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# CAREER PROFILES Options and Insights

BILLY SPITZER | Vice President, Programs, Exhibits, and Planning, New England Aquarium  
(bspitzer@neaq.org)

## Degree: When, where, what, and what in?

I did my undergrad work at Harvard University, majoring in physics and chemistry. After a year working as a whitewater raft guide and kayaking instructor in the Smoky Mountains, I entered the MIT/WHOI Joint Program in Oceanography. I received my PhD in marine chemistry in 1989. My thesis involved using seasonal variations in oxygen levels as a measure for levels of primary production in the North Atlantic—measuring noble gas levels to control for nonbiological effects, and developing a computer model of the physics of the upper ocean to infer the amount of biological production from the measurements. I really enjoyed the research, which was pretty interdisciplinary (chemistry, biology, and physics) and varied (development of lab techniques, field work in Bermuda, data analysis, and computer modeling). And I really loved the intellectual culture of Woods Hole, where you can learn an enormous amount from interacting with colleagues and going to scientific talks on a wide range of subjects.

## Did you stay in academia at all, and if so, for how long?

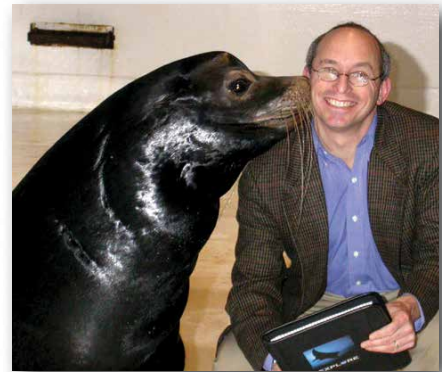
Although I had wanted to do scientific research for a long time, I was also always interested in education. So, after I finished my PhD I decided to go from science to science education, and started working in the nonprofit sector.

## How did you go about searching for a job outside of the university setting?

During the last couple of years of my graduate work, I did a great deal of career research and exploration. I used my undergrad career office, as well as the MIT career office, and I talked to everyone I could. I thought about a whole range of career options, including higher education, K–12 teaching, environmental consulting, working at a science museum, and others. In those days, there was not as much support for science careers outside of academia. I made extensive use of *What Color is Your Parachute*, a great book on career exploration that I continue to use and recommend to other people all the time. It helps you figure out what kinds of things you like to do (rather than just focusing on finding a specific job) and take charge of the process using informational interviews to build your network and advance your search (rather than just looking at job advertisements). I have used informational interviews to get every job I've had.

## Is this the only job (post-academia) that you've had? If not, what else did you do?

After grad school, I spent seven years at TERC, an educational research and development firm in Cambridge, MA. I used my science background to develop educational materials and training for teachers, learned about how science education works, and



developed skills in project management and grant writing. My work at TERC focused mostly on creating professional development programs for teachers and on creating learning opportunities outside schools in museums and science centers, supported by effective applications of technology. For several years, I directed the National Science Foundation-funded LabNet project, an electronic community that served over 1,500 science teachers with forums for professional discussion, resource sharing, and collaborative projects.

## What is your current job? What path did you take to get there?

My current position is Vice President for Programs, Exhibits, and Planning at the New England Aquarium in Boston, MA. I am responsible for development of mission-driven exhibits and programs, including oversight of exhibit design, visitor experience, volunteer and education programs, and strategic planning for the organization. We are working to redefine what it means to

be an aquarium: combining education, entertainment, and action to address the most challenging problems facing the ocean. Through a wide variety of educational programs and conservation initiatives, we strive to make a lasting impact globally. We work to develop the next generation of ocean stewards through a variety of programs that combine learning, service, and stewardship, while focusing on key issues such as climate change and habitat protection. These efforts include immersive experiential learning and citizen science opportunities for youth, workplace learning and career development for teens, volunteer service and stewardship programs for adults, and interpretation and communication training for staff. All involve a range of collaborations and capacity building initiatives with other organizations in Boston, New England, and across the United States.

When I was at TERC, I became interested in learning opportunities outside of school, where it seemed possible to provide support for really effective learning, free from all the constraints and requirements of a classroom. I did several projects that involved science museums, and realized that this was a fun and interesting field. When I heard that an oceanographer had been recently hired to run the New England Aquarium, I decided it would make sense to talk to him. That informational interview ultimately led to being hired as Director of Education. This job entailed responsibility for overall leadership, development, delivery, and evaluation of education programs—all of which reach more than one million Aquarium visitors, and thousands more through outreach to schools, youth, and community organizations. I was later promoted to my current position.

