

# Geoscience Department

## Spring 2008 Newsletter

### In This Issue:

GSA 2008 Joint Meeting	1
Letter from our Chair	2
Research Labs & Facilities	3
•ESAL	
•LVIS	
3rd Annual GeoSymposium	4
Spotlight on Faculty	6
•Dr. Brenda Buck	
Welcome New Faculty	7
•Dr. Pamela Burnley	
Geoscience Stars	8
My Experience...	10
•Denise Honn	
Ross Fellowship Recipient	11
•Colin Robins	
Spotlight on Graduates	11
•Robyn Howley	
Student Awards	12
Faculty Awards	13
Alumni News	14
Thank You Donors!	15
Update Contact Information	16

Dr. Michael Wells  
**Department Chair**

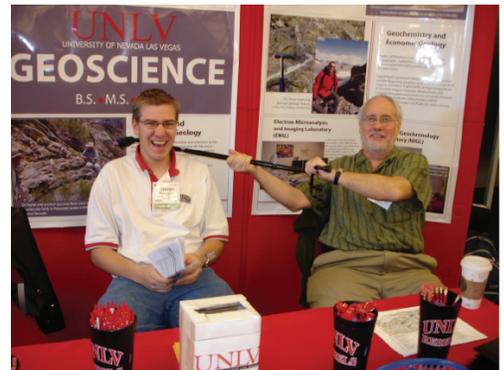
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### Geoscience Department Hosts GSA 2008 Joint Meeting

Exchanging information is a key component in scientific advancement; many significant discoveries were born of collaboration between researchers who connected with one another at scientific symposia. On March 19-21, approximately 745 researchers from across the United States, Canada, and Europe converged on the UNLV campus for the Geological Society of America 2008 Joint Meeting of the Cordilleran and Rocky Mountain Sections. This event, jointly hosted by the UNLV Geoscience Department and the NAU Department of Geology, included nearly 400 oral and poster presentations by students and professionals in geology and other related fields, and eleven field trips to view the spectacular geology in our own backyard. This event marked the 20th anniversary of the first Cordilleran Section meeting held in Las Vegas in 1988.



Graduate student, Steven Forrester, and Meeting Chair, Rod Metcalf, having fun at the Department booth. Photo by Lora Griffin

Under the supervision of Organizing Chair Rod Metcalf (UNLV), Department faculty, staff, and students not only presented their current research during the conference (34 presentations were made by UNLV faculty and students!), they also volunteered their time and talents to make sure the event was a success. Undergraduate and graduate students did an outstanding job of manning the registration desk, running the speaker ready room, running audio-visual equipment during the sessions, and manning the UNLV Geoscience Department booth.



Graduate student, Peter Druschke, talks geology with another GSA participant during one of the many poster sessions. Photo by Lora Griffin

Gene Smith (UNLV) and Ernie Dubendorfer (formerly UNLV, now NAU) organized the fieldtrips, and Terry Spell (UNLV) acted as the Program Chair. The technical program included both oral and poster presentations on topics such as paleontology, tectonics, magmatism, seismic hazards, structural geology, ore deposits, paleoclimatology, and Geoscience education.

## Letter from Our Chair

Greetings from the UNLV Geoscience Department! I write to you from the relative calm after a flurry of activity surrounding the joint Cordilleran-Rocky Mountain section meeting of the Geological Society of America, hosted on the UNLV campus during our Spring break (see article). By all accounts, the meeting was hugely successful, and we certainly enjoyed the stimulation and excitement of having our friends and colleagues on campus, and in convening many symposia and theme sessions on our favorite topics, and field trips to our favorite places. One highlight was an open house in the Lilly Fong Geoscience building that was attended by over 250 geologists; seeing 70+ animated geologists snug in the mineralogy lab, gesticulating with drink and food in hand, was a sight to behold! If we saw you there, we hope you enjoyed the meeting as much as we did!

Like the natural world in which we study, our department has seen many changes this past year. Robert Fairhurst, our EMIL scientist, has left for a position at Exeter University in Great Britain. We are very pleased to have hired Dr. Sean Mulcahy from U.C. Davis as a Research Assistant Professor. In addition to managing our EMIL facility, Sean conducts research that combines observations of ductile deformation with petrology and geochemistry applied to problems in continental tectonics. Sean will make a great addition to our structural geology and tectonics group and we look forward to his joining our department in August. In January 2009, our new Soil Chemist, Dr. Libby Hausrath, will also join us. Libby comes to us from NASA, where she is a Postdoctoral Fellow, and prior to that, from Penn State University where she received her Ph.D. Libby's research on chemical weathering as a function of climate and biological activity addresses important questions regarding the "Critical Zone", and will complement our growing program in Surficial Processes, including ongoing research in soils, hydrogeology, glacial geomorphology, and paleoclimatology.

In the Fall we also look forward to welcoming back two faculty members to the Geoscience Department who have been serving the University in administrative posts. Dr. Peg Rees, who most recently served as Associate Vice President for Research and Community Outreach and the Executive Director of the UNLV Public Lands Institute (PLI), will be returning to the Department while

also continuing her duties as Executive Director of PLI. Dr. Rod Metcalf will be returning to the faculty ranks after serving as Executive Director of Interdisciplinary Initiatives and Science and Engineering Building Facilities, and previously as Associate Dean for the College of Sciences. We are lucky, once again, to have these talented people as faculty colleagues.

As Department chair, it has been a rewarding, and humbling, experience to better acquaint myself with the accomplishments of our faculty and students. I say with pride that our faculty are successful in competing with the top research institutions in the country for prestigious external grants (see Faculty Awards) and are publishing in the top peer-reviewed journals. This level of accomplishment is mirrored by the increased productivity and recognition of the College of Sciences; in a study by the NSF published in the journal *Science* late last year, *UNLV ranked fourth among all universities in the increase in*

*productivity in the fields of Science and Engineering over the period 1992-2002.* This success has translated to success in improving our analytical capabilities, and we now boast many state-of-the-art analytical facilities for student and faculty research. This spring we have added EBSD (electron backscattered diffraction) capability to our SEM to enable study of crystal lattice and grain boundary orientation and grain shape, and a new ultraviolet laser in the argon lab for in-situ dating by the  $^{40}\text{Ar}/^{39}\text{Ar}$  method.

It is an exciting time to be in Geoscience; the opportunities for geologists are diverse and the demand for geologists is high. Importantly, society, and Planet Earth, face many challenges that demand geologically informed perspectives. As we move forward, we strive to better educate students and the public in the scientific method, how to think critically and distinguish "good" from "bad" science, and how natural systems work on Planet Earth. Recent events make it clear that it is a time for an increase in scientific advocacy and a greater dialog between policy makers and scientists. It is a time for everyone to get involved.

As always, we love to hear from our alumni and friends, so please stay in touch. You can update your contact information by using the enclosed form, emailing the department at [geodept@unlv.edu](mailto:geodept@unlv.edu), or submitting the new online contact form found on our website at <http://geoscience.unlv.edu/AlumniContactForm3.html>. You are all invited to a UNLV Geoscience alumni reception at the National GSA Meeting next fall. I hope to see you in Houston in October!

