TREMBLINGS

NEWSLETTER & BULLETIN BOARD

Vol. 9(4), November 2018

"…partnering to preserve and restore healthy aspen ecosystems."

NOTICE: The WAA is a user-driven organization. Submit your news items and announcements, upcoming presentations, recent reports & publications, photos, and commentary ideas to Paul Rogers, Director: p.rogers@usu.edu. Please share *Tremblings* with your friends and colleagues.

New members welcome!

WAA HAPPENINGS

Research Position Open—This Research Plant Physiologist works in the USDA Forest Service's Northern Research Station, Institute for Applied Ecosystem Studies Research Unit located in Rhinelander, WI. Research in this work unit addresses questions concerning developing the theory and application of scaling science to provide knowledge at relevant scales in forestry. Position closes Nov. 13, 2018.

Pando In The News—The Oct. 17 publication of the first comprehensive assessment of the giant aspen clone known as Pando has spawned a tsunami of media interest (see sampling here); at least 40 articles, broadcasts, and podcasts across the U.S. and in several international markets. Authors Paul Rogers & Darren McAvoy assess the current plight of Pando relating to chronic mule deer browsing and discuss restoration solutions, as well as applications to "mega-conservation" globally. The open access article in the journal *PLOS ONE* allows readers to share it freely without copyright violation. Look for upcoming broadcasts on National Public Radio's Weekend Edition and Public Broadcasting Service (television) Weekend News Hour.

(**Editor's Note:** If you have a recent article, event, or restoration project that is in the news, please contact us and we will highlight it in an upcoming *Tremblings*, website posting, and on Facebook.)

Send Your Flashy Photos—We'd like to post your best aspen photos on the WAA Facebook site. Send us pictures that are artistic, unique, ridiculous, or sublime. We've toyed with flash fiction—three to five sentence stories—with some of the quirkier aspen photos on Facebook, too. The responses have be creative, thought provoking, and fun, so be sure to let us know if you'd like to see others convert your photo to a mini-tale!

Donate to the WAA—The WAA is requesting member support via direct donations. For veteran and new members alike, please consider donating online at a level that fits your budget. Funds garnered through donations will go to administering the WAA, member and public outreach, workshops, monitoring, and aspen research partnerships.

Aspen's fall palette, Wallowa-Whitman NF in northeastern Oregon. "Typically we think of aspen leaves turning bright yellow in fall before falling. I was struck by the diversity of colors when examining many leaves close up," says photographer Mark Penninger.

UPCOMING EVENTS

NAFEW Comes to Flagstaff—The 12th North American Forest Ecology Workshop will be held in Flagstaff, AZ June 23-27, 2019. This biennial conference features the practical intersection between research, management, and restoration across the continent. Featured topics will include wildlife, climate change, disturbance ecology, social science/forest policy, and forestry applications. Abstracts for proposed papers and posters are due

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Feb. 1, 2019. Take in the breadth of contemporary forest ecology in the beautiful setting of Flagstaff!

Aspen Workshops 2019, Planning Phase—

- **Wyoming-South Dakota:** The 8th annual Aspen Days will move to the northeast part of the state this year and partner with western South Dakota to share the bill. Details to follow.
- **Utah:**
  - Summit County landowners' workshop hopes to examine aspen at the borderlands between public and private land. Preliminary planning is underway.
  - Pando Populus is gearing up for a "barn raising" of sorts at Pando in 2019. We hope to get our hands dirty repairing fence, cleaning up debris, and potentially assisting with interpretive facilities. Check the Pando Populus website for further developments.
- **Nevada:** Previously announced plans for a Nevada workshop have been delayed to 2019. Stay tuned, Nevada aspen enthusiasts!
- **Want to Host a Workshop?** Contact the WAA Director to schedule a workshop on public, private, or combined ownership lands.

COMMENTARY

Aspen seedlings follow Brian Head Fire

Karen Mock, Professor, Wildland Resources, Utah State University, Logan, Utah
Larissa Yocom, Assistant Professor, Wildland Resources, Utah State University, Logan, Utah

Over the past decade, views on the importance and frequency of aspen seeding events in the Intermountain West have begun to change. Once thought to be so rare as to be ecologically and operationally negligible, there is increasing evidence that aspen seedling establishment may actually be common under certain conditions. These conditions include seed production, soil moisture sufficient for germination and establishment, low herbivory pressure, and reduced competition for soil access, light, and water. Post-fire landscapes often provide just this "window of opportunity," and in fact most observations of aspen seedlings occur within a few years of a high- to moderate- severity fire.

In July 2017, the Brian Head fire burned over 71,000 acres (28,700 ha) high elevation forested land in southern Utah. According to the Burned Area Emergency Response team, 61% of the fire footprint was categorized as moderate or high soil burn severity. The following summer, an unusually high number of aspen trees in the region produced heavy seed crops (photo), just 1-2 weeks prior to the onset of summer rains. The timing is important, as aspen seeds are viable for only a few weeks. By September 2018, a strong suckering response was noted near pre-existing aspen stands, but widespread clusters of aspen seedlings were also found, extending to areas where aspen previously was not present. There was a strong association of these seedlings with logs and soil depressions. We plan to monitor the fate of these seedlings over the coming years.

