







# The Importance of Science Communication in Facilitating Change

by Tatiana Eaves

We are living in the age of speed. Inherent value is placed on news articles that you can read in less than five minutes, titles desperately aimed to shock you enough to click them, and social media platforms with character limits. Science needs to catch up too. No longer can we sit within the safety of our peers, publishing our findings in journals and hoping to reach the masses. We must take the distribution of science into our own hands. Especially now, considering the growing spread of misinformation and the silencing of science by our highest branches of government, facilitating public distrust.

PNAS published a study back in 2014 where social psychologists surveyed how different American professions were viewed by Americans on scales of warmth, competence, and associated emotions. They found that people described scientists as competent, but cold. This is important because 'warmth' attributes to trustworthiness not just status and expertise. For example, doctors were rated high in both the competence and warmth category.

In order to curve public perception, more work needs to be done in effective science communication. Along with pursuing my Masters in the ESP program, I work as a science writer and communicator for just this reason. My background is in the biological sciences, but I work in scientific publishing. I have noticed this growing disparity between scientists, journalists, political officials and other non-scientists. Traditionally, research scientists are seen as wary to speak with journalists/policy holders for fear of having their work misunderstood or misrepresented and often, field-specific jargon becomes their casual vernacular.



It is essential to bridge these gaps between professions and well, humanize scientists. In that we must all become front-facing scientists, seeking out opportunities to discuss our research with non-scientists or individuals outside our fields. Strong communication skills and the ability to weed out jargon while discussing your research is crucial to increasing scientific literacy overall. A study published in PLOS ONE, illustrated that incorporating narrative elements in academic writing can actually lead to a higher citation frequency. People are more likely to cite your research if they can easily understand it.

Science is in need of a shift, and only we can lead it. People need to know that scientists can be the people sitting next to

them at that coffee shop, or in that bar, that we get nervous and fumble over our words, that we are actual people. People are on the go and that means knowledge, opinions, and ideals are moving and changing more quickly than ever before. We cannot expect science to match the pace, we must facilitate it. There is a growing community within the field of science communication, but there is still a lot to be accomplished here. If we don't take communication into our own hands it is liable to be misunderstood in future.

*All thoughts expressed in this piece are my own and are in no way a reflection of AAAS*

## Alumni Spotlight: Cara Urban



There is no “silver bullet” fix that addresses climate change for all agricultural systems... yet many farmers already see the impacts of

climate change on their operations and know that the threats to their livelihood are increasing. Cara Urban graduated from the JHU ESP program in 2017 and works as a staffer for its state-level, national and international platforms (see the [North American Climate Smart Agriculture Alliance](#) and projects in [North Carolina](#), [Ohio](#), [Missouri](#), [Florida](#) and the [Delmarva Peninsula](#)) at the nonprofit Solutions from the Land (SfL). SfL facilitates diverse, multi-stakeholder conversations among hundreds of crop and livestock organizations, value chain industry partners, academic institutions, governments, environmental organizations and—most importantly—agricultural producers at every scale. These dialogues embrace and highlight the tools, practices and incentives that can place farmers at the forefront of solving global challenges.

An exciting part of SfL’s work at forums such as COP25 and UNFCCC’s Koronivia Joint Work on Agriculture is that farmers are often not represented as active participants in global conversations about agriculture. Cara sees SfL’s model as a way for multiple sectors to take their lead from environmentally aware farmers, while addressing shared concerns about productivity and profitability. Outside of work, Cara reads, writes, and volunteers around the Gunpowder River’s watershed near Baltimore.

## Environmental Innovation

By Scott Atkinson

We’re pleased to announce a first-of-its-kind, new speaker series for the 2019-2020 calendar year. *The Business of Saving our Planet*, a four-part speaker series, will bring together some of the brightest minds in sustainable business for an informative and inspiring discussion with students, scientists, executives and entrepreneurs who are positively impacting our environment by disrupting the private and non-profit sectors. Students are invited to engage remotely via the Facebook live stream or join in person for a chance to attend and network in person. Moderated by Scott Atkinson, Partner at Heidrick & Struggles and current ESP student, this series will explore topics including: Global Food System Innovation & Sustainability, the Media’s Role in Environmental Awareness & Behavior Change, the Movement Towards Environmental Impact Investing & Divestiture, Technology in Wildlife Conservation & Trafficking, and Environmentalism in the Fashion Industry.



