Fall 2019

**Featured Stories:**

**CC Alumni Profiles:** *Catch up with 2019 alums Koki Atcheson, Katie Timzen and Aiden Franko*

**Summer Research:** *Alexa Hoffman ’20 dives into pelagic ocean ecosystems research at the Cape Eluethera Institute*

**Faculty Achievements:** *Dr. Rebecca Barnes, Assistant Professor of Environmental Science, to receive 2019 Sulzman Award at the Fall AGU conference*

*Students study the effects of tree islands in Atmosphere-Biosphere Interactions*

*Hydrology students measuring the profile of an urban stream in Denver*
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Environmental Management students in the San Luis Valley
EV Course Listing

2nd Semester Course Offerings:

Half Block:

EV127: Introduction to Geographic Information Systems [GIS] (Matt Cooney)

Block 5:

EV128: Introduction to Global Climate Change (Miro Kummel)
EV260: Nature and Urbanization in the Front Range (Corina McKendry)
EV271: Environmental Law and Policy (Mike Angstadt)
EV333: Atmospheric Dynamics (Lynne Gratz)

Block 6:

EV128: Introduction to Global Climate Change (Rebecca Barnes)
EV145: Environment and Society (Jean Lee)
EV309: Population Dynamics (Miro Kummel)
EV391: Junior Research Seminar (Eric Perramond)
EV320: Adv. Topics in Environmental Science: Landscape Ecology (Charlotte Gabrielsen)

Block 7:

EV212: Energy: Environmental Thermodynamics and Energetics (Lynne Gratz)
EV375: Community Forestry (Jean Lee)
EV421: Environmental Synthesis (Rebecca Barnes and Mike Angstadt)
2nd Semester Course Offerings [cont.]:

Block 7 [cont.]:

EV128: Introduction to Global Climate Change (Shane Burns)
EV209: Ecology and the Environment (Mark Snyder)
EV145: Environment and Society (Susan Ashley)
EV237: American Environmental History (Amy Kohout)
EV285: Introduction to Literature and the Environment (Sylvan Goldberg)
EV276: Environmental Sociology (Wade Roberts)

Block 8:

EV128: Introduction to Global Climate Change (Charlotte Gabrielsen)
EV145: Environment and Society (Corina McKendry)
EV209: Ecology and the Environment (Miro Kummel)
EV281: Environmental Ethics (Philosophy Visitor)
EV431: Atmospheric Chemistry (Lynne Gratz)

Noah Nunnelly '21 climbs up the bank of Monument Creek after collecting a water isotope sample

Virginia Thom '20 and Brandon Ewert '20 set up a weather tower at Happy Apple Farm in Penrose, CO
Alumni Spotlights

Aiden Franko ‘19 and Katie Timzen ‘19 head for Middle Earth

What inspired you both to move to New Zealand after graduation?

During our Junior year at CC we both did the HECUA study abroad program in New Zealand. We spent 4 months traveling around the country, learning and participating in internships. During this period, we both fell in love with the country. The pace of life, outdoor recreation opportunities, and easy ability to travel all over brought us back. Post-graduation we both felt like this was the point in our lives where we didn’t have anything holding us in one place, so now was the time to go.

Katie: After leaving CC I felt like I needed time to think. I wanted space to consider different career opportunities, places to live, and just to take time for myself. I think my time here can also be a means to an end of more powerful environmental work in my future. It is a chance to get new perspectives and ideas that I can leverage to make a greater impact in my careers down the line.

Aidan: I was also looking to spend some time evaluating career paths and what my next steps post-graduation might be. I felt like taking the time to wwoof, travel, and meet people with different life perspectives, while traveling around New Zealand would be a valuable experience. I also felt like there were parts of the country that I hadn’t seen last time and really wanted to explore more.

How did the Environmental Policy major influence your journey?

