



SW Fire Science Consortium Newsletter

Winter 2011

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Greetings!

In this issue, the Southwest Fire Science Consortium announces several upcoming events planned for this spring. In our last newsletter we announced a unique opportunity to give our top research needs in the Southwest to the Joint Fire Science Program. The Southwest's top research needs results are in. Read more about how your input played a role in determining the top choices and how these results will be used. In addition, a featured article by Ryan Fitch, Graduate Research Assistant with NAU School of Forestry, discusses research on protecting old growth trees from prescribed burning. We also raise a new topic in question and would love your feedback. Lastly, please pay 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 put those thoughts into action.

Protecting Old-growth Ponderosa Pine Trees from Prescribed Fire

Summary of Ecological Restoration Institute's [ERI Working Paper No. 24](#)

By Ryan Fitch
Graduate Research Assistant,
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Previous to European settlement, ponderosa pine forests of the Southwest flourished under low intensity frequent fire regime, episodic regeneration, insect outbreaks, and drought. Today's ponderosa pine forests are characterized by overly dense stands of small diameter trees which reduce biodiversity; increase fuel loads and "ladder fuels" that increase



the risk of severe wildfire and alter nutrient cycles. More recent forest restoration prescriptions have focused on reintroducing low intensity surface fire into this region's ponderosa pine ecosystems. The aim of this treatment is to aid in returning ponderosa pine stand and forest structures to their pre-American/European settlement conditions which reduce the risk of severe or catastrophic wildfire, improve the aesthetics of the landscape, and increase growth and diversity of understory species.

Prescribed fire under mature ponderosa pines at G.A. Peason Natural Area, Flagstaff, AZ-photo courtesy of ERI

In addition to low intensity prescribed fire, the conservation of old-growth ponderosa pine trees is critical to meeting the objectives of the restoration projects. Benefits from old growth trees include: increased resistance to low intensity surface fires; improved aesthetics of the landscape; and greater genetic diversity within the ecosystems which help forests adapting to environmental and climatic changes. Reducing the risk of old-growth tree mortality due to fire is has become an important restoration tool.

The timing of prescribed fire as a restoration tool is of importance for reducing tree mortality. Fire damage that is incurred during the dormant season of ponderosa pine results in lower mortality rates than fire damage incurred during the growing season. Prescribed fire has been shown to increase bark beetle attacks in southwest ponderosa pine forests due, in part, to crown damage to ponderosa pine during fire. Thinning and prescribed fire treatments implemented on shallow lava soils can also been shown to increase mortality of large diameter (> 19.7 inches in diameter) ponderosa pine.

Slash compression treatment has been shown to lower the amount of crown volume scorch and lower scorch heights on trees. However, despite the benefits of reduced tree mortality from crown scorch, adverse effects from running heavy machinery over the soil including soil compaction and the introduction of exotic species, may reduce natural regeneration processes. Slash compression treatments are also more expensive to implement given the need for additional machinery and operation time.

Forest litter removal to a distance of at least 9 inches from the tree bole has been shown to reduce the percentage of trees showing spots of cambial kill or moderate bark char from the prescribed fire. The practice of clearing litter from the base of the tree may reduce injury repair stress on old-growth trees associated with prescribed fire. However, it has been suggested that litter and duff removal is not needed to prevent ponderosa pine mortality after prescribed burns ([Fowler et al. 2009](#)).The effectiveness of reducing old-growth mortality through raking may depend on specific site characteristics where the prescribed burn is carried out.

Old-growth ponderosa pines provide a blue print of the forest structure prior to American/European settlement. Restoration projects are looking to restore these pre-settlement forest conditions and the preservation of old-growth trees is central to accomplishing this goal. The old-growth trees provide numerous benefits and their continued existence is linked with the success or failure of the restoration projects we implement.

Do you have an article you would like to be featured in our newsletter? We are always looking for new and exciting information to share. Please email us with your ideas or article at swfireconsortium@gmail.com

The Southwest's Top Research Needs

[The Joint Fire Science Program](#) (JFSP) is one of the principal sources of funding for fire-related research in the country. Through funding from JFSP the Southwest Fire Science Consortium and other regional consortia have been developed. Every year, JFSP seeks new ways to solicit information on major research needs which they consider when writing their annual requests for proposals. This year they reached out through the regional consortia to determine the most important research needs.

The Southwest Fire Science Consortium came to you to get input about critical research needs in the Southwest. Through surveys, meetings and workshops you expressed your most pressing research questions and information needs. From this, we identified 11 critical research questions/topics to be addressed through future research. Finally, we initiated a survey using SurveyMonkey.com which included the 11 questions to be ranked by 1st, 2nd, and 3rd priority. At the end of the final response period, out of the 276 sent the survey link via email, we received 79 responses out of 122 who actually opened the email (46.2% response rate).

