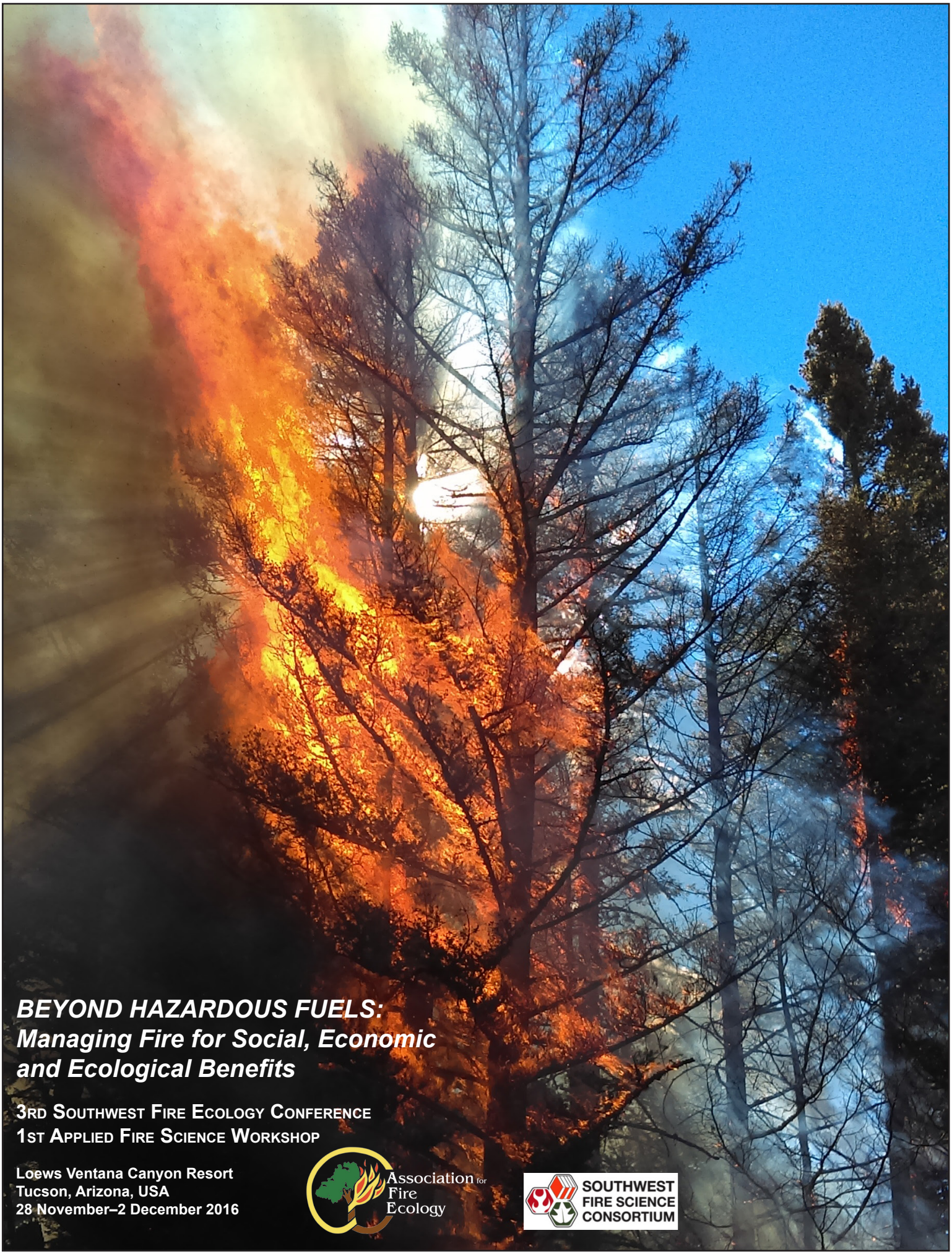

BEYOND HAZARDOUS FUELS: Managing Fire for Social, Economic and Ecological Benefits

3rd Southwest Fire Ecology Conference
1st Applied Fire Science Workshop

Loews Ventana Canyon Resort
Tucson, Arizona, USA
28 November–2 December 2016

Association for Fire Ecology

SOUTHWEST FIRE SCIENCE CONSORTIUM

Program for the

3rd Southwest Fire Ecology Conference

held concurrently with the

1st Applied Fire Science Workshop

BEYOND HAZARDOUS FUELS: Managing Fire for Social, Economic and Ecological Benefits

Loews Ventana Canyon Resort
Tucson, Arizona, USA
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Hosted by:

Association for Fire Ecology

IN CONJUNCTION WITH THE

SOUTHWEST FIRE SCIENCE CONSORTIUM

FIRE CONFERENCE COMMITTEE MEMBERS

Steering Committee

Mark Kaib (co-chair), US Fish and Wildlife Service
Tessa Nicolet (co-chair), US Forest Service
Aaron Green, Arizona State Forestry
Andi Thode, Northern Arizona University
Barb Satink Wolfson, Southwest Fire Science Consortium
Brent Woffinden, National Park Service
Catia Juliana, Association for Fire Ecology
Collin Haffey, US Geological Survey
Cori Dolan, University of Arizona
Gary Luce, National Advanced Fire and Resource Institute
Geoff Babb, Bureau of Land Management, NIFC
Helen Poulos, Wesleyan University
Jake Nuttall, US Forest Service
Juliette Jeanne, Bureau of Indian Affairs
Matt Rollins, US Forest Service, Washington Office
Susan Rich, New Mexico Energy, Minerals, and Natural Resources Department
Timothy Ingalsbee, Association for Fire Ecology
Zander Evans, Forest Guild

Program Committee

Andi Thode (co-chair), Northern Arizona University
Susan Rich (co-chair), New Mexico Energy, Minerals, and Natural Resources Department
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Charlotte Reemts, The Nature Conservancy, Texas
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Shaula Hedwall, US Fish and Wildlife Service
Tessa Nicolet, US Forest Service
Timothy Ingalsbee, Association for Fire Ecology
Todd Chaudhry, Colorado Plateau Cooperative Ecosystems Studies Unit/National Park Service

Conference Logistics and Details

Website
Catia Juliana
Brett Cole

Facilities and Venue
Catia Juliana
Barb Satink Wolfson

Moderator Coordinator
Andi Thode

Student Activities Coordinator
Timothy Ingalsbee
Chris Dunn
Leslie Fowler

Registration
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Brandy Newton

Budget
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Marketing and Outreach
Catia Juliana
Timothy Ingalsbee

Field Trip Coordinators
Cori Dolan

Student Volunteer Coordinators
Jesse Young
Leda Kobziar

Program Details

Plenary Sessions Coordinator: ***Barb Satink Wolfson***
Poster Session Coordinator: ***Timothy Ingalsbee***
Attached Meetings Coordinator: ***Geoff Babb***
Special Sessions Coordinator: ***Louisa Evers***
Workshops Coordinator: ***Catia Juliana***
University and Continuing Education Credits: ***Ron Masters***

Cover design credit: ***Jennifer Touchette;*** cover photo: Pioneer Fire, outside Boise, Idaho, by ***Kaylee Drinville***
Program compiled and proofread by ***Catia Juliana***, ***Timothy Ingalsbee, Julie Rogers,*** and ***Cori Dolan.***
Program format and layout by ***Laurie Burk,*** OnPoint Presentations

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ABOUT THE ASSOCIATION FOR FIRE ECOLOGY

The Association for Fire Ecology (AFE) is a nonprofit organization dedicated to improving the knowledge and use of fire in land management. The AFE vision is a network of dedicated professionals from around the world who together play a key role in wildland fire ecology research, education, management, and policy in order to enhance our knowledge and management of fire as a vital ecological process. Every two years, AFE organizes and hosts its International Fire Ecology and Management Congress. AFE also hosts smaller conferences and workshops on regional or topical themes. AFE publishes a peer-reviewed E-journal called *Fire Ecology,* recognizes outstanding fire ecologists with our Lifetime Achievement and Student Excellence awards, and provides formal certifications for wildland fire professionals and academic programs.

Our members include scientists, educators, students, managers, practitioners, policymakers, and other interested citizens. Anyone can become a member of AFE and, through active involvement in our events, programs, and projects, can help shape the emerging professions and growing field of fire ecology. For more information, visit AFE's website at www.fireecology.org

MORE ABOUT AFE: Services and Benefits

Membership

Join AFE! Membership is open to anyone interested in fire ecology. AFE members have access to 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 and workshops, AFE hosts many other venues for networking and collaborating with fellow fire ecologists. Becoming a member is easy and affordable, with discounts for students, retirees, and international members. Applications and secure payment can be handled on our website.

Fire Ecology Journal

Read *Fire Ecology,* and publish your research in the 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 is managed by an editor assisted by a team of 30 associate editors representing scientists on five continents. Issues are published three times per year: April, August, and December. We are now celebrating our eleventh year, and have published papers from nearly 600 authors. 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 new research in fire ecology.

Wildland Fire Professional Certification Program

Become a certified fire ecologist! 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 research and management profession. There are six levels of wildland fire certification: Technician, Practitioner, Manager, Senior Manager, Fire Ecologist, Senior Fire Ecologist. Certification is for current AFE members only.


Association for Fire Ecology

WILDLAND FIRE PROFESSIONAL CERTIFICATION

Your Name Here

has been determined by the Association for Fire Ecology to qualify for the title of

Certified Wildland Fire Ecologist

AFE Wildland Fire Certificate holders must meet specific requirements pertaining to their level of education, training, and experience. All Certificate holders are expected to maintain the highest standards of professional conduct and to adhere to the AFE Code of Ethics.

Awarded this 1st day of December, 2016 *Leda Kobziar, AFE President*

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 present three different Lifetime Achievement Awards to people who have made significant contributions to fire ecology and management in the US, as well as Student Excellence Awards to undergraduates and graduate students who show exceptional promise in the field of fire ecology. We also award the Mike daLuz Memorial Student Travel Scholarship.

Upcoming Events

FireVision 20/20—The 7th AFE International Fire Congress
Buena Vista Palace
Orlando, Florida, USA
28 November–2 December 2017

2016 BOARD OF DIRECTORS AND STAFF

AFE Officers

President: ***Dr. Leda Kobziar,***
Associate Professor, Natural Resources and Society, University of Idaho
Vice-President: ***Dr. Karin Riley,***
Research Ecologist
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Assistant Research Professor, Fire Ecology, Division of Atmospheric Sciences, Desert Research Institute
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Assistant Professor of Applied Forest Ecology and Management, Department of Forestry, Michigan State University

AFE Staff

Executive Co-Directors:
Catia Juliana, M.S.
Dr. Timothy Ingalsbee
Accounts Manager:
Brandy Newton
Webmaster:
Brett Cole

2016 SAFE Officers

President: ***Leslie Fowler,*** Chapter: University of Idaho
Vice-President: ***Leonard Rios,*** Chapter: Humboldt State University
Training and Education Officer: ***Taylor Barton,***
Chapter: Stephen F. Austin State University

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Dr. Gus Smith, District Ranger, Superior National Forest
Dr. Chris Dicus, Interim Associate Dean, Research and Graduate Programs, College of Agriculture, Food and Environmental Sciences, California Polytechnic State University
Dr. Penelope Morgan, Department of Forest, Rangeland, and Fire Sciences, University of Idaho
Dr. Brandon Collins, Fire Ecologist, Center for Fire Research and Outreach, University of California, Berkeley
Dr. Ron Masters, College of Natural Resources, University of Wisconsin-Stevens Point
Sam Lindblom, The Nature Conservancy
Dr. Francisco Seijo, Lecturer in Political Science, Middlebury C.V. Starr School in Spain, New York University Global Campus in Spain, Accent International Consortium in Spain
Dr. Christopher J. Dunn, Faculty Research Associate, Oregon State University
Dr. Sharon Hood, Research Ecologist, Fire, Fuel, and Smoke Program, US Forest Service, Rocky Mountain Research Station

WELCOME AND INTRODUCTION

The Association for Fire Ecology (AFE) and the Southwest Fire Science Consortium (SWFSC) welcomes you to the Third Southwest Fire Ecology Conference in Tucson, Arizona. It was in 2008 when we started having a regional conference dedicated to sharing the science and management of fire in the Southwest. We have been able to bring this conference to you every four years with the help of our many partners and dedicated committee members. We hope you will be inspired by the program of events, and by the networking and opportunities to learn together with the wide array of important topics and participants we have this year.