During our last visit here we got the impression that people in New Zealand are much more connected to the land than in many other places. This resonated with us, and we wanted to explore that connection further. In order to do so, we chose to explore the country through wwoofing, which is a system for people to work on organic farms. We have really been able to apply a lot of what we learned as Environmental Policy majors to the farming systems we are working in here. Our major also gave us a really good basis for what we were getting ourselves into with this kind of work and how we would be making a positive difference to the local environment. Additionally, our major has helped us have more informed conversations with the different people we have met along our journey, from the farmers we’ve stayed with to the many other Kiwis we have met along the way.

Katie and Aiden exploring the North Island
Katie Timzen and Aiden Franko ‘19 Cont.

How have you spent your time in New Zealand so far, and where are you going from here?

So far, our time in New Zealand has been a varied experience with many twists and turns that we hadn’t expected. We spent a few weeks working on an organic farm near the town of Thames. At this first farm we helped by working in the vegetable garden, removing invasive plants in the areas that have gone back to native forest, as well as helping to care for the sheep. Our hosts at this location were members of the Green Party and Jeanette Fitsimmons, had served in Parliament, so learning from and talking to them was an incredible opportunity. We spent a little time traveling and hiking after that. Then we moved to our second location near Rotorua, where we were working at Kohutapu Lodge. This is a cultural tourism lodge run by a Maori family, aimed at putting money and opportunities back into their local community. From there we spent a few days exploring, hiking, and visiting friends in Wellington. Then we headed to Motueka on the South Island. We worked at an organic pick-your-own blueberry farm. We largely worked removing invasive plants and fixing fencing. At this location, our hosts were also highly involved in environmental work. One worked for the Department of Conservation and the other at the Tasman Land Trust, so we were able to learn a lot and have interesting conversations with both of them. Since then we have spent time exploring more of the South Island. It has been really interesting to see how popular recreational tourism is here and what the impacts of such a major tourism industry are on the environment.

Aidan: From here I will be spending a little time on my own, possibly seeing more of the Queenstown and Dunedin areas. Then we plan to do a little more wwoofofing and will be volunteering for a mountain bike race for a week. We are also planning to do a couple of multi-day backpacking trips to see more of the island, in the coming weeks. Then my family will be traveling with me for a while before I head back to the US.

Katie: I will be spending more time traveling around the South Island, and am especially excited to do some backcountry trips here! Then I will be looking for work, most likely in Wellington. Wherever I decide to settle down, I look forward to involving myself with local climate activism groups.

Where are your favorite places that you have traveled?

Aidan: So far, my highlights have been the Coromandel Penninsula, Wellington, Abel Tasman, the Nelson Lakes, and Wanaka. I realize that it a lot of places, but they are all beautiful and have so many outdoor recreation opportunities to offer, and also great communities of people. I am really looking forward to continuing south as I think that the Queenstown area, Dunedin, Southland, and Milford Sound will all make my list too. But more than anything I’ve liked the places where our hosts have made us feel welcome and like a part of their families and communities.
Nonprofits and Environmental Education with Koki Atcheson ‘19

Were there any moments in your life that spurred you to go into the environmental field? Where did your passion for environmental advocacy and education begin?

I think back to being a tiny tot, seeing my dad roll out topographic maps of proposed wilderness areas in the Cascades. I pushed back on his conservation influence for years, thinking that there were more urgent concerns for humans. Since then, my friends, classmates, teachers, and authors have been mentors who helped me realize what my dad understood all along: environmental issues are deeply intersectional and immediately impactful to human lives. Through education and advocacy, I believe that people can be empowered to find and share the deep connections between their own life and environmental issues, and join the fight for a healthy planet in perpetuity.

What were you interested in as a student at CC? What led you to become an EV major? Did you do any research, or write a thesis?

I declared an Environmental Science: Integrated major because I saw it as a way to ground my education in science, but reach a breadth of study encouraged by a liberal arts degree. I found Political Ecology, Human Impacts on Biogeochemical Cycles, Foundations in Environmental Education, and Place and Space in the Southwest to be particularly impactful classes. Each offered a new perspective to understand human/nature connection. Those classes helped me see that now is the time for the conservation movement to reckon with a history of displacement, racism, and exclusion. I believe there is an equitable path forward, but it will require work to unlearn colonist ideologies.

