

# Large Wildland Fires:

Social, Political *and* Ecological Effects

**University of Montana**  
**Missoula, Montana**  
**May 19-23, 2014**

*Co-hosted by*  
Association for Fire Ecology *and*  
International Association of Wildland Fire





We have received an overwhelming amount of support for the

# Large Wildland Fires Conference!

The organizers gratefully acknowledge the following organizations and individuals who have generously contributed to this event:



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Smoke Program  
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Missoula, Montana

**Pam Sikkink**

Research Ecologist  
USFS Missoula  
Fire Laboratory  
Missoula, Montana

# Welcome *and* Introduction

The Association for Fire Ecology (AFE) welcomes you to the Large Wildland Fires Conference in Missoula, Montana, USA. AFE, fellow organizers, and sponsors of this conference recognize that during today's difficult economic times it takes an extraordinary level of effort and commitment on your part to participate in this event. We thank all of you and applaud your commitment to the science and management of wildland fire, and we are confident that your efforts will be rewarded by a rich and informative program of events.

This fire conference is unique in that AFE has partnered with the International Association of Wildland Fire (IAWF), bringing together our respective staffs, boards, and members to jointly organize this event. This has not happened since our First International Fire Ecology and Management Congress back in 2000. With each organization sharing its knowledge, skills, and resources, we've brought together our best efforts to host this collaborative event.

A heartfelt thanks to our partners and all those individuals who have volunteered to serve on planning committees, dedicating their time and energy to do the hard work needed to put this conference together. Without the dedication of the committees, staff, volunteers, and sponsors, we would have no conference. Thank you!

The theme of this fire conference is "Large Wildland Fires: Social, Political, and Ecological Effects." It has become a large fire conference, indeed! A diverse mix and broad sweep of the international wildland fire community has come to Missoula to share the latest research findings and management applications concerning the ecology and management of large wildland fires--fast emerging as one of the major challenges facing land managers today and the far foreseeable future.

The ability to meet with each other face-to-face in a conference setting is invaluable to meeting this and other challenges of fire management. Take advantage of opportunities to share with, learn from, and get inspired by fellow attendees gathered here from all across the globe. Enjoy your reunions with old friends and colleagues—and look forward to meeting new ones, too.

On behalf of the board of directors and staff of the Association for Fire Ecology, I'd like to welcome you all to Missoula and to thank you for your participation in this event and your ongoing support of AFE.

Sincerely,



Brian Oswald, Ph.D.  
Board President  
Association for Fire Ecology



# Welcome *and* Introduction

Wildland fire management has risen to the forefront of land management and now receives greater social and political attention than ever before. Its movement into the 21st century is characterized by changes that are pushing the program far beyond its historical beginnings. Emerging trends, both good and bad, are influencing management capability, opportunities, and direction. In the environment of today, as well as tomorrow, wildland fire management is inextricably intertwined in the mix of social, political, and ecological considerations as drivers of land management.

As we move forward and confront new challenges, there is much to respond to and to learn. There is a need to broaden the opportunity of wildland fire management, to directly address how to restore and maintain resilient landscapes, how to make communities better able to withstand wildfires without loss of life and property, how to sustain proactive landscape-scale vegetation management and fuels reduction activities, and how to consider and implement the full spectrum of management activities and the full range wildfire responses. Responsibility for addressing these issues extends beyond just fire management professionals; it is a societal issue demanding clear understanding and attention to all perspectives.

The International Association of Wildland Fire (IAWF) is extremely proud to team with the Association of Fire Ecology (AFE) to sponsor the 2014 Large Wildland Fires: Social, Political, and Ecological Effects Conference. The two associations recognize the challenges facing wildland fire management and are working to bring focus to the many issues associated with large wildfires and the future of fire management.

Welcome to what promises to be one of the most informative, enlightening, and powerful fire conferences of our time. It is designed to be innovative and revolutionary and will be focused on not just a single component of wildland fire management but on multiple important components. It will provide a forum for discussing the social, political, and ecological aspects of large wildland fire management. The conference will bring together at one time the significant body of knowledge about all of these program concerns. It will provide a stage where workshops, oral presentations, poster paper presentations, special sessions, workshops, and plenary presentations by leading experts in the field will facilitate the sharing of what is known, what needs to be learned, what lies ahead, how to advance knowledge, and how to use this knowledge to effectively deal with the wildland fire situation. During this conference you will be able to explore ways to expand collaborations, gain new knowledge, discuss the latest relevant research findings, learn about and from management treatments, engage in policy discussions, and conduct global fire management interaction.

On behalf of the alliance of the two associations, all conference sponsors and partners, I welcome all participants and hope that this conference will meet, and even exceed your expectations of increasing awareness, knowledge, and capability in this important field in addition to networking with peers to establish future avenues of discovery.

I encourage you to visit the IAWF Exhibit Booth and become a member. If you were not previously a member, ask about the membership incentives that are available only during the conference. By participating as an active IAWF member you can help to improve communication between firefighting organizations, enhance firefighter and public safety, increase our understanding of wildland fire science, and improve our ability to manage fire. Your membership in the IAWF provides you with a connection to other wildland fire professionals from across the world. Our membership, which is truly international, includes professionals from the fields of fire ecology, suppression, planning, contracting, fire use, research, and prescribed fire. Our members are scientists, firefighters, managers, contractors, and policy makers. As an association, we are unique in that we represent all areas of wildland fire management. Membership benefits include, but are not limited, to the following:

WILDFIRE magazine – All members receive Wildfire magazine, official publication of the IAWF. Writers contribute wildland fire articles and news from all corners of the world, and topical editors cover all the important issues in wildland fire. We encourage you to submit articles and photographs to our Wildfire Magazine Editorial Board for inclusion in the magazine.

INTERNATIONAL JOURNAL OF WILDLAND FIRE – Our other official publication of the IAWF, published by CSIRO, is dedicated to the advancement of basic and applied research covering wildland fire and is available as an additional membership benefit, with free e-access to the Journal's abstracts and articles. Members who seek a paper subscription of the journal can receive an additional 1-year subscription of eight bound issues at a discounted rate of US\$205.

On behalf of the Board of Directors of the IAWF, thank you for your support of our association.



Tom Zimmerman, IAWF President and Chairman of the Board

## Membership

Join AFE! Membership is open to anyone interested in Fire Ecology. AFE members have access to the many services and benefits. And as an AFE member you can become active in shaping the direction of the profession of fire ecology. In addition to our annual conferences, AFE hosts many venues for networking and collaborating with fellow fire ecologists, and our members play in integral role. Becoming a member is easy and affordable, with discounts for students, retirees and international members. Applications and secure payment can be made on our website.

## Fire Ecology Journal

The journal publishes peer reviewed articles, opinion pieces, responses, and book reviews, as well as occasional reprints of “classic” fire ecology articles. The journal’s current editor is the esteemed Dr. Jim Agee, and we have over 30 associate editors representing scientists on five continents. Issues are published three times per year: April, August, and December. We are now entering our tenth year, and have published over 425 authors of scientific papers. The journal is now indexed by all of the leading indexing institutions: Thomson Reuters ISI Web of Science, AGRICOLA, Biosis Reviews, Current Contents, Google Scholar, Scopus, and the Science Citation Index. These indicate that Fire Ecology has joined the ranks of the most prestigious international journals, and will be the journal of choice for significant research in fire ecology.

## AFE’s Wildland Fire Professional Certification Program



This program is designed to further ecologically-based fire science and management and to meet the increasing demands for effective analysis, decision-making, and workforce development in a changing fire landscape. The goals of the program are to formally identify fire careers as vital professions, to set standards for the preparation of future fire professionals, and to document the education, experience, and training qualifications of

members of the fire ecology and management profession. There are 6 levels of Certification: Wildland Fire Technician & Wildland Fire Practitioner; Wildland Fire Manager & Senior Wildland Fire Manager; Wildland Fire Ecologist & Senior Wildland Fire Ecologist. You must be a current AFE member to apply for certification.

## AFE Wildland Fire Academic Certification Program

The complexity and importance of wildland fire science, management, and decision-making is at an all-time high across our Nation and worldwide. To meet current and future challenges of workforce development, analysis, and sound decision-making, AFE has developed a process for recognizing academic programs which prepare future fire professionals. Our overarching goal is to support fire ecology and ecologically-based fire management while advancing fire science and its application.

## AFE’s Conferences and Events

AFE hosts events at least once a year, from regional workshops and conferences to our international fire congresses. These events provide opportunities for learning, networking, collaborating, and socializing with colleagues from other agencies, universities, regions, and nations. AFE’s Fire Congresses are among the largest gatherings of fire scientists in the world, bringing together some of the top fire researchers, managers, and policymakers from dozens of countries across six continents to share their discoveries, experiences, and initiatives in fire ecology.

At our events, we also give three different Lifetime Achievement Awards to people who have made significant contributions to fire ecology and management in the U.S., as well as Student Excellence Awards to undergraduates and graduate students who show exceptional promise in the field of fire ecology.

**UPCOMING Event:** AFE’s 6th International Fire Ecology and Management Congress. San Antonio, Texas, USA. November 16-20, 2015. [www.afefirecongress.org](http://www.afefirecongress.org)

*Contact Us!* Check out our website at [www.fireecology.org](http://www.fireecology.org). If you have any questions or want more information about AFE, you can reach us at: [office@fireecology.net](mailto:office@fireecology.net) or 541-852-7903. You can also Like us on Facebook at [www.facebook.com/fireecology](http://www.facebook.com/fireecology) or Follow us on Twitter at [www.twitter.com/fireecology](http://www.twitter.com/fireecology).





# About IAWF

**The International Association of Wildland Fire (IAWF)** is a non-profit, professional association representing members of the global wildland fire community. The purpose of the association is to facilitate communication and provide leadership for the wildland fire community.

The IAWF is uniquely positioned as an independent organization whose membership includes experts in all aspects of wildland fire management. IAWF's independence and breadth of global membership expertise allows it to offer a neutral forum for the consideration of important and at times controversial, wildland fire issues. Our unique membership base and organizational structure allow the IAWF to creatively apply a full range of wildland fire knowledge to accomplishing its stated mission.

Vision: To be an acknowledged resource, from the local to global scale, of scientific and technical knowledge, education, networking and professional development that is depended on by members and partners in the international wildland fire community.



## International Journal of Wildland Fire

Our official fire science journal, published on our behalf by CSIRO, is dedicated to the advancement of basic and applied research covering wildland fire. IAWF members have access to this leading scientific journal online as a members benefit. For those members who want to receive the hard copy version of the journal, they may receive it at the IAWF discounted rate of US \$220, which includes your IAWF membership and a 1-year subscription to WILDFIRE.

## WILDFIRE Magazine

All IAWF members receive WILDFIRE magazine, official publication of the IAWF. Our authors submit fire articles from all corners of the world and our topical editors cover a broad array of important issues in wildland fire. We encourage you to submit articles and photographs for inclusion in the magazine. Visit our magazines' Editorial Advisory Board page on our website for more information such as Writer's Guidelines.

There are so many reasons to become a member of the International Association of Wildland Fire but most importantly, the opportunity to be a member of a professional association that is committed to facilitating communication and providing leadership for the wildland fire community. Join today at [www.iawfonline.org](http://www.iawfonline.org).

## International Association of Wildland Fire

1418 Washburn • Missoula, Montana, USA • (01) (406) 531-8264  
Toll Free from US & Canada: (888) 440-IAWF (4293)  
[www.iawfonline.org](http://www.iawfonline.org)



International Association of Wildland Fire  
UNITING THE GLOBAL WILDLAND FIRE COMMUNITY

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**Mikel Robinson**

Missoula, Montana, USA

# The Mike da Luz Memorial Student Scholarship



This past October, the Association for Fire Ecology lost an esteemed member of our board of directors, Mike da Luz. Mike was instrumental in helping to strategize the financial growth and future direction of AFE. His clear and intelligent analyses and his humble wisdom will be greatly missed.

In cooperation with Mike's family, AFE has created "The Mike da Luz Memorial Student Scholarship" to help fund student travel to attend AFE conferences and other educational events. We are very grateful to the family for this opportunity to honor

Mike by continuing to foster his vision of knowledge transfer and fire ecology education. This year at the Large Wildland Fires Conference, we are pleased to give out the first scholarship to Vasyl Gumeniuk, a Ph.D. student from the Fire Lab at the National University of Life and Environmental Sciences of Ukraine. His letter of recommendation stated:

*Vasyl is one of a small group of young scientists attempting to understand the relationship of wildland fire with the forest resources in Ukraine. The research that Vasyl is conducting will lay the foundation for management and protection of Ukrainian forests and will be especially helpful in future mitigation efforts for forests impacted by the Chernobyl nuclear event. Attendance at the Missoula conference will give Vasyl a great opportunity to connect with scientists conducting wildland fire research. This opportunity is especially important for both Vasyl and Ukraine as the country reexamines its natural resource policies and practices.*

AFE is very happy to welcome Vasyl to this event and to offer this award to a young scholar in such a way that honors the work of our friend Mike. And we're deeply touched by the generosity of his friends and family who have contributed to this fund. Half of the proceeds from the Art Auction on Wednesday during the awards banquet will be used for future scholarships.

## About Mike

Michael Andrew da Luz was born October 24, 1949 and passed away October 13, 2013, at home surrounded by his family, following a short battle with kidney cancer. Michael was most proud of his family. He was a loving husband to Althea, his wife of 41 years. He was a great dad, role model, and mentor to his son Nicholas, daughter Michelle, and son-in-law Matthew.

He took great joy in being an energetic and playful "Bud" to his granddaughter Quinn. He was admired as a brother, son-in-law, brother-in-law, uncle, cousin, and nephew. Mike was a proud veteran of the U.S. Air Force. He graduated from the University of California at Berkeley School of Forestry and completed graduate studies through the Silviculture Institute at Oregon State University and University of Washington.

He enjoyed a long and fulfilled career as a forester, working with the U.S. Forest Service for more than 30 years throughout California, Oregon, and Colorado. Following his federal retirement in 2005, he worked with ESRI, a geographic mapping software company, for the past 8 years. In retirement he remained actively engaged in his profession, serving on the Board of Directors of the Association for Fire Ecology and participating with other related organizations.

He enjoyed a wide variety of work experiences, but found particular passion and excitement as a wildland firefighter and responding to natural disaster incidents. He relished opportunities to share knowledge about land and applied fire management by mentoring young professionals, serving as a university guest lecturer, hosting field trips, or during casual walks in the woods. He cared greatly about people and touched the lives of many friends and colleagues, who fondly knew him as "Mikey".

He left his mark on many forested landscapes and looked forward to playing an active role in habitat conservation into the future. Mike was an adventurer and enjoyed road trips as much as international travel. He especially loved spending time in the Hawaiian Islands and any opportunity to snorkel in tropical waters around the globe. He enjoyed running, downhill skiing, whittling, playing guitar and ukulele, photography, and sketching his favorite landscapes. Mike lived his life fully and will be remembered by many with his thumb up and a smile on his face. He was deeply loved and is profoundly missed.

Donations to AFE in his name will support scholarships for students to attend conferences and become engaged in the land management and fire ecology profession. Donations can be made on the AFE website.



# General Information

## Banking

There is a credit union located in the lower level of the University Center; their hours are 9:00-5:00 pm daily. Three ATMs/bank machines are also available, two on the lower level by the credit union and one on the second level by the dining room.

## Conference Proceedings

All those who present a poster or oral presentation at the Large Fires Conference have the option of publishing their material in conference proceedings. The proceedings will be published by the Rocky Mountain Research Station and will be made available as a printed copy or online. If anyone wants to submit their presentation as a paper in the conference proceedings, please email Bob Keane (rkeane@fs.fed.us) by June 1, 2014. All manuscripts are due to Keane by July 1, 2014. Visit the conference webpage for more information, including guidelines and template.

## Continuing Education

The program has been approved for Continuing Education from the Society for Range Management - Certified Professional in Rangeland Management and the Society of American Foresters. Pick up information and necessary documents at the conference registration desk.

## Dining

Coffee/Tea will be provided each morning of the conference; coffee/tea and refreshments will also be provided during morning and afternoon networking breaks. Lunch will be provided on Tuesday. All meals and breaks will be located in the Exhibit Hall, University Center (UC) Commons – 2nd level.

The food court on the 2nd level of the UC is open from 11:00-2:00 each day and has a variety of restaurants. The Galloping Griz Food Truck will be located outside by the

outdoor exhibits on Wednesday and Thursday during lunch. There are two restaurants in the UC with extended hours: Pizza Hut (10:00-6:00) and Jus' Chillin (7:30-4:00). There is also a Market on the 1st level of the UC.

The Awards Banquet will take place on Wednesday Evening in the UC Ballroom. If you have not already purchased a ticket, there will be a limited number available at the registration desk until Wednesday at noon or until they sell out.

Information about local restaurants can be found on the “Word on the Street” board in the exhibit hall.

## Exhibitors

The exhibitors will be set up on Monday Evening during the Social Reception, all day Tuesday, until noon on Wednesday and until 3:30 pm on Thursday. The Exhibit Hall is located on the 2nd level of the University Center in the Commons. We encourage you to visit our sponsors and exhibitors each morning and during lunch and breaks. Visit the outdoor exhibits located on the north side of the UC.

## Internet

Free wireless internet is available on The University of Montana campus. The network is grizzlyguest; you will be required to enter your email address.

## Mobile App - Sponsored by Phos-Chek

To download the Large Fires Conference mobile app:

- iPhone and iPad users--search “EventBoard” on the Apple App Store.
- Android users--search “ EventBoard “ on the Google Play Store.
- Our Conference will be listed under conferences.
- Select *Large Wildland Fires Conference* to enter the mobile app.

Thanks! We hope you enjoy the mobile app!

# General Information

## Parking

We have reserved the top level of the parking garage for our conference attendees. Watch for signs and parking attendant as you enter the lot from Campus Drive. When you enter the reserved lot you will be given a ticket for your dashboard and a ticket to take to the registration desk to pay for your parking. Parking is \$3/day.

## Posters

Poster will be displayed on panels in the University Center Ballroom. The formal poster presentations will be on Tuesday Evening from 5:30-7:30 pm.

Please see the detailed program for the list of posters. All posters will be left up the entire three days, and will be staffed by the authors during the formal presentation on Tuesday.

Poster presenters may place their posters anytime between 1:30 -5:00 on Tuesday. All posters must be removed before 5:00 pm on Thursday, May 22nd. We will provide you with the means to attach your poster (pushpin, Velcro, clips).

## Presenters

Please note that all presenters will be required to use the computers we are supplying; this will ensure smooth transitions between presentations.

We have provided an on-line submission system to upload your presentations. All oral presenters are required to turn in their presentations the day prior to their session. This is very important so we can load your presentations and make any adjustments that may be needed before your presentation. Please do your very best to help us out with this! Please do not upload your presentation until it is finalized, otherwise you

will need to withdraw and resubmit.

You can either use the online system or you can upload your presentation at the speaker table in the registration area onsite.

Online Submission System: <https://iawf.submittable.com/submit/29008>

A Speaker Ready Room is available for all conference presenters to preview their material prior to presentation. The Speaker Ready Room is located on the 2nd level of the UC 222 (in the tech lounge).

## Transportation

Shuttle buses will be provided each day to and from the University from the Conference Hotels. Look for the schedule at the hotel registration desk and the conference registration desk.

## Questions and Information

If you have any questions or need any assistance, please visit the registration desk which will be located in the foyer area outside of the ballroom. Missoula area information has been provided by Destination Montana; please visit the 'Word on the Street' in the Exhibit Hall for more information.

# Featured Presenters



## **Between a Rock and a Hard Place, a Growing Wildfire Threat and the Urgency to Adapt Protection Strategies** **Jerry T. Williams, retired National Director of Fire and Aviation Management, USDA Forest Service, Montana, USA**

Over the past several years, there have been a growing number of large catastrophic wildfires in this country. Despite ever-growing protection investments, at least 7 of the 11 Western states have suffered their worst wildfires on record in the last two decades; some more than once. A significant portion of these wildfires have occurred in forests that have undergone dramatic changes in stand structure, species composition and fuel accumulation over a one-hundred year period. These changes, in the presence of drought, underlie the severity of many of today's highest consequence wildfires in ways that are unprecedented over such broad landscapes.

Wildfire protection strategies in the Western United States tend to favor emergency response and suppression over fuel reduction and proactive land management at meaningful scales. However, many of the area's worst wildfires typically exceed all efforts at control until firefighters get a break in fuels or a moderation in weather. Although suppression works at lower fire dangers, it often falls short at the highest level of threat, when drought, extreme burning conditions and other competing fire emergencies overwhelm firefighting efforts.

As suppression budgets continue to climb and home losses, firefighter fatalities, natural resource damages and costs also mount, we find ourselves wondering if we are operating beyond the point of diminishing returns and crossing an important threshold, in terms of "acceptable loss." Unless wildfire protection strategies adapt as droughts deepen, we may find ourselves inadvertently imperiling the very values that we are charged to sustain.

Against this backdrop, this paper calls for a comprehensive re-evaluation of wildfire protection strategies, including the land-use policies and the regulatory framework that influences strategic options. The paper encourages a formal, evidence- and science-based trade-off analysis of all protection options against an established protection objective. The analysis should be the basis for opening debate, establishing context, day-lighting key issues, "telling the fire story," identifying obstacles, anticipating long-term un-intended consequences and building public, political and legislative will to act.

**BIO:** Jerry Williams began his career as a firefighter with the United States Forest Service in 1969. In 1977, he received his permanent appointment while in the smokejumper program. He completed his master's degree in fire sciences at the University of Washington in 1979. Mr. Williams has extensive fireline and fire-use experience and numerous assignments in command and coordination roles. His work experience includes fire management positions at the district, forest, regional, and Washington Office levels of the organization. His career has spanned the organization's shift from fire control to fire management.

In 2000, Williams co-led the agency's first strategic-level plan to accelerate restoration work in the West's fire-adapted ecosystems. In 2003, he co-led an interagency fire policy effort that expanded the post-fire review process to address predisposing land-use factors. Williams participated in the agency's first National Fire Plan (2002) and the Healthy Forest Restoration Act (2004).

In 2005, he retired as the Forest Service's national director of fire and aviation management. Since then, he has continued to write, advise, and speak on wildland fire topics in the United States and abroad. He has presented at the Kennedy School of Government, the University of Alberta, the Food and Agriculture Organization of the United Nations, the University of Montana's Center for the Rocky Mountain West, Oregon State University, and Australia's Bushfire Cooperative Research Centre.

