Association for Women Geoscientists - Salt Lake Chapter Newsletter

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ASSOCIATION FOR WOMEN GEOSCIENTISTS

Salt Lake Chapter

Spring Fundraising Auction: Another Success!

In This Issue:

Once again, the AWG – Salt Lake Chapter managed to pull off another evening of great auction items and delicious food and wine. This year, we held our fundraiser atop the 18th floor of the Zions Bank Building in Downtown Salt Lake City. The view was amazing – not only were the mountains spectacular, but several local landmarks such as the state capitol building, the Salt Lake City Mormon temple, and the Mormon tabernacle building all looked stunning when lit up at night! Several people in attendance commented about how wonderful the venue was. This year we were treated to a special donation of tamales and other delicious gourmet food courtesy of Bob Graves, a geologist and co-owner of Rico's Catering service.

2010 Auction continued…

Auction Items being viewed inside the Founders Room at Zions Bank

This year's auction raised a total of $2,753 after expenses! Special thanks to our corporate donors Uinta Paleo, PSI, and Rio Tinto and thanks very much to Zions Bank for donating the use of the Founders Room.

This year's scholarship recipients are featured on the following page.

We would also like to thank the following volunteers for helping: April Abate-Adams, Mark Adams, Stephanie Carney, Jessica Castleton, Allison Cornett, LeeAnn Diamond, Jane Drexler, Bob Graves, Felicia Graves, Kitty Gundy, Leslie Heppler, Toby Hooker, Drew Jordan, Lucy Jordan, Katie KellerLynn, Sheila Kluck, David Lynn, Jennifer Miller, Alli Spencer, Laura Springsteen, Michael Vanden Berg, and Janae Wallace.

View of downtown from our venue. A little construction project known as City Creek is shown in the foreground.

AWG-Salt Lake Chapter is looking to fill President-Elect and Treasurer Officer Positions for 2011.

Term dates are October 1 through September 31. The treasurer has a two-year term; the president-elect is really a three-year term--president-elect (one year), president (one year), and past-president (one year). Elections will be this summer.

Speaking of summer, stay tuned for details on our annual summer social!

Expanding Your Horizons

By Lucy Jordan with Katie KellerLynn

Katie KellerLynn, (kneeling, left) with Lucy Jordan (standing, right) and one group of Expanding Your Horizons students showing off their favorite rock specimens.

This spring, I did a new thing. Well, sort of. I had participated in "Expanding Your Horizons" when I was a wee young scientist in junior high, and on March 13, 2010, I participated again; this time as a workshop leader. "Expanding Your Horizons" is an opportunity for 6th through 12th grade girls to spend a Saturday morning in various science workshops of their choosing. The main goal of the program is to get young women excited about science, encouraging them to pursue math and technical careers, where men still hold a majority. The workshop leaders are all professional female scientists, and the activities are aimed at showing the girls what's cool about science and careers in science. When I was in 7th grade, my science teacher and a classmate's mother chaperoned me and a group of my classmates to the "Expanding Your Horizons" workshops in North Dakota. We rode six hours to Fargo in the back of a pickup truck, which had a topper on it and lots of blankets and pillows for our comfort. We stayed in a hotel, a big treat for us but probably one restless night for the poor business travelers in the adjacent rooms. I can't remember all the workshops I attended, but I do remember thinking that the chemistry of milk and working in a lab were really cool! I have no doubt that "Expanding Your Horizons" did indeed expand my horizons and kindle a desire for me to study and make a career in science.

So now it was my turn to give back. I mentioned the invitation I had received from the program's organizers to my friend, Katie, whom I have come to know through the Salt Lake Chapter of the Association for Women Geoscientists (AWG). She was just as excited as I was, and already had an idea for a workshop, which we could easily modify for this group. Our workshop, called "Rock Detectives," introduced participants to rocks and minerals by having them solve mysteries about 22 different samples. At each station, the students examined the rock or mineral and answered some questions (provided with a few clues, and our assistance, if needed). *Continued on page 10*

Katie KellerLynn assists Expanding Your Horizons attendees in the Rock Detectives workshop.

MEET THE AWG – SALT LAKE CHAPTER 2010 SCHOLARSHIP WINNERS

Susan Ekdale Field Camp Scholarship: Kimberlee Pulsipher

Kimberlee is a junior geology student at the University of Utah. She is the American Association of Petroleum Geologists (AAPG) Student Chapter president and is a member of the Student Advisory Committee. She is currently doing undergraduate research with Dr. David Dinter, which she enjoys very much. Kimberlee is an avid snow and water skier and spends what free time she can find in pursuit of the perfect turns; that pursuit has taken Kimberlee everywhere from Kashmir to New Zealand. Despite Kimberlee's love for travel, she says it always feels good to come home to Utah.