I wrote my thesis on Community Engaged Environmental Education based on interviews with families who generously volunteered their time and reflections about their participation in a Latinx family camping program. Interviewees readily mentioned that nature is a medium for human connection and community building. The most resonant finding to me was the necessity of institutionalizing inclusive practices to make the outdoors accessible to all, rather than labeling programs "inclusive" without fully abandoning explicit and implicit exclusive practices.
Koki Atcheson ‘19 Cont.

Did you study abroad? If so, how did your off-campus studies influence your path at CC?

I studied abroad at the International Sustainable Development Studies Institute (ISDSI) in Chiang Mai, Thailand, and off-campus at Teaching and Research in Environmental Education (TREE Semester). Seeing cross-cultural perspectives on sustainability and development in Thailand pushed me to situate ideas of conservation in the Rocky Mountain West within a global collective consciousness of what it means to "live well." Studying environmental education at TREE semester helped me to consider the many paths to stewardship of our planet and the role educational institutions can or should have in fostering that relationship. My off-campus studies shaped my path at CC by fostering dialogue with students at TREE and role-models in sustainable living in Thailand, who stretched the way I understand human/environment relationships.

What is your new job like? What sort of problems are you trying to solve?

As the PIFP Communications Fellow at Conservation Colorado, I support the communications team in advancing state level pro-conservation policies, and broadening the narrative of who is considered an environmentalist. As the largest environmental advocacy organization in Colorado, we strive to pass nationally leading pro-environmental policies to protect Colorado's climate, lands, air, water and communities for future generations. We work to hold decision makers accountable to their constituents – in Colorado, a large majority of people support bold climate action. Up against corporate interests and oil and gas money, we advocate for a safe, healthy future for all those who call Colorado home, particularly for frontline communities who have been and continue to be disproportionately impacted by climate change. The problems we are trying to solve, like the climate crisis, health impacts of oil and gas development, and low water availability, are vast and interconnected. As one organization alone we cannot solve these problems, so we work closely with partner organizations to build power in Colorado communities and move the needle toward a healthy, just future.
Alexa Hoffman ‘20 Dives Head First into Fisheries Research at the Cape Eleuthera Institute

Why did you want to do research?

I’ve known for a while now that I wanted to pursue scientific research. I grew up wanting to study animals, be outside and generally was intrigued by the scientific process, but it wasn’t until high I started to seriously consider it. I had a strong experience being a part of a marine biology research project as a student at The Island School in connection with the Cape Eleuthera Institute. Then my interest in research only continued to grow as I became involved with Miro Kummel’s treeline research sophomore year. I decided to see if I wanted to dive back in (ha) to research in the marine biology field, which was my motivation to go back to CEI for a summer for an even more immersive research experience.

Who did you do research with? Why the Bahamas?

I was a part of a project at Cape Eleuthera Institute (CEI) known as the Exuma Sound Ecosystem Research Project (EXERP). This project was created by my two advisors, Brendan Talwar MSc and Eric Schneider MSc, to begin to describe the open ocean ecosystem of the Exuma Sound. The Exuma Sound is a deep water basin in close proximity to Eleuthera, many coastal mangrove, coral reef, and shallow sand ecosystems. Within this overarching project there is research being collected on everything from deep water macroinvertebrates, to sharks and marine mammals.

I chose to pursue an this internship in the Bahamas because not only did I want to explore the possibility that I want to go in the direction of marine biology, but I already had a deep connection to the place from being a student at The Island School. Brendan Talwar was actually my research teacher when I was a student. It definitely felt full-circle coming back and getting to work on his team along with getting to assist in teaching an Island School class. The education portion of the institute was also a massive draw for me. I think it is incredible that high school students get to be directly involved and immersed into a full-fledged research project, something most people first come into contact with in college.
What was your research on?

