



Letter from the Director

This year marks the 50th anniversary of Earth Day, a time for hope and optimism. Those are words that I used in our last newsletter written in January. Since then, the United States and much of the world has reeled from an unparalleled economic recession sparked by the coronavirus pandemic, the loss of over half a million lives worldwide to COVID-19, and a rise in civil unrest that has not been seen in the United States since 1969. So many of us know at least some of the lyrics of Marvin Gaye’s Hall of Famous song (Mercy Mercy Me (The Ecology)) that discusses the abuses of the planet and he spoke directly to the abuses associated with minority communities across America. This poignant song stirred many to action and helped raise awareness of pollution and social injustice in 1971 but the song could easily be the anthem for those seeking environmental equity in 2020.

The Climate Crisis is not on hold and continues along its horrid path vanquishing species in its wake. But for most of the summer we have all been reckoning with our own country’s legacy of racial inequity. As wave after wave of protests and associated discourse continue revealing evidence that brown, black and native communities have also been disproportionately impacted by the coronavirus pandemic as a result of lingering and persistent health, social, economic and environmental inequities. It is those environmental inequities that we highlight in this newsletter. Environmental justice and climate justice and the titles of two electives in our program but for that that have not taken them, we will regard environmental justice as the view that all people deserve a healthy, clean and safe environment with fair treatment and meaningful



Jerry L. Burgess, Ph.D.
Director for the Environmental Science and Policy & GIS Programs

involvement – regardless of their race/ethnicity, their class status, their age, their gender, their citizenship, and other social variables. Let’s take a look at what our peers think on the topic.

Hopkin’s Students in Cameroon



What Does Police Brutality Have To Do With Climate Change?

By Dr. Eileen McGurty

The multi-generational, multi-racial protests that erupted following the police murder of George Floyd have transformed our country. The movement for Black lives is still fighting to hold individual police accountable as well as dismantle the structural racism at the foundation of our criminal justice system. Even without yet attaining these policy wins, activists have affected massive change: protests took place in ALL 50 states, in small towns as well as large cities; for the first time, the majority of Americans support the Black Lives Matter movement and agree that police brutalize Black people; and at this very moment, in cities across the country, elected officials are working to reconceptualize the role of police in public safety.

I've been heartened by the protests because of their potential to redress the crimes against Blacks by police but also because more and more white people are opening their eyes to systemic racism and white privilege. I also hope that the awakening will finally force environmentalists to see the truth: environmental racism is real, environmental policy must be anti-racist, and multi-racial coalitions are the real hope for creating a post-carbon world.

1. Environmental Racism is Real

One thing the protests are making clear is that racism is not just about deplorable individuals; racism is deeply embedded in all our institutions and culture. Environmentalism is not immune. As a result, people of color have more exposure to contamination, enjoy less access to environmental benefits, wait longer for response and remedial action, have less access to healthy food (food deserts), experience more severe impacts from

climate change, and suffer worse health outcomes because of these environmental injustices.

2. Anti-Racism For Environmental Policy-making

In the past, environmentalists have simply assumed that a policy designed to improve environmental conditions would be race-neutral. For example, when the hazardous waste laws were written to contain the hazards in landfills or decrease the level of hazard with treatment facilities, no one asked about the communities that would end up with these hazardous waste facilities. However, the laws were superimposed onto a system of housing built on decades of racial oppression and segregation. As a result, conditions improved for white communities because the hazardous materials were removed, but people of color bore the burden as the hazardous materials were transported to their communities. The environmental justice movement was born in one of those communities when the residents let it be known that in the US, there is no such thing as racially-neutral. All environmental policies are entwined in some way with systems that are infused with white privilege: land use, housing, transportation, natural resource management, etc. If we don't engage in anti-racist environmental policy-making by actively working to make sure environmental policies are not racist, they will be. Guaranteed.

3. Coalitions as Solution

If we assume that the anti-racism movement has nothing to do with environmentalism, not only will our work further racist outcomes, but we are missing an enormous opportunity to build an effective coalition to combat the climate



Dr. Eileen McGurty

catastrophe. Just a few months ago Yale produced a fascinating – and hopeful – [study](#). They found that people of color are more worried about global warming than whites are. Specifically, 69% of Hispanics/Latinx and 57% of African Americans are “alarmed” or “concerned” about climate change, but only 49% of whites are. Whites are more than twice as likely (27%) to be doubtful or dismissive than are Hispanics/Latinx (11%) or African Americans (12%). Ayana Elizabeth Johnson reminds us in her [op-ed](#), that's 36 million Latinx and 23 million Black people who are already distressed about the future of the planet and could join the climate movement, doing some of the enormous amount of work that is needed. If we are going to create a movement that can completely transform our carbon-based economy in just 20 years, we need everyone. A powerful multi-racial coalition can only be built if environmentalists acknowledge the extent of environmental racism and build an anti-racist environmentalism.

A Career Observing Cumulative Impacts

By Ryan Campbell

My introduction to environmental justice began nearly 20 years ago during my undergraduate studies at Tulane University in New Orleans. I vividly remember a course book titled "Chronicles from the Environmental Justice Frontline" as an eye-opening account of how communities of color in this country suffer environmental injustices. I often thought, how could this be happening in the United States of America? My time with the Louisiana Bucket Brigade (LABB) proved to me how low-income and minority communities have to fight for their rights to clean air and water.

While at LABB, I worked in a community in Chalmette, LA that had industrial facilities in their backyard (literally), and we were able to set up new air quality monitors as residents raised concern of respiratory and health problems. It was empowering to bring together government officials, community members, industry, and the

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Warblers and Privilege

By Alessandro Molina

The summer after graduating from college, I found myself in the bucolic hills of rural Virginia chasing a tiny, threatened bird. I had been hired by a graduate student working to ensure the future of the Golden-winged Warbler, a vibrant neotropical species weighing less than two quarters. The private ranchlands we were working on were an important breeding refuge for this species, and so we spent endless hours hopping fences and tiptoeing past wary cattle on our quest for the warbler. It was a dream job, and it set me on the path to becoming a wildlife professional.

