The Oligocene John Day Formation capped by Miocene Columbia River Basalt near Picture Gorge, eastern Oregon. Speaker Emily Cahoon in photo. Calhoon supplied the photos for this article.

**Report on Nov. 12, 2019 joint meeting with NWGS**

*Rethinking Yellowstone’s Volcanic Path Through Oregon*

By Marcia Knadle, AWG PNW President

There was a full house (including 7 or 8 AWG members) in attendance at our joint meeting with Northwest Geological Society on November 12 in Seattle. Portland State University PhD candidate Emily Cahoon spoke on *Rethinking Yellowstone’s Volcanic Path Through Oregon*. She detailed how the

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Needed: AWG-PNW Newsletter Editor

By Shari Maria Silverman
AWG-PNW Newsletter Editor

The AWG PNW chapter newsletter position is open! Unlike some other chapter board positions, you can become the newsletter editor during the year. Therefore, we could even gradually transition you in this 2019-2020 season. There is a lot of freedom with this newsletter, so you can really use your creativity. You can even use a different format or medium.

Let me know if you are interested!
Shari Maria Silverman
AWG PNW Newsletter Editor
silv9579@yahoo.com
Title Email “AWG PNW Newsletter Editor Position”

Thank you and I hope to hear from you!

Rethinking Yellowstone’s Volcanic Path Through Oregon
Continued from p. 1

Yellowstone Hotspot plume has expressed itself in Oregon through the last 50 million years. The story begins with the Siletz terrane along the Oregon and Washington coasts and then possibly the volcaniclastic sequences of the Clarno and John Day Formations, and finally the Columbia River Basalts – focusing on the Picture Gorge Basalt subunit. Many of these geologic units have likely been translated northward by the clockwise rotation of the entire Pacific Northwest. The Columbia River Basalts are considered expressions of the Yellowstone plume, and her dating of the Picture Gorge Basalt has illustrated that early lavas associated with the plume erupted over a much larger area than previously thought.

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Association for Women Geoscientists Foundation

“The mission of the AWG Foundation is to attain equality of opportunity for women in the geosciences and train new leaders by funding high impact programs for women in the geoscience.”
Quoted from the AWG Foundation page on the AWG website.

AWGF funds: 1. Scholarships and Travel Grants 2. Professional Development Programs 3. Awards and Outreach Programs

To find out more about donating to AWGF, applying for AWGF funds, or just AWGF in general, visit the AWG Foundation page at http://www.awg.org/Foundation.
Rethinking Yellowstone’s Volcanic Path Through Oregon
Continued from p. 2

Emily then discussed how the occurrence of sunstones, Oregon’s state gem, in southeastern Oregon help explain the evolution of the Yellowstone plume. Sunstones range from red to green and get their color from microinclusions of native copper in labradoritic feldspars, and there is still a lot of speculation about where it comes from and how it gets there. The sunstones are hosted in Columbia River Basalts and the zoning pattern suggests that the copper came in when the crystals formed, rather than later. Copper and nickel accumulate in the lower portions of deep plumes, so the presence of copper in the feldspars may reveal the depth at which the basalt magmas originated.

The presentation was well received and sparked numerous questions.

We thank Emily for making the journey up from Portland and presenting a well-organized and fascinating talk. We also thank NWGS (currently led by former AWG-PNW president Heather Vick) for helping us provide a larger platform and venue for her presentation. Emily’s interested in leading a field trip in eastern Oregon for our chapter perhaps next fall or the following spring, assuming she’s able to do her proposed postdoctoral research on sunstones here in the Pacific Northwest.

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President’s Message
By Marcia Knadle, AWG-PNW President

I’m writing this somewhat reluctantly, but only because I really hoped not to have to step in as chapter president. However, it turned out that no one else was able to do it this year, and Heather Nielsen had reached her term limit under our chapter bylaws. I’ve done this before a few times and Heather has left the chapter in great shape but, as a Pacific Region Delegate, I’m plenty busy with AWG Board duties. Both Heather and I contacted several members last summer, and most said they were interested but the timing was bad. In many cases, it was because they’re already busy in leadership positions for other geological organizations – which is a GOOD thing and suggests that a good part of AWG’s mission is successful! I have your names and am hoping that at least one of you will be available to become chapter president next year, mainly because we continually need new people and new ideas on the chapter board. In the meantime, I promise to devote as much time to the chapter as possible.