*The Business of Saving our Planet* will feature top leaders in each category and curate discussions where different approaches to addressing issues such as climate change, wildlife restoration and sustainable business can be explored and debated. While learning about disruptive trends will be important, this series will offer a more personal look into the lives of some of the most notable leaders who are “in the business of saving the planet.” What inspired their ideas? What risks did they take along their journeys? Join us to learn why some of most influential experts in their industries are optimistic about our ability to solve some of the most pressing environmental issues of our time, why you should be too, and how you can be part the impact revolution.

## Alumni Spotlight: Setsuko (Set) Ova

Set is a monitoring and evaluation specialist working on environment-related projects in international development. She gained technical knowledge on environmental science and policy through the JHU ESP program, which she completed in 2017. Currently she is working on the USAID / Scaling up Renewable Energy (SURE) program which assists partner countries in the technical assistance needed for large-scale clean energy deployment towards energy security and GHG reduction. Within this program, her duties include developing and implementing the monitoring and evaluation strategy, developing data collection tools and supporting progress reporting to USAID and program stakeholders.



Within this program she is also working on Engendering Utilities, an activity aiming to increase gender equality in the energy sector. This activity specifically focuses on enhancing gender equity practices within the human resources systems of energy utilities in USAID partner countries. This requires an immense data collection, management and analysis effort, but is a promising and exciting strategy towards empowering women in a traditionally male-dominated sector.

## Alumni Spotlight: Ryan Campbell



Ryan Campbell is a Program Manager at MDB, Inc. (MDB), a small strategic consulting firm focused on environmental science, worker safety, and public health. MDB offers a range of technical and creative services to help clients achieve their communication and

program goals. Ryan started at MDB in 2010 during his first semester of the ESP program. In his nine-year tenure at MDB, he has been promoted to the company's Senior Leadership Group and has worked on a variety of projects supporting federal agencies, primarily EPA and HHS, public-private partnerships with NGOs and foundations, and the private sector, such as Waste Management. The ESP program provided a meaningful blend of science education and real-world focus applicable to stakeholder organizations and agencies.

Currently, Ryan manages MDB's contracts with the EPA Office of Water and oversees MDB's Water portfolio. He facilitates strategic partnerships to support environmental programs and advises clients on program operations, best management practices, stakeholder engagement, and communication strategies.

His work focuses on watershed protection, restoring urban waters, and sustainable wastewater treatment. Most notably, since 2012, he has been honored to support EPA's Urban Waters Federal Partnership, a public-private partnership between 15 federal agencies and 28 national NGOs working to revitalize urban watersheds in over 19 underserved communities across the country. In 2017, the program was the recipient of the People's Choice Service to America Award, one of the highest federal government recognition programs.

One of his favorite projects was supporting a federal interagency working group of the Partnership for Sustainable Communities, an Obama Administration initiative amongst EPA-HUD-DOT. The work focused on the inclusion of environmental justice principles into transportation and housing projects and the effort fostered collaboration amongst the three federal agencies to develop new resources and opportunities for communities.

Ryan thoroughly enjoys consulting and contributing to federal government programs. He has served as an ESP Ambassador and is always interested in meeting alumni and current students within the program. When he is not working, you can find him exploring everything DC has to offer (via public transportation) from Rock Creek Park to the Anacostia River and the city's great restaurants.

## Stepping Across Deep Time with New Friends in Newfoundland and Labrador

*By Aileen Craig and Owen Snoey*

This summer 14 ESP students participated in an amazing journey across 1.8 billion years of geologic time in Newfoundland and Labrador, Canada. On this canvas we saw evidence of continents moving, oceans dying and being born, the origins of multi-cellular life, as well as, humanity's historical tenacious hold on this fragile environment.