The top four themes in need of more research, in order of highest priority, included:

- 1. Fire and climate change:** How do climate change, insect outbreaks, and other stressors interact with and effect fire management? Given changes in climate, what are realistic and sustainable forest structure and fuel loading goals that will promote forest health and wildlife habitat for the future? Which insects and pathogens currently exist in our forests and how are those populations expected to change with time? How might these factors affect fuel loading, tree mortality, and fire severity? What are the thresholds for ecosystem changes or type conversions in a changing climate?
- 2. Piñon-juniper ecosystems:** Piñon-juniper ecosystems are in need of a thorough synthesis because managers are concerned about the following questions in piñon-juniper ecosystems: What were the historic fire regimes? What was the patch size for high severity fires historically? What types of fuel reduction treatments are appropriate given different fire regimes? What are the thresholds for transition from surface fire to crown fire? How effective are treatments in changing fire behavior? Can fuel treatments help restore rangelands? How might the role of fire change with a changing climate?
- 3. Treatment longevity:** How long do the effects of fuel reduction treatments and/or prescribed fire last? How does time since treatment affect fuel loading objectives? How does this vary with fire severity? How does time since treatment affect forest structure and regeneration? How does time since treatment affect native vs. exotic understory plant composition?
- 4. Fire season:** How does burn season affect multiple variables, such as fuel reduction, vegetation structure, native species regeneration, non-native plant invasion, potential for water runoff and erosion, and wildlife populations and habitat?

Collectively, research needs from the regional consortia will get evaluated and ranked. The top research needs across consortia will then be submitted to the JFSP board and weighted against the long-term investment strategy. Along with input from other sources such as the National Wildfire Coordinating Group, JFSP will make decisions major research needs which they consider when writing their annual requests for proposals.

Lessons Learned: La Niña Fires - Tell us what you think



What do we know about wildfires occurring during La Niña events? Climate research indicates that a greater number of acres burn during La Niña events than during El Niño events and that the number of acres burned increases over time ([Swetnam and Baisan 2003](#)). This winter the Southwest experienced a moderate to strong La Niña event which brought drier-than-average winter weather. Because of this, fire managers are anxious about the upcoming fire season.

Knowing what has been learned from past wildfire seasons during La Niña events in the Southwest may help fire managers to prepare for the upcoming fire season. What information is available and what do we still need to know? We are interested in knowing whether this topic is of importance to fire managers in the Southwest so that we can provide you with more information. Please let us know your thoughts about this topic by emailing us at swfireconsortium@gmail.com.

Recent Activities and News

Webinar

On February 15 Dr. Andi Thode from Northern Arizona University presented on the "Effectiveness of post-fire seeding and herbicide treatments to battle cheatgrass in Zion National Park." The study aimed to determine the effects of treatments on reducing cheatgrass in the understory and to determine the effects of the treatments on the understory. This study suggests that: 1) Imazapic does provide for a short-term restoration window, 2) seeding in conjunction with imazapic may benefit from the incorporation of a time-lag, 3) Imazapic adversely affects many native species, 4) understanding the pre-fire community is critical when applying post-fire treatments, and 5) Imazapic will not eliminate cheatgrass. A recording of the webinar and a downloadable pdf are available on our [website](#).

Southwest Interagency Fuels Workshop

The Southwest Interagency Fuels Workshop held on March 8-10, 2011 in Flagstaff, Arizona was a great success. We had 155 participants in the three-day workshop. The Workshop brought together managers and researchers from multiple resource agencies and academia to share information and provide feedback on fuels treatments in the Southwest. Participants include those from federal agencies (USFS, NPS, BIA, BLM, FWS), tribes (San Carlos Apache, White Mtn. Apache, Santa Clara Pueblo, Mescalero Apache), academic/research institutions (NAU, U of A, U of Cali, Prescott College, Ecological Restoration Institute, Texas AgriLife Research), state agencies (NM State Forestry, AZ State Forestry), non-profit (The Nature Conservancy), and others. Participants had the opportunity to join discussions regarding lessons learned, new research, and future outlooks in five vegetation types including ponderosa pine, pinyon/juniper, interior chaparral, semi-desert grasslands, and mixed conifer. In addition, this Workshop provided technical skills related to fuels treatments and ecological restoration in fire-adapted ecosystems. Hands-on workshops included an overview of available models, smoke management techniques, and specific fuels models. With this, we hope this Workshop equipped program managers with the most up-to-date information on research, fuel treatment applications and computer models that will enable land managers to perform their duties and stay current with regional and national direction.

Powerpoint presentations and a summary document will be posted on our website soon!

New Web Address

We have a new web address. Simply type in <http://swfireconsortium.org> to bring you to our webpage and get updated on all our new and past happenings.