Michael Wells



Department Chair, Michael Wells, and Department Office Manager, Maria Figueroa, running the Geoscience booth at the AGU meeting in San Francisco, CA, December 2007. Photo submitted by Maria Figueroa

## GSA 2008 Joint Meeting Continued from Page 1



Faculty member, Matt Lachniet, and College of Sciences Dean, Ron Yasbin, smile for the camera at the open house and reception. Photo by Lora Griffin

The event also included field trips to various points of geologic interest throughout Nevada, Arizona, Utah, and southern California. Students were invited to attend mentoring luncheons where they had opportunities to learn from industry professionals about real

world experiences in both applied geoscience and hydrogeology.

After the talks and poster presentations on Wednesday, symposium attendees were invited to the Lilly Fong Geoscience Building for a Department open house and reception. The open house provided a great opportunity for students, faculty, and researchers to network and build connections for the future. The reception also showcased UNLV faculty and student research and department labs, and highlighted the significant changes in programs and facilities in the Geoscience Department since the 1988 meeting. *Article by Lora Griffin, April 2008*

## Research Labs & Facilities

### Environmental Soil Analytical Laboratory (ESAL)

The Environmental Soil Analytical Laboratory (ESAL) was established September 1, 2007. ESAL was created and is directed by Dr. Brenda Buck. ESAL is managed by Dr. Yuanxin Teng, who formerly managed the Forest Soils Laboratory at the University of Toronto for 15 years. ESAL is currently housed in the Lilly Fong Geoscience building, but will move into the new Science and Engineering building, once completed, in Fall of 2008. The mission of ESAL is to provide expertise and education in soil,



Dr. Teng, Lab Manager, working in ESAL, which is currently located in the Lilly Fong Geoscience building. Photo by Mandy Williams

sediment, plant, and water analyses for the community of southern Nevada, including Nevada System of Higher Education faculty and students, government agencies, and other public and private entities. Despite lacking several pieces of key equipment, since it's inception, ESAL has provided over \$29,000 in services for faculty and students at UNLV and DRI, the USDA Natural Resource Conservation Service, and the Nevada Dept. of Agriculture. When fully equipped, ESAL will be an exceptional laboratory able to provide expertise and analyses necessary for research applications in environmental topics (i.e. soil and water contamination by radionuclides, heavy metals, organic pollutants), land use (i.e. urban sustainability, flood hazards, subsidence, urban horticulture), paleoclimate, natural resources (i.e. petroleum, economic geology), geoarchaeology, biological processes and management, and other soil/water/plant-related topics. *Article by Brenda Buck, March 2008*

## LVIS is in the HOUSE!



Logo created by Alex Roy

The Las Vegas Isotope Science Lab (LVIS) has now completed its first year of operation, under the management of Dr. Million Hailemichael. The lab was funded by the National Science Foundation, with matching grants from UNLV, and is currently housed in the Technology building.

Million, along with Lab directors, Dr. Ganqing Jiang and Dr. Matt Lachniet, oversaw the installation of the stable isotope ratio mass spectrometer and three automated sample preparation devices in the Spring of 2007. To date, the Lab has analyzed over five thousand samples, and expects to analyze many more in the coming years. The establishment of a new state-of-the-art lab required a lot of patience, trouble-shooting, and funds, but now that most of the kinks are ironed out, the lab anticipates to ramp up its interdisciplinary research efforts.

Currently, LVIS is completing research funded by three separate National Science Foundation grants in areas as diverse as China, Central America, and Alaska. The lab has also run samples for researchers from sites such as southern California and northern Australia.

*Article by Matt Lachniet, April 2008*

# The 3rd Annual GeoSymposium

## Showcases Student Research Within the Geoscience Department!

Our students hosted the 3rd annual UNLV GeoSymposium on Friday, April 18th, at the Marjorie Barrick Museum of Natural History. Continuing a young, but growing tradition, the 2008 GeoSymposium



Student volunteers help make GeoSymposium a success! Photo by Aaron Mayes

successfully showcased many of the innovative student research projects currently being conducted in geoscience disciplines at UNLV, and drew an enthusiastic audience of academic, industry, government, and civic geoscientists from around the nation. Friday's events culminated in a highly successful silent auction of rock and mineral specimens, and an evening reception in proper Department of Geoscience tradition. A hike to the Black Mountain Overlook in Boulder City, NV along part of the River Mountain's Trail was also held on Saturday morning.

Tim Garfield, Senior Technical Consultant with ExxonMobil Upstream Geoscience (ExxonMobil Production Co.), perfectly set the stage for the research forum with his delivery of the UNLV Department of Geoscience seminar on Thursday evening. Tim's exciting talk entitled *Evolving Deepwater Depositional Concepts: Convergence*



GeoSymposium Chair, Colin Robins, invites graduate student, Sam Siebenaler, to the podium to give his talk during the oral session. Photo by Maria Figueroa

of *New Technologies and Geologic First Principles* described many of the ways in which researchers at ExxonMobil are using fundamental geologic principles to redefine models of sedimentation and reservoir development in off-shore environments around the world.

Paul Dobak, Chief Geologist –North America for Barrick Gold Exploration, Inc., formally opened Friday's GeoSymposium with his keynote address highlighting career

opportunities and market dynamics in the field of mineral exploration. Discussion afterwards focused on the skill sets students would need to best prepare themselves to secure an industry position, and also to plan for fluctuations in the job market. As in previous years, there followed seven 15-minute oral presentations by students, including two undergraduate talks.

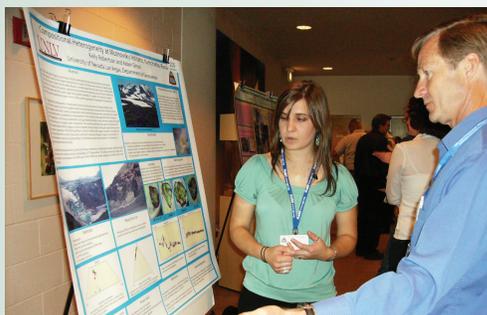
After the morning's oral session, attendees enjoyed a catered deli lunch sponsored by Barrick Gold Exploration, Inc. This luncheon gave students the opportunity to network with industry professionals and other geoscientists about research challenges, job markets, and future opportunities for entry-level geoscientists.

As lunch ended, the focus of the forum shifted to the poster presentations, where a total of 14 students described their ongoing thesis or dissertation research.



Students, faculty, and professionals network at the poster session. Photo by Aaron Mayes

At 3:00 p.m. Dr. Jonathan Price, State Geologist and Director of the Nevada Bureau of Mines and Geology, delivered the afternoon keynote address on Earth Caching, which illustrated one means of connecting geoscientists and laymen alike with unique or special geologic features in the world around them. Dr. Price's talk was followed by remarks from Department Chair, Michael Wells, and GeoSymposium student coordinator, Colin Robins, who began the awards ceremony.



