Conference Program

Tallgrass Prairie and Oak Savanna

Regional Fire Conference

January 29-31, 2013

Dubuque, Iowa

BIG RIVERS Joint Fire Management Council

Tallgrass Prairie and Oak Savanna Fire Science Consortium

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2013 Tallgrass Prairie & Oak Savanna Regional Fire Conference

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Conference Overview

The 2013 Regional Fire Conference has been organized by the Tallgrass Prairie & Oak Savanna Fire Science Consortium (TPOS), in collaboration with the Illinois Prescribed Fire Council and the Wisconsin Prescribed Fire Council. Additional sponsoring groups are The Nature Conservancy, Iowa Department of Natural Resources – Forestry Bureau, U.S. Fish and Wildlife Service, Big Rivers Forest Fire Management Compact, and the Iowa Natural Heritage Foundation. TPOS is housed at and receives in-kind support from the Nelson Institute for Environmental Studies, University of Wisconsin - Madison.

TPOS is one of 14 regional fire science consortia funded by the Federal Joint Fire Science Program (www.firescience.gov). The consortia foster communication and information exchange among all elements of the fire management and research community. For more information on the Tallgrass Prairie & Oak Savanna Fire Science Consortium, please see our website at www.tposfirescience.org.

Steering Committee

Jim Elleson, Proprietor, Quercus Land Stewardship
Nate Fayram, Coordinator, Tallgrass Prairie & Oak Savanna Fire Science Consortium
Gail Kantak, State Fire Supervisor, Iowa Department of Natural Resources
Bill Kleiman, Nachusa Grasslands Preserve Manager, The Nature Conservancy
Paul Samerdyke, Wildlife Biologist, Wisconsin Department of Natural Resources
Hannah Spaul, Wisconsin Director of Land Management, The Nature Conservancy

Program Committee

Jeremy Bennett, Regional WUI and Prevention Specialist, Bureau of Indian Affairs
Ann Calhoun, Baraboo Hills Project Coordinator, The Nature Conservancy
Nate Fayram, Coordinator, Tallgrass Prairie & Oak Savanna Fire Science Consortium
Clay Frazer, Senior Ecologist, Eco-Resource Consulting
Mike Hansen, Restoration Projects Coordinator, University of Wisconsin Arboretum
John Harrington, Professor of Landscape Architecture, University of Wisconsin - Madison
Greg Hoch, Prairie Habitat Evaluation Ecologist, Minnesota Department of Natural Resources
Chad Loreth, South Zone WUI Specialist, U.S. Fish and Wildlife Service
Bryan Woodbury, Wildlife Biologist, Wisconsin Department of Natural Resources
Brad Woodson, Wildlife Biologist, McHenry County Conservation District
Tom Zellmer, U.S. Fish and Wildlife Service (retired)

SCHEDULE OF EVENTS
TUESDAY, JANUARY 29

Noon – 1:00 pm — **Registration** — **Riverfront Concourse**

1:00 – 1:15 pm — **Welcome and Introduction to the Tallgrass Prairie and Oak Savanna Fire Science Consortium** — **Ballroom**
Dr. Paul Zedler, Nelson Institute for Environmental Studies, University of Wisconsin – Madison
Paul Charland, U.S. Fish and Wildlife Service
Hannah Spaul, The Nature Conservancy
Nate Fayram, Tallgrass Prairie and Oak Savanna Fire Science Consortium

1:15 – 2:15 pm — **Oak, Fire and Mesophication: Past, current and future trends of oak in the eastern United States**
Gregory J. Nowacki, Ecologist, US Forest Service, Eastern Region, Milwaukee, Wisconsin

2:15 – 3:15 pm — **Role of fire and grazing in the evolution of grasslands and the implication for management**
Dr. Roger Anderson, Distinguished University Professor Emeritus of Plant Ecology, Illinois State University, Normal, Illinois

3:15 – 3:30 pm — **Break with Refreshments** — **Riverfront Concourse**

3:30 – 4:10 pm — **Concurrent Sessions - Round 1**

- **Blowing in the wind: managing smoke from prescribed burning - The Flint Hills Experience** — **Mtg Room 1**
  Carol Blocksome, Kansas State University & **Tom Gross,** Kansas Department of Health and Environment

- **An analysis of 5 years of grassland bird data and restoration practices on a 500-acre Northern Illinois Conservation Area** — **Mtg Room 2**
  Gabriel Powers, McHenry County Conservation District

- **Design and Build your own Fire Equipment** — **Mtg Room 3**
  Ben Halverson, U.S. Fish and Wildlife Service

- **Neighbors Helping Neighbors: Fire Training Exchanges Spread Like Wildfire** — **Mtg Room 5**
  Kyle Lapham*, The Nature Conservancy
  Jeremy Bailey, Susanne Hickey, Liz Rank, The Nature Conservancy
  Ray Guse, Washington Department of Fish and Wildlife

- **Introduction to a select group of prairie butterflies and moths. A managers journey attempting to understand these critters for better management outcomes** — **Mtg Room 6**
  Armund Bartz, Wisconsin Department of Natural Resources

4:20 – 5:00 pm — **Concurrent Sessions - Round 2**

- **Understanding the Wind** — **Mtg Room 1**
  Brad Woodson, McHenry County Conservation District

- **Trends in Prescribed Fire on Public Lands in Missouri** — **Mtg Room 2**
  Daniel Godwin, University of Missouri – Columbia

- **Online Prescribed Fire Planning Software** — **Mtg Room 3**
  Tom Buman, Agren Inc.

