



TREMBLINGS

NEWSLETTER & BULLETIN BOARD

Vol. 14(3), August 2023

Partnering to preserve and restore healthy aspen ecosystems

MEMBER PARTICIPATION: The WAA is a virtual science-based community. Send us aspen-related publications, management plans, and media mentions and we'll help spread the word. Contact Paul Rogers, Director: p.rogers@usu.edu.

Share *Tremblings* with your friends and colleagues.

New members welcome! [Sign up here](#)

Scottish Highlands to bolster biodiversity through aspen reforestation. You can see a video of the work of NGO [Mossy Earth here](#). This is a reminder that many of the issues and assets associated with aspen ecosystems in North America are common elsewhere.



Sometimes you just don't know what to say – stuff happens out there that is hard to logically explain. So, just accept it; an old truck occasionally has a mature aspen growing up through the engine cavity. There's sure to be a story behind it, but until we obtain the proper one, you can click on over to our "Flash Fiction" offerings for this picture on the [WAA Facebook page](#). Perhaps you want to add your story? (Photo: Paul Rogers).

WAA HAPPENINGS

Aspen Common Garden Site Needed—Seeking caretaking for an aspen common garden. UC-Berkeley has a collection of 350+ aspen genotypes from across the continent growing in replicate greenhouse pots. We are looking for a location where they could be permanently planted as a long-term genetics research collection beginning late 2024. An ideal location would be >1 hectare and include the potential for irrigation, fencing, and mowing/weeding, and would have some local staff for plant care. Agencies, researchers, and nonprofits are all welcome! There is initial funding available to support a transfer. If interested in partnering or managing, please email [Dr. Benjamin Wong Blonder](#).

Spring Fund Status—Thanks to member donors who contributed to the WAA's spring fund drive! This effort yielded a income of \$2,825 from seven donors since May 1, 2023. (The 2022 Fund Drive yielded \$1,315.) If you were planning to donate and forgot, among myriad other "to do" items, fret not. We're happy to take [donations](#) anytime it is convenient for you. As a reminder, the WAA relies on agency partners and member donations to stay afloat. Our polling of WAA members clearly suggested that they favored a personal donation over other support options. We hope modest contributions from many will continue to power the WAA's annual administrative costs. And, of course, we are looking for larger donors to navigate this challenging funding climate!

Reforesting Scotland...with Aspen—A reader notified us of efforts to increase aspen coverage by planting root cuttings and working with beaver reintroductions in the

UPCOMING EVENTS

Aspen Science & Sketching—The Kimball Art Center and the WAA are partnering to host an artist's workshop

with a bit of science, lore, and discussion to (hopefully) inspire participants. Dr. Paul Rogers will explore unique attributes of this tree species and why Utah and the world are now highlighting the values of these flickering forests. Kati Gyulassy will lead an hour-long drawing lesson focused on these beautiful trees. “[What’s so special about quaking aspen?](#)” will take place at Rotary Park, Park City, Utah Aug. 20, 2023 from 11:00 a.m. to 1:00 p.m.

Great Basin Experimental Range Redux—The USFS, Rocky Mountain Research Station will be hosting a meeting at the historical Great Basin Experimental Range near Ephraim, Utah Sept. 12-13. The purpose of the meeting is to revitalize research at this historic outdoor laboratory. Participants from government and academic research organizations will be on hand to brainstorm cooperative avenues for research in water conservation, aspen ecology, fire sciences, climate change, vegetation ecology and management, and additional topics. Contact [Dr. Stanley Kitchen](#) for more information about this important meeting.

Moab Science Festival Features Aspen & Fire—Lisa Floyd-Hanna and Paul Rogers will present fire and aspen ecology talks alongside a panel discussion at the [Moab Festival of Science](#) September 15 at [Star Hall](#). There will be an event hike examining fire across multiple elevation/vegetation zones in the La Sal mountains on Saturday, September 16. See the Festival website for further details about the full 2023 event running from September 13-17.

Summer 2023 Aspen Workshops:

- **DONE** The WAA co-hosted its first Washington summer workshop July 17-19, 2023, near Newport. The event was well-received and a public presentation was added.
- **DONE** Colorado Aspen Summit II near Pagosa Springs July 31-Aug. 2 just wrapped up. We had 35 participants and addressed fire, herbivory, invasive species, and aspen arboglyphs. Contact [Gloria Edwards](#) (Southern Rockies Fire Science Network) to learn more or obtain an event summary.
- The Sierra Nevada Aspen Workshop, West Slope Sierras edition, is scheduled for Sept 7-8, 2023 at the

San Francisco State, Sierra Nevada Field Campus (near Sierra City, CA). If you are interested in attending or contributing to this event please contact [Becky Estes](#) (USFS R5 Regional Ecologist).

We’re open to proposals for future aspen workshops in your area! Please contact [WAA Director](#) Paul Rogers.

COMMENTARY

What drives oystershell scale invasions?

