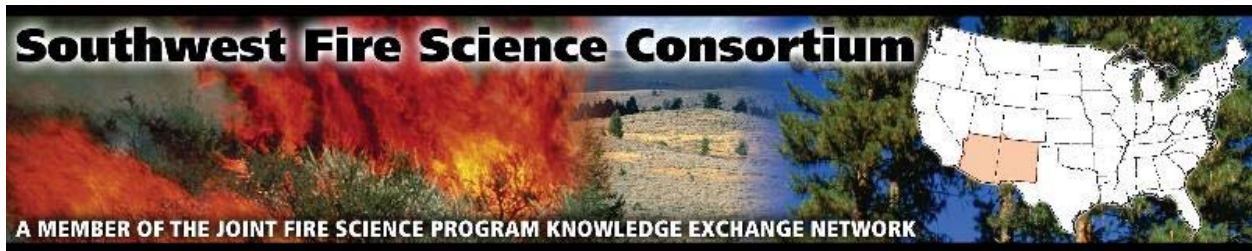


Subject: Summer 2010 Newsletter

From: Southwest Fire Science Consortium <swfireconsortium@gmail.com>

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Newsletter - Summer 2010

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Greetings!

The Southwest Fire Science Consortium is off and running and this newsletter highlights some of the activities we have in the works. In our feature article for this newsletter, Dan Neary, Research Soil Scientists with the Rocky Mountain Research Station, discusses the impacts of the recent Schultz Fire on flooding and debris flows and the outlook for future flooding in the area. In this newsletter we also highlight the activities the consortium has been involved with this summer and what we have on the horizon. Please pay close attention to our request for proposals for new activities, including webinars, working papers, workshops and field trips. If you have an activity you would like the consortium to support, this is your opportunity to let us know.

Schultz fire debris flow and flooding impacts synopsis

**By Dan Neary,
Research
Soil Scientists, Rocky
Mountain Research
Station**

The Schultz Fire was a wind-driven event originating from an abandoned campfire. It burned approximately 15,051 acres on the eastern slopes of the San Francisco Peaks, Coconino National Forest, between June 20th and 30th, 2010. A BAER Team completed an assessment of the fire as of July 8, 2010, reporting the high potential for post-fire flooding, sedimentation and possible debris flows due to the severity of the fire.



Flooding downstream of the Schultz fire

Five factors have combined to contribute to create historically unprecedented flood flows observed after the Schultz Fire. The first is the steep nature of the San Francisco Peaks with a drop of nearly 3,000 feet from the upper slopes to Highway 89. The second is the tendency of thunderstorms to develop over the mountain. The third is the fire itself, covering a large portion of the east flank of the mountain upslope of most of the suburban developments in the area. The fourth is the widespread occurrence of high severity fire and water repellency in the soil with some watersheds experiencing up to 70% coverage by high severity wildfire. The fifth is an active Monsoon period. These are some of the factors that frequently interact to produce flood flows 5 to 1,000 times those observed by similar rainfall events before wildfire.

The inciting factor for the floods was the occurrence of high intensity rainfall over the Schultz Fire burned area in a series of storms starting on July 16, 2010. A series of flood and debris flows into the suburban developments started with the onset of the 2010 summer Monsoon period. Thunderstorms on July 16, 2010, started the periodic flooding, with the most recent on August 16th. The largest was the event on July 20th. So far there have been seven storms that have produced flood flows. These events are likely to continue through the Monsoon period of 2010. Risk of flooding could rise in September and October if moisture from any decaying tropical systems intrudes into Arizona. Melting of winter snows probably will not increase flooding risk since they are generally long duration, low energy events. A rain on snow event could be of concern. The next high risk period will be the second Monsoon after the wildfire. There is likely to be a 5-year period in which flood and debris flows off of the Schultz Fire will be higher than normal until the watersheds recover some of their ability to receive and store water. This period could be extended to a decade or more due to some of the erosion processes now occurring on the upper mountain slopes.

The occurrence of flood flows is a function of the probabilities of thunderstorm location, size, and intensity. The biggest factor is rainfall intensity not total rainfall. In some situations, significant low-intensity rainfall amounts are able to trigger flood flows. Rain depths as small as 0.5 inch in ten-to-fifteen minutes can generate significant runoff. The flood event of July 20, 2010, was certainly the most intense observed so far. Peak rainfall of 1.0 inch in fifteen minutes triggered the flood flow on that date.