The Brian Head seedlings could easily have been missed by a casual observer; the first few sets of leaves do not resemble aspen. They are tiny, long, and strongly serrated, with reddish stems (photo). But small spade-shaped cotyledons are evident. This is likely why aspen seedlings have been considered rare; by the time they are more recognizable as aspen they may be indistinguishable from suckers which are regenerating simultaneously. Landscape genetic patterns in aspen stands commonly show clusters of small clones at the periphery of larger

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clones, suggesting that episodic seeding events do result in the establishment of many new clones.

The great majority of individual aspen trees arise from suckers and not directly from seeds, but seeding events are disproportionately important for two reasons. First, seeds represent new combinations of genes, and provide adaptive potential that may be critical with rapidly changing conditions. Second, seeds can colonize new areas. (See Landhäusser, et al., **Recent Aspen Publications**, this issue.)

From a management standpoint, this suggests that naturally-occurring aspen seedlings should be a high priority for short-term protection from herbivory. Management for genetic diversity and assisted migration in aspen could also take a more active form, e.g. establishment of seed banks (seeds survive at least 5 years in a freezer), nursery propagation of aspen seedlings, and post-fire planting programs. Nursery-grown aspen are being outplanted in mined land reclamation work in Alberta by Simon Landhäusser and we are now exploring these methods for use in the Intermountain West through projects funded by the Utah Agricultural Experiment Station (Cedar Mountain Initiative) and Utah's Watershed Restoration Initiative.

WAA *Creates*

"WAA Creates" showcases artistic aspen-related contributions. We encourage fiction, folklore, poetry, drawings, paintings, photography, and other artistic expressions that may be captured in a brief-form newsletter. Please contact the Director with suggestions, submissions, or feedback on this feature.

Reflections on Pando
(photography)

Lance Oditt, Studio 47.60° North
Seattle, Washington

The artist: *Each visit to Pando stirs a different sense of wonder. My first time; a sense of wonder for the fact that Pando is possible at all. The second visit; the fact that a remote forest can bring people together. This visit, Pando's ability to inspire curiosity and dedication of researchers the world over, and this, a parting reflection. A revelation on loan until the next time.*

RECENT ASPEN PUBLICATIONS

Boyce, M. S. 2018. Wolves for Yellowstone: dynamics in time and space. Journal of Mammalogy 99:1021-1031.

Call, A., and S. B. St Clair. 2018. Timing and mode of simulated ungulate herbivory alter aspen defense strategies. Tree Physiology 38:1476-1485.

Coles-Ritchie, M. 2018. Removal of invasive plants from Pando exclosure 2018. Grand Canyon Trust, Flagstaff, AZ. [report]. Aspen Bibliography paper 7771.

Grady, A. 2018. Hart Prairie Preserve Site Visit to Assess Aspen Health Nature Conservancy, Flagstaff, AZ. USDA Forest Service, Southwestern Region, Forest Health Protection, Arizona Zone, Flagstaff, AZ. Aspen Bibliography paper 7753.

Landhäusser, S. M., B. D. Pinno, and K. Mock. 2019. Tamm Review: Seedling-based ecology, management, and restoration in aspen (*Populus tremuloides*). Forest Ecology and Management 432:231-245.

Mouton, J. C., and T. E. Martin. 2018. Fitness Consequences of Interspecific Nesting Associations among Cavity-Nesting Birds. The American Naturalist 192:389-396.

Neary, A. 2018. Aspen Drought Stress Response, Snow Cover and Soil Moisture Dynamics on an Oregon Bunchgrass Prairie. Oregon State University, Corvallis, Oregon. [MS Thesis]

Painter, L. E., R. L. Beschta, E. J. Larsen, and W. J. Ripple. 2018. Aspen recruitment in the Yellowstone region linked to reduced herbivory after large carnivore restoration. Ecosphere 9:e02376.

Pelz, K., and F. Smith. 2018. Effects of Stand Structure, Browsing, and Biophysical Conditions on Regeneration Following Mountain Pine Beetle in Mixed Lodgepole Pine and Aspen Forests of the Southern Rockies. Forests 9:525.

Rhodes, A. C., R. T. Larsen, J. D. Maxwell, and S. B. S. Clair. 2018. Temporal patterns of ungulate herbivory and phenology of aspen regeneration and defense. Oecologia 188:707-719.

Rogers, P. C., and D. J. McAvoy. 2018. Mule deer impede Pando's recovery: implications for aspen resilience from a single-genotype forest. PLOS ONE 13:e0203619.

Stefani, F., N. Isabel, M.-J. Morency, M. Lamothe, S. Nadeau, D. Lachance, E. H. Li, C. Greer, É. Yergeau, and B. D. Pinno. 2018. The impact of reconstructed soils following oil sands exploitation on aspen and its associated belowground microbiome. Scientific reports 8:2761.

St-Pierre, A., D. Blondeau, A. Lajeunesse, J. Bley, N. Bourdeau, and I. Desgagné-Penix. 2018. Phytochemical Screening of Quaking Aspen (Populus tremuloides) Extracts by UPLC-QTOF-MS and Evaluation of their Antimicrobial Activity. Molecules 23:1739.

van Beeck Calkoen, S. T. S., D. P. Kuijper, H. Sand, N. J. Singh, S. E. van Wieren, and J. P. Cromsigt. 2018. Does wolf presence reduce moose browsing intensity in young forest plantations? Ecography 41:1-12.

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