links and our treatment of fossils. Those hoping to learn about exciting discoveries and advances in paleontological techniques will, I fear, need to look elsewhere.”



Summary of *RNCSE* 2011;31(3):7.1–7.2; the full text is available from: reports.ncse.com/index.php/rncse/article/view/41/34

In the Light of Evolution: Essays from the Laboratory and Field, edited by Jonathan Losos (Greenwood Village [CO]: Roberts and Company, 2011; 330 pages). Reviewer **Marvalee H Wake** describes *In the Light of Evolution* as “a wonderfully rich and diverse collection of essays that illustrate the way evolutionary biologists *think and work*—how they develop questions and hypotheses about evolution and how it occurs, how they test their hypotheses, why both lab and field work are important to resolution of many questions, and why the answers usually open new questions—and why that is useful for the progress of science. The authors of the essays present a wide range of exploration of several major areas of evolutionary biology, and of research on a great diversity of organisms.”



Summary of *RNCSE* 2011;31(3):8.1–8.4; the full text is available from: reports.ncse.com/index.php/rncse/article/view/43/35

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