Wild Women of Reclamation Newsletter

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ASMR American Society of Mining and Reclamation

Greetings to all of our fellow Wild Women of Reclamation,

We have been working on ways to stay connected and get to know each other than just at the annual meetings. The meetings are a busy time and there is so much exchange of information going on that we sometimes miss the more personal opportunities to engage with one another. We are all busy but occasionally it is fun, a great stress release and a good learning opportunity to read a short article on what a fellow Wild Woman does for research or in their job.

This newsletter format is meant to be a quick read and easy to put together every few months. But it will only be successful if we get stories from you. The submissions could be something factual about your research or your reclamation project so that we can become more educated on different aspects of reclamation. It could be about mentoring a group of girls or teaching a course. It could be a first-hand account of what it is like to be the first one ever to attend university in your family (that's a big topic up here in New Brunswick). You could write about working with a particular group to foster a better appreciation for what we do as reclamationists.

Submissions should be one to two pages in length and include a few photos, if possible. If you send in a brief biography (max. ½ page) about who you are and a photo, we will also include that information so that you will be more recognizable at the next conference. Including contact information may result in a request for additional information, collaboration potential or just a comment on your article.

We already have a few articles in queue, but this is a solicitation for more women to submit an article. We would also appreciate someone with skills to improve on the letterhead. More editors make for a better product. I have to credit Jennifer Franklin (University of Tennessee) for the flowering dogwood photo in the header for this addition. I will collect all flower photos and rotate them through just for variety.

What do you all think?

Michele Coleman (mcoleman@nbpower.com)
Cindy Adams (cindya@sgm-inc.com)

In this edition, we have two authors, Sara Klopf from Virginia Tech and Summer King from the Quapaw Tribe Environmental Office in Oklahoma, who both introduce us to their research area. Here are brief biographies of both women.

Sara Klopf

Summer King

Sara Klopf is a Research Associate at Virginia Tech where her research emphasis has been landscape rehabilitation after various mining activities. Her particular interest is the botanical side of ecological restoration and she is particularly interested in using native species in mine land reclamation.

She is currently working with The American Chestnut Foundation (https://www.acf.org/), SUNY Syracuse, the University of Georgia, and the Forest Health Initiative to field-test varieties of American chestnut trees for blight resistance and vigor on coal mine reclamation sites. She is also working on assessing the hydrologic and vegetation responses to wetland mitigation in northern Virginia, working with state agencies to quantify the impact of prescribed fire on the hydrology of a sinkhole pond, and developing and testing improved seed mixes on reclaimed mineral sands mines.

Sara's educational background began at the University of Illinois in Urbana-Champaign where she obtained a B.S. in Integrative Biology, then at Southern Illinois University Carbondale where she obtained an M.S. in Plant Biology. She then worked as a lab manager at SIUC focusing on research related to peatland reclamation after oil sands mining activities in northern Alberta, Canada. (http://www.landrehab.org/klopf)

Sara currently lives in Salem, Virginia with her husband Ryan where she spends most of her free time gardening, cooking, hiking, and reading. She can be reached at ksara1@vt.edu

Summer King was born in the (former) hottest summer on record in Oklahoma and her grandmother's name was Rose, so she was named Summer Rose. This explains the interesting and beautiful name.

Summer King is the Environmental Scientist for the Quapaw Tribe of Oklahoma, where her main duties revolve around the Tar Creek Superfund Site. Summer works with the tribe's construction division on active Superfund remediation projects, conducts confirmation soil sampling, and works on special projects such as utilizing soil amendments post-remediation.

Summer graduated from Northeastern State University in Tahlequah, Oklahoma, with a master's of science in Industrial Management, and has a bachelor's degree in Environmental Management. She worked in the tribal environmental field for 13 years before joining the Quapaw Tribe in 2016.

Summer lives in Miami, OK and has two Great Pyrenees. She enjoys Crossfit and weightlifting, and has a blackbelt in TaeKwonDo. She can be reached at sking@quapawtribe.com.