The research I was involved in was pretty widespread. The overall EXERP project, as I mentioned before, was created to begin to describe the pelagic ecosystem of the Exuma Sound. One of the projects within EXERP is on Fish Aggregation Devices (FADs). FADs can be any man-made or natural objects that attract fish to a particular location. Often these are buoys, Sargassum mats, or driftwood. Fishermen have used FADs for centuries to target fish and in modern times they have begun to play a controversial role in commercial fisheries, particularly in the tuna industry. CEI has deployed two sub-surface FADs in the Exuma Sound in order to better understand how they impact fish behavior, along with using them as a platform to study the migratory predators of this area. By deploying them under the surface of the water they are hidden from fishing activity. Multiple times a week we would visit each location to conduct both snorkel surveys, but also deploy cameras. Once the cameras were retrieved the video footages would be analyzed to observe fish abundance and behavior.

A second main project occurring within EXERP is that of our pelagic longline surveys. Long-line has been banned in the Bahamas for decades now, which allows researchers to utilize it as a tool to conduct surveys of species abundance and presence within the pelagic ecosystem. Along with catching sport fish, a main focus of these long-lines is targeting sharks within the area. Due to nutrient poor waters within the Exuma Sound, it becomes a challenging and competitive ecosystem for these predators to forage in. CEI has conducted many studies over the years on sharks in more coastal environments surrounding the Exuma Sound, along with even deep water shark research. EXERP is the first group to really focus on those in pelagic waters. From preliminary data they had noticed Silky and Dusky sharks being sporadically abundant here. All silky sharks caught in this area have been juveniles, suggesting this area could be a nursery for this species. One of my advisors has decided to focus on satellite tagging silky sharks to track these juveniles throughout the year to see how they are actually utilizing the Exuma Sound. We set these long lines a few times a week and also spend a lot of time opportunistic fishing to try to target sharks.

Along with these main two projects, there are other smaller ongoing projects within EXERP. Some of these are deep water macroinvertebrates, Sargassum surveys, and boat based transects (which I am working on for my thesis).
Denver Climate Protest with Hiromi Kondo ‘20

By Hirmo Kondo ‘20

On October 11, 16-year-old Swede Greta Thunberg came to Denver’s Civic Park for her 60th week on strike against climate change. She joined many other youth climate activists that stressed not only the effects of climate change, but the inequality and the racism that come with climate change. Together, they spoke to hundreds of people. Greta delivered her speech to a variety people with both young children and adults cheering her name. The strike ended with a quote that should resonate with most people. “It’s not about what political stance you take. It’s about staying healthy.”

As an EV major it was encouraging to see people from a wide demographic rally behind this cause and it was incredible to hear from the well-spoken youth, but it was also disheartening to hear the personal stories of the effects of climate change.

Alexa Hoffman ‘20 Cont.

What did you discover and why are your results important? Can you see yourself pursuing this kind of research in the future?

Currently all of the projects are in their more beginning phases and the data has yet to be fully analyzed. Some conclusions we have been able to come to is in the presence of certain species we didn’t know existed in this area, particularly with marine mammals and birds. Although true, the data that has been collected has allowed for more projects to develop within EXERP and allowed for some projects to evolve. The FADs projects has recently moved towards using acoustic telemetry to track fish on the FADs vertically within the water column. Also research on the marine mammals of the area has begun to take off. CEI recently deployed a hydrophone that will be retrieved in a few months. The data recorded from the hydrophone will help to identify the marine mammals of the area, in particular the deep divers (mostly beaked and sperm whales) that can be hard to spot on the surface. After the internship with CEI I know for certain that I want to continue pursuing research in the marine biology realm. I love the ocean and believe it’s something extremely important to study as climate change and its overexploitation progresses. Both of my research advisors conduct their research through the lens of conservation and fisheries management, which I know for sure is also a direction I want to take in my future career.
Dr. Rebecca Barnes wins AGU award for student mentoring