### What did your oceanographic education (or academic career) give you that is useful in your current job?

My time in Woods Hole helped me to learn a lot of science, but even more importantly, to ask good questions. I still use that skill today whenever we are facing an interesting challenge, as well as using the analytical and research skills I learned to solve problems. And it really helps to understand the nature and process of science when you are in the business of science education. I also continue to collaborate with many scientific colleagues at WHOI and elsewhere.

### Is the job satisfying? What aspects of the job do you like best/least?

I love my job and feel fortunate to be able to do the work I do. I like the varied challenges, the need to work in teams across different disciplines, the opportunities to collaborate with other people and organizations around the country, and the visible impact of the work.

Recently, I watched a documentary on the Apollo 8 mission. The astronauts talked about how it felt to orbit Earth, to see it for the first time as a blue planet—because that is what Earth is. I was very moved to hear these hardboiled pilots and engineers in tears talking about how beautiful Earth looked, and how they missed it when they headed off toward the moon. When you step back and look at the big picture, you realize that it's the only Earth we've got and we need to take good care of it.

How do we help more people see the connections between themselves and the planet we need to protect? At the New England Aquarium, we have been working on how to do this, using the power of aquariums, zoos, and nature centers to inspire, educate, and engage the public. There used to be a focus on

finding the little things we can do to make a difference. But given the scope of the problems we face, we need to do big things and make a big difference. We need to work together to realize our potential as citizens, not just consumers, to change how we function as a society. For example, in Boston we have made great improvements in public transportation, a new greenway, bike sharing, bike lanes, ferries, and water taxis, all of which help to create a greener and more livable city.

At the Aquarium, we have been working to create tools and training to help environmental educators across the country learn how to communicate about issues such as climate change in a way that provokes thinking and discussion. We are building a national learning and support network that will help to transform the culture of communication at more than 150 informal science education centers over the next several years. We believe that we can train enough voices in proven communication techniques to change the national discourse around climate change to be productive, creative, and solutions focused. It is really satisfying to know that this work will have a big impact.

### Do you have any recommendations for new grads looking for jobs?

I think it's really important to take the time to think about what you find inspiring and meaningful, and then use that as the basis for a job search. Make effective use of networking and informational interviewing to maximize your opportunities. Don't be afraid to explore new and nontraditional options—a career path does not need to be linear. Finally, keep learning and reflecting on your experiences over time—it's never too late to change direction.

BRENDA EKWURZEL | Senior Climate Scientist, Union of Concerned Scientists  
(bekwurzel@ucsusa.org)

**Degree: When, where, what, and what in?**

I received my PhD from Lamont-Doherty Earth Observatory of Columbia University in 1998. My research involved measuring isotope geochemical tracers in the ocean to unravel sea ice melting and growth rates as distinguished from other water mass sources that comprise the Arctic Ocean. This research, combined with a heavy dose of paleoclimate studies while at Lamont, gave me a global view of climate science that I draw on every day in my current work.

**Did you stay in academia at all, and if so, for how long?**

I enjoyed 15 years in academia, in graduate school and as a faculty member. One day, a senior faculty colleague encouraged me to attend an American Meteorological Society (AMS) summer colloquium on science and policy. It was an eye-opening experience, and it eventually led me to my current job, where I focus on policy-relevant climate research, helping policymakers and the public understand and respond to the risks of climate change and assisting other scientists in communicating more effectively on climate issues.

**How did you go about searching for a job outside of the university setting?**

I was not actively searching for another job, but after the AMS event, I saw the Union of Concerned Scientists (UCS) was expanding its work on climate change. It was immediately appealing, and I knew that policymakers were all too often ignoring the risks of climate

change that scientists were uncovering. It was an opportunity to help represent that research to policymakers.

**Is this the only job (post-academia) that you've had? If not, what else did you do?**

Between my MS and PhD, I worked at the Connecticut Department of Environmental Protection. While there, I conducted field sampling to identify which potential party was responsible for a fossil fuel spill that was reported in drinking water wells nearby. It was a fun challenge because there often were several gas stations at the same intersection. I enforced regulations and ensured that the scientific approaches taken by responsible parties for environmental impact and cleanup studies were sound. That experience serves as a reminder that the policies I work on today have very real effects for people, businesses, and the environment down the road.

