TREMBLINGS

NEWSLETTER & BULLETIN BOARD

Vol. 9(2), May 2018

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

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

WAA HAPPENINGS

Reminder: Support Request—The WAA has existed primarily on the basis of state and federal agency funding for a decade. Such funding avenues are becoming more difficult to access, particularly under new federal priorities. In the absence of institutional support, we've created a mechanism for you to make direct donations in amounts appropriate to you. Much like public TV/radio, if you find value in the WAA, please consider donating online. Thanks!

Artist to Donate Portion of Painting Proceeds—Artist Nancy Romanovsky is offering to donate 15% of sales proceeds from her aspen-themed paintings through the month of May. You may visit her offerings online to gain a sense of the beauty she has captured in aspen landscapes. Look for Nancy's work in an upcoming edition of *Tremblings'* WAA ***Creates*** section.

Online Spatial Bibliography—Our new spatial bibliography allows you to search aspen-related literature via a map-based platform. This tool was built under a partnership between Brigham Young and Utah State Universities. The Aspen Spatial Bibliography allows users to search for past research based on the location of the study. Feedback and corrections welcome.

Crowdfunding at Pando— Check out a new edgy and humorous video about the famous Pando aspen clone in southcentral Utah. The Fishlake National Forest has launched a crowdfunding campaign to acquire resources for interpretive signs, restoration, and monitoring….and they're having fun doing it!

Some photos are just too good to pass up. In the coming year WAA partners will be looking deeper into aspen-beaver ecology, restoration, and monitoring. Though canines are unlikely to be a major factor, a good scientist doesn't rule out potential factors too early (Photo: Jeff Obrecht, Winegar Hole Wilderness Area, Targhee National Forest, Idaho).

UPCOMING EVENTS

Aspen Workshops & Gatherings 2018—

- **Oregon:** A date is now set for the eastern Oregon aspen workshop: July 9-11, at John Day, Oregon. The program will involve science experts and local case studies. We will focus heavily on field

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examples and cross disciplinary discussions in those settings. Contact Paul Rogers, WAA Director, for details.

- **Wyoming:** Aspen Days will take place in Laramie, Wyoming July 31 – Aug. 2. This will be the seventh annual event in the Wyoming Aspen Days series. We will be discussing recent science, ungulate herbivory, beaver-aspen restoration, monitoring methods, and more. Contact Ryan Amundson, Wyoming Game & Fish, for more information.
- **Utah:** Pilgrimage to Pando is being planned as a follow-up to 2017's Road Trip to Pando. Dates have been set (Sept. 6-9) and logistics are being finalized. The Pilgrimage will take on a decidedly spiritual-environmental perspective with speakers from numerous faith groups standing alongside scientists, artists, and designers. 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!

COMMENTARY

Wyoming's High Desert: Aspen habitat presents challenges

Kevin Spence, Habitat Biologist, Wyoming Game and Fish Department, Green River, Wyoming

The high elevation desert of southwest Wyoming occurs between 6,040 ft. and 9,550 ft. Isolated "high points" in the area are dryland oases supporting high aquatic and terrestrial wildlife species richness, as vegetative diversity provides essential life stage habitat needs for numerous species. Although aspen makes up the smallest percentage of all vegetation types on this landscape, I consider aspen stands and their associate understories the most ecologically important in this ecosystem. Just a few benefits these aspen stands provide include: solid dam building material for beaver pond complexes providing riparian wetlands and stream system stability, nesting habitat for neo-tropical migrant bird species, summer nurseries providing high nutrition to meet lactation demands for elk calves and mule deer fawns, and as a key headwaters component for sustaining watershed health and function through snowmelt capture, infiltration, spring/seep recharge, thereby promoting maintenance of base stream flows for Colorado River Cutthroat Trout.

