

GEOLOGICAL SOCIETY OF NEVADA **NEWSLETTER**

Geological Society of Nevada, 2175 Raggio Parkway, Room 107, Reno, NV 89512 (775) 323-3500 - Hours Tuesday -- Friday, 9 a.m. to 4 p.m. Monday by appointment.

Website: www.gsnv.org • E-mail: gsn@gsnv.org



August 2018, Vol. 34, No. 6

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Published monthly except June and July

CALENDAR OF GSN EVENTS

Aug. 10, 2018 **FRIDAY**

17TH ANNUAL "SILVER" SUMMER SERIES BBQ IN RENO

Guest Speaker: Doug Hurst, Northern Empire. Title: ""Perspective of a Canadian Invader in the Nevada Mining Scene". Location is at Dan Kappes's home, 13045 Welcome Way, Reno, NV. 6:00 PM Drinks, 6:30 PM Potluck BBQ, 7:30 PM talk begins. Sponsors for the evening are Kappes, Cassiday & Associates, Mine Development Associates, CGS Mule and Hunsaker Inc. BBQ meat and drinks will be provided. Please bring an appetizer, side dish, salad or dessert to share! Also bring your own lawn chair. Please RSVP by August 6th to Laura Ruud at the GSN Office, gsn@gsnv.org or 775-323-3500.

Details on page 3.

Aug. 15, 2018 WEDNESDAY

WINNEMUCCA CHAPTER SUMMER BBQ!

The BBQ will be held at Highland Park, 4220 Water Canyon Road, Winnemucca, NV, 4:30 to 8:00 PM. Food & Drinks Sponsored by: ALS Minerals & **Boart Longyear.** For more information, please contact Matt Fithian at:

Matthew.Fithian@ssrmining.com. Details on page 7.

Aug. 16, 2018 **THURSDAY**

ELKO CHAPTER SUMMER BBQ #3

The Elko monthly BBQ will be held at the Duncan Little Creek Gallery Bar Backyard, 516 Commercial St. BBQ begins at 6:00 p.m. Food & Drinks Sponsored by EM Strategies. For more info. Please contact Nate Wright,

Nathan.Wright@Newmont.com. Details on page 7.

FRIDAY

Sept. 28, 2018 NOTE CHANGE!! GSN MEMBERSHIP MEETING will be on the 4th Friday in September instead of the traditional 3rd Friday due to a conflict with the

Elks Lodge. The GSN meeting will be held at the Reno Elks Lodge, 597 Kumle Lane, Reno, Nevada. Social hour begins at 6 pm, Dinner at 7 pm and talk at

7:45 pm.

Oct. 5-7, 2018 GSN Fall Field Trip

SAVE THE DATES!

Another great GSN Fall Field Trip is being planned as "we speak". This trip is to the Mono Lake - Mammoth Lakes area in east central California. Registration form will be available soon. Contact Laura at the GSN office to reserve your spot on the trip. Details on page 8.

G.S.N. "SILVER" SUMMER SERIES SPONSORS!













FROM THE PRESIDENT Richard Bedell, GSN President 2018-2019 AUGUST 2018

It is a pleasure to be your incoming President. I have lived in many places before coming to Reno in 1993 and belonged to many geologic organizations and I can clearly state that this is the best. The field trips, speakers, networking, and opportunity to learn from one another is unprecedented in my experience.

The Summer Silver Series speaker August 10th at Dan Kappes's home will be Doug Hurst, who was Doug Silver's partner in International Royalty (IRC), and actually, presented part of one of the original Summer Series. We called them the Doug's. Doug has a fantastic background in the markets related to mineral exploration and therefore fits the economic theme of this series very well.

Doug's presentation is entitled "Perspective of a Canadian Invader in the Nevada Mining Scene". He told me he wanted to have a somewhat cheeky title to fit with the casual nature of the event.

Doug became Executive Chairman of Northern Empire working on the Sterling Project near Beatty, which is why he considers himself an invader. He lives in Nelson British Columbia. A number of us GSN Members got to have dinner with Doug in Nelson this past February to take our minds off Cat skiing in the area.

After IRC Doug was a founder and Executive of Newmarket Gold Inc. that got bought out for a cool billion by Kirkland Lake Gold Ltd.

Doug holds a B.S. in Geology from McMaster University in Ontario so he can speak our lingo.

Why do we have so many Canadian and other invasive species in Nevada? Let's look at 2017 gold production globally.

#1 Barrick with 5.32 Moz. produced at \$750 per ounce. Barrick combines numbers from Goldstrike and Cortez for a whopping 2,312,000 oz. in 2017. In 2018 production is expected to fall, in part because of Nevada.

#2 Newmont is running a close second with 5.27 Moz. but at a higher cost of \$924/oz. Production increased 8% from 2016 in part because of the Twin Creeks expansion, increased production in Carlin and the first full year of production out of Long Canyon.