Connor Crouch, Graduate Research Assistant, School of Forestry, Northern Arizona University

Kristen Waring, Professor of Silviculture and Applied Forest Health, School of Forestry, Northern Arizona University



If you work with aspen in the American West, you may have heard of the invasive insect oystershell scale (OSS; *Lepidosaphes ulmi*). OSS was first observed causing aspen mortality in Arizona in 2016, and occurrences have since been observed in Utah, Nevada, and Idaho. One of the first questions we hear from practitioners about OSS-infested aspen is, “what’s causing these outbreaks?” This is an interesting question because OSS has been in North

America for centuries and was documented on aspen in Arizona as early as the 1990s, but elevated incidents only recently began. Understanding what drives OSS invasions is a critical first step in developing management strategies.

Our Arizona OSS research group (which includes USDA Forest Service staff and NAU faculty) sought to answer this question by sampling aspen ecosystems across Arizona. Study sites included aspen stands with and without OSS and spanned a wide range of conditions, from xeric sites where aspen co-occurred with manzanita to mesic, high elevation spruce-fir forests; from the Sky Islands of southern Arizona to north of the Grand Canyon; and across a gradient of fire and management histories. We examined nearly 100 potential factors, including those representing stand structure, climate,

fire, management, location, soils, and other damaging agents.

Using a variety of modeling approaches, we found that climate had the strongest influence on OSS abundance, with warmer, drier conditions being more favorable for OSS. We had previously observed [a clear elevation threshold](#) of



~8350 ft/2545 m above which OSS does not occur, and [our latest research](#) determined that this elevational relationship was driven by cool, wet climatic conditions. We hypothesize that climate warming is behind the recent OSS outbreak in Arizona, and as the climate continues to warm, future outbreaks may occur where small populations currently exist but are not causing significant damage. OSS may also spread into new areas as climate conditions become more favorable and fall within the identified temperature, precipitation, degree days and evaporation thresholds that limit the OSS distribution in aspen.

Management also had a strong influence on OSS abundance. We found more OSS inside ungulate exclosures, particularly those with dense aspen recruitment, and less OSS in areas of recent fire. OSS can only survive on living hosts, so fire, which kills aspen even at low severities, also kills OSS feeding on those aspen. The relationship between OSS and ungulate exclosures is less clear.



We hypothesize that exclosures promote OSS by increasing stand density, which provides more feeding sites for OSS and likely facilitate OSS spread. Increased stand densities inside exclosures might also reduce aspen vigor, making trees more susceptible to OSS.

Our study indicates that three strategies might help to suppress OSS populations: (1) increasing application of

fire at the landscape scale, (2) reducing reliance on ungulate exclosures, and (3) decreasing aspen stand density. Research is needed to assess the efficacy of these strategies for suppressing OSS populations and mitigating damage to aspen ecosystems, but our work provides an important early look at how we might accomplish these goals and increase [aspen resilience](#) to OSS.

WAA Creates

“WAA Creates” requests diverse artistic aspen-related contributions from across our membership. We encourage fiction, folklore, poetry, drawings, paintings, photography, and other artistic expressions. [Send your stuff](#) to Tremblings.

Griffin

(photo of paint on aspen bark)



Jill & Riley Logan
Bozeman, Montana

From the artists: *Many of our paintings include aspen trees with hidden messages written in their bark. When an opportunity arose for me and my son to paint hidden creatures on real aspen stems, after researching tree-safe paints, we excitedly started creating.*

Jill & Riley Logan create fantastical art in many forms. This work and others can be found at the [website here](#).

RECENT ASPEN PUBLICATIONS

A word on Open Access: The Western Aspen Alliance strongly supports open access publishing (CC-BY). Articles with hyperlinks below are available for download and sharing following [Creative Commons](#) rules for attribution.

Crouch, C. D. 2023. Regeneration and Recruitment for Resilience: Sustaining Aspen Ecosystems Threatened by Climate Change, Ungulate Browse, and Oystershell Scale. Dissertation. Northern Arizona University, Flagstaff, AZ. 236 pp. [[Dissertation](#)].

Gifford, T. S. 2023. Modeling Aspen Yield, Aspen Site Index, and the Effects of Sustainable Timber Harvest on Wildlife Habitat in Minnesota and the Lake States. University of Minnesota, St. Paul, MN. 128 pp. [[Dissertation](#)].

Kerr, K. L., J. C. Fickle, and W. R. Anderegg. 2023. Decoupling of functional traits from intraspecific patterns of growth and drought stress resistance. *New Phytologist* [239:174-188](#).

Peltier, D. M., P. Nguyen, C. Ebert, G. Koch, T. Schuur, and K. Ogle. 2023. Moisture stress limits radial mixing of non-structural carbohydrates in sapwood of trembling aspen. *Tree Physiology*: [tpad083](#)

Schwager, J., M. T. Curzon, and B. J. Palik. 2023. Impacts of Historic Disturbance on Drought Response of Aspen-dominated Forest. Pages 242-246 in *Northern Hardwood Conference 2021: Bridging Science and Management for the Future*. Gen. Tech. Rep. NRS-P-211, USDA Forest Service, Madison, Wisconsin.

Sui, X., J. Tam, H. Keller, W. Liang, and U. Erb. 2023. Superhydrophobicity mechanism of refoliated quaking aspen leaves after complete defoliation by LDD (gypsy, spongy) moth caterpillars. *Plant Science* 330:111659.

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