In 2012, Williams published "*Exploring the Onset of High-Impact Mega-Fires Through a Forest Land Management Prism*" in the journal, *Forest Ecology and Management*.



# Featured Presenters



## **Large Fires above the Arctic Circle: Inuvik Region, Northwest Territories, Canada**

**Rick Lanoville, retired Manager, Forest Fire Management Services, Department of Renewable Resources, Northern Territories, Canada**

Large fire occurrence in the Inuvik Region has been known from historic antidotal accounts and from the mapping of fires starting in 1950. Most of the large fires occur during drier years in the forested area and infrequently on the barrens above the treeline. Lightning is the primary source of ignition starting in mid-June and ending in mid-July. Fire spread stops by mid-August coincidental with season-ending rain. The landscape varies from near-level to gently undulating within an elevation range of 50 – 250 m above sea level. Drainage is generally poor. Annual precipitation is 248 mm (9.8 in) where 50% comes as snow over the eight month winter. The average fire season starts June 01 after snow melt and ends September 30 when the duff layers freeze and

snow starts accumulating. On average, over-winter precipitation is barely sufficient to recharge the deep duff layers with moisture resulting in a residual dryness carried over from the previous fall. During the fire season, June is the driest month (22.1 mm or 0.9 in) and August is the wettest (39.9 mm or 1.6 in). The deep duff layers undergo seasonal drying where the smouldering threshold is reached coincidental with lightning ignitions. In the forested area, tree growth is stunted by permafrost. The dominant forest cover is black spruce, less than 15 m in height, crowns extending close to the ground, and spaced apart, a structure that offers little shelter from the open wind and significant exposure to solar radiation to the tree crowns and the forest floor. The primary carrier of fire is fine fuels: lichens and feather mosses (surface) and bark flakes and dead fine twigs (stems and crowns). These fuels are sensitive to changes in relative humidity. During the peak of the fire season, the average relative humidity is about 60% and wind speed is in the range of 12 – 14 km/h – typical conditions for surface fire spread during dry periods. Three fire case studies are presented. The first, Fire EV034, occurred during the second week of August 1968 following a virtually rain-free fire season and burned 26,937 ha (66,563 ac), mostly during the first two burning periods. The second, Fire EV006, started on June 14 1999 by lightning and spread to 164,000 ha (405,250 ac) by August 12 under a wide range of burning conditions. The third is a multiple fire event that started on June 29 1986 under blowup conditions and burned a total of 261,520 ha (646,227 ac) by August 13. Each of these case studies illustrates how wind, relative humidity, seasonal drought, and atmospheric instability influenced fire spread. In conclusion, the combination of below average relative humidity and above average wind speed accounted for most of the fire spread. Seasonal drought is important for fire ignition and survival during and following rain events. The Haines Index gave mixed results as an indicator for large fire spread potential.

**BIO:** Rick Lanoville was born and raised in Creston, British Columbia. After graduation from high school, he worked seasonally for the British Columbia Forest Service in fire management while attending university where he earned a Bachelor of Science Degree in Forestry from the University of British Columbia in 1976. Upon graduation, he accepted a job offer for the position of District Protection Officer with the federal government located in Fort Simpson NWT. In the winter of 1982, he was appointed the position – Fire Behaviour Specialist (the first such appointment in Canada) – located in Fort Smith. In 1989, the fire program was transferred to the Territorial Government with the option of transfer to other federal government jobs; Lanoville decided to stay with the fire program. In 1994, he was appointed to the position of Manager, Forest Fire Management Services and supervised fire meteorology, GIS specialists, and continued as a Fire Behaviour Specialist as and when required. Lanoville retired in the spring of 2005 after nearly 30 years during which time he managed three experimental burn projects: the Porter Lake Project (1982), the International Crown Fire Modelling Experiment (1996 – 2000), and Innovations Canada burn projects (2001 – 2005); authored and co-authored a number of case studies; helped develop and deliver two national fire behaviour courses at the advanced and specialist levels; and assisted with fire operations in Saskatchewan (2002) and British Columbia (1998 and 2003). Lanoville received the Premier’s Award for Excellence presented to him by the Honourable Joseph Handley, Premier, on June 17 2005 at the Great Hall of the Legislative Assembly, Yellowknife. Currently, he is a consultant and qualified expert witness. Lanoville is married and has two adult children.

# Featured Presenters



## Fire Management and the Australian Landscape

**Alan Goodwin, Chief Fire Officer, Department of Environment and Primary Industries, Victoria, Australia**

Bushfires in Australia are frequent events in the summer months in the south and the dry season of the north, mostly caused by lightning strikes. Every year fire impacts extensive areas, sometimes with catastrophic consequences. On one hand they can cause loss of life, property damage and impact critical infrastructure. On the other hand they can allow native flora to evolve, adapt and supply a means of reproduction. Thus fire plays an essential role in the ecology of the country. For thousands of years indigenous Australians have used fire to live, for cooking, hunting, for travelling, for warmth.

Fire has resulted in severe loss of life over 150 years the most recently being Black Saturday, 2009 when 173 people lost their lives and over 400,00 ha were blackened in Victoria. Some of the most intense and extensive bushfires commonly occur during droughts and heat waves. Our successes in suppressing bushfires over many decades has contributed to changing the natural landscape and in some instances exacerbated the severity of fire events.

The interaction with communities and individuals in the more populated areas of Australia is providing an ever demanding challenge to land managers, emergency responders and the role of fire in the landscape. Social and economic demands are often in conflict with fire management practices as the frequency of fire, planned and unplanned, can extend too many months of the year.

The responsibilities for fire reside with the states and territories of Australia and there is no national coordination of fire management. This presents unique challenges and also opportunities as individual jurisdictions across Australia strive to effectively manage bushfire.

Australia will continue to burn and the population in high risk areas will continue to grow. Community expectations of Governments, land managers and emergency responders needs to be reflective of a shared responsibility for fire management and protection. Legislation, policy, strategies, tactics and operations for fire management needs to be innovative and the communication be for now and for the future.

Fire is an integral part of who we are and where we have come from and it will play a critical role in where we go as a leader in fire management. Learning from fire, working with fire and accepting it is an important part of our culture — as living in Australia is living with fire.

**BIO:** Alan Goodwin is the Chief Fire Officer, a role he has held since October 2012. Previously, Goodwin was the Regional Director for the North West region of the former Department of Sustainability and Environment. Goodwin has 20 years' experience working in the forest and fire industry, including roles with Forestry Tasmania. His previous roles for the Victorian Government also include Assistant Chief Fire Officer and Director Planned burning. He has been involved in several wildfire response deployments from Australia to the United States. In 2008/2009 Goodwin and his family spent 12 months living in the United States spending time at the *National Interagency Fire Center* in Boise, Idaho and the *Office of Wildland Fire* at the US Department of Interior, Washington DC.

Goodwin is a board director for the International Association of Wildland Fire, a fellow of the Australian Rural Leadership Foundation and received the Australia Fire Service Medal in 2012.

# Featured Presenters



**Tom Tidwell, *Chief, US Forest Service, Washington, DC, USA***

BIO: Tom Tidwell has spent 33 years in the Forest Service. He has served in a variety of positions at all levels of the agency, including as district ranger, forest supervisor, and legislative affairs specialist in the Washington Office. As deputy regional forester for the Pacific Southwest Region, Tidwell facilitated collaborative approaches to wildland fire management, roadless area management, and other issues. As regional forester for the Northern Region, he strongly supported community-based collaboration in the region, finding solutions based on mutual goals and thereby reducing the number of appeals and lawsuits.

In 2009, after being named Chief, Tidwell set about implementing the Secretary's vision for America's forests. Under his leadership, the Forest Service is restoring healthy, resilient forest and grassland ecosystems—ecosystems that can sustain all the benefits that Americans get from their wildlands, including plentiful supplies of clean water, abundant habitat for wildlife and fish, renewable supplies of wood and energy, and more.

Such benefits are at risk from the effects of climate change, and Tidwell has led the way in forging a national response. Under Tidwell's leadership, the Forest Service has charted a national roadmap for addressing climate change through adaptation and mitigation. The Forest Service is taking steps to help ecosystems adapt to the effects of a changing climate while also taking action to mitigate climate change, partly by reducing greenhouse gas emissions.

Tidwell has facilitated an all-lands approach to addressing the challenges facing America's forests and grasslands, including the overarching challenge of climate change. Such challenges cross borders and boundaries; no single entity can meet them alone. Under Tidwell's leadership, the Forest Service is working with states, Tribes, private landowners, and other partners for landscape-scale conservation—to restore ecosystems on a landscape scale.

## **PANEL SESSION: Socio-Economic, Political and Ecological Impacts of Large Wildland Fires**

Session Facilitator: Chuck Bushey, President of Montana Prescribed Fire Services, Inc. Panelists: Dan Bailey, International Code Council™, Washington, DC, USA; Penny Morgan, Wildland Fire Program Professor, University of Idaho, College of Natural Resources, Department of Forest, Rangeland, and Fire Sciences, and Matthew Thompson, Research Forester, USFS Rocky Mountain Research Station

Balancing the need to protect people and property from fire with ecological realities is challenging. Not all large fires are “bad” per se, for some fires can have desirable ecological effects outcomes and can result in valued ecosystem services. Not all large fires are extreme, and the fires we judge extreme due to social impacts may not be extreme in their biophysical impacts. We need some measures of fire beyond size. Until we accept that we live in a fire environment that is rapidly changing, we will be more reactive than proactive. Our current fire policy is flexible enough to support innovative, safe and effective fire management that helps us further our long-term vegetation management goals and in turn fosters resilience among people and the land.



# Featured Presenters



## **MODERATOR:**

**Chuck Bushey**, *President of Montana Prescribed Fire Services, Inc. & IAWF Past President*

Mr. Bushey is the President of Montana Prescribed Fire Services, Inc. performing duties as fire ecologist, prescribed fire specialist, fire behavior analyst, and fuel mitigation specialist. Previously Chuck worked at the USDA Forest Service, Missoula Fire Sciences Laboratory and later Systems for Environmental Management, Inc. on fire research topics dealing with post-fire effects, fire use, wilderness fires, fire behavior, and smoke management. A few of his fire qualifications have included Fire Behavior Analyst, Wildland Fire Arson Investigator, and Strike Team Leader (Engines). Chuck has an MSc from Southern Illinois University - Carbondale, and has authored over 50 publications and reports. Charles Bushey was the President of the IAWF from 2007-2011.

## **PANELISTS:**



**Dan Bailey**, *International Code Council™, Washington, DC, USA & IAWF Past President*

Dan Bailey is Executive Director for National and International programs dealing with Wildland Fire, Natural Resource, Environmental and Natural Hazard Programs for the *International Code Council™*. Dan was a staff assistant to Senator Wayne Morse (Oregon) before moving to the *USDA Forest Service* where he was involved with land management, forestry and wildland fire programs in Oregon, Idaho, Montana, Arizona and Washington, DC. He served as a National Incident Commander leading efforts on more than 200 of the largest wildfires, hurricanes and other disasters. Prior to retiring from the Forest Service, he served as the National Program Manager for Wildland Urban Interface (WUI) Fire and Firewise programs. Dan was also the founder of the *National Firewise Communities Workshop* series. He served on the *NFPA* Board of Directors, and founded the *NFPA* Wildland Fire Management Section, serving as chair for 8 years. He has served on the Boards of the *National Wildfire Foundation*, the *United Nations*, *International Wildland Fire Alliance*, and the *World Forestry Alliance*. Dan Bailey was the President of the IAWF from 2012-2013.



**Penny Morgan**, *Wildland Fire Program Professor, University of Idaho,*

*College of Natural Resources, Department of Forest, Rangeland, and Fire Sciences*

Penny Morgan is a professor in the College of Natural Resources at the University of Idaho. She directs the University's Wildland Fire Program. The fire program has been educating and working with leaders in fire education, research and outreach for more than 30 years. Penny was born, raised and educated in the West. She earned her bachelor of science and master of science degrees from Utah State University and holds a doctorate from the University of Idaho. Her current research focuses on some of the broad challenges facing people in the West: How will the changing climate influence fire occurrence and severity? Where, when and why do fires burn severely? How do bark beetles affect crown fire hazard in forests and burn severity? What drives landscape dynamics, and how can we best manage landscape change? How does vegetation recover following large fires, and how does post-fire management affect weeds and other vegetation regrowth? Penny is committed to helping people understand and use science in natural resources management in Idaho, the western U.S., and beyond.



**Matthew Thompson**, *Research Forester, USFS Rocky Mountain Research Station*

Since August 2009, Mr. Thompson has been a Research Forester in Human Dimensions Program at the Rocky Mountain Research Station in Missoula, Montana. He works in Fire Economics group of National Fire Decision Support Center, intended to link the fire science and fire management communities. His focus is on nexus of economics, risk analysis, and decision sciences to support wildland fire and natural resource management. He is the recipient of Forest Service's 2013 Research & Development Deputy Chief's Early Career Scientist Award. Matt is happily married to his high school sweetheart and has one dog and no kids. His hobbies include hiking, camping, snowboarding, basketball, crossword puzzles, and playing drums in his basement "jam cave." He enjoys travel, including recent trips include Ireland, Nicaragua, and Colombia; Canadian Rockies are destination for summer 2014. Education: BS Systems Engineering, University of Virginia; MS Industrial Engineering & Operations Research, University of California, Berkeley; MS Forest Management, Oregon State University; PhD Forest Engineering, Oregon State University

# Featured Presenters



## **BANQUET SPEAKER**

**Michael Kodas**, *photojournalist, author and videographer and Associate Director of the Center for Environmental Journalism, University of Colorado, Journalism and Mass Communication Department*

Michael Kodas is the Associate Director of the Center for Environmental Journalism in the University of Colorado's Journalism and Mass Communication department, as well as a photojournalist, author and videographer whose work has appeared in the New York Times, The Los Angeles Times, The Chicago Tribune, The Boston Globe, The Denver Post, National Public Radio, The PBS Newshour, Newsweek, the CBS Evening News, Outside.com, GEO, Der Spiegel, OnEarth, National Geographic New Watch, Mother Jones, *Suddeutsche Zeitung*, and many other publications. In 1999 he was part of the team at The Hartford Courant awarded The Pulitzer Prize for breaking news coverage. His book, *High Crimes: The Fate of Everest in an Age of Greed*, was named Best Non-Fiction in USA Book News' National Best Books Awards of 2008, and was a question on the game show Jeopardy! In 2003 his environmental photography was honored with solo exhibition at Yale University. From 1987 until 2008 he was a staff photographer, picture editor and writer at The Hartford (Conn.) Courant. For the research into his environmental projects he has circumnavigated Long Island Sound in a sea kayak, worked as a seasonal U.S. Forest Service firefighter in Colorado and Wyoming, hiked the Appalachian Trail, trekked through the arc of deforestation in Brazil, sailed on the *Amistad* and climbed mountains in Nepal and Tibet. He is a graduate of the University of Missouri School of Journalism, held a Davidoff Scholarship at the Wesleyan Writers Workshop, and, in 2009, was awarded a Ted Scripps Fellowship in Environmental Journalism at the University of Colorado. He is currently working on a book studying the global increase in wildfire for Houghton Mifflin Harcourt.



## **FILM FESTIVAL HOST**

**Dr. Stephen Pyne**, *Regents professor in the School of Life Sciences, Arizona State University in Tempe*

Dr. Steve Pyne is a Regents professor in the School of Life Sciences, Arizona State University in Tempe (<https://sols.asu.edu/people/stephen-j-pyne>) and the author of more than a score of books, most of them on the history of humanity and fire. In a previous life he was a member of the North Rim Longshots for 15 seasons at Grand Canyon National Park. Dr. Pyne is currently working on a two-book endeavor that will survey the past 50 years of American fire history. *Between Two Fires* will provide the play-by-play narrative, and *To the Last Smoke*, a suite of regional studies, the color commentary.

# Social Events

## MONDAY, MAY 19

### Art Show

Visit the Art Show in the UC Gallery on the 2<sup>nd</sup> level of the University Center. Art will be on display Monday Evening, all day on Tuesday and until noon on Wednesday. At the Banquet you will have an opportunity to bid on the art.

### Social Reception with Exhibitors/Sponsors and Student Mixer

University Center Commons  
6:00-8:00 pm

All conference attendees welcome, hors de oeuvres and no host bar.

### After hours no-host social at the Top Hat Lounge

Beginning at 8:30 pm

The Top Hat offers a full bar and a delectable tapas menu with flatbreads and salads that can easily be considered a full dinner. Look for Joe Scott with the “Large Wildland Fires Conference” sign. The Top Hat is at 134 West Front Street, and is open until 2 am,  
<http://tophatlounge.com/>

## TUESDAY, MAY 20

### After hours no-host social at Brooks & Browns Bar & Grill in the Holiday Inn Parkside

Beginning at 8:00 pm

Food is served until 10 pm, and the bar will remain open until around midnight. Brooks & Browns is located at 200 S. Pattee St. Look for Adam Watts and Gus Smith with the “Large Wildland Fires Conference” sign. Bring your conference name tag to order from a special menu.

## WEDNESDAY, MAY 21

### Awards Banquet *(ticket required)*

UC Ballroom 5:00-9:30 pm

5:00 Silent Auction and Social Reception

6:30 Dinner Served

7:00 Awards, Banquet Speaker and live music

## THURSDAY, MAY 22

### University of Idaho Alumni and Friends Mixer

Florence Building Lobby/Red Bird Wine Bar, 111 N. Higgins Ave

5:30-6:30 pm

Hosted by: University of Idaho, Wildland Fire Program, Department of Forest, Rangeland, and Fire Sciences

### Film Festival: Monster Flicks: Big Fires on the Big Screen ... An Evening with Dr. Stephen J. Pyne

Wilma Theater, Downtown Missoula

131 S. Higgins

Doors at 6:30, Films at 7:00

All conference attendee will receive a complimentary ticket to this event. Tickets for the public will be sold at the door.

## FRIDAY, MAY 23

### After hours no-host social at the Kettle House Brewery South Side.

Beginning at 6:00 pm

The Kettle House brews an array of specialty beers ranging from lagers to brown ales to India Pale Ales in Missoula. Masala Indian food cart will be parked outside for those who would like dinner. First 50 people to show their conference nametag receive a complimentary Kettle House pint glass. Last call is at 9:15 pm, and the bar closes at 10 pm. The Kettle House is located at 602 Myrtle Street.



# Attached Meetings

## MONDAY, MAY 19

### Coalition of Prescribed Fire Councils Governing Board Meeting

Meeting Organizer: Dr. J. Morgan Varner  
University Center Room 224  
8:00-5:00

### Quadrennial Fire Review (QFR)

Facilitated session by invitation.  
Meeting Organizer: Brian McManus  
University Center Room 215  
8:00-5:00

### AFE Board Meeting

Meeting Organizer: Adam Watts  
Gallagher Boardroom  
12:30-5:00

### FireSafe Montana

Meeting Organizer: Jennifer LaManna  
James E. Todd Building Room 204  
8:00-3:00 – by invitation  
3:00-5:00 Open Forum- FireSafe Montana's Enough is Enough Summit: Fuel Mitigation is the first step to success; whether the question is how do we improve fire fighter and community safety or how do we become more effective at combating large wildfires. Homeowners are getting the message, but still not acting. Join FireSafe Montana and our partners to evaluate our current outreach strategies and discuss Montana's process to create a unified message that will lead homeowners to take action.