#3 Anglo Gold Ashanti with 3.8 Moz. at \$1,054/oz. They do not produce anything in Nevada, but we (Renaissance Exploration) are trying to change that through an exploration agreement.

#4 Kinross produced 2.7 Moz. at \$954/oz. Better than expected production from Bald Mountain and Round Mountain helped offset decreases elsewhere in the world.

The next 6 largest global gold producers produce nothing in Nevada. You think there's a message? Yes! Join GSN.

The G.S.N. wishes to thank

Falcon Drilling and Shirene Urton
for sponsoring the MAY 19, 2018 MEETING

SOCIAL HOUR in RENO!



GSN "SILVER" SUMMER SERIES BBQ—AUGUST 10, 2018

17th Annual "Silver" Summer Series BBQ With Guest Speaker: Doug Hurst Executive Director of Northern Empire

Title: ""Perspective of a Canadian Invader in the Nevada Mining Scene"

Date: Friday, August 10, 2018

Time: Drinks @ 6:00 pm, BBQ/Potluck Meal @ 6:30 pm, Talk @ 7:30 pm

Where: Dan Kappes's Home, 13045 Welcome Way, Reno, Nevada

Things to Bring Along: A Side Dish, Salad or Dessert to share and a Lawn Chair!

Dan Kappes is buying the BBQ'd meat & hosting; Mine Development Associates is providing the beer kegs, CGS Mule is providing wine & soda and Hunsaker Inc. is providing water and ice!

DIRECTIONS TO DAN'S HOUSE (Please Carpool if you CAN!):

Take U.S. 395 to Damonte Ranch Exit. Head west on Arrow Creek Parkway, turn right (north) on Thomas Creek Rd. Turn right on Welcome Way at the 4-way stop sign. Dan's house is downhill from the corner, the first house on the left (except for the corner house) 13045 Welcome Way. Call if you get lost – Dan's Cell phone is: 775-848-1981 and home phone: 775-622-1117.

Membership Renewals Coming Soon

GSN members, this is a reminder that your yearly membership fee is due by the September 28th monthly meeting. Membership dues are \$50. Nevada student dues are \$10. You can become a lifetime member and never have to worry about dues again for just \$1,250.

Please log on to: http://gsnv.org/membership/join-gsn.php to pay your dues online or to download the paper form to mail it in. We are looking forward to enjoying another year of talks, field trips, and comradery with all GSN members. If you have questions please contact Molly Hunsaker, GSN Membership Chair at mollymariehunsaker@gmail.com or 775-340-0289.

(Paper form is on page 11 of this newsletter.)

"FACES OF GSN" TONY GESUALDO

I am writing this from my hotel room in Hawthorne, NV, not a place I ever dreamed of visiting but a small town surrounded by an Army munitions depot and the basins and ranges of the Walker Lane. Some of you might know it, as we have a mini-GSN meeting each morning in the local diner before we all head out to check our respective rigs. I am working on a drill program for a small exploration company down a dirt road few have traveled with a beautiful view of the highest point in Nevada, Boundary Peak, backdropped by the high Sierra. Not a bad office!

I was a slow starter in the field of geology. Even though I had a rock collection at a young age, was great at reading maps, enjoyed camping and the outdoors, and excelled in my science classes, it took until well beyond high school to begin my career in geology.

I had been working in various restaurants in Athens, GA for almost 10 years (pizza maker, dishwasher, line cook, kitchen manager, head meat cook, muffin man, bread delivery man, farmer's market vendor, etc.) when some major life events turned me in a different direction. At 27, I decided to go to school for science and somewhat randomly called the undergraduate advisor for the Geology Department at the University of Georgia (UGA). In one short meeting, Dr. Rob Hawman convinced me to declare geology as my major.

Being an older student, I knew I needed to get involved. I became an event coordinator for the newly revived Geol-ogy Club at UGA. Together with a couple other older students, we were able to plan some amazing geology adventures (backpacking, camping, canoeing, caving) throughout the southeast with themes ranging from the Pennsylvanian carbonate plateau in the Tennessee-Alabama-Georgia area, to coastal barrier island sedimentation in South Carolina. to unconfined aguifers in northern Florida. Cooking was (and is) still a passion, and I could (and still can) cook up some delicious field food for fellow geocampers on multi-day trips. These skills were handy during our field school based in Cañon City, CO, where I became the defacto head chef during our excursions to eastern Utah and northern New Mexico.



"Canoe trip on the Suwanee River, Florida"



"Sniffing rocks in northwest Georgia"

Besides school, other geological organizations such as Georgia Geological Society (GGS), Atlanta Geological Society (AGS), and the Geological Society of America (GSA) exponentially helped my geological understanding of the world through field trips, conferences, and short courses. Throughout school and my career, field trips and conferences have been some of the most eye-opening learning experiences. I owe a lot to the people that I have connected with and learned from through these and other organizations.