AFE, the SWFSC, and our conference sponsors recognize that during today's difficult economic and political 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. Both AFE and the SWFSC have similar missions that recognize the importance of applying science in management and in turn addressing science that is needed by management.

We are very grateful 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 core members of the committees, staff, volunteers, and sponsors, we would have no conference. Sincerely and respectfully, *thank you!*

The theme of this conference is *Beyond Hazardous Fuels: Managing Fire for Social, Economic and Ecological Benefits.* The variety of fire environments and rich fire history of the greater Southwest Region provide an incredible place to work and collaborate as resource managers and fire researchers, and a learning ground ripe for many success stories that can be applied elsewhere. We value the diverse array of job descriptions we see among our attendees, which include fire managers, academics, and researchers, and practitioners in wildlife biology, archaeology, economics, social science, and other disciplines. The array of people coming together to address the future of fire in our ecosystems and society speaks volumes about the need and potential benefits of our mission. We have no choice but to build a more active fire community to address the many issues our society and ecosystems face, including changes in climate, changes in political will and support for science-based inquiry and practice, and an ever-growing population at the edge and within our wildlands.

The ability to meet with each other face-to-face in a conference setting is invaluable to meeting the challenges of fire management. Take advantage of opportunities to share with, learn from, and get inspired by fellow attendees gathered here. Enjoy your reunions with old friends and colleagues—and look forward to meeting new ones, too. It is the connections, bonds, and friendships within our fire management community and beyond that will nurture the brainstorming and new ideas that can help with the issues that face us today.

On behalf of the Association for Fire Ecology and the Southwest Fire Science Consortium, we warmly welcome you all to Tucson, and thank you for your participation in this event and your ongoing support of both AFE and the SWFSC.

Andrea Thode, Ph.D.
Southwest Fire Science Consortium Chair and Conference Program Committee Co-Chair

Leda Kobziar, Ph.D.
President, Association for Fire Ecology

Mark Kaib, Ph.D.
Conference Steering Committee Co-Chair

Susan Rich
Conference Program Committee Co-Chair

GOOD STUFF TO KNOW! General Conference Information

Wifi. The hotel offers complimentary wifi in your guest room. Wifi is not available in the meeting rooms.

Parking at the Hotel. Parking is complimentary for our conference attendees.

Tweet All About It! Using our hashtag #SW16FireCon

Poster Presenter Info. Posters will be in in the Grand Ballroom Foyer Lobby. Presenters can hang their posters between 12pm Monday and 4:30pm Tuesday. Posters break down is between 3:30-5 on Thursday, and all posters must be down by 6pm Thursday.

Exhibitor Booth Info. Exhibitor Booths will be in in the Grand Ballroom Foyer Lobby. Presenters can hang their posters between 12pm Monday and 4:30pm Tuesday. Posters break down is between 3:30-5 on Thursday, and all posters must be down by 6pm Thursday

CFEs and CEUs... are pending. Check with the registration desk for more information.

Presentation Upload Information (full details are on our website). Talks should be in PowerPoint 2010 or later, and need to have this ***required file name:*** DayofWeek_Rm_24hourTime_LastName (day of week = first 3 letters only, 24 hour time has no colon). If you haven't already uploaded your talk via Dropbox (deadline is now passed), then you will need to upload it from a thumb drive at the Presentation Loading Station at registration. No presentations will be accepted by email. ***Presentations must be uploaded the day before your talk.*** See the Schedule overview for a listing of times (pages 11 and 12). ***A note about late presentations:*** If you are unable to load your presentation the day before you're scheduled to talk, be prepared for the possibility that you will need to use your 20 minutes to load your talk, and in the event that the file doesn't load properly for any reason, you may need to give your talk without your prepared visuals.

Ventana Village... is a nearby shopping center with restaurants and stores (see map on page 22). The hotel runs free shuttles to the village; check at the front desk for details.

Poster Reception. Tuesday 5:30 to 7 pm in the lobby. Join us for appetizers and no-host bar, meet poster presenters, and mingle with friends. Concurrently there will be short film in Salon F.

AFE Annual Members Meeting. Wednesday, 5:30 to 6 pm in Ballroom B. You're invited to join us for our Annual AFE members meeting! AFE members are the professionals and students responsible for developing the international fire ecologist and manager certification programs, the higher education in fire ecology recognition program, collaborative international position statements on critical issues (e.g., climate change, fuels management, gender in fire), awards for lifetime achievements, TREE student travel grants, GRIN innovative student research grants, and the international AFE Fire Congresses and Regional Conferences where scientists, managers, and the next generation unite. All of these accomplishments depend on the initiative and support of our enthusiastic members and committees. Come to the meeting and find out how you can get involved and make a difference. New members welcome!

SAFE Annual Members Meeting. Wednesday, 6 to 6:30 pm in Salon F. All students welcome! Come meet your fellow SAFE members, share updates on our chapters, elect new national officers, and help shape the future of SAFE. Also stop by our booth in the exhibit hall throughout the week to learn more about SAFE.

Friday Field Trips. Get on the Bus! We have three fantastic field trips planned. Some may already be full, but there may still be seats left on other trips. Check in with registration to see if there are any seats left.

AFE Awards Banquet. This year we are offering a complimentary Luncheon Banquet on Wednesday from 12 to 1:30 pm. Guest tickets for non-attendees may still be available; check at registration. The banquet talk, *Smokey Bear: Education or Propaganda?* will be given by ***Tom Swetnam,*** Regents' Professor of Dendrochronology, Emeritus, Laboratory of Tree-Ring Research, University of Arizona. We will also be giving a Lifetime Achievement Award, two Student Excellence Awards, and announcing our newly certified Wildland Fire Professionals and Wildland Fire Academic Programs.

Informal Opening Reception. Monday 5 to 7 pm by Cascade Terrace and Bill's Grill. Join us to mingle, register, and enjoy the lovely facilities at our informal no-host reception. It is happy hour, so the lounge will be offering discounts on food and drink.

SOUTHWEST FIRE ECOLOGY CONFERENCE AND APPLIED FIRE SCIENCE WORKSHOP WEEK-AT-A GLANCE

	AM sessions	Lunch	PM session	Evening	Rx 310 course*
Monday 28 November	Workshops*	*on your own*	Workshops*	Informal opening reception	8 am to 5 pm
Tuesday 29 November	Welcome and opening plenary	*on your own*	Concurrent sessions	Poster reception	4:20 to 5:20 pm
Wednesday 30 November	Roundtable sessions	Banquet lunch**	Concurrent sessions	AFE members meeting SAFE meeting Student/mentor mixer	4:20 to 5:20 pm
Thursday 1 December	Concurrent sessions	*on your own*	Closing plenary		8 to 10 am
Friday 2 December	Field Trips *				

* Pre-registration required; additional fee may apply.
**Awards Banquet Lunch is complimentary for all attendees.
Note: Attached Meetings will be held throughout the week.

FIRE CONFERENCE SUPPORTING ORGANIZATIONS

SPONSORS

Silver Sponsor

Fire Learning Network/Fire Adapted Communities Learning Network

Bronze Sponsors

Arizona Prescribed Fire Council
Desert Landscape Conservation Cooperative
FRAMES: Fire Research and Management Exchange System, University of Idaho
FUSEE: Firefighters United for Safety, Ethics, and Ecology
Greater Flagstaff Forests Partnership
Joint Fire Science Program
National Park Service
New Mexico Forest and Watershed Restoration Institute
New Mexico State University
Northern Arizona University (NAU) School of Forestry
Sky Island Alliance
US Fish and Wildlife Service

EXHIBITORS

BLM Great Basin Smokejumpers
Southern Rockies Fire Science Network

DONORS

University of Arizona Institute of the Environment
University of Arizona Laboratory of Tree-Ring Research
University of Arizona School of Natural Resources and the Environment

SPONSORS

Silver Sponsor

Fire Learning Network (FLN) and Fire-Adapted Communities Learning Network (FACLN)

Social-impact networks across the world are addressing society's most difficult problems. These are networks of like-minded organizations and people creating strong alliances that yield tremendous results. In the US, the FLN and FACLN are working to increase the wildfire resiliency of ecosystems and communities, respectively, as complementary approaches to addressing the nation's wildfire problems.

Since 2002, the FLN has engaged dozens of multi-agency, community-based projects to accelerate the restoration of landscapes that depend on fire. The FACLN was launched in 2013 and currently works in 17 places. The spread of "fire-adapted community" concepts is one manifestation of a growing, global movement aimed at helping communities become more resilient to disasters.

These networks are supported by a cooperative agreement between The Nature Conservancy, USDA Forest Service, and agencies of the Department of the Interior.

Bronze Sponsors

Arizona Prescribed Fire Council

The mission of the Arizona Prescribed Fire Council is to serve as a forum for prescribed fire practitioners at all levels of government, academic institutions, tribes, coalitions, and interested individuals to work collaboratively to promote, protect, conserve, and expand the responsible use of prescribed fire in Arizona's fire-dependent ecosystems.

The purposes of the Council are:

- To provide a forum for addressing the issues, barriers, and advancement of prescribed fire use in Arizona.
- To promote a general public understanding of the benefits of prescribed fire use and the role of fire in our diverse fire-dependent ecosystems.
- To promote safety, training, and research in the art and science of prescribed fire.

- To facilitate planning, coordination, and implementation of multijurisdictional prescribed burn projects, utilizing best management practices to ensure desired outcomes.
- To promote effective prescribed fire and smoke management best practices, regulations, and policies to ensure the continued use of safe and appropriate use of prescribed fire.

Desert Landscape Conservation Cooperative (LCC).

The Bureau of Reclamation and the US Fish and Wildlife Service have partnered to develop the Desert LCC. The Desert LCC is a bi-national, self-directed, non-regulatory regional partnership formed and directed by resource management entities as well as interested public and private entities in the Mojave, Sonoran, and Chihuahuan desert regions of the southwestern United States and northern Mexico. Through collaborative partnerships, the Desert LCC seeks to provide scientific and technical support, coordination, and communication to resource managers and the broader Desert LCC community to address climate change and other landscape-scale ecosystem stressors.

Fire Research and Management Exchange System (FRAMES)

FRAMES (www.frames.gov) strives to provide a convenient, systematic exchange of information and technology within the wildland fire research and management community. Developed by the University of Idaho in collaboration with the USFS Rocky Mountain Research Station, FRAMES includes a searchable online database of wildland fire-related documents, tools, videos, projects, and data; collaboration space for user groups; online training and certifications developed by NWCG, NAFRI, WFMRDA, LANDFIRE, and the University of Idaho; the FRAMES Emissions & Smoke Portal with educational materials on air quality and smoke management developed by the NWCG Smoke Committee and the University of Idaho; and archived webinars from JFSP Regional Consortia, IAWF, and the Wildland Fire Lessons Learned Center. FRAMES is located in the Department of Forest, Rangeland, and Fire Sciences in the University of Idaho College of Natural Resources in Moscow, Idaho.