There is one incident, however, that stands out in brilliant contrast with my gilded memories of that summer. One morning, after concluding a series of dawn surveys, I began to make my way back to our research vehicle. I clambered out of the raspberry brambles and hopped over a short cattle fence, cutting through the backyard of the rancher whose land we were surveying. As I turned towards the truck, I heard the unexpected and distinctive sound of a shotgun cocking at the back of my head.

"Don't move a muscle." My stomach dropped and my nerves began to tingle. I grew up in the suburbs and had little experience with guns. But I was also a 21-year-old white kid with a clean shave and a collared shirt. I took a deep breath and put my hands in the air, then I turned and greeted the rancher with disarming smile. He lowered his rifle and apologized, and we both laughed when he joked that he "had almost blown me away."

This event came rushing back to me with the recent headlines about Christian Cooper, a black birder who



had the police called on him unjustly while hiking through Central Park. That summer in the mountains of Virginia I had discussed the shotgun incident with my boss. *What would have happened if I were black?* I asked him. He had never hired a black research assistant, he told me, because it wouldn't be safe.

What does it say about our society when we deny our fellow citizens, based on the color of their skin, not only career opportunities but something more fundamental? The privilege to walk the Earth without fear of being mistrusted, targeted, or treated as an outsider? To me, this is a fundamental starting point for environmental justice. We share this planet. We all belong here. Until we begin to hold these truths to be self-evident, we will never achieve justice of any kind.

Planting Sustainable Seeds of Equality

By Moon Pankam

In Thai, the word for river is แม่น้ำ, *mae nam*. For me, the word แม่น้ำ evokes the imagery of the sinuous limbs of the Mekong and Chao Phraya Rivers – two bodies of water that intersect in my childhood memories, though they never physically meet. แม่น้ำ is composed of the words แม, *mae* – mother and น้ำ, *nam* – water. Translated to the most literal extent, a river is thus a *water mother*, or a *mother of water*; a feature of the earth that breathes life into plants, animals, and people; communities, cities, and civilizations. A river, of course, can also be polluted, neglected, and destroyed by drought. I remember that the Chao Phraya and Mekong were dirty; nowadays, I read online articles that tell me they are drying up, which has rendered devastating impacts on adjacent Thai farming communities.

While considering the Thai word แม่น้ำ I've wondered if, in other languages, the word for river has a similar meaning or etymology; one that reflects its importance in the tangle of things on earth. I wonder in how many languages an ocean might be a mother or father, or a canyon a child, or a desert a life-bringer to all things moored in its sands. In how many languages are humankind and our environments considered one and the same? The phrase “mother of water” carries a cruel irony when I see how humankind has treated our river mothers, our earthen siblings, and ourselves.

I see similar stories of environmental destruction and communal harm throughout the Global South, from Thailand to Zimbabwe to Bangladesh. I see similar stories in the United States as well. Anthropogenic climate change, polluting industries, structural racism, and land-grabbing continue to weave webs of violence and intergenerational trauma throughout marginalized communities around the globe. How many children in the United States suffer from breathing problems due to the deliberate placement of industrial facilities in Black and Brown communities? How

many communities in the Global South see their ancestral lands polluted by the incursion of multinational corporations that have forced a new mining or drilling operation?

The disregard for the lives of marginalized peoples and communities is inextricably connected to the disregard for the sacredness of land, the environments that shape our being. Language has always been important; the precision of a one word can carry a thousand years of cultural history, and evoke longing, remembrance, and realization. In how many languages do we realize that, when we destroy a canyon, a forest, or a river, we destroy ourselves? Our topographies are marked by mountains and rivers; they are also marked by injustice and suffering. And so our languages bear the weight of suffering as well.

But the world is ripe for change, and languages and landscapes are always evolving. I ask my fellow participants in the ESP program to grow in solidarity; to plant sustainable seeds; to imagine topographies of compassion and restoration; and to use precise language and concrete action to shape landscapes of transformative justice. I am wondering what our collective environments might look like as we rebuild them together; what words and tools can we use for change?



Faculty Spotlight: Professor Paul Kazyak

Professor Paul Kazyak is one of the most thoughtful and caring faculty you are likely to encounter at Hopkins. He and his wife are engaged in a variety of community focused initiatives all designed to make our world a better place for all involved (from fish to society). Prof. Kazyak is a retired scientist from the Maryland Department of Natural Resources, and he teaches a number of courses for our Program. One of our favorites is Freshwater Ecology where students travel across the region experiencing different watershed and learning to identify species from American Shad to the invasive Blue Catfish. His past experience includes the design of the nationally recognized Maryland Biological Stream Survey and working on numerous sustainability-related projects. He is an experienced educator and was named 2008 *Environmental Educator of the Year* by the National Science Teachers Association. He was named the 2013 Green



Employee of the Year by the Maryland Department of Natural Resources and he helped start Frostburg Grows, a sustainable agriculture project in western Maryland. Prof. Kazyak is our 2020 faculty of the year and we are incredibly honored to have him on board. Take his class, you will not regret it!

Paul was awarded Outstanding Faculty Member for 2020

Nature Bound: The ESP Blue Jay Book Review

By Morgan Conover



Unbowed: A Memoir, is the life story of the Kenyan environmentalist and activist, Wangari Maathai. Maathai traces her life from growing up in rural, colonial British Kenya in the 1940s and 50s to going to college in the United States in the 1960s. She earned a full scholarship in what became known as the Kennedy Airlift, named for the late, then Senator John F. Kennedy, which eventually saw almost 600 Kenyans transported to study in different universities throughout the United States (including Barack Obama Sr., President Obama's father). Maathai attended Mount St. Scholastica in Atchison, Kansas. She noticed that Atchison was segregated, and that the economic differences between the neighborhoods were stark but not surprising because the same divide was evident in Kenya: "We blamed our inequities on colonialism, while Americans blamed theirs on the legacy of slavery."