Upon graduating with a B.S. in Geology (cont. on pg 5)

Faces-Gesualdo (cont. from page 4)

in 2011, I started working for Uwharrie Resources (now Carolina Gold Resources), a private gold exploration company. Over the next ~2 years I worked for them throughout the Carolina Slate Belt in South Carolina, North Carolina, and Georgia. In that time, I cobbled together a decent understanding of east coast geology, a ninja-like understanding of a machete, a healthy fear/respect of waist-high poison ivy and the many blood sucking insects, and a thorough understanding of the differing BBQ in all three states: mustard, vinegar, and smoky-savory tomato-based, respectively.

By late 2013, the gold price was low, and work was scarce. I applied to and attempted to work a bunch of geology jobs, most notably a couple months in northern Ontario, Canada, before accepting a position in Carlsbad, NM as a mudlogger in early 2014. I had fallen in love with hardrock exploration geology/puzzles, and so I applied to graduate schools before I moved to New Mexico. Between working on oil rigs, going on geo-adventures, and rockhounding in southeastern New Mexico, I learned a ton in the 5 months I worked on oil rigs for Morco Geological Services in the Delaware Basin.



"Lunch break near Canon City, CO"

Before going to graduate school in the fall of 2014, I was a teaching assistant at the Georgia-South Carolina field school for a second time, based in Cañon City, CO, expanding my understanding of Rocky Mountain stratigraphy, sedimentation/oil plays in the Paradox and Uinta basins, and hydrothermal/volcanic systems in the Vallez Caldera and the San Juan Mountains. The jump from southeastern New Mexico, to central Colorado, to the Black Hills for graduate school proved to be an amazing transect of the Paleozoic and Mesozoic strata across the middle of America.



"The edge of Wharf Mine property, looking over the northern Black Hills, SD"

I spent a little over two years in Rapid City, SD during my graduate program at South Dakota School of Mines and Technology (SDSMT), learning about Black Hills geology through school and proximity. One summer I spent working as a contract exploration geologist at Wharf Mine in Lead, SD. I was their sole logger for the RC drill program and mapped near-mine exploration targets in the lower Paleozoic units. In school, I became heavily involved in the SDSMT Society of Economic Geologists (SEG) student chapter as Secretary and then President, putting together field trips in Utah, Nevada, Idaho, and around the Black Hills. I also joined the South Dakota AIPG chapter, and enjoyed their field trips in South Dakota and northwestern Nebraska.

While in graduate school I embarked on my first forays into Nevada geology. With guidance from my advisor, Dr. Zeynep Baran, and emeritus professors Dr. Alvis Lisenbee and Dr. Colin Paterson, and with oversight from Jim Carver, Matt Fithian, and Andrew Armstrong at Marigold, I completed a thesis that investigated the structural controls on mineralization at Marigold Mine. Keeping me close to Marigold for field work on the weekends, I picked up a summer internship at Meikle/Rodeo (Goldstrike Underground) with their modeling group. The combination of underground experience, modeling work, Carlin Trend geology, and nearby thesis work propelled me into my post-graduate job with Barrick at Turquoise Ridge starting in January 2017 as a production geologist.

(cont. on page 6)

Faces—Gesualdo (cont. from page 5)

Turquoise Ridge is an amazing deposit. Having such high-grade ore (with a cutoff grade two orders of magnitude greater than the mine where I did my thesis...) may have skewed my gold-grade-reality a little. Picking up my rounds underground, working closely with operations and the engineers, and making decisions daily based on gold grades and costs showed me the many factors considered to get gold out of the ground – a useful lesson for future exploration endeavors. During my time at Turquoise Ridge, I became Secretary of the Winnemucca GSN chapter. The experiences and contacts I gained by being a part of such an active society are invaluable. Over the last 2 years, I have met some amazing people and learned a lot from all the field trips, meetings, and events. The community promotes a healthy flow of information (and beverages) - all of which I have and continue to enjoy.



I recently started a new chapter, leaving the stability of production work in a well-endowed mine to do consulting/contract work with a private exploration company, KA Gold. Underground production geology is something I will miss, but the unknown and excitement of exploration was calling me back. This returns us to my hotel room in Hawthorne, my current home away from home.

As I wrote this essay, I realized that a central theme of my relatively short geology career has been identifying gaps in my understanding of geology and finding ways to learn more. What makes GSN such a great organization is that it provides ample opportunities to fill these gaps. Listening to experienced geologists, having discussions with colleagues, attending field trips and meetings, and getting up close and personal with the rocks provides incredible ways to learn, which only fuels our curiosity. Seeing life as a never-ending learning experience, I figure we will be entertained (and hopefully employed) for a while.



Another Great GSN Picnic!