Preliminary observations of areas treated with straw mulch indicate that a lot of it is holding fast and that germinating wheat seed is helping to stabilize soils. Seeds spread in the second set of BAER applications are likely to help with the watershed recovery process especially in years 2-5. The mulch has not worked on the steep slopes of the upper mountain as much of it has washed off. The outlook is for continued watershed recovery where the mulch is holding firm. Native plants are also sprouting, contributing to the

recovery. The outlook for the upper mountain slopes is for continued high levels of erosion.

More information about the Schultz fire is available through the [Coconino National Forest](#).

Recent activities

Webinars

We hosted two webinars this summer. On June 7th Dr. Pete Fulé from Northern Arizona University presented findings from a recent synthesis of post-fire seeding studies. Recent NAU graduate Donna Peppin, Pete Fulé, and their colleagues conducted a thorough survey of the literature on post-fire seeding in forested systems to determine the effectiveness of this practice in reducing runoff and erosion and the impacts on native vegetation recovery. The results of this study have been recently published in *Forest Ecology and Management*. A link to the final report and a recording of the webinar are available on our [website](#).

On July 28th Dr. Mike Ryan from the Rocky Mountain Research Station presented findings from a recent synthesis on forests and carbon in the U.S. In the webinar, Mike summarized the main issues surrounding forests and carbon and the benefits and tradeoffs associated with different forest management practices. Links to recent publications and a recording of the webinar is available on our [website](#).

What's coming

The Southwest Fire Consortium will help sponsor the The Southwest Fuels Workshop, planned for this upcoming winter. This workshop will provide an interagency atmosphere of technology transfer and networking. The goal is to bring together natural resource managers, researchers and academics to share knowledge, success stories and needs. Combining research presentations with facilitated discussions and workshops, participants will have multiple opportunities to lend their voice to the land management dialogue. The conference will target fuels and vegetation management specialists, and invite speakers and presenters at the forefront of developing and applying knowledge. The status of knowledge concerning major southwestern vegetation types, fuel treatments and fire ecology will be presented then follow-up discussions will be encouraged to share what is currently being applied, what is working and what areas need more work. Workshops will include fuels and fire behavior modeling, treatment effectiveness monitoring and smoke management, among others to be developed by the program committee. For more information contact Linda Wadleigh at lwadleigh@fs.fed.us.

We are teaming up with the Lessons Learned Center and the [Southern Arizona Buffelgrass Coordination Center](#) to present a short video and accompanying story on the concerted efforts underway to manage buffelgrass in southern Arizona.

Buffelgrass and other nonnative grasses are threatening to transform the diverse Sonoran Desert into a impoverished flammable savanna. This story will highlight the efforts of the Southern Arizona Buffelgrass Coordination Center in coordinating public and private sectors to control the spread of buffelgrass across southern Arizona. Look for the story this coming fall.

Request for proposals

Workshops/field trips

In addition to the interagency fuels workshop this coming winter, we have funding available to sponsor other workshops or field trips over the next two years. We can sponsor already planned activities or assist in development of new ideas. If you have an idea for a workshop or field trip please let us know. Fill out a [workshop proposal form](#) and return an electronic copy to swfireconsortium@gmail.com. More details are available on the workshop proposal form.

Other planned activities

We plan to do even more! We have funding available to create more webinars and Wildfire Lessons Learned stories. In addition, we plan on teaming up with the Ecological Restoration Institute to develop short working papers on specific topics of interest. We are looking for suggestions for topics for all of these activities. If you have a topic you'd like to see covered in one of these formats, please let us know. Fill out a [proposal form](#) and return an electronic copy to swfireconsortium@gmail.com More details are available on this form.

What's new in the Southwest

Recent Research

Click [here](#) for a summary of recent publications related to fire in the Southwest.

News of note

This October Grand Canyon National Park will host the Monitoring Trends in Burn Severity annual field trip. The purpose of the field trip is to help scientists and image analysts who produce burn severity products obtain on the ground experience to help improve their mapping techniques. Also this October, Grand Canyon National Park is hosting a meeting of the Intermountain Region GIS staff. The focus of the meeting will be to discuss ways to implement a region wide fire database to compliment a national database. For more information contact Eric Gdula at eric_gdula@nps.gov.

Saguaro National Park has partnered with Scott Abella's research group at the University of Nevada Las Vegas to develop techniques for restoring soils and native vegetation to sites treated for buffelgrass. Through a series of related studies, the overall objective is to identify native species most competitive with buffelgrass that are amenable to becoming

established through seeding or planting. For more information contact Scott Abella at scott.abella@unlv.edu.

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