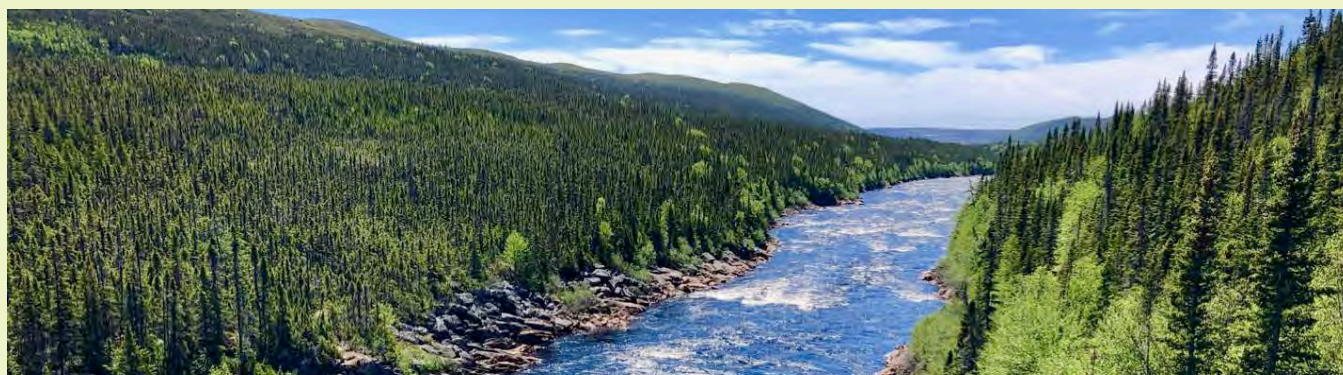
The course, AS 420.738 Newfoundland and Labrador: The Making of a continent and a Journey through time, ranged from intensive dives into the geology and the origins of the North American continent and its surprisingly close connection to Africa, to forays into the causes of the Atlantic Cod fishery's collapse as a policy case study. The region is a living laboratory and has been historically relevant in validating the Theory of Plate Tectonics. Our leader, Dr Jerry Burgess, led us across the kilometers of distance and millions of years of time with skill and planning. His close knowledge of Newfoundland based on his work on the island helped us to take advantage of ad hoc opportunities that came up along the way, as well as, many roadside lectures at various rock outcrops with our notebooks at the ready. His efforts helped us to understand and visualize the story in the rocks as the continents did their dance. The students had the opportunity to explore the geochronology labs at Memorial University and to stand on and learn about 560 million-year-old fossils of the oldest known multicellular life at Mistaken Point Ecological Reserve (a UNESCO site), and hike through land comprised of the Earth's Mantle at the Tablelands in Gros Morne National Park (also a UNESCO site). We visited four UNESCO sites in all such as the two mentioned above but also got to experience time on more recent scales as we explored historic Basque whaling practices at Red Bay and generations of Cod Fishermen in Battle Harbour, both in Labrador.

As we made our way through Canada's easternmost province, our little band of diverse students also got to know each other. We supported each other, lent each other missing camping gear, complained about the weather and bonded as only those



going through a life enriching experience such as this can do. This course offered a unique experience as the first camping course offered by the department. A mix of seasoned and brand-new campers came together and supported each other through some rainy and below 40° nights. The team was later rewarded with sunshine and beautiful campsites along the coasts with whales in the distance. The result was, friendships based on a shared experience that can extend beyond the experience itself.

Over this course we learned a great deal about essential field work, the importance of notes as a record of the observations, as well as, how to better 'read the rock' from an expert in the field. Our discussions on the broader context of policy will help us to bring in the human realities along with the science into our policy formation process. We also got to see first-hand the result of policy failures such as those leading the collapse of the cod fishery as well as the introduction of the Moose into Newfoundland. These are examples to be learned from and will help us be better scientists and advisors. In the mean-time our memories of Newfoundland and Labrador, beautiful, fragile and friendly, will linger on as a wonderful shared experience.



## Nature Conservation & Sustainability in Cuba

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overlooking Viñales Valley, *Finca Agroecológica El Paraíso*. Truly, farm-to-table dining at its finest. Produce was grown on terraced plots in the shade of trees stepping down to a shallow river. Poultry roamed free across the property to help manage the bug population. Tobacco, also grown on-site, was used as natural pest control as well. Pigs rooted happily in the woods. Lemongrass, spearmint, and oregano flourished in the sun. Everything was used and nothing went to waste.

Over lunch, we learned that the Cuban tradition of and attention to ecologically and financially sustainable agriculture dates back to the Special Period of the 1990s. The dissolution of the Soviet Union and the cessation of the Council for Mutual Economic Assistance (COMECON) plunged Cuba into a severe economic crisis. The Special Period radically transformed Cuban society. It necessitated the introduction of sustainable agriculture, decreased use of cars, and reformation of the country's industries. It also drastically changed the national diet, greatly impacting citizen's health, as all were forced to live without many goods they had become accustomed to receiving from the USSR. Yet another example of the indomitable spirit of the Cuban people.

