



Geological Society of Nevada Southern Nevada Chapter Newsletter

May 2005

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Evidence for glaciation in the Spring Mountains

- DATE:** Thursday, May 26, 2005
- SPEAKER:** Marvin (Nick) Saines, Consulting Geologist
- LOCATION:** Room 102 Lilly Fong Geoscience Bldg.
- TIME:** 6:00 p.m. Social *Half-Hour*
6:30 p.m. Presentation
- SPONSOR:** Charley Pedro
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Geological Society of Nevada, Southern Nevada Chapter

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<http://geoscience.unlv.edu/GSN/gsnsc.htm>

Hello Everyone,

Thanks to Otto Holmquist for presenting new evidence for faults in the Las Vegas Valley. The meeting turnout was the best we've had in a very long time. Hopefully everyone enjoyed the meeting and will return in the future. We would also like to thank Otto's' company, GEOLINES, LLC for sponsoring food and refreshments at the meeting.

Food and refreshments for the May meeting will be sponsored by Charley Pedro, a local rockhound who is involved with our chapter and wants to help us out. We really appreciate this sponsorship as it allows us to have both food and refreshments during the meeting. We are currently looking for a sponsor for our June meeting if anyone is interested or knows of someone who might be.

May's talk is in conjunction with a field trip on May 28. We hope to see everyone on this trip. It will be nice to get into the field and enjoy the great outdoors during this trip. And see some cool geology! ~ Robyn

KYLE CANYON MORaine FIELD TRIP:

Dr. Nick Saines will be leading a field trip to the Pleistocene glacial moraine deposit in Kyle Canyon on Saturday, May 28, 2005. The trip coincides with his May talk about the moraine. We will meet at 9 am in the free parking lot at UNLV near the corner of Harmon and Swenson, adjacent to the softball field. We will carpool up the mountain. If you would like to meet us there, we will gather at the Mary Jane Falls parking lot at 10:15 am (if it's open, if not we will meet and park where the road is closed). See the announcement at the end of this newsletter for more information.

ADS & SPONSORS:

Thanks to local rockhound Charley Pedro for sponsoring our May meeting. The food and beverages were paid for solely by Charley. GSN is a non-profit organization and chapter fees, advertisements, and sponsors support

our chapter. If your business would like to sponsor social hour at one of our southern Nevada chapter meetings or would like to place a paid advertisement in this newsletter and on our website please contact Jim O'Donnell at 702.293.5664 or jim_odonnell@cox.net. Please see our current advertisements at the end of this newsletter and support our sponsors.

NEW AWG CHAPTER:

Denise Honn, a UNLV graduate student, is forming a new Las Vegas chapter of the Association for Women Geoscientists. Denise is still working out the specific details but if you are interested in joining please contact her at honnd@unlv.nevada.edu. Also, please view the announcement at the end of this newsletter. AWG is a wonderful organization and it would be really beneficial to the Las Vegas community to have a local chapter. Please stay tuned for more information.

THIS MONTH'S SPEAKER

Evidence for Glaciation in the Spring Mountains Marvin (Nick) Saines

Evidence for Pleistocene glaciation of the Spring Mountains includes glacial till, cirque basins, and a remnant of a moraine in upper Kyle Canyon. The elevation of the moraine, the lowest feature, is 2530 m (8,300 ft) above sea level. Geologists have discussed the possibility of Pleistocene glaciers in the Spring Mountains for over 70 years. Flint (1947) references Blackwelder (1934) in stating that the Spring Mountains held one or more alpine glaciers during the Pleistocene. Flint (1957, 1971) references personal communication with C.W. Longwell to support the presence of glaciers in the Spring Mountains. Piegat (1980) identifies degraded cirques at the head of Kyle Canyon and references Burchfield *et al* (1974) who mapped possible glacial deposits at heads of two degraded cirques. In 1990 Saines mapped the morainal deposit in Kyle Canyon. The exposure is over 10 m (33 ft) high and 50 m (164 ft) long and is comprised of unsorted glacial till at the base overlain by about 2 m (6.6 ft) of glaciofluvial deposits. The limestone clasts in the till range up to 1 m in size, and many are striated. In 1999 Professor Rik Orndorff and graduate student John Van Hoesen of UNLV were shown the exposure. They conducted research, and published