Dr. Rebecca Barnes will receive the 2019 Sulzman Award for Excellence in Education and Mentoring at the 2019 American Geophysical Union (AGU) Fall Meeting. The Sulzman Award is presented each year to a mid-career woman scientist in recognition of significant contributions as a role model and mentor for the next generation of biogeoscientists. Dr. Barnes is a self-identified “biogeofeminist” who’s research focuses on understanding how aquatic and terrestrial ecosystems process and export nitrogen and carbon. Dr. Barnes was nominated by Dr. Erika Marín-Spiotta of the University of Wisconsin – Madison.

Citation by Dr. Erika Marín-Spiotta

Rebecca Barnes exemplifies excellence and leadership in research, teaching, mentoring and service. Becca’s research is transforming our understanding of biogeochemical processes at the interface between aquatic and terrestrial ecosystems, with a focus on responses to anthropogenic and climatic disturbance.

Becca established an outstanding record of mentoring and teaching, through unwavering support of students and leadership in national initiatives to promote the careers of women and historically minoritized groups in the geosciences. Becca masterfully achieved integration of research into her teaching. In her first 4.5 years at Colorado College, she mentored 13 senior theses and co-authored with 14 students, while maintaining a productive and well-funded research program of her own. Becca engages her students in creative ways to learn and communicate scientific information. Last year she launched a class project to write Wikipedia profiles of women scientists, a project featured on the wiki.edu blog, inspiring others across the country. As an instructor in the SPATIAL isotope biogeochemistry course, Becca has inspired multiple cohorts of students and faculty. As one of her letter writers states: "Becca is a powerhouse, both in terms of her research work and her advocacy and leadership within the academic community."

Through her leadership in the Earth Science Women’s Network, Becca has made immeasurable contributions to building an international peer-mentoring community for women in the geosciences. She single-handedly manages multiple websites and online community resources. Becca has developed early-career professional development workshops, now a regular feature of AGU’s Fall Meeting. She co-organized a workshop with leaders from 500 Women Scientists, producing a guide with best strategies for developing inclusive scientific meetings, profiled in Nature. Currently she serves as co-principal investigator on two major multi-institutional National Science Foundation awards, where she engages in interdisciplinary research on strategies for building diverse, equitable and inclusive climates from undergraduate to faculty levels.

-Erika Marín-Spiotta, University of Wisconsin - Madison
Response

It is an incredible honor to receive the Sulzman Award. I am thankful to Erika Marín-Spiotta for nominating me, my letter writers for their support, and all those who volunteer to the Biogeosciences section. I truly believe that science is a team sport and I am so appreciative of the amazing team of scientists that I work with. This includes the undergraduate students at Colorado College who diligently wade streams and climb mountains for samples; they are the backbone of my research program. Their enthusiasm for learning is inspiring and working with them in the field, in lab, and the classroom is the most rewarding part of my job and without a doubt makes me a better scientist and person. I am thankful to Gabe Bowen and larger SPATIAL isotope family for teaching me so much about how to incorporate research into the classroom and the importance of truly loving what you do. It is always exciting to meet the early career scientists, knowing I will leave wiser and curious about questions I did not even know to ask a week prior. I am grateful for the opportunities that the Earth Science Women’s Network (ESWN) provides me to give back to the geoscience community. I am especially proud of the work we have done to develop evidence based mentoring programs and trainings to improve workplace climate. It is truly inspiring to see so many scientists working together to make our community safer and more inclusive. I am humbled to work alongside the awesome women of ESWN and 500 Women Scientists, Erika Marín-Spiotta, Emily Fischer, and Jane Zelikova; you inspire everything from classroom lessons to political action. I am indebted to you and my network of mentors and mentees who provide strength and resilience, and inspire me to pay it forward.

- Rebecca Barnes, Colorado College

Dr. Barnes and her Block 3 Hydrology Class