After earning her graduate degree in Pittsburgh, she returned to Kenya and worked as a professor at the University of Nairobi. There, as one of the few female faculty members, she fought for equal rights and equal pay. In addition to her work in academia, Maathai was involved with a number of civic organizations.

As she became more attuned to the problems that plagued the recently independent Kenya—most notably poverty, corruption, and environmental degradation—she became inspired to address the problems. Maathai founded the Green Belt Movement in 1977, and soon after became an internationally-known environmental activist. The basic premise of the movement was to inspire communities, particularly rural women, to develop a personal responsibility for improving their quality of life, when the Kenyan government wasn't focused on the welfare of its people or its environment. The Green Belt Movement's main focus was to plant trees, because planting trees was a simple, tangible action that could most directly change the material realities of Kenyans for the better.

Maathai's leadership role in the Green Belt Movement made her a target for the Kenyan government. She was arrested multiple times for simply telling the truth and fighting against the government's attempts to clear forests and further degrade Kenya's environment for political and economic gain. Despite the constant onslaught of attacks meant to humiliate, intimidate, and silence her and her fellow

Unbowed: A Memoir

By Wangari Maathai

326 pages. Anchor Books.

activists, Maathai remained a stalwart individual. Her general demeanor is one of resilience, positivity, and hope, most exemplified in her worldview: "To me, a general orientation toward trusting people and a positive attitude toward life and fellow human beings is healthy—not only for one's piece of mind but also to bring about change."

Maathai was "the first" for a lot of things. She was the first person in her family to earn an advanced degree. She was the first woman to receive a doctoral degree in East and Central Africa. Most notably, she was the first African woman and the first environmentalist to receive the Nobel Peace Prize. While she won the Prize 16 years ago, her story feels timely. It is one we can still learn from today, because it is ultimately a remarkable story of resilience in the face of extreme hardship. Maathai exemplifies what can be accomplished through devotion to a noble cause and determination to enact positive change.

Upon winning the Nobel Peace Prize, Wangari Maathai celebrated in the best way she knew how: she planted a tree.

A Tale of Two Cities — Fresno

By Michael Mayfield

Fresno is located in the heart of the nation's bread basket; California's San Joaquin Valley. Yet despite superlative rankings for agricultural production, the region is more frequently noted as being among the most highly polluted areas in the country. Indeed, Fresno has been classified by the EPA as an "extreme non-attainment area" as it pertains to air quality ([EPA](#)). This is due to the fact that the city has failed to meet federal air quality standards for both Ozone and PM 2.5 for several decades.



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A Career Observing Cumulative Impacts

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media around the installation of those monitors to protect the community.

Most of my career has focused on convening diverse stakeholders, telling the stories of environmental justice communities, and developing resources to advance their needs. For ten years, I have worked at [MDB, Inc.](#), a small consulting firm that has an environmental justice practice and I have supported [EPA's Urban Waters Program](#) that works in underserved watersheds across the country. I am honored to work with a team and clients that are doing the right thing to develop strategies, tools, and funding opportunities that help solve the injustices that low-income and minority communities must bear.

Over the years, I have learned that these injustices are not only environmental. Environmental justice communities often call on federal agencies to address cumulative impacts. Cumulative refers to the collective injustices that low-income and minority communities experience: environmental exposures from other media (e.g., chemical, air, water, soil), mental health, economic and financial, racial, housing, workforce, and transportation. As America is waking up to the injustices that have been around for decades, we have to address environmental justice holistically and recognize that it is another layer of burden for low-income and minority communities.

Cooperative Mission in Nepal

By Amir Poudel



Amir Poudel
Lecturer

When JHU students visited the Fishing community in Madi Valley inside the Chitwan National Park as part of the 2020 spring intersession field course in Nepal, no one knew that the interactions done with local fish producers would give birth to a new project to help these communities better manage their fishing industry. Madi, known as a major production hub of live fish for Kathmandu and other nearby cities like Pokhara, engages more than 150 households through few cooperatives. Fish mortality during shipping and handling was a major hurdle communicated by the community members to the students. During the interaction, solar dryers were identified as a good alternative that would manage the dead fish to be sold in local market at a fairly better price than regular fish. In order to address the challenge, a collaboration was sought with Wentworth Institute of Technology (WIT)- an engineering college in Boston- to design a technology that would help the farmers. A competitive mini-grant of \$5000 offered by WIT led by Dr. Saurav Basnet (Assistant Professor) was secured for working on the concept. A group of ESP students are currently collaborating with WIT engineering students to design this project. One round of meeting between JHU and WIT students has taken place so far and the plan is to continue these interactions for mutual learning. As I am based in Nepal will assist in the field level testing of the technology. The ultimate aim of the project is to engage students of diverse backgrounds to work on a climate smart solution. This would use renewable energy technology and the outcome of the project would also increase communities' resilience by improving their livelihood situation. A detailed summary of the project can be found [in the attached link](#) and any student interested should contact me.

A Tale of Two Cities — Fresno (Continued from page 5)

Though all residents of Fresno are subjected to shortened life expectancy due to poor air quality, there exists an extreme sub-regional divide even within the city lines. According to a 2012 study done by the Joint Center for Political and Economic Studies, life expectancy in West Fresno is more than **20 years lower** than in northeast Fresno ([Place Matters for Health in the San Joaquin Valley](#)). This is a symptom of urban sprawl that has sent new development north and away from industrial zones, waste plants, and a lack of green space in the south.

It is not a coincidence that the West Fresno region is home to more POC who face high levels of poverty and low educational attainment rates ([Central Valley Health Policy Institute](#)). COVID-19 has only exasperated these existing health disparities. For these reasons, it is *essential* that we reckon with these longstanding issues as we emerge from the grips of this pandemic. This will require investment in clean energy infrastructure, and a transition to a more equitable quality of life.