Restoring the American Chestnut in Coal Country

Sara K. Klopf

Few plant species elicit such nostalgia as the American chestnut. Once a dominant canopy tree in the Appalachians and an abundant source of lumber and food for both humans and wildlife, the chestnut was rendered functionally extinct after the spread of a fungal blight in the early 20th century. Since then, shadows of the American chestnut remain: top-killed trees that re-sprout as shrubs in the forest, furniture and flooring produced from reclaimed chestnut wood, and numerous personal stories of collecting bushels of chestnuts and seeing the forest canopy blanketed in white chestnut flowers.

Organizations such as the American Chestnut Foundation have been using hybrid breeding to develop trees that are morphologically American, but that carry the blight resistance of the related Chinese and Japanese chestnuts. As nuts for these ostensibly blight resistant trees have become available, vast areas of reclaimed Appalachian coal mines provide an opportunity for establishing young trees and assessing their blight resistance in a real-world scenario. The historic range of American chestnuts in Appalachia overlaps with the extent of coal mining in Appalachia, and the reclaimed mines are in need of reforestation. Unfortunately, many chestnuts planted on coal mine reclamation sites struggle to establish and resist blight infection.

Last fall I wrote a proposal for a small research grant funded by the Powell River Project, to study chestnut performance on a coal mine reclamation in southwestern Virginia. This site was planted with a mix of American, Chinese, and several lines of hybrid chestnuts in 2008. Over the last year, I have been finding and surveying the remaining trees, and quantifying their survival, growth, and blight incidence. I have also been collecting site data such as soil texture, aspect, and percent slope at every surviving tree to determine why some chestnuts perform better than others.

As with many reclamation studies, this research has answered some questions but left many more. I found that several site characteristics, such as soil pH, aspect, and vegetation competition were related to growth and survival - but where survival and growth were improved, blight symptoms were also more severe. I hope to initiate additional future studies to investigate the effects of those variables that had the strongest relationships to growth, survival, and blight incidence. Hopefully, we will soon be able to develop best management practices for planting chestnuts on reclaimed coal mines, helping to re-establish this magnificent tree within the "new forests" that are being widely planted on Appalachian mines.

Figure 1 Left: Hybrid chestnut planted on reclaimed coal mine. Middle: Measuring the height of a dormant chestnut. Right: chestnut leaf image (www.psu.edu)

Bird Studies at the Tar Creek Superfund Site

Summer King

The Quapaw Tribe has been dealing with the Tar Creek Superfund site long before it was listed on the National Priories List in 1983. Tar Creek is a forty square mile former lead and zinc mine located in northeast Oklahoma. Mining and milling of ore produced more than 500 million tons of waste in the area. The Quapaw Tribe was the first tribe in the US to conduct active superfund remediation, and since 2014 has removed more than 1.2 million tons of mine tailings contaminated with lead, zinc and cadmium. The tribe is fortunate to work with several local universities on a variety of projects, including a very interesting bird study this summer.

Dr. Christine Brodsky, an ecologist from Pittsburg State University in Pittsburg, KS, was interested in the number and species of birds utilizing a variety of sites in Tar Creek. Over the course of a month, Dr. Brodsky and the Quapaw Tribe Environmental Office studied 21 sites, ranging from pre-remediation to active remediation to post-remediation.

Bird counts require specific weather conditions, and can only be conducted within four hours of dawn. It was a very interesting month! Almost 1,000 individual birds from 57 species were documented. As might be expected, the pre-remediation and post-remediation sites had the highest counts and diversity; however, there were birds utilizing active construction sites. Red-winged black bird was one of the most prevalent species we found. One of my sites has been under a construction hold because we found a family of barred owls. Several notable species found in this study include: Northern Cardinal, Red-winged blackbird, Indigo Bunting, Killdeer, Barred Owl, Blue Grosbeak, Common Nighthawk and Yellow-breasted Chat.

This study will continue for the next several years, and it will be interesting to see how wildlife returns to sites that are currently under construction. If you have any questions about Tar Creek, please feel free to email Summer King.

Figure 2 Red-winged blackbird

Figure 3 Barred owl
(http://www.audubon.org/news/the-silent-flight-owls-explained)

Figure 4 This site was included as a post-remediation site in the bird study – great before and after example of reclamation.