Recent Synthesis of Information

We have two new synthesis pieces available. The first is an Ecological Restoration Institute (ERI) Working Paper written by Dave Egan of ERI titled "[Protecting old trees from prescribed burning.](#)" This paper notes the ecological importance of old growth trees and addresses the threat of prescribed burning to old growth tree stands. Finally, it reviews previous recommendations in light of recent research.

We also have developed an ERI Fact Sheet "[Methods for estimating surface live fuel loading.](#)" Written by Molly Hunter of NAU School of Forestry, this fact sheet gives brief overview of three basic methods available for estimating live fuel loading; the importance of these estimations; and the advantages and disadvantages of each method.

Upcoming Events

Southwest Climate Change Initiative Webinar

April 20, 2011

11am to 12pm mountain standard time (10 to 11am AZ time)

The Nature Conservancy will host a webinar through the Southwest Fire Science Consortium that will present information from the Southwest Climate Change Initiative. The Initiative is a collaborative effort started by The Nature Conservancy in 2008 to provide climate science information to natural resource managers in Arizona, New Mexico, Colorado and Utah so that they can begin responding to climate change. First, we will present the results of a regional climate change assessment where we evaluated the effects of recent temperature change on from 1951-2006 on major habitats and species across Arizona, New Mexico, Colorado, and Utah. Major habitats are current vegetation grouped into plant communities with a common set of dominant plants, regional climate, and disturbance regimes. We also characterize habitats by the number of species of conservation concern that are found within them. Species of conservation concern are those species listed under the Endangered Species Act or those species with a global conservation status of critically imperiled, imperiled or vulnerable. Second, we will present the results from two landscape sites in the Southwest, the Four Forest Restoration Initiative Area in Arizona and the Jemez Mountains in New Mexico, where managers and scientists have initiated planning activities to adjust fire management strategies given what is known about climate change impacts.

Register Open: [click here to register](#)

Santa Fe Watershed Research Forum Field Trip

June 13, 2011

Santa Fe, NM - Time and specific location TBA

One of our goals of this field trip is to pass along the knowledge learned through the collaborative watershed restoration process to managers in the Southwest who may benefit. The research forum would be used to present the broad range of research and monitoring that has been completed, is ongoing and is planned within the watershed as it relates to fire and watershed management. This would be followed by a field trip into the watershed to visit different treatment sites, and research and monitoring areas.

Registration and more information to come on our website!

2012 Southwest Regional AFE Conference

Fire, Landscapes, Wildlife & People: Building Alliances for Restoring Ecosystem Resilience

February 27-March 1, 2012

La Fonda Hotel, Santa Fe, New Mexico

We plan to put on a fire science and management conference in the Southwest every four years. The last Southwest Fire Conference was in January 2008 in Tucson, Arizona. The Southwest Fire Science Consortium in partnership with the Association for Fire Ecology and Humboldt State University will be hosting the 2012 Southwest Regional AFE Conference in Santa Fe, New Mexico. We are currently in the planning stages for this conference. The conference is scheduled for February 27-March 1, 2012.

[Save the Dates flyer!](#)

More information to come on our website!

NEW Travel Stipends Available!

The Southwest Fire Science Consortium would like to help you attend upcoming events. We now offer travel stipends for individuals who would like to attend a consortium related event but don't have the financial means to get there. We offer full or partial funding up to \$480 toward your travel expenses. Simply fill out the travel stipend application ([click here](#)) electronically and email back to us for consideration of funding. Travel stipends are awarded based on need and participation during an event.

Other Events in the Southwest

National Workshop on Climate and Forests: Managing for Tomorrow's Forest

May 16-18, 2011

Northern Arizona University, Flagstaff, AZ

A National Workshop on Climate and Forests is to be hosted by SAF from May 16-18, 2011 at Northern Arizona University in Flagstaff, AZ. The workshop will explore adaptation and mitigation options, discuss and develop state of the art planning tools, and work towards their use by resource managers. Featured Speaker: Dr. Connie Millar For more information on this and other events please go to <http://www.safnet.org/natworkshop11/index.cfm>.

Request for Proposals

The SWFSC is constantly looking for ways to improve dissemination of fire science information.

Through support from the Joint Fire Science Program, the consortium can fund 2-3 workshops/field trips per year at a rate of up to \$8,000 per workshop or field trip. In addition, we have funding available to create webinars, Wildfire Lesson Learned stories, and Ecological Restoration Institute Working papers.

Workshops/field trips

We have funding available to sponsor already planned or development of new workshops or field trips. We can sponsor already planned activities or assist in development of new ideas. If you have a planned activity or have a new idea for a workshop or field trip please let us know.

Fill out a workshop proposal form ([click here](#)) and return an electronic copy to swfireconsortium@gmail.com. More details are available on the workshop proposal form.

Other Outlets

We have funding available to create more webinars and Wildfire Lessons Learned stories. In addition, we are 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 ([click here](#)) and return an electronic copy to swfireconsortium@gmail.com. More details are available on this form.

What's New in the Southwest!

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



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