Tropical Ecology and African Wildlife

By Holly Rooper



Photos courtesy of Professor Peter Houlihan

In Yaounde, the capital city of Cameroon, we landed as a disoriented group of graduate students, and we packed into a car too small to fit us all. I sat on the lap of a stranger; this could be the story of the rest of the trip: letting go of expectations and accepting things as they come. It is going outside of everything you know and realizing you are trying to understand something you never can, but always did. It is in showing up with strangers that amplify your insecurities and later find comfort in their presence. It's realizing you are only at war with yourself, this is a war we all fight, in West Virginia, in DC, in Africa. It is the story of humanity, of craving belonging and purpose. Easing into the trip, I found myself questioning everything from basic understanding to the sometimes more prominent questions of security my mother placed into my mind. Anything could happen, anything should happen, in the streets of Cameroon where chaos reigns. I began to wonder what else I was missing. What doors could be open if I shifted my gaze to the unknown? In the beauty and grime lies the reality of our world today, just like the trash and plastic lit aflame on the side of the street. As we left the chaos of Yaounde, to a more rural

town, Somolmo, I saw a different world in the red clay huts lined with stone graves, with people along the street, and baskets full of yams and plantains. These streets were their homes, a home only they knew.

The African beat is unfamiliar, wild, and authentic. To an Appalachian spirit, music holds the soul's essence, with the dualities of joy and melancholy dancing in its rhythm. Where the black and white can't be separated, but muted into inseparable shades of gray, those bittersweet moments in the cities and rainforests of Cameroon highlighted my strengths and weaknesses. It shined an undeniable, yet unfortunate light on each. These are the moments where we search for god, in whatever form we see it—in nature, in humanity, in music, or ourselves. We feel it in the moments of grace we see slipping by, in moments we never expected, and moments tears come streaming down our faces with no rhyme or reason.

For some, that grace comes a bit more consistent, and naturally, for me, it comes in waves shifting between grace and graceless. It came in moments like feeling just as home in the Congo Basin rainforest as I do in the Appalachian mountains. It was

finding the familiarity of obtrusive roots, birdsongs, and abundant greenery. Some moments although layered with complexity like hearing a poacher's gunshot in the middle of the night, a sound that makes the blood run cold and bones quiver, but to the shooter, it's feeding their family. It's attempting to understand the unknowable; it's trying to unwind the universal thread. It's in moments when we feel confident one second and right before your presentation, forgetting everything. These are the moments' god laughs, in its beautiful, but not always a welcome sound.

We were taught a variety of field methods, and I hope to use these methods in my career eventually, but for me, they are not the purpose of this article. They were essential to this course, but that is not the story I should tell. My story is interlaced in the shadows of the untalked about- the questions we long to ask but rarely do. Like when I asked Eric, a Bantu teacher, about the medicine men of the Baka and receiving a funny look. I wondered about the unknown taboos and stigmas that lingered in this unfamiliar culture, some of which I got to scratch the surface, but others

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Tropical Ecology and African Wildlife

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remained a mystery. Sometimes these answers leak out in very unexpected ways. When the patterns we look for in nature are the fingerprints of divinity when evolution echoes spirituality. It's walking out of the camp; it's rushing to distance myself from the rest of the group, not to be first but to find quiet, to find stillness after so many stimuli. It's the beauty of walking back through the villages with the eco guard stopping by every house and also having the opportunity to offer my hand. To shake the hand of a child

with a bloated belly and feeling the weight of humanity. It's my classmate, Prudence, dragging along and stopping to buy a snack at a random house that I didn't know also doubles as a store. It's sitting in a straw chair, not knowing what anyone is saying. It's when I finally ask where our Eco guard went and hearing something, something.. palm wine and cracking a laugh and glance with the woman selling it.

Without a doubt, 2020 has been a challenging year for everyone, one that is infused with grief and sorrow, but underneath just like the coal in my home state, West Virginia, lies the ability of transformation and growth. In hindsight, the

trip I took for the Tropical Ecology and African wildlife course in January 2020 set the stage for the continual shifts I would see throughout the year. Every shaky foundation felt the vibration, many damaged, this is the year of communal upheaval and rebuilding one that will most likely define our generation. I knew my journey to Cameroon would be life-changing, I had never even been on a plane, but I learned far more than the outlined course objectives eluded. This trip taught me that humanity means more to me than I could ever have imagined, and this continued to be a gift in the months that followed. I learned we are more similar than we are different from Appalachia to Africa, and that you also don't always have to speak the same language to understand it, especially when a giggle accompanies the words. I'll leave you with this, "The only man I envy is the man who has not yet been to Africa - for he has so much to look forward to- (Richard Mullin)."



Business of Saving the Planet

By Scott Atkinson

The COVID-19 pandemic exposes the enormous contradictions and structural inequalities of our society. Places like Chicago, Detroit and St. James Parish in Louisiana, beset by decades of economic inequality and pollution in impoverished neighborhoods, have experienced some of the highest mortality rates in the U.S. According to the CDC, the COVID-19 death toll is twice as high among people of color under the age of 65 than white Americans. The attention being paid to leaders and activists for racial justice, climate justice and environmental justice is a much-needed silver lining in America's latest series of crises. As powerfully stated by Killer Mike, an Atlanta based social justice activist and artist, now is the time to "plot, plan, strategize, organize and mobilize". The Johns Hopkins ESP community must address the structural inequalities in our country through environmental leadership and activism.

"**Voices of Environmental Justice & Activism**", the 3rd panel in our *Business of Saving our Planet* speaker series, will focus on leadership through activism and how the current pandemic exacerbates the environmental justice divide.