Over the past 27+ years, landscape-scale vegetation treatments have been implemented to address advanced succession and enhance habitat integrity. Treatments involved the use of prescribed fire, wildfire, mechanical methods, and improved livestock grazing on thousands of acres of sagebrush grassland, mixed mountain shrub, riparian, juniper woodlands, subalpine fir, and aspen communities. As a keystone species, prescribed fire and mechanical treatments focused on hundreds of acres of deteriorated aspen habitat, whether or not conifer encroachment, even aged aspen appearing not to be regenerating, or declining aspen transitioning to sagebrush. We recognized size and juxtaposition of treatments and designed projects to avoid "ice cream patches" where ungulates concentrate to forage. First year response of aspen regeneration had a median estimate of 26,667 stems/ acre (10,827/ha). Some aspen suckers survived at certain sites to eventually replace the stand, while others did not. One particular site exhibited an estimated 40,000+ stems/acre (16,240/ ha) immediately following prescribed fire, and within three years aspen suckers were nearly absent.

What we learned through aspen regeneration trend monitoring, diet analysis, extended livestock grazing deferment, estimating ungulate use from fecal pellet group counts, and trail

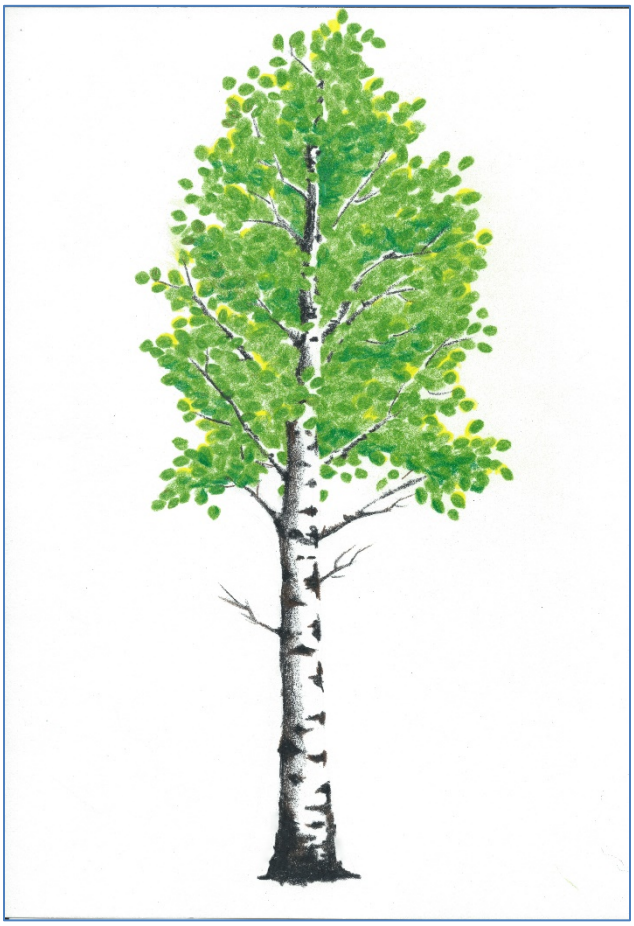
cameras was summer ungulate browsing of aspen regeneration, primarily by elk, was severe enough to cause retrogression and death of aspen suckers. This was unusual as elk are typically known to be grazers during the summer months. Aspen suckers in adjacent southwest Wyoming foothills of the Wind River, Wyoming Range, Sierra Madres, and Uinta Mountains typically do not experience browsing severe enough to prevent stand replacement, making the browsing situation with high desert aspen stands a regional anomaly. The elk population in the area has been reduced by about 40% during the past decade via hunting, although there is often too much aspen browsing still. Elk numbers may likely be approaching minimum threshold of the hunting public's tolerance, yet we hope at an achievable population level we'll find ecological balance.

Questions remain regarding why aspen regeneration (and bark scarring of adult trees) are highly desirable as summer ungulate forage. Research to better understand clone-related aspen defense against herbivory may assist managers with planning successful aspen restoration efforts on this dry landscape.

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.

Aspen
(colored pencil on paper)



Emily Guyon
Cheshire, Connecticut

The artist: *I love aspen trees. They are beautiful all year round—from their bright, fluttering leaves in the spring and summer, brilliant colors in the fall making a statement in gold against the background of deep conifer greens, and feathering the slopes in subtle contrast to winter snows. They make for a fun and interesting subject to draw, and this drawing was done for my Dad, John Guyon.*

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RECENT ASPEN PUBLICATIONS

Andersson, J., E. Domingo Gómez, S. Michon, and J.-M. Roberge. 2018. Tree cavity densities and characteristics in managed and unmanaged Swedish boreal forest. Scandinavian Journal of Forest Research 33:233-244.