By Bob Thomas, Chairman of the GSN Board of Directors



The GSN picnic was held on June 22 at Rancho San Rafael Regional Park in Reno, and once again it was a highly successful and fun event. It's hard to beat chowing down on burgers and dogs and everything else what was included, while socializing with colleagues and friends! About 100 people attended, and activities included the traditional gold pan toss with competitors in both the adult and kids divisions – although I must say the kids division could have benefited from a few more entrants. As in past recent

Thomas!) for being the head cooks, Kebrina Rosino, Lori Carpenter and Ben Pe-



years, the picnic was organized by the GSN Board of Directors, and special thanks are in order to several organizations and individuals. Mine Development Associates once again sponsored the Great Basin Brewing Co. beer. Dave Shaddrick generously sponsored the Peavine Pavilion site, which is the best picnic spot in the park. Molly Hunsaker and friends Patty Capistrant and Brooke Mills provided wonderful home baked desserts. Richard Bedell contributed wine. Special mention to the onsite help of Cami Prenn, who organized the "food line" and generally assured things ran smoothly. Thanks also to Greg French and Richard Bedell (Editor's note—and Bob



terson for organizing the gold pan toss event. Laura Ruud organized the announcement reminders and reservation sign-ups. The picnic wouldn't have happened without the efforts of all those mentioned – as well as some I may have forgotten. Please thank them when you have the chance!





GSN WINNEMUCCA CHAPTER SUMMER BBQ



WEDNESDAY, AUGUST 15, 2018

4:30 p.m.—8:00 p.m.

Come enjoy some food and drink while playing games and catching up with friends!

Location: Highland Park 4220 Water Canyon Road Winnemucca, Nevada

Food and Drinks Sponsored by:







GSN ELKO CHAPTER SUMMER BBQ #3

(last one before we go back to our regular meetings at the Western Folklife Center)

THURSDAY, AUGUST 16, 2018

6:00 p.m.—9:00 p.m.

Location: Duncan Little Creek Gallery Bar (Backyard)
516 Commercial Street
Elko, Nevada

Food and Drinks Sponsored by:





SAVE THE DATES! G\$N FALL FIELD TRIP—OCTOBER 5-7, 2018!!



"Shaped by Fire and Ice" By Dennis Bryan

The Fall GSN field trip is to the Mono Lake - Mammoth Lakes area in east central California, approximately three hours south of Reno. The trip will highlight the recent volcanism associated with the Long Valley Caldera. We will explore the cataclysmic eruption of one of the most extensive tuff units in North America, see craters formed 600 years ago, and walk on volcanic domes that have barely had time to cool. We will also touch on the extensive glaciation that carved valleys and deposited moraines along the eastern front of the spectacular Sierra Nevada. We will witness the results of tectonic forces that have uplifted these mountains over a mile above the Owens Valley. We'll even throw in some unusual tufa formations along one of the most unique saline lakes in the world. A highlight of the trip will be a morning exploring the extraordinary volcanic formations and beautiful vistas of the Devils Postpile National Monument.

The inspiration for the field trip is the recently GSN published "Geologic Guidebook to the Long Valley – Mono Craters Region of Eastern California" by Steven R. Lipshie. This guidebook and field guide is an excellent overview to the area and forms the basis of our planned trip.

The field trip will take place over three days, October 5 -7, 2018, Friday through Sunday. We'll stay in Mammoth Lakes two nights and be back in Reno that Sunday evening around dinner time. We'll ride in vans for better access to our field stops.

Bring your camera as this field trip features some of the most scenic geologic terrain you will ever have the chance to visit up close. And since it is in early Fall at altitudes up to 9,000 feet we may even be treated to some colorful fall foliage.

To get your name on the reservation list, please contact Laura Ruud at the GSN office: Email—gsn@gsnv.org; 775-323-3500. A registration form will be sent out via email in the next few weeks.

G.S.N. SPRING 2018 FIELD TRIP WAS A BIG SUCCESS

Thanks to our very generous sponsors and also to our hard-working field trip organizer, Richard Bedell, another successful GSN field trip is in the books as of June 10, 2018! Our sponsors for this trip were:

Boart Longyear, Envirotech Drilling, National Gold, ALS Minerals, **American Assay Labs, Kinross Gold and EM Strategies!**

The participants were treated to stops in the Monte Cristo Range, the Eastside project and Gilbert. We were honored to have John Oldow accompany the group on the trip and share some of the knowledge he's gained while working in this area over the course of many years. Other leaders on the trip who shared their knowledge of the geology along the trip were Richard Bedell, Mark Coolbaugh, Doug McGibbon, Kevin Marks, Ruth Carraher and Brent Cland. On more than one occasion Dick Hardyman's name came up as a very much missed expert voice in this area too. Despite some mishaps with vans and sand bogs, the trip was a complete success. We even got to see a herd of big horn sheep!



















Thank you to our generous sponsor for the Winnemucca Chapter meeting in MAY



Thank you to our generous sponsor for the Elko Chapter meeting in MAY



JUST REFINERS (USA), INC.