Firefighters United for Safety, Ethics, and Ecology (FUSEE)

FUSEE is a nonprofit organization promoting safe, ethical, ecological fire management. FUSEE (pronounced *FEW-zee,* like the hand-held torches carried by firefighters) includes current, former, and retired wildland firefighters; other fire management specialists; fire scientists and educators; forest conservationists; and other citizens who support FUSEE's vision and mission. As an independent voice in the wildland fire community, FUSEE conducts public education, media outreach, and policy advocacy in support of the new, emerging paradigm that seeks to holistically manage wildland fire for social and ecological benefits instead of simply "fighting" it across the landscape. Inspired by ***Aldo Leopold's*** *Land Ethic*, FUSEE advocates a new Fire Ethic in fire management policies and practices:

A thing is right when it contributes to the safety of firefighters and the public, ethical use of public resources, environmental protection of fire-affected landscapes, and ecological restoration of fire-dependent ecosystems. It is wrong when it tends otherwise.

Check out our research and policy papers at: www.fusee.org

The Greater Flagstaff Forests Partnership (GFFP)

The GFFP is a longstanding community-based collaborative representing numerous entities that include academic and private organizations, and municipal, state, and federal agencies. As one of the nation's longest standing forest restoration collaborative organizations, GFFP has been recognized as a national model. Founded in 1996, GFFP has endeavored to support many successful collaborative efforts through research and demonstration of new approaches to forest ecosystem restoration in northern Arizona's ponderosa pine forests.

GFFP's actions are based on community protection and the improvement of the overall sustainability and resiliency of forests in the greater Flagstaff area. Primary efforts focus on: 1) Multi-agency planning, coordination, and implementation of forest restoration projects; 2) Monitoring and adaptive management; 3) Woody biomass utilization and; 4) Community outreach and education—GFFP is a core member of the Fire Adapted Communities Learning Network, which offers the opportunity to share successes, while learning from other communities across the country.

Joint Fire Science Program (JFSP)

The JFSP mission:

- Provide credible research tailored to the needs of fire and fuel managers.
- Engage and listen to client needs 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.
- Focus on science delivery when research is completed, with a suite of communication tools that assures that managers are aware of, understand, and can use the information to make sound decisions and implement projects.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The New Mexico Forest and Watershed Restoration Institute (FWRI)
The New Mexico FWRI is one of three Southwest Forest Restoration Institutes (SWFRI). The SWFRI were established to promote practices that reduce the risk of catastrophic fire and enhance ecosystem function. FWRI does this through a wide variety of activities, but its main program areas are: public education on protocols for thinning and burning; monitoring to track treatments and inform adaptive management; GIS support for planning, monitoring, and prioritization; and support to local groups and the collaborative process. FWRI is part of New Mexico Highlands University in Las Vegas, New Mexico.

New Mexico State University
At New Mexico State University, the Agriculture College *Brings Science to Your Life* through academics, research, and New Mexico's Cooperative Extension Service. You can pursue academic programs targeting a wide array of careers in industries as diverse as natural resource management, tourism, fashion, environment, education, and consumer sciences. Of our 22 bachelor degree programs, 14 are offered nowhere else in New Mexico.

The Northern Arizona University (NAU) School of Forestry
The NAU School of Forestry offers a program that is nationally regarded for its unique approach to undergraduate education and is ranked number10 in the nation among forestry programs in scholarly output. It is accredited by the Society of American Foresters and the fire certificate track is an Association for Fire Ecology certified academic program.

The fundamental educational mission of the NAU School of Forestry is to foster the intellectual and personal development of our students, at both the undergraduate and graduate levels. We cross traditional boundaries by applying transdisciplinary and multi-objective approaches to ecosystem studies.

Our scholarship mission is to advance knowledge in ecosystem science and management, to bring this new knowledge back to the classroom, and transfer it to the citizens of Arizona, the Southwest, and elsewhere. Our programs leading to the Master of Forestry, M.S. and Ph.D. in Forestry play a special role in carrying out our scholarship objectives.

Sky Island Alliance
For the past 25 years, the Sky Island Alliance has been documenting, protecting, and restoring the Sky Island Region's unique landscapes, wild lands, wildlife, and waters. We work to protect and restore the biodiversity and natural heritage of the Sky Islands through science, education, and advocacy that connects the bi-national landscapes, people, and wildlife of the Sky Islands for the benefit of all. We envision the Sky Islands as a place where nature thrives, where open space and clean water are available to all species, and where people are deeply connected to the region and its innate ability to enrich our lives.

US Fish and Wildlife Service (USFWS)
The USFWS is the principal federal agency responsible for conserving, protecting, and enhancing fish, wildlife, and plants and their habitats for the continuing benefit of the American people. Fire is essential to managing the majority of the Service's 150 million acres, which includes 560 national wildlife refuges, 38 wetland management areas, a network of national fish hatcheries, and numerous other sites in the US and its territories. The Service's team of fire management professionals has significant expertise not only in fire planning and operations, but in a range of scientific and technical areas including fire ecology and fire science, smoke management, hydrology, wildlife and fisheries biology, forestry, range conservation, soil science, and water resources. Restoring and maintaining all USFWS lands in desirable condition by increasing prescribed burning and wildland fire use overall is our most cost-effective, long-term fire management strategy.

EXHIBITORS

Great Basin Smokejumpers
Our mission: to provide professional, effective, and safe fire management and fuels reduction services to help land managers meet their objectives. Our motto: *Selectio Labor Amare Nunquam Laboro Dias* (Select an occupation you love and never work another day).

Southern Rockies Fire Science Network (SRFSN)
The SRFSN is a service providing innovative ways for managers, scientists, policy makers, and citizens to interact and share fire science on important management topics throughout intermountain Colorado, southern Wyoming, eastern Utah, and the Black Hills of South Dakota and Nebraska. We are a catalyst for wildfire science and exchange between interested and involved groups through an inclusive and open process helping researchers, managers, and communities make sound decisions on wildfire issues based on credible science. With over 7030 members and growing, the SRFSN is the only regional organization focused on fire science information and exchange across agency, administration, and state boundaries.

DONORS

University of Arizona Institute of the Environment (UAIE)
The mission of the UAIE is to advance innovative solutions to environmental challenges in Arizona and around the planet. We embrace the significance of our location in the desert Southwest and harness the collaborative expertise at the U of A and among its partners to help societies, especially those in dry regions, make the best-informed decisions for a sustainable future. We invest in creative scholarship and cutting-edge research, promote the environmental enterprise of the University, and train students and faculty alike to convey their insights to the world.

University of Arizona Laboratory of Tree-Ring Research (LTRR)
Founded in 1937, the LTRR was the nation's first dendrochronology lab, and since then has helped found many labs around the world. Our unique heritage is a source of pride and we remain dedicated to our ideals: excellence in research, teaching, and outreach.

University of Arizona School of Natural Resources and the Environment (SNRE)
SNRE is a world leader in pursuing science that informs how environmental change impacts arid and semi-arid systems and how best to adapt to environmental challenges. Our research answers important questions about how ecosystems respond under environmental or human pressures. We develop strategies to help mitigate the effects of these pressures, helping to create and maintain healthy and sustainable ecological systems.

FIRE CONFERENCE EXHIBITOR BOOTH NUMBERS

Booth	Exhibitor
2	Bureau of Land Management, Great Basin Smokejumpers
3	Arizona Prescribed Fire Council
4	Desert Landscape Conservation Coop
5	US Fish and Wildlife Service
6	Sky Island Alliance
7	Firefighters United for Safety, Ethics, and Ecology (FUSEE)
8	Southern Rockies Fire Science Network
9	Southwest Fire Science Consortium
10	Northern Arizona University School of Forestry
11	Greater Flagstaff Forests Partnership
12	Fire Research and Management Exchange System (FRAMES), University of Idaho
13	Fire Learning Network / Fire Adapted Communities Learning Network

OPENING PLENARY SPEAKERS

Bryan Rice, Director, Office of Wildland Fire, Department of the Interior

Wildland fire and the next generation

Mr. Rice is the Director of the Office of Wildland Fire in the Department of the Interior. His federal government career has spanned nearly 20 years, including service as a Peace Corps Volunteer conducting community forestry work in Nepal, a wildland firefighter on the Forest Service's Helena Interagency Hotshot Crew, resource monitoring work in Tanzania, and various natural resources management leadership positions in the Bureau of Indian Affairs and the Forest Service. A citizen of the Cherokee Nation of Oklahoma, he spent his school years in the Midwest in Whitewater, Wisconsin, and Peoria, Illinois. Mr. Rice holds a B.S. in Forestry from the University of Illinois at Urbana-Champagne, and an M.B.A. from the University of Alaska-Southeast focusing on rural development and transportation systems. He is a licensed pilot, and enjoys time outside, hunting and fishing.

Elizabeth Reinhardt, Retired US Forest Service

Beyond hazardous fuels: restoring fire

Elizabeth Reinhardt retired this year as Assistant Director of Fire and Aviation Management, US Forest Service, with responsibility for fire ecology and hazardous fuels. Previously she worked in Forest Service Research, at the Missoula Fire Lab and in Washington, D.C. She has a B.A. in English from Harvard University and a Ph.D. in Forestry from University of Montana

Andrea Thode, Associate Professor, Northern Arizona University

An overview of fire in the Southwest

Andrea Thode completed her B.S. (1996) and later her Ph.D. (2005) in fire ecology through the Ecology Graduate Group at the University of California, Davis. She has worked for the US Forest Service in California and is currently an Associate Professor of fire ecology in the School of Forestry at Northern Arizona University. Her research focuses on fire effects at the local and landscape scale. Andi has been the principal investigator for the Southwest Fire Science Consortium since its inception in 2009.

Tessa Nicolet, Fire Ecologist, US Forest Service Southwestern Region

An overview of fire in the Southwest

Tessa Nicolet is a fire ecologist for the Southwestern Region of the US Forest Service.

Dave Calkin, Research Forester, US Forest Service

A systems view of wildfire management

Dave Calkin is the Research Forester in the Human Dimensions Program at the US Forest Service Rocky Mountain Research Station in Missoula, Montana, USA. Dave is the team lead of the Fire Management Science group of the National Fire Decision Support Center, working to improve risk-based fire management decision-making through improved science development, application, and delivery. Dave's research incorporates economics with risk and decision sciences to explore ways to evaluate and improve the efficiency and effectiveness of wildfire management programs. Dave received a B.S. in applied math from the University of Virginia, an M.S. in natural resources conservation from the University of Montana, and a Ph.D. in Economics from Oregon State University.

Peter Fulé, Professor, Northern Arizona University

Fire in a warming climate

Peter Fulé is a professor of forest ecology at Northern Arizona University. He studies interactions of climate, fire, and forests.

Dee Randall, Forest Manager, San Carlos Apache Tribe

Case Study I: Restoring fire to the landscape—San Carlos Apache Reservation

Dee Randall is the Forest Manager for the San Carlos Apache Tribe. Dee started his career working as a ranch hand for the Ash Creek Cattle Association at age 9, and continued throughout high school during the summer months. Seeing the country from an early age strengthened his interest in natural resources. Dee's forestry career started in Fire Management and later working as a Forestry Technician for the Tribe. Dee received his Bachelor of Science degree from the University of Arizona in 1989 and started as the Forest Development Forester at San Carlos.