### SAFE Meeting

Meeting Organizer: Kris Lee  
University Center Room 332  
5:00-6:30

### Moderator Meeting

Meeting Organizer: Pam Sikkink  
UC Alumni Board Room 329  
7:00 pm

## TUESDAY, MAY 20

### QFR

Individual interviews and small group interview sessions – by invitation  
Meeting Organizer: Brian McManus  
University Center Room 215  
8:00-5:00

## WEDNESDAY, MAY 21

### Research Presentation to Fire Behavior Subcommittee

Meeting Organizer: Tamara Wall  
UC 326/327  
1:30-3:30

### Coalition of Prescribed Fire Councils

Meeting Organizer: Dr. J. Morgan Varner  
UC 330/331  
1:00-5:00

### LANDFIRE Business Meeting

Meeting Organizer: Donald Long  
UC 332/333  
1:00-5:00

### QFR

Facilitated session by invitation.  
Meeting Organizer: Brian McManus  
University Center Room 215  
1:00-5:00

## THURSDAY, MAY 22

### QFR

Individual interviews and small group interview sessions – by invitation  
Meeting Organizer: Brian McManus  
University Center Room 215  
8:00-5:00

## FRIDAY, MAY 23

### IAWF Board Meeting

Meeting Organizer: Mikel Robinson  
Yellowstone/Glacier Room,  
Holiday Inn Parkside  
8:00-5:00

## SATURDAY, MAY 24

AFE Board Meeting Post Conference Brief  
Montana Board Room, Holiday Inn Parkside  
8:30-10:00

# Program Schedule

Presentation abstracts may be found on the mobile app and conference webpage

<b>MONDAY, MAY 19, 2014</b>		
7:00 -1:30	Registration Desk Open ( <i>University Center Foyer - 3rd Floor</i> )	
<b>FULL DAY WORKSHOPS</b>		
8:00-5:00	James Todd 203	RT-130 Annual Fire Line Safety Refresher, <i>Instructor: Chris Johnson</i>
8:00-5:00	UC 330/331	Introduction to the Interagency Fuels Treatment Decision Support System (IFTDSS), <i>Instructor: Stacy Drury</i>
<b>MORNING WORKSHOPS</b>		
8:00-12:00	Anderson 316	Introduction to the BehavePlus Fire Modeling System, <i>Instructors: FaithAnn Heinsch and LaWen Hollingsworth</i>
8:00-12:00	UC Theater	Overview and Demonstration of the FFI, Ecological Monitoring Application, <i>Instructor: Duncan Lutes</i>
8:00-12:00	UC 332	Introduction to the Creating Hybrid Structure from LANDFIRE/Lidar Combinations (CHSLIC) Tool, <i>Instructor: Kurtis Nelson</i>
8:00-12:00	UC 326/327	Advanced Fire Behavior Analysis, Through Lessons Learned, <i>Instructors: Dan Mindar and Erin Noonan-Wright</i>
8:00-12:00	Anderson 005	Microscale wind simulations using WindNinja, <i>Instructor: Jason Forthofer</i>
12:00-1:00	Lunch (on your own)	
<b>AFTERNOON WORKSHOPS</b>		
1:00-3:00	Anderson 005	Practical Tools for Assessing Potential Crown Fire Behavior & Canopy Fuel Characteristics, <i>Instructors: Martin Alexander &amp; Miguel Cruz</i>
1:00-3:00	UC 332	Journalism Skills for Scientists, <i>Instructor: Mark Vosburgh</i>
1:00-5:00	Anderson 004	LiDAR Data Processing for Fuel Applications, <i>Instructors: Nancy Glenn and Andy Hudak</i>
1:00-5:00	Anderson 316	Using the BehavePlus fire modeling system in Prescribed Fire Planning, <i>Instructors: Faith Ann Heinsch and LaWen Hollingsworth</i>
1:00-5:00	UC Theater	Recently Updated Missoula Fire Sciences Lab Educational Programs and Applications: FireWorks, First Order Fire Effects Model and FuelCalc, <i>Instructor: Duncan Lutes</i>
1:00-5:00	UC 326/327	Climate Downscaling for Fire Management, <i>Instructors: Yongqiang Liu, Scott Goodrick and John Stanturf</i>
1:00-5:00	UC 327	Crafting Solutions for Management of Large Wildland Fires and Prescribed Fire across Tribal and Nontribal Jurisdictions, <i>Instructors: Vita Wright and Frank Lake</i>
1:00-5:00	UC 333	Defining Fuel Treatment Success: Workflows, Metrics and Evaluation, <i>Instructors: Russ Parsons, Erin Noonan-Wright, Greg Cohn, and Katherine Hetts</i>
2:00-6:00 PM	Exhibitors Set Up ( <i>University Center Commons - 2nd level</i> )	
5:30-8:00 PM	Registration Desk Open ( <i>University Center Foyer - 3rd Floor</i> )	
6:00-8:00 PM	No Host Social with Exhibitors and Student Mixer ( <i>University Center Commons - 2nd level</i> )	
7:00 PM	Moderator Meeting ( <i>University Center Alumni Board Room 329</i> )	
8:30 PM	After Hours No-host Gathering ( <i>Top Hat Lounge - 134 West Front Street, downtown Missoula</i> )	

## TUESDAY, MAY 20, 2014

7:00	Registration Opens <i>(University Center Foyer - 3rd level)</i>						
7:00-8:00	<b>Morning coffee with Exhibitors</b> <i>(University Center Commons - 2nd level)</i>						
8:00-8:10	<b>OPENING REMARKS AND WELCOME,</b> <i>(University Center Ballroom - 3rd level)</i> <b>Robert Keane</b> , AFE Board of Directors, Conference/Program Chair and <b>Thomas Zimmerman</b> , IAWF President and Chairman of the Board						
8:10-8:50	<b>PLENARY SESSION</b> <b>Between a Rock and a Hard Place, a Growing Wildfire Threat and the Urgency to Adapt Protection Strategies</b> <b>Jerry Williams</b> , retired National Director of Fire and Aviation Management, USDA Forest Service, Montana, USA						
8:50-9:30	<b>PLENARY SESSION</b> <b>Large Fires above the Arctic Circle: Inuvik Region Northwest Territories Canada</b> <b>Rick Lanoville</b> , retired Manager, Forest Fire Management Services, Department of Renewable Resources, Northwest Territories, Canada						
9:30-10:00	<b>BREAK with Exhibitors</b> <i>(University Center Commons - 2nd level)</i>						
<b>TUESDAY CONCURRENT SESSIONS</b>							
	<b>UC Theater</b>	<b>UC Ballroom</b>	<b>UC 326/327</b>	<b>UC 330/331</b>	<b>UC 332/333</b>	<b>James Todd 203</b>	<b>James Todd 204</b>
	<b>SPECIAL SESSION</b> Fuel Treatments in the 21st Century - Do They Matter? <i>Moderator: Laurie Kurth &amp; Henry Bastian</i>	<b>LARGE FIRES</b> <i>Moderator: Adam Watts</i>	<b>SPECIAL SESSION</b> Multi-scale, Global Perspectives on the Causes and Consequences of Changing Wildland Fire Regimes <i>Moderator: Gabriel Yospin</i>	<b>FIRE ECOLOGY</b> <i>Moderator: Terrie Jain</i>	<b>FUELS MANAGEMENT</b> <i>Moderator: Chris Dicus</i>	<b>SPECIAL SESSION</b> Social-ecological study of western fires: Developing an integrated framework for research in times of change <i>Moderator: Winslow Hansen</i>	<b>SPECIAL SESSION</b> Southern Great Plains Wildfire Outbreaks <i>Moderator: Todd Lindley</i>
10:00-10:20	<b>SS01.1 Laurie Kurth/Henry Bastian:</b> Welcome and Outline for the Day	<b>1. E. Natasha Stavros:</b> Regional likelihood of very large wildfires over the 21st century across the western United States	<b>SS03.1 David McWethy:</b> Reconstructing Human Use of Fire in the Blue Mountains of Central Otago, New Zealand from Human Arrival c. 720 Years Ago to Present: a Coupled Lake Sediment-Dendrochronological Approach	<b>7. Rachel Loehman:</b> Mixed-Severity Fire in Lodgepole-Dominated Forests: Are Historical Regimes Sustainable on Oregon's Pumice Plateau, USA?	<b>13. David W. Peterson:</b> Post-fire Logging Effects on Woody Fuels and Potential Fire Behavior up to Four Decades After Wildfire	<b>SS04.1 Winslow Hansen:</b> Social-ecological Study of Western Fires: Developing an Integrated Framework for Research in Times of Change: Introduction and Objectives	<b>SS05.1 Todd Lindley:</b> An Introduction to Southern Great Plains Wildfire Outbreaks: Historic and Synoptic Perspectives



10:20-10:40	<b>SS01.2 Elizabeth Reinhardt:</b> Wildland Fuels Management: Expectations and Aspirations	<b>2. Zhiqiang Yang:</b> Monitoring large fire susceptibility in Washington, Oregon, and California using MODIS	<b>SS03.2 Alan J. Tepley:</b> Landscape Legacies of Human Fire Use in the Blue Mountains of Central Otago, New Zealand, from the Late Maori Period (ca. 1600 AD) through European Settlement (ca. 1850 AD) to the Present.	<b>8. Benjamin Gannon:</b> Structure, Process, and Resilience in Colorado Front Range Montane Forests	<b>14. Mike Battaglia:</b> Post-wildfire Management in Mixed-severity Wildfire Scars of Black Hills Ponderosa Pine Forests	<b>SS04.2 Winslow Hansen:</b> Complex Interactions Between People and Natural Disturbance: Lessons Learned and Questions Raised from a Case Study of Beetle Outbreak, Wildfire, and Property Values in South-Central Alaska	<b>SS05.2 Kurt Van Speybroeck:</b> Climate Variability, Drought and Texas Fire Weather Impacts
10:40-11:00	<b>SS01.3 Tony Dixon:</b> Fuel Treatments in the 21st Century - Do They Matter: from the Eyes of the Administration	<b>3. Domingos Viegas:</b> Analysis of Three Large Fires that Occurred in Portugal in 2012 and 2013	<b>SS03.3 Kimberly Taylor:</b> Impacts of Pinus contorta Invasion on Fuel, Fire Effects, and Plant Communities in Patagonia and New Zealand	<b>9. Natasha Robinson:</b> Are Gullies Refuges For Birds? The Value Of Topographical Heterogeneity To Avifauna Within A Fire-Prone Landscape	<b>15. Veronica Ibarnegaray:</b> Forest Fires, Climate Change and Community Based Fire Management in Bolivia	<b>SS04.3 Helen Naughton:</b> Frontiers in Fire Economics	<b>SS05.3 Brad Smith:</b> Wildland Fire in Grass-dominant Fuels during Southern Great Plains Wildfire Outbreaks and Efforts to Mitigate Adverse Societal Impacts
11:00-11:20	<b>SS01.4 Sandy Burnett/Henry Bastian:</b> National Cohesive Wildland Fire Management Strategy	<b>4. Jason Sharples:</b> Exploring the drivers of extreme wildfire development	<b>SS03.4 Jesse Morris:</b> Late Holocene Fire Histories from the Subalpine Interior of Tasmania, Australia	<b>10. Kevin Krasnow:</b> Disturbance and maintenance of aspen ecosystems	<b>16. Morris Johnson:</b> Vegetation structure of fuel treatments alters fire severity in the wildland-urban interface	<b>SS04.4 Cara Nelson:</b> Restoration of Fire-Adapted Forests: Lessons Learned from Implementation of the National Fire Plan in the Western United States	<b>SS05.4 Chris Angerer:</b> Wildfire Outbreaks - Enhanced Fire Department Response
11:20-11:40	<b>SS01.5 Tom Harbour:</b> Agency Administrator's Perspective - Fuel Treatment in the 21st Century	<b>5. Nicholas Gellie:</b> Historical fire climatology and large fires in Victoria	<b>SS03.5 Laurie Stahle:</b> A 12,000-Year History of Fire from Cradle Mountain National Park, Tasmania, Australia	<b>11. Paula Fornwalt:</b> Ten Years Of Understorey Vegetation Assembly Following Colorado's Largest Mega-fire	<b>17. Jesse Kreye:</b> Fire behavior in masticated fuels: A review	<b>SS04.5 Michael Hand:</b> Socio-Economic Vulnerability to Wildfire Hazards in the Face of Climate Change: Comparisons from the Southwest and Northwest United States	<b>SS05.5 Gregory Murdoch:</b> Mesoscale Meteorology of Southern Great Plains Wildfire Outbreaks: the Thermal Ridge
11:40-12:00	<b>SS01.6 James Douglas:</b> Fuel Treatments in the 21st Century - Do They Matter: Agency Administrator's Perspective	<b>6. Charlotte Ham:</b> Using the Evaporative Demand Drought Index and the Palmer Drought Severity Index to Forecast the Number of Large Wildland Fires on Federal Lands	<b>SS03.6 Andres Holz:</b> Effect of high severity fire drove the population collapse of the subalpine Tasmanian endemic conifer <i>Athrotaxis cupressoides</i>	<b>12. Morgan Varner:</b> Restoring oak woodlands in fire-excluded landscapes: Lessons from large wildfires in northern California	<b>18. Chris Dicus:</b> How Fuel Treatment Types, Locations, and Amounts Impact Landscape-Scale Fire Behavior and Carbon Dynamics	<b>Panel Discussion:</b> Social-Ecological Conceptual Framework Construction	<b>SS05.6 JD Carlson:</b> Weather and Soil Moisture Impacts on Large Oklahoma Wildfires from 2000 to 2012
12:00-1:00	<b>Lunch (University Center Commons - 2nd level)</b> <i>Pick up your lunch in the UC Commons on the 2nd level then join us for our Membership Meeting (All Welcome)</i> <b>12:15-12:30 Association for Fire Ecology (AFE) Membership Meeting</b> <b>12:30-12:45 International Association of Wildland Fire (IAWF) Membership Meeting</b>						

**TUESDAY CONCURRENT SESSIONS**

	<b>UC Theater</b>	<b>UC 330/331</b>	<b>UC 326/327</b>	<b>UC 332/333</b>	<b>James Todd 203</b>	<b>James Todd 204</b>	<b>UC Meeting Rm Foyer</b>
	<b>SPECIAL SESSION</b> Fuel Treatments in the 21st Century - Do They Matter? <i>Moderator: Laurie Kurth &amp; Henry Bastian</i>	<b>LARGE FIRES</b> <i>Moderator: Chuck McHugh</i>	<b>SPECIAL SESSION</b> Multi-scale Global Perspectives on the Causes & Consequences of Changing Wildland Fire Regimes <i>Moderator: Gabriel Yospin</i>	<b>FIRE ECOLOGY</b> <i>Moderator: Morris Johnson</i>	<b>SPECIAL SESSION</b> Social-ecological Study of Western Wildfires: Developing an Integrated Framework for Research in Times of Change <i>Moderator: Brian Harvey</i>	<b>SPECIAL SESSION</b> Landscape Level Fire Use to Restore Ecosystems in Canada: Applications and Challenges <i>Moderator: Jane Park</i>	<b>MICRO-TALKS</b> (10 minutes) <i>Moderator: Geoff Cary</i>
<b>1:00-1:20</b>	<b>SS01.7 Panel Discussion:</b> Wildland Fire, Society's Reality, Not Just a Federal Issue <b>Bob Harrington</b> , National Association of State Foresters <b>Chris Topik</b> , The Nature Conservancy <b>Mark Melvin</b> , Coalition of Prescribed Fire Councils <b>Patti Blakenship</b> , US Fire Administration, FEMA <b>Vern Stearns</b> , Intertribal Timber Council, <b>Pete Lahm</b> , Air Resource Specialist, USFS <b>TBD</b> , National Alliance of Forest Owners	<b>19. David L Martell:</b> Optimizing the containment of large wildfires	<b>SS03.7 Garbriel Yospin:</b> Upland Areas in Sub-alpine Tasmania Serve as Refugia for Endemic Conifers under Varying Fire Regimes in Ecosystem Process Simulations	<b>25. Becky Kerns:</b> Effects of Prescribed Burn Regime on Understory Vegetation: A Fifteen Year Response	<b>SS04.6 Brian Harvey:</b> Post-Fire Subalpine Forest Regeneration Varies with Climate in Patches of Stand-replacing Wildfire	<b>SS06.1 Cliff White:</b> Overview of Landscape Level Fire Management/Use Policy in Canada	<b>M1. JD Carlson:</b> OK-FIRE: A Weather-Based Operational Decision Support System for Wildland Fire Mgmt  <b>M2. Jessica Haas:</b> Exposure of Human Populations To Wildland Fires: A Case For Multiple Landowner Mitigation
<b>1:20-1:40</b>		<b>20. Philip Dennison:</b> Large wildfire trends in the Western United States from MTBS data, 1984-2011	<b>SS03.8 Cameron Naficy:</b> Spatially Explicit Quantification of Heterogeneous Fire Effects over Long Time Series: a Comparison of Multiple Methods and Patterns from Two Forest Types in the Northern U.S. Rockies	<b>26. Christopher Dunn:</b> Scale Dependent Vegetation Response to Mixed-Severity Fire and Salvage Logging in Douglas fir/Western Hemlock Forests of Oregon's Western Cascade Mountains	<b>SS04.7 Tyron Venn:</b> Economic Evaluation of Bushfire Risk Mitigation Strategies in Australia	<b>SS06.2 Cordy Tymstra/Dave Finn:</b> Interagency Landscape Level Fire Management Planning in Alberta	<b>M3. Vincent Mans:</b> Duration of the effectivity of long term retardants in preventive treatment  <b>M4. Steven Miller:</b> Using Prescribed Fire To Reduce The Risk Of Smoke Related Traffic Problems On I-95
<b>1:40-2:00</b>		<b>21. Mike Brown:</b> Catastrophic Fires Down Under Down Under - A Case Study	<b>SS03.9 Kerry Kemp:</b> Post-fire Tree Recruitment in the U.S. Northern Rockies: the Influence of Seed Source Proximity and Patch Size	<b>27. Ariel Cowan:</b> The Combustion of Large Downed Wood: Initial Impacts of Burn Intensity on Soil Nutrients and Ectomycorrhizal Communities of Ponderosa Pine Seedlings	<b>SS04.8 Garrett Meigs:</b> Contemporary Megafires in the Pacific Northwest: What Drives the Biggest of the Big?	<b>SS06.3 Gregg Walker:</b> Use of Area Burned by Condition Class and Burn Targets for Fire Management Planning and Monitoring	<b>M5. Matt Jolly:</b> Assessing the physiological drivers of the 'Spring Dip' in Jack Pine and Red Pine foliar moisture content and potential their relationship to extreme crown fire activity  <b>M6. Rich McCrea:</b> Challenges In Predicting Fire Behavior On The Wesley Fire

2:00-2:20	Panel continued...	<b>22. Roy Renkin:</b> Transitioning From A Small Fire: factors Driving Episodic Fire Growth Post-1988 in Yellowstone National Park	<b>SS03.10 Philip E. Higuera:</b> Sensitivity and Complacency of High-severity Fire Regimes to Climatic Variability from Centuries to Millennia	<b>28. Elias Anoszko:</b> Once Burned Twice Shy: How Multiple Fires and Wind+Fire Combinations Alter Successional Patterns in the Boreal Forest	<b>SS04.9 Travis Belote:</b> Restoring Mixed Severity Fire in the Crown of the Continent: from Stands to Landscapes and WUI to Wilderness	<b>SS06.4 Dave Smith:</b> Managing SARA and Multiple Objectives Using Prescribed Fire	<b>M7.</b> Philip Dennison: Automated Identification of Firefighter Safety Zones Using Lidar and Multispectral Data
							<b>M8.</b> Theodore Adams: Using Terrestrial LiDAR to Model Shrub Fuel Beds for Fire Behavior Simulation
2:20-2:40		<b>23. Peter Robichaud:</b> Large Post-fire Emergency Stabilization Response Is Not Always Related to Large Fires	<b>SS03.11 Matt Jolly</b> Persistent and episodic changes in global fire weather season length from 1979 to 2012	<b>29. Scott Abila:</b> Multi-Severity Fire Effects in Xeric Oak-Pine Communities Following Small Fires in the Great Smoky Mountains National Park	<b>Panel Discussion:</b> Northwest US Framework Construction	<b>SS06.5 Anastasia Drummond:</b> Consultation with Stakeholders, Staff and Public During Prescribed Fire Planning and Implementation	<b>M9.</b> JD Carlson: Overview of Ongoing Field and Modeling Studies in Oklahoma for Dynamic Grassland Fuels
							<b>M10.</b> Martin Alexander: Practical Tools for Assessing Potential Crown Fire Behaviour and Canopy Fuel Characteristics
2:40-3:00	<b>SS01.8 Doug Crandall,</b> Director of Legislative Affairs	<b>24. Matthew Reilly:</b> Effects of Large Wildfires on Stand Structure and Landscape Diversity in the Pacific Northwest	<b>Panel Discussion</b>	<b>30. Penny Morgan:</b> Experimental Evidence That Surface Mulch Applications Alter Soil Nitrogen Cycling Following High-Severity Wildfire		<b>SS06.6 Cliff White:</b> Using an Eco-Cultural Paradigm to Define Landscape-Level Fire Use Prescriptions	<b>M11.</b> Miguel Cruz: Error Associated with Model Predictions of Wildland Fire Rate of Spread
						<b>Discussion</b>	
3:00-3:30	<b>BREAK with Exhibitors</b> ( <i>University Center Commons - 2nd level</i> )						



**TUESDAY CONCURRENT SESSIONS**

	<b>UC Theater</b>	<b>UC 330/331</b>	<b>UC 326/327</b>	<b>UC 332/333</b>	<b>James Todd 203</b>	<b>James Todd 204</b>	<b>UC Meeting Rm Foyer</b>
	<b>SPECIAL SESSION</b> Fuel Treatments in the 21st Century - Do They Matter? <i>Moderator: Laurie Kurth &amp; Henry Bastian</i>	<b>SPECIAL SESSION</b> Rim Fire <i>Moderator: Neil Sugihara</i>	<b>POLITICAL ISSUES</b> <i>Moderator: Adam Gossell</i>	<b>FIRE MANAGEMENT</b> <i>Moderator: Dave Martell</i>	<b>SPECIAL SESSION</b> Social-ecological Study of Western Fires: Developing an Integrated Framework for Research in Times of Change <i>Moderator: Helen Naughton</i>	<b>SPECIAL SESSION</b> Landscape Level Fire Use to Restore Ecosystems in Canada: Applications and Challenges <i>Moderator: Jane Park</i>	<b>MICRO-TALKS</b> (10 minutes) <i>Moderator: Miguel Cruz</i>
<b>3:30-3:50</b>	<b>SS01.9 Linda Wadleigh:</b> How Severe are Large Fires?	<b>SS02.1 Shelly Crook:</b> 2013 Rim Fire Overview, Stanislaus National Forest, California	<b>31. Winston Tripp:</b> Society, Politics, and Large Wildland Fires: Examining the Political and Social Factors Affecting the Diffusion of Wildland Fire Policies and the Cost of Large Fires	<b>37. John Green:</b> Operational Test Results and Technical Description of the Xiomax Airborne Wide Area Imagery	<b>SS04.10 Julie Mueller:</b> Estimating the Benefits of Forest Restoration Using Non-Market Valuation	<b>SS06.7 Jane Park:</b> Landscape Level Prescribed Fire Use in the Rocky Mountain National Parks	<b>M12. Jessica Block:</b> WIFIRE: A Real-Time Cyberinfrastructure for Wildfire Sensing and Prediction  <b>M13. Adrian Cardil:</b> Extreme temperature conditions and wildland fires in Spain
<b>3:50-4:10</b>	<b>SS01.10 TBD</b>	<b>SS02.2 Patricia Oliva:</b> Near Real-time Wildfire Mapping using Spatially-refined Satellite Data: the Rim Fire Case Study	<b>32. Michael DeGrosky:</b> An Exploration of Warfighting and Firefighting Doctrine	<b>38. Kristen Allison:</b> Emerging Technology in near-time flow for wildfire applications	<b>SS04.11 Brandon Collins:</b> Recent Large Fires in Sierra Nevada Mixed-conifer Forests: Causes, Ecological Effects, and Forest Responses	<b>SS06.8 Dustin Guedo:</b> Fescue Grassland Restoration Through the Reduction of Forest Encroachment with Prescribed Fire in Prince Albert National Park, Saskatchewan, Canada	<b>M14. JD Carlson:</b> Synoptic Weather Regimes Associated with Dormant-Season Wildfire Outbreaks in the Southern Great Plains  <b>M15. Anne Ganteaume:</b> Characterization of the large fire regime in SE France
<b>4:10-4:30</b>	<b>SS01.11 Susan Prichard/Gus Smith:</b> When Wildfires Become Fuel Treatments: Examples of the Interactions of Past Wildfires and Subsequent Wildfires	<b>SS02.3 David A. Peterson:</b> Using the 2013 Rim Fire to Develop an Improved Short-term Predictor of Satellite-observed Fire Activity	<b>33. Ryan Maye Handy:</b> The Timeline of Media Manipulation during and after a Large Scale Wildfire	<b>39. Jane Kapler Smith:</b> Improving Usefulness of Information Syntheses for Fire Managers	<b>SS04.12 Ryan Fitch:</b> Changes in Wildland Fire Suppression Costs due to Restoration Treatments	<b>SS06.9 Jill Harvey:</b> 400 Years of Fire History in Central British Columbia, Canada	<b>M16. Michael Mann:</b> California Wildfire in a Changing Climate and Built Environment  <b>M17. Fred Schoeffler:</b> Fire Weather Associated with the New Mexico (USA) June 2012 Little Bear Fire