Continued on p. 4
President’s Message (Continued from p. 3)

We have one new member on the chapter board: Mindy Brugman, filling the role of vice president that was vacant last year. Mindy works as a meteorologist for Environment Canada in Vancouver, BC; however, her first love was glaciology. Some of you may remember Mindy from the Mt. St. Helens eruption episode of “We’ll Meet Again,” which aired on PBS a few years ago. You can find out more about Mindy and see the episode itself (if you’re willing to pay to join KCTS 9 Passport) at http://www.pbs.org/meet-again/episodes/mount-st-helens/. Not surprisingly, she’s especially eager to organize some chapter events around the 40th anniversary of the 1980 eruption next spring. If you have ideas or would like to help organize events, feel free to email her at vpresident@awg-ps.org. If you have ideas for speakers (including volunteering yourself) for other chapter meetings, either in the Seattle area or the Portland area, please contact me at marciaawg@aol.com.

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Upcoming AWG Field Trips (Summer 2020 [San Andreas Fault] and 2021 [Iceland])

Note from Editor: This is taken from the email sent from Marcia Knadle on January 3, 2020. The email below indicates that a deposit needed to be mailed by January 16. I may need to send out a retraction if it is full. However, in case it is not, I wanted you to see this in case you were interested.

Those of you who are AWG members and read AWG Enews and Gaea are aware that AWG is sponsoring a second field trip in 2020. However, those of you who are not members may not know about this. We're doing a second trip because our primary trip (to New Zealand) filled up quickly and because it's so expensive as to be beyond the means of most of our membership. As a result, we decided to hold a US trip in late summer, a follow up to our 2017 field trip to see the San Andreas Fault in southern and central California. This trip follows the fault zone from San Francisco north to Cape Mendocino. Our leader for the 2017 trip was Tanya Atwater, and I'm happy to see that she's registered for this trip.

If you're interested, please send me an email (fieldtrips@awg.org) and call Tom Williams on Monday morning -- see the attached flyer for the phone number and instructions. You will need to register with AWG, and you'll need to be a member to do that, so please make sure you join or renew your membership. The AWG registration information and forms are available at www.awg.org/fieldtrips. Please feel free to email me if you have questions.

By the way, our next AWG field trip will be to Iceland in summer of 2021.

Marcia Knadle

AWG-PNW President
AWG Field Trip Committee Co-Chair
AWG Pacific Region Delegate
**Rethinking Yellowstone’s Volcanic Path Through Oregon**

Continued from p. 3

References:


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**GeoGirls Summer Camps**

Free

Sunday August 2 to Thursday August 6 2020

**APPLICATIONS DUE:**
March 6, 2020

**SELECTIONS ANNOUNCED:**
May 8, 2020


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**GeoCorps Spring and Summer Opportunities**

Deadline to Apply: February 2, 2020

More info: [https://www.geosociety.org/GSA/Education_Careers/Field_Experiences/GeoCorps_America/GSA/fieldexp/GeoCorps/apply.aspx](https://www.geosociety.org/GSA/Education_Careers/Field_Experiences/GeoCorps_America/GSA/fieldexp/GeoCorps/apply.aspx)
President’s Message (Continued from p. 4)

We also have a new chapter webmistress, Cindy Bartlett, a senior geologist at Geosyntec in Portland. I'll be working with Cindy this fall to update our website, much of which has fallen into disrepair. Many thanks to our outgoing webmistress, Katie Brower, who is now very busy working full time AND will be next year’s NW Geological Society President! Many thanks also to Kathy Vanderwal Dubé, who spent 6 years on our chapter board – 3 years as president, then 3 years as past president.