**What is your current job? What path did you take to get there?**

I'm a senior scientist and analytic lead for climate work in UCS's Climate and Energy Program. Right now, my day-to-day work involves scientific research, including new modeling to study the degree to which the world's major fossil fuel producers have contributed to specific effects of climate change, such as global average surface temperature. I also supervise scientists to help them grow as researchers in the policy and science space. Their work includes research into frequent coastal inundation along the US East and Gulf Coasts. Another



research endeavor brings in citizen science through the Weather at Home project, which uses spare computer processing power worldwide to serve as a “super computer” for conducting climate modeling of extreme heat events in the western United States. Investigations also include changing forest ecosystems in the Rocky Mountain West. All of these endeavors are relevant for local leaders and policymakers right now because many communities are struggling to adapt and pay for damage related to climate change. I also help our policy and media staff create and vet communication to the public about climate research. There is a lot of vetting at any organization like ours, and it is important to have a scientific review of everything we do. That's a very core job function and it is challenging and stimulating to think through the best way to accurately communicate science in a way that can be heard by the audience at hand.

I've been at UCS for nine years and have learned so much on the job. When I started, I still had the mentality that a lot of scientists have when it comes to

the interface between science and policy: if I can just get them to understand the research, they'll figure out what to do about it. But there are so many barriers for policymakers when it comes to really understanding the science. Those barriers can be ideological. In other cases, it is a lack of time and attention because they and their staff have so many other demands to meet. But we know that science needs to be at the table because it gives policymakers a clearer sense of their options. That's why it is important for scientists to highlight the aspects of our work that are the most relevant for policymakers, both directly and to their constituents. So, yes, it is important for policymakers to understand how the scientific process works and how climate change works, but they are not going to get there unless we first illustrate why they should care: the sea is rising on your coasts, the wildfire season is getting longer where your constituents live, the snowpack is shrinking near ski resorts that provide a lot of valuable economic activity to your district.

### What did your oceanographic education (or academic career) give you that is useful in your current job?

The first-hand experience I have had on Arctic icebreakers was valuable scientifically, plus it has been a great way to talk with the public and policymakers about the science. It is one thing to tell someone you are a scientist, but when you tell them about research you performed in a remote, hostile location, including two expeditions to the North Pole, they are much more interested in what you have to say and much more willing to listen to the science you want to convey. I advise scientists to use the most ancient communications tool

for human connection, which is telling our own stories of discovery in the field, the lab, or our "Eureka!" moments looking at a computer screen with new research results. We can enjoy sharing what we've discovered.

### Is the job satisfying? What aspects of the job do you like best/least?

There have been some really exciting, unexpected moments. The most out-there one for me was being interviewed on *The Colbert Report*. He's considered one of the most difficult interviews on television because he is very funny and the type of satire he uses can be really challenging for guests. But my colleagues helped me prepare and it wound up going well and being a lot of fun.

The most frustrating thing is not being able to talk very often about what is happening in the ocean. It's fascinating for me personally because it is a topic I have studied for years, including nearly a year at sea on different science research ships. But people are ultimately land-lovers, so policymakers and journalists focus on what is happening on land, which is just part of the story scientifically.

Working in policymaking also requires a long-term view. Policy changes very slowly, so the successes come along infrequently, but they can be huge. When I think about fuel economy laws and carbon rules for power plants that have come along in the past few years, it is easy to forget that those policies are only coming into place because of more than a decade's worth of work at our organization and by other groups that have pushed for science-based policies.

It is also very gratifying to be able to help other scientists, especially when they come under scrutiny from

politicians or advocacy groups. I am lucky in that I work at a place where I have seasoned policy and communications colleagues, but most scientists are on their own when they are criticized in the public or by the press. We have had a lot of success helping scientists defend themselves against these sorts of attacks.

At the same time, the communications advice and workshops we have done with scientists really pay dividends. A lot of people we've worked with over the years have become incredibly effective communicators and representatives of the scientific community in their own right, so it is great to see them out there and to know that we helped.

### Do you have any recommendations for new grads looking for jobs?

Be open! Twenty years ago, there were much clearer tracks for a scientific career. Obviously, funding is a huge problem for the scientific community right now, but that means we will need to innovate and find other ways to do and apply research. Opportunities in new fields have proliferated, whether it is in Silicon Valley or in Washington.

If you had told me twelve years ago that I'd ever be in a witness chair on Capitol Hill or be interviewed on Comedy Central, I wouldn't have believed you. But I have been open to these opportunities to be in the public eye while also holding onto my identity as a scientist and continuing to do scientific research—so, in a lot of ways, it's been the best of both worlds.



ELLEN LETTVIN | Vice President for Science and Education, Pacific Science Center,  
on assignment as Noyce Fellow, Department of Education (elettvin@pacsci.org)

**Degree: When, where, what, and what in?**

I earned a PhD jointly awarded by the Computer Science and Electrical Engineering and the Atmospheric, Oceanic, and Space Sciences Departments at the University of Michigan. I also did my undergraduate work at Michigan.

