Online Proceedings

Poster Session 2

Commons East, Easel 56

1:00 PM to 2:30 PM

Contextualizing Barriers in Natural Resource Management and Restoration for Native Lands in Washington

Hannah Jarvis Wilson, Senior, Environmental Science & Resource Management
Mentor: Ernesto Alvarado, School of Environmental and Forest Sciences
Mentor: Martha Groom, Interdisciplinary Arts and Sciences, UW Bothell

The Moses Prairie Project is an effort to restore and enhance culturally important plant species on the Quinault Indian Nation Reservation through the traditional land management practice of controlled burns. Moses Prairie was selected because it was the only wetland fully owned by the tribe, unlike the other various prairies that are on allotted acreage. The prairie is a fen which makes it a biodiversity hotspot that supports both plant and game species if managed well and is not encroached by the surrounding temperate rainforest. In September of 2015, the prairie was burned for the first time in 150 years. I witnessed the complex difficulties and successes that come with collaboration across different agencies, cultures, and peoples. It brought up questions of what it meant for conservationists to do a cultural resource restoration project for tribes on the Olympic Peninsula, in the Pacific Northwest, and the rest of the United States and beyond. There are more contexts that bring to light why this project conserving both culture and the environment. I analyzed the data from the vegetation monitoring project on Moses Prairie, researched Quinault natural and cultural histories, looked at the kind of laws and systemic barriers that for tribes doing natural resource management, suggested future considerations such as climate change, and made recomendations on how to do more holistic and interdisciplinary natural resource management and ecological restoration. The goal of this report is to analyze the way restoration on reservations is shaped by the historical climates and natural events, tribal culture and resource management, and the past and present colonization and capitalization of the landscape. The aim is for scientists in my position to consider the many influences of the way a landscape is formed and the considerations we must keep in mind going forward with climate change and the continual erasure of the tribes. I also hope to provide a resource for the tribe to be able to reference either for their own knowledge or for people they hire or work with.

Poster Session 3

Commons East, Easel 75

2:30 PM to 4:00 PM

Global Warming and Energy Conservation Knowledge in a University Population

William Nevin Appel, Senior, Global Studies (Bothell)
Mentor: Martha Groom, Interdisciplinary Arts and Sciences, UW Bothell

Global warming is a real threat to our communities and the world at large, yet most publics may under-appreciate the threat, or yet be moved to action. This research explores the level of awareness and motivation at UW Bothell, specifically exploring the questions: What is the level of knowledge about global warming and fossil fuels from students, faculty and staff? Does knowledge or perception of these issues differ among U.S. students versus international students? How does awareness and motivation toward action correlate to having taken environmental coursework? Results will be presented from an anonymous, cross-sectional survey from three groups: students, faculty, and staff at UW Bothell (UWB) regarding knowledge, perception, usage, and interest or engagement in actions to reduce fossil fuel use and reduce climate warming. Based on related prior work, both quantitative and qualitative results are expected to show a range in perception, knowledge, and acceptance of global warming, as well as fossil fuel usage and energy conservation in relation to political affiliation, and prior exposure to environmental coursework. The study serves as a foundation for a future study to increase knowledge about global warming and energy conservation.

Poster Session 4

MGH 241, Easel 124

4:00 PM to 6:00 PM

The Role of Innexins in Ectodermal Cellular Signaling in *Hydra vulgaris*

Miranda Nicole Howe, Senior, Biochemistry
Mary Gates Scholar
Mentor: Martha Bosma, Biology
Mentor: Joshua Swore

Hydra vulgaris are some of the simplest animals with neurons and have only two thin, near transparent layers of tissue: myo-endodermal and myo-ectodermal layers. Each cell in the animal can be examined simultaneously due to their small size, simple body pattern, and stereotypical (regular and defined) behaviors. This makes *Hydra* great animals for examining simple signal transmission pathways from which the complex pathways in vertebrates derive. Cells in the ectoderm and endoderm use calcium signaling to coordinate contractions and cause the animal to move, but how this mechanism of cell-to-cell calcium signaling functions is not well understood. Invertebrate gap junctions, intercellular proteins that cells use to send signals to adjacent cells, are coded from the innexin gene family. It has been found that the genome of *Hydra magnipapillata* has fourteen predicted innexin genes. Recent data suggests some of these innexins are expressed in the ectoderm, specifically innexins 1,4,5, and 13. I hypothesize these proteins are necessary for the animal to perform coordinated contractions. To determine the role of these proteins, I used shRNA techniques to knockdown innexin expression. After examining wild type *Hydra*, I examined an existing line of transgenic Hydra which express GCaMP in ectodermal cells to identify when cells use calcium to signal other cells. In these animals, signals can be viewed as a wave of fluorescence passing across the ectoderm. I knocked down the genes by electroporating shRNA molecules into adult animals who express GCaMP, and will image these animals' behavior. There should be quantifiable differences in the fluorescent waves, as I postulate that some cells will be excluded from these waves if an innexin is knocked down, and analyzing these differences should clarify the role of innexins in gap junction signaling.