If you're interested in being involved in another chapter leadership position, there are some to consider over the coming year. Our newsletter editor of the past 5 years, Shari Silverman, is tiring and would love to transition it to someone else. We aim for 4 newsletters a year, but if it ends up being a bit less, it's not a big deal. If you're interested in taking it on, but feel like you would need to acquire publishing software, our chapter has funds to help with that. Shari's done a great job producing high-quality newsletters, but you would have a free hand in what they look like and shouldn't feel intimidated. Please contact Shari (silv9579@yahoo.com) or me if you're interested. In addition, Secretary Megan Faust will reach her term limit under our chapter bylaws at the end of next summer. We MUST have a secretary under AWG’s Bylaws, so we'll need someone to fill that office. In addition, if you'd like to serve on our chapter's Scholarship Committee, please contact chair Sarah Dewey at awg.pnw.scholarships@gmail.com. The committee will be busy in December with judging this year's applications. Speaking of our scholarship, we've had a great response to our fundraising appeal and have raised the full amount needed for our matching funds from the AWG Foundation. A huge THANK YOU to everyone who's sent in a donation. If you'd like to contribute toward next year's scholarship, please send your check to:

Kate Johnson
AWG Foundation Treasurer
652 Glimmerglen Road
Cooperstown, NY 13326

Please be sure to make it out to “AWG Foundation” and specify “AWG-PNW Tanaka Scholarship” on the memo line.

Again, if you have ideas for meetings or other events, or if you'd like to get more involved with the chapter, either now or in the next few years, please let me know.
Marcia Knadle, AWG-PNW President
Ape Cave Day Hike
By Marcia Knadle, AWG-PNW President (photos and text)

This year’s chapter field trip was held Saturday Sept. 28 and was a day hike to Ape Cave on the south flank of Mt. St. Helens. We had 8 participants and, although wet weather was predicted, the sun was out much of the time and rain held off until almost the end of the day. Ape Cave is an approximately three-mile long lava tube in a basalt flow that came down the south flank of Mt. St. Helens 2000 years ago. The entrance is about mid-way, so people usually hike the lower part, and then if they’re more adventurous, hike through the more difficult upper part. We hiked the easier lower cave, which was a bit drippy from the September rains, but not too wet. Erin Dunbar did a great job of finding reference publications about the cave, some of which were quite old and rather obscure. Heather’s two boys were along and, being 8 and 5 years old, reminded us of how cool this all is when viewed through young eyes. A few of us continued on to Lava Canyon for a short hike and were rewarded with a clear view of the mountain on the way out. Many thanks to Erin for suggesting and helping to organize the trip. Next year, we hope to hold two field trips, one as part of our Mt. St. Helens 40th Anniversary events, and a second trip late next summer or early fall with Emily Cahoon (PSU) to southern Oregon to look at unusual volcanics related to the Yellowstone Hot Spot track.

Photos Continue on p.10
An important new grassroots network for students facing sexual harassment during research fieldwork has taken off, buttressed by the voices of thousands of students and researchers still in need of support and intervention. FISST (Fieldwork Initiative to Stop Sexual Trauma) is the creation of PhD student Jerika Heinze, which seeks to maintain a network for victims who have struggled with gendered violence while conducting research, as well as proliferate pre-fieldwork training seminars that break open the blackbox of data collection and shed light on the realities of sexual harassment and assault in the field.

Despite the many stories of gendered violence in the domain of research fieldwork which has been well documented since as early as the 1970’s, little has been done to mitigate these encounters or provide institutional support for victims. Although great strides have been made against on-campus sexual harassment and assault, Universities regard gendered violence in real world settings as outside of the purview of their jurisdiction, thus leaving researchers alone to handle on their own. A 2019 pilot study by Jerika Heinze indicated that over 2/3 of the fifty researchers interviewed experienced violent, harassing, or fear-inducing experiences while doing fieldwork, with half of those incidences qualifying as traumatic or having a significant impact on the researchers ability to feel safe. When asked what solutions participants felt they could benefit from, 90% stated that a pre-fieldwork conversation about the realities of field work, including tools and conversations about gendered violence and sexual harassment would have been greatly beneficial to them.
This need for a pre-emptive intervention inspired the creation of the FISST Training – a seminar designed to impart onto students a corpus of various strategies on how to minimize potentially dangerous situations, stressing that no student should ever have to endure uncomfortable or potentially threatening situations in order to get their research data or as a rite of passage as a researcher. During the seminar, students will learn that they will be supported in their decisions to leave or pause future fieldwork in the event that dangerous conditions arise. Students will create a bilateral plan with their research advisors about how to report gendered violence, and will be connected with various resources available to protect women and non-binary researchers in academia, as well as larger networks for fieldwork researchers. A round table discussion will be held for students to discuss their own concerns and any problems they may anticipate in their own unique fieldwork situations. Students will benefit from talking about various scenarios, discussing boundaries, and an awareness of the mental health support available to them. Advisors and staff will also be led in a discussion on how to best support students in the field.