Moderated by current student, Scott Atkinson, our panel will feature leaders including:

Mayor Justin Cummings - Justin earned a PhD in Ecology & Evolutionary Biology at the University of California Santa Cruz after receiving bachelor's degree in Spanish and Biology in 2006. His PhD focused on understanding how trees used for forest restoration negatively suppressed the regeneration of invasive grass in Panama. After finishing his PhD, Justin pursued a

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Mayor Justin Cummings



Saving the Planet *(Continued from page 8)*

two year post-doc at Florida International University where he studied how water level and seasonality affected ecosystem carbon flux in the Everglades. In 2015, Justin was hired to be the Director of the UCSC Doris Duke Conservation Scholars Program to support conservation efforts around the globe and to educate a new generation of environmental and conservation leaders. A long-time community activist, Justin ran for Mayor of Santa Cruz on a platform of policies including rent control, workers' rights/living wage, and preserving Santa Cruz's open spaces. In 2008, Justin made history as Santa Cruz's first black male mayor, the city's first millennial mayor, and potentially the first punk-rock-loving mayor.

Jacqui Patterson, Director of Environmental & Climate Justice Program, NAACP – Jacqui is a leading researcher, program manager, coordinator, advocate and activist working on environmental and climate justice, women's rights, violence against women, racial

justice, and economic justice. A Johns Hopkins AAP alum with a master's degree in public health, Jacqui served as a Senior Women's Rights Policy Analyst for ActionAid where she integrated a women's rights lens with the issues of food rights, macroeconomics, and climate change. Her publications include: "Climate Change is a Civil Rights Issue", "Disasters, Climate Change Uproot Women of Color"; "Coal Blooded; Putting Profits Before People"; "Just Energy Policies: Reducing Pollution, Creating Jobs"; "And the People Shall Lead: Centralizing Frontline Community Leadership in the Movement Towards a Sustainable Planet"; and a book chapter, "Equity in Disasters: Civil and Human Rights Challenges in the Context of Emergency Events" in the book *Building Community Resilience Post-Disaster*.

Panel topics will include how activism is evolving, as movements and organizations are learning to adapt their tools and systems to mobilize for the current climate, food deserts as an



environmental justice issues and the innate bias of online grocery delivery, and how social and/environmental inequality has contributed to the impact of Covid-19 on low-income neighborhoods and communities of color.

This will be an interactive virtual panel where audience members will be able to pose questions to our panelists. We will be announcing two additional surprise panelist soon so stayed tuned!

Alumni Spotlight: Jessica Freedman

Jessica graduated from the JHU AAP ESP program in May of 2020. In 2017, Jessica started environmental planning for McLaughlin Research Corporation (MRC), a small, female-owned military contracting company. She provides environmental compliance support for both the Navy and for the Coast Guard at the Naval Undersea Warfare Center. Jessica writes the documents necessary to comply with various environmental policies such as the National Environmental Policy Act (NEPA) and Endangered Species Act, detailing all the physical and biological resources in the area and examining potential environmental impacts of military training and testing.

Her studies in the JHU AAP ESP program allowed for an immersive educational experience in environmental science and policy; writing and studying about environmental policies and applications for her Master's degree and writing NEPA documents including Environmental Assessments, Endangered Species Act Consultations, and Coastal Zone Management Act consistency determinations for MRC. The courses in this program helped to make Jessica a more confident and skilled environmental planner.

Furthermore, in 2017, Jessica joined the Eastern Rhode Island Conservation District board, a local non-profit that helps to provide financial and technical assistance to farmers to implement conservation practices. Now that Jessica is no longer balancing schoolwork into the mix, she is leading the fundraising and outreach efforts as the non-profit's secretary. She recently organized a plogging (running or walking while picking up trash) fundraiser and is now running information booths at the local farmer's market on Tuesdays after her work day ends with MRC.

Jessica envisions harmonious relationships between humans and the natural environment, inspiring her to seek out meaningful work that best meets this objective.



COVID, Punctuated Equilibrium, and Disruptive Innovation in the Classroom & Learning Community

Dr. Jenn da Rosa

In his book, *The Innovator’s Dilemma*, Clayton Christensen (1997) differentiates between *sustaining innovation* and *disruptive innovation*. Sustaining innovation is a kind of evolutionary innovation that improves a product over time in ways that people are expecting. Let’s consider some *sustaining innovation* that you would expect: Johns Hopkins University’s Advanced Academic Programs (AAP) was launched in the early 1990s. Among the early programs that were part of this new Hopkins division was Environmental Studies, which would later evolve into the Environmental Sciences & Policy (ESP) program that you know and love. Initially, all AAP courses were face-to-face. However, in the early 21st century, AAP courses began to offer online courses. Gradually, over time, the demand for online courses grew. Today, 90% of AAP instruction takes place online. This slow progression

from face-to-face courses to mostly online course offerings was gradual and not surprising.

