



TREMBLING S

NEWSLETTER & BULLETIN BOARD

Vol. 6(2), May 2015

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

NOTICE: The WAA is a user-driven organization. Please send news items and announcements, contributions, **recent reports & publications**, photos, and commentary ideas to Paul Rogers: p.rogers@usu.edu. We encourage you to share *Tremblings* with your friends and colleagues. **New members welcome!**

WAA HAPPENINGS

Aspen in the News—A National Public Radio Science Friday "Picture of the Week" article features Jennifer DeWoody (US Forest Service Geneticist) discussing the state of the Pando Clone, thought to be the World's Largest Organism (see Commentary below for related story). DeWoody explains how the size of this massive clone (43 h/ 106 acre) was confirmed with the aid of Utah State University researchers and also discusses the difficulties of aging Pando with current genetic techniques. Read the article in full [here](#).

WAA Briefs Online—The first two in the new series of WAA Briefs are now available for download through the Aspen Bibliography at Utah State University. The intent of WAA Briefs is to provide easily digestible synopses of current research on aspen topics. Each edition provides supporting technical works for the interested reader. Click on "[Building Resilience into Quaking Aspen Management](#)" or "[Managing Ungulate Browsing for Sustainable Aspen](#)" for digital copies of these brochures. WAA Brief #3, summarizing aspen fire ecology and management, is expected out in the coming weeks.

Looking for Female Aspen Clones—Professor Karen Mock (Utah State University) is requesting help in locating female aspen clones in the central Rocky Mountains for an ongoing study involving seed germination. Basic needs include deciphering between males and females and recording GPS

locations. Sound too difficult? Fear not! She provides photos and instructions on the requirements at this [handy link](#). If further questions, contact Dr. Mock by [email](#) or phone: 435-797-7870.



In spring, the western tanager (Piranga ludoviciana) returns to the mountains as the aspen catkins begin to appear. (Photo: Jim Shuler, Wolf Creek Ranch, Utah).

UPCOMING EVENTS

Wyoming Workshop—Wyoming Game & Fish and WAA will be presenting the 4th "Aspen Days" August 10-11 at Pinedale, WY. There will be an evening presentation followed by a one-day field trip. The event will address aspen ecology, fire, climate, wildlife uses and impacts, and exurban interface issues. All are welcome. Contact [Eric Maichak](#) or [Jill Randall](#) for further information.

New Mexico Workshop—The 2015 aspen workshop will take place July 22-24 at Chama, NM.. We will review current science applicable to land management and contrast issues, impacts, and treatment options on public versus private lands. Feature issues will be ungulate browsing, fire



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ecology, and impacts of drought on sustainable aspen management. New Mexico BLM, Western Landowners Alliance, and WAA will host the workshop. Contact BLM Forestry Lead [Jeremy Kruger](#) for details on the event.

NAFEW 2015—The [10th North American Forest Ecology Workshop](#): Sustainable Landscapes from Boreal to Tropical Ecosystems will take place June 14-18, 2015 in Veracruz, Mexico. **Abstracts for poster presentations are still being accepted.** Forest ecologists from around North America will share ideas, knowledge, experiences, and challenges on forest ecosystems of Canada, Mexico and the United States, from boreal, arid and semi-arid, to tropical environments. The backdrop of the 10th NAFEW will be the tropical and the mountain cloud forests of central and southeast Mexico. The program will include three days of oral and poster presentations, as well as one day of in-conference field trips.

Restoring the West 2015—Save the dates: Oct. 29-30, Utah State University, Logan, Utah. This annual conference addresses prominent science and management issues in the western U.S. This year's theme will be "Fire ecology and restoration in the Interior West" and will feature aspen and cohort forest communities, as well as other vegetation zones. Check the [Restoring the West](#) website as details continue to be posted in the coming months.

Schedule an Event—This is a good time to make arrangements for field workshops, aspen expertise/speakers, webinars, and tours (contact the [WAA Director](#) for additional information). If you would like to announce 2015-16 activities in *Tremblings* please contact us.

COMMENTARY

Remembering the Genet of Aspen Researchers

Dan Kashian, Associate Professor, Department of Biological Sciences, Wayne State University, Detroit, Michigan



A visionary in aspen research, Dr. Burton V. Barnes, passed away in July 2014 in Ann Arbor, Michigan at the age of 83. He was Professor Emeritus at the University of Michigan where he spent his entire academic career and the Forest Botanist at its Matthaei Botanical Gardens.

Burt's influence on our understanding of aspen began with his own PhD research at Michigan under the direction of the renowned forester Stephen H. Spurr in the late 1950s. Legend has it that Spurr took Barnes out onto Michigan's Biological Station, waived his hands at the stunted trembling aspen, and told him to figure out a way to differentiate the clones. What followed was Barnes's groundbreaking work on the clonal growth of aspen, which included differentiation of over 100 clones based upon leaf and branch morphology, fungal infections, bark characteristics, and flushing time. His methods also included the excavation and mapping of aspen root systems. These studies persuaded ecologists at the time to consider enormous genetic variation among aspen that had previously appeared homogenous.