An outreach website is currently underway to provide rapid response help to students and researchers who experience difficulty while in the field. Jerika has also created an online community, Women in the Field/Survivors in the Field, to provide more support for researchers doing fieldwork. The FISST Training is currently in need of sponsorship to launch, as well as an emergency aid fund to help students in need of urgent intervention while in the field. To show support, make a donation, book a training, or connect with the initiative, email Jerika Heinze at JLHeinze@mail.sfsu.edu

Sandy Bowman and Marcia Knadle at Lava Canyon

Scouring from one of the Mt. St. Helens mudflows at Lava Canyon

Yet another Ape Cave Trip Photo on p. 13
San Rafael Capitol Reef Field Excursion
Spaces Open
By Tom Bush
Earth and Space Sciences Department Coordinator at Pierce College Puyallup

Tom Bush will be leading a field trip for Pierce College Puyallup that is open to the general public over Pierce College’s Spring Break to south-central Utah

Destinations: several sections of Capitol Reef National Park, the San Rafael Swell, Goblin Valley State Park, and the Horseshoe Canyon District of Canyonlands National Park

Transportation: by 15-passenger van departing from and returning to Pierce College Puyallup, Puyallup, WA

Accommodations: camping for 4 nights at Goblin Valley State Park near the San Rafael Swell, 3 nights at Wonderland RV Park in Torrey near Capitol Reef National Park

Dates: Thursday, March 26–Saturday, April 4, 2020

Cost: $839 (includes transportation by van, camping fees (including showers), meals while at the field site in Utah, admission fees, Community and Continuing Education registration fee; does NOT include meals while driving to and from Utah, personal snacks, souvenirs, campfire wood, personal camping gear, other personal expenses, and any other trip expenses not specifically mentioned in the costs included above)

More details if desired: The San Rafael Capitol Reef Field Excursion is a 10-day geo-tour of spectacular south-central Utah, visiting the San Rafael Swell, Capitol Reef National Park, the Horseshoe Canyon District of Canyonlands National Park, Goblin Valley State Park and nearby areas. This trip will involve touring and hiking in these areas in order to enjoy the scenery and understand the geologic processes that formed it. We will camp for 4 nights at Goblin Valley State Park near the San Rafael Swell, and 3 nights at Wonderland RV Park in Torrey, just outside Capitol Reef National Park, where we will have easy access to the localities of interest. Each day will consist of driving to selected areas, stopping at key localities, and enjoying the scenery. Many of the stops will include short walks, and some will involve hiking of various lengths of easy to moderate difficulty. These are a required part of this trip, so you should be in reasonable good physical condition and should bring hiking boots or a good pair of hiking shoes. You should be able to hike at least 8.1 miles at a brisk pace along rolling terrain, and some hikes require some minor scrambling on rock, but the views and the geology will be worth the effort! We will have some rock, mineral, and fossil collecting opportunities outside the parks we visit.

Continued on Page 12
San Rafael Capitol Reef Field Excursion
Spaces Open
(Continued from Page 11)

Each day will start at 7:00 A.M. with breakfast. You will also pack your lunch at this time. The field day is from approximately 8:00 A.M. to 5:00 P.M. Dinner is served in camp within one hour of returning to camp. This will be followed by a brief camp discussion around the campfire.

Tom Bush, Earth and Space Sciences Department Coordinator at Pierce College Puyallup will lead the trip. He has lead four dozen such trips to various locations in the U.S. and abroad.