One afternoon, we descended into Viñales Valley, a UNESCO World Heritage Site, to the base of the Sierra de los Órganos mountain range. We were given climbing helmets with small lights attached to the front like those worn by coal miners. Led by a team from the Antonio Núñez Jiménez National School of Speleology, we intended to explore in the Santo Tomás Cave. However, the only way to reach the entrance of the cave was to climb halfway up the side of a *mogote*, one of the round top mountains that dot the valley. Clinging to trees and scrambling over rocks, we made slow progress up the mountain. Inside the entrance of the cave we entered another world of low-hanging ceilings, ghostly echoes, and creeping shadows. Rocks changed shape in the flickering light of our helmet lamps. Stalactites and stalagmites loomed out of the darkness. Finally, around a bend, the cavern opened up into a gallery with vaulted ceilings and ferns dripping from the walls. We passed through another, smaller passage with access to the open air. Here, tucked away in a corner, was a rare cave-dwelling rock frog (*Eleutherodactylus zeus*). Found only in limestone caves in Cuba, *E. zeus* is a large species that lives in almost complete darkness and has adapted enlarged eardrums and exceptional vision to survive.

Crawling back through the semi-darkness, with the soft splashing of falling water accompanying each footstep, we came to a rippled rock with thin fins protruding from the front, almost like folds of cloth. Gently tapping the rock created musical, resonant notes that echoed around the cave.

Across the island, on a peninsula on the western coast of Cuba, we stopped to visit at the Parque Nacional Guanahacabibes Nature Center. Local guides led our group on a hike over-land to another cave. Here, curled in the dark, was a Cuban tree boa and a squat owl annoyed to be awoken by noisy, American tourists. Our guides pointed out plants and birds of interest, providing



their Latin and colloquial names, main attributes, and ecological niche. Back at the Nature Center, we were greeted by the resident pet iguana, a 5-foot-long, prehistoric-looking creature with no interest in cuddling. Across the street, on the quiet stretch of highway, goats munched contentedly on scraggly grass.

Five miles down the road, the highway curved to the south to hug the coastline along the Gulf of Mexico. Turquoise water and sandy beaches flashed passed on our right. Mangrove trees grew in profusion along the water's edge, natural protection against storms and the current. Patches of water rippled and waved, forming concentric rings even as the waves moved unendingly towards the shore. In these spots, fresh groundwater bubbled to the surface and mixed with the salty Gulf. Wild pigs and other animals often wander out into the Gulf to drink from these springs.

At our destination, María La Gorda, we changed into swimsuits and boarded a converted, 46-foot sportfishing boat. Motoring down the coast, we came to a sheltered cove with clear water and a profusion of coral. Donning masks and flippers, we jumped off the back of the boat with our laminated fish guidebooks. In a short time, we saw fish species of all colors and shapes. Those with slim bodies and chunky snouts. Some with deep blue, almost purple scales and others with bright yellow spots. Floating there, in the salty water with small fish playing around our feet, we marveled at the colors of the world around us.

Every night we debriefed. Lessons on Cuban politics and history were interspersed with lectures on geology and ecology. The significance of the Cuban Revolution and endemic species were treated with equal care. Plants and people so closely interconnected on an island 777 miles long and 119 wide. Discussion covered the importance of the adoption of eco-tourism and the implementation of environment protection laws. How Cuba's reintroduction into the global economy may impact its environment and the legal frameworks in place to curb over-development or exploitation. Cuba is already threatened by the footprint of foreign tourism, most especially the trash generated by cruise ships and plastic water

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## Nature Conservation & Sustainability in Cuba

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bottles, and the strain on its delicate waste management infrastructure.

Currently, Cuba operates two currencies: one for locals and the other for tourists. Discrepancies in value and employment place the highly-educated population in a difficult position. Often, rather than working for the government, Cubans will seek employment in the tourism industry. Our

guide, Esperanza, is highly educated with multiple degrees and international professional experience. She previously served as a communications specialist at the Cuban Embassy in Canada and traveled extensively in the United States. Our spelunking teacher trained as a doctor. Our taxi driver in Havana was an economist. Throughout our trip, the importance of academic and scientific exchange was stressed by the Cuban experts we met.