Susan Ekdale Field Camp Scholarship: Nora Nieminski

Nora Nieminski is an undergraduate student studying Environmental Geoscience at the University of Utah. She plans on graduating with an Honors degree in both Geoscience and French in May of 2011. Along with her focus on the sciences, Nora has developed a proficiency of languages and is fluent in French, Italian, and Polish. She remains very active within the College of Earth and Mines Sciences at the University. She is the Vice President of the University of Utah Chapter of the Association of Environmental and Engineering Geologists, as well as a member the University Chapter of the American Association of Petroleum Geologists, and of the Society of Economic Geologists. She is also an active member of the Geology Department's Student Advisory Committee and is part of the University of Utah French Honor Society. In addition to her academic involvement, Nora is a certified ski coach and works for the Alta Ski School and for the Snowbird Sports Education Foundation. Whenever she finds the time, Nora enjoys rock climbing, mountain biking, swimming, training and showing dogs.

Outstanding Student Award: Brittany Dame

Brittany Elise Dame is a senior at the University of Utah graduating this spring with a Bachelor's Degree in Geoscience with an Environmental Emphasis. She is currently participating in an undergraduate research project with Dr. Kip Solomon. This work centers on analyzing insitu-equilibrated dissolved gas concentrations with a gas chromatograph. She has been named the valedictorian and outstanding senior for the College of Mines and Earth Sciences. Brittany enjoys biking, climbing, traveling, and generally being outside. Her plans to attend the University of California Santa Barbara will continue her academic career in the hydrological sciences.

Research Scholarship: Patricia Garcia

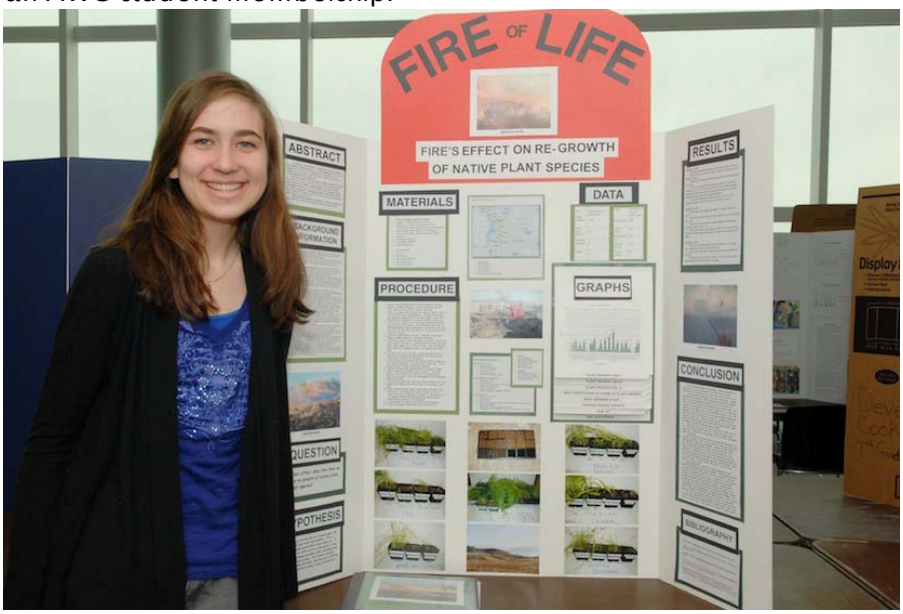
Patricia is enrolled as a full-time student in the Department of Earth Science at Utah Valley University, pursuing a Bachelor of Science in Earth Science with an emphasis in Geology. Prior to attending UVU, she was a business manager and competitive skier, with a love for geology. Going back to school to get an Earth Science degree has been one of the best decisions she has ever made. She will be graduating next year, and will be applying to graduate schools, to study hydrogeology. The AWG scholarship is greatly appreciated and it will further her research project in Mali, Africa.