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Thank you to our generous sponsors for the Elko Chapter JUNE & JULY SUMMER BBQS

JUNE BBQ



JULY BBQ





VISION FOR DISCOVERY

GSN 2020 SYMPOSIUM

May 14 - 25, 2020, Reno, Nevada

Nugget Casino Resort Sparks, Nevada

The GSN 2020 Symposium Committee has been hard at work organizing the next symposium coming up in only 22 months! The 1st Call for Papers flyer will be mailed out to everyone very soon. Keep your eyes open for it in your mailboxes and consider submitting a paper for this respected scientific event.

G.S.N. ELKO CHAPTER BBQ #2

The GSN Elko Chapter's officers were hard at work again, putting on the second of their three summer BBQs. President, Nate Wright did a fantastic job on the chicken and tasty coleslaw. Membership Chair, Diane Cheung handcrafted 2 flag shaped fruit trays that were delicious plus salad and sheet cake! Chelsea Raley rounded out the meal with her beans and potatoes that were very popular with the crowd. A big thanks to the folks at CGS for stepping up on short notice and sponsoring all the food AND all the drinks to make this another great GSN event!



Photo Credit: Diane Cheung

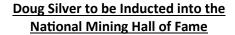
Wrap-up of the Reno Aces Night - July 20, 2018



Thanks to **National EWP** for sponsoring another fun GSN event at the Reno Aces ball game on July 20th. Everyone had a great time and the evening ended with a win for the Aces and a great fireworks show!

Keith Meyers, James Stephens and Brian Johnson, as always, were wonderful hosts for this event. They always represent National EWP with class. Several of the GSN kids even got to go out on the field before the game. It was a great night for baseball, food, drink and GSN camaraderie!





We want to congratulate Mr. Doug Silver on his impending induction into the National Mining Hall of Fame! Doug is a Lifetime Member of the GSN and the namesake of the GSN's "Silver Summer Series" coming up on August 10th. The induction ceremony will take place on September 29th at the Ritz-Carlton in Denver, CO. A short bio is below. www.mininghallofame.org



Douglas B. Silver is considered one of the top thought leaders of the global mining business due to his diverse and international business expertise. His private research has elevated the industry's understanding of macro trends, valuation standards, and corporate strategies. This knowledge has resulted in Silveright.

ver being directly involved in mineral discoveries, building major royalty companies and creating massive shareholder wealth. Silver conceptualized and founded the Denver Gold Group, which continues today as the world's premiere gold investment forums. He is well known for his extensive writings as well as his informative and humorous speeches. A private supporter of education and women's issues, and a mentor to many students, Silver is the recipient of numerous awards including the University of Arizona's President's Award for his leadership role with the Lowell Institute for Mineral Resources, and the Distinguished Member Award of the Society for Mining, Metallurgy & Exploration (SME).

Thank you to our generous donors in MAY, JUNE & JULY!

G.S.N. FOUNDATION

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GEOLOGICAL SOCIETY OF NEVADA

2019

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Offices are located at NBMG's Great Basin Science Sample & Records Library at The Desert Research Institute Walk-in Office hours: Tuesday through Friday, 8:00 AM - 3:00 PM. Mondays - Call or email for appointment.

The Geological Society of Nevada (GSN) is a non-profit, educational organization whose principal objective is to promote the advancement of geological sciences, especially as they relate to Nevada. GSN supports the dissemination of information through meetings, field trips, publications and academic endeavors. Membership is open to geologists, geophysicists, geochemists, engineers, educators, students, prospectors or anyone else with an interest in the geological sciences and/or the goals of the GSN. The organization is based in Reno with additional Chapters in Elko, Las Vegas and Winnemucca.

The GSN Membership year begins September 1st. Annual dues are \$50.00, Students \$25.00 or \$1,250.00 for Lifetime Membership. Dues are due in September each year at the commencement of the fall meeting schedule. The GSN conducts a Field Trip in the Fall and one in the Spring of each year. Monthly meetings are held September through May in Reno, Elko, Winnemucca, and Las Vegas. If you would like to receive email announcements from one of the G.S.N. Chapters (Elko, Winnemucca or Southern Nevada) please check a box below.

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ROCKTAIK

Yellowstone super-volcano has a different history than previously thought

Yellowstone super-volcano eruptions were produced by gigantic ancient oceanic plate

Reprinted from Science Daily (https://www.sciencedaily.com/releases/2018/07/180726085827.htm)
Date: July 26, 2018, Source: Virginia Tech

Scientists have long thought that Yellowstone Caldera, part of the Rocky Mountains and located mostly in Wyoming, is powered by heat from the Earth's core, similar to most volcanoes such as the recently active Kilauea volcano in Hawaii. However, new research published in *Nature Geoscience* by Ying Zhou, an associate professor with the Virginia Tech College of Science's Department of Geosciences, shows a different past.