Graduate student, Kelly Robertson, discusses her research with Faculty member, Terry Spell, at the poster session. Photo by Maria Figueroa

Cash prizes were awarded for the best undergraduate and graduate presentations in both the oral and poster sessions. This year's deserving recipients

included Mandy Williams, who won the award for most outstanding graduate student oral presentation with her talk entitled *Biological Soil Crusts in the Mojave: Factors of Distribution and Models of Spatial Extent*. Lora Griffin won

in the undergraduate category for her presentation on the *Identification and Quantification of Mineralogy Associated with Carlin-Type Gold Deposition, North-Central Nevada*. Greg Zellner was awarded the most outstanding



Winners of the most outstanding oral and poster presentations (left to right): Greg Zellner, Carl Swenberg, Mandy Williams, and Lora Griffin.  
Photo by Aaron Mayes

graduate poster award for his presentation of *Geology, Ore Mineralogy, and Source Constraints of Mineralizing Fluids, Little Giant Mine, Yavapai County, Arizona*. The award for best undergraduate research poster went to Carl Swenberg for *Exploring the Chemical Behavior of Platinum Group Elements*. **Congratulations to all!**

Due to the hard work and planning of Greg Zellner and Peter Druschke, and with additional assistance from our department social club, B.O.B., the silent auction surpassed all expectations and raised nearly \$1000.00 to help cover the costs of



One of the many fine specimens up for bid at the silent auction. Proceeds go to support future GeoSymposium events.  
Photo by Maria Figueroa

GeoSymposium. As the auction and reception came to a close, attendees gradually departed for home or dinner, marking the end of Friday's formally planned events.

On Saturday morning, a small but enthusiastic group set off in perfect weather to the River Mountains, near Boulder City, NV, for a six-mile roundtrip hike to the Black Mountain Overlook and excellent panoramas of the Las Vegas Valley, Lake Mead, and Boulder City. Discussions addressed the volcanic and tectonic evolution of the region, the formation of magnesio-riebeckite, and the development of jarosite through hydrothermal alteration of pyrite in Tertiary volcanic rocks of the area. The group also saw a desert iguana, a flock of big-horn sheep; and numerous species of desert flora in full bloom. A second stop at the local Dairy Queen (a field excursion tradition), compliments of Dr. Jon Price,

was the perfect end to a great day of exploring the amazing geology that surrounds us.

This year's research symposium event was made possible in part through the generous donations of: Maureen Wruck Planning Consultants, Barrick Gold Exploration, Inc., Espresso World, Inc., Jim O'Donnell Geophysical Consultant, Jean Cline, Judith Costa, David Ely, Linda Linden, James Mills, and Saines Environmental Hydrogeology LLC. Our silent auction was made possible with donations from Jonathan Carter, Peter Druschke, Maria Figueroa, Steven Forrester, Patrick Haynes, Bruce Hurley of the Geological Society of Nevada, Jean Pierre Piron of Jewelry and Minerals of Las Vegas, David Moore, Stephanie Mrozek, Ashley Tibbetts, Greg Zellner, and Mary Ellen Zellner.

The students and faculty of the UNLV Department of Geoscience extend their most heartfelt thanks to our sponsors, speakers, and guests for a successful and rewarding 3rd annual UNLV GeoSymposium!



Participants of Saturday's fieldtrip explore the geology of the River Mountains.  
Photo by Colin Robins

- Geosymposium Chair:** Colin Robins
- Geosymposium Faculty Advisor:** Adam Simon
- Abstracts with Programs:** Lora Griffin, Brian Aillaud, & Craig MacNeil
- Correspondence and Fundraising:** Colin Robins & Jan Morton
- Facilities & Catering:** Colin Robins & Mandy Williams
- Field Trip:** Audrey Rager, Colin Robins, & Denise Honn
- Symposium Set-up:** Rhonda Fairchild & Kelly Robertson (and many others!)
- Web Page:** Steve Maglio & Becki Huntoon
- Guest Speaker Search:** Aubrey Shirk
- Silent Auction:** Greg Zellner & Peter Druschke

**Thank you all for your efforts!**

## Spotlight on Faculty Research: Dr. Brenda Buck

**Question:** What are  $PM_{10}$  and  $PM_{2.5}$  and what do they have to do with geology and your health?

**Answer:** They are particulate matter  $< 10 \mu m$  ( $PM_{10}$ ) or  $< 2.5 \mu m$  ( $PM_{2.5}$ ) in diameter which are found in the air and capable of causing heart and lung disease!

These particles pose great health concern because they easily pass into the lungs and are especially hard on those with asthma, cardiovascular disease, elderly, children, and smokers. They are known to cause heart disease, lung cancer, asthma, and premature death. One of the greatest sources of this material is dust. Dr. Brenda Buck, Associate Professor in the Geoscience Department, with DRI colleagues James King and Vic Etyemezian, are studying the rapidly shrinking Salton Sea in southern California. As the sea dries up, vast expanses of salt flats are exposed. These fragile salt crusts have the potential to create enormous dust emissions leading to downwind degradation of groundwater and soil quality. Dr. Buck, with UNLV graduate students, Jan Morton and Mike Howell, have found that in these salt-dominated systems, salt mineral dynamics control dust emissions. Surfaces with the highest emissions will be those that are composed of hydrating salt minerals and those with acicular or prismatic crystal habits. Salt minerals with acicular or prismatic habits are more likely to be disruptive, enhance salt heave, lessen the degree of interlocking precipitates, and form loose, 'puffy' crusts that are highly susceptible to erosion. Salt crusts composed of hydrating minerals, such as mirabilite/thenardite; eugsterite/glauberite; gypsum/bassanite; and/or numerous Mg-sulfates, are more likely to dissolve and reprecipitate repeatedly (i.e. diurnally, seasonally), form tiny individual crystals or small aggregates, and be less cohesive and more likely to result in highly emissive surfaces. Who knew mineralogy was the key to a large portion of our air pollution?!

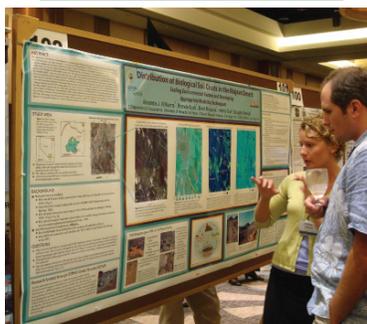
In addition to her own research projects, Dr. Buck currently advises four graduate students. Colin Robins' PhD dissertation is partially funded by an NSF grant, *A Novel Approach to Arid Soil Dating:*



Dr. Brenda Buck, Associate Professor in the Department, at Birch Creek Rock. Photo submitted by Brenda Buck



Graduate student, Colin Robins, cuts petrocalcic horizons at Mormon Mesa, NV. Photo by Brenda Buck



Graduate student, Mandy Williams, presents her research at a NSF-EPSCoR meeting in Hawaii. Photo by Brenda Buck



Dr. Dirk Goossens (R), and undergraduate, Lars Bangen (L), measuring dust emissions at Nellis Dunes NV. Photo by Brenda Buck

*Extraction and  $^{40}Ar/^{39}Ar$  Geochronology of Pedogenic Sepiolite and Palygorskite*, a collaboration between Dr. Buck and Dr. Terry Spell (UNLV). Colin is developing new methods to date petrocalcic horizons in the rock record. Accurately dating petrocalcic soils remains one of the largest scientific hurdles in both geomorphology and sedimentology and, if successful, Colin's results could be applied to both Quaternary soil landscapes and to the paleosol record.

Mike Howell (MS candidate) is studying the genesis of hyperarid soils in the Atacama Desert, Chile. These soils are dominated by salt mineral assemblages found nowhere else on Earth. Mike is developing new techniques to quantify these highly transitory minerals, establish their distribution within soil profiles, and construct a model of their formation. Ultimately, Mike's work will be highly applicable to surficial processes occurring in arid landscapes on Earth and Mars.