Photo of glacial moraine overlain by fluvial sediment. Photo from Orndorff et al. (2003).

several papers and abstracts on the glacial geology of the Spring Mountains, including Orndorff, Van Hoesen, and Saines (2003). The results of their research on erosional and depositional landforms in Kyle Canyon indicate that the Spring Mountains were the southernmost glaciated range in the Great Basin during the Pleistocene. Deposits in Lee Canyon, to the north of Kyle Canyon, have yet to be mapped.



Striated limestone clast from the glacial moraine. Photo from Orndorff et al. (2003).

The field trip on Saturday, May 28, will visit the moraine and will include an optional hike to Big Falls, a possible hanging valley below a cirque basin. Let's use multiple working hypotheses to brainstorm other possible origins for the features. Abe Van Luik thinks the deposit at 8,300 ft is actually a glacial debris flow rather than a moraine, and is "pretty convincing proof of glaciers on the slopes above it!" he states. See what you think.

Speaker's Background & Education

Nick is a consulting hydrogeologist and environmental geologist, who has been in Las Vegas for 16 years. He got his Ph.D. in Geology (hydrogeology dissertation) from the University of Massachusetts in 1973. In the 1970s, with Harza Engineering Company in Chicago, Nick worked on dams and groundwater supply projects in the U.S., Guyana, Iran, Afghanistan, Jordan, and Malaysia. In the 1980s he spent five years in the Sultanate of Oman doing groundwater exploration and development. He came back to Harza to go to Las Vegas as a hydrologist on the Yucca Mountain Project in 1989. After Harza's contract ended he joined OHM Remediation Services where he worked for five years on cleanups of military bases in the west and on Midway Island. Over the past seven years he has been doing mostly environmental and groundwater-related work in Las Vegas. His interest in glacial deposits stems from the summer of 1963, when he was Princeton Professor Paul MacClintock's assistant, mapping glacial deposits in northern Vermont. He has worked in glacial terrain in the Northeast and Midwest, and studied the glacial deposits in Great Basin National Park in Nevada.

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Geological Society of Nevada, Southern Chapter
Spring 2005 Field Trip
Pleistocene Glacial Moraine at Kyle Canyon
Saturday, May 28, 2005

Led by: Dr. Nick Saines, Consulting Geologist, Las Vegas

WHAT WE WILL SEE

We will be visiting a remnant glacial moraine with an optional hike to Big Falls. Big Falls may represent a possible hanging valley below a cirque basin. Evidence for Pleistocene glaciation that we will observe includes morainal landforms, glacial till, striated stones, and glacio-fluvial deposits. The trip will also be a wonderful opportunity to experience the spectacular scenery of the Spring Mountains.

DISCUSSION

Rick Orndorff, John Van Hoesen, and Nick Saines have interpreted the features as glacial in origin (see References below). However, interpretations can be challenged, and Nick welcomes debate and use of multiple working hypotheses to brainstorm alternative possible origins for the features present in the Kyle Canyon area.

LOGISTICS

Meeting time: 9:00 AM

Location: Free parking lot (UNLV) at the corner of Swenson & Harmon near the Softball Stadium. [Directions: from Swenson go east on Harmon and take the first left across from the intramural field, drive over the first large speed bump and take the first left into the free parking lot. Visit www.unlv.edu for a map.] Alternatively, meet us at 10:15 am at the Mary Jane Falls parking lot in Kyle Canyon.

Transportation: We will car-pool to Kyle Canyon, and park in the Mary Jane Falls parking lot. *Since gas prices are so high it would be appreciated if passengers compensate the drivers. Suggested amount \$3 - \$5 per person.* From the parking lot we will hike ~ 1 mile to the moraine. Keep in mind that we will be at ~8300 feet so please wear comfortable and appropriate clothes, and hiking shoes. The temperature will be about 20 degrees cooler than in Vegas so be prepared. Bring a daypack, lunch/snack, water, camera, and a notebook.

