de the lab: NAU field researchers provide school ers hands-on education

April 20, 2017 1 Comments

Visiting school teacher Jennifer Balducci holds a sedated ground squirrel

Science in the field can differ drastically from science in the classroom.

Reading about hibernating ground squirrels having the lowest body temperature of any mammal, while interesting, is completely different than witnessing their peripheral tissues dropping below freezing without solidifying or crystalizing—a true phenomenon.

Northern Arizona University field researchers have been studying ground squirrels and the effects of climate change on hibernation since 1993. They are one of two NAU groups who will host K-12 teachers at research sites in the Arctic and sub-Arctic regions of Alaska this summer. The partnership is organized by PolarTREC to invigorate polar science education and understanding by bringing educators and polar researchers together.

"I think involving K-12 teachers in research is really helpful in getting K-12 students excited about STEM," said **Cory Williams**, research assistant professor who has worked on the ground squirrel project since 2008.

Williams and "Team Squirrel" are hosting Jennifer Balducci, a high school biology and chemistry teacher from Switzerland. During her three weeks in the Arctic, which concludes in early May, Balducci is immersed in field work, capturing arctic ground squirrels as they emerge from hibernation and equipping them with biologgers that allow NAU scientists to monitor their body temperature and activity levels throughout the year. While in the field, Balducci has been communicating with her students more than 4,500 miles away through blogs. She hopes this will encourage them to become passionate learners.

"Many of these kids hear the word 'research' and think only about lab-based studies, which doesn't interest all of them," Williams said. "This provides a great opportunity to showcase other types of research and hopefully have more kids, particularly from under-represented groups, consider STEM careers."

The second group of NAU researchers is working with University of Alaska Fairbanks and Alaska Pacific University on a project called "Arctic Glacial Lakes." At the G. William Holmes Research Station in Alaska's Arctic National Wildlife Refuge, the scientists conduct research to better understand the complex sedimentological and hydrological processes important to glacier-fed Arctic lakes.

Rebecca Harris is a high school science teacher from Utah who will join the team of researchers in the field in August. Harris's three-week stint will consist of retrieving instruments from approximately 50 meters below the lake's surface, procuring sediment cores, retrieving data from loggers at weather stations and rain buckets, measuring discharge in rivers and visiting glaciers to record annual ice accumulation.

Darrell Kaufman, regents professor in NAU's School of Earth Science and Environmental Sustainability, crosses one of the major inflows to Lake Peters, Carnivore Creek, after checking instruments on the opposite bank.

"The rapid climate changes of recent decades have profoundly impacted the natural environment, politics and societies worldwide, and these impacts are projected to continue to intensify in the future," said graduate student **Ellie Broadman**, one of the field researchers at Lake Peters. "Because of the severity and large-scale of its impacts, climate change is extremely important to understand and is therefore usually a key topic in earth and environmental science curricula in middle and high schools. It's important that students understand that all the buzz about modern climate change isn't just hyperbole; it's based on long-term, in-depth understanding of climatic and environmental systems."

Broadman, who will work closely with the visiting teacher this summer, believes Harris will be able to share experiences in the field with her students in hopes of making various concepts in earth and environmental science more concrete.

"I like to imagine the difference between talking to her students in southeastern Utah about climate change in the Arctic as a general idea that some scientists somewhere study, versus being able to explain it using real data she helped collect, photos of herself working on glaciers or in the tundra and stories about living and working in the Arctic that she can share with her students. The latter scenario makes studying Arctic climate change more of a reality than a mere idea for both Rebecca and her students."

With the goal being to improve and enliven science education by connecting teachers, researchers, students and the public around the globe, Williams hopes this experience proves to be eye-opening for the visiting teachers.

"I hope after this summer they are able to better understand how important climate change is in polar systems, but mostly, I hope this sparks great enthusiasm for science in the future generations that Rebecca and Jennifer are able to share their experiences with."

NAU graduate student Ellie Broadman downloads data from a weather station on Chamberlin Glacier, one of the glaciers whose meltwater flows into Lake Peters.

One Response to *Outside the lab: NAU field researchers provide school teachers hands-on education*

1. *Scarlett Bayard*
   April 22, 2017

   Please let me know if they need chaperones! I graduated from NAU in 1985, worked as an elementary teacher and a 5th grade science teacher for many years. Now I work for a Region 10 in Dallas, TX as a consultant. How can I sign up?

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Chad Brown, who's studying forestry, received the scholarship in the area of tribal public policy. He wants to help tribes sustainably and traditionally use their lands.

Magical Moments in Fiction: Author Roberta Parry to speak at NAU Bookstore

Parry will showcase her literary work, including short stories, play monologues and novels. Parry, who grew up in Northern Arizona and now lives in Santa Fe, also will display some of her art.

Be it the Boston Marathon or graduation stage, NAU grad student Rivers Puzey runs through it

In the first half of 2017, Thomas Puzey has won a marathon, finished 16th in the Boston Marathon and raced in Europe. In May he graduates from NAU with a doctorate in physical therapy.

A weekend of choral performances at NAU

The last weekend in April is scheduled to be a big one for the Northern Arizona University School of Music with two concerts featuring seven unique choral ensembles.

Campus Recreation kids camps at NAU open for registration

Campus Recreation's Mountain Jacks and Explorers Kids camp is accepting registration for children from Flagstaff and the surrounding community.

Editor's Picks

NAU's unique study abroad program wins international award

NAU was honored for its Interdisciplinary Global Program, which allows students to study and work in another country for a full year, helping them to prepare for work in the global economy.

NAU researcher discovers key to fighting autism may lie not in the mind, but in the gut

Greg Caporaso and team performed fecal microbial transplants, which showed promising results that could lead to a new treatment option.

Lumberjack love: NAU student-athletes work with area elementary school children

Members of several NAU sports teams worked with local elementary school students to encourage academic responsibility, good character and fitness through the Lumberjacks C.A.R.E. program