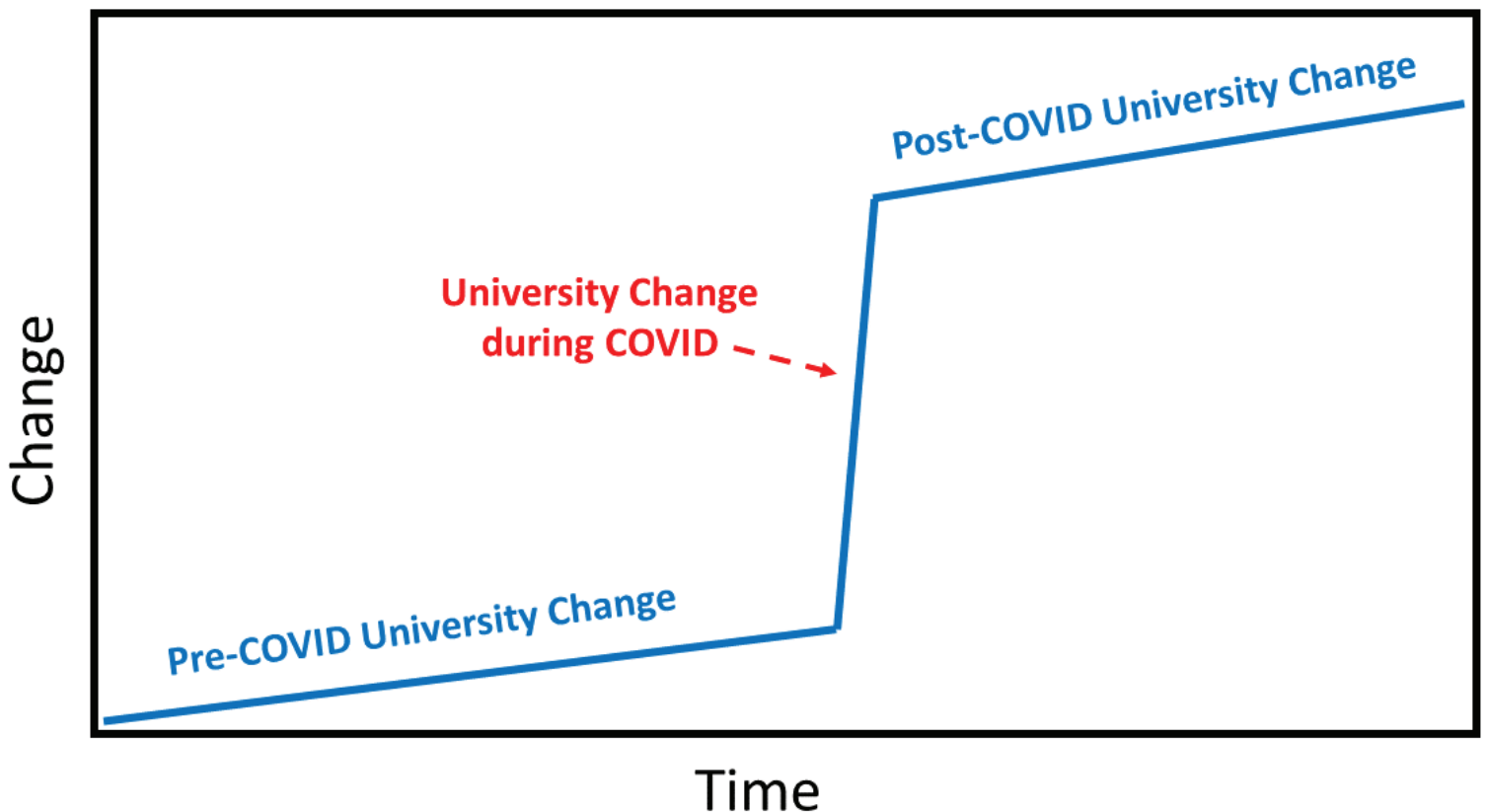
On the other hand, Christenson (1997) describes *disruptive innovation* to be an innovation that creates a new market because it has changed our values and behaviors. Some textbook examples of this would be how Wikipedia disrupted the market for old-fashioned encyclopedias or how the creation of Amazon has disrupted how we purchase, well, everything. Disruptive innovations are riskier, so established organizations tend to play things safe and follow the sustaining innovation route; whereas startups are more likely to engage in disruptive innovation.

When I first read about *sustaining* and *disruptive innovation*, it reminded me of a similar, albeit different concept in evolutionary biology. Evolutionary



Dr. Jenn Da Rosa
Program Coordinator for the Environmental and Energy Programs

biologists are often debating the two theories of speciation: gradualism and punctuated equilibrium. I maintain that these same ideas can be applied to an organization or program as it



Punctuated Equilibrium, and Disruptive Innovation (Continued from page 10)

changes over time. *Gradualism* refers to change that is even, slow, and steady. You can think of JHU AAP as undergoing steady, slow changes in the last 20-25 years as it transitioned to online course offerings. You can think of the ESP program over the last 15 years as we increasingly perfected the quality of those online courses, their design, and the content covered to reflect changing science and evolving policy. In my opinion, AAP has been ahead of the curve on the gradualism plot. Traditional brick-and-mortar universities have been slower to integrate online course offerings and pedagogy, so you can think of their change as being slower, but steady nevertheless.

According to evolutionary biologists, *punctuated equilibrium* describes evolution that happens over a short period of time. There might be a disruptive event that prompts rapid and abrupt change. Let's apply this same concept to an organization or program. Can you think of any disruptive events that have happened recently? I am glad we are all on the same page. The COVID-19 pandemic has, of course, unbalanced almost every aspect of our lives. It has also affected the higher education system. As I write this, universities around the United States are still grappling with how to open in the Fall semester safely, teach effectively, and still provide the "college experience".

Let's pause for a moment and look at how the university has evolved rapidly to meet this sudden COVID challenge. For the first time in our history, Johns Hopkins moved all courses to fully online or remote learning during the Spring semester. Professors that had never taught online learned to teach using Blackboard and Zoom. Technology was learned. Communities were formed. Resources were shared. An enormous amount of change happened – and is still happening.

More course modalities are being offered to students for their safety and learning preferences. Campus layouts and norms are shifting due to social distancing needs. This is a *punctuated equilibrium*-type change. It is happening over the course of months, not years or decades.

I maintain that *punctuated equilibrium-type change is the mother of disruptive innovation*. Perhaps this is a play on the old saying that "necessity is the mother of invention". Time will tell. My point is that the massive upheaval that comes with the COVID pandemic will provide new opportunities for innovation in higher education because our values, behaviors, and expectations have changed. And, while it may be frustrating now, this is ultimately a positive thing.

How has the Environmental Sciences and Policy program responded to this *disruptive event*? We have approached this from two main angles:

- 1) Build community at the program and classroom level.
- 2) Find unique and fulfilling ways to help students meet their degree/course requirements.

To build community and promote awareness, we supported the GIS program's four-part *Mapping a Monster* Speaker Series about the use of geospatial technology to combat the COVID-19 pandemic. If you missed any of these talks, they can be viewed on the [AAP YouTube Channel](#). You can also find the Hopkins Celebrates Earth Day 50 lightning talks there as well.