Note: Those who will continue on to Big Falls (an additional 2.0 miles of rough hiking each way) should car pool separately from those who only have time to visit the moraine.

Contact Information:

Nick Saines: greatunc@aol.com, phone (702) 896-4049.

REFERENCES

- Orndorff, R.L., Van Hoesen, J.G., and Saines, M., 2003, Implications of New Evidence for Late Quaternary Glaciation in the Spring Mountains, Southern Nevada. Journal of the Arizona-Nevada Academy of Science 36(1): 37-45.*
- Van Hoesen, J.G. and Orndorff, R.L., 2000, SEM micromorphology of Pleistocene aged till, Spring Mountains, Nevada. GSA Abstracts with Programs, Reno, Nevada, v.32, no.7.*
- Van Hoesen, J.G. and Orndorff, R.L., 2001, SEM Micromorphology of limestone clasts from a Pleistocene ice contact deposit, Spring Mountains, Nevada: 2nd Annual Graduate Student Research Forum, University of Nevada, Las Vegas, Las Vegas, NV.*
- Van Hoesen, J.G. and Orndorff, R.L., 2003, Using GIS To Evaluate An Enigmatic Diamicton In The Spring Mountains, Southern Nevada. Professional Geographer 55: 206- 215.*
- Van Hoesen, J.G. and Orndorff, R.L., 2003, The micromorphology of glacial and non-glacial clasts: Evaluating the effects of lithology and age. GSA Abstracts with Programs, Seattle, Washington.*
- Van Hoesen, J.G., Orndorff, R.L., and Saines, M., 2000, Evidence for Pleistocene Glaciation in the Spring Mountains, Nevada. GSA Abstracts with Programs, Reno, Nevada, v.32, no.7.*

Abstract from Van Hoesen et al., 2000:

We have identified a number of glacial landforms in the Spring Mountains of southern Nevada. These include high valley cirques and moraines northwest of the town of Mt. Charleston, NV and due east of Mt. Charleston peak (11,990 ft above sea level). The moraines are unstratified and unsorted containing abundant fines and numerous striated limestone clasts. Most clasts are striated; however, the consistency of a preferred orientation for striations increases with increasing clast size and elongation, although many smaller clasts do contain striations with a distinct preferred orientation. The entrenchment of Big Falls stream through limestone bedrock suggests this is an early-middle Pleistocene glaciation. However, quantitative time constraints have yet to be established. Most of the glacial record has been destroyed or buried over time through fluvial and mass wasting events. However, the same mass wasting events that ultimately obscured the majority of the glacial record may be responsible for the preservation of the few remaining moraines in the region. Debris slides may have prevented the erosion of two morainal deposits located high on the valley walls and protected a moraine located on the valley floor. Two remnant cirques are located at the head of Big Falls stream and one remnant cirque is located at the head of Kyle Canyon; they exhibit a classic bowl shaped morphology. The cirques are carved into limestone bedrock that lacks any surficial evidence of glaciation such as striations, chatter marks, and crescentic gouges. This is attributed to the age of glaciation coupled with the lithology of the bedrock. Evidence for glaciation in the Spring Mountains suggests they represent the southernmost extent of Late Quaternary glaciation in the Great Basin and ends the long-standing debate over whether this region experienced glaciation during the Pleistocene.



New Chapter of the Association for Women Geoscientists!

Lets start a new chapter right here in Las Vegas, on the UNLV campus.
This group will benefit all geoscientists!

- *To Encourage the participation of women in the geosciences*
- *To Exchange educational, technical, and professional information*
- *To Enhance the professional growth and advancement of women in the geosciences*

Please contact Denise K.Honn for more information: honnnd@unlv.nevada.edu, 702-895-3513.
For information on the national organization: <http://www.awg.org>

New Chapter of the Association for Women Geoscientists!