"In this research, there was no evidence of heat coming directly up from the Earth's core to power the surface volcano at Yellowstone," Zhou said. "Instead, the underground images we captured suggest that Yellowstone volcanoes were produced by a gigantic ancient oceanic plate that dove under the Western United States about 30 million years ago. This ancient oceanic plate broke into pieces, resulting in perturbations of unusual rocks in the mantle which led to volcanic eruptions in the past 16 million years."

The eruptions were very explosive, Zhou added. A theoretical seismologist, Zhou created X-ray-like images of the Earth's deep interior from USArray -- part of the Earthscope project funded by the National Science Foundation -- and discovered an anomalous underground structure at a depth of about 250 to 400 miles right beneath the line of volcanoes. "This evidence was in direct contradiction to the plume model," Zhou said.

In her study, Zhou found the new images of the Earth's deep interior showed that the oceanic Farallon plate, which used to be where the Pacific Ocean is now, wedged itself beneath the present-day Western United States. The ancient oceanic plate was broken into pieces just like the seafloor in the Pacific today. A section of the subducted oceanic plate started tearing off and sinking down to the deep earth.



This is the location of the Yellowstone's hotspot track. The triangles indicate general locations of the Yellowstone and Snake River Plain age-progressive volcanoes with ages shown in millions of years, plotted on a topography map of the Western United States. Credit: Virginia Tech

The sinking section of oceanic plate slowly pushed hot materials upward to form the volcanoes that now make up Yellowstone. Further, the series of volcanoes that make up Yellowstone have been slowly moving, achingly so, ever since. "The process started at the Oregon-Idaho border about 16 million years ago and propagated northwestward, forming a line of volcanoes that are progressively younger as they stretched northwest to present-day Wyoming," Zhou added.

The previously-held plume model was used to explain the unique Yellowstone hotspot track -- the line of volcanoes in Oregon, Idaho, and Wyoming that dots part of the Midwest. "If the North American plate was moving slowly over a position-fixed plume at Yellowstone, it will displace older volcanoes towards the Oregon-Idaho border and form a line of volcanoes, but such a deep plume has not been found." Zhou said. So, what caused the track? Zhou intends to find out.

"It has always been a problem there, and scientists have tried to come up with different ways to explain the cause of Yellowstone volcanoes, but it has been unsuccessful," she said, adding that hotspot tracks are more popular in oceans, such as the Hawaii islands. The frequent Geyser eruptions at Yellowstone are of course not volcanic eruptions with magna, but due to super-heated water. The last Yellowstone super eruption was about 630,000 years ago, according to experts. Zhou has no predictions on when or if Yellowstone could erupt again.

The use of the X-ray-like images for this study is unique in itself. Just as humans can see objects in a room when a light is on, Zhou said seismometers can see structures deep within the earth when an earthquake occurs. The vibrations spread out and create waves when they hit rocks. The waves are detected by seismometers and used in what is known as diffraction tomography.

"This is the first time the new imaging theory has been applied to this type of seismic data, which allowed us to see anomalous structures in the Earth's mantle that would otherwise not be resolvable using traditional methods." Zhou said.

Zhou will continue her study of Yellowstone. "The next step will be to increase the resolution of the X-ray-like images of the underground rock," she added.

"More detailed images of the unusual rocks in the deep earth will allow us to use computer simulation to recreate the fragmentation of the gigantic oceanic plate and test different scenarios of how rock melting and magma feeding system work for the Yellowstone volcanoes."

Activity Update

Mike Brady, June 2018

www.activityupdate.com

NEVADA

Maverix Metals Inc. announced that it acquired a portfolio of royalty interests (including the McCoy-Cove Property) from Newmont Mining Corp. for \$17,000,000 cash and 60,000,000 shares (28%). (resource @ Cove = 614,000 tonnes @ 11.57 gpt Au indicated) *Press Release:* May 29

SSR Mining Inc. announced that reserves at the Marigold Mine aggregate 205,100,000 tonnes @ 0.46 gpt Au proven+probable. (was 185,000,000 tonnes @ 0.45 gpt Au proven+probable) *Press Release:* June 18

Gold Reserve Corp. announced that it began the construction of the Isabella Pearl heap leach Mine to produce 40,000 ounces/year gold. (reserve = 2,694,000 tonnes @ 2.22 gpt Au, 13 gpt Ag proven+probable) *Press Release*: June 19

Nevada Copper Corp. announced that recent drill results at the Pumpkin Hollow/North Project include 169.2-228.6 meters @ 1.11% Cu, 0.04 gpt Au (NC18-04); 161.4-193.6 meters @ 0.50% Cu, 0.08 gpt Au (NC18-05); 158.5-170.7 meters @ 0.42% Cu, 0.05 gpt Au (NC18-07) and 281.9-303.3 meters @ 0.44% Cu, 0.01 gpt Au (NC18-08). (open pit reserve = 134,900,000 tonnes @ 0.10 gpt Au, 0.50% Cu proven+probable) *Press Release:* June 19