Mandy Williams (PhD candidate) is studying the distribution of biological soil crusts in the Muddy Mountains Wilderness Area, Nevada. Mandy was awarded a 2 yr. NSF-SEPHAS fellowship and later co-wrote a successful proposal funded by the BLM. Her work will determine what environmental factors control biological soil crusts distribution, density, morphology, and species composition; the influence of geomorphic surface age on crust characteristics; and the reliability of two established crust indexes. Mandy's work will be used to enhance rangeland management plans and better estimate biological soil crusts spatial extent relative to ecosystem function.

Jan Morton (PhD candidate) is studying the distribution of  $^{137}Cesium$  in surface soils, biological soil crusts, and natural vegetation in the Spring Mountains north of Las Vegas.  $^{137}Cesium$  is a high-yield fission product present since the early 1950's as a result of radioactive fallout from atmospheric nuclear testing.  $^{137}Cs$  has long been used in geomorphic studies as an indicator of soil erosion. However, Jan's M.S. thesis showed that this technique cannot be used in soils with high salt contents. She will now build upon that previous work to better understand the fate and transport of radioactive Cs in our environment.

Continued on next page

## Dr. Brenda Buck, continued

Dr. Brenda Buck's additional on-going research projects include studying (1) geomorphic/geological controls on rock colonizing life for NASA exploration with undergraduate Corinne Griffing--a \$1.5 million funded project with NASA-EPSCoR; (2) dust emissions at Nellis Dunes, NV to better understand impacts on air pollution and human health in Las Vegas (with Postdoc Dr. Dirk Goossens, undergraduate students Michelle Stropky, Robbie Davis, Lars Bangen, Rhonda Fairchild, and John Carter, and graduate student Jan Morton); (3) flood hazard assessments on desert piedmonts and playas in southern Nevada (with graduate students Jan Morton, Mandy Williams, Colin Robins, Mike Howell, Maureen Yonovitz, and Dr. House (NBMG)); (4) formation and distribution of gypsum soils in the Azraq Basin of Jordan; (5) speciation of iodine in the salt-impacted soils along the Virgin River, NV; (6) polygenetic development of the Mormon Mesa petrocalcic horizons (with Dr. Amy Brock, former Ph.D. student, now assistant professor at Western Illinois University); (7) use of evaporitic paleosols for salt diapir tectonics and petroleum exploration; (8) the effects of scale on stable isotopic analyses for paleoclimatic interpretations in arid soils; (9) salt heave as a new formation process for patterned ground in the Atacama Desert in Chile and applications to Mars (with graduate student Mike Howell); and (10) geomorphic mapping of the Ivanpah Valley area in southern Nevada (with Dr. House, NBMG).

Dr. Buck is also Chair of Commission 1.1 of the International Union of Soil Science, Chair of the International Organizing Committee, Vice Chair for the Scientific Committee and co-Convenor of two sessions for the 13th International Conference on Soil Micromorphology, Chengdu, China, 2008, and co-organizer of an NSF-sponsored meeting: *Desertification Processes in Inner Mongolia and the US*. Article by Brenda Buck, April 2008

### Buck Wins Top International Award!

Dr. Brenda J. Buck was recently given the Soil Science Society of America's top award, recognizing her professional achievement in mineralogy and soil chemistry. She's the 16th recipient and first woman to receive this prestigious award. The "Marion L. and Chrystie M. Jackson Soil Science Award" recognizes a soil scientist in mid career who has had a profound effect on the field nationally and internationally. Buck is one of the world's foremost experts on arid soils. She was cited in the award for making "outstanding advances" in the fields of soil-geomorphology, landscape evolution, micromorphology, tectonics, paleoclimate, geoarchaeology, and heavy-metal and radionuclide contamination. She is active in national and international soil and geology research and has served with the National Science Foundation and the International Union of Soil Science. Buck has co-authored 39 peer-reviewed articles, 102 abstracts, and has worked in 18 countries on six continents. She is the founding director for the Environmental Soil Analytical Laboratory (ESAL) at UNLV, and she started the only soil-science degree program in Nevada. *Soil Science Society News Release*

## Department Welcomes New Faculty

Dr. Pamela Burnley is the most recent addition to the Department. She has a joint appointment in Geoscience and Physics, where she is a member of the High Pressure Science and Engineering Center (HiPSEC). Pamela's research focuses on the mechanical behavior of rocks



Dr. Pamela Burnley, center, and Dr. Gene Smith (L), look over Mengesha Beyene's (R) graduate research poster at the 3rd annual GeoSymposium. Photo by Aaron Mayes

at high temperature and pressure, including the interaction between the processes of deformation and metamorphic reaction. She uses a variety of research techniques including high-pressure experimentation, in-situ synchrotron x-ray diffraction, scanning and transmission electron microscopy, and numerical modeling to better understand the grain-scale processes that control the large-scale mechanical behavior of Earth's materials.

Pamela grew up in New England and fell in love with geology as a child. The idea that the boulders in the yard had been carried there from far away by huge glaciers was a source of great mystery and intrigue for her. She got her ScB in geology from Brown University and continued on to graduate school at UC Davis. For her MS thesis she worked on the metamorphic and structural history of the Funeral Mountains, in eastern Death Valley. Working in the Funerals introduced her to the complexity of deformation processes in natural rocks and the idea that one could understand how rocks deform by looking at how the crystals within the rock interact. She continued her graduate education at Davis studying the effect of stress on the olivine to spinel phase transformation in the laboratory. One of the products of her thesis was the hypothesis that deep earthquakes could be caused by a new type of phase transformation induced faulting that she discovered in the laboratory. From Davis, Pamela did post doctoral fellowships at Cornell, Princeton, and CU Boulder, gaining experience in high pressure mineral physics and finite element modeling among other things, before taking a faculty position at Georgia State University (GSU). Along the way, Pamela also became interested in science education and outreach. At GSU she continued her research in mineral physics but also became involved in P-16 systemic reform and science education for pre- and in-service teachers. In addition, she became heavily involved in creating research experiences for undergraduates (REU). She created and ran a summer REU program at GSU for 6 years, which served 79 students and science teachers.

Pamela was attracted to UNLV by its strong graduate program and the opportunity to work in an interdisciplinary environment. She is looking forward to conducting research with both undergraduate and graduate students at UNLV, and collaborating with HiPSEC and Geoscience faculty. Article by Pamela Burnley, April 2008

# ★ Geoscience Stars ★

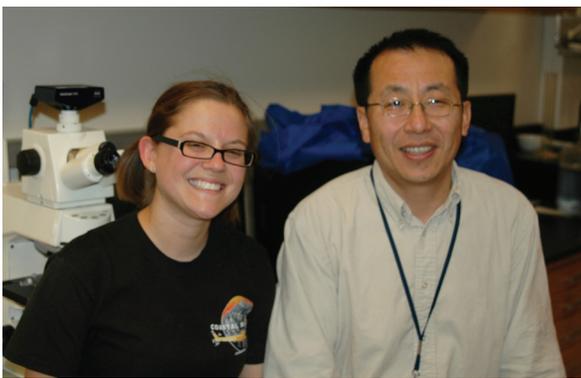


**Kelly Robertson** is conducting her PhD research (Adam Simon, advisor) on the Mutnovsky Volcano in Kamchatka, Russia, a stratovolcano that has been active since the late Pleistocene. The volcano has had four caldera-forming events with magmatic products that have varied from basalt to rhyodacite. Kelly will test hypotheses about the causes of magma compositional heterogeneity, the driving forces of the eruptions, and possible physical and chemical links between the active crater and proximal hydrothermal activity using a variety of techniques, including thin section petrography, whole rock geochemistry, melt inclusion analyses, U-Th dating, and isotopic analyses.