CLOSING PLENARY SPEAKERS

Vic Morfin, Forest Fuels Specialist, Coconino National Forest

Case Study II: Coconino National Forest—working to overcome challenges in managing fires for resource objectives

Vic started with the Forest Service in 1989. He has worked on fire crews in Arizona, New Mexico, Montana, and Colorado. He has served in fire management as an AFMO on the Santa Fe National Forest and Fuels AFMO on the Kaibab National Forest. He is currently the Forest Fuels Specialist on the Coconino National Forest. Vic earned his B.S. and M.S. in Forest Science at Northern Arizona University. His thesis work was on changes in composition and structure in ponderosa pine/Douglas-fir stands on the Colville Indian Reservation.

Jay Lusher**,** Chief Fire and Aviation, National Park Service Grand Canyon National Park

Case Study III: Grand Canyon—advancing perceptions of fire as a tool

Jay Lusher is the Chief Fire and Aviation at Grand Canyon National Park. Jay oversees the management of wildland fire within the park, which continues to explore new ways to have fire play a integral part of the ecological process.

Tim Sexton

Restoring fire to North American landscapes. If not now, when? If not you, who?

Tim manages the Wildland Fire Research Development and Applications Program, which involves management of the Wildland Fire Decision Support System and facilitation of transfer of new science associated with wildland fire to the field. Tim's work experience includes: District Ranger, National Fire Use Program Manager, National Fire Ecologist (NPS), FMO,and Hotshot Superintendent. He is one of the three National Area Commanders. He previously served as Type II and I Incident Commander as well as on Fire Use Management Teams. Tim has a B.S. in History from Boise State University and an M.S. in Fire Ecology from Oregon State University.

PARTICIPANTS IN THE PANEL DISCUSSION: *HOW WE MANAGE FIRE IN THE SOUTHWEST*

Don Falk, Associate Professor, University of Arizona

Don Falk works on fire history, fire ecology, and the ecology of resilience in a changing world. He is a Fellow of the American Association for the Advancement of Science, and has received a Fulbright Short-Term Scholar award, the Ecological Society of America's Deevey Award, and the Udall Faculty Fellowship in Public Policy. Don was co-founder and Executive Director of the Center for Plant Conservation at Arnold Arboretum of Harvard University and now at San Diego Zoo Global; he subsequently served as the first Executive Director of the Society for Ecological Restoration. His books include *Genetics and Conservation of Rare Plants, Foundations of Restoration Ecology,* and T*he Landscape Ecology of Fire.* Don was a delegate to the 2015 United Nations climate summit in Paris.

Heidi Schewel, Public Affairs Specialist, Coronado National Forest

Heidi Schewel is a native Tucsonan and serves as Public Affairs Specialist on the Coronado National Forest in southeastern Arizona. She is a Type II Public Information Officer, and has worked fire information for 25 years. She comes from an interdisciplinary background, having earned Bachelor and Master of Science degrees in Agriculture at the University of Arizona. Heidi began her career with the National Park Service working Interpretation and Science and Resource Management. Her passion for interpretation, combined with teaching and public-speaking experience, help her to tell fire's many stories.

Bill Hahnenberg, Incident Commander, National Incident Management Organization-Portland Team, US Forest Service, Washington, D.C.

Since September of 2012, Bill has been the Incident Commander for one of four US Forest Service National Incident Management Organizations (NIMO) Teams. During the summer of 2012, he was the Incident Commander for the Rocky Mountain Area Type 1 Team during a very busy season spent managing several complex incidents. Previous experience includes leading a Rocky Mountain Type 2 Team and the Rocky Mountain Fire Use Management Team. His record includes 11 years as a Type 1 or Type 2 IC. He has participated with incident management teams in operations and command throughout his career and has over 40 years of fire experience. From 2003 until the fall of 2012, Bill served as the Fire Management Officer for the Upper Colorado River Interagency fire program based in Grand Junction, Colorado. Prior to moving to a full time fire position, he served for over 23 years as a US Forest Service District Ranger on two national forests. Early in his career, Bill worked as a soil scientist on three national forests. He graduated from Michigan State University in 1973 with a degree in Forestry and Soil Science. Bill enjoys spending time with his wife and sons. In his spare time he likes to ski, hike, officiate high school football, play raquetball, train Labrador retrievers, and hunt elk and pheasant. He lives in Grand Junction, Colorado.

William (Bill) Kaage, Fire and Aviation Division Chief, NPS

Bill started his career in 1983 as a wildland firefighter on the Clearwater National Forest, progressing up the ranks until he became Assistant Fire Management Officer on the Clearwater. Bill has served in numerous operations, planning, and command positions such as Fire Use Manager, Operations Section Chief, Fire Behavior Analyst, and Incident Commander. Bill has served as the Fire Management Officer (FMO) for Everglades and Sequoia and Kings Canyon national parks. In 2005, he became the Deputy Regional FMO for the PacNW Region of the NPS, and in 2009 he became the Wildland Fire Branch Chief of the NPS. Currently the NPS Fire and Aviation Division Chief, he serves as the agency's representative to the National Wildfire Coordinating Group, with responsibilities in developing interagency wildland fire policy. Bill has a Master's in Science degree in Forestry with an emphasis in wildland fire management and ecology from the University of Montana, and a Bachelor's in Science from Beloit College.

Jeffery C. Whitney, State Forester, Department of Forestry and Fire Management

Mr. Whitney began his career in 1972 as a seasonal wildland firefighter, serving five seasons with hotshot crews and three seasons as a heavy engine captain. Jeff was appointed to his current role as Arizona State Forester in January 2015 by Arizona Governor Doug Ducey. Prior to this position, Jeff served as executive director of the Fire Program Analysis for the US Department of the Interior and the USDA Forest Service, as a USDA Forest Service program manager, an assistant director of planning and budget, and as an incident commander. Jeff also served as deputy forest supervisor in San Bernardino, California; natural resources group leader with the Tonto National Forest; desert fishes/listing and recovery coordinator, regional fire management coordinator, and southwest strategy coordination for the US Fish and Wildlife Service. Jeff earned a Bachelor of Science in botany from Northern Arizona University in 1977, and a Master of Science in environmental resources from Arizona State University in 1996.

Shaula Hedwall, Supervisory Fish and Wildlife Biologist, US Fish and Wildlife Service

Shaula Hedwall is a Fish and Wildlife Biologist for the Fish and Wildlife Service in Flagstaff, Arizona. Shaula has worked extensively with fish and wildlife and the effects of forest and fire management for almost 27 years. She is a member of the Mexican Spotted Owl Recovery Team and the national lead for the Mexican spotted owl.

AFE AWARDS BANQUET LUNCHEON SPEAKER

Tom Swetnam, Regents' Professor Emeritus, University of Arizona

Smokey Bear: education or propaganda?

Tom is the son of a Forest Service District Ranger, and he worked seasonally for the Gila National Forest in wildland fire after finishing his undergraduate degree at the University of New Mexico. Tom's seminal research in fire history, fire climatology, and dendroentomology set the stage for and provided many of the methods for much of the dendroecological work that has come afterwards. As a faculty member of the University of Arizona's Laboratory of Tree-Ring Research (LTRR) and the School of Natural Resources, Tom has mentored dozens of students who have gone on to make important contributions in science or resource management. In 1999, Tom became the Director of the LTRR, and championed the construction of a new multi-million dollar facility, increased faculty, and brought new programs such as the Center for Mediterranean Archaeology and the Environment (CMATE) to the Lab. Tom has served on advisory boards for the Governor of Arizona, the National Science Foundation, the National Climate Data Center. He has testified in congress many times regarding the effects of climate change and resource management on wildland fire activity and forest health. Tom is a Regents' Professor, the highest faculty position in the state university system.

POSTER PRESENTATIONS

#	Presenter	Poster Title
1	***Yvonne Jimison***	*Influence of smoke on germination of species in the southern High Plains, USA*
2	***Bret A. McNamara***	*Post-fire seedling establishment patterns of* Hesperocyparis bakeri
3	***Adam Toomey***	*Season of burning on gulf cordgrass vegetative communities in the Gulf Coast Prairie and Marsh ecoregion*
4	***C. Jason Williams***	*Shrubland ecohydrologic response and recovery over a ten year period following pinyon and juniper removal*
5	***Jonathan Bontrager***	*Long term vegetation recovery following post-fire mulching using Landsat time series*
6	***Megan E. Poling***	*Post high severity successional pathways in Southwestern pine and dry mixed conifer forests*
7	***Carter Colia***	*Eight years post forest restoration insect and pathogen presence and tree mortality in warm/dry mixed conifer, southwestern Colorado*
8	***Jim Malusa***	*Post Horseshoe II Fire recovery in the Chiricahua Mountains of southeast Arizona: photo matches from 2010–2016*
9	***Zachary W. Poynter***	*Twenty-year response of an upland oak forest to repeated prescribed burning followed by a fire-free period*
10	***Devin E. Black***	*Recovery of an upland oak-hickory forest following wildfire*
11	***Doug Cram***	*Silvicultural treatments influence fire severity in Southwest forests*
12	***Conamara S. Burke***	*Modeling wildfire behavior in forest treatments with different tree clumping patterns*
13	***Jessie M. Dodge***	*Do fuel treatments impact fire severity and post-fire understory plant recovery in ponderosa pine forests?*
14	***Devin Black***	*Oak woodland habitat restoration using mechanical mastication and prescribed fire*
15	***Fallon L. Kelley***	*The effects of restoration treatments on richness, diversity, and abundance of large mammals in southwestern Colorado, USA*
16	***Austin B. Ryburn***	*Active cavity-nesting species abundance and site suitability in different fire restoration treatments of a warm/dry mixed conifer forest, southwestern Colorado*
17	***Austin J. McMenimen***	*Feeding index signs of* Sciurus aberti *(Aberts squirrel) in warm/dry mixed conifer forests following various restoration treatments in southwest Colorado*
18	***Brittany L. Hesse***	*Large mammalian richness and abundance in relation to fire treatments in a warm, dry mixed conifer forest in southwestern Colorado*
19	***Leonard Rios***	*Effects of prescribed fire season on growth and defense in* Pinus lambertiana
20	***Emma Clare Williams***	*Quantifying the effects of prescribed fire on tree growth*
21	***John B. Leary***	*Prescribed fire as a tamarisk management tool in riparian restoration*
22	***Victoria L. Haynes***	*Prescribed patch burning in cordgrass rangelands on ungulate distribution*
23	***Ryan B. Walker***	*Prescribed fire effects on burn severity and forest persistence during a subsequent extreme wildfire*
24	***Ann M. Lynch***	*White fir abundance and extent increase in the absence of fire in southern Arizona, USA*
25	***Anthony C. Caprio***	*Did pre-fire treatments mitigate effects of the 2015 Rough Fire in Kings Canyon National Park?*
26	***Miguel Villarreal***	*Landscape patterns of contemporary sky island fires: a first look across the US-Mexico border*
27	***Jeffrey Gicklhorn***	*Examining fire occurrence and burn severity in the Great Basin using Monitoring Trends in Burn Severity data*
28	***Kim Ernstrom***	*IFTDSS: to infinity and beyond*