Gold Standard Ventures Corp. announced that recent drill results at the Railroad/Dixie Project include 230.2-254.6 meters @ 0.18 gpt Au (DX18-05); 147.8-214.9 meters @ 1.05 gpt Au (DX18-06) and 152.4-167.6 meters @ 0.77 gpt Au (DX18-07). (resource = 29,463,000 tonnes @ 1.5 gpt Au inferred) *Press Release:* June 13

Gold Standard Ventures Corp. announced that recent drill results at the Railroad/Pinion Oxide Project include 65.5-77.7 meters @ 1.14 gpt Au (PR18-97); 36.6-57.8 meters @ 1.42 gpt Au (PR18-98); 30.5-42.7 meters @ 0.79 gpt Au (PR18-99) and 57.8-80.8 meters @ 0.46 gpt Au (PR18-100). (resource = 31,610,000 tonnes @ 0.62 gpt Au indicated) *Press Release*: June 6

Corvus Gold Corp. announced that recent drill results at the Mother Lode West Project include 294.13-315.47 meters @ 0.97 gpt Au (ML18-064); 33.53-36.58 meters @ 0.59 gpt Au (ML18-065); 0-15.24 meters @ 1.56 gpt Au (ML18-066) and 201.17-227.08 meters @ 0.68 gpt Au (ML18-067). (resource = 8,545,000 tonnes @ 1.57 gpt Au indicated) *Press Release:* June 13

NEW G.S.N. GUIDEBOOK AVAILABLE FOR PURCHASE! G.S.N. Special Publication #65

Get your copy of GSN's newest field trip guidebook published in conjunction with the June 2018 field trip titled "Epithermal Mineralization of the Monte Cristo Range, Rhyolite Domes and Regional Detachments, Esmeralda County Nevada"

Cost is \$40 plus \$9 shipping in the U.S. The GSN bookstore website is: https://gsnv.org/publications/ to order online and see all of the other great field trip guides and Symposium Proceedings volumes that the GSN has for sale! Please contact Laura Ruud with questions. gsn@gsnv.org or 775-323-3500.



Thank you to our out-going GSN Executive Committee officers whose terms ended on May 31, 2018. Kelly Cluer served as GSN President this year and did a hell of a job! He will serve on the Board of Directors as Immediate Past President for 1 more year. David Boden has served as the GSN Publications Chair for the last 3 years. Thank you for your long volunteer service to the organization Dave! GSN VP, Richard Bedell presents awards to Kelly (left) and David (right).





OBITUARIES



Larry McIntosh 1944-2018

Larry McIntosh, age 74, of Gardnerville, NV, died peacefully at home on June 7, 2018 after a long battle with lung cancer and pulmonary fibrosis.

Born in Ottumwa, Iowa, on May 7, 1944 to Edith and Earl McIntosh, he spent much of his childhood in New Mexico. He served in Alaska and Germany in the Army Security Agency before settling in Northern Nevada where he attended the University of Nevada, Reno, earning a Bachelor of Science in Geological Engineering from the Mackay School of Mines. Larry was a member of the Geological Society of Nevada and enjoyed a long career as a geologist in gold exploration.

A kind, gentle, and generous person with a charming understated sense of humor, Larry had a strong Christian faith and was devoted to his wife of 43 years and his family. He had a deep love and knowledge of the Sierra Nevada mountains and the Nevada desert, was an accomplished woodworker and photographer, and was an avid reader of mysteries and the classics. Larry was inquisitive and always eager to uncover the inner workings of things, from building much of his family home in Gardnerville to maintaining the perfect compost pile to being a successful gold prospector.

Larry is predeceased by his two brothers, Mike and Jack, and is survived by his wife Sue McIntosh, his sister Sue Gorman, his four children, Jennifer, Hannah, Ian, and Andrew, and his two grandsons, Elric and Felix.

A memorial service was held on Saturday, June 16 at Grace Community Church, Minden, NV.

Women's Mining Coalition (WMC) Meets with Congressional Leaders in Washington, D.C.

April 26, 2018 (Reprinted from the National Mining Association Newsletter)

This week, the Women's Mining Coalition (WMC) met in Washington for a three-day fly-in to engage members of Congress, staff and administration personnel. The mission of the WMC is to deliver the message to legislators that a strong mining industry is vitally important to our nation, our communities, our families and our

livelihoods, and that today's regulations and modern technology ensure responsible stewardship of U.S. lands.

Representatives from the following NMA members participated: Alaska Miners Association, American Coal Council, Arch Coal, Caterpillar, Coeur Mining, Hecla Mining, Kinross Gold, Newmont Mining, Peabody, Polymet Mining, SRK Consulting, and Teck American. NMA's Katie Sweeney was a featured speaker along with member companies Holland & Hart and Venable.