4:30-4:50	<b>SS01.12 Jim Menakis/Frankie Romero/Dave Mueller:</b> Wildfires/Fuel Treatments Intersect - Changes in Fire Management, Fire Behavior and Fire Ecology	<b>SS02.4 Leda Kobziar:</b> The Immediate Effects of California's Rim Fire on Tree Injuries and In-stand Severity in Fuels Treated Plantations	<b>34. Roger Hammer:</b> Housing Development and Rebuilding after Wildfire: Rebuilding and policy responses after fire on the Colorado Front Range, 2010-2012	<b>40. Timothy Ingalsbee:</b> Restorationist Fire Use for Ecological Fire Management: Managing Large Wildfires by Design	<b>Panel Discussion:</b> Southwestern US Framework Construction	<b>SS06.10 Peter Murphy:</b> The Great Fire of 1919	<b>M18. Kevin Moriarty:</b> Firefighter Observations on Mountain Pine Beetle Post-outbreak Lodgepole Pine Fires: Expectations, Surprises and Decision-making
							<b>M19. James Gattiker:</b> Can We Automatically Cluster Historical Wildfire Behavior to Assist Rapid Risk Mapping
4:50-5:10	<b>SS01.13 Marlena Hovorka/Lisa Elenz:</b> Integrating Fuel Treatments in Land Management Planning and Wildfire Incident Response	<b>SS02.5 Carol Ewell:</b> Fuel Treatment Effectiveness in the 2013 Rim Fire, Stanislaus National Forest, California	<b>35. David Torgerson:</b> Wildfire Loss Prevention - Insurance Resources	<b>41. Carl Seilestad:</b> Reconsidering Wildland Fire Use: Perspectives from the Northern Rockies		<b>SS06.11 Steve Roberts:</b> Saskatchewan Wildfire Management Strategies: Lessons Learned	<b>M20. Matthew Thompson:</b> Wildfire Risk and Treatment Effectiveness of Protecting Highly Valued Resources and Assets with Fuels Management
							<b>M21. Julie Gilbertson-Day:</b> Planning for Future Ignitions in the Tenmile Municipal Watershed, Helena National Forest, Montana
5:10-5:30	<b>SS01.14 Erik Christiansen:</b> Conclusion/Summary: Do Fuel Treatments Matter Now and in the Future	<b>SS02.6 Lauren Ponisio:</b> Fire and the assembly of pollinator communities	<b>36. John Handmer:</b> Do we Learn from Disaster?	<b>42. Emily Platt:</b> Managing Federal Lands for Resilience to Fire	<b>Major Conclusions/Future Research Recommendations</b>	<b>Panel Discussion</b>	<b>M22. Cassandra Hansen:</b> From Sensor to Incident Commander, The Silver Fire 2013
							<b>M23. Dave Thomas:</b> JFSP Project: Risk Perception, Sensemaking and Resilient Performance: The Sounds of Wildland Firefighting in Action
5:30-7:30	<b>Poster Session and Reception</b> ( <i>University Center Ballroom</i> )						
8:00 PM	<b>After Hours No-host Gathering</b> ( <i>Brooks &amp; Browns Bar &amp; Grill, Holiday Inn Parkside</i> )						

## WEDNESDAY, MAY 21, 2014

7:00	Registration Opens ( <i>University Center Foyer - 3rd level</i> )						
7:00-8:00	Morning coffee with Exhibitors ( <i>University Center Commons - 2nd level</i> )						
7:40-7:45	Moderator Meeting (UC Room 329)						
8:00-10:00	<b>CONCURRENT SESSIONS</b> ( <i>No plenary talks today, go right to the concurrent sessions</i> )						
	<b>UC Ballroom - North</b>	<b>UC Ballroom - South</b>	<b>UC Theater</b>	<b>UC 326/327</b>	<b>UC 330/331</b>	<b>UC 332/333</b>	<b>UC Meeting Rm Foyer</b>
	<b>SPECIAL SESSION</b> The Evolution of Fire Behavior Analysis and Management of Large, Long-duration Incidents as Experienced on the Mustang Complex <i>Moderator: Tami Parkinson</i>	<b>SPECIAL SESSION</b> The ecological importance of maintaining severe fire on the western forested landscape <i>Moderator: Richard Hutto</i>	<b>SPECIAL SESSION</b> Analysis of large wildland fires using Forest Inventory & Analysis (FIA) data: A treasure trove for wildland fire analyses <i>Moderators: Bianca Eskelson &amp; Vicente Monelon</i>	<b>SMOKE</b> <i>Moderator: Shawn Urbanski</i>	<b>CLIMATE CHANGE</b> <i>Moderator: Faith Ann Heinsch</i>	<b>SOCIAL ISSUES</b> <i>Moderator: Jesse Abrams</i>	<b>MICRO-TALKS</b> (10 minutes) <i>Moderator: Katharine Hetts</i>
8:00-8:20	<b>SS07.1 Don Boursier/Tom Zimmerman:</b> Introduction and Fire Behavior	<b>SS08.1 Robert Keane:</b> Has High-severity Fire Always Been an Important Component of Large Fires?	<b>SS10.1 Vicente Monleon:</b> Using Forest Inventory Data to Estimate Fire Effects: a Plot Matching Approach	<b>43. Darlene Oshanski:</b> Wildland Fire Smoke: An Overview of Manitoba Health's Emerging Work	<b>49. Kristen Shive:</b> Managing burned landscapes: evaluating future management strategies on the Rodeo-Chediski Fire under a warming climate	<b>55. Christine Olsen:</b> Public and agency perceptions about smoke: Interview and survey results from four states	<b>M25. Ben Butler:</b> An Investigation of LandScan Suitability for Strategic Decision Making in the Wildland Fire Decision Support System
8:20-8:40		<b>SS08.2 Rosemary Sherriff:</b> Examining historical mixed-severity fire regimes in ponderosa pine and mixed-conifer forests of western North America	<b>SS10.2 Bianca Eskelson:</b> Estimation of Coarse Woody Debris Combustion Factors using Forest Inventory and Analysis Data	<b>44. Shawn Urbanski:</b> Pollutant Emissions from Large Wildfires in the western United States	<b>50. David Mills:</b> Results from modeling the impact of climate change on acreage burned in the U.S. through 2100	<b>56. Travis Paveglio:</b> Understanding the effect of large wildfires on residents' well-being: What factors influence reported wildfire impact?	<b>M26. Melanie Colavito:</b> Enhancing Scientist-Manager Relationships to Foster Ecosystem Resilience
							<b>M27. Jose Duce Aragüés:</b> The EPRIF Baztan: A Small Community Based Project to Solve a Big Socio-Ecological Problem
							<b>M28. Christinea Andruk:</b> Fire Suppression-Driven Oak Regeneration Failure Results in Xeric Juniper-Dominated Woodlands: an Expanded View of the Mesophication Process



8:40-9:00	SS07.2 Larry VanBussum: IMET Program	SS08.3 Christopher Rota: Not all Habitats are Disturbed Equally: Black-backed Woodpecker Population Dynamics in Burned Forests and Mountain Pine Beetle Infestations	SS10.3 Jeremy Fried: Woody Biomass Dynamics after Forest Fires: Augmenting Annual Inventory with Post-fire Plot Assessment	45. Luba Volkova: Does Fuel Reduction Burning Mitigate Wildfire Emission: Evidence from an Empirical Study in Australian Eucalyptus Forest	51. Geoff Cary: What Determines Area Burned in Large Landscapes? Insights From a Decade of Comparative Landscape-fire Modelling	57. John Diaz: Local Ecological Knowledge and Fire Management: What Does the Public Understand?	M29. Kori Blankenship: Simulating the Historical Range of Variability in Fire-Adapted Forests
							M30. Eric Menges: Biological Constraints to Fire Regimes in Florida Scrub
9:00-9:20	SS07.3 Tim Sexton: Evolution/Decision Making	SS08.4 Lisa Eby: Resilience of Native Trout Populations to Fire in the U.S. Rocky Mountain West	SS10.4 Robert Keane: Evaluating the Performance and Mapping of Three Fuel Classification Systems Using Forest Inventory and Analysis Surface Fuel Measurements	46. Efthalia Chatziefstratiou: Resolving the Effects of Canopy Structure on Fire-emitted Smoke Dispersion using Large Eddy Simulations	52. Christopher O'Connor: Severity and Associated Climate Conditions of Large Fires Diverge from Historical Precedent in High-Elevation Forests in the Pinaleno Mountains, Arizona, U.S.A.	58. Jesse Abrams: Community Wildfire Protection Planning in Large-Fire Landscapes: An Analysis of Plan Content	M31. Keala Hagmann: Evidence of high-severity fire in a 1915-25 inventory of ~200,000 forested hectares in eastern Oregon
							M32. Justin Crotteau: Natural Regeneration after the Storrie Fire in Lassen National Forest, Northeastern California
9:20-9:40	SS07.4 Frank Guzman: Home Unit Overview	SS08.5 Victoria Saab: Ecological Consequences of Post-fire Management Activities following Wildland Fire	SS10.5 Theresa Jain: The Science of Modifying Fuel Structure in Forests for Short-term Success and Long-term Benefits: Application of Forest Inventory and Analysis Data	47. Pete Lahm: SmoC and Wildfire Air Quality Response	53. Mike Flannigan: Fuel moisture sensitivity to temperature and precipitation; Climate change implications	59. Diane French: Forest Jihad?: The Threat of Religious-Inspired Pyro-Terrorism in U.S. Forests and Abroad	M33. Justin Zielger: Evaluating Restoration Treatments Objectives: Creating Spatially Heterogeneous Structure and Reducing Fire Behavior
							M34. Christine Olsen: Agency-stakeholder trust in fire-prone communities: An int'l collaboration drawing on research & mgmt experience in Aus, Canada, and the US

	UC Ballroom - North	UC Ballroom - South	UC Theater	UC 326/327	UC 330/331	UC 332/333	UC Meeting Rm Foyer
9:40-10:00	SS07.5 Mitch Burgard: SOPL	SS08.6 Richard Hutto: It's Time to Integrate the Ecological Benefits and Necessity of Severe Fire in National Fire and Forest Management Plans	Panel Discussion	48. Miriam Rorig: Evaluation of Smoke Dispersion Modeling of Large Wildland Fires in WA and ID, 2012	54. Jeffrey Kane: Possible mechanisms for increased tree mortality resulting from altered interactions between fire and other disturbances	60. Katie Lyon: Assessing the Efficacy of Community Wildfire Protection Plans in Colorado	M35. Kevin Vogler: Sustainable Biomass Supply from Forest Health and Fire Hazard Reduction Treatments: A Biomass Assessment of Federally Owned Land in Eastern Oregon
							Discussion
10:00-10:30	Coffee break with Exhibitors (University Center Commons - 2nd level)						
	<b>WEDNESDAY CONCURRENT SESSIONS</b>						
	UC Ballroom - North	UC Ballroom - South	UC Theater	UC 326/327	UC 330/331	UC 332/333	
	<b>SPECIAL SESSION</b> The Evolution of Fire Behavior Analysis and Management of Large, Long-duration Incidents as Experienced on the Mustang Complex <i>Moderator: Tami Parkinson</i>	<b>SPECIAL SESSION</b> Working with American Indian Tribes on Large Wildland Fires - Effective Consultation and Coordination <i>Moderator: Frank Lake</i>	<b>SPECIAL SESSION</b> Decisions and operational resources for suppressing wildland fires <i>Moderator: Van Miller</i>	<b>FIRE SEVERITY</b> <i>Moderator: Alan Sijepcevic</i>	<b>FIRE MANAGEMENT SPATIAL ANALYSIS</b> <i>Moderator: LaWen Hollingsworth</i>	<b>SOCIAL ISSUES</b> <i>Moderator: Ron Steffens</i>	
10:30-10:50	SS07.6 John Kern: FBAN/LTAN	SS09.1 Frank Lake: A Resource Advisor's Experience Working with Incident Management Teams, Agencies and Tribes	SS11.1 Thomas Holmes: Econometric Analysis of Wildfire Suppression Production Functions for Large Wildland Fires	61. Feng Zhao: Effects of contemporary and future fire management on carbon balance in the Greater Yellowstone Ecosystems evaluated with remote sensing and modeling	67. Greg Dillon: Wildland Fire Potential 2012: A Tool for Wildfire Risk Assessment and Fuels Prioritization	73. Max Nielsen-Pincus: Understanding the Roles of Vulnerability, Adaptive Capacity, and Mitigation Planning in Community Resilience to Wildland Fire	
10:50-11:10	SS07.7 Bob Nester: IMET	SS09.2 Tony Harwood: Tribal Government Large Fire Consultation and Coordination Issues	SS11.2 Hari Katuwal: The Influence of Suppression Actions on the Development of Wildfire Perimeters	62. Zhiwei Wu: Determining Relative Contributions of Vegetation and Topography to Burn Severity from LANDSAT Imagery	68. Karen Short: Sources and Implications of Bias and Uncertainty in a Century of US Wildfire Activity Data	74. Thomas Wuerzer: The 'social' Issues of measuring Wildfire Awareness and Preparedness	

11:10-11:30	SS07.8 Rita Chandler: Trainee	SS09.3 John Philbin: BIA, Western Regional Forester	SS11.3 Michael Hand: The Influence of Incident Management Teams on Suppression Resource Use	63. Jonathan Coop: Influences of Previous Wildfires on Subsequent Fire Severity, Vegetation Change and Resilience in a Returned Southwestern Landscape	69. Joe Scott: Emerging concepts in wildfire risk assessment and management	75. Patricia Alexandre: Modeling structure losses to wildfires across the conterminous United States
11:30-11:50	Panel Discussion	SS09.4 Ira Matt: A Tribal Historic Preservation Officer's Experience Working with Federal Agencies and Incident Management Teams on Wildland Fires for Protection of Tribal Heritage and Cultural Resources	SS11.4 Dave Calkin: What We Know and Don't Know about the Effectiveness of Suppression Actions on Large Wildfires	64. Pam Sikkink: Comparison of Six Fire Severity Classification Methods Using Fires From Montana and Washington, USA	70. Jessica Haas: Multi-Dimensional Hazard Analysis of Post Wildland Fire Debris Flows	76. Max Moritz: Novel Strategies for Overcoming Barriers to Fire Science Communication
11:50-12:10		SS09.5 Jim Steele: 35 Years a Guest on Indian Reservations	SS11.5 Van V. Miller: An Evaluation of the Wildland Fire Decision Support Systems from Dueling Perspectives: Naturalist Decision Making versus Heuristics and Biases	65. Carol Miller: The Influence of Interacting Gradients in Wilderness Management, Spatial Climate, & Topography on Fire Severity in the Northern Rocky Mountains USA	71. Bob Cechet: FireDST: Fire Impact and Risk Evaluation Decision Support Tool	77. John Bailey: Picking up the Pace: the Realities of Landscape-level Fire Management
12:10-12:30		Panel Discussion	Panel Discussion	66. Brian Harvey: Are spatial patterns of burn severity changing with warming climate and increasing wildfire?	72. Patrick Freeborn: Evaluating Associations between National Fire Danger Rating System (NFDRS) Indices & Daily Wildland Fire Activity Characterized Using Time-series of Agency Incident Reports & Satellite Observations	78. Stephen Pyne: Fires Wild, Fires Tame, Fires Large: Assessing 50 Years of American Fire History
<b>Lunch</b> (on your own)						
12:30-1:30	<b>Student Mentor Luncheon</b> (limited space - pre-registration required)					
<b>FIELD TRIPS</b> (Meet buses at 1:20 in Parking Lot W located north of the University Center)						
1:30-5:30	<b>Restoration Fuel Treatments in Old Growth Larch and Ponderosa Pine, Trip Leader: Mick Harrington</b>					
1:30-5:30	<b>Blue Mountain, Trip Leader, Dick Hutto</b>					
1:30-5:30	<b>Missoula Fire Sciences Laboratory, Trip Leader, Bob Keane</b>					
1:30-5:30	<b>US Forest Service Missoula Technical Development Center/National Weather Service/Smokejumper Center, Trip Leader: Faith Ann Heinsch</b>					
1:30-5:30	<b>Missoula City Tour, Trip Leader: Destination Missoula Representative</b>					
5:30-9:30	<b>BANQUET</b> (Awards, Dinner, Guest Speaker and Entertainment - UC Ballroom - 3rd level) Featuring <b>Michael Kodas</b> , photojournalist, author and videographer and Associate Director of the Center for Environmental Journalism, University of Colorado, Journalism and Mass Communication Department (Pre-registration required)					



**THURSDAY, MAY 22, 2014**

<b>7:00</b>	Registration Opens ( <i>University Center Foyer - 3rd level</i> )					
<b>7:00-8:00</b>	Morning coffee with Exhibitors ( <i>University Center Commons - 2nd level</i> )					
<b>7:40-7:45</b>	Moderator Meeting (UC Room 329)					
<b>8:00-8:10</b>	OPENING REMARKS ( <i>University Center Ballroom- 3rd level</i> )					
<b>8:10-8:40</b>	PLENARY SESSION: Tom Tidwell, Chief, US Forest Service, Washington, DC					
<b>8:40-9:20</b>	PLENARY SESSION: Fire Management and the Australian Landscape Alan Goodwin, Chief Fire Officer, Department of Environment and Primary Industries, Victoria, Australia					
<b>9:20-9:50</b>	BREAK with Exhibitors ( <i>University Center Commons - 2nd level</i> )					
	THURSDAY CONCURRENT SESSIONS					
	<b>UC Ballroom - North</b>	<b>UC Ballroom - South</b>	<b>UC Theater</b>	<b>UC 326/327</b>	<b>UC 330/331</b>	<b>UC 332/333</b>
	<b>SPECIAL SESSION</b> Wildfire risk assessment and decision support <i>Moderator: Morgan Pence</i>	<b>WILDLAND FUELS</b> <i>Moderator: Leda Kobziar</i>	<b>FIRE SUPPRESSION</b> <i>Moderator: Albert Simeoni</i>	<b>FIRE HISTORY</b> <i>Moderator: Bob Gray</i>	<b>SPECIAL SESSION</b> The Las Conchas Fire: a case study of ecological and social impacts <i>Moderator: Edward Martinez</i>	<b>SPECIAL SESSION</b> Resistance is NOT Futile - Avoiding Post-fire Conversion to Annual Grasses in the Cold Desert <i>Moderator: Génie Montblanc</i>
<b>9:50-10:10</b>	<b>SS12.1 Anne Black:</b> Toward understanding and managing the human condition in risk management	<b>79. Yi Qi:</b> Spectroscopic Analysis of Seasonal Changes in Live Fuel Moisture Content and Dry Matter	<b>85. Bret Butler:</b> Recent Findings Relating to Firefighter Safety Zones	<b>91. Andre Arsenault:</b> Historical Pattern of Large Wildfires and Other Forest Disturbances on the Island of Newfoundland	<b>SS13.1 Sara Brown:</b> The Las Conchas Fire, New Mexico in Historical Context	<b>SS14.1 Steve Bunting:</b> Altered Fire Regimes in Rangelands Overview
<b>10:10-10:30</b>	<b>SS12.2 Becky Brooks:</b> Strategic Planning Information: Improving the Delivery	<b>80. Andrew Hudak:</b> Landscape-Level Relationship of Fire Radiative Power and Energy to Surface Fuel Load	<b>86. Charles Palmer:</b> Stress and Coping in Wildland Fire Dispatchers	<b>92. Charles McHugh:</b> Estimating Historical Annual Wildland Fire Burning Rates For the Contiguous United States Using LANDFIRE Data	<b>SS13.2 James Biggs:</b> Anatomy of the Las Conchas Fire, Jemez Mountains, New Mexico	<b>SS14.2 Matt Germino:</b> Wildfire Size Effects on Site and Soil Stability: Wind Erosion in Cold-desert Rangelands
<b>10:30-10:50</b>	<b>SS12.3 Rachel Loehman:</b> In the Line of Fire: Risk Mitigation and Protection of Cultural Resources in Fire-prone Environments	<b>81. Stephen Hallgren:</b> Long-term prescribed fire effects on litter and soil carbon in upland oak forests	<b>87. Crystal Stonesifer:</b> Spatial and Temporal Characterization of Large Airtanker Use	<b>93. Jay Miller:</b> Pre-settlement vs. modern fire regimes of the Sierra Nevada region	<b>SS13.3 Matt Tafoya:</b> Consequences of the Las Conchas Fire on Santa Clara Pueblo	<b>SS14.3 Jeffrey Beck:</b> Effects of Large Fires on Sagebrush Obligate Species and Implications for Management