Chapter Awards $700 to Science Fair Winners

By Lucy Jordan

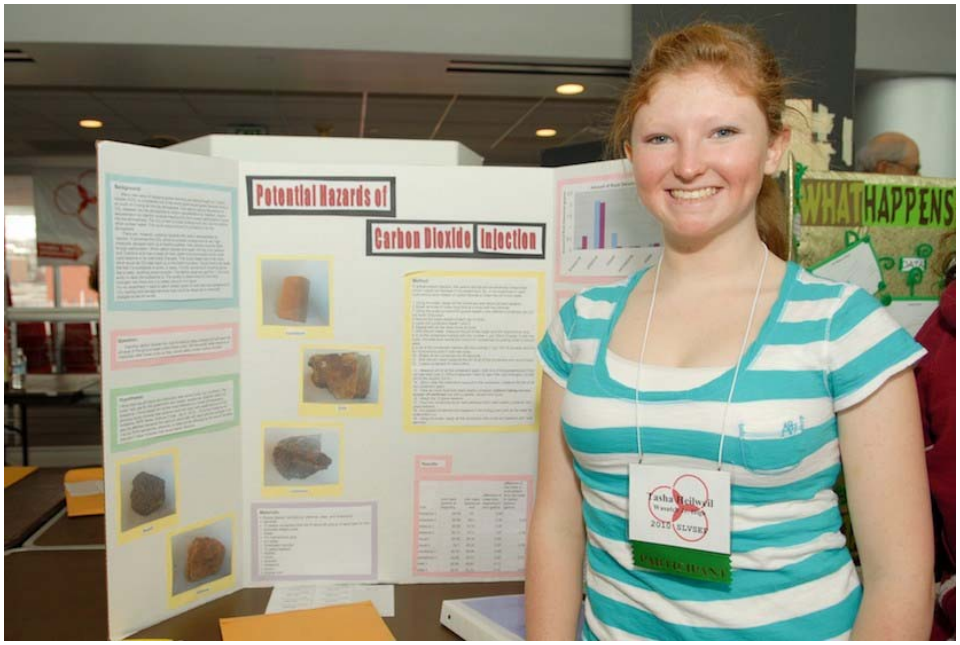
Our chapter has provided special award judges to the Salt Lake Valley Science and Engineering Fair for several years now. This was my second year organizing this outreach activity, and the response from our members was great. We had more than enough volunteers to judge, which made my job a lot easier. Thanks to Matt Affolter, Laura Springsteen, Sally Potter, Tiffani Martin, Jessica Allen, and Katie KellerLynn for spending the morning of March 26 interviewing and judging projects at the Tower at Rice Eccles Stadium. Using funds from a matching grant from the AWG Foundation, we were able to award over $700 in cash and prizes to the top three earth-science related projects by girls in each of three age divisions. Seeing how excited and inquisitive the young women were about their respective scientific topics, most of which are directly related to world problems, was the most rewarding part of the day for me. Receiving her custom award certificate, an envelope of money, and a geologic gift may have been the most rewarding part for our winners! Below is a list of this year's winners and a bit about their projects.

Senior 1st place: Clare Vergobbi, West High Title: Fire of Life: Fire's Effect on the Re-growth of Native Plant Species. (Clare was our 2nd place winner in the junior division last year.) Award: $100, a guidebook to gems, and an AWG student membership.



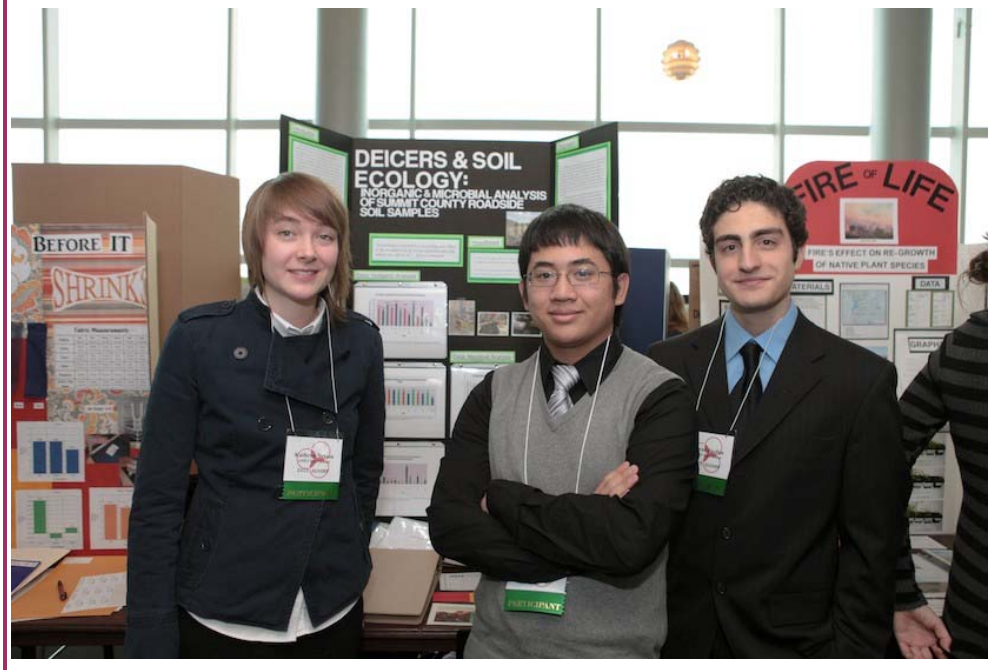
Clare studied the effect of wildfire on the re-growth of native plant species. The study hypothesized that the plants will grow best in soil that has experienced fire in the past few years, because that soil contains more nutrients and has a lower acidity level than soil that has not experienced fire for many years. The study proceeded in seven basic steps: 1) Collect soil samples from five fire sites west of Utah Lake in Utah County; 2) Plant the seeds of three native plant species in each soil; 3) Also prepare and water one extra pot for each soil with no seeds planted in order to analyze the effect of rogue seeds; 4) Allow growth period of seven weeks, watering every three days; 5) Measure growth once every three weeks; 6) Take photographs and notes throughout the study to document growth; 7) Average the data to determine the most fertile soil. The data generally supported Clare's hypothesis, with one exception; the seeds grew best in soil that experienced fire within the past two years.