Kelly has received several prestigious awards including the State of Nevada, Nevada Stars scholarship for the first two years of her PhD, and an ExxonMobil scholarship for laboratory analyses and travel; she also received Honorable Mention in the National Science Foundation Graduate Fellowship program. *Article & photo by Kelly Robertson, April 2008*



**Jennifer Mercadante** graduated with a Geology degree (BS) last December, but she continues to work with faculty member, Steve Rowland, on a project they began in 2006. Jennifer and Steve are describing and interpreting an extraordinary fossil trackway site in the Jurassic Sandstone of Valley of Fire State Park. The tracks were probably made by a group of proto-mammals, scurrying up the face of a sand dune, about 175 million years ago. There are at least twelve sets of parallel trackways, with individual footprints occurring in a range of sizes. Jennifer and Steve interpret this site to document gregarious behavior in a group of animals that were closely related to mammals. No other occurrences of gregarious behavior in proto-mammals have been reported from the Mesozoic, so this could turn out to be a pretty big story. Jennifer and Steve have a manuscript nearly finished which they will be submitting to a high-profile journal. *Article & photo by Steve Rowland, April 2008*



**Corinne Griffing** is an undergraduate student working with Dr. Henry Sun (DRI, Adjunct Professor at UNLV) and Dr. Brenda Buck (Associate Professor at UNLV) on an NSF-funded undergraduate research project. Corinne is using SEM analyses to help understand life in extreme environments as a proxy for possible life on Mars or other extraterrestrial bodies. She is analyzing samples of endolithic microbial communities collected from the Mojave Desert to better understand geologic controls on life. These communities are usually composed of cyanobacteria, algae, and lichens which can live inside translucent and porous rocks. She is working in both Dr. Sun's laboratory at DRI as well as the EMIL laboratory in Geoscience. She presented her research in April, at UNLV, in a special GSA symposium for NSF-funded undergraduate research. After Corinne graduates with her B.S. in May of 2008, she plans to continue her graduate studies at UNLV, working with Dr. Matt Lachniet. *Article & photo by Brenda Buck, March 2008*



**John Beyers** is a graduating senior in Geoscience who has had an exciting undergraduate experience. John is planning on graduating May of 2008, and will be finishing his course requirements doing field mapping with Dr. Wanda Taylor. As an undergraduate, John has been on the UNLV men's swim team for the past five years. With John's teamwork, the swim team has gone on to capture three Mountain West Conference titles from 2005 to 2007! In 2006, John was a participant with three others in an NCAA tournament, where the team took ninth, quite an impressive feat considering the strong competition. This year, John is training with the team to take part in the Olympic Swimming Trials this summer in an attempt to secure a berth on the extremely-competitive Olympic Team. The trials, which are open to the public, will take place at the end of June in Omaha, Nebraska. We all wish John the best of luck!



John has also been accepted as a Masters student at Iowa State University, studying with Dr. Neil Iverson. John's interest in glaciers and glaciation was piqued by the Geomorphology class at UNLV, and he began thinking about a MS degree to study these fascinating geologic systems. John's project will likely look at how glaciers deform their soft sediment bases using a laboratory device called a ring shear, which simulates the deformation of tills beneath a glacier, but in a laboratory-controlled environment.

*Article & photo by Matt Lachniet, April 2008*



MS student **Kevin Donahue** has hit the ground running... and kept going downward. Kevin has started a paleoclimate project in Pinnacle Cave, Nevada, located SW of Las Vegas on the flanks of Mt. Potosí. Kevin's project involves using cave deposits to reconstruct paleoclimate history of the Central Great Basin, via the analysis of stable oxygen and carbon isotopes from a Uranium-thorium-dated stalagmite. The project is being undertaken with the collaboration of the local Southern Nevada

Grotto of the National Speleological Society with permission from the government land managers.

Accessing the cave was a feat out of a National Geographic adventure. As entrance to the cave is via a long vertical drop, Kevin and his advisor, Matt Lachniet, had to be trained in vertical rope techniques to enter the cave. This required using ascending and descending (rapelling) gear, and contortionist movements to fit through tight cave passages, including two called "the birth canal" and "the corkscrew".

The data in hand reveal big climate changes over a key interval of Ice Age time during the Late Quaternary, between 20,000 and 15,000 years before present. This time interval is often referred to as the "Mystery Interval", sandwiched between the coldest period of the Last Glacial Maximum at 21,000 years before present, and a prominent warm period that commenced around 15,000 years ago.

Kevin's data will be important for unraveling the controls on southern Nevada's climate history, as well as important implications for forecasting future water resources in the Mojave Desert. *Article & photo by Matt Lachniet, April 2008*



Undergraduates **Seth Page and Christina Hughes** are working

to characterize flow in leach piles with funding provided by the National Science Foundation-EPSCoR program via the Scaling Environmental Processes in Heterogeneous Arid Soils (SEPHAS) project. Under the supervision of Associate professor, Mike Nicholl, and Assistant Professor, Adam Simon, Seth and Christina have designed and fabricated a model leach pile in the form of a cylindrical column filled with crushed sandstone. Fluid is added to the top of the column from a point source and then collected at the bottom for analysis. Currently, the students are working with a 20 cm diameter column that is 30 cm high. They are using this prototype to design measurement systems that will track inflow, outflow, solute concentration, and fluid distribution within the column. Once all of the measurement systems are functional, a larger (~1 m tall) column will be constructed for the actual testing. It is expected that the understanding developed in this project will lead to more efficient leach piles that extract a higher percentage of the available gold at lower cost. *Article & photo by Mike Nicholl and Adam Simon, April 2008*



# My Experience in the UNLV Geoscience Department

Denise K. Honn, Graduate Student



More than just taking classes and doing research, my time here at UNLV has taught me to teach myself, learn from experience, seek out experts, and has given me the confidence to chase my scientific curiosities. When I began at UNLV as a Master's student, I expected to continue to be led through school just as I was as an undergraduate, learning from lectures and textbooks. However, as a Master's student I learned to walk on my own,

making decisions with my advisor guiding me, but not holding my hand. I also decided to run with the scientific pack, realizing that my ideas are just as good as other geologists. As a PhD student I have continued chasing my research curiosities and have learned to pick myself up when I fall. My experiences at UNLV have been the first few steps in the marathon that is a scientific career.

## Learning to Walk - trusting myself

As an incoming Master's student, I had expected to learn by attending professor-led lectures and reading textbooks just as I had as an undergraduate. Instead, I found I thrived on the student-led and discussion-based classes that are common in the UNLV Geoscience Department. Discovering that I had the knowledge to teach myself and others gave me the confidence to step out on my own, and learn and think for myself. I realized the importance of not just accepting all research as fact and questioning various methods and results. From my research, I learned to make decisions on my own without my advisor patting me on the back every step of the way. My thesis was mainly a mapping project documenting five nested calderas in central Nevada. Doing the mapping myself, I realized that I had the knowledge and the guts to draw lines on the map. This was my first step in deciding to run with the scientific pack.