POSTER PRESENTATIONS, CONTINUED

#	Presenter	Poster Title
29	***Paulette L. Ford***	*Improving climate change risk management strategies in grasslands: a prototype application of state and transition simulation modeling*
30	***Jesse D. Young***	*Using a wildfire risk assessment framework to optimize restoration of ponderosa pine forests*
31	***Daric C. Burr***	*Planning for wildfire severity: analyzing potential fire behavior in three forest restoration treatments in warm, dry mixed conifer, southwestern Colorado*
32	***Joshua L. Conver***	*Modeling fire pathways in a montane grassland-forest landscape in the Valles Caldera National Preserve, New Mexico, USA*
33	***Lisa B. Saperstein***	*From IFTDSS to implementation: community protection and resilient landscapes on the Kenai Peninsula, Alaska*
34	***Wade T. Tinkham***	*Establishment of a large scale permanent forest dynamics plot to characterize forest health and resiliency in Colorado*
35	***Danielle Steger***	*Wildfire propagation and wind flow across treated and untreated forest edges with varying wind incidence angles*
36	***Carl A. Seielstad***	*From drone to data*
37	***Carl A. Seielstad***	*Unmanned aerial systems in fire management*
38	***Eric Osei-Kwarteng***	*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*
39	***Brian Scott Sheppard***	*Anticipating and planning for post-fire watershed risks*
40	***Charles T. Mogen***	*Understanding and applying historical fire regimes to forest management at the village of Taos Ski Valley, New Mexico*
41	***Erica R. Bigio***	*Fire history and human-fire-climate relationships of Buryatia, Siberia*
42	***Laura L. Trader***	*Interagency partnerships for fire ecology in the Jemez Mountains, New Mexico: restoring and maintaining a resilient landscape in Monument Canyon Research Natural Area*
43	***Matthew Millar***	*The Flagstaff Watershed Protection Project: a model for multi-agency collaboration*
44	***Tyler K. Mockta***	*Sustaining a traditional product in a fire prone forest on Mescalero Apache Tribal Lands*
45	***Lionel Whitehair***	*Fire on tribal landscapes: Navajo Nation*
46	***Randy L. Striplin***	*Quantifying barriers to prescribed fire in the Lake Tahoe Basin*
47	***Greg Bartlett***	*Too late when the wildfire is at mine's gate!*
48	***Philipp D. Wickey***	*Effects of repeated, high-severity fire on vegetation, ground cover, and arthropod assemblages*
49	***Jamie M. Lydersen***	*Historical air photos as a source of information on landscape heterogeneity for forest restoration*
50	***Ben T. Hart***	*Reestablishment of the ectomycorrhiza fungal community after forest restoration treatments*
51	***Dominique Bachelet***	*Replacing the climate change information fire-hose by stimulating web tools*
52	***Monique Wynecoop***	*Understory vegetation response to fuels reduction treatments within the North Start Fire: a case study for addressing Forest Service fuels management impacts on cultural practices of the Confederated Tribes of the Colville Reservation*
53	***Dana Skelly***	*Applying lessons learned from the Canyon Creek Complex Fuels Treatment Effectiveness Assessment—Malheur National Forest*
54	***Maya Khosla***	*Searching for the gold spot—the wild after wildfire*
55	***Tom Ribe***	*A Leopoldian "fire ethic"to inspire safe, ethical, ecological fire management*
56	***Parts Permillion***	*Beyond the bear: introducing "Charrtoons" to promote wildfire and climate change science and policy messages to diverse audiences*

Monday, 28 November

Registration
7 am to 4 pm in the lobby, and 6 to 7 pm at the informal opening reception by Cascade Terrace

Presentation Loading
8 am to 4 pm in the lobby, and 5 to 7 pm by Cascade Terrace

Exhibit Booth and Poster Set-up
Begins at noon, in the lobby

Workshops
#1 Rx 310: Introduction to Fire Effects
8 am to 5 pm, Executive Board Room
This workshop continues throughout the week at various times in the Sonora Room

#2 IFTDSS—Interagency Fuels Treatment Decision Support System
3 to 5 pm, Salon D

#3 Combining Fire Management, Technology, and Ecology into Landscape Scale Fire Management
1 to 5 pm, Salon E

#4 Fuel Treatment Effectiveness Metrics for Southwestern Systems
1 to 5 pm, Salon F

#5 FHAES (Fire History Analysis and Exploration System): User-Friendly Software for Fire History
1 to 5 pm, Sonora Room

Informal No-Host Welcome Reception
5 to 7 pm, Cascade Terrace and Bill's Grill
Registration table and presentation loading station will be set up by the Cascade Terrace

Student Volunteer Meeting
5:05 to 6:05 pm, Salon D

Moderators' Meeting
5:15 to 6:15 pm, Executive Board Room

Conference Steering Committee Meeting
7 pm, Cascade Terrace

Tuesday, 29 November

Registration
7 am to 4 pm, in the lobby

Presentation Loading
8 am to 4 pm, in the lobby

Exhibit Booth and Poster Set-up Deadlines
Exhibitor booths should be set up by 8 am
Posters should be set up by 4:30 pm

Welcome
8 to 8:30 am, Ballroom B

Opening Plenary Speakers
8:30 to noon, Ballroom B

Bryan Rice
Director, Office of Wildland Fire, Department of the Interior

Elizabeth Reinhardt
Retired, US Forest Service

Andrea Thode
Associate Professor, Northern Arizona University

Tessa Nicolet
Fire Ecologist, US Forest Service Southwest Region

Dave Calkin
Research Forester, US Forest Service

Peter Fulé
Professor, Northern Arizona University

Dee Randall
Forest Manager, San Carlos Apache Tribe

Lunch Break
Noon to 1:30 pm
On your own

Concurrent Oral Presentations
1:30 to 3:10 pm

Afternoon Break
3:10 to 3:40 pm

Concurrent Oral Presentations, continued
3:40 to 5:20 pm

Rx 310
4:20 to 5:20 pm, Sonora Room

Conference Steering Committee Meeting
5:20 to 5:40 pm, Sabino Room (staff office)

Poster Session and Reception
5:30 to 7 pm, in the lobby

Movie
Three showings: 5:30, 6:05, and 6:40 pm, Salon F
Searching for the Gold Spot: The Wild after Wildfire

Wednesday, 30 November

Registration
7:30 am to 3 pm, in the lobby

Presentation Loading
8 am to 3 pm, in the lobby

Roundtables
8 am to noon. Meet in Ballrooms B and C for plenary discussion. Roundtables and sharebacks will then be held in Salons D, E, F, G, H, I, J, K, and L. Check your name tag for your roundtable assignment.

AFE Award Banquet Luncheon
Noon to 1:30, Kiva Ballroom
Complimentary for all conference attendees. Please join us!
See details, below.

Concurrent Oral Presentations
1:40 to 3:20 pm

Afternoon Break
3:20 to 3:40 pm

Concurrent Oral Presentations, continued
3:40 to 5:20 pm

Rx 310
4:20 to 5:20 pm, Sonora Room

AFE Members Meeting
5:30 to 6 pm, Ballroom B

SAFE Meeting
6 to 6:30 pm, Salon F

Student-Mentor Mixer
6:30 to 8 pm, Cascade Lounge

AFE Awards Banquet Luncheon

Lunch and Welcome
Lunch starts at noon in the Kiva Ballroom
Mark Kaib, Master of Ceremonies

Award Presentations
12:30 PM
Leda Kobziar, Association for Fire Ecology President, Natural Resources and Society, University of Idaho
- Harold Weaver Undergraduate Student Excellence Award
- Edward Komarek, Sr. Graduate Student Excellence Award
- The Harold Biswell Lifetime Achievement Award

Featured Speaker
12:45 PM
Tom Swetnam, Regents' Professor Emeritus, University of Arizona
Smokey Bear: education or propaganda?

Closing Remarks
1:25 PM
Mark Kaib

End of Banquet
1:30 PM

Thursday, 1 December

Registration
7:30 am to 1:30 pm, in the lobby

Rx 310
8 to 10 am, Sonora Room

Concurrent Oral Presentations
8 to 10 am

Morning Break
10 to 10:30 am

Concurrent Oral Presentations
10:30 to 11:50 am

Lunch Break
11:50 am to 1:20 pm
Lunch on your own

Closing Plenary Speakers
1:20 to 3 pm, Ballroom B

Vic Morfin
Forest Fuels Specialist, Coconino National Forest

Jay Lusher
Chief, Fire and Aviation,
National Park Service, Grand Canyon National Park

Tim Sexton
Program Manager, USFS Wildland Fire Research Development and Applications Program

Afternoon Break
3 to 3:30 pm

Panel Discussion
3:30 to 4:30 pm, Ballroom B
How we manage fire in the Southwest
Don Falk, Heidi Schewell, Bill Hahnenberger, Shaula Hedwall, Bill Kaage, and ***Jeff Whitney***

Closing Remarks
4:30 to 4:50 pm, Ballroom B

Exhibit Booth and Poster Breakdown Deadlines
3:30 to 5 pm, in the lobby
Everything has to be down by 6 pm

Friday, 2 December

Field Trips
Pre-registration is required; lunch is provided. See page 19.

- **The Laboratory of Tree Ring Research, University of Arizona** (8:45 am to noon)
- **Altar Valley and Buenos Aires National Wildlife Refuge** (8 am to 5:30 pm)
- **Las Cienegas National Conservation Area–Restoration Treatment Lessons Learned in Desert and P-J Woodlands** (8 am to 5:30 pm)
- **Self-Guided Hike of Ventana Canyon Trail, Catalina Mountains**

	OPENING PLENARY IN BALLROOM B
8:00	Welcome: AFE and Consortium
8:20	Logistics
8:30	Opening Remarks: ***Bryan Rice,*** Director, Office of Wildland Fire, Department of the Interior *Wildland fire and the next generation*
8:55	*Beyond hazardous fuels: restoring fire* – ***Elizabeth Reinhardt,*** Retired, US Forest Service
9:20	*An overview of fire in the Southwest* – ***Andrea Thode,*** Associate Professor, Northern Arizona University ***Tessa Nicolet,*** Fire Ecologist, US Forest Service Southwestern Region
9:45	*Improving landscape conditions on Southwest national forests with wildfire*
	10:10 am Break
10:40	*A systems view of wildfire management* – ***Dave Calkin,*** Research Forester, US Forest Service
11:05	*Fire in a warming climate* – ***Peter Fulé,*** Professor, Northern Arizona University
11:30	*Case Study I: Restoring fire to the landscape—San Carlos Apache Reservation* – ***Dee Randall,*** Forest Manager, San Carlos Apache Tribe
Noon	**LUNCH: ON YOUR OWN**

CONCURRENT ORAL PRESENTATIONS SCHEDULE (Moderators in parentheses)

	Executive Board Room	Ballroom A / Salon D	Ballroom A / Salon E	Ballroom A / Salon F	Ballroom B
Session Title	**Post-Fire Effects** (*Jesse Minor*)	**Fire Use and Management** (*Moderator TBA*)	**SS1 So You've Had a Big Fire...** (*Julie Korb, Anne Bradley, Collin Haffey, Helen Poulos*)	**Fire Management and Decision Making** (*Don Falk*)	**Resilience and Climate Change** (*Susan Rich*)
1:30 PM	***Mary Lata*** *The effects of ponderosa pine smoke on the emergence of Arizona Bugbane* (Cimicifuga arizonica)	***Shaula Hedwall*** *Interagency coordination to meet multiple objectives: a new approach to wildfire*	***Joy Nystrom Mast*** *High-severity fire, drought, and climate change impacts on Southwestern ponderosa pine forests*	***Charlotte Reemts:*** *Do fuel treatments work? Effectiveness of fuel treatments for mitigating the effects of high intensity wildfire on Madrean pine-oak forests in the Davis Mountains of West Texas*	***Andrea Thode:*** *Landscape impacts of fire and climate change in the Southwest: a science-management partnership*
1:50 PM	***Henry Grover*** *The distribution and function of fire mosses in severely burned pine forests of Arizona*		***Suzanne Owen:*** *Ponderosa pine regeneration and ectomycorrhizal fungi response after severe wildfires*	***Daniel Vega-Nieva*** *Developing an operational fire danger system for Mexico based on satellite and weather information*	***Sean Parks*** *Climate-induced fire regime shifts in the mountains of the western US*
2:10 PM	***Daniel Moya*** *Resilience of semiarid mediterranean ecosystems: fire severity and soil microbial activity recovery in the short, mid and long term*	***Vita Wright*** *The decision to manage fire: insights from wilderness fire managers*	***Jessi Ouzts*** *Post-fire tree planting in Arizona and New Mexico*		***Ellis Margolis*** *Multi-seasonal climatic effects on wildfire extent and seasonality in the Jemez Mountains, New Mexico*
2:30 PM	***Javier Sagra*** *Plant restoration after prescribed fires: testing the effect of seed provenance and seed predation in Mediterranean forests*	***Valentijn Hoff*** *Linking forest structure and fire severity on the North Rim of the Grand Canyon*	***Owen Burney*** *The target plant concept: a post-fire restoration perspective*	***Richard Halsey*** *Fuel myopia—losing lives, property, and habitat by doing the same thing over and over again*	***Alexis Arizpe*** *Widespread fire years in conifer forests are contingent on both winter and monsoon precipitation in the US-Mexico sky islands*