10:50-11:10	<b>SS12.4 Lisa Elenz:</b> Strategic Decision Making for Wildfires using a Risk Management Process	<b>82. Nicholas Skowronski:</b> Airborne Laser Scanner-assisted estimation of prescribed fire fuel consumption	<b>88. Russ Parsons:</b> Safety Zones and Convective Heat: Numerical Simulation of Potential Burn Injury from Heat Sources Influenced by Slope and Winds	<b>94. Philip Stewart:</b> Changing Fire Regimes of the Great Sandy Region, South East Queensland	<b>SS13.4 Gil Gallegos:</b> Understanding Fire Severity Through Utilization of Novel Analysis Tools to Better Understand Catastrophic Wildfires	<b>SS14.4 Jeanne Chambers:</b> A Strategic Landscape Approach to Managing Invasive Species and Wildfire - Melding Ecological and Conservation Considerations
11:10-11:30	<b>SS12.5 Crystal Stonesifer:</b> Identification of Beneficial Fire Opportunities: an Evaluation of FMU Strategic Objectives in WFDSS	<b>83. David Affleck:</b> Crown Fuel and Stem Biomass Models for the Major Conifer Species of the Interior Northwest USA	<b>89. George Broyles/Joe Domitrovich:</b> Wildland Firefighter Smoke Exposure	<b>95. Chris Stockdale:</b> Using Historic Photographs to Model Changes in Burn Probability of the Landscape Since European Settlement	<b>SS13.5 Elyssa Duran:</b> Soil Characteristics Across Severity in the Las Conchas Fire	
11:30-11:50	<b>SS12.6 Erin Noonan-Wright/Tonja Opperman:</b> Applying the Wildland Fire Decision Support System (WFDSS) to Support Risk-Informed Wildland Fire Decision Making: the Gold Plan Fire, Bitterroot National Forest, Montana	<b>84. Anu Kramer:</b> Quantifying ladder fuels: A new approach using LiDAR	<b>90. Jose Duce Aragues:</b> Engine Safety Zone Emergency Device, a Last Resource Protocol	<b>96. Adam Watts:</b> Hydrologic implications of ground fires in low-relief landscapes	<b>SS13.6 Anita Lavadie:</b> Hydrologic Impacts of Burn Severity on Nutrient Concentration in Surface Water, Jemez Mountains, NM	<b>Panel Discussion</b>
11:50-1:00	<b>LUNCH (on your own)</b>					
<b>THURSDAY CONCURRENT SESSIONS</b>						
	<b>UC Ballroom - North</b>	<b>UC Ballroom - South</b>	<b>UC Theater</b>	<b>UC 326/327</b>	<b>UC 330/331</b>	<b>UC 332/333</b>
	<b>SPECIAL SESSION</b> Wildfire risk assessment and decision support <i>Moderator: Morgan Pence</i>	<b>FIRE BEHAVIOR</b> <i>Moderator: Gene Rogers</i>	<b>FIRE SUPPRESSION AND FIRE SAFETY</b> <i>Moderator: Robin Wills</i>	<b>FUELS MANAGEMENT</b> <i>Moderator: Robin Silverstein</i>	<b>SPECIAL SESSION</b> The Las Conchas Fire: a case study of ecological and social impacts <i>Moderator: Sara Brown</i>	<b>SPECIAL SESSION</b> Resistance is NOT Futile - Avoiding Post-fire Conversion to Annual Grasses in the Cold Desert <i>Moderator: Génie Montblanc</i>
1:00-1:20	<b>SS12.7 Matt Jolly:</b> Applications of Spatial Weather to Support Wildland Fire Management Decisions	<b>97. Miguel Cruz:</b> The effect of the degree of grass curing on the behaviour of grassland fires – an experimental study	<b>103. Bob Loveless:</b> The Changing Culture in Wildland Firefighting Safety—an Examination of 1994-2013 Entrapment Rates	<b>109. Nicole Vaillant:</b> Prescribed fire effects on field-derived and simulated forest carbon stocks	<b>SS13.7 Lorraine Garcia:</b> Las Conchas Fire Impacts on Aquatic Macroinvertebrate Community Structure	<b>SS14.5 Kyle Anderson/Nancy Glenn:</b> Use of Terrestrial Laser Scanning to Model Fuel Characteristics in Shrub-steppe

	UC Ballroom - North	UC Ballroom - South	UC Theater	UC 326/327	UC 330/331	UC 332/333
1:20-1:40	<b>SS12.8 Matt Thompson:</b> Decision Making Under Uncertainty - Implications for the Wildland Fire Decision Support System (WFDSS)	<b>98. Mohamed Drissi:</b> Modeling the spreading of large-scale wildland fires	<b>104. Alexis Waldron:</b> Developing wildland firefighters' leadership qualities through awareness-based processes: A qualitative investigation	<b>110. LaWen Hollingsworth:</b> Protecting the Protected: Designing a Fuels Treatment Plan in Arizona's Huachuca Mountains to benefit the Threatened Mexican Spotted Owl	<b>SS13.8 Richard McNeill:</b> Vegetation Response to the Las Conchas Fire, 2011	<b>SS14.6 Douglas Shinneman:</b> Assessing Fuel Loads Across Successional and Invasion Gradients in Degraded Sagebrush Landscapes
1:40-2:00	<b>SS12.9 Michael Hand:</b> Estimating Expected Suppression Costs (SCI) and Integration of Suppression Resource Use by Teams	<b>99. Rodd Linn:</b> Surface Gusts Interacting with Wildfires	<b>105. Devon Barnes:</b> Evaluating Sprinkler Efficacy for Wildland Fire Protection Programs in Fairbanks, Alaska	<b>111. Chris Weston:</b> How much carbon is really lost in forest fires: findings from 40 Eucalyptus forests of southern Australia	<b>SS13.9 Joe Zebrowski:</b> Geomorphic Effects of a High Severity Burn in the Las Conchas Fire	<b>SS14.7 Geno Schupp:</b> SageSTEP: Short-term Vegetation Responses to Fuels Treatments in Sagebrush Ecosystems
2:00-2:20	<b>SS12.10 Karen Short/Mark Finney:</b> Improved Simulation of Probabilistic Wildfire Risk Components for the Conterminous United States	<b>100. Jeremy Sauer:</b> Assessing Large Fire Behavior With Fundamental Fluid Dynamics Theory	<b>106. Dick Mangan:</b> From "Dude" to "Yarnell": a retrospective Look at 24 Years of Wildfire Fatalities in the U.S. (1990 - 2013)	<b>112. Eric Mueller:</b> Field Experiments and Modeling for the Assessment Fuel Treatment Effectiveness in Reducing Wildfire Intensity and Spread Rate	<b>SS13.10 Kara Walters:</b> The Cost of a Wildfire in the West: a Las Conchas Case Study	<b>SS14.8 Jan Beyers:</b> Effectiveness of Current Postfire Seeding Practices in the Cold Desert Ecosystems - Implications for Future Restoration Projects
2:20-2:40	<b>SS12.11 Dave Calkin:</b> Integrated Risk Assessment to Facilitate Improved Decision Making	<b>101. Ali Tohidi:</b> Characterization of firebrand geometry and flight dynamics	<b>107. Janice Coen:</b> Coupled Weather-Fire Modeling of Landscape-scale Wildland Fires using Satellite Active Fire Detection Data: Application to Firefighter Safety	<b>113. Kevin Barnett:</b> An application of risk analysis to support and evaluate wilderness fire management decisions	<b>SS13.11 Dadhi Adhikari:</b> Linking Forest to Faucets in a Distant Municipal Area: Public Support for Forest Restoration and Water Security in Albuquerque, New Mexico	<b>SS14.9 Mark Brunson:</b> Managing Invasive Species and Wildfire - Social and Political Considerations in Public Land States
2:40-3:00	<b>SS12.12 Karin Riley:</b> Assessing Predictive Service Area Fire Potential Forecasts	<b>102. Marty Alexander:</b> Effects of Bark Beetle Attack on Crown Fuel Flammability and Crown Fire Potential in Lodgepole Pine and Engelmann Spruce Forests	<b>108. Greg Cohn:</b> Changes to Probability of Ignition in Canopy Fuels Following Mountain Pine Beetle Attack	<b>114. Jens Stevens:</b> Wildfire Interactions With Fuel Treatments in Sierra Nevada Forests: Consequences for Forest Structure and Understory Plant Diversity	<b>SS13.9 Edward Martinez:</b> A Synthesis of the Las Conchas Fire: How Does it Compare?	<b>Panel Discussion</b>
3:00-3:30	<b>BREAK with Exhibitors</b> ( <i>University Center Commons - 2nd level</i> )					
3:30-4:45	<b>PANEL SESSION: Socio-Economic, Political and Ecological Impacts of Large Wildland Fires</b> (UC Ballroom - 3rd level) <b>Session Facilitator:</b> Chuck Bushey, President of Montana Prescribed Fire Services, Inc. <b>Panelists:</b> Dan Bailey, International Code Council™, Washington, DC, US; Penny Morgan, Wildland Fire Program Professor, University of Idaho, College of Natural Resources, Department of Forest, Rangeland, and Fire Sciences and Matthew Thompson, Research Forester, USFS Rocky Mountain Research Station					
4:45-5:00	<b>CONFERENCE SUMMARY AND WRAP UP:</b> Ron Wakimoto, Professor of Forestry at The University of Montana, Missoula					
6:30-9:00	<b>Film Festival "Big Fires on the Big Screen":</b> An Evening With Dr. Stephen Pyne ( <i>Wilma Theater, Downtown Missoula, Doors Open at 6:30, Films at 7:00 pm</i> )					



## FRIDAY, MAY 23, 2014

**FIELD TRIPS** (Meet buses in front of the Adams Center, North end of the University of Montana Campus)

8:00-5:00

**The Fires of 2000: Revisiting Social, Political, and Ecological Issues**, Trip leader: Karin Riley

8:00-5:00

**40 Years of Wilderness Fire in the Selway-Bitterroot**, Trip leader: Carol Miller

8:00-5:00

**Fuels reduction and restoration in mixed conifer forests of the southwestern Crown of the Continent: Collaborative Forest Landscape Restoration Program site visits and discussions**, Trip Leader: Travis Belote

6:00 PM

**After hours no-host gathering** (Kettle House Brewery South Side, 602 Myrtle Street)



Photos: Karin Riley



# Poster Presentations Tuesday, May 20, 5:30-7:30 pm, UC Ballroom

## CLIMATE CHANGE

1. **Barbero, Renaud, Phd:** Projections of Megafire Probabilities Over the Continental United States Using Weather And Climate Forcing
- 1.1 **Abatzoglou, John:** Atmospheric Drivers of Daily Variations in Fire Growth of Very Large Wildfires
2. **Ford, Paulette, Phd:** Landscape-Scale Patterns of Fire And Drought In Eight High Plains States, USA
3. **Johnston, Kayla:** Intraspecific Variation in Climate- and Fire-Related Functional Traits Among Northwestern California Tree Species: A Preliminary Analysis
4. **Keyser, Alisa:** Predicting High Severity Fire Occurrence and Area Burned in a Changing Climate For Three Regions in the Western USA.
5. **Mcwethy, David, Phd:** Assessing Lebanon's Wildfire Potential in Association with Current and Future Climatic Conditions
6. **Osei-Kwarteng, Eric:** Assessing Impacts of Climate Change and Human Population Growth on Forest Fire Potential in the Tropics: A Case Study of The Tain Ii Forest Reserve in Ghana
7. **Wright, Molly C.:** The Impacts of Wildfire on Population Dynamics of Amphibians in Northern New Mexico and Southern Colorado.

## FIRE BEHAVIOR

8. **Bailey, Cody D.:** The Effects of the Non-Native Laurel Wilt Disease on Crown Fuels
9. **Butler, Bret:** Clearing Distances for Power and Communications Infrastructure
10. **Dickinson, Matthew B.:** Coincident Ground, Airborne, and Satellite Measurements of Fire Radiated Power
11. **Ewell, Carol M.:** Fire Behavior Assessment Team (FBAT) - Measurements from Active Wildfires
12. **Garrett, Benjamin:** Examining Airborne Infrared Fire Detection Data in the Context of Fire Severity
13. **Gibos, Kelsy:** Bushfire Behaviour Predictive Services In Victoria, Australia
14. **Gray, Robert:** A Tale of Two Fires – The Relative Effectiveness of Past Wildfires in Mitigating Wildfire Behavior and Effects
15. **Hoffman, Chad:** Development and Evaluation of the Physics-Based Wildland-Urban Interface Fire Dynamics Simulator
16. **Johnson, Morris:** Vegetation Structure of Fuel Treatments Alters Fire Severity in the Wildland-Urban Interface
17. **Johnson, Morris:** Fuel Treatment Prescriptions Alter Spatial Patterns of Fire Severity Around the Wildland-Urban Interface during The Wallow Fire, Arizona, USA
18. **Kreye, Jesse, Phd:** Pine Cones Facilitate Ignition of Forest Floor Duff
19. **Lasher, Trevor:** The Effects of Air Entrainment on the Burning Rate of Foliage From Mountain Pine Beetle-Attacked Trees
20. **Poling, Megan:** Effects of a First-Entry Prescribed Burn in Southwestern Mixed Conifer
21. **St. Clair, Tom:** Modeling Large Fire Growth Potential in the Alaskan Taiga



# Poster Presentations Tuesday, May 20, 5:30-7:30 pm, UC Ballroom

## FIRE ECOLOGY

22. **Abrahamson, Ilana:** Fire Regime Syntheses in the Fire Effects Information System (FEIS)
23. **Amato, Victoria:** Effects of Fire Severity on Herbaceous Vegetation Recovery, Following a Southwest Ponderosa Pine Wildfire.
24. **Nikolay, Baranovskiy V.:** Mathematical Simulation of the Impact of Forest Fire on Typical Soils in Russia
25. **Birch, Donovan:** Daily Fire Weather and Environmental Factors Influencing Burn Severity of 42 Forest Fires in Central Idaho and Western Montana, 2005-2007 and 2011
26. **Booth, Emily, Ph.D.:** Understanding Post-Wildfire Vegetation Trajectories in Pine-Oak Woodlands
27. **Chappell, Linda:** How Much Is Enough? 20 Years of Programmatic Vegetation Monitoring on the Fishlake National Forest
28. **Conrad, Elliott T.:** Relationship Between Leaf Water Status and Flammability of Lodgepole Pine Foliage
29. **Ford, Paulette, Phd:** Landscape-Scale Patterns of Fire And Drought In Eight High Plains States, USA
30. **Fornwalt, Paula:** Characterizing Spatial Tree Regeneration Patterns Following Large Wildfires in Ponderosa Pine-Dominated Forests
31. **Gray, Laura:** A Comparison of Wildfire Effects on Two Ponderosa Pine Sites Between 7,500 and 9,000-Foot Elevation on The Dixie National Forest In Southern Utah
32. **Hagmann, Keala:** Evidence of High-Severity Fire in a 1915-25 Inventory of ~200,000 Forested Hectares In Eastern Oregon
33. **Hamilton, Dale A., MS:** Mapping Landscape Fire Frequency For Fire Regime Condition Class
34. **Hammond, Darcy:** Sapling Bark Allocation of Southeastern U.S. Hardwood Species in a Frequently Burned Pine-Oak-Hickory Ecosystem
35. **Hann, Wendel, J., Phd:** Evaluating Landscape Wildland Fire and Fuel Management Effectiveness With Modeling and Validation: An Initial Investigation
36. **Hood, Sharon:** Low-Severity Fire Increases Tree Defense from Mountain Pine Beetle
37. **Innes, Robin J.:** Fire Effects Information System: Now Spatially Searchable
38. **Kent, Kevin:** Algorithmic Inventorying of Snags In Post Fire Environments Using Remote Sensing Techniques
39. **Leonard, Steve, Phd:** Ecological Refuges In Large Wildfires: Unburnt Patches in the Kilmore East-Murrindindi Fire Area, Victoria, Australia.
40. **Lynch, Ann M., Phd.:** Spruce-Fir Colonization Following A High-Severity Fire in 1685 In Southern Arizona
41. **Meng, Ran:** Study of Vegetation Regeneration In Post-Disturbance Environment In Sierra Nevada Region of California By Remote Sensing Method
42. **Merschel, Andrew:** Variability in Growth Climate Relationships in Mixed-Conifer Forests of Central Oregon and Response to Fire Exclusion with Implications for Climate Change
43. **Peterson, David W., Phd:** Snag Dynamics Following Stand-Replacing Wildfires in Dry Coniferous Forests of the Pacific Northwest
44. **Senneff, Zachary:** Leaf Litter Flammability of Eastern Deciduous Forests Species
45. **Stevens-Rumann, Camille:** Forest Recovery and Trajectory in Dry Mixed Conifer Forests Following Bark Beetle Outbreaks and Wildfires
46. **Strand, Eva:** Sensitivity to Scale and Fire Regime Inputs in Deriving Fire Regime Condition Class
47. **Weill, Alexandra, U.C. Davis:** Comparative Modeling of Fire Activity in Mediterranean Shrublands
48. **Wells, Ashley:** Multidecadal Trends in Burn Severity and Patch Size, 1900-2007

# Poster Presentations Tuesday, May 20, 5:30-7:30 pm, UC Ballroom

## FIRE MANAGEMENT

49. **Amato, Sam:** Fire Perimeter Delineation and Reconstruction from Geo-Referenced Photographs Using Google Earth Pro
50. **Atkinson, Tyson:** Objectifying ‘Steep, Rugged, Inaccessible Terrain’ for Fire Management
51. **Leyshon, Nicola:** Does an Expanding Wui Actually Increase Risk of Residential Loss?
52. **Drury, Stacy A., Phd:** The Afters Project: Motivation, Objectives, and Results
53. **Dubrowin, Damien:** Fire Management Planning – An Australian Perspective
54. **Ewell, Carol M.:** Fire Management Lessons Learned - Evolving Fire Management Programs
55. **Hamby, Gregory:** Long-Term Growth and Mortality of Residual Ponderosa Pine in Masticated Stands Treated with Prescribed Fire
56. **Hoff, Valentijn:** An Analysis of the Severity Patch Distribution of Subsequent Fires on The North Rim of the Grand Canyon
57. **Holden, Zachary A.:** Topofire: A System for Monitoring Insect and Climate Induced Impacts on Fire Danger in Complex Terrain
58. **Hyde, Josh:** Training Tools for Smoke Management in the Frames Emissions and Smoke Portal
59. **Ingalsbee, Timothy Ph.D.:** A ‘Leopoldian’ Fire Ethic to Empower Ecological Fire Management
60. **Lanier, Sam:** From Sensor to Incident Commander, the Silver Fire 2013
61. **Long, Donald:** The Landfire 2010 Update: An Overview
62. **Mchugh, Charles W.:** Strategic Operations Planning – It’s Not Just for Wilderness Anymore
63. **Miller, Kristen:** The Coalition of Prescribed Fire Councils: One Voice for Preserving the Ecological Role of Fire
64. **Montblanc, Eugenie:** Great Basin Fire Science Delivery
65. **Opoku Agyemang, Sandra (M. Sc.):** Fire in the Afram Headwaters Forest Reserve, Ghana: Causes, Occurrences and Management Interventions
66. **Piper, Renee:** Fire and Fuels Management Tech Transfer and Training: Why Blended Learning is the Only Way to Go
67. **Reed, Warren P.:** Synthesis and Assessment of Mastication as a Fuels Reduction Treatment from 2000 to Present
68. **Wolfson, Barbara Satink:** The Southwest Fire Science Consortium: A Growing Opportunity in Fire Science and Management
69. **Vaillant, Nicole, Phd:** Arcfuels10 - An Arcmap Toolbar for Fuels Management Planning

## LARGE FIRES

70. **Duhnkrack, Jesse:** Impacts of Large Wildfires on Units within the Intermountain Region of the National Park Service
71. **Eidenshink, Jeff, Phd:** Forecasting Distribution of Numbers of Large Fires
72. **Eisele, Bob:** Large Fires in San Diego County, California
73. **Ingalsbee, Timothy:** Temperate and Boreal Forest Mega-Fires: Characteristics and Challenges
74. **Ramirez, Joaquin:** Supporting Strategic and Tactical Wildfire Decisions with Operational Simulations
75. **Rocca, Monique E., Phd:** Forest Cover After the High Park Fire: Landscape-Scale Restoration or Novel Vegetation Pattern?
76. **Tiller, Michael:** Burn Severity Assessment of the Bastrop Fire Complex Using Differenced Normalized Burn Ratio
77. **Wall, Tamara U:** Extremes in Fire – the Intersection of Climate, Fuels and People

# Poster Presentations Tuesday, May 20, 5:30-7:30 pm, UC Ballroom

## **SOCIAL ISSUES/POLITICAL REALITIES**

78. **Butler, Benjamin:** An Investigation of Landscan Suitability for Strategic Decision Making in the Wildland Fire Decision Support System
79. **Christianson, Amy, Phd:** Aboriginal Wildfire Evacuation Partnership
80. **French, Diane:** Forest Jihad?: The Threat of Religious-Inspired Pyro-Terrorism in U.S. Forests and Abroad
81. **Gerweck, Deanna:** Examining the Effect of Environmental Change in Determining Fire Evacuee's Responses to Natural Disasters
82. **Kooistra, Chad:** Post-Wildfire Landscape Recovery: Perspectives from Remotely Sensed Images and Social Science Data
83. **Loewe, Verónica M.:** Creation and Implementation of a Certification System for Insurability and Fire Risk Classification for Forest Plantations, to Improve Sectorial Asymmetries and Raise Competitiveness of Small and Medium Companies (SMES)
84. **Robinne, François-Nicolas:** A Spatial Analysis of Wildfire Risk to Alberta's Drinking-Water Supply
85. **Vosburgh, Mark:** Journalism for Scientists

## **WILDLAND FUELS**

86. **Baranovskiy, Nikolay V.:** Forest Fuel Ignition by Focused Sunrays
87. **Barnes, Devon:** Evaluating Sprinkler Efficacy for Wildland Fire Protection Programs in Fairbanks, Alaska
88. **Bowman-Prideaux, Chris:** The Effectiveness of Post-Fire Rehabilitation at Altering Fire Return Intervals in the Sagebrush Steppe
89. **Crotteau, Justin:** Fuels Dynamics and Potential Fire Behavior after Variable Retention Harvest in Lodgepole Pine
90. **Frost, Scott, MS:** Mitigating the Potential for Large Fires—An Investigation of Fuel Treatment Alternatives at Army Garrison Camp Williams
91. **Hyde, Josh:** A Comparison of Landfire Fuel Representation Systems and their Application in Estimating Fire Effects across Landscapes
92. **Kreye, Jesse, Phd:** Spatial and Temporal Variability of Forest Floor Duff Moisture: Autocorrelation and Scales of Importance
93. **Kropp, Rachael:** The Relationship Between Foliar Chemistry and Heat Content of Live Wildland Fuels
94. **Lata, Mary:** The Four Forest Restoration Initiative
95. **Mcneill, Richard:** Little Bear Fire: Pre-Fire Hazardous Fuel Treatment Effectiveness
96. **Mietkiewicz, Nathan:** Spruce Beetle Legacies on Fuel Loads in the Southern Rocky Mountains, Co.
97. **Peterson, Birgit:** Enhanced Canopy Fuel Mapping through Integration of Lidar Data
98. **Silverstein, Robin P.:** Predicting Smoke: Spatial Analysis of Fuel Loadings at the National Level
99. **Vakili, Emma:** Evaluating Fuel Treatment Effects on the Spatial Scale of Surface Fuels in Front Range Ponderosa Forests
100. **Wilkin, Kate:** The Natural Trade-Offs of Reducing Chaparral Fire Risk
101. **Vogler, Kevin:** Sustainable Biomass Supply from Forest Health and Fire Hazard Reduction Treatments: A Biomass Assessment of Federally Owned Land in Eastern Oregon



# Special Events

EXHIBITION OF

# Art & Expression

OF WILDLAND FIRES

**An Art Exhibit and Competition  
concurrent with the Large Wildland Fires:  
Social, Political & Ecological Effects Conference**  
UNIVERSITY OF MONTANA MAY 19-23, 2014

Join us by sharing your expression in our Wildland Fire themed Art Exhibition.

All art media is welcome and encouraged including textile, painting, wearable, photography, ceramics, collage, poetry, sculpture, carving etc.

Entries will be on display at the University Center Gallery for the general public and all Large Wildland Fires Conference attendees.