## Deciding to Run - continuing my education

After finishing my Master's project, I knew I wanted to continue with my PhD, and by staying at UNLV I would have the freedom to pursue my own scientific questions. I was curious about linking a plutonic section with a volcanic section and I wanted to know what answers a linked system can give us. One of the most valuable lessons that I have taken away from this research thus far is that my ideas are just as good as other scientists and that I can and should interact with the geologic community.

This interaction includes publishing in journals, presenting at meetings, participating in fieldtrips, and more importantly, seeking out experts to learn from.

## Running and Falling - learning from experts and experience

Processing samples at analytical labs outside of the UNLV Geoscience Department has given me the opportunity to learn methods and techniques from experts. I've found that most geologists are very approachable and patient. The UNLV geoscience seminar series has been another great way to learn through lectures and conversations with visiting speakers. Conversations with my fellow students are just as constructive as those with experts. I recently started a VIPs (Volcanology and Igneous Petrology Students) group in our department so that we can get together every other week or so and discuss hot topics, methods, papers, and our research projects without the dominating presence of faculty. The most important person to my growth as a scientist has been my Advisor, Eugene Smith. Gene gives me guidance when I lack direction, lets me flail when I need to work things out myself, and picks me up when I make mistakes. He is awesome! Mistakes I've made have forced me to think about my work critically and kept me from heading the wrong way. The whole idea of using multiple working hypotheses is that we will disprove most of our ideas. If we are right all of the time we aren't pushing our limits and are likely only looking for evidence that supports a favorite model or hypothesis.

The more I learn from experience, journals, textbooks, lectures, or experts, the more questions I seem to have. Many of these questions lead to ideas, and sometimes to more projects, which in turn lead to more questions. My scientific curiosity is fueled by this process of questions leading to more questions.

## Beginning the Marathon – chasing my scientific curiosity

The friendly atmosphere, the expert faculty, and in-house lab equipment in our department has given me the perfect environment to chase my scientific curiosities, to grow as a student and a scientist. But, as Gene has pointed out,...



Continued on Next Page

## Denise Honn, continued

“This is only the beginning. There is life beyond your PhD”. That feeling of “the more I learn the less I know” continues to grow. It is becoming apparent that my experience at UNLV has only been the first few steps in this marathon of a career in science. *Article by Denise Honn, April 2008*

## Colin Robins, PhD Student, Awarded the First Jack and Fay Ross Family Fellowship



I am extremely honored to be the first ever recipient of the Jack and Fay Ross Fellowship. This fellowship presents a truly wonderful opportunity for PhD students in the UNLV Department of Geoscience to significantly advance both the progress and level of detail of their research. I will take full advantage of this incredible and exciting chance to improve my research efforts, publish my findings in international scientific journals, and to ensure a strong, thorough execution of my studies at UNLV.

Specifically, I plan to use my time on the Jack and Fay Ross Fellowship to complete my PhD dissertation research with Dr. Brenda Buck on *A Novel Approach to Arid Soil Dating: Extraction and  $^{40}\text{Ar}/^{39}\text{Ar}$  Geochronology of Pedogenic Sepiolite and Palygorskite*. If successful, this innovative project will greatly advance geoscientists' ability to constrain arid region landform ages, and to understand implications of those ages for climate change, landscape evolution, and rates of surficial processes around the world.

Funding from the Jack and Fay Ross Fellowship will also allow me to attend and present results at (1) the 13th International Conference on Soil Micromorphology (held only every four years) in Chengdu, China, and (2) the first joint meeting of the Soil Science Society of America and the Geological Society of America in Houston, TX. The timing of this fellowship is truly ideal: these unique conferences are the most prestigious forums in my field of study, and the costs of attendance and logistics of travel are simply not feasible on most graduate assistantships.

The Jack and Fay Ross Fellowship will allow me the freedom to assist with collaborative, undergraduate research projects in my department, and to gain greater breadth and depth of experience in geoscience research. It will also help to support my collaboration with Dr. Buck on a separate, invited paper on arid soil systems, which we will submit for review during the upcoming year.

In summary, the Jack and Fay Ross Fellowship will not only help me disseminate scientific knowledge and receive valuable feedback for improved future studies, but will also help me network with renowned scientists, build a competitive professional resume, and prepare myself for a postdoctoral career

in the geosciences. I am extremely fortunate to have the support of the Jack and Fay Ross Fellowship and am eagerly looking forward to the upcoming academic year. *Article by Colin Robins, April 2008*

## Spotlight on Graduate Research: Robyn Howley, PhD Student

My PhD research involves high-resolution stratigraphic correlation from a poorly fossiliferous carbonate platform into a highly fossiliferous intra-shelf basin (House Range Embayment) that existed across Nevada and Utah during the Middle Cambrian. Accurate correlation of this mixed carbonate/siliciclastic passive margin succession has been hampered by a disparity in the regional biostratigraphic data. Rocks of the shallow-water carbonate platform are virtually devoid of fossils useful for biostratigraphy and those that are present include trilobite fauna that were geographically restricted. In contrast, rocks of the slope and basin contain a plethora of fossils, many of which are suitable for high-resolution biostratigraphy, including cosmopolitan agnostoid trilobites. This disparity results in a situation where rocks from the slope and basin can be correlated globally, but cannot be correlated to the adjacent carbonate platform. Accurate correlation of these distinct environments is important for deciphering regional and global environmental changes and understanding how these changes may have affected seawater chemistry and the early radiation and diversification of marine animal life during the tail end of the Cambrian Explosion. Cambrian researchers have thus made high-resolution subdivision of the Cambrian, and creation of a high-resolution chronostratigraphic framework, a primary focus.

In refining the high-resolution correlation of this platform-to-basin transect, sequence and chemostratigraphic methods were applied to the well known Middle Cambrian outcrop in eastern Nevada and western Utah. Over the course of several summers I collected sedimentologic and stratigraphic field data on over 6 km of carbonates and shales. The fault-block style mountain ranges of the Basin and Range offered sections with nearly 100% exposure and ample opportunity for climbing! With this data set I was able to place the passive margin sequence into a sequence stratigraphic framework that revealed 6 depositional sequences, several of which may be related to global sea-level events. Currently, my advisor Ganqing Jiang and I are working on analyzing the carbon isotope stratigraphy which should reveal several prominent, and globally occurring, Middle Cambrian isotopic excursions. Today's research on ancient secular isotopic trends requires a high-resolution data set and access to the Las Vegas Isotope Science Lab (LVIS) here in the Geoscience Department has provided us with the opportunity to analyze a much higher resolution data set than would have been possible without an affiliated lab. Our results will not only have implications for the global Cambrian time scale, but also for predicting local economic resources. *Article by Robyn Howley, April 2008*

## Selected Student Awards & Honors

### Lora Griffin

(Undergraduate, Mentor: Jean Cline)

Recently awarded an internship with NASA and will spend the summer of 2008 at the Smithsonian Institute National Air and Space Museum conducting mapping and image analysis of geological formations on Mars.