CONCURRENT ORAL PRESENTATIONS SCHEDULE, CONTINUED

	Executive Board Room	Ballroom A / Salon D	Ballroom A / Salon E	Ballroom A / Salon F	Ballroom B
Session Title	**Post-Fire Effects** (*Jesse Minor*)	**Fire Use and Management** (*Moderator TBA*)	**SS1 So You've Had a Big Fire...** (*Julie Korb, Anne Bradley, Collin Haffey, Helen Poulos*)	**Fire Management and Decision Making** (*Don Falk*)	**Resilience and Climate Change** (*Susan Rich*)
2:50 PM	***Raquel Alaro Sánchez*** *Growth and function responses after wildfires depend on site dryness in* Pinus halepensis *Mill.*	***Ana Barros*** *Simulating the effect of alternative wildland fire use policies in the Deschutes National Forest*	***Sandra Haire*** *The potential influence of tree regeneration on the dynamics of refugia through multiple fire events*	***Christopher O'Connor*** *Quantifying potential hazards for fire responders: application of the Suppression Difficulty Index to forests of the western US*	***Christopher Dicus*** *Simulated carbon dynamics in post-fire successional pathways of the Wasatch Mountains, Utah*
			3:10 pm Break		
Session Title	**Landscape Level Management** (*Jesse Minor*)	**Fire and Fuel Treatment Effects on Wildlife Habitat** (*Shaula Hedwall*)	**SS1 So You've Had a Big Fire...** (*Julie Korb, Anne Bradley, Collin Haffey, Helen Poulos*)	**Fire Management and Decision Making** (*Mary Lata*)	**Resilience and Climate Change** (*Mark Kaib*)
3:40 PM	***Tyson Swetnam*** *Potential fire regime changes in a post African buffel grass* (Cenchrus ciliaris) *invaded desert mountain landscape, southeastern Arizona, USA*	***Patrick Magee*** *Identifying and mitigating social-ecological tradeoffs: fuel treatments, fire hazard, and obligate avifauna in piñon-juniper woodlands*	***Mark Lesser*** *How populations grow: contributions of long distance dispersal and intrinsic establishment in disjunct ponderosa pine stands*	***Dominick DellaSala*** *Using mixed-severity fire to restore and maintain ecosystem integrity: a case study in the Sierra Nevada of California, USA*	***Alicia Azpeleta*** *Assessing climate change and its effects on ecosystem services on tribal lands*
4:00 PM	***Dolors Armenteras*** *Changing patterns of fire occurrence in NW Amazon: effect of spatial and social hetereogeneity?*	***Emily Yurcich*** *Estimating prescribed fire effects on semidesert vegetation composition and structure using a 30-year Landsat derived fire history data*	***Paula Fornwalt*** *Post-fire tree regeneration in ponderosa pine forests of the southern Rocky Mountains*	***Joe Scott*** *Simulated wildfire hazard across Arizona and New Mexico—burn probability and conditional fire intensity*	***Charlotte Reemts*** *Targeted thinning as a climate adaptation strategy in sky islands*
4:20 PM	***Bryan Bird*** *Formalizing desired conditions and objectives for natural fire regimes in forest plan revisions in the Southwest to maintain habitat conditions for native wildlife*	***Carol Chambers*** *Bats in the burn: how bats responded to the largest fire in Arizona's history*	***Collin Haffey*** *Varied ecological responses to extraordinary high-severity fire along a 5000-foot elevational gradient since the 2011 Las Conchas Fire, New Mexico*	***David Calkin*** *Enterprise risk management in the USFS and its implications to wildland fire management*	***Perry Grissom*** *Tools to build a fire resilient landscape—the Southern Arizona Resilient Landscape Collaborative*
4:40 PM	***Megan Poling*** *Calibrating initial assessments to address Monitoring Trends in Burn Severity product limitations in the Southwest*	***Randeep Singh*** *How fire may be a disaster for top predator: predicting the fire risk in the semi-arid habitat region, India*	***Lisa Floyd*** *Variation in type conversion patterns at forest-chaparral ecotones*	***Karen Short*** *What does it mean to have a high initial attack success rate in wildland firefighting?*	***Cynthia Wallace*** *Mapping when and where invasive buffelgrass is green*
5:00 PM	***Teresa Brennan*** *Stand age effects on Tecate cypress recruitment after the 2003 Otay Fire*	***Carol Chambers*** *Ponderosa pine snag dynamics and cavity excavation following bark beetle outbreaks or wildfire*	***Matthew Hurteau*** *The influence of projected climate on post-fire vegetation dynamics*	***Rachel Houtman*** *Modeling management to reduce damages from mega-fires*	***Krista Bonfantine*** *New methods and technology to support crowdsourced ecological monitoring*
	5:30 TO 7 PM POSTER RECEPTION AND MOVIE				

8:00 to Noon	Meet in Ballrooms B and C for plenary discussion. Roundtables and sharebacks will then be held in Salons D, E, F, G, H, I, J, K, and L. Check your name tag for your roundtable assignment.
Noon	**ALL-INCLUSIVE AFE AWARDS BANQUET LUNCHEON IN THE KIVA BALLROOM** *Smokey Bear: education or propaganda?* – Guest speaker ***Tom Swetnam,*** Regents' Professor Emeritus, University of Arizona

CONCURRENT ORAL PRESENTATIONS SCHEDULE

Session Title	Executive Board Room	Ballroom A / Salon D	Ballroom A / Salon E	Ballroom A / Salon F	Ballroom B
	Communication (*Peter Fulé*)	Fire Management and Planning (*Charlotte Reemts*)	SS1 So You've Had a Big Fire... (*Julie Korb, Anne Bradley, Collin Haffey, Helen Poulos*)	SS3 Fire and Rapid Ecological Change: A Usgs Perspective on the Transformation of Public Lands (*Sue Phillips*)	SS2 Planning and Implementation of Ecologically Based Fire Response (*Christopher O'Connor, David Calkin*)
1:40 PM	***Peter Fulé*** *Using a socio-ecological systems framework to develop a community fire plan in rural Mexico*	***Dirac Twidwell*** *Coexisting with fire: movements afoot in the Great Plains*	***Christopher Guiterman*** *Persistence and fire regimes of oak shrubfields suggest increasing dominance with climate change*	***Matthew Brooks*** ***Jan van Wagtendonk*** *History of wildland fire research in the US Geological Survey*	***Timothy Ingalsbee*** *Ecological fire management: a call to action*
2:00 PM	***Rob Galbraith*** *How insurance discounts for firewise communities incent homeowner mitigation efforts in the WUI*	***Dominick DellaSala*** *Does increased forest protection correspond to higher severity fire in frequent-fire forests of the western USA?*	***Jonathan Coop*** *Fire-vegetation interactions over repeated burning in the Jemez Mountains: type conversions, successional trajectories, and management prospects*	***Phil Mantgen*** *Does prescribed fire promote forest resistance to drought?*	***Dan Whatley*** *Forest-level planning enables greater use of managed fire*
2:20 PM	***Krista Bonfantine*** *Tree ring education builds understanding of watershed health*	***Tessa Nicolet*** *Considerations when managing fire for ecological benefits*	***Xanthe Walker*** *Effects of changing climate and disturbance regimes on ecological memory: implications for forest resilience to wildfire*	***Rachel Loehman*** *Interactions of landscape disturbances and climate change dictate ecological pattern and process: spatial modeling of wildfire, insect, and disease dynamics under future climates*	***Francisco Romero*** *Timely and informed initial response decision making*
2:40 PM	***Gloria Edwards*** *From needs to knowledge: needs assessment and development of knowledge tools for fuels and fire ecology of Gambel oak and masticated fuels in the southern Rockies region.*	***Vita Wright*** *The important role of fire ecologists for fire science communication*	***Jesse Minor*** *Ecological trajectories following multiple mixed-severity fire events in pine-oak and mixed conifer forest types*	***Jennifer Briggs*** *Ecological outcomes and collaborative assessment of forest restoration and fuels reduction treatments in Colorado's Front Range*	***Laura Barrett*** *Improving incident objectives and decisions through spatial fire planning*
3:00 PM	***Barb Satink Wolfson*** *Successfully communicating fire science to the public through art: evaluation results and broader impacts*	***James Menakis*** *Living with fire—lessons learned from a grassland savanna in central Africa and how it relates to fire management in the United States*	***Helen Poulos*** *Pines vs. oaks II: ecophysiological mechanisms underscoring tree regeneration patterns following two high intensity fires in a Madrean evergreen woodland*	***Jessica Walker*** *Using phenology to track the vegetative recovery of southwestern US dryland forests after fire*	***Tessa Nicolet*** *Quantifying wildfire risk and benefit to ecosystem function in the Southwestern Region*
3:20 PM Break					

CONCURRENT ORAL PRESENTATIONS SCHEDULE, CONTINUED

Session Title	Executive Board Room	Ballroom A / Salon D	Ballroom A / Salon E	Ballroom A / Salon F	Ballroom B
	SS5 Fire Trek (*Timothy Ingalsbee*)	Fire Effects on Hydrology (*Doug Cram*)	SS1 So You've Had a Big Fire… (*Julie Korb, Anne Bradley, Collin Haffey, Helen Poulos*)	SS3 Fire and Rapid Ecological Change: A Usgs Perspective on the Transformation of Public Lands (*Sue Phillips*)	SS2 Planning And Implementation of Ecologically Based Fire Response (*Christopher O'Connor, David Calkin*)
3:40 PM	***Gabrielle Boisrame*** *Managed wildfire effects on the eco-hydrology of Illilouette Creek Basin in Yosemite National Park*	***Amanda Webb*** *Fire in lowland riparian ecosystems of Chihuahuan, Sonoran, and Mojave desert ecoregions: a literature review and information gap analysis*	***Jason Kean*** *Assessing post-wildfire debris-flow hazards: tools for rapid response and planning for the future*	***Collin Haffey*** *A case study of the benefits of place-based science-management partnerships in a rapidly changing landscape*	***Greg Dillon*** *Delineating strategic fire management zones from wildfire risk assessment results: a case study from two national forests in Montana*
4:00 PM	***Christopher Moran*** *Data-driven classification of forest canopy structure and fuel*	***Carissa Wonkka*** *Regeneration and invasion of cottonwood riparian forest following wildfire*	***Anne Bradley*** *A proposed preplanning framework to improve postfire management*	***Craig Allen*** ***Ellis Margolis*** *Diverse histories, ecologies, and effects of fire across elevational and landscape gradients in the wooded uplands of northern New Mexico*	***Christopher Dunn*** *Planning for the unplanned: relevance of pre-planning to large-fire operations*
4:20 PM	***Monique Wynecoop*** *Understory vegetation response to fuels reduction treatments within the North Star Fire: a case study for addressing Forest Service fuels management impacts on cultural practices of the Confederated Tribes of the Colville Reservation*	***Daniel Moya*** *Short-term effects of prescribed fires on the soil properties of the Mediterranean pine forests in southeast Spain*	***Marie Rodriguez*** *Using WFDSS as a tool in postfire impact planning*	***Leslie Defalco*** *An ecological approach to post-fire restoration of important habitat features for the Mojave Desert tortoise*	***Christopher Dunn*** *Are US federal fire management systems resilient?*
4:40 PM	***Katelynn Jenkins*** *Effectiveness and longevity of ponderosa pine fuels reduction treatments: a legacy of research at Lick Creek Demonstration/ Research Forest in western Montana*	***Joel Sankey*** *Watershed resiliency to climate change and future fire in the western USA*	***Jeremy Sweat*** *The East Jemez Landscape Futures Project*	***Pete Coates*** *Understanding the effects of wildfire on greater sage-grouse populations*	***Christopher O'Connor*** *Know before you go: mapping operational risks and opportunities for ecological fire management*
5:00 PM	***Chase Brook*** *Using maximum entropy modelling as a tool for predicting wildland fire occurrence in the state of Texas*	***Anne Tillery*** *Using pre-wildfire debris-flow hazard assessments to plan and implement landscape-scale water source protection in the Rio Grande watershed*		***Jon Keeley*** *Global warming impacts on future fire regimes: what California fire history can teach us*	***Karin Riley*** *Can landscape restoration and fire suppression cost savings be achieved via ecological fire response?*