Contact Tom Bush at tbush@pierce.ctc.edu for registration details. Registration will be open by mid-November. ONLY THREE SPACES ARE AVAILABLE TO THE GENERAL PUBLIC. $150 non-refundable deposit is due at the time of registration. Balance is due February 28, 2020.

Thanks,

--Tom Bush

See Flyer on Page 18 (Last Page)

AWG Membership

Not a member but want to be? Membership offers opportunities for field trips, networking, and interesting speakers among other benefits.

Individual Membership
Annual Dues
Sustaining Professional: $100/year
Professional: $50/year
Early Career: $30/year
Student/Reduced Income: $20/year

For more options such as rates for international countries, lifetime memberships and institutions and corporations, see: http://awg.org/membershiprates
FROM THE EDITOR:

Thank you to Marcia Knadle, Jerika L. Heinze, Tom Bush, Lisa Ely, and Tad Britt for your contributions. If I missed anyone or didn't include your contribution, please let me know because it was not on purpose.

Thanks again! Shari Maria Silverman, AWG-PNW Newsletter Editor

AWG - PNW
2019-2020 Officers

∞ President: Marcia Knadle
∞ Vice President: Mindy Brugman
∞ Secretary: Megan Faust
∞ Treasurer: Theresa Burton
∞ Past President: Heather Nielson
∞ Scholarship Committee Chair: Sarah Dewey
∞ Webmaster: Cindy Bartlett
∞ Newsletter Editor: Shari Silverman
∞ Pacific Region Delegate: Karla Tucker
∞ Pacific Region Delegate: Marcia Knadle
∞ Pacific Region Alternate Delegate: Anne Fulton
A few photos from the AWG Western Great Lakes field trip:

By Marcia Knadle, AWG-PNW President

Typical stone quarry outcrop of Silurian dolomite, but too steep to safely approach.
A few photos from the AWG Western Great Lakes field trip (Continued from page 14):

By Marcia Knadle, AWG-PNW President

Copper Harbor Beach on Lake Superior (Keweenaw Peninsula, MI)

I was pleasantly surprised how much that area felt like western WA in the summer – not too hot, lots of green, but no mountains. And Door County in WI felt a lot like the San Juan Islands – and was just as touristy.

Following the Niagara Escarpment along Lake Michigan in Door County, WI
I've decided to change the calendar for two reasons:

1. It is getting huge, which is transforming the newsletter into a huge, email-crashing monster; and
2. Events and their links change over the months between newsletters.

So I'm putting the sponsor and their event page links, so you can have up to date information at your fingertips!

**Western Oregon**

Southern Oregon Community College Geology Lectures: [https://www.socc.edu/geology](https://www.socc.edu/geology)
- They haven’t started yet, but they occur periodically throughout the academic year
  - Last year they started in October
- Coos Bay, Oregon

Oregon Museum of Science and Industry: [https://omsi.edu/](https://omsi.edu/)
- Scroll down for events (bottom), classes (top), and attractions (middle)
- Mostly western Oregon, but also NE Oregon

Oregon State University Events: [https://events.oregonstate.edu/calendar?event_types%5B%5D=115610](https://events.oregonstate.edu/calendar?event_types%5B%5D=115610)
- Includes PhD dissertations, science pubs, activities, etc.
- Occurs in Corvallis, Newport, Portland and Bend

- Field trips and lectures
- Mostly Portland, but field trips can occur around the state

Ice Age Floods Institute, Lower Columbia Chapter
- Lectures, Tualatin: [http://www.tualatinhistoricalsociety.org/calendar.html](http://www.tualatinhistoricalsociety.org/calendar.html)
- Everything, Portland area: [https://iafi.org/local-chapters/lower-columbia-chapter/](https://iafi.org/local-chapters/lower-columbia-chapter/)

**Eastern Oregon**

High Desert Museum: [https://www.highdesertmuseum.org/calendar/](https://www.highdesertmuseum.org/calendar/)
- Bend

Columbia Gorge Discovery Center and Museum: [https://www.gorgediscovery.org/](https://www.gorgediscovery.org/)
- The Dalles