We launched our ESP Instagram Takeovers this spring to help bring our students, alumni, and faculty a little closer together. How this works is each ESP student/alumni/faculty can sign up for a week to "takeover" the ESP Instagram account. Each member that takes over the account

can share content from a more local and personal level with the entire program. We've had posts from past field courses, projects people are working on, hiking trip pics – anything environmental! You can [sign up](#) at any time.

We are also striving to build community more in our classrooms too. This is especially important in a world where we feel increasingly isolated and distanced from each other. Professors are leveraging small group work to encourage students to interact with each other more and to reinforce student-student relationships that will last after the class is over. Other professors are bringing the alumni into their classroom as guest speakers, mentors, or as interviewees for students to meet and learn from.

We recognize that students are under personal, professional, and economic pressure. The ESP program academic advisors (Dr. Burgess, Dr. da Rosa, Dr. Hansen) have been working to find ways to help all students meet their degree requirements in these challenging times. We have adapted our modes of delivery. *Virtual live* courses have become a new option for students that are remotely located but desiring a face-to-face, synchronous presence with their instructor and classmates. These courses also provide a safe option for meeting residency requirements while field courses are postponed.

I can say with certainty that we (ESP) will emerge from this *disruptive event* an even more resilient community with greater flexibility in learning modes and resources than we were before. This is due to the dedication of our faculty, the passion of our students, and the allegiance of our alumni. Overall, higher education will not be returning to the status quo either. We have diverged too far too quickly. Disruptive innovations will result, and universities will be better for it.

Alumni Spotlight: Makary Hutson

Makary currently works for the Forest Service in Fort Collins, Colorado, focusing on environmental compliance and policy relating to hydropower dams and renewable generation – this is how his career progressed.

Like many undergraduate students, I did not know specifically what I wanted to do after graduating with a Biology degree from Gonzaga University. I applied to a wide variety of entry-level positions in the scientific field, including lab and field work, without a specific direction or focus. Relying on numerous informational interviews and professional networking, I ultimately found a contract position as an environmental protection specialist with Bonneville Power Administration (BPA). BPA is a federal power-marketing agency under the Department of Energy based in Portland, Oregon, and my primary responsibility was to ensure environmental compliance with federal laws and regulations including NEPA, ESA, NHPA, and CWA, for projects and construction relating to transmission system infrastructure and wildlife-mitigation. I learned a lot of my knowledge on the job. I admit, I had never even heard of NEPA before I started at BPA.

After a couple of years gaining invaluable experience as a federal contractor, I landed a permanent federal position (as a GS-9) in a similar environmental compliance role at BPA. My new position focused on the actual implementation of the mitigation measures identified during project planning, field surveys, and NEPA scoping, such as requirements to protect endangered species, avoid or mitigate impacts to wetlands, or avoid sensitive archaeological sites. The role required effective communication between stakeholders and interested parties, with emphasis on working closely with Native American tribes, USFWS, NOAA, engineers, construction staff, non-profits, and lawyers. Over eight years at BPA, I gravitated towards environmental policy and contentious or compli-

cated issues, such as the operation of the dams in the federal Columbia River hydropower system and the effects on endangered salmon and steelhead. I also led or supported multiple large, expensive programs to mitigate the environmental effects of hydropower on fish and wildlife. For example, funding tributary habitat and stream restoration projects throughout the Pacific Northwest, coordinating operations at hydropower dams to release water to benefit juvenile and adult salmon, and managing a large instream water rights program to purchase water rights from farmers to keep more water instream, especially during critical summer months and spawning periods for endangered salmon and steelhead.

I moved to new hydropower specialist role with the U.S. Forest Service regional office in Denver, Colorado in February 2018. As a land managing agency, the Forest Service promotes multiple uses on public lands while sustaining the nation's forests "to meet the needs of present and future generations." The majority of hydropower dams and associated facilities (i.e. reservoirs, campgrounds, etc.) in the U.S. are located on public lands. My responsibilities include supporting environmental policies and regulatory compliance to protect and mitigate the impacts of energy-generation projects on public lands. The Federal Energy Regula-

tory Commission (FERC) is the lead agency for licensing all non-federal hydropower dams, so a lot of my project-specific work for dams on public lands is in conjunction with FERC licensing and re-licensing processes. In my day to day, I routinely assist on issues relating to sensitive resources, legal policies, regulatory processes, public access, mitigation conditions, and national-level consistency between all levels; from folks working on the ground in our National Forests up to national-level legal and policy specialists. I also work closely with non-governmental organizations, non-profits, and other stakeholders with a shared interest in the use of our national forests.

While my professional career to date has focused on working in governmental agencies, my ultimate goal is to own my own environmental compliance firm that can assist during the design, permitting, and implementation of all types of projects to promote environmental sustainability and resource mitigation. I believe everything I learned in the JHU ESP program and earning my master's degree is a significant boost towards achieving my future goals. If you want to dialogue please feel free to email me at: mhutson4@jhu.edu or makaryh@gmail.com



Learning in the Field: Nepal

By Sara Papanikolaou and Carmel Comendador

When we first met our JHU classmates in person over dinner in Thamel, a small town in Kathmandu, Nepal on January 3, life as we know now, was very different. Spending the first weeks of January outside of the U.S. portended more travels and adventures in this new year (and decade). We had enrolled in the “Climate Change Adaptation and Development in Nepal” course, a 3-week field course offered during the Spring Intercession semester.

Carmel had completed two semesters in the MA in Nongovernmental Organizations (NGO) Management program, a fully online curriculum, and was looking forward to being in a field “classroom” for three weeks and learning with classmates, professors, and subject matter experts in person. Her knowledge of environmental sciences was very limited at that point, but she was drawn to this course because she had visited Nepal previously, a few months after the devastating earthquakes of 2015, and wanted to return to learn more about this beautiful country. In particular, she was excited to learn about Nepal’s civil society and how NGOs engaged in environmental and humanitarian issues. Sara was nearing the end of coursework in the Energy and Climate Policy program, and with plans to work in the climate adaptation sector following graduation and a lifelong dream of visiting Nepal, was thrilled to be part of the trip. Many of our classmates were in the Environmental Sciences programs, as well as Cultural Heritage Management, Global Security Studies, and the NGO Manage-

ment program.