AFE MEMBERS MEETING: 5:30 TO 6 PM; SAFE MEETING: 6 TO 6:30 PM; MENTOR MIXER: 6:30 TO 8 PM

Concurrent Oral Presentations Schedule

Session Title	Executive Board Room	Ballroom A / Salon D	Ballroom A / Salon E	Ballroom A / Salon F	Ballroom B
	SS6 Cultural Resources, Fuels Treatment, Fire Management (*Zander Evans*)	Forest Structure (*Todd Chaudhry*)	Fire History (*Ellis Margolis*)	SS9 An Evaluation of Landscape-Level Collaborative Restoration Projects (*Jenny Briggs, Amy Waltz*)	SS8 Solving the Wildfire Paradox—Solutions for Managing More Ecologically Beneficial Fires (*Frankie Romero, Tonja Opperman*)
8:00 am	***Will Reed*** *Heritage guidance for BAER*	***Gretchen Fitzgerald*** *Post-fire tree regeneration in ponderosa pine and mixed conifer in the San Juan Mountains, southwest Colorado*	***Lane Johnson*** *Completing the largest landscape-scale tree-ring fire-scar network in the world: fire history and fire-climate analyses in the Jemez Mountains*	***Jenny Briggs*** *Seven years of fire, forest restoration, and ecological monitoring in Colorado: progress of the Front Range and Uncompaghre Plateau CFLRPs*	***David Calkin*** *What will it take to break the cycle of the wildfire paradox?*
8:20 am	***Connie Constan:*** *Management considerations and wildfire effects on archaeological materials in the Jemez Mountains*	***Mike Battaglia*** *The role of mixed severity wildfire in shaping ponderosa pine forest structure on the Colorado Front Range*	***Cecil Frost*** *Fire scars underestimate fire frequency in frequent-fire landscapes*	***Dan Kipervaser*** *Getting fire back on the landscape: are we measuring the right things? Meeting 4FRI desired conditions after six years*	***Jose Iniguez*** *Is there such a thing as too much fire?*
8:40 am	***Jennifer Dyer*** ***Zander Evans*** *Partnering with tribes to protect cultural resources in an era of megafires*	***Jose Iniguez*** *How wildfires restored forest structure patterns in the sky islands of southeastern Arizona*	***Anthony Caprio*** *A historical perspective on large fires in the southern Sierra Nevada: rare or everyday events?*	***Eytan Krasilovsky*** *Measuring impacts on fire and forests in the Zuni and SW Jemez Collaborative Forest Landscape Restoration Program projects*	***Tim Sexton*** *Terminology—PNF to WFU to WTF*
9:00 am	***Megan Friggens*** *Fire and cultural resources: a method for assessing potential impacts of wildfire on archeological sites*	***Megan Poling*** *Increasing trends in burn severity in the southwestern USA from 1984–2013*	***Peter Fulé*** *How can managers interpret contradictory literature on historical fire regimes? A case study*	***Jeff Cannon*** *Effect of collaborative forest restoration treatments on fine-scale spatial heterogeneity in the Colorado Front Range*	***Nate Benson*** *Wildfire: it is all about the objectives*
9:20 am	***Anastasia Steffen*** *Managing lithic scatters and fire: if they are made of stone, why treat them like glass?*	***John Paul Roccaforte*** *Ponderosa pine restoration treatments increase ecosystem resiliency to the San Juan Fire, White Mountains, Arizona, USA*	***Christopher Guiterman*** *Navajo settlement, transhumance, and the interruption of frequent fire regimes*	***Justin Ziegler*** *Structural complexity and fire behavior following restoration treatments in dry forests*	***Timothy Ingalsbee*** *Talk the walk: a call to adopt "ecological fire use" as official fire management terminology*
9:20 am	***Rachel Loehman*** *Linking field-based and experimental methods to quantify, predict, and manage fire effects on cultural resources*	***Andrew Barton*** *Pines vs. oaks II: Regeneration dynamics of Madrean evergreen woodlands following two high intensity fires in southeastern Arizona*	***Ellis Margolis*** *Historical dominance of low-severity fire in dry and wet mixed-conifer forest habitats of the endangered Jemez Mountains salamander*	***Mike Stoddard*** *Efficacy of resource objective wildfires for restoring ponderosa pine ecosystems in northern Arizona*	**Panel** ***Tim Sexton*** ***Timothy Ingalsbee*** ***Nate Benson***
	10 am Break				

Concurrent Oral Presentations Schedule, continued

Session Title	Executive Board Room	Ballroom A / Salon D	Ballroom A / Salon E	Ballroom A / Salon F	Ballroom B
		SS7 Evaluating the Economic Returns (*Michael Taylor*)	Fire Modeling (*Ellis Margolis*)	SS9 An Evaluation of Landscape-Level Collaborative Restoration Projects (*Jenny Briggs, Amy Waltz*)	SS8 Solving the Wildfire Paradox—Solutions for Managing More Ecologically Beneficial Fires (*Frankie Romero, Tonja Opperman*)
10:30 am		***Zander Evans*** *Wildfire management, cost, and burn severity: five year trends in the Southwest*	***Christine Bielski*** *Quantifying dynamic grassland fuel properties to improve fire behavior fuel models*	***Mary Stuever*** *San Juan–Chama Watershed partnership: a landscape scale collaboration spearheaded by private landowners*	***Brian Kelley*** *Internal perceptions related to managed fire in southwestern forests*
10:50 am		***Rachel Houtman*** *When to let fire burn: fuel reduction effects versus timber values at risk*	***Carolyn H. Sieg*** *Detailed physics-based fire model reveals some unexpected interactions between bark beetles and fire*	***Anne Bradley*** *The Rio Grande Water Fund: a collaborative partnership to restore healthy forests and ensure water security for farms, industry, and communities in the upper Rio Grande watershed*	***Frank (Bill) Hahnenberg*** *Big Fish Fire case study—the paradox of a great fire with some great outcomes*
11:10 am		***Sushil Nepal*** *Quantifying impacts of potential management and climate change using state and transition models for dry forests of the Colorado Plateau*	***Alan Taylor*** *Do fuel treatments restore ecosystem function? Response of water use efficiency to fuels treatment in an Arizona ponderosa pine forest as measured by tree ring δ13C*	**Guided Discussion** *Assessing the outcomes of collaborative forest restoration: what metrics represent ecological effectiveness across projects? A structured discussion with speakers and session attendees.*	**Panel** ***Carl Seilstad,*** ***Bill Kaage*** ***Bill Hahnenberg***
11:30 am		***Hua Zhong*** *Analyzing the economic benefits of fuel treatments in the southern Colorado Plateau using parameterized state-and-transition models*	***Don Falk*** *Ecosystems as energy fields*		**Panel** ***Carl Seilstad,*** ***Bill Kaage*** ***Bill Hahnenberg***

11:50	**Lunch: on your own**
	Closing Plenary: Ballroom B
1:20	*Case Study II: Coconino NF—Working to overcome challenges in managing fires for resource objectives* – ***Vic Morfin,*** Forest Fuels Specialist, Coconino National Forest
1:50	*Case Study III: Grand Canyon—Advancing perceptions of fire as a tool* – ***Jay Lusher,*** Chief, Fire and Aviation, NPS Grand Canyon National Park
2:20	*Restoring fire to North American landscapes: If not now, when? If not you, who?* – ***Tim Sexton,*** Program Manager, USFS Wildland Fire Research Development & Applications Program
	3 pm Break
3:30	Panel Discussion: *How we manage fire in the Southwest* – ***Don Falk, Heidi Schewel, Bill Hahnenberg, Shaula Hedwall, Bill Kaage,*** and ***Jeff Whitney***
4:30	Closing Remarks
4:50	**Evening: on your own**

Friday, 2 December 2016: Field Trips

We are very excited to offer four different field trips for our conference participants to choose from. Pre-registration is required for field trips #1–3; lunch is provided.

1. The Laboratory of Tree Ring Research, University of Arizona
8:45 am to Noon

How old are the oldest trees? What can trees tell us about our history, our environment, and our future? How will climate change affect us? Answers to these questions and more will be answered during your tour of the University of Arizona Laboratory of Tree-Ring Research. Visit the labs, speak with the researchers working to answer the tough challenges we face, learn about the artwork installation, and see the world's oldest trees. You'll also have time to walk around the University of Arizona campus where you can see Old Main, visit the bookstore, or grab a snack at the Student Union.

2. Altar Valley and Buenos Aires National Wildlife Refuge
8 am to 5:30 pm

A tour to the Altar Valley watershed southwest of Tucson will introduce you to a working landscape of Sonoran Desert grassland and Sky Island ecosystems where fire management has been a major theme since the late 1970s/early 1980s. The desire to manage mesquite and woody vegetation encroachment and to return fire to this landscape were the major themes that initially united ranching neighbors together to form the Altar Valley Conservation Alliance in 1995. This mutual vision has allowed the Alliance to overcome many obstacles including Endangered Species Act compliance, fire planning, liability, and building fire management capacity. The resource benefits that come from active fire use and management have been demonstrated within the valley at the Buenos Aires National Wildlife Refuge for over 30 years. As a strong alliance partner, the Refuge has provided fire management leadership, technical assistance, and implementation of prescribed burns. The Refuge and some ranches are also working to integrate other hazardous fuels and brush control treatments with fire, to help restore grassland function and resilience. A successful valley-wide landscape fire coordination program has been in place for several years, in which partners meet to discuss topics related to prescribed fire projects, as well as wildfire. This tour will feature stops at Three Points Fire District, the Elkhorn Ranch, and the Buenos Aires National Wildlife Refuge. The tour will include speakers from the Natural Resource Conservation Service, the US Fish and Wildlife Service, the Altar Valley Conservation Alliance, Buenos Aires National Wildlife Refuge, and other partners. Join us to learn about how Altar Valley partners are working on building a sustainable natural resource conservation program using fire, and contribute to some real-time strategic discussions about the feasibility of prescribed fire in the Altar Valley, given climate trends characterized by dry warm winters. You might also consider putting your binoculars in your pack to be ready for the many birds and other wildlife you may see along the way!