Awarded a 10-week internship in the Undergraduate Research Opportunities Summer 2007 program, and was funded for 7 months as a research assistant by the UNLV NSF EPSCoR Research for Undergraduates program.

Awarded Grand Prize for a poster presentation at the NW Mining Association Conference (Spokane, WA).

Awarded First Place for a poster presentation at the Ores and Orogenesis Conference (Tucson, AZ, 9/07).

Awarded Most Outstanding Undergraduate Talk at the 2008 GeoSymposium (UNLV, 4/18/08).

### Denise Honn

(PhD student, Advisor: Gene Smith)

Received the Outstanding Student Paper Award from the American Geophysical Union, 5/07, Acapulco, Mexico.

### Robyn Howley

(PhD student, Advisor: Ganqing Jiang)

Awarded a UNLV President's Fellowship, 2007-2008, and is currently funded by the UNLV President's Graduate Research Fellowship.

Received the following grants and scholarships: UNLV Graduate and Professional Student Association Grant (GPSA); UNLV GPSA Research & Travel Grant; UNLV Geoscience Scholarship (GSN Fund); Institute for Cambrian Studies Grant; Nevada Petroleum Society Graduate Scholarship.

Received 2nd Place Talk at the 2007 Science & Engineering Platform.

Awarded Honorable Mention for the SEPM-RMS Donald L. Smith Award.

If you have awards and honors that you would like to share for the next newsletter in Spring 2009, please submit your content to Jean Cline (jean.cline@unlv.edu) and Becki Huntoon (rebecca.huntoon@unlv.edu), Newsletter Committee.

### Steve Maglio

(PhD student, Advisor: Adam Simon)

Recently received a UNLV GPSA Grant, Spring 2008: *Quantifying Element Mass Transfer of Monazite at Subduction Zone Conditions by using the Hydrothermal Diamond Anvil Cell and in-situ X-Ray Fluorescence.*

Received Honorable Mention at the GPSA Science and Engineering poster session.

### Kelly Robertson

(PhD student, Advisor: Adam Simon)

Awarded the State of Nevada, Nevada Stars scholarship for the first two years of her PhD.

Awarded an ExxonMobil scholarship for laboratory analyses and travel.

Received Honorable Mention in the National Science Foundation Graduate Fellowship program.

### Colin Robins

(PhD student, Advisor: Brenda Buck)

Selected as the first recipient of the newly endowed Jack and Fay Ross Family Fellowship.

### Aubrey Shirk

(PhD student, Advisor: Steve Rowland)

Selected as the UNLV Student Leader of the Month for November 2007 by UNLV Division of Student Life, SIA Leadership Program.

### Carl Swenberg

(Undergraduate, Mentor: Adam Simon)

Awarded Most Outstanding Undergraduate Poster at the 2008 GeoSymposium (UNLV, 4/18/08).

### Mandy Williams

(PhD student, Advisor: Brenda Buck)

Awarded Most Outstanding Graduate Talk at the 2008 GeoSymposium (UNLV, 4/18/08).

### Greg Zellner

(MS student, Advisor: Adam Simon)

Awarded Most Outstanding Graduate Poster at the 2008 GeoSymposium (UNLV, 4/18/08).

Won the Department's Most Outstanding TA Award for his commendable performance as a teacher's assistant, Fall 2006 - Spring 2008.

## Selected Faculty Awards, Grants, & Significant Publications

### Brenda Buck

Recipient of the M.L. & C.M. Jackson Award, 2007, Soil Science Society of America, for Outstanding Contributions in Soil Mineralogy/Chemistry, 16th recipient, 1st female.

### Jean Cline

U.S. Geological Survey Mineral Resources External Research Program, \$112,159, The Searchlight Mining District: Linking Low Sulfidation Epithermal Mineralization with an Under-lying Granitic Pluton Using Melt and Fluid Inclusion Chemistry, 2008-2009.

Cizdziel, J., Wei, Y., Stetzenbach, K., Hodge, V., Cline, J.S., Howley, R., and Phillips, F., 2008, Recent Measurements of Chlorine-36 in Yucca Mountain Rock, Soil, and Seepage: Journal of Radioanalytical and Nuclear Chemistry, v. 275, no. 1, p. 133-144.

### Matthew Lachniet:

National Science Foundation, 2007 (Co-PI), \$182,670, Collaborative Research: Climatic Instability in Interior Alaska from the Isotopic Record of Late Quaternary Ground Ice. With Dan Lawson, Cold Regions Research and Engineering Laboratory, US Army Core of Engineers, Co-PI.

National Science Foundation, 2007 (PI), \$95,064, Millennial-scale Tropical Rainfall Variability From 100 to 20 ka: Testing Cross-isthmian Water Vapor Transport and Feedbacks on Thermohaline Circulation, 2007-2008, ATM-0710707.

Lachniet, M.S., Patterson, W. P., Burns, S. J., Asmerom, Y., and Polyak, V. J., 2007. Caribbean and Pacific Moisture Sources on the Isthmus of Panama Revealed from Stalagmite and Surface Water  $d^{18}O$  Gradients, Geophysical Research Letters, v. 34. doi:10.1029/2006GL028469.

Lachniet, M.S., 2007, Glacial Geology and Geomorphology, In: J. Bundschuh and G. Alvarado (Editors), Central America: Geology, Resources, and Hazards. Taylor & Francis, London, pp. 171-182.

Piperno, D. R., Moreno, J. E., Iriarte, J., Holst, I., Lachniet, M., Jones, J. G., Ranere, A. J., and Castanzo, R., 2007, Late Pleistocene and Holocene Environmental History of the Iguala Valley, Central Balsa Watershed of Mexico: Proceedings of the National Academy of Sciences of the United States of America, v. doi:10.1073/pnas.0703442104, p. 8.

### Steve Rowland

Elected chair of the History of Geology Division of the Geological Society of America. Steve is organizing a session on the history of the relationship between geology and religion for the annual meeting next October in Houston.

### Terry Spell

UNLV Research Infrastructure Award, An Ultraviolet Laser Upgrade for the Nevada Isotope Geochronology Laboratory, \$67,619, for 12/17/07 to 06/60/08, (Spell PI, Wells Co-PI).

National Science Foundation, Novel approach to Arid Soil Dating: Extraction and  $^{40}Ar/^{39}Ar$  Geochronology of Pedogenic Sepiolite and Palygorskite, \$61,238, 2007 to 2008, (Spell Co-PI, Buck PI).

Kula, J.L., Tulloch, A.J., Spell, T.L. and Wells, M.L., 2007, Two-stage Rifting of Zealandia-Australia-Antarctica: Evidence from  $^{40}Ar/^{39}Ar$  Thermochronometry of the Sisters Shear Zone; Stewart Island, NZ, Geology, v. 35, no. 5, p. 411-414.

### Wanda Taylor

Recently awarded the 2007/2008 Educational Outreach Faculty Excellence Award for her strong support and long-time service to Educational Outreach natural science and exploring programs. Since 1993, Dr. Taylor has designed and led members of the Las Vegas community on educational field trip programs offered through Educational Outreach. Her dedicated efforts have highlighted UNLV research and graduate and undergraduate studies to the public, as well as opening their eyes to the natural beauty and history of the desert southwest in Nevada and the surrounding states.