Art will be professionally judged in many categories such as: best in show, photography, oil, water color, acrylic, textile, ceramic, written, and people's choice. Judging will be followed by a presentation of ribbons.


Participants are invited to donate their work to a silent auction fundraiser supporting the "Mike DaLuz Memorial Student Travel Scholarship Fund" and the "United Phoenix Fire Fighters Association".

**Mike da Luz Memorial Student Scholarship Fund**  
AFE lost one of their board members Mike da Luz in 2013. Mike's family is working with AFE to create "The Mike da Luz Memorial Student Scholarship" to help fund students travel to attend conferences and other educational events. Donations will be used exclusively to support students in attending events.


**The United Phoenix Fire Fighters Association**, together with the Prescott Fire Fighters Charities, have established a 501(c)3 relief fund to benefit families of the firefighters killed in the Yarnall Fire. Every penny of your tax deductible contribution will go directly to the families.

**Art that is donated to the Silent Action will be displayed and auctioned at the Large Wildland Fires Conference Banquet on Wednesday evening, May 21, 2014**


Sponsored by



International Association of Wildland Fire



Association for Fire Ecology




## Monster Flicks: BIG FIRES on the BIG SCREEN...


An Evening With **Dr. Stephen J. Pyne**  
**THURSDAY, MAY 22 WILMA THEATRE 7PM**

A film festival is being held in conjunction with the conference on "Large Wildland Fires: Social, Political & Ecological Effects" taking place in Missoula the week of May 19-23, 2014. The conference is co-hosted by the International Association of Wildland Fire and the Association for Fire Ecology.

The festival will feature a commentary by renowned global wildland fire historian Dr. Steve Pyne from Arizona State University on films dealing with large wildland fires of the past such as the 1933 Tillamook burn (Oregon), the 1947 Maine fires, and the 1967 Tasmania fires (Australia).



**Dr. Steve Pyne** is a Regents professor in the School of Life Sciences, Arizona State University in Tempe (<https://sols.asu.edu/people/stephen-j-pyne>) and the author of more than a score of books, most of them on the history of humanity and fire. In a previous life he was a member of the North Rim Longshots for 15 seasons at Grand Canyon National Park. Dr. Pyne is currently working on a two-book endeavor that will survey the past 50 years of American fire history. *Between Two Fires* will provide the play-by-play narrative, and *To the Last Smoke*, a suite of regional studies, the color commentary.



This event will take place on **Thursday evening, May 22** at the historic **Wilma Theatre** in downtown Missoula. Doors will open at 6:30 pm with Dr. Pyne's introductory remarks beginning at around 7:00 pm.

Members of the public are welcome and encouraged to attend.

Admission fee: \$5



# Awards Banquet Wednesday, May 21, UC Ballroom

The Silent Art Auction and no-host Social Reception will begin at 5:00 followed by dinner at 6:00. Later in the evening we will have our Awards Ceremony, an exciting presentation by Michael Kodas and live music by Russ Nasset and the Revelators.

*Featuring AFE Board Member, Dr. Chris Dicus as our Master of Ceremony*



## Banquet Speaker Michael Kodas

*Photojournalist, author and videographer  
and Associate Director of the Center for  
Environmental Journalism,  
Journalism and Mass Communication Department  
University of Colorado,*



## Live Music by Russ Nasset and the Revelators

### Awards to be presented

- IAWF Ember Award
- IAWF Student Scholarships
- Mike daLuz Memorial Student Travel Scholarship
- AFE Lifetime Achievement Awards
- AFE Student Awards
- AFE Professional Certifications
- AFE Academic Certificate Program
- Conference Student Poster Awards

*Ticket required – If you have not already purchased a ticket, there will be a limited number available at the registration desk until Wednesday at noon or until they sell out.*

## Monday, May 19

### ALL DAY • 8:00 - 5:00

**RT-130 Annual Fire Line Safety Refresher**, Instructor: Chris Johnson, USFS

**Introduction to the Interagency Fuels Treatment Decision Support System (IFTDSS)**, Instructor: Stacy Drury, Sonoma Technology, Inc

### MORNING • 8:00 - Noon

**Introduction to the BehavePlus Fire Modeling System**, Instructors: FaithAnn Heinsch and LaWen Hollingsworth, USDA Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory

**Overview and Demonstration of the FFI, Ecological Monitoring Application**, Instructor: Duncan Lutes, USDA Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory

**Introduction to the Creating Hybrid Structure from LANDFIRE/Lidar Combinations (CHISLIC) Tool**, Instructor: Kurtis Nelson, USGS Earth Resources Observation and Science (EROS) Center

**Advanced Fire Behavior Analysis, Through Lessons Learned**, Instructors: Dan Mindar, Wildland Fire Management Research Management Development and Application (WFM RD&A) and Erin Noonan-Wright, WFM RD&A and Missoula Fire Sciences Laboratory

**Microscale Wind Simulations Using WindNinja**, Instructor: Jason Forthofer, USDA Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory

### AFTERNOON • 1:00 - 5:00 (unless specified)

**Practical Tools for Assessing Potential Crown Fire Behavior & Canopy Fuel Characteristics (1:00 - 3:00)**, Instructors: Martin Alexander, University of Alberta, Edmonton, AB, Canada & Miguel Cruz, CSIRO, Canberra, ACT, Australia

**Journalism Skills for Scientists (1:00 - 3:00)**, Instructor: Mark Vosburgh, USDA Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory

**LiDAR Data Processing for Fuel Applications**, Instructors: Nancy Glenn, Boise Center Aerospace Laboratory, Department of Geosciences, Boise State University and Andy Hudak, USFS Rocky Mountain Research Station

**Using the BehavePlus Fire Modeling System in Prescribed Fire Planning**, Instructor: Faith Ann Heinsch and LaWen Hollingsworth, USDA Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory

**Recently Updated Missoula Fire Sciences Lab Educational Programs and Applications: FireWorks, First Order Fire Effects Model and FuelCalc**, Instructor: Duncan Lutes, USDA Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory

**Climate Downscaling for Fire Management**, Instructors: Yongqiang Liu, Scott Goodrick and John Stanturf, USFS Southern Research Station Center for Forest Disturbance Science

**Crafting Solutions for Management of Large Wildland Fires and Prescribed Fire across Tribal and Nontribal Jurisdictions**, Instructors: Vita Wright, Northern Rockies Fire Science Network and Frank Lake, USDA FS- Pacific Southwest Research Station

**Defining Fuel Treatment Success: Workflows, Metrics and Evaluation**, Instructor: Russ Parsons, Erin Noonan-Wright, Greg Cohn, and Katherine Hetts, USDA Forest Service

# Wednesday Field Trips (1:30-5:30)

## Restoration Fuel Treatments in Old Growth Larch and Ponderosa Pine

**Trip leader: Mick Harrington, retired from USFS, Missoula, MT**

**Speaker: Steve Arno, Research Forester, retired from USFS, Missoula, MT**

This field trip will feature a visit to a remnant stand of old growth ponderosa pine and western larch. Surrounded by heavily harvested forests, this small uncut stand provides a glimpse of the historic forest stature prior to wide spread timber cutting. A detailed stand and fire history document the pre-1900 structure, composition, and key processes. With fire removed from this stand for 85 years, major changes in stand characteristics were taking place and are clearly seen. Restoration of old growth stands is controversial as explicit management guidelines are not definitive. Fire Lab researchers collaborated with personnel from the Lolo National Forest to design a study comparing several operation restoration examples.

Various combinations of mechanical cutting of understory and overstory trees as well as prescribed fire were implemented. Stand structure and composition were

monitored for 10 years along with fuel quantities and qualities. In addition, detailed measurements of tree physiology by University of Montana scientists were followed in the 300+ year old ponderosa pine and western larch. Visitors on this field trip will be able to visually compare these treated units with each other and with an untreated control unit. Tree vitality and growth results will be discussed along with probable intensities and severities of wildfire. Mick Harrington and Steve Arno will lead field trip participants on a tour of the treatments. This field trip will involve a short hike in steep off-trail terrain. Participants are advised to bring warm clothes and rain gear, since the weather can be chilly and wet this time of year.

**Bio:** Mick Harrington received undergraduate and graduate degrees in Forest Science and Fire Ecology, respectively, from the Forestry School and Botany Department, University of Montana. In 1977 he transferred to the Rocky Mountain Forest and Range Experiment Station in Arizona as a research forester, conducting research in prescribed fire effects and fuels reduction in ponderosa pine, gambel oak, and pinon pine. In 1987, he returned to the Missoula Fire Sciences Lab to conduct research in restoration of degraded ponderosa pine/western larch forests and native grasslands, with an emphasis on prescribed fire use. Mick retired in 2013 after 40+ years in wildland fire research.



Photos: Mick Harrington



# Wednesday Field Trips (1:30-5:30)

## Blue Mountain

**Trip leader: Dick Hutto, Professor of Biology and Wildlife Biology, Division of Biological Sciences, University of Montana, Missoula, MT**

Take a walk through the 11-year-old Black Mountain fire to see the consequences of that natural disturbance event from an ecologist's perspective. Dr. Hutto is an ecologist in the Division of Biological Sciences at UM who has conducted research on the effects of fire on bird communities since the 1988 Yellowstone fires, which helped fuel the still-pervasive sentiment that the fires we see today are unnatural, and that the mismanagement of forests is to blame. Although the aftermath of the Black Mountain fire is getting on in years, you should still be able to witness firsthand what the birds have to say about the consequences of this fire. The walk is designed to expose several post-disturbance patterns that are inconsistent with some of the conventional wisdom surrounding fires in this dry, mixed-conifer forest type. The walk is a great companion activity to the special session on "The ecological importance of maintaining severe fire on the western forested landscape." During this trip, participants will take a short walk on fairly even terrain. Participants are advised to bring warm clothes and rain gear, since the weather can be chilly and wet this time of year.



**Bio:** Dr. Richard L. Hutto is Professor of Biology and Wildlife Biology at the University of Montana (<http://cas.umt.edu/dbs/labs/hutto/>). He has conducted research on migratory landbirds in Mexico in winter, the Southwest during spring and fall, and in the Northern Rockies in summer for more than 35 years. In 1990, he developed the USFS Northern Region Landbird Monitoring Program, and he has been studying the ecological effects of fire on bird communities for the last 25 years. Dr. Hutto was host of "Birdwatch," a nationally televised PBS series that ran from 1998-2001. Because he is moved by what birds have to teach us about land stewardship, Hutto established the Avian Science Center on the University of Montana campus (<http://avianscience.dbs.umt.edu/>) to promote ecological awareness and informed decision making by listening to what western birds tell us about the ecological effects of human land-use practices. His fire ecology lab's Facebook page (<https://www.facebook.com/fireecologylab>) provides tidbits that reflect an ecological perspective on fire.



Photo: Dick Hutto



# Wednesday Field Trips (1:30-5:30)

## Missoula Fire Sciences Laboratory

**Trip leader:** Bob Keane, Research Ecologist, USFS, Missoula, MT  
**Shepherd/domos:** Bob Keane & Kris Lee



Take a one-of-a-kind, extensive tour of the Missoula Fire Sciences Laboratory where you will be shown some of the current research studies being conducted at this internationally renowned wildland fire science facility. You will see the burn chamber, wind tunnel, soils laboratory, fire history laboratory, and MODIS satellite receiving station. Some recent research will be demonstrated in these facilities including burning masticated fuel-beds, measuring soil heating after organic fires, the physics of fire ignition,

and fire whirl generation. The field trip will start with a general introduction and history of the fire lab and a half hour of presentations on current research efforts. Then participants will tour the facilities and speak with the scientists conducting the fire research.

### **Bios:**

**Bret Butler:** Bret's research focuses on fundamental heat and combustion processes in wildland fire. Applications for his research include fire behavior models, links between fire behavior and effects, and firefighter safety.

**Jack Cohen:** Jack currently focuses his research on the fire dynamics related to live shrub and tree canopy fire behavior (active crown fires) and continues a portion of his time revealing opportunities for preventing wildland-urban fire disasters.

**Mark Finney:** Mark's research includes studies with fire spread in deep and discontinuous fuel beds, and fire simulation for purposes of fire risk assessment which has been done in direct support of the development of two major fire management systems.

**Emily Heyerdahl:** Emily's research focuses on inferring the drivers of spatial and temporal variation in fire regimes over the past several centuries using tree rings and modern fire records. These drivers include climate, forest type, topography, and land use.

**Matt Jolly:** Matt's research focuses on improving our understanding of how living plants burn and how live fuel flammability varies both seasonally and inter-annually. This new knowledge will help better inform the next generation of fire behavior and fire danger models.

**Robert (Bob) Keane:** Bob's areas of expertise are in landscape and ecosystem modeling, whitebark pine restoration, wildland fuel science, fuel mapping, fire hazard and risk analysis, fire ecology, and fire regimes.

**Sara McAllister:** Sara's research focuses on the fundamental physics of wildland fire. Her main research interest is in understanding fuel particle ignition. She has authored a textbook on combustion fundamentals and over 20 peer-reviewed publications and conference papers.

**Russ Parsons:** Russ's research applies simulation modeling science to provide an improved understanding of wildland fuels characteristics and dynamics, and how wildland fuels interact with fire behavior at multiple scales.

**Shawn Urbanski:** Shawn has focused some of his research on biomass burning emission inventories, rapid response emission inventories for wildland fires in the US, assessing the impact of wildland fires (wild and prescribed) on air quality, a prototype fire emission - smoke dispersion modeling system, field and laboratory studies characterizing the chemical composition of smoke, and emission factor databases for emission inventories and air quality modeling.

# Wednesday Field Trips (1:30-5:30)

## Missoula Technical Development Center/ National Weather Service/Smokejumper Center

Trip leader: Faith Ann Heinsch, Physical Scientist, USFS, Missoula, MT

### *The Missoula Technology and Development Center (MTDC)* Bob Beckley

The Missoula Technology and Development Center (MTDC) began as the support facility for Forest Service fire management in the late 1940s, when a small group started developing techniques for parachuting men and cargo. In the early 1960s, the center's role was expanded to a Service-wide technical center with a nationwide program that now encompasses all Forest Service equipment needs. Today, MTDC works with Federal and State agencies, universities, private firms, and research groups to meet its responsibilities to resource managers.

MTDC is one of four detached units of the Engineering Staff in Washington, DC, and serves Forest Service Regions and cooperating Federal and State agencies. MTDC makes equipment, information, concepts, and ideas available so Federal and State agencies can better manage the millions of acres of public land through:

- Interviewing Forest Service personnel to help identify real needs,
- Surveying commercial markets and tests promising products.
- Designing, building, and testing prototype equipment,
- Cooperating with private industry to develop commercial sources,
- Maintaining specifications and standards for fire and safety equipment, and
- Disseminating publications, fabrication drawings, project films, and audiovisual programs.

Current projects include testing of fire retardants, fire shelter development, smokejumper parachute systems, and heli-rappel descent devices.

### *The Smokejumper Center*

Allison Linville

Smokejumpers are highly trained specialists who parachute into remote areas of national forests to fight the spread of wildfires. The nation's largest training base for smokejumpers is located in Missoula. The visitor center at the Aerial Fire Depot offers updated displays, dioramas and videos related to fire suppression. Guided tours are given of the parachute loft and training facilities.

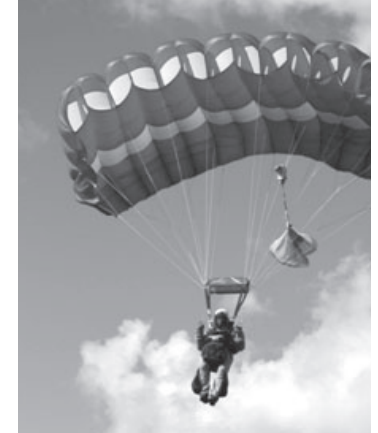


Photo: Tom Wallace

### *National Weather Service - Bob Nester and Jenn Kitsmille*

The mission of the National Weather Service is to provide weather, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the national economy. The forecast office in Missoula, Montana, is responsible for these forecasts in parts of western Montana and north central Idaho. During the fire season, fire weather forecasts are prepared for the region and, upon request, are detailed down to specific locations of concern to firefighters, accounting for the local topography and microscale weather effects. These forecasts are tailored to fire behavior applications. Local meteorologists also serve as incident meteorologists, providing on-site support for larger fires.

**Bob Nester** – Lead Forecaster National Weather Service Missoula

Bob has been a lead forecaster at the NWS Missoula Forecast Office since 2001 and is in his 27th year with the NWS. He has been an Incident Meteorologist (IMET) for 20 years, 1994-Present. He has worked over 50 assignments across the U.S. and is on the instructor cadre for the IMET program.

**Jenn Kitsmiller** – Lead Forecaster National Weather Service Missoula

During her 10 year career as a meteorologist with the National Weather Service, Jenn has lived in and forecasted for Reno, Houston and Missoula. Missoula has become her home, and the time she has spent here has helped her develop a passion for fire weather forecasting. In 2011, she became the fire weather program leader for Missoula and she has also served as an Incident Meteorologist



# Wednesday Field Trips (1:30-5:30)

## Missoula City Tour

**Trip leader: Troy Payton, Destination Missoula**

We will start the tour at the Missoula Art Museum. From there the guests will have the option to walk (those that prefer not to walk can go with the bus and be waiting for the group at the Park) to Caras Park/Carousel/Brennan's Wave via downtown and Pattee Street to check out some historic buildings and walk along with river trail. After Caras Park we will go to the Historical Museum and Montana Natural History Center at Fort Missoula.



# Friday Field Trips (8:00-5:00)

## 40 Years of Wilderness Fire in the Selway-Bitterroot

**Trip leader: Carol Miller, Research Ecologist, USFS, Missoula, MT**  
*Boxed lunch included.*



Photo: Karin Riley

Participants will take a tour between the Frank Church-River of No Return and Selway-Bitterroot Wildernesses. During this full-day field trip, they will learn about the historical and current challenges associated with the oldest Wilderness fire program in the Forest Service. Some of the pioneering managers and scientists who started and nurtured the program will serve as guides for the tour and will provide their perspectives on ecosystem restoration, the risk of fires burning out of the wilderness, and the choice between accepting risk now versus postponing that risk into the future. Current managers will also be on hand to discuss the management of recent long-duration wildfires, the effort that goes into protecting values at risk, and the challenges that lie ahead. Evidence of recent fire and management actions will be interpreted by a cadre of presenters representing perspectives from Forest Service personnel (line officers, fire staff, wilderness staff, incident management), local cooperators, and outfitters. The 2013 Gold Pan fire will serve as an example to illustrate key discussion points.

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*Presenters representing a range of perspectives will include:*

**Dave Campbell** - West Fork District Ranger (retired)

**Bob Mutch** - Chair, Painted Rocks-West Fork FireSafe Council

**Rick Floch** - BRF Fire Management Officer; operations section chief for 2 weeks during the Gold Pan fire

**Diane Hutton** - Incident Commander on the Gold Pan fire

**Bart Hoag** - Strategic Operational Planner (SOPL) and Long Term Analyst (LTAN) on the Gold Pan fire (retired)

**Julie King** - Bitterroot National Forest Supervisor

**Deb Gale** - West Fork Ranger District Program Manager, Wilderness, Trails, Outfitter and Guides, Wild and Scenic Rivers

**Steve Burson** - Storm Creek Outfitters, Idaho Outfitter Guides Association

**Local cooperator from the Scripps Ranch and Painted Rocks VFD**

The tour will offer sightseeing and interpreted observation of recent fire patterns. It will include two brief stops (West Fork Ranger Station and Nez Perce Pass) before reaching the Magruder Ranger Station for a two-hour stop that will allow time for lunch, a short hike, and in-depth discussions. Discussion topics will include wilderness law and policy related to fire management, ecological dynamics and landscape resilience, special uses, wildland urban interface, protection responsibilities, managing risk, and the future of the wilderness fire program. Printed reference materials will be supplied to each participant and will include background on wilderness law and policy, a fire history map and historical statistics for the Selway Bitterroot Wilderness, a tour map, and fire weather and fire progression information for the Gold Pan fire of 2013.

Participants should bring warm clothes and rain gear, and be prepared for changeable outdoor conditions, as the weather can be chilly and wet this time of year and one of the stops is at 6500 feet elevation. This full day field trip will leave Missoula promptly at 0800 and return at 1730.



# Friday Field Trips (8:00-5:00)

## The Fires of 2000: Revisiting Social, Political, and Ecological Issues

**Trip leader: Karin Riley, Research, Geoscientist, University of Montana, Missoula, Montana**

*Boxed lunch included.*

Following the theme of the conference, we have organized a field trip to visit one of the largest fires to burn in the Bitterroot valley in recorded history. During the fires, newspaper headlines proclaimed the fire to be “the worst in 50 years”, however, following the fires, both positive and negative effects of fire were apparent. The fires of August 2000 burned approximately 350,000 acres and consumed 79 homes. Participants will travel to a part of the burned area south of Darby, Montana. This field trip consists of seven separate stops, with each stop consisting of a short presentation followed by a short discussion of the important attributes of large fires. Themes of the stops include: the ecology of large fires, daily fire behavior of the Fires of 2000, suppression strategies for these fires, effect on local fisheries, post-fire debris flows, effect on local communities, community preparedness, and impacts of fuel treatments. This field trip was designed as a forum to discuss political, social, and ecological issues



Photo: Karin Riley

that govern wildland fire management in today's society in the context of large fires. Participants are advised to bring warm clothes and rain gear, since the weather can be chilly and wet this time of year.

Weather and snow conditions permitting, trip stops will include several spots in the Rye

Creek area where participants can view wildfire effects, homes that were destroyed during the fire, and the steep mountainous topography typical of the area. A boxed lunch will be provided. This trip will depart from University of Montana at 8 a.m. and return at approximately 5 p.m.