Senior 2nd place: Tasha Heilweil, Wasatch Jr. High Title: Potential Hazards of Carbon Dioxide Injection. Prize: $80, a guidebook of gems, and an AWG student membership.



Carbon injection and sequestration is a new technology that can possibly stop the increase of carbon dioxide (CO2) in the atmosphere. The CO2 would probably react chemically with the water in these aquifers making carbonic acid and lowering pH levels, potentially dissolving the rocks it contacts. In Tasha's experiment, she tested if a low pH solution would dissolve or chemically change different types of rocks. The rocks she tested were sandstone, siltstone, slate, limestone, and basalt. Her hypothesis was basalt and limestone would be affected by the low pH solution. She put each type of rock into neutral and low pH solutions and measured their mass changes from beginning to end and found that limestone was the most affected by the low pH solution compared to the neutral pH water. Siltstone was dissolved by both the low and neutral pH solutions. Basalt readily dissolved in the neutral pH solution, but not the low pH solution. If rocks dissolve during actual carbon injection and sequestration, pathways could be created for CO2 to contaminate shallow drinking water aquifers or escape back to the surface of the Earth. Therefore, the results of her experiment show that rock dissolution is a potential hazard for carbon injection and sequestration.

Senior 3rd place: Nathan Nguyen, Kathryn Nelson & Shwan Javdan, AMES High Title: Deicers & Soil Ecology: Inorganic & Microbial Analysis of Summit County Roadside Soil Samples. Prize: $75 split between students, a guidebook of gems, and an AWG student membership.



Each winter Northern Utah roads accumulate large amounts of ice. UDOT is responsible for keeping drivers safe and uses deicers, such as sodium chloride and calcium chloride, to keep roads clear of ice. These deicers run off into the surrounding environment, seeping into the ground and harming microbes which play a pivotal role in the soil's biogeochemical cycles. In order to better understand how deicers affect the chemistry and microbial ecology of soil in natural landscapes, along roadsides, soil samples were gathered, analyzed, and compared. Inorganic analysis of soil samples, including evaluating conductivity, to determine the relative salt concentration levels;

nitrate, because nitrate is the final form of nitrogen which is a crucial component to almost all biological compounds; and pH, because hydrogen and hydroxide ions are charged particles that will affect the conductivity results, at varying distances from the roadside. These data were compared to information on relative concentrations and species diversity for bacterial communities. Molecular techniques, including DNA extraction, DNA Nanodrop Spectrophotometry and Automated Ribosomal Intergenic Spacer Analysis (ARISA) were used in microbial analysis. A change in the inorganic soil chemistry and microbial communities, at the various sites, was demonstrated and suggest that deicers impact and change these local ecosystems.

Junior 1st place: Annie Stevens, Wasatch Jr. High Title: Water Quality in our Canyons. Prize: $80 and a neon color-coded US geologic age map.

Annie's experiment focused on answering the following questions: Since most of the drinking water in SLC comes from the nearby watershed canyons, does this close proximity of our snow pack to a large urban area affect its quality? Salt Lake valley is subject to long wintertime inversions and the canyons are subject to a large number of visitors. Air pollution can be caught as snow falls and then melt into the watershed. Can traveling the canyons add to this pollution? Does the close proximity of urban area to a watershed have an effect on water quality?