If Cuba is to take significant action to protect its environment from the threat of over-tourism and climate change, the government and research institutions must have all available data and tools at their disposal. This is the power of academic cooperation. The Cuban people are aware of the danger. Climate change denial is non-existent. The government has gone so far as to acknowledge climate change in the revised constitution. Although a small contributor to global greenhouse gas emissions, Cuba is a signatory to the Paris Agreement and has outlined a 100-year plan, called *Tarea Vida*, to adapt to and mitigate the impacts of climate change. *Tarea Vida* has been used as a template for climate action by other island nations around the world.

Our time in Cuba was brief, but inspiring. We were gifted a rare opportunity to learn from incredible people in a beautiful place. This spring, the American government again restricted travel to Cuba for purposes of tourism and academic exchange. We were offered a glimpse of a society, culture, and ecosystem that's often relegated to a few sentences in the history books. An island, geographically and politically isolated from the rest of the world, but eager to engage and share.



## Graduation Ceremony 2019

*by Candice Hilliard*

This spring, I attended an ESP-EPC-GIS Master's graduation reception that differed a bit from receptions in the past. On the eve of the KSAS Master's Graduation Ceremony, around 65 graduates, family members, faculty, and staff gathered to celebrate. Our cohort first embarked on a campus tour led by ESP Director, Professor Jerry Burgess, then settled in for dinner at the Ambassador Dining Room. As we sat on the open patio surrounded by cozy fires and delicious food, the intimate and relaxed setting allowed for meaningful conversation and new connections. I had the opportunity to meet and have dinner with a fellow graduate and her family. In the absence of this reception, I would not have been able to shout and wave 'Congratulations!' as I passed her in the crowded arena the next day.

The feeling of connectedness continued as we gathered in the lower levels of the arena awaiting the start of the ceremony. Graduates laughed, embraced, and fixed each others' caps and gowns, while professors walked the halls, making sure to say hello and congratulations to all of their students. When my name was called, I walked across the stage feeling appreciative of the time the ESP faculty had taken to cultivate a personal connection with me and sense of

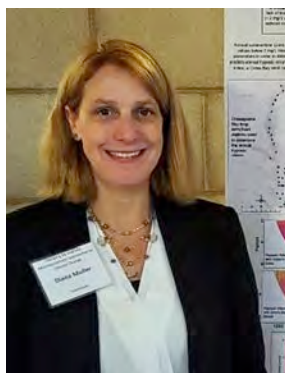


community within the department. My family cheered as I exchanged celebratory hugs with Professor Burgess and Dr. da Rosa.

With the support of the JHU community, I aim to complete the final assignment that faculty and Commencement speaker Canadian Supreme Court Justice, Rosalie Abella, gave to graduates - "Use the skills and knowledge gained during our time at JHU to create positive change and better the world".

## Outstanding Faculty Member of the Year: Rachel Isaacs

My love of travel and the environment led me to seek out opportunities to learn new skills and leverage these to travel around the world. This desire transitioned into a degree in Geography with a focus in GIS, Remote Sensing, spatial statistics, and landscape ecology throughout my undergraduate and graduate careers. As an undergraduate at the University of Hawai'i – Hilo, I had the opportunity to participate in research examining the succession of vegetation after lava flows. During my Master's at Texas A&M University, I used a combination of field and GIScience skills to explore the impacts of ice storms in Virginia and Arkansas. This research and improving my technical skills helped me get a full-time position in GIS environmental compliance before I even graduated. While working full-time, I missed academic research and the opportunity to learn new skills. I leapt at opportunities when invited to join research expeditions examining the roles of fire and climate change in Mount Rainier National Park, WA and Denali National Park, AK. My career and these expeditions helped solidify how valued these GIScience skills were across private, government, and academic industries. In particular, the Denali expedition convinced me to return for my Ph.D. at The Pennsylvania State University where I studied the spatiotemporal impacts of climate change on treeline in Denali combining my love of field work with GIScience skills. At Penn State, I was also given the opportunity to teach my first courses and discovered how much fun I had communicating my passions to others. It was at JHU, where I have been able to experiment with course design, that I really discovered how much fun it was to work with students who were just as eager as I to learn and explore new technology and the world around them.



## Congratulations to Outstanding ESP Graduates

Diana Muller

Sarah Solomon



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