Continuing to study genetic variation, Barnes partnered with eminent botanist Warren H. Wagner at Michigan on hybridization and introgression in aspen throughout the 1960s and 70s. The duo thought they had discovered a new hybrid species between the two native Michigan aspen, trembling and bigtooth aspen. Wagner named it *Populus Xbarnesii*, the Barnes aspen, only to discover that the species had already been named (*Populus Xsmithii*). Unoffended, Burt continued to collect, study, and document the species and its



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intermediates throughout his lifetime (some sources still list the pseudonym *Populus Xbarnesii* today!).

Burt discovered the Pando Clone in the early 1970s; the enormous trembling aspen clone at Fish Lake, Utah, is arguably “the World’s Largest Organism.” His discovery was based solely on aerial photography and the same morphological techniques he developed in the 1950s, but his conclusions were corroborated by modern molecular genetics almost four decades later. Burt avoided the media attention given to Pando and its investigators in the 1990s, and thus his studies of it were often overlooked. In recent years he visited the Fish Lake clone on public tours happily unrecognized, content to keep his expertise quiet. Back home, he playfully engaged his students in the life history of aspen using popular media trumpeting “the WLO”, as he called it. Every Barnes undergraduate knew at least one phrase in German: “Aspen über alles!”

Burt conducted extensive research on the population genetics of western aspen throughout the 1980s and 90s. He collected thousands of pollen samples and began to use isozymes as molecular markers of genetic variation among eastern and western clones, attempting to relate differences in the variation to specific landscapes. Isozyme analysis has largely been replaced with DNA-based approaches, but his forethought in this arena was pioneering in understanding the ecology and genealogy of aspen.

Even in 2014, Burt Barnes continued to convey an enthusiasm for the species he loved and the ecosystems it belonged to; he left an immeasurable legacy on our understanding of aspen. His final gift to me was a group of aspen sprouts from his collection that he hoped I would out-plant locally for teaching purposes. His hand-marked tags read “WLO!”, and the other “Barnes aspen!”

RECENT ASPEN PUBLICATIONS

- Anyomi, K. A., F. Lorenzetti, Y. Bergeron, and A. Leduc. 2015. Stand Dynamics, Humus Type and Water Balance Explain Aspen Long Term Productivity across Canada. *Forests* 6:416-432.
- Batchelor, J. L., W. J. Ripple, T. M. Wilson, and L. E. Painter. 2015. Restoration of Riparian Areas Following the Removal of Cattle in the Northwestern Great Basin. *Environmental management* 55:930-942.
- Bretfeld, M., J. P. Doerner, and S. B. Franklin. 2015. Radial growth response and vegetative sprouting of aspen following release from competition due to insect-induced conifer mortality. *Forest Ecology and Management* 347:96-106.
- Couture, J., T. Meehan, E. Kruger, and R. Lindroth. 2015. Insect herbivory alters impact of atmospheric change on northern temperate forests. *Nature Plants* 1, 15016.
- Couture, J. J. and R. L. Lindroth. 2014. Atmospheric change alters frass quality of forest canopy herbivores. *Arthropod-Plant Interactions* 8:33-47.
- Hillstrom, M. L., J. J. Couture, and R. L. Lindroth. 2014. Elevated carbon dioxide and ozone have weak, idiosyncratic effects on herbivorous forest insect abundance, species richness, and community composition. *Insect Conservation and Diversity* 7:553-562.
- Meehan, T. D., J. J. Couture, A. E. Bennett, and R. L. Lindroth. 2014. Herbivore-mediated material fluxes in a northern deciduous forest under elevated carbon dioxide and ozone concentrations. *New Phytologist* 204:397-407.
- Paudel, S. K., S. W. Simard, C. R. Nitschke, and J. L. Innes. 2015. Climate Variation and Disturbance Regime Affect Stand Composition and Structure of the Boreal Forests in Southwest Yukon of Canada. *Open Journal of Forestry* 5:15.
- Purton, K., D. Pennock, P. Leinweber, and F. Walley. 2015. Will changes in climate and land use affect soil organic matter composition? Evidence from an ecotonal climosequence. *Geoderma* 253:48-60.



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Rubert-Nason, K., C. Hedman, L. Holeski, and R. Lindroth. 2014. Determination of Salicinoids by Micro-high-performance Liquid Chromatography and Photodiode Array Detection. *Phytochemical Analysis* 25:185-191.

St Clair, S. B., P. C. Rogers, and M. R. Kuhns. 2015. Managing Ungulate Browsing for Sustainable Aspen. WAA Briefs #2. Western Aspen Alliance, Utah State University [brochure] 2 pp.

Vacchiano, G., M. Maggioni, G. Perseghin, and R. Motta. 2015. Effect of avalanche frequency on forest ecosystem services in a spruce–fir mountain forest. *Cold Regions Science and Technology* 115:9-21.

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