- Far-eastern Oregon and southern Idaho

Washington on Next Page
Western Washington

Anacortes Science Cafe: Events announced on their Facebook page
https://www.facebook.com/AnacortesScienceCafe/?fb_dtsg_ag=AdyPZmuXGmVvRoRqUPRCEOcmJ5oH6juGYBGLd4B0xHkF3Q%3AAdyEGTXB4MxcF0maileTp5oMGW9TNT0e3AKr1Z5Dahx2g
  ● They meet every third Thursday at 4 pm at Johnny Picasso’s (510 Commercial Ave.), Anacortes, WA

Nick Zentner Lectures: http://www.nickzentner.com/read-me/
  ● Central Washington University geologist
  ● Travels around the state, mostly eastern Washington, but also throughout Western Washington

Ice Age Floods Institute: https://iafi.org/
  ● All over Washington (although I don’t know about the peninsula)

Burke Museum: https://www.burkemuseum.org/calendar
  ● Seattle: mostly hands-on science with some lectures

Eastern Washington

Nick Zentner Lectures: http://www.nickzentner.com/read-me/
  ● Central Washington University geologist
  ● Travels around the state, mostly eastern Washington, but also throughout Western Washington

Ice Age Floods Institute: https://iafi.org/
  ● All over Washington (although I don’t know about the peninsula)
  ● Field trips and lectures

Wenatchee Valley Museum and Cultural Center: http://www.wenatcheevalleymuseum.org/our-events/
  ● Wenatchee

Central Washington University Geological Sciences Department speaker series: http://www.geology.cwu.edu/dept/seminars.html
  ● Ellensburg
Williams GeoAdventures

AWG Northern California San Andreas Fault
Geology Field Trip September 10–17, 2020

Join us in a week-long field study of the remarkable geology along the North Coast of California from San Francisco to Mendocino. We will meet at Union Square in San Francisco on September 10th at 1:00 pm and end with a drop off at the San Francisco International Airport around 2:00pm on September 17th. We will stay four nights at the Marin Headlands Hostel Annex and three nights at the Mendocino College Coastal Field Station in Point Arena. Transportation is by coach and driver.

The San Francisco Bay Area, wave cut platforms, rocky headlands and sea stacks, uplifted terraces, crashing waves, and wide sandy beaches are your outdoor classroom as you discover how the collision of ocean and land has shaped the region. There are numerous field stops and short hikes in the San Francisco Bay Area, Point Reyes, and the Sonoma and Mendocino Coast. Topics for discussion include the San Andreas Fault, coastal processes, Franciscan and Gualala Block rocks, folds and faults, plate tectonics, and California geologic history.

The trip cost is $1,900 per person ($1,840 for Williams GeoAdventures services and a $60 AWG trip registration fee). Trip participants must be current AWG members and are required to register first with AWG and pay the AWG registration fee. The trip cost includes the geology field trip and guiding services and geologic field guide, transport by coach and driver, accommodations for seven nights at the Marin Headlands Hostel and the Mendocino College Coastal Field Station, and the welcoming dinner in Sausalito. Not included in the trip cost is transportation to and from San Francisco and your home, all of the other meals, travel insurance (HIGHLY RECOMMENDED), and coach driver tip. Meals will be prepared by the group at our lodgings. Discounts are available for attendees who are willing to help coordinate the food, with student participants getting preference.

After you’ve registered with AWG, trip registration with Williams GeoAdventures will open on Monday, January 6, 2020 at 9am Pacific Time by contacting me by phone (707) 953-6979 and submitting a $500 deposit within 10 days, payable to Williams GeoAdventures, 101 Ross Street, #4, Cotati, CA 94931. The balance payment of $1,340 per person is due to Williams GeoAdventures by July 15, 2020.

Trip availability is on a first come, first served basis. The minimum number of trip participants is 16 and the maximum number is 22. Williams GeoAdventures will provide an online application and liability waiver for the trip participants to fill out in July 2020. Trip fees are non-refundable unless you and I are able to fill your space.

We are excited about sharing the beauty of the Northern California San Andreas with you. Please contact me via email or phone with any questions about this trip. I am looking forward to seeing you all on the California North Coast in September 2020!

Thomas R. Williams, Williams GeoAdventures

Email geoteachtw@earthlink.net
Telephone (707) 953-6979

www.geology-adventures.com