CAREER PROFILES Options and Insights

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

I earned a bachelor's degree in ecology and evolutionary biology (EEB) from the University of Michigan (2008) and a doctorate in marine science from the University of South Carolina (2017). Being from the Detroit metro area with family engineers in the car industry, I started out on a mechanical engineering track almost by default, but it did not suit my personality. I transitioned to EEB in my final two undergraduate years and worked in John Lehman's lab assessing the water quality response to an ordinance banning the local sale of specific phosphorus-containing fertilizers. This experience led to an opportunity at the Bermuda Institute of Ocean Sciences (BIOS) where I worked for four years as an oceanographic research technician in Mike Lomas' Phytoplankton Ecology Lab and with the Bermuda Atlantic Time-series Study (BATS).

These four years at BIOS were foundational. I was given responsibilities and was able to build familiarity with a suite of methodologies and equipment. I engaged with a wide range of people, particularly international students, and explored through casual conversations how BIOS operated. All these positive experiences steered me to further invest in a research career, which led to an opportunity at the University of South Carolina.

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

I anticipated applying for a postdoctoral position up until the final year or so of my graduate career. I was not enthralled with the trajectory of an academic career and was concerned with higher education's impact on the supply and demand of the STEM workforce (i.e., degrees produced vs. relevant opportunities available). So, it wasn't necessarily that I had a burning passion for something else like policy, but the practicality of it all. I had these questions while at the same time enjoying and excelling at the research process and having two amazing advisors, Claudia Benitez-Nelson and Tammi Richardson, and supportive collaborations.

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

The best opportunity I found was the Knauss Fellowship in Washington, DC. I worked in the Policy, Planning, and Evaluation office within NOAA's Office of Oceanic and Atmospheric Research (OAR). I quickly learned that OAR was going through an organizational restructuring, which was personally trying. However, it provided a unique opportunity to build my own portfolio of responsibilities, which I centered around learning how the government works through such activities as supporting our budget formulation office, conducting programmatic analysis with the National Sea Grant College Program (Sea Grant), facilitating a strategic planning process for the Weather Program Office, staffing the OAR front office for annual meetings and programmatic evaluations, and briefly acting as Special Assistant for NOAA Research's Deputy Assistant Administrator.

During the fellowship, I still entertained the idea of returning to academia. I participated in National Science Foundation/NOAA Dissertations Symposium in Chemical Oceanography (DISCO) and decided if I could get excited about new research questions, I'd pursue it more

seriously. Though I am immensely grateful for that program, it did solidify that academia was not the best route for me. So, I explored the possibility of management consulting and landed an opportunity to work on harmful algal bloom ecological forecasting at NOAA. Instead, however, I was fortunate to receive an Oak Ridge Institute for Science and Education (ORISE) Fellowship with the Environmental Protection Agency (EPA) Headquarters Office of Water, working in the Water Quality Standards program (in DC). I wanted to understand how my technical background (phosphorus biogeochemistry) applied to regulations (Clean Water Act) and was curious to experience working in another federal agency.

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

The ORISE fellowship lasted only six months, because I was offered a federal position with NOAA Sea Grant. I was in this position for a little over three years and grew a lot. I had maintained a strong curiosity regarding how scientific organizations operate; during my Knauss Fellowship I heard a lot about data-driven

decision-making and was interested to see if it could be more than just jargon. I also wanted to expand my employability, so I started approaching my career as a generalist. At Sea Grant, my primary role was product manager for programmatic business data and software. I learned design principles and customer service and was tasked with redesigning our input process and the usability of programmatic business data. Applications of these data are statutorily required (reporting to Congress) and provide strategic awareness—where is the organization investing resources, is this appropriate with its goals, and is it achieving its desired impacts? These responsibilities allowed me to work up some proficiency in SQL and sharpened my project management abilities. I was also responsible for managing our interagency agreements and several funding opportunities/grant awards.

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

For the past five months, I have been working for US EPA's Chesapeake Bay Program (CBP), which provides the opportunity to blend my technical background and federal experience. During my Knauss Fellowship, I had cold-emailed the individual who hired me because I found her responsibilities so interesting. The email didn't get answered, but it does show there can be a winding path you can't foresee. Working within CBP's Partnership and Accountability branch, I'm involved with the program's Indicator process, a framework used to technically assess progress made on each of the outcomes defined in the 2014 Chesapeake Bay Watershed Agreement. I manage a few grant awards and am involved with CBP's directive to assess what the agreement looks like after 2025, a major time-based milestone for several of the agreement's outcomes. There are times I wish for a more specialized position, but overall, I find satisfaction in being valuable for a range of projects, which was the aim of my post-academic career strategy.

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

The job is satisfying. The throughline from my interest in aquatic ecology to organizational operations and implementation is seeking to understand how systems work, where challenges exist, and then utilizing a design process to address them (research question, policy, business rule, software). I'm most content when I get to focus on those aspects, and it's a bonus that my technical background in estuarine phosphorus biogeochemistry is an excellent fit with the CBP mission. However, the job is still work, and I think that's important to remember when planning your career.

The least favorite part of this job is the day-to-day churn of bureaucracy. I've somewhat oriented my career to address its inherent inefficiencies, and so the biggest disappointment is that despite the shaking of fists at bureaucracy, addressing it is never taken as seriously as it could be. This is mostly due to decades of congressional dysfunction and administrations that try to address an exhaustive list of campaign promises and societal issues in a limited timeframe. A less discussed matter is that management and leadership (i.e., decision-makers) are usually hired due to their strong programmatic background, yet they can struggle to engage with understanding the gears and mechanics of organizations. For all the reasons above, few resources are left devoted to addressing architectural issues, which is why bureaucracy can endure so resiliently.

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

Critical thinking, data analysis, teaching, technical writing, and public speaking. Then it becomes more specific to professional experiences. The planning and oversight as a seagoing oceanographic tech were foundational to project management and general professional development. During my PhD, I spent many, many hours developing and assessing

methodologies, and that experience emphasizes not what we do from a programmatic perspective but rather how we go about doing things to ensure quality. Your science is only good as your data, which is only as good as your methodology and how you execute it. And I believe that principle translates to all areas of work.

Is there any course or other training you would have liked to have had as part of your graduate education to meet the demands of the job market?

There should be emphasis on gaining technical skills that are broadly needed in most Earth science-adjacent industries: data analysis and statistics, coding (e.g., R or Python), and spatial analyses and tools (e.g., GIS) will likely stay relevant through time. Graduate schools should provide structured training for scientists to meet with end users, beyond general outreach. I would have appreciated professional engagement with state environmental programs, as I may not have needed a special fellowship to secure this career.

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

Audit classes if you can. Environmental economics was not a core component of my degree's curriculum, but I was glad to have been introduced to those concepts. Explore jobs being released—what are they looking for? Do you have relevant skills, and does the position interest you? Begin with an expansive search and then focus. From there, seek out informational interviews—I had success with "cold" emails because I was explicit in why I was contacting them. Once you receive an opportunity, you will open more doors for yourself if you're enjoyable to work with. This doesn't mean just agreeing with everything but being thoughtful and respectful of your colleagues and the work at hand.