### Michael Wells

Wells, M.L., and Hoisch, T.D., 2008, The Role of Mantle Delamination in Widespread Late Cretaceous Extension and Magmatism in the Cordilleran Orogen, Western US: Geological Society of America Bulletin, v. 120, doi: 10.1130/B26006.1. (Most viewed paper online in May 2008).

Wells, M.L., Spell, T.L., Hoisch, T.D., Arriola, T., Zanetti, K.A., 2008, Laserprobe  $^{40}Ar/^{39}Ar$  Dating of Strain Fringes: Mid-Cretaceous Orogen-parallel Extension in the Interior of the Sevier Orogen, Tectonics, doi: 10.1029/2007TC002153.



Left to Right: Long-time faculty members Steve Rowland, Peg Rees, Dave Weide (emeritus), and Fred Bachuber (emeritus) celebrate Dave's birthday. Photo by Jean Cline

# Alumni News

## Evie Coleman, BS Degree



Former undergraduate, Evie Coleman, holding a shovelnose sturgeon. Photo submitted by Evie Coleman

I was very happy to receive the Summer 2007 Newsletter and read about all of the wonderful activities and advances being made at my Alma mater. I enjoyed my undergraduate time in the geoscience department immensely and am so grateful to all of the wonderful professors (and employers) from whom I learned so much. This year has brought about a lot of changes for me, and I wanted to share this news with all of you.

In May 2007, I was hired as a biological science aid for the US Geological Survey in Yankton, South Dakota. I al-

ways laugh about how I got a job with the right agency, just the wrong discipline, and was in fact very surprised that I was hired into a position for which I was so poorly qualified. Though I have always had a great interest in biology, I had not had any formal education in that subject since my senior year of high school. Luckily, my supervisor, Darin G. Simpkins, was much more interested in my willingness to work from a boat in a variety of conditions than my specific educational background.

Yankton is a long way from Las Vegas, but it is actually the town I was born in. My family has been in this area for over a hundred years (one of my ancestors was actually the first man to build a cabin in the Missouri River bottom of South Dakota), and the countryside is dusted with cousins of mine, many of whom I have never even met. I feel that it is beyond coincidental that a job opening came available in an area of the country that I had longed to return to. I am currently enjoying a REAL autumn with the harvesting of crops and leaves of changing color.

My work through a field office of the Columbia Environmental Research Center, Biological Resources Division, USGS centers on studying the pallid sturgeon, an endangered species of the Missouri River system. Specifically, we are trying to determine how successful the sturgeon are at reproducing naturally in the river, and we do this by netting larval and juvenile fish. I spent the summer involved in field work, going out on the river daily to collect samples. Now that the colder weather is upon us and the spawning/hatching season long over, we have concentrated on identification of the larval species collected. With tens of thousands of larval fish (usually one to ten millimeters in length) to examine and identify, it is a long process!

I am enjoying this new learning experience, and am overjoyed to be contributing, even in such a small way, to the field of science. I would love to hear from anyone in the department who has the time to write!

Article by Evie Coleman, October 2007

## Robert Noto

### 2000 Graduate, MS Degree (Tim Wallen, Advisor)

Since graduation in 2000, I have been employed by the prime contractor for the Department of Energy (DOE) National Nuclear Security Administration (NNSA) Nevada Test Site (NTS) contract. I started as a Geographic Information System (GIS) scientist at the Remote Sensing Laboratory (RSL) doing Radiological/Nuclear Emergency Response.

Currently, I am the Spatial Sciences project manager which encompasses Electro-Optical Imagery acquisition/analysis and GIS. Our baseline scope revolves around Emergency Planning, Management, and Response for the DOE/NNSA complex. While that is our primary mission, we also provide a full range of geospatial services and support for a wide variety of federal, state, and local agencies and customers.

The opportunities presented to me here have been both challenging and rewarding. I have had the honor of working with a cadre of people through the world, from local First Responders to high level government officials to Foreign Diplomats. The sense of contribution to national security is a very rewarding part of my career. Article by Robert Noto, March 2008

## Recent Graduate News

### Amy Brock

#### 2007 Graduate, PhD (Brenda Buck, Advisor)

Employed as a tenure-track Assistant Professor at Western Illinois University

### Nathan Suurmeyer

#### 2007 Graduate, MS (Andrew Hanson, Advisor)

Employed fulltime by Shell Oil in Houston, Texas

### Shelley Zaragoza

#### 2007 Graduate, MS (Cathy Snelson, Advisor)

### Tonia Arriola

#### 2008 Graduate, MS (Michael Wells, Advisor)

Employed fulltime by ExxonMobil in Houston, Texas

### Joe Kula

#### 2007 Graduate, PhD (Michael Wells, Advisor)

Internship with ExxonMobil in Houston, Texas

## Thank You Donors!

July 1, 2007 - March 31, 2008

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### Southern Nevada Gem & Mineral Society Scholarship

- Southern Nevada Gem & Mineral Society

### Graduate Students Fund

- Andrew Hanson
- Wanda Taylor

### Dear Alumni and Friends:

We would like to take this opportunity to thank those of you who have supported the Geoscience Department since our last newsletter and in previous years. In these difficult budgetary times, the UNLV Geoscience Department is, more than ever, reliant on our alumni and friends to help us sustain our strong teaching and research activities and embrace emerging opportunities. Alumni, parents, employees, and friends have supported the Geoscience Department through gifts to specific scholarships, attendance at campus events, and contributions to building funds. Through your generous donations, this past year has seen the establishment of the Jack and Fay Ross Family Fellowship, the Nate Stout Memorial Scholarship, and another successful annual GeoSymposium. Your gifts to academic and student-centered programs have made the difference in transforming the Geoscience Department into a top rate institution of geological research and advancement; students and scholars from around the world come to the UNLV Geoscience Department to discover the past, shape the present, and create the future.

Our department values the ongoing relationships we have with many of you and we will continue to provide you with opportunities to be interconnected. We will be hosting an alumni reception at the annual GSA meeting in Houston in October and we look forward to seeing some of you there. If you are not going to the Houston meeting, please write or email and tell us about your latest accomplishments and adventures. We also invite you to visit us here on campus as we would love to see you, find out what you have been up to, and show you what is new in the department. While many of the faces here have changed, you would find some recognizable denizens of the Lilly Fong Geoscience building, and certainly, a recognizable community of colleagues.

**Many thanks for your past  
and continuing support!**

*Michael Wells*

**Professor and Department Chair**

**For more information on how your gift can  
help the Department, please contact:**

**Michael Wells, Department Chair**  
(702)895-3262 or e-mail michael.wells@unlv.edu

**Jean Cline, Fundraising Chair**  
(702)895-3262 or e-mail jean.cline@unlv.edu

You can also visit the Geoscience Department  
website at <http://geoscience.unlv.edu/>

## Please Update Your Contact Information

Name (Include Maiden): \_\_\_\_\_

Year of Graduation: \_\_\_\_\_ Advisor: \_\_\_\_\_

Employer & Job Title: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_ Email: \_\_\_\_\_

### Any News to Share?

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Please submit this form by mail. You may also email the Department at [geodept@unlv.edu](mailto:geodept@unlv.edu) or use the new online Contact Form at <http://geoscience.unlv.edu/AlumniContactForm3.html>

**We look forward to hearing from you!**



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