### Speakers:

- Sonny Stiger, TriCounty FireSafe Working Group, Board member of Fire Safe Montana (retired), US Forest Service fire and fuels manager (retired)
- Alan Tresemer, Captain of Painted Rocks Fire Rescue Company
- Jacquie Parks, Fire Management Officer, Bitterroot National Forest, U.S. Forest Service
- Mike Jakober, South Zone Fish Biologist, Bitterroot National Forest, U.S. Forest Service
- Marilyn Wildey, Acting NEPA Coordinator and Hydrology Technician, Supervisor's Office, Bitterroot National Forest, U.S. Forest Service
- Ed Snook, Hydrologist, Bitterroot National Forest, U.S. Forest Service
- Larry Campbell, Friends of the Bitterroot

## Fuels Reduction and Restoration in Mixed Conifer Forests of the Southwestern Crown of the Continent: Collaborative Forest Landscape Restoration Program Site Visits and Discussions

**Trip Leaders: Travis Belote, Research Ecologist, The Wilderness Society, Bozeman, Montana**

**Cory Davis (University of Montana and SW Crown CFLRP)**

*Boxed lunch included.*

**Overview:** Fuels reduction and restoration in forests historically characterized by mixed severity fire remains a controversial topic for researchers and managers. In the southwestern Crown of the Continent of western Montana, a diverse group of stakeholders has been working together with the US Forest Service to develop landscape strategies of fuels reduction and restoration of fire regimes in mixed conifer forest types. The Collaborative Forest Landscape Restoration Program (CFLRP) has been partially supporting this work since 2009. During the field trip, we will visit several sites

# Friday Field Trips (8:00-5:00)

representing the diversity of forest conditions located in the Seeley Lake and Swan Valley area, including pre- and post-treatment areas, recently burned forests, and a stand supporting the national champion western larch where mechanical fuels reduction and prescribed fire were used to reduce crown fire risk over 10 years ago. We will discuss opportunities and challenges associated with collaboratively developed fuels reduction and restoration projects in mixed conifer forests. Participants are advised to bring warm clothes and rain gear, since the weather can be chilly and wet this time of year. We will depart Missoula at 8am and plan on returning at 5pm.

## **Stop 1. Girard Grove: Fuels reduction and restoration in old-growth western larch (9:30a – 11a)**

The Girard Grove on the Seeley Ranger District of the Lolo National Forest hosts the largest known individual of western larch and is within 3 miles of the town of Seeley Lake, MT. The stand, dominated by western larch, lodgepole pine, and Douglas-fir, received mechanical fuels reduction treatments and prescribed fire a little over 10 years ago. We will use this stop to discuss objectives of fuels reduction and restoration treatments, the history of collaborative forest restoration in Montana, and a recent comparative study between the site and a similar site recently burned in the Bob Marshall Wilderness.

### ***Speakers:***

Travis Belote (Forest Ecologist, The Wilderness Society)  
Cory Davis (Research Associate, University of Montana College of Forestry and Conservation, and Monitoring Coordinator for the Southwestern Crown Collaborative)  
Tim Love (District Ranger, Seeley Lake RD, Lolo National Forest)  
Sharon Hood (Forest and Fire Ecologist, University of Montana)  
Mick Harrington (Scientist [retired], Rocky Mtn Research Station, Fire Sciences Lab, Missoula)

Lunch and restroom stop: River Point Campground, Seeley Lake (11:00-11:30)

## **Stop 2. Jocko Lakes fire (11:45a – 1:00p)**

The Jocko Lakes fire burned over 35,000 acres just west of Seeley Lake. We will use stops within this fire perimeter to discuss social aspects of wildfire and community protection and discuss how previous forest treatments and firefighting strategies influenced fire spread. We will discuss how landscape placements of treatments may help increase the decision space for fire managers.

### ***Speakers:***

Jarel Kurtz (Assistant Fire Management Officer, Helena National Forest, Lincoln RD)  
Jim Riddering (Remote Sensing Program Manager, University of Montana Fire Center)  
Tim Love (District Ranger, Seeley Lake RD, Lolo National Forest)  
Jon Haufler (Executive Director, Ecosystem Management Research Institute, Seeley Lake)  
LaWen Hollingsworth (Spatial Fire Analyst, Fire Modeling Institute, Missoula)

## **3. Colt Summit Restoration/Fuels Reduction Project (tentative 1:30p – 3:00p)**

This integrated restoration project 13 miles north of Seeley Lake is within the Wildland Urban Interface and includes fuels reduction on 2,000 acres. The project was appealed and litigated between 2011 and 2013 based largely on wildlife concerns. We will discuss tradeoffs among fuels reduction and wildlife habitat within the WUI.

### ***Speakers:***

Scott Tomson (Wildlife Biologist, Lolo National Forest, Seeley Lake RD)  
Melanie Parker (Executive Director, Northwest Connections, Condon, MT)  
Marnie Criley (Community Program Coordinator, Northwest Connections, Condon, MT)  
Scott Brennan (Associate Director Northern Rockies Regional Office, The Wilderness Society)  
Vince Archer (Soil Scientist, Enterprise Program, Washington Office of NFS)

## **4. Holland Fuels and Swan Valley heterogeneity (tentative 2:30-3:30)**

Time allowing, we will drive up the road and into the Swan Valley to visit a fuels reduction project conducted within the past decade. Up until just a few years ago, much of the Swan Valley was owned Plum Creek Timber Company, and evidence of past management can be easily seen from space as a checkerboard of different stand ages and conditions. We will use this stop to discuss landscape-scale heterogeneity and mixed severity fire restoration.

### ***Speakers:***

Melanie Parker (Executive Director, Northwest Connections, Condon, MT)  
Roger Marshall (Stewardship Forester, Swan Ecosystem Center, Condon, MT)  
Brad Gillespie (District Fire Management Officer, Flathead National Forest, Swan Lake District)

# Sponsors & Exhibitors



## Joint Fire Science Program

<https://www.firescience.gov/>

Our Mission: Provide credible research tailored to the needs of fire and fuel managers; engage and listen to clients and then develop focused, strategic lines of new research responsive to those needs; solicit proposals from scientists who compete for funding through a rigorous peer-review process designed to ensure the best projects are funded; and focus on science delivery when research is completed with a suite of communication tools to ensure that managers are aware of, understand, and can use the information to make sound decisions and implement projects.

The Program is uniquely positioned to tailor wildland fire research in response to the emerging needs of policymakers and fire managers. An annual cycle of proposal solicitation, review, and funding ensures timely response to evolving conditions. Research projects complement and build on other federal research programs, such as those in the Forest Service Forest and Rangeland Research Stations, U.S. Geological Survey, and National Fire Plan. Synthesis of research findings and targeted delivery to managers are essential components of the Program.

More than 90 colleges and universities have also collaborated on and partnered with JFSP-sponsored research projects. By engaging masters and doctoral candidates in these projects, we are training the next generation of resource managers and scientists. This collaboration extends to private, non-profit organizations and tribal, state, county, and local governments as well. In all, nearly 200 organizations have become partners in JFSP-sponsored research.



## USDA Forest Service, Fire & Aviation Management Program

<http://www.fs.fed.us/fire/>

The first forest reserves were established in 1891 and were initially under the management of the Department of Interior's General Land Office, but the first foresters worked for the Bureau of Forestry in Department of Agriculture. In 1905, President Roosevelt transferred the forest reserves to the jurisdiction of the Department of Agriculture. Today, the Bureau of Forestry is the USDA Forest Service, although it is still funded under the Interior Appropriations bills passed by Congress each year. The forest reserves grew in time, and today's National Forests encompass 191 million acres.

In the 19th and early 20th century, there was little organized response for wildfires in forests and rangelands. Many fires had devastating results, such as the Peshtigo Fire in 1871 which burned more than 3.5 million acres in Wisconsin and Michigan and resulted in 1,500 deaths. In 1902, the Yacolt Fire in the southwestern Washington burned about a million acres and cost 38 lives. The "Big Blowup" in 1910 burned nearly 3 million acres in the northern Rockies. During this time, fires were primarily fought on federal, state and private lands by Forest Service personnel and area residents. This was mostly hand-to-hand combat with wildfire, using wet burlap bags, axes, and water buckets to try and stop the advancing flames.

As large fires occurred across the United States, State and local governments began to act. After the severe wildfires in Montana and Idaho in 1910, more emphasis was placed on telephone communications and fire patrols. State Fire Warden positions were established, especially in the west, and legislation such as the Weeks Law in 1911 and the Clarke-McNary Act in 1924 enhanced the Federal-State fire suppression partnership. These programs grew into the Forest Service's State and Private Forestry division, of which Fire and Aviation Management is a part. In 1944, Congress increased the scope of the Clarke-McNary Act to create an emphasis on fire prevention.

Fire research began in 1899, after Forest Service Chief Gifford Pinchot authorized a study on the history of forest fires to better understand the damage. Fire research evolved from this early request into today's sophisticated analysis of fuels, combustion, weather and safety.

The role of fire management has changed a great deal with the times. In 1935, the Forest Service had a "10 a.m." policy which stipulated that a fire was to be contained and controlled by 10 a.m. following the report of a fire, for, failing that goal, control by 10 a.m. the next day and so on. Today fire is recognized as an important component of healthy ecosystems. The policy of fire suppression on every fire has transitioned to suppression or, where appropriate, fire use to achieve resource objectives.

Firefighting took to the air shortly after World War I as the Forest Service used aircraft to patrol for wildfires. Smokejumpers came on the scene to fight their first fire in 1940. In 1956, the first practical drops of water and chemicals onto wildfires began, and helicopters began to assist with firefighting in the 1950's.

Changing social issues in the last one hundred years have shown the need for continued fire prevention messages from Smokey, but also a shift to more fire use projects and smoke management studies. Concepts such as defensible space, especially in the urban interface, have become a focal point as more homes and



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communities are built in or adjacent to public lands. Interagency cooperation with the advent of the National Fire Plan in fuels reduction, community assistance, and an increasingly diverse workforce continue to challenge Forest Service Fire and Aviation Management. We have reached out to assist state and local fire departments throughout the United States, and cooperate with other countries and commonwealths throughout the world.

In the new millennium, the Forest Service Fire and Aviation Management Program has become the premier leader in wildland fire management, operations, and research. In today's rapidly changing world of communications and technology, Forest Service Fire and Aviation Management is on the cutting edge with aviation technology, computer simulated fire management programs and sophisticated resource tracking systems.

The Forest Service Fire and Aviation Management part of the Forest Service continues, even through sometimes dramatic environmental, economic, political and social change, to work our core values: Safety. Mutual Respect. Integrity.



**FUSEE: Firefighters United for Safety, Ethics, and Ecology**  
(Exhibitor)  
<http://fusee.org/>

Firefighters United for Safety, Ethics, and Ecology (FUSEE, pronounced "FEW-zee") is a nonprofit organization dedicated to uniting wildland firefighters and other fire management workers in support of safe, ethical, and ecological wildland fire management. FUSEE conducts public education and policy advocacy promoting community and firefighter safety, ethical public service, wildlands protection, and ecological restoration. Our website features our research reports and policy analyses on some of the burning issues affecting the wildland fire community. We strive to inform and empower fire management workers and their citizen supporters to become torchbearers for a new paradigm in fire management.



**US Forest Service Fire Science Research** (Exhibitor)  
<http://www.fs.fed.us/rmrs/>

The U.S. Forest Service conducts fundamental and applied research in wildland fire. The U.S. Forest Service Fire Science Research booth showcases wildland fire research conducted by the U.S.

Forest Service, with contributions primarily from the Pacific Northwest Research Station's Fire and Environmental Research Applications Team, the Rocky Mountain Research Station's Fire, Fuel, and Smoke Science Program, and the Washington Office's Research and Development. Materials on active fire science research as well as historical documents are available. The U.S. Forest Service educates and mentors future fire science managers and provides tours, curriculum, teacher workshops, and presentations to increase the public's understanding of the science of wildland fire. Educational materials are also available at the booth.



**Neptune Aviation Services** (Exhibitor)  
[www.neptuneaviation.com](http://www.neptuneaviation.com)

Over the past 20 years, the Neptune Aviation fleet has flown thousands of missions with a meticulously maintained cadre of firefighting workhorses, including P2V and BAe 146 aircraft. No other aerial firefighting company in the country comes close to matching the experience and expertise amassed by the dedicated team of world-class pilots, mechanics and engineers at Neptune Aviation. Neptune has proven to be an invaluable partner with the United States Forest Service, not only providing the majority of firefighting aircraft over the past 20 years, but fearlessly pursuing the research and development of a Next Generation aircraft. In fact, Neptune was the first ever US operator to contract with the USFS for a Next Gen aircraft in the form of Tanker 40, a converted British Aerospace BAe 146. Neptune's Rev 3 tank is a technological wonder with capabilities never before seen in the industry. Although the wildland fire climate has changed significantly during the two decades since Neptune Aviation was formed, Neptune's role as the undisputed industry leader has never wavered.

**WE ARE NEPTUNE. EMBRACING FAMILY. FIRM HANDSHAKE. RESILIENT SPIRIT.**



**Wildland Fire Management RD&A**

**Wildland Fire Management Research, Development & Application** (Exhibitor)  
[www.wfmrda.nwccg.gov](http://www.wfmrda.nwccg.gov)

**MISSION:** The RD&A Program will sponsor and guide the development and application of wildland scientific knowledge; develop decision support tools; and provide science application services to the interagency wildland fire community. The



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RD&A Program will serve as a primary point of contact for communication between scientists and participating field managers, and as an advisor to program administrators at local, regional, and national levels. With integrity, professionalism, safety, and mutual respect as our core values, we serve as leaders, role models, and mentors within our resource management agency.

**VISION:** The Wildland Fire Management Research Development & Application (RD&A) is a highly effective organization providing exemplary fire science integration and wildland fire management support to management agencies and personnel through proactive and timely response and in collaboration with partners. The RD&A Program will sponsor and guide the development and application of wildland scientific knowledge; develop decision support tools; and provide science application services to the interagency wildland fire community.



**Northern Rockies Fire Science Network** (*Exhibitor*)  
<http://nrfirescience.org/>

The Northern Rockies Fire Science Network (NRFSN) aims to become a go-to resource for managers and scientists involved in fire and fuels management in the Rocky Mountains of Idaho, Montana, Washington, and Wyoming. We facilitate knowledge exchange among managers and scientists by bringing people together to strengthen collaborations, synthesize science, and enhance science application to critical fire and fuels management issues.

Activities include workshops and fieldtrips, a Network of Fire Science Champions, syntheses and research briefs, online resources (resource database and newsletter), and webinars. All activities and products are guided by input from managers involved in fire and fuels management.

#### **Through these activities, our goals are to:**

1. Expand scientist-manager communication networks  
Increase scientist understanding of fire management challenges and research needs
2. Improve access to and application of science by managers
3. Improve public understanding of and support for fire management
4. Increase the integration of scientific and traditional knowledge on tribal and adjacent lands
5. Facilitate management of resilient ecosystems in the Northern Rockies



**Phos-Chek** (*Exhibitor*)  
**(Mobile App Sponsor)**  
[www.phos-chek.com](http://www.phos-chek.com)

Phos-Chek® long-term fire retardants, Class A foams, and water enhancing gel are the world's leading chemical solutions for managing wild land, industrial and municipal fires. In 1962, the Phos-Chek name was born and an era of innovation and partnership began. For several years before and for four decades since, we have worked side-by-side with fire management agencies in North America and across the world to provide safe and effective firefighting chemicals to meet the needs and desires of fire management personnel. Phos-Chek Class A Foam M makes water more effective. Phos-Chek Flash 21 is a fuel gelling agent for ground and heli-torches. Phos-Chek AquaGel-K and Insul-8 Gel are thickened water products that are ideal for structure protection, exposure protection and other specialty applications. Long-Term Retardants, both in dry powder form or as liquid concentrates, for aerial or ground application are designed to meet the full range of fire management needs.



**Canadian Interagency Forest Fire Centre**  
<http://www.ciffc.ca/>

The Canadian Interagency Forest Fire Centre Inc. (CIFFC) was opened on June 2, 1982 with a mandate to provide operational forest fire management services to Member Agencies that will, by agreement, gather, analyze and disseminate fire management information to ensure a cost effective sharing of resources; and actively promote, develop, refine, standardize and provide services to Member Agencies that will improve forest fire management in Canada.

CIFFC operates as a private non-profit corporation with two levels of management which direct the operation:

- (1) The Board of Trustees is made up of Assistant Deputy-Ministers responsible for forestry representing each of the Provinces, Territories and Federal Government. This group sets policy, gives direction and approves annual budgets for the Fire Centre.
- (2) The Council of Directors is made up of the Directors responsible for forest fire management for each of the Provinces, Territories and a representative of the Federal government. This group prepares budgets and policies and controls the operation and expenditures of the Fire Centre.

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(3) Fire Centre staff operate and implements programs approved by the Council of Directors and the Board of Trustees. In addition, the Fire Centre coordinates and directs working groups assembled to address specific tasks.

The Canadian Council of Forest Ministers originally directed CIFFC to promote and improve fire management on a national level. The Centre continues to meet this challenge through its agreements and the development of exchange standards through various Working Groups.

Internationally, CIFFC will continue to promote Canadian fire management technology in the global market place.

These programs, in concert with existing fire management programs, will all contribute to a better organization and a more efficient fire management system for Canada.



**Fire Smart Roofing (Exhibitor)**  
[www.saferbuildingsolutions.com](http://www.saferbuildingsolutions.com)

Fire Smart Roofing (FSR) manufactures and treats code rated Fire Retardant Shakes and Shingle for use in the WUI and high fire zones.



**Firewise Communities-NFPA (Exhibitor)**  
<http://www.firewise.org/>

NFPA's Firewise Communities Program® encourages local solutions for safety by involving homeowners in taking individual responsibility for preparing their homes from the risk of wildfire. Firewise is a key component of the Fire Adapted Communities initiative – a collaborative approach that connects all of those who play a role in wildfire education, planning and action with comprehensive resources to help reduce the wildfire risk. The program is co-sponsored by the USDA Forest Service, the US Department of the Interior, and the National Association of State Foresters.



**INCA AB – Inventor of INCA Wild Fire Safe (WFS) (Exhibitor)**  
[www.wildfiresafe.com](http://www.wildfiresafe.com)

INCA Wild Fire Safe (WFS) is a complete innovative concept – with three products – to combat violent and difficult controlled fires:

- WFS – Net (for overall protection)
- WFS – FST (for outside and in protection)
- WFS – HITS (for inside and out protection)



**FRAMES: Fire Research and Management Exchange System (Exhibitor)**  
[www.frames.gov](http://www.frames.gov)

FRAMES provides searchable fire-related information, a platform for data sharing and storage, development of new tools, and support to federal wildland fire management agencies in the United States throughout the various stages of wildland fire, including planning, operation, and post-fire monitoring. This online resource was developed for wildland fire managers, researchers, and other stakeholders by the University of Idaho in collaboration with the USFS Rocky Mountain Research Station. FRAMES offers an array of services and features including:

- The Resource Cataloging System (RCS), a searchable online database of data, documents, web pages, tools, projects, and programs. The RCS houses thousands of records and provides access to the Tall Timbers E.V. Komarek Fire Ecology Database
- The FRAMES Emissions and Smoke Portal with educational materials on air quality and smoke management developed by the National Wildfire Coordinating Group's (NWCG) Smoke Committee (SmoC) and the University of Idaho
- Online training for wildland fire managers developed by National Interagency Fuels Technology Transfer (NIFTT) and the National Wildland Fire Coordination Group (NWCG)
- Archived fire videos and webinars from IAWF, the Wildland Fire Lessons Learned Center, and JFSP regional consortia
- Conferences, Meetings, Webinars, Workshops, Training, Announcements, and Job Postings

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**National Wildfire Coordinating Group Fire Behavior Subcommittee** (*Exhibitor*)  
[www.nwcg.gov/branches/et/fenc/subcommittees/fbs](http://www.nwcg.gov/branches/et/fenc/subcommittees/fbs)

**VISION:** The safety of our nation and the health of our wildlands are ensured through effective fire and resource management decisions made by the wildland fire community based on the best science, technology, and practices

**MISSION:** To provide leadership in establishing and maintaining consistent nationwide standards and procedures for wildland fire behavior assessment.

## GUIDING PRINCIPLES

1. **SAFETY:** We believe in safety, therefore public and fire personnel safety is the first priority in all fire management activities.
2. **LEADERSHIP:** We believe effective fire management is the result of leadership at all levels, therefore we will provide and promote leadership throughout all fire behavior committee activities.
3. **SCIENCE:** We believe in the scientific process, therefore we will promote the infusion of science into all realms of fire behavior assessment.

**University of Idaho**  
A LEGACY OF LEADING

**University of Idaho  
Wildland Fire Program  
Department of Forest, Rangeland,  
and Fire Sciences** (*Exhibitor*)  
<http://www.uidaho.edu/cnr/frfs>

The Department of Forest, Rangeland, and Fire Sciences at the University of Idaho provides a wide range of ecology and management skills pertaining to forests and landscapes. If you want to study a diversity of forestry and Rangeland science, this is the place for you.

Our extensive breadth of programs and internationally renowned faculty help students gain hands-on experiences and understand concepts and social aspects involved in managing natural and renewable resources. If you want to position yourself as a leading professional with technical research skills and advanced knowledge of natural resources management and business practices, discover our undergraduate and graduate programs.



**10 Tanker Air Carrier** (*Exhibitor*)  
<http://www.10tanker.com/>

In 2006 10 Tanker began providing the wildland fire community the most innovative retardant delivery service available. Today, 10 Tanker is the first “Next Generation” airtanker to fly in support of wildfires in the United States. With the capability the DC-10 brings to the fire ground, we believe that “More, Sooner, Safer, Cheaper” is the best way to describe our product.

**More-**The DC-10 delivers 11,600 gallons of retardant per load. This is four times more retardant than any other tanker employed today.

**Sooner-**Jet Speed and lift capacity give the DC-10 the capability to deliver 11,600 gallons in less than a quarter of the time of any other next generation aircraft.

**Safer-**Minimizing flights and helping to quickly achieve control objectives enhances firefighter and pilot safety.

**Cheaper-**Because a DC-10 can carry four times more retardant than any other air tanker, it can deliver retardant at one half to two thirds the cost.



**W.S. Darley & Company** (*Exhibitor*)  
[www.Darley.com](http://www.Darley.com)  
[www.edarley.com](http://www.edarley.com)

Since 1908, Darley has been dedicated to serving the World’s Fire and Emergency Services. Our corporate headquarters, which is over 40,000 sq feet, is located at 325 Spring Lake Drive in Itasca, IL 60143. We also have over 150,000 sq feet of manufacturing, engineering and research and development operations which are in Chippewa Falls, Wisconsin and Janesville, Iowa.

Darley has a current customer base of more than 125,000, which includes federal, state and local governments as well as customers in over 100 countries. We remain a family owned and operated business committed to customer service and our employees. Company operations are overseen by the executive committee consisting of James Long, Jeff, Peter and Paul Darley. Paul Darley is President & CEO. Paul has served as President of the Fire Apparatus Manufacturers Association and currently serves on several corporate and charity boards.



