



Arizona Geological Society Newsletter

MARCH 2019

March 5th, 2019 DINNER MEETING

Who: Sarah Elizabeth Baxter is the featured speaker. See abstract below.

Where: Sheraton Tucson Hotel and Suites, 5151 East Grant Road, (at the intersection of Grant and Rosemont on the North side of Grant in the **SABINO BALLROOM** (enter at northwest corner of the building) and go upstairs to the meeting room.

When: Cash Bar at 6 p.m.—Dinner at 7 p.m.—Talk at 8 p.m.

Cost: Members \$30, Guests \$33, Students Members free with online reservation (\$10 without).

RESERVATIONS ARE REQUIRED: Reserve on the AGS website (<http://www.arizonageologicalsoc.org/events>) by 11 am on Friday, March 1st. Please indicate Regular (Braised Short Ribs with Creamy Polenta), Vegetarian (Vegetable Napoleon), or Salad (Greek Salad) meal preference. Please cancel by **Friday, March 1st at 11 am** if you are unable to attend - no shows and late cancellations will be invoiced.

The January dinner meeting is sponsored by:



ABSTRACT

Treasures of Arizona's Sky Islands: Geology and Mineral Resources of Coronado National Forest

by Sarah Elizabeth Baxter

Mineral Resources Project Manager & Zone Geologist - Nogales Ranger District
Coronado National Forest

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Coronado National Forest (“Forest”) contains approximately 1.853 million acres (7,200 km²); dominantly occurring in the high mountain ranges of south to southeastern Arizona and southwestern New Mexico. The Forest occupies parts of Cochise, Graham, Greenlee, Pima and Santa Cruz Counties of Arizona and Hidalgo County New Mexico. The geology of the Forest is very diverse and highly variable, which reflects the complex geologic history of this region. Much of the geologic record of the region, which is part of the Basin and Range geologic province, contains intercalated sedimentary and volcanic rocks composing seven (7) major sequences that have been intruded during at least five (5) magmatic events; a geologic record stretching from the Precambrian to the late-Tertiary. This region’s high mountains and broad-flat low valleys gave rise to its unique nickname: Arizona’s Sky Islands. Not surprisingly, because of the Sky Island’s unique geologic nature and evolution, Coronado National Forest is the most biologically diverse of all lands managed by the USDA – Forest Service.

The mineral resources of the Forest have been investigated and mined by various inhabitants, visitors and prospectors for thousands of years. Silver (Ag) has been produced from mantos vein deposits and epithermal deposits. Gold (Au), Ag, and lead (Pb) have been produced by fissure-hosted and carbonate replacement deposits as well as contact metasomatic deposits known as skarns. The largest and richest deposits on the Forest are world-class porphyry Copper (Cu) deposits, which have produced Pb, Cu, zinc (Zn), Au, Ag, and molybdenum (Mo). Most of these porphyry-Cu deposits reside outside of the Forest, except in the Patagonia, Pajarito, Santa Rita, and Chiricahua Mountains. Other productive mineral resources occur within the Dragoon, Whetstone, Huachuca and Santa Catalina mountains. The Forest contains a diverse list of mineral resources and potential ore deposits including the following: tungsten skarn, tungsten vein, porphyry-Cu, porphyry-related Cu skarn, polymetallic replacement, porphyry Cu-Mo, polymetallic vein, Creede-type epithermal vein, rhyolite-hosted tin (Sn), and placer Au. It is the treasures of Arizona’s Sky Islands that continue to tempt the small prospector as well as large international mining companies to explore; not only in the Forest’s past but also into the future.

ABOUT THE SPEAKER

Sarah is 6th-generation native Californian (her family established residency in California as early as 1850) originally from Torrance, California. At the age of 5, she learned mineral prospecting and geology while working the family placer claim in San Bernardino National Forest. In 1999, she graduated from the University of California, Davis with a degree in Political Science and worked for five years in Law, Government Administration and Environmental Policy.