**Did you stay in academia at all, and if so, for how long?**

I worked for 11 years in academia, first as a postdoctoral research fellow, subsequently as an oceanographer, and later as a senior oceanographer and assistant director at the University of Washington Applied Physics Laboratory.

**How did you go about searching for a job outside of the university setting?**

A recruitment firm contacted me.

**Is this the only job (post-academia) that you've had? If not, what else did you do?**

Yes.

**What is your current job? What path did you take to get there?**

For the past five years I have been Vice President for Science and Education at Pacific Science Center in Seattle, Washington. Starting March 10, I am on assignment at the US Department of Education as the inaugural Robert Noyce Fellow in Informal STEM Learning (STEM = science, technology, engineering, math). The path I took to get to the job of Vice President for Science and Education is somewhat circuitous.

While working as an oceanographer at the Applied Physics Laboratory, I came to feel that, as a member of the research community, I had a responsibility to share the importance of and my enthusiasm for my work. I also felt that the Applied Physics Laboratory would benefit from elevating its profile in the community (defining “community” to consist of the University and business communities as well as the public in the Puget Sound region). To further these goals (both personal and institutional), I wrote a proposal to the director of the laboratory identifying several specific pathways that the lab could take to achieve broader awareness in the community, and defining the role I sought to play in bringing this about. He was supportive of the idea and was willing to devote some support to the project, so for four years I divided my time between conducting research and serving as Assistant Director for Education and Outreach at the lab. One of the organizations with which I collaborated to help achieve broad outreach with the public was Pacific Science Center—the local science museum in Seattle. As part of some strategic planning, the Science Center reorganized and created the position of Vice President for Science and Education. A recruitment firm reached out to me to see if I might be interested in the position. After learning more about the position and the institution, I decided to apply, and was lucky enough to be offered the job. I am now about to embark on a two-year fellowship at the US Department of Education, focusing on integrating informal STEM



learning in a variety of educational programs, with an emphasis on the out-of-school setting.

**What did your oceanographic education (or academic career) give you that is useful in your current job?**

First, it provided me with content knowledge and expertise that I could bring to the development of Science Center public education programs focused on climate change and ocean acidification. Second, it provided me with strong quantitative and analytical skills that support decision making in many areas of endeavor. Third, it provided me with communication skills (written, verbal) that have supported all aspects of my work. Lastly, having an advanced degree outside of an academic setting can command a baseline of respect.

**Is the job satisfying? What aspects of the job do you like best/least?**

Yes, the job is satisfying. Engaging and educating the public about the STEM disciplines, and particularly about climate change and ocean acidification, is very important. It is very rewarding to

# CALL FOR CAREER PROFILES

## Who would you profile?

be able to envision a project or program focused on public education and engagement, to oversee its implementation, and to see (and measure) its impact. I like best the people with whom I work—they are passionate about their work and care deeply about public education. It is humbling to work with people who are devoted to this cause. The aspect I like least is the budget process. In a nonprofit organization, there is rarely enough money. The most frustrating part is that the programs that are the most important, where the need is greatest—educating and engaging underserved populations—relies most heavily on external support, and is therefore most vulnerable to funding cuts.

### Do you have any recommendations for new grads looking for jobs?

Think about what your best skills and special talents are. If you focus on those areas, you are most likely to find (or create) opportunities for personal excellence. The pathways that are well trodden by others are less likely to bear fruit because there are so many others pursuing that same avenue. Also, keep an open mind—on several occasions I found that the path I sought to pursue did not lead to where I intended—but did lead to something rewarding.

*Oceanography's* "career profiles" of marine scientists are intended to provide information to ocean sciences graduate students about career options other than teaching and/or research in a university setting.

*Oceanography* needs your help to make this careers column a success. Finding the right subjects is a challenging task, and *Oceanography* needs suggestions about who to profile. Please consult your roots, your Rolodex, or your phone's contacts folder and provide *Oceanography* with information about people you know whose career paths might inspire and inform the next generation. Self-nominations are accepted.

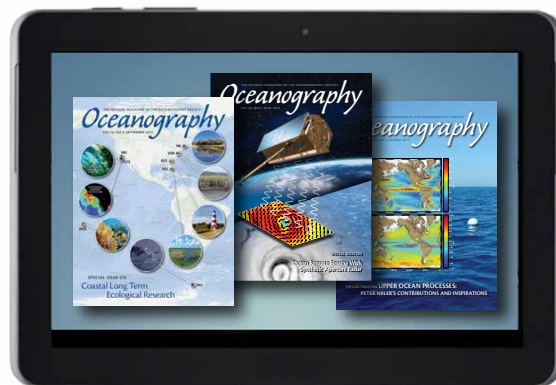
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## Oceanography

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