Bretfeld, M., S. B. Franklin, and R. M. Hubbard. 2017. Initial evidence for simultaneous, bi-directional sap flow in roots of interconnected aspen ramets (Populus tremuloides). Folia Geobotanica 52:345-352.

Caldwell, B., and K. O'Hara. 2018. Correlation of Leaf Area Index to Root Biomass in Populus tremuloides Michx supports the Pipe Model Theory. Journal of Biodiversity Management & Forestry 2017.

Chen, L., J. G. Huang, A. Dawson, L. Zhai, K. J. Stadt, P. G. Comeau, and C. Whitehouse. 2018. Contributions of insects and droughts to growth decline of trembling aspen mixed boreal forest of western Canada. Global change biology 24:655-667.

Davies, C., C. J. Ellis, G. R. Iason, and R. A. Ennos. 2014. Genotypic variation in a foundation tree (Populus tremula L.) explains community structure of associated epiphytes. Biology letters 10:20140190.

Edworthy, A. B., M. K. Trzcinski, K. L. Cockle, K. L. Wiebe, and K. Martin. 2018. Tree cavity occupancy by nesting vertebrates across cavity age. The Journal of Wildlife Management 82:639-648.

Heroy, K. Y., S. B. St. Clair, P. C. Rogers, and J. J. Villalba. 2018. The influence of the foodscape on quaking aspen stand condition and use by ungulates. International Journal of Forest, Animal And Fisheries Research 2:50-63.

Keane, R. E., M. F. Mahalovich, B. L. Bollenbacher, M. E. Manning, R. A. Loehman, T. B. Jain, L. M. Holsinger, A. J. Larson, and M. M. Webster. 2018. Effects of Climate Change on Forest Vegetation in the Northern Rockies Region. Pages 128-173, *In* Climate change vulnerability and adaptation in the Northern Rocky Mountains-Part 1. USDA, Forest Service, Rocky Mountain Research Station, Fort Collins, CO.

Jiang, X., J.-G. Huang, J. Cheng, A. Dawson, K. J. Stadt, P. G. Comeau, and H. Y. Chen. 2018. Interspecific variation in growth responses to tree size, competition and climate of western Canadian boreal mixed forests. Science of The Total Environment 631:1070-1078.

King, C. M., and S. M. Landhäusser. 2018. Regeneration dynamics of planted seedling-origin aspen (Populus tremuloides Michx.). New Forests 49:215-229.

Man, R., H. Yang, and J. W. Schnare. 2018. Data on overstory and understory trees in aspen-dominated boreal mixedwood stands over 20 years after partial harvesting. Data in Brief 17:284-287.

Parker, W. C., and M. Sharma. 2018. Influence of post-harvesting residual stand structure on canopy light transmittance in ontario's boreal mixedwood forests. The Forestry Chronicle 94:35-46.

Rhodes, A. C., and S. B. St. Clair. 2018. Measures of browse damage and indexes of ungulate abundance to quantify their impacts on aspen forest regeneration. Ecological Indicators 89:648-655.

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.

Trugman, A. T., D. Medvigy, W. R. Anderegg, and S. W. Pacala. 2018. Differential declines in Alaskan boreal forest vitality related to climate and competition. Global change biology 24:1097-1107.

Usoltsev, V., O. Shobairi, and V. Chasovskikh. 2018. Climate-Induced Gradients of Populus sp. Forest Biomass on the Territory of Eurasia. Journal of Ecological Engineering Vol 19:1.

Woolbright, S. A., B. J. Rehill, R. L. Lindroth, S. P. DiFazio, G. D. Martinsen, M. S. Zinkgraf, G. J. Allan, P. Keim, and T. G. Whitham. 2018. Large effect quantitative trait loci for salicinoid phenolic glycosides in Populus: Implications for gene discovery. Ecology and Evolution 8:3726-3737.

Zhao, P., C. Xu, M. Zhou, B. Zhang, P. Ge, N. Zeng, and H. Liu. 2018. Rapid regeneration offsets losses from warming-induced tree mortality in an aspen-dominated broad-leaved forest in northern China. PloS one 13:e0195630.

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