Junior 2nd place: Collette Jones, Tooele Jr. High Title: Thirsty Rocks. Prize: $60 and a US geologic map.

Collette tried to determine how much water different kinds of rock would absorb. She thought that the light and soft rocks would absorb more water than the hard and heavy rocks. She used 15 different rocks specimens, a scale, plastic clear cups, tongs and plastic wrap. She let the rocks sit in the water for approximately 24 hours and weighed them before and after placing them in the water. After checking the water level, it turned out that chalk (which is a light and soft rock), absorbed more water then hornfels (which is a hard and heavy rock). Her hypothesis was partly true because the soft rocks absorbed more water than the hard rocks. However, she discovered that some of the hard rocks absorbed less water even if they were lighter than some of the soft rocks. For example, Coal (a lightweight rock but also hard) and Sandstone (a soft but heavy rock). She found that Sandstone absorbed more water than Coal and was surprised that the rock Marble 2 weight actually went down!

Junior 3rd place: Dorothy Smith, Elizabeth Lloyd & Alec Evans, Hillside Middle School Title: Save Us From the Tsunami. Prize: $60 split between students and her choice of a US geologic map or magnifying loupe.

Problem: Will the placement of shallow underwater obstructions off of a coast limit damage caused by a tsunami? Hypothesis: The students thought the placement of shallow underwater structures off a coast will take energy away from a tsunami wave and lessen the destruction it causes. Their methodology included building a wave tank with model coast line and a device to create a wave, placing pegs on the model shore, generating a wave, record results, repeat, then do the same experiment but with an offshore underwater obstruction (a brick) a certain distance from the shoreline. The data shows that when an obstruction is placed close to the shoreline the average number of pegs knocked over was reduced. The placement of an obstruction close to the shore (the variable) significantly altered the number of pegs knocked down (the response variable). The data supported their hypothesis as long as the obstruction is placed close to shore.

Elementary 1st place: Ema Parker, Excelsior Academy Title: Refraction/ Reaction. Prize: $40 and a magnifying loupe.

Ema wanted to build a device to measure refraction in water samples using acrylic sheets and different types of glue, and then evaluate visual displacement. She created a standard curve using known amounts of salt, dissolved in water, in a range of concentrations one might find at the Great Salt Lake. After collecting water samples from different locations around the lake, she examined the amount of refraction each displayed and estimated the salt concentrations for each sample using her standard curve.

Elementary 2nd place: Bayli Barbosa, Joelette Organista & Jocelyne Lopez, Salt Lake Center for Science Education Title: Trash Talk. Prize: $45 split between students.

Many schools do not recycle what they can and what could. The purpose of this experiment was to determine how much of the food in schools can be recycled. The students put 4 bins in a station and observed if students put the garbage in the right bin. They weighed the bins and repeated this exercise for one week. The hypothesis was not supported by the data because they thought that 90% of the trash would be recyclable but only 68% was recyclable.

Elementary 3rd place: Taryn Otto, MeLisa Benitez & Rosaicela Pacheco, Lincoln Elementary. Title: Fly Away. Prize: $30 split between students.

The girls wanted to see what kind of damage tornado winds do. They built a box with toy people, buildings, and trees. They cut out four windows; one in the front, one in the back one in the left side and one in the right side and used a fan on high to see how many of the Lego people would be blown down. Their hypothesis was that more people would fall from the wind blowing through the front window than the other windows. They tried each window five times and added up the results. The results showed that the same number of people blew down from the front window and the back window.

The Chapter will be judging the regional science fair again in March 2011. If you would like to be a part of the Chapter's judging team next March, please contact me at lucyjordan@utah.gov.

Continued from Page 3...

Here are some examples:

Hi! I am a mineral called "mica." How did the early settlers (pioneers) use me? Hint: Look through one thin layer.

Hi! Geologists know me as halite. Can you guess what I am? Hint: Taste me.

Hi! I am "fossil sunshine." I am also the state rock of Utah. Do you know what I am?

Hi! I come from a ghost town. My name is alunite (and so is the name of the town). Can you find me on the map of Utah? My chemical formula is $KAl_3(SO_4)_2(OH)_6$. Why was there interest in alunite at Alunite during World War II? What is alunite used for today?

Hi! Our names are asphalt and concrete. We look like rocks, but are we?

Overall, the girls seemed eager to learn and glad to be spending their Saturday in "school." A few of the girls seemed particularly interested in rocks, and we hope that the spark of a few young geologists was ignited.

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