

Undergraduate Research Symposium **May 18, 2018 Mary Gates Hall**

Online Proceedings

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ENGAGING OUR ENVIRONMENT

Session Moderator: Kyle Armour, Oceanography and Atmospheric Sciences

MGH 284

3:30 PM to 5:15 PM

* Note: Titles in order of presentation.

How "Pura Vida" Can Combat the Climate Crisis

Alexandra Lyn Johnson, Senior, Environmental Studies

Mary Gates Scholar, UW Honors Program

Mentor: P. Sean McDonald, Program on the Environment

Mentor: Kristi Straus, Program on the Environment

Climate change is an issue that affects every region of the world, but it has a disproportionate impact on coastal communities and developing countries. Fitting both of these criteria, Costa Rica is extremely vulnerable to the impacts of climate change. Currently, Costa Ricans are known for living "pura vida", or the pure life, and the country consistently ranks #1 on the Happy Planet Index, a global index of sustainable well-being. The main goal of my study was to assess how closely a relationship with the environment impacts one's perception of success. As an intern for Frontier Programs in Costa Rica, I engaged in conservation research in the Osa Peninsula, subsequently interviewing twenty locals to attempt to answer how environmental relationships and definitions of success are intertwined. Frontier Programs' goal is to seek out conservation hotspots and work with locals to empower them in future conservation action. My results support the argument that a connection to the environment affects factors people use to define success: happiness, health, and job security. Costa Rica is already feeling the effects of climate change and a loss of biodiversity, and further degradation of this unique natural area has the potential to lead to a decreased connection to nature. This creates a compelling argument for enhancing the climate resiliency of Costa Rica. Closer to home, my work could be extended to make the case that Americans can increase their overall perceptions of success by developing closer relationships with the natural world.

Empower Communities, Inspire Change: How Environmental Education Grants Make a Difference

Anna Marie Johnson, Senior, Environmental Studies

Mentor: P. Sean McDonald, Program on the Environment

It is no secret environmental issues are increasing in quan-

tity and severity with passing time. The U.S. Environmental Protection Agency (EPA) is tasked with addressing these issues through its programs and regulatory authority. With a large portion of the EPA's budget allotted to grants, it becomes increasingly important to measure the success of funded projects to ensure they are achieving their intended goals. Grants awarded for environmental education specifically bring awareness to environmental literature and curriculum. This in turn inspires critical thinking, problem solving, and action. Through my internship with the Office of Public Engagement and Environmental Education at the EPA, I aimed to discover what prescriptive criteria EPA should require from their grantees, in hopes of funding impactful projects and collecting data to leverage the program's legacy. I synthesized final reports of environmental education grants issued since 2012, interviewed EPA personnel, interviewed grantees, and conducted a thorough review of documents within the environmental education grant process. I discovered stark differences in the definitions of "success" between the grantees and their communities as compared to political and agency structures. Realigning these measurements of success allows EPA to allocate grants to promising projects and use the limited available funding to make a difference. Empowering communities through grants allows them to educate their communities in ways they know best, but also provides them with the encouragement to commit to action and use public involvement for solving environmental challenges.

Trailhead Outreach: Analyzing Winter Backcountry Users' Education and Awareness of Avalanche Danger

Jonathan Alan (Jonathan) Christ, Junior, Atmospheric Sciences: Meteorology

Mentor: Scott Schell

Mentor: Forest McBrien

Mentor: Charlotte Guard

Working with the Northwest Avalanche Center (NWAC), the Trailhead Outreach Project researched levels of avalanche

awareness, education, and preparedness of different demographics and user groups who enter avalanche terrain in the winter backcountry. Washington state itself is responsible for 54% of hiker avalanche fatalities nationwide in the past ten years. This statistic, combined with the increasing popularity of mountain recreation, made it necessary to understand who uses the backcountry and how they can be reached with the education required to make informed decisions when traveling near or in avalanche terrain. It was believed that backcountry skiers are generally well versed in avalanche risk and protocol while snowshoers and hikers are not. To obtain this information, NWAC set up a tent staffed with volunteers at four popular backcountry trailheads in the Cascade mountains on 12 separate weekend days (three at each location) over the winter of 2017-2018. Users were asked to take a survey that consisted of 14 quick questions to identify their mode of travel and levels of education, awareness, and preparedness. General demographic questions were also included. Preliminary results indicated that hikers and snowshoers do in fact have lower levels of avalanche awareness, education, and preparedness than skiers, and that people are heading into the backcountry with low levels of avalanche education at astounding rates. The results from the survey help the Northwest Avalanche Center direct their education and awareness programs toward the user groups shown to be less informed and potentially more vulnerable to an avalanche related accident.

EWV! Education, Waste, and Water in Remote Amazonian Communities

*Danielle E. Bogardus, Senior, Environmental Studies
UW Honors Program*

Mentor: Samantha Zwicker, School of Environmental and Forest Sciences

Mentor: Tim Billo, Program on the Environment

Few communities within the Madre de Dios region of Peru are recognized by local governments, and less are allocated the necessary resources to meet basic needs such as waste management. The aim of this study is to develop a toolkit to understand the amount of waste, the composition, the levels of water contamination, and the mentalities towards waste management, specifically within the Las Piedras district, in the Madre de Dios region, of Peru. The damaging effects of absent waste management and unsustainable landfills affect the environmental, social, and economic sectors of the surrounding environment. To raise awareness of waste management and find tangible solutions, the Waste Management Toolkit includes waste auditing, water sampling, and mentality survey strategies which were conducted in three remote communities, as well as within the Las Piedras Municipality. Results have shown evidence of both human health and environmental health impacts from improper waste management due to burning, burial, and dumping practices. Mentality surveys have shown distrust in the local municipalities, a lack of

education when it comes to waste management practices and impacts, as well a district wide absence of infrastructure to support waste systems. The Waste Management Toolkit has successfully led to the implementation of a communal waste pit in the community of Lucerna in the field season of 2016 and 2017, as well as in the community of Puerto Nuevo in Spring of 2018. The community of Boca Pariamanu has been studied and results have been reported to the local municipality in Spring of 2018 to support waste management systems since they are accessible from the closest large city, Puerto Maldonado to export waste. These three communities have become the pioneers within the region. Future endeavors will include the replication of the Waste Management Toolkit in surrounding communities and municipalities.