The next three weeks brought a diversity of learning experiences. Through many guest lectures, we were exposed to the expertise of leaders in environmental, climate, and gender issues. We visited the United Nations compound in Kathmandu, where the Environmental Sciences and Policy (ESP) students met with a representative from United Nations Development Fund (UNDP) observing their work mainly on climate change adaptation and the NGO students with representatives from the United Nations Population Fund (UNFPA) to discuss the UN’s engagement in Nepal in the areas of family planning, adolescent sexual health, and maternal health. We visited the World Wildlife Fund (WWF)-Nepal where we learned about WWF’s various partnerships with NGOs in Nepal to advance nature conservation. We toured the International Centre for Integrated Mountain Development (ICIMOD), which is headquartered in Nepal and learned about ongoing research into the effects of climate change on the Hindu Kush Himalayas, including declining snowpack and increased risk of glacial lake outburst flooding. Finally, we visited the Nature Conservation Center in Chitwan National Park, where the Nepal Army, which manages the Center, led a robust discussion on their anti-poaching efforts and disaster response. Carmel can still visualize rhinos being swept away in the floods across the border to India.

Part of what made this field course such an invaluable learning experience for us

both was the exposure to guest lecturers with the highest level of expertise in their respective fields. Dr. Manohara Khadka’s interactive lecture on gender and climate change at the International Water Management Institute (IWMI)-Nepal office opened our eyes to the extent of marginalized populations falling outside the consideration of policy makers, as well as the lack of attention given to gender-based violence. Dr. Maheshwar Dhakal, Joint Secretary and head of the Climate Change Management Division of Nepal’s Ministry of Forests and Environment, provided an update to the climate change status of Nepal and the roadmap presented at the United Nations Climate Change Conference (UNFCCC CoP 25) in Madrid a month earlier. In Pokhara, a panel of local government and NGO leaders led a discussion into the effect of Nepal’s new federalist structure on the environmental and civil society sectors, and continued efforts to expand the reach of the country’s electric grid. Our guest lecturers also included authors of academic papers who shared their research studies on buffer zone management and preserving biodiversity. We participated in series of one to one interaction with farmers and community members to get first-hand knowledge on the impacts of climate change and we observed several on-farm and off-farm adaptation practices carried out by the rural communities.

Diverse cultural and social characteristics were covered where traditional

(Continued on page 14)



Learning in the Field: Nepal *(Continued from page 13)*

knowledge regarding natural resource management were discussed. Students were able to observe first-hand how intricately environment is linked with the cultural landscape of the communities. There were several coverages from a security point of view wherein border issues along the Nepal and India in terms of wildlife movement and illegal trade were discussed. Likewise, Nepal Army's experts shared their knowledge about disaster risk reduction programs and strategies and it was very interesting to hear their thoughts about changing pattern of weather and climate in recent times and how it could impact future security situation between the countries.

During our three weeks in Nepal, we had two overnight stays with local families. The community homestay programs are revenue-generating opportunities for local families who provide lodging and meals for travelers. At the first homestay, we learned that a portion of our lodging fees

were set aside to fund a health center for the village; our second homestay was with the Magars, one of Nepal's ethnic communities. At each homestay, we were also treated to a cultural experience featuring ethnic dancing and performances. As a class, we visited a milk cooperative and learned how a community's resources are pooled together. We also visited several solar panel installations; one which helped to reduce the need for water gathering by women in the community and another which helped to maintain watering holes for the animals in the buffer zone- as part of the park's intervention for climate change adaptation against drought. In a few instances, the ESP and NGO students went on separate site visits. The NGO students visited a hill village (getting up there on unpaved roads was an adventure in itself!) where we saw the construction of a birthing center and women-friendly toilets. ESP students visited a community seed bank and discussed the impacts of the shifting monsoon on agriculture. In

Chitwan, the NGO students met with representatives of an NGO managing a health center and orphanage, while ESP students visited a community that had shifted from cereal crop production to aquaculture. The ideas identified by the students during the interaction with this aquaculture cooperative in Madi valley, later helped the community to raise a mini- grant for testing a solar drying technology for the site. A joint undertaking between JHU/ESP students and Wentworth Institute of Technology (WIT), Boston, this project will run from 2020 till 2022 where students from both the institute will collaborate.

It's hard to convey what a valuable experience this field course was, especially since it was likely the only overseas traveling either of us will do this year in light of the pandemic. We are so grateful to both Prof. Amir Poudel and Prof. Karin Orr for organizing this field course and the unique learning opportunity it provided.



Congratulations to Outstanding ESP Graduate

Alex Chen



Environmental Sciences and Policy
MASTER OF SCIENCE

Jerry L. Burgess, Ph.D.

Director for the *Environmental Science and Policy* and *GIS Programs*

Johns Hopkins University
Olin Hall, Office 241, 3400 N. Charles St,
Baltimore, MD 21218

[ESP Student Blog and Resource Site ESP](#)

Email: jerry.burgess@jhu.edu

Office: (410) 516-7326

Jennifer da Rosa, Ed.D.

Program Coordinator for the
Environmental and Energy Programs

Johns Hopkins University
1717 Massachusetts Ave., N.W.,
Suite 829
Washington, D.C. 20036

Email: jdarosa@jhu.edu

Office: (202) 452-1915

Follow us on Twitter and Instagram
@JHUesp

Cassandra Hansen, Ph.D., GISS

Program Coordinator for the
Environmental and GIS Programs

Johns Hopkins University
1717 Massachusetts Ave., N.W.,
Suite 104
Washington, D.C. 20036

Email: chanse11@jhu.edu

Follow us on Twitter and Instagram
@JHUGIS