In 2008, Sarah sought to redefine her career and graduated from Oregon State University with a Bachelor’s of Science in Geology. Her undergraduate research thesis focused on an underground orogenic gold deposit and was entitled: Mineralogy of Gold-Quartz Veins of the French Gulch District, Shasta County, California. Her work was funded by a department scholarship for academic excellence.

Following graduation from OSU, Sarah worked as a brownfields exploration geologist for Freeport-McMoRan in Morenci, Arizona. Following work in Alaska for Pathfinder Mineral Services and Sumitomo Metal Mining in 2009, she formed Klondike Mountain Geological Services and

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worked as an independent geologist, and awarded contracts with Kinross Gold Corp., Hudbay Minerals, and ASARCO.



In 2015, Sarah earned her Professional Science Master’s degree in Economic Geology from the University of Arizona. As a graduate student, she was awarded the 2013-2014 SRK Consulting Scholarship for Academic Excellence and her Master’s thesis was entitled: Calc-Silicate Alteration and Ore Characterization, ASARCO Mission Complex: Implications for the Optimization of Molybdenum Recovery.

On January 17, 2017, Sarah joined the US Forest Service where she administers several minerals projects including the Rosemont Copper Project. Her diverse career ranges from helicopter-supported re-connaissance field geologist in the Alaskan Interior, near mine-site exploration and being a production geologist at both underground and open pit operations in Nevada, Alaska, Washington, and Arizona to Minerals Administration for the US Forest Service.

Arizona Geological Society Membership Stats (2/27/2019)

Total Membership	Professional Members	Student Members	Organizational Members
420	347	66	7

Jeffrey Post Regales AGS Membership with Smithsonian Treasures at February 2019 Meeting



Wulfenite is Loved: Arizona State Mineral is Well-Represented at Tucson Gem and Mineral Show

A selection of the AGS Secretary's favorite Wulfenite exhibits:



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Arizona Geological Survey: Rebooting AZGS' Economic Geology Program - 2019



Economic geologist Carson Richardson joined the Arizona Geological Survey (AZGS) in January 2019. State geologist Phil Pearthree interviews Carson on the future direction of AZGS' Economic Geology program for the 48th episode of the Arizona Mining Review e-video magazine.

Carson is a Ph.D.-candidate finalizing his dissertation at the University of Arizona.

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His recent research interests included: structural geology and ore deposits of the northern Shoshone Range, Nevada; and the magnitude and timing of structural deformation, Goshute-Toano Range, Nevada.

Carson's chief task at AZGS is to restart our economic geology program. He'll be involved in AZGS STATEMAP geologic mapping, too, working with Charles Ferguson and Brad Johnson on areas of mineral alteration commensurate with potential mineral resources. One potentially fruitful avenue is to add to the existing Arizona mineral database on mineral production of mines and mining districts in central and western Arizona. Carson will be following in the footsteps of Stanton Keith and Stan Keith who published indexes of mining properties for Cochise, Pima, Santa Cruz and Yuma Counties; available for free download from the AZGS Online Document Repository.

You can view the video here:

https://www.youtube.com/watch?v=QBeRAFEb_RM&t=1s

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Please contact the AGS Secretary if your company is interested in advertising in this monthly newsletter.

Arizona Geological Society is grateful to Freeport-McMoRan, Inc. for their generous support of our student members!

Freeport-McMoRan sponsored student dinners for the 2018 AGS monthly meetings.



AGS MEMBERSHIP APPLICATION OR RENEWAL FORM

YOU CAN RENEW OR SIGN UP as a new member and pay online. Please go to our website, arizonageologicalsociety.org. Or use the form below if you are more comfortable with the old school approach.

Please mail check with membership form to: Arizona Geological Society, PO Box 40952, Tucson, AZ 85717

Dues (check box) 1 year: \$35; full-time student (membership is free)

NEW MEMBER or RENEWAL? (circle one) Date of submittal _____

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All newsletters will be sent by email. If you do not have an email address, we will mail a hard copy to you, but we cannot guarantee timeliness.

If registered geologist/engineer, indicate registration number and State: _____

Enclosed is a _____ tax-deductible contribution to the J. Harold Courtright or the M. Lee Allison Scholarship Funds.