Careers in science diplomacy and international policy

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A small group huddled together in the back of a Paris café. I sat with representatives from Norway, Mexico, the US, and several members of the Women's Major Group to the United Nations (UN) Framework Convention on Climate Change. One term was being hotly contested as it relates to climate adaptation strategies: "gender equality". Several days earlier, during the opening of negotiations for the 21st meeting of the Conference of the Parties (COP) on Climate Change in Paris in December 2015, a 16-year-old girl read her island country's passionate statement about their future under rising sea levels. When the new global agreement was finally signed, our tiny bit of language about gender equality remained. Despite the decision by the Trump administration to withdraw the US from the Paris Agreement 2 years later, the Agreement has only grown in strength and is redefining the global climate policy landscape. My experience at this meeting is just one example of the many opportunities for ecologists to engage in international policy as a career path. – *GB*

The American Association for the Advancement of Science (AAAS) Science & Technology Policy Fellowship provides one possible pathway to a career-changing immersion into the world of diplomacy and science policy. Through my AAAS Fellowship with the US Geological Survey, I first grasped the power of scientific collaboration to build bridges between countries, even when traditional diplomatic efforts have failed. Although my fellowship work was primarily domestic, I also led the Fellows' Science Diplomacy Affinity Group, which connected me to the science diplomacy world. Whether interacting with ambassadors on scientific collaborations in marine ecology or briefing political appointees on wildlife trafficking and transboundary natural resource management, I found that the AAAS Fellowship provided a unique window to the ways in which ecology, diplomacy, and policy may intersect. – *TMS*

Figure 1. *Responding to the global decline of pollinators will require skilled ecological diplomats working with international partners, such as in the current collaboration between Colorado State University and University of Derby, UK, which uses students and citizen scientists to investigate pollinator species.*

Ecological diplomacy is not a career path with an assigned curriculum. The first step involves combining ecological training with an open mind toward societal questions and an interest in the intersection of science, diplomacy, and international environmental policy. At the federal government level, the work of an ecological diplomat may include ensuring that sound scientific data underpin international environmental negotiations, working with lead negotiators to define population parameters for global pollinator declines (Figure 1), or developing management plans to conserve a transboundary migratory species across all of the communities along its migration route. At the university or institutional level, ecological diplomats may develop or participate in exchange programs to allow students to conduct their field work in another country while also offering cultural exchange opportunities. At the individual scale, an ecological diplomat might initiate a new collaboration with another scientist in a country in which it would be politically difficult for a traditional diplomat to make headway. If collaborating with teams that represent many cultural and disciplinary perspectives is something you are interested in, then consider ecological diplomacy.

Because ecosystems and the impacts of climate change cross international boundaries, ecological science frequently intersects with international policy and social science (eg Tavoni and Levin 2014; Cinner *et al.* 2016). Ecology informs international policy on topics such as climate change, invasive species, and sustainable agriculture. Diplomatic negotiations on these topics often converge with social issues, such as gender equality and food

security (IUCN 2016). International interest in science-based global environmental policies such as the Paris Agreement and the UN Sustainable Development Goals is growing (Susskind and Ali 2015), and there are an increasing number of opportunities for ecological careers that combine science diplomacy and policy. Largely unrecognized by traditional academia, ecological diplomacy enables the application of ecological science for international benefit.

What is the path to an ecological diplomacy career? The following observations are based on our shared experiences as ecologists who now work on the international stage.

Seek mentors with existing international research collaborations or build your own connections. As an undergraduate, TMS conducted tropical mycology fieldwork in the remote rainforests of Guyana with her thesis advisor. They worked alongside Amerindian researchers and Guyanese students. As a PhD student, she travelled to field stations throughout Costa Rica with insect "para-taxonomists", local collectors who contribute to international efforts to document and conserve biodiversity. These early experiences were pivotal to her desire to develop a career in international scientific collaboration and led her to the AAAS Fellowship as a gateway into science diplomacy. In addition to finding international research collaborations through academic advisors and mentors, international organizations, such as the International Union for Conservation of Nature (IUCN) and the UN Environment group, often have working groups where early-career scientists and interns can contribute to specific policy reviews. Such groups provide critical introductions to international collaborations and policy work.

Understand that policy decisions are often made in the absence of complete scientific data and that scientific data are one of many considerations in complex negotiations. Before signing the historic Paris Agreement, the French Minister of the Environment asked representatives from the 197 assembled nations how to balance a moral decision with ecological data, referring to whether the difference between the impacts of a 1.5 versus 2.0°C global warming was really known. A coalition of self-proclaimed "ambitious countries" pushed to limit warming to 1.5°C, minimizing land loss for small island states. Although this was based on existing scientific data, we do not have complete knowledge of what it would take to achieve 1.5°C of warming instead of 2.0°C. GB and her team decided to focus on this ambitious target despite the incomplete data available to guide that decision. You can learn how to navigate decision making in the absence of complete data by interning or volunteering with stakeholder groups such as The Nature Conservancy.

International diplomacy rests on informed advocacy. Short-term experiences with environmental advocacy groups, such as the Women's Major Group on Climate Change or IUCN Specialist Groups and Task Forces, are intense and rewarding. Such involvement can even take place remotely, working through listservs and other online platforms; for example, ecologists can make important contributions by reviewing policy statements for scientific accuracy.

Be flexible and creative in seeking training opportunities. Being a specialist in ecology and a novice in diplomacy can be uncomfortable. However, training opportunities are available to help prepare scientists for engaging in science diplomacy and policy, including the AAAS Science & Technology Policy Fellowship (www.aaas.org/program/science-technology-policy-fellowships), Knauss Fellowship (http://seagrant.noaa.gov/Knauss), the Fulbright Scholar Program (www.cies.org), and many others. Opportunities for international engagement may be located abroad or may be domestic activities with international impact. The Global Young Academy (https://globalyoungacademy.net) consists of 200 scholars, including ecologists, from 70 countries, serving as the voice of young scientists on science policy issues of global importance. New international partnerships may also be forged by hosting a displaced or refugee scientist at your institution through the Institute of International Education's Scholar Rescue Fund (www.scholarrescuefund.org). Training opportunities and short-term fellowships can serve as the first steps toward a career in ecological diplomacy; foster a deeper understanding of other cultures and ecosystems; and help scientists gain critical skills in negotiation, policy writing, and partnership-building. Fluency in other languages and an understanding of other cultures are additional valuable skills to cultivate.

There are many paths into international scientific engagement that range from paralleling an academic career track in research to delving deeper into policy work. Early-career scientists may not appreciate the range of opportunities outside of academia or may worry that leaving a university setting might prevent them from returning later. However, scientists who engage internationally often find that the cultural, political, and diplomatic aspects of their work enrich their intellectual scholarship, broadening their academic and diplomatic opportunities. Now more than ever, in our hyper-connected societies and with climate patterns changing globally, the world needs ecological diplomats who understand how ecological concepts fit into an international political framework and who can navigate national and cultural boundaries to help address our shared environmental challenges.

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