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Our entire company is committed to customer satisfaction. We are dedicated to excellence and offer a diverse line of quality products and services through progressive design, manufacturing and distribution. Darley was recently awarded major contracts by the Department of Defense to provide our forces with firefighting, rescue and special operational equipment.

W. S. Darley & Co.'s involvement in the Fire Industry spans over a century and three generations of Darleys. They not only have a rock solid reputation for building quality products, but also for building strong relationships with Fire Fighting Organizations around the world. Darley draws their strength from being a financially stable company with a unique industry position.

Darley builds Fire Trucks, manufactures Fire Pumps and sells Fire Fighting, Emergency, and Defense Equipment through its catalog and websites. Nowhere else will you find a company as dedicated to the Fire Industry. All this experience comes from a company that cares – W. S. Darley & Co. is customer driven.



**EnviroVision Solutions** (*Exhibitor*)  
<http://www.evsolutions.biz/>

EnviroVision Solutions (EVS) award winning wildfire detection system, ForestWatch®, has been used with great success by governments and private industrial timber owners around the world, since the 1990's, protecting valued assets in a cost-effective and resource conscious manner. ForestWatch® integrates real world data into a powerful decision support and emergency management system.

The state of the art ForestWatch® wildfire detection system provides an interface with programmable high-definition cameras providing panoramic color images, geo-referencing, and smoke detection providing real time fire intelligence to fire managers. ForestWatch® can significantly reduce the time between fire ignition, discovery and dispatch. Night time detection, utilizing near-infrared provides for 24/7 protection. Camera footage is date and time stamped and archived for investigations and after action reviews. Web access to real time and stored images allow fire managers and cooperators to monitor fire starts or ongoing incidents. ForestWatch® also has

the ability to receive and display AVL, weather, and lightning data. Integrated geo-referencing pinpoints fire start locations, using GIS layers specific to your area.

Developed by a South Africa-based technology firm, EnviroVision Solutions is one of the most advanced automated wildfire detection systems in the world. The USA division of EVS is located in Roseburg, Oregon.



**FireSafe Montana** (*Exhibitor*)  
<http://firesafemt.org/>

FireSafe Montana is a private, non-profit organization coordinating and supporting a statewide coalition of diverse interests working together to help Montanans make their homes, neighborhoods, and communities fire safe.

FireSafe Montana actively encourages and assists in the development of local FireSafe councils across the state. These councils are key to raising public awareness of local wildland fire threats and issues, motivating residents to take positive action, and providing access to the expertise and resources homeowners need to get the job done. When people take personal responsibility for applying and maintaining Firewise practices on their property, they greatly increase the chances of their homes surviving a wildfire.

Through its public information programs and materials, website, newsletter, and special events, as well as its active involvement in federal, state, and local fire mitigation efforts, FireSafe Montana is working hard to reduce the potential loss of life and property from wildfire in Montana.

*Mission:* To assemble diverse interests in a coalition that will work together on solutions to reduce the loss of lives and property from the threat of fire in and around Montana communities.

Mobilize Montanans to make their homes, neighborhoods, and communities fire safe.



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**Great Basin Fire Science Delivery** (*Exhibitor*)  
<http://www.gbfiresci.org/>

The Great Basin Fire Science Delivery (GBFSD) project ([www.gbfiresci.org](http://www.gbfiresci.org)) is one of 14 Knowledge Exchange Consortia funded by the Joint Fire Science Program. The project links managers and scientists to improve pre- and post-fire management decisions by providing relevant information and access to technical expertise. GBFSD works to: 1) provide a forum where Great Basin land managers can identify technical needs with respect to fire, fuels, and post-fire vegetation management; 2) develop and synthesize the information and technical tools to meet these needs; 3) provide the information and technical tools through preferred venues; and 4) develop direct lines of communication between managers and scientists. The project is currently sponsoring five syntheses and related field guides that are focused on sagebrush and pinyon/juniper ecosystems that address effects of fire on vegetation and soils, site recovery potential, effects of livestock grazing on fuel loads, impacts of fire on runoff and erosion, and wind erosion and post-fire stabilization. GBFSD webinars and field events offer the latest research on fire and fuels management in the Great Basin. Our website features condensed lists of useful publications and guides, provides information about online fire and fuels management courses, and provides links to our partner's resources.



**Hydratrek** (*Exhibitor*)  
<http://www.hydratrek.com/>

Hydratrek, Inc. located in Covington, TN manufactures multi-purpose, amphibious vehicles designed for fire suppression, search & rescue and operational logistic support applications.

Hydratrek vehicles are custom built to the exact specifications of each customer. They can be configured with a skid mounted pump unit, spine boards or other related equipment. With a payload capacity of 3000 lbs. on land and the ability to tow an additional four (4) tons behind the vehicle, Hydratrek can be used to quickly and effectively move personnel or equipment into the areas where it is needed most. The rear area of the Hydratrek D2488B can be configured with fold-down seats for six (6) additional firefighting professionals.

Using all-aluminum construction, Hydratrek incorporates a totally hydrostatic closed-loop, planetary drive wheel system in the larger vehicles and low-speed, high torque motors on the front and rear wheels on our smaller versions. "Tri-Mode" propulsion means the vehicle is capable of being powered by the 24" wide tracks, dual 11" brass counter rotating propellers or both simultaneously. Because Hydratrek uses hydraulics your maintenance costs will be significantly reduced because there are no chains, gears or clutch to maintain.



**National Fallen Firefighters Foundation** (*Exhibitor*)  
<http://www.firehero.org/>

The United States Congress created the National Fallen Firefighters Foundation to lead a nationwide effort to remember America's fallen firefighters. Since 1992, the tax-exempt, nonprofit Foundation has developed and expanded programs to honor our fallen fire heroes and assist their families and coworkers.

The Foundation is a 501(c)3 nonprofit organization, located in Emmitsburg, Maryland. It is registered as a corporation in the State of Maryland. The Foundation receives funding through private donations from caring individuals, organizations, corporations, and foundations.

A grant from the Department of Justice's Bureau of Justice Assistance supports programs for survivors of fallen firefighters. The Federal Emergency Management Agency partners with the Foundation to sponsor many of the National Memorial Weekend activities. The National Institute of Standards and Technology supports work on a national research agenda to prevent line-of-duty deaths.



**Northwest Fire Science Consortium** (*Exhibitor*)  
<http://www.nwfirescience.org/>

The Northwest Fire Science Consortium is a multi-disciplinary, multi-institutional network consisting of federal and state agencies, non-governmental organizations, universities, and private

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landowners within Washington and Oregon. The Consortium seeks to provide:

- A delivery system for the effective dissemination and adoption of fire science information, knowledge, tools, and expertise.
- A framework within which a variety of existing organizations and outreach programs focused on fire science delivery can coordinate more effectively.
- A venue to increase researcher understanding of the fire science needs of practitioners.



**SimTable (Exhibitor)**  
<http://www.simtable.com/>

SimTable is a modern-day interactive 3D physical sand table that simulates real fire, flood and hazmat plume behavior onto real topography and communities – protecting real lives and property. This 3D simulation based platform serves as a dynamic and effective training tool to an array of professional training arenas including first responder communities.



**SkySentry LLC (Exhibitor)**  
<http://www.skysentry.net/>

SkySentry is an internationally recognized leader in the design, integration, and use of lighter-than-air vehicles, payloads, and concepts of operation in very challenging operational environments. Since its inception in 2003, the company's focus has evolved from space, ultra-high altitude, and missile defense, to capitalizing on the low operating cost and long persistence of tethered airships, known as aerostats. Further in the recent past, SkySentry has worked diligently to make these superb, fully integrated communications and surveillance systems available to civil agencies. This work largely involves reducing the cost from those of "military hardened" systems, while offering a spectrum of performance capabilities.

Essentially, SkySentry's elevated systems can provide a long-enduring, "eye-in-the-sky" with its wide variety of day, night, standard, high resolution, still or video cameras, directly applicable to disaster response or fire fighting management. Likewise, its light-weight communications payloads can provide communications links and connectivity of phones, radios, and WiFi gear over hundreds of square miles, within

minutes of arrival and at dramatically lower cost than either emergency cell towers or satellite communications. On a cost-per-hour of coverage basis, or cost-per-square-mile of coverage, SkySentry's elevated systems are simply unbeatable, especially when considering the ease and expediency of use. For more information, please refer to the Products page of [www.SkySentry.net](http://www.SkySentry.net).



**Southern Rockies Fire Science Network (Exhibitor)**  
[www.srockiesfsn.org](http://www.srockiesfsn.org)

**How We Help You:** The Network is a way for managers, scientists, policy makers, and citizens to interact and share fire science throughout intermountain Colorado, southern Wyoming, eastern Utah, and the Black Hills of South Dakota. Our vision is to achieve a cohesive wildland fire community throughout the Southern Rocky Mountain region supported by credible fire science and information. The SRFSN is the only regional organization focused on fire science information and delivery across agency, administration, and state boundaries. We are a catalyst for wildfire science and exchange between researchers and managers through an inclusive and open process.

**JOIN US!** Attend a field trip, workshop, webinar, or read and share materials on our website, bi-weekly E-News or Twitter. You are welcome to contribute to our understanding of wildfire by submitting for a "mini-grant" for an event or product through our website: [www.srockiesfsn.org](http://www.srockiesfsn.org). Help connect researchers, practitioners, and community groups to develop solutions for the WUI, watersheds, prescribed fire, and ecosystem restoration.



**Technosylva, Inc. (Exhibitor)**  
<http://technosylva.com/>

Solutions for Wildfire Protection Planning & Operational Response from San Diego (CA). Technosylva has developed the only specific wildfire management tools in the market, used in agencies since 1997.

**FIRESPONSE:** Unique Decision Support System for Wildland firefighting from the dispatching to the incident management, available in desktop, web and mobile platforms.

**WILDFIRE ANALYST:** the ultimate tool for analyzing real-time Wildfire Behavior.

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Our team has a rich legacy in conducting fuels mapping, fire behavior analysis and wildfire risk assessments, focused on integrating analysis results into usable applications to support fire professionals for protection and mitigation planning, as well as response and suppression.



Budenheim is a global producer of specialty phosphates for the food & pharmaceutical industries, water treatment, and countless technical applications.

The company specializes exclusively in the development and manufacture of completely halogen free flame retardants for a wide variety of consumer products: paints & coatings, textiles & leather, paper & wood composites, and plastics. Our HFFRs make the products we use in every-day life safer. At Budenheim, environmental protection is more than a passing notion ... it is our passion and commitment in everything we do!

FR CROS brand long-term fire retardants have been used in Europe, Africa, and South America since 1982. Soon, these products will become available to wildland fire managers in the USA and Canada.



The Desert Research Institute (DRI) is the environmental research arm of the Nevada System of Higher Education. DRI conducts cutting-edge applied research in air, land and life, and water quality across Nevada, the United States and on every continent. With more than 500 employees and two main campuses in Reno and Las Vegas, Nevada, DRI generates \$50 million in total annual revenue.

DRI's faculty members are nontenured, entrepreneurial and responsible for their own salaries from external grants and contracts. This blend of academic rigor and private-

sector pragmatism has earned DRI a reputation for delivering rapid, high quality environmental science in a businesslike fashion.

Mission: We excel in basic and applied research and the application of technologies to improve people's lives throughout Nevada and the world. We implement this mission by fostering scientific and engineering talent. We apply scientific understanding to the effective management of natural resources while meeting Nevada's needs for economic diversification and science-based educational opportunities.



**Federal Employee Defense Services (FEDS)**  
[www.fedsprotection.com](http://www.fedsprotection.com)

FEDS provides federal employee professional liability insurance. With FEDS liability insurance, you can expect knowledgeable and tenacious legal counsel experienced in the array of federal investigations, proceedings, and personal capacity lawsuits resulting from acts, errors or omissions. FEDS protection is available for just \$290 per year with the option of payroll deduction. Most federal wildland firefighters and all managers and supervisors are eligible for agency reimbursement up to half the cost of this insurance. Call 866.955.FEDS(3337) or visit [www.fedsprotection.com](http://www.fedsprotection.com). You simply can't afford not to have it!



**Montana Department of Natural Resources and Conservation**  
<http://dnrc.mt.gov/>

"Helping to ensure that Montana's land and water resources provide benefits for present and future generations" is the mission of the Montana Department of Natural Resources and Conservation (DNRC).

First established in 1971 as a result of the Executive Reorganization Act of 1971, the DNRC provides leadership in managing the state's natural resources. It is presently responsible for promoting the stewardship of Montana's water, soil, forest, and rangeland resources; for regulating forest practices and oil and gas exploration and production. In the past eight years, the agency has generated \$425 million for Montana school children through the sound management of state lands.



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**Rite in the Rain**  
<http://www.riteintherain.com/>

The hassle of soggy and illegible paperwork has plagued outdoor professionals for decades. Our founder Jerry Darling developed the early version of *Rite in the Rain* paper to address that problem for the Pacific Northwest logging industry in the 1920's and our product has been evolving ever since

Jerry has long since passed away but his vision is shared by our entire team. Still manufactured in Tacoma, Washington, USA *Rite in the Rain* paper is used around the globe in situations ranging from desert warfare to rainforest insect research.

The Silver family took the reins from Jerry in the late 1950's. Scott and Todd Silver, co-presidents, are committed to making JL Darling LLC one of the best places to work on the planet. Our growing team of craftsmen and women are the reason for our quality and share deeply in the success they create. It's only Rite, right!?

Our motto "*Outdoor writing products for outdoor writing people*" speaks both to our expertise and focus. We are consistently seeking to improve our existing products and to add new items to serve those who can benefit from our services. Our R&D department is continuously developing products for new applications and we welcome your input.

Vision: We seek to be the world's scientific leader investigating the effects of natural and human-induced environmental change and advancing environmental technologies aimed at assessing a changing planet. We will achieve this vision by increasing scientific knowledge and understanding of the earth's environment, promoting preservation of diverse ecosystems, advancing responsible resource management, and improving human health and welfare.



**University of Montana Bookstore**  
<http://www.montanabookstore.com/>

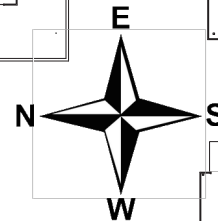
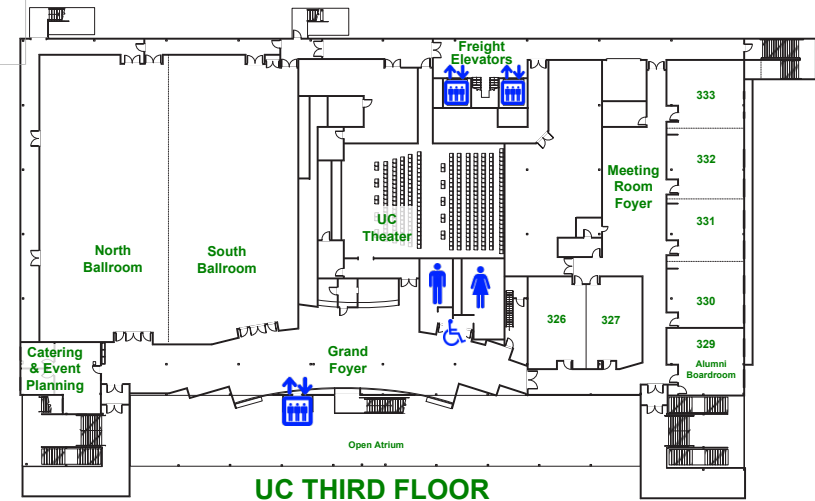
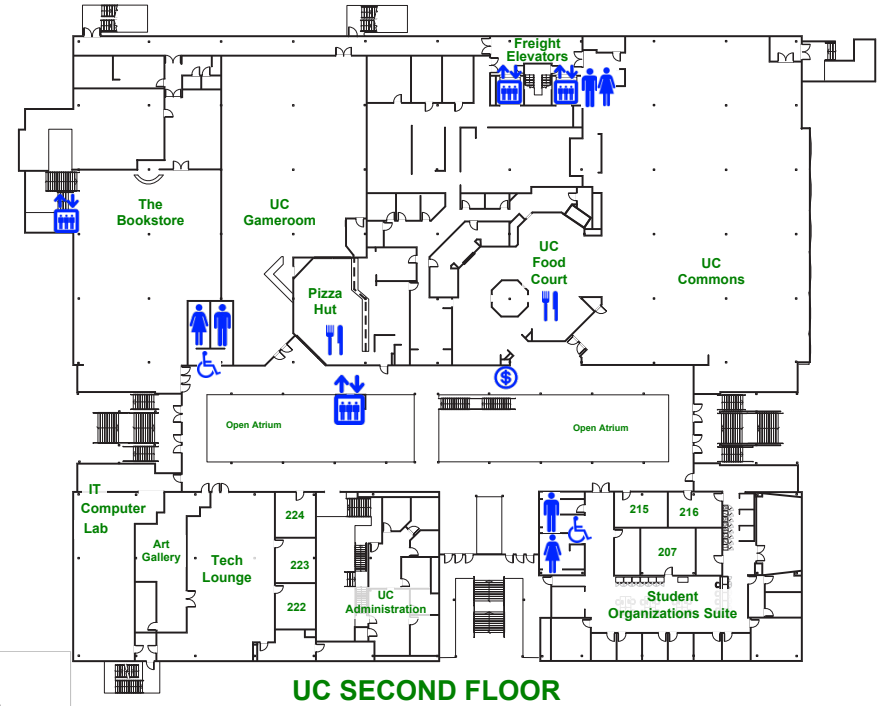
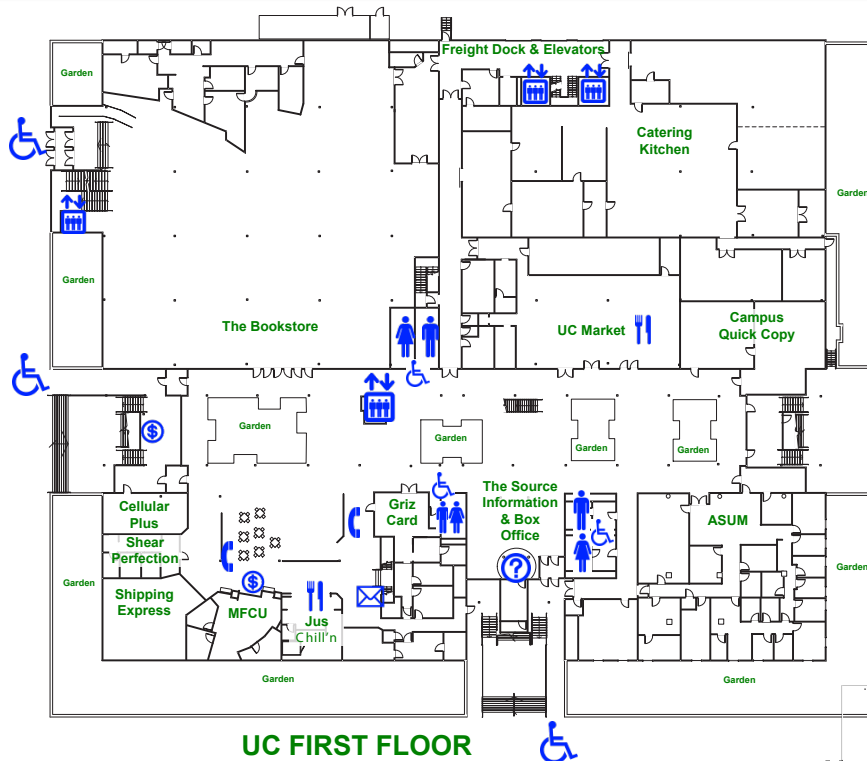
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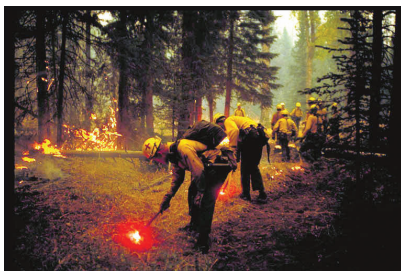
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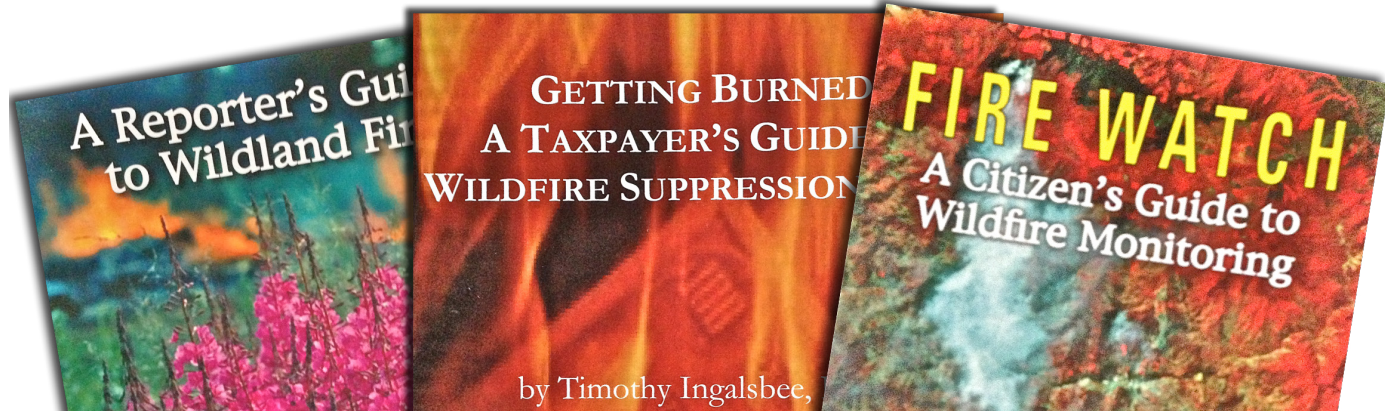
## Welcome to the Large Wildland Fires Conference

*Visit us in the Exhibit Hall and pick up your free Wildfire book.*



FUSEE is a nonprofit organization whose members include current, former, and retired wildland firefighters, other fire/fuels management workers, researchers and educators, rural residents, and forest conservationists. Through public education and policy advocacy our mission is to promote fire use and *safe, ethical, ecological* fire management. Our vision is to re-create fire-compatible communities able to work safely and live sustainably with wildland fire.

We provide critical analyses and alternative perspectives on many of the *burning issues* affecting the wildland fire community. We seek to inform and empower fire management workers and their citizen supporters to become advocates for firefighter and public safety, ethical public service, wildlands protection, and ecological restoration. Visit our website and check out our reports. We invite you to join our network of supporters promoting fire use in ecological fire management.



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# Large Wildland Fires:

Social, Political *and* Ecological Effects