The NPGS 2018 Field Trip

"Unraveling Tectonic History Through Sedimentation and Structural Geology: A Trip in Memory of Jim Trexler" September 7-9, 2018

The field trip will focus on the over-arching tectonic problem(s) that Jim and crew were working on including the Late Paleozoic Southwestern Laurentian Borderland (SLaB) and unraveling the tectonic history through sedimentation and structural geology.

Stop leaders include Pat Cashman, Don French, Dan Sturmer, Erica Key, Gwen Linde, Bill Ehni, Jerry Walker and Tim Lawton

Because there is a limited capacity for this event, we recommend advanced registration

<u>Click here to register online</u> and reserve your seat. <u>Click here to find out all the details about the field trip.</u>

Contact General Chair Dan Sturmer (Daniel.Sturmer@uc.edu)



James Trexler, 1946-2017

OTHER UPCOMING EVENTS

7 August: Arizona Geological Society presents: "Rhodochrosite: Red Treasure of the Rockies - The Story of the Sweet Home Mine" at Borderlands Brewing, 119 East Toole Avenue, Tucson AZ 85701. Please click on the link for more information and to RSVP: https://www.arizonageologicalsoc.org/event-2868502

13-17 August: International Mineralogical Association XXII Meeting, Melbourne, Australia.

19-22 August: Conjugate Margins Conference, Halifax, Nova Scotia, Canada.

22-24 August: Virtual Geoscience Conference, Kingston, Ontario, Canada.

6-8 September: Mining & Exploration International (MEI2018) Conference & Expo will be held September 6, 2018 through September 8, 2018, at the Las Vegas Convention Center, Las Vegas, Nevada. Workforce Development, Sustainability & Community, and Technology are the primary areas of emphasis, though a wide range of topics crucial to mining and exploration will be explored. Details can be viewed at MEI2018 Sessions & Workshops.

13-16 September: The NMEC (Nevada Mineral Exploration Coalition) is hosting the 6th Annual Great Basin Rendezvous at Camp Lamoille near Elko, NV. Contact Dave Shaddrick, Dave@dshaddrick.com or Warren Thompson wfthompson@frontiernet.net for more information. Register at https://www.nvmec.org/gbrregistration

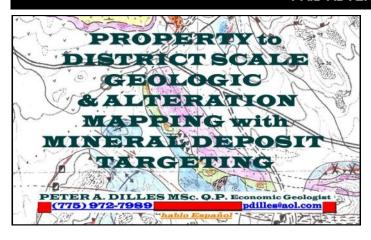
15-23 September: Association of Environmental & Engineering Geologists Annual Meeting, "Engineering Geology for a Sustainable World". Hyatt Regency, San Francisco, CA. Click on the link for more information. https://www.aegannualmeeting.org/

22-25 September: SEG 2018 Conference: SEG 2018: Metals, Minerals, and Society, Keystone, CO. Website: http://www.seg2018.org/

WWW.segweb.org

25-26 September: Nevada Water Resources Association Fall 2018 Symposium. https://www.eiseverywhere.com/ereg/index.php?eventid=305384&

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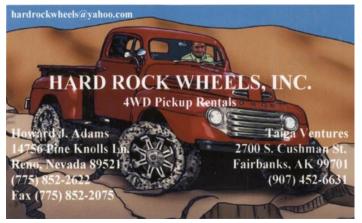
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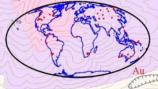
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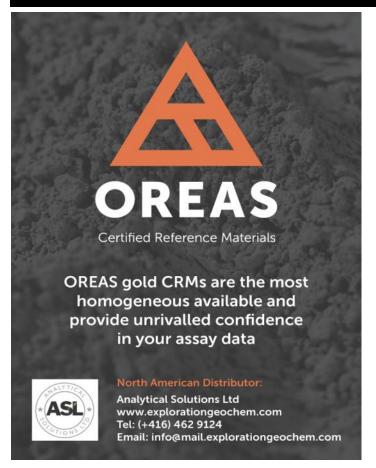
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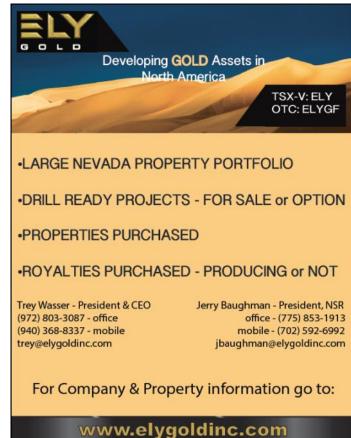
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TRAVELLING GSN BACKPACK PHOTOS

(submit your photos anytime and I'll place them when I have room!)

A GSN 2015 Symposium backpack (along with owner David Knight from Elko) travelled to Valdez, Alaska this summer. Check out the halibut in the bin. They have nice looking fish up there!