3. Las Cienegas National Conservation Area– Restoration Treatment Lessons Learned in Desert and P-J woodlands
8 am to 5:30 pm

The Las Cienegas National Conservation Area is located southeast of Tucson in the transitional zone between the Sonoran and Chihuahuan deserts. This tour includes three stops dedicated to lessons learned on a variety of treatment types including prescribed fire, mechanical thinning, and herbicide use. Join us for discussions about maintenance, the impact to wildlife, and biomass use, where participants will not only listen, but also contribute experiences, lessons learned, and thoughts about how land management moves forward into the future.

4. Self-Guided Hike of Ventana Canyon Trail, Catalina Mountains

This dramatic trail follows the length of Ventana Canyon, crossing Ventana Creek several times, and is surrounded by steep, saguaro-lined canyons offering glimpses of distant peaks and a continually expanding panoramic view of the Tucson valley below. Approximately 2.5 miles (~2.5 hours) from the trailhead sits the Maiden Pools, which, if water is present, are large enough to swim in. The trail does continue on for several steep miles to The Window, a 15- by 25-foot arch at the top of one of the peaks in the Santa Catalina Mountains. Whether you choose to hike the full trail or only part way, you can follow along with a provided fact sheet for interpreting the affect of invasive grasses on fire regime, WUI issues, damage from the 2003 Aspen Fire, and an area where bighorn sheep have been reintroduced.

Association for Fire Ecology Position Papers

AFE produces position papers that synthesize the best available research on critical fire ecology issues of the day, and offer suggestions for ecologically based management applications. These papers are drafted by special committees established by the AFE board of directors, and are submitted to external peer review by top experts in the field.

AFE's most recent position paper is:

Sexual Harassment and Gender Discrimination in Wildland Fire Management Must Be Addressed
(November 2016)

Executive Summary

- Sexual harassment and gender discrimination are prevalent in workplaces around the world. While they affect both women and men, they appear to affect significantly larger portions of the female than the male workforce.
- Our survey discovered that they are common in the wildland fire vocation as well.
- Of 342 respondents, 32% reported observing incidents of sexual harassment in the workplace while 24% reported having experienced it.
- Additionally, 54% reported observing gender discrimination of others in the workplace and 44% reported personally experiencing discrimination.
- These figures may be an underestimate, since sexual harassment and gender discrimination are typically underreported.
- In fact, in our survey, the majority of respondents who experienced sexual harassment (64%) or gender discrimination (60%) did not report it.
- Reporting harassment experiences often does not improve and sometimes worsens the outcomes for the reporting person.
- Results of our survey indicated that those who reported being sexually harassed were supported by their manager 58% of the time and by their organization 53% of the time, but rarely by external agencies or legal intervention.
- Those who reported gender discrimination received less support, with managers being supportive only 28% of the time, and organizations being supportive only 25% of the time.
- Respondents in our survey reported that sexual harassment and gender discrimination resulted in a number of negative effects including: negative repercussions for their career; feelings of depression, anger, or anxiety, and even mental health breakdowns; and substance abuse.
- We are committed to promoting awareness about the issues revealed by this study among our members and the public media.
- We strongly recommend additional training of fire management personnel and supervisors beyond what is currently provided on gender, discrimination, and sexual harassment.
- We strongly recommend the establishment of arm's-length reporting centers that are removed from the chain of command, where affected persons can report sexual harassment and gender discrimination, free from backlash within their working units.

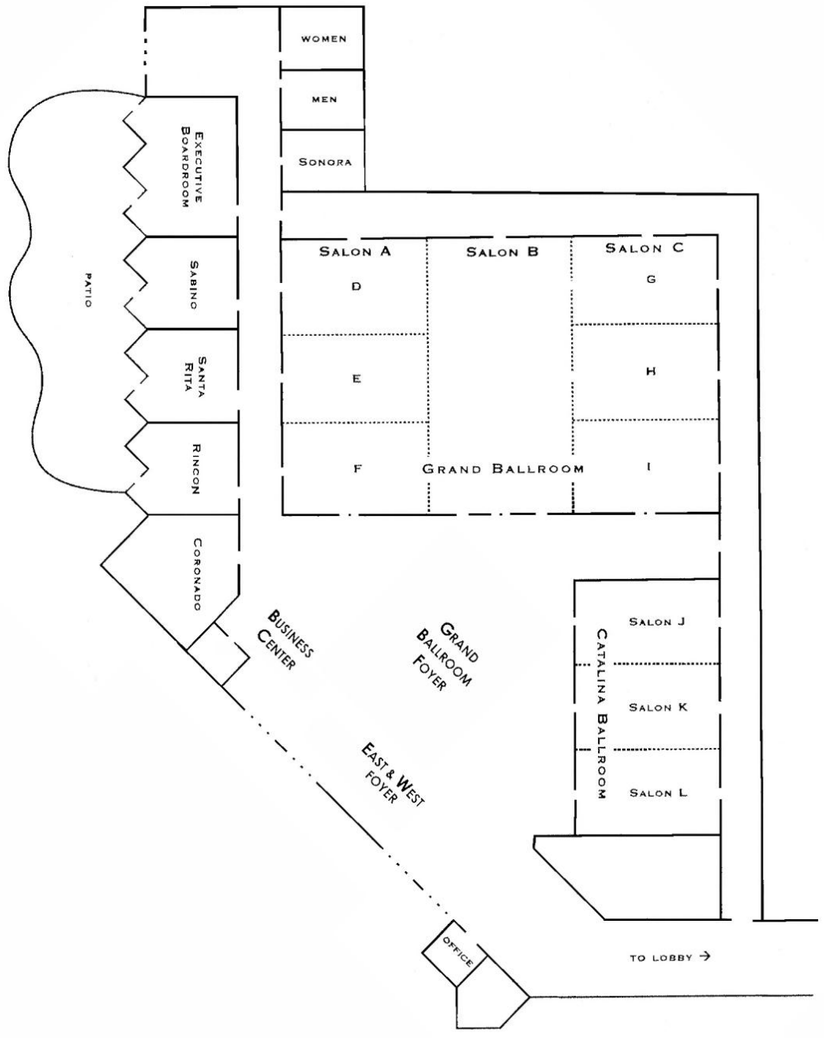
Copies of this paper are available at the AFE exhibit table, and it will soon be available on the AFE website (http://fireecology.org/about-afe-position-papers). Feel free to provide us with your comments. What topics do you think warrant position papers?

You can also comment on AFE positions papers through Facebook, Twitter, and LinkedIn. We'd love to hear from you!

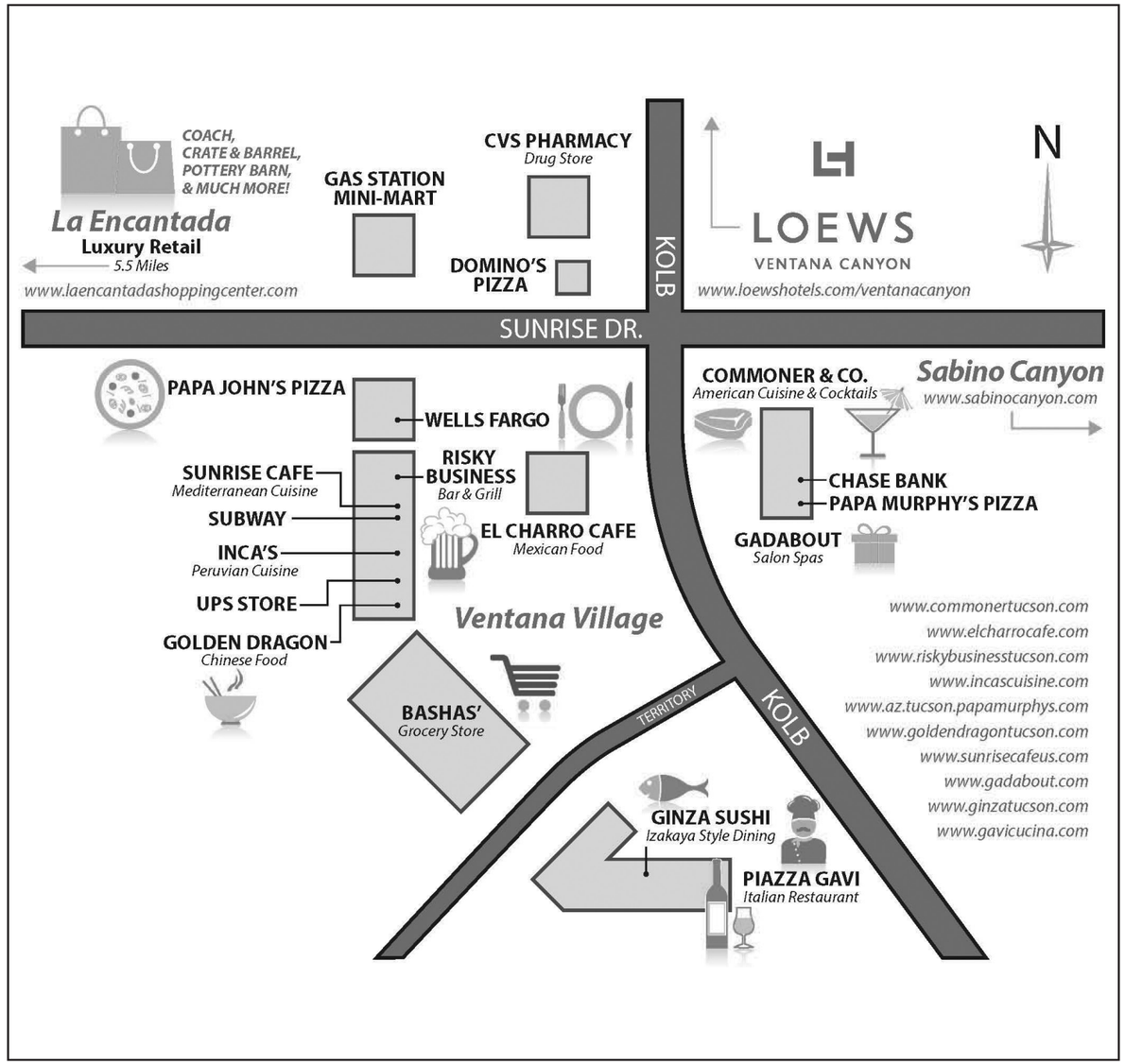
FLOORPLAN FOR LOEWS VENTANA CANYON RESORT
TUSCON, ARIZONA, USA

LOEWS
VENTANA CANYON

Meeting Space



VENTANA VILLAGE MAP



FireVision 20/20:
A 20 Year Reflection and Look into the Future

7th International Fire Ecology & Management Congress

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November 2016 - Call for Special Sessions, Workshops & Trainings, and Attached Meetings
January 2017 - Call for Oral and Poster Presentation Abstracts
June 2017 - Registration opens

The 2017 AFE International Fire Congress will offer an exciting blend of learning opportunities for fire managers, natural resource professionals, policy and administrative leaders, and the academic and research community. Presentations will feature the latest in research results and applications. Workshops throughout the week will provide innovative training opportunities built on the research presentations. Special sessions will focus on unifying the science and applications around key management issues. Round table discussions will allow small groups to focus on key topics and principles. The Congress will conclude on Saturday with field trips that demonstrate how much of the material described and discussed the rest of the week is being applied across Florida.

www.afefirecongress.org


Leda Kobziar


Dave Fogler


St Johns River Water Management District

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SKY ISLAND ALLIANCE