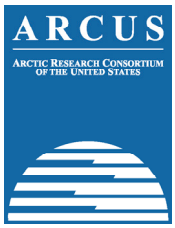
PolarTREC Public Science Report
Sian Proctor
Historical Ecology for Risk Management 2014
Barrow, Alaska 2014

PolarTREC Expedition Page
http://www.polartrec.com/expeditions/historical-ecology-for-risk-management-2014



This program is supported by the National Science Foundation under award 1345146. Any opinions, findings, and conclusions or recommendations expressed by this program are those of the PIs and coordinating team and do not necessarily reflect the views of the National Science Foundation.

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Why should a teacher go on science expeditions?

I believe that opportunity leads to exploration, exploration leads to discovery, and science is all about discovery. The most important asset a teacher can give their students is to instill a love of science through exploration and discovery. It's hard to instill exploration, passion, and discovery when you haven't experienced it first hand. Teachers need to go on sceince expeditions so that they can lead by example and experience the exporation, passion, and discovery they want their students to embrace. Teachers with real life experiences are role models who engage and inspire by weaving their experiences and discoveries through the classroom science activities.

How are you going to link this back to your classroom?


Sian Proctor on expedition in Barrow, Alaska

As a result of my PolarTREC expedition I now have first hand experience of a polar environment, coastal erosion in action, mitigation strategies, and the impact of climate change on community - which are all topics covered in my Geologic Disasters and the Environment course. I now have 20 videos I created while in Barrow, Alaska that capture the story of what is happening in this unique environment - which is completely different from the Phoenix dessert where I live and teach. These videos, when added into the larger context of climate change and ocean literacy, create a media-rich snapshot of the environment, science, and challenges being tackled in this region. Exposing students to this information and videos of their teacher in this in environment can give students the confidence that they too can explore polar regions and engage in this kind of research because there teacher has done it.

From your needs assessment, What are the three to five things you expeceted to learn during your experience? Did you learn them? Why or why not?
During my expedition I expect to learn a lot about climate change and coastal erosion. I achieved this goal with the help of Dr. Kathleen Fischer, an oceanographer and one of my research advisors. Dr. Fischer explained to me key concepts about why the coastline was at increased risk do to changes in the amount and location of sea ice, increased fetch, coastal geology, and storm surges. We went out in the Barrow environment to study the geology, examine the coastal berms and embankments, and analyze the locations of key infrastructure. The first hand experiences provided me with a solid understanding of why arctic environments have extreme challenges do to changing climate conditions.

I also expected to learn about small community living, risk perceptions, tribal resilience, and the

historical ecology of the region. Dr. Anne Garland, my other research advisor, provided the guidance to help me understand about the rich culture and history of the region. Dr. Garland instructed me on how to engage with community, setup-learning activities for individuals of all ages, and to do research on culture and ecology through the study of legends and myths.

Sian Proctor on expedition in Barrow, Alaska.

I also learned about preparedness and mitigation strategies and challenges facing the community and region. We had multiple meetings with local officials and the emergency management department. It was really interesting to learn about how a community prepares for changes both in the near future and 20 years down the road. As a result of my expedition I learn how to put together a whole picture of Barrow, Alaska and the impact of arctic climate change on this coastal community.

From your needs assessment, what were the three to five concepts you would like to teach better or differently? How does this impact your students?

There were three concepts that I wanted to add into my curriculum as a result of this expedition. The first was the use of videos to engage the student. I now have my student create weekly videos dealing with their understanding of the concepts being learned in the course as a result of my experience making videos on this expedition. This has been a highly successful way of engage my online students.

Sian Proctor on expedition in Barrow, Alaska.

The second concept I wanted to add to my curriculum was to create more critical thinking and decision making into my curriculum. I have done this by having students answer more thought provoking questions that the students answer in a video or voiced over screen-cast presentation. For example, here is a question about coastal erosion:
"What would be the top mitigation strategy (something not currently being done) that you would implement if you where the emergency manager

for the town of Barrow, Alaska. What would have to be done for this strategy to be put in place and be fully embraced by the community? Do you think it could be done within the next 5 years? Why or why not?

From your outreach plan, are there any activities that you will pursue, post-expedition, that the public should know about? Other ideas on how you'll share this experience with tthe public and/or your peers?

My expedition to Barrow, Alaska made me think about how to engage my students understanding of science concepts in a new, fundamentally different way. I now have them engage in metacognitive activities that make them have to synthesize their learning and understanding of the concepts and then present them in a documentary like fashion through the creation of videos. What I like most about this is that after a student learns a key concept, I can have them go out on their own, local expedition, to find examples of those concepts and express their understanding in the same way I learned to do in Barrow, Alaska.