- **Prescribed burning for fun and profit with volunteers** — **Mtg Room 5**
  Brian Buenzow, Wisconsin Department of Natural Resources

- **Bee diversity on two tallgrass prairie remnants after 22 years of management** — **Mtg Room 6**
  Mike Arduser, Missouri Department of Conservation

5:00 pm — **Poster Session, Exhibitor Showcase, and Social** — **Riverfront Concourse**

WEDNESDAY, JANUARY 30

8:00 am — **Coffee** — **Riverfront Concourse**

8:30 – 9:30 am — **Lawyers, Risk Managers, and Politicians: How we can maintain the ability to utilize fire as a management tool!** — **Ballroom**
Stephen Creech, Wildfire Management and Training Specialists Bloomington, Indiana

9:30 – 10:00 am — **Break with Refreshments** — **Riverfront Concourse**

10:00 – 10:50 am — **Concurrent Sessions - Round 3**

- **Beyond the Stability Index-Fire management & forecasting tools for air quality, weather & climate impacts of prescribed fires** — **Mtg Room 1**
  Dr. Scott Spak, University of Iowa

- **Re-introducing prescribed fire to fire-dependent (but fire-excluded) woodland and forest urban ecosystems** — **Mtg Room 2**
  Matt Schramm, Thunderpaws Ecology & Fire, & **Angella Moorehouse,** Illinois Nature Preserves Commission

- **Summer Burns in Michigan: Growing Season Fire in Oak Barrens, Jack Pine Barrens, and other Natural Communities** — **Mtg Room 3**
  Jack McGowan-Stinski, Cardno JFNew

- **The compatibility of prescribed burning and the conservation of insects in fragmented landscapes** — **Mtg Room 5**
  Karl Gnaedinger, The Nature Conservancy

- **i. The Plains and Prairie Potholes Landscape Conservation Cooperative – Addressing our Partnerships Science Needs** — **Mtg Room 6**
  Mike Olson* & Rick Nelson, U.S. Fish and Wildlife Service, &
  Max Post van der Burg, USGS Northern Prairie Wildlife Research Center

- **ii. Native Prairie Adaptive Management: a way to speed up learning about what works**
  Pauline Drobney, U.S. Fish and Wildlife Service

11:00 – Noon — **Concurrent Sessions - Round 4**

- **Climate Projections for the Midwest United States and Implications to Natural Ecosystems** — **Mtg Room 1**
  Dr. Michael Notaro, University of Wisconsin – Madison

- **Prescribed Burns in Southern Iowa Oak Savannas: Grassroots efforts to promote savanna ecology and management** — **Mtg Room 2**
  Gregg Pattison, U.S. Fish and Wildlife Service

- **Short-term effects of burn season on flowering phenology of savanna plants** — **Mtg Room 3**
  Noel B. Pavlovic* & Ralph Grundel, U.S. Geological Survey and
  Stacey A. Leicht-Young, University of Rhode Island

- **Incorporating refugia into prescribed burns – what to think about and how to do it** — **Mtg Room 5**
  Matt Zine, Wisconsin Department of Natural Resources

- **i. Fire Use Modules** — **Mtg Room 6**
  Dan Paulson, U.S. Fish and Wildlife Service

- **ii. NWCG Leadership Development Program: Engaging Leadership Development by Prescribed Burners and Non-Operational Fire Managers**
  Jeremy Bennett, Bureau of Indian Affairs

WEDNESDAY, JANUARY 30 (CONTINUED)

Noon – 1:00 pm	**Lunch**	**Ballroom**
1:00 – 1:50 pm	**Concurrent Sessions - Round 5**	
	◆ **Mixing Heights and their impact on Smoke Dispersion** **Casey Sullivan,** National Weather Service	**Mtg Room 1**
	◆ **Prescribed Burning as a Woodland & Forest Management Tool** **Brad Hutnik,** Wisconsin Department of Natural Resources	**Mtg Room 2**
	◆ **Assessing threats to grasslands in the prairie peninsula: eastern redcedar encroachment in the Grand River Grasslands** **Ryan Harr,** Iowa State University	**Mtg Room 3**
	◆ **Long-term Studies of Bird-Fire Interactions in Illinois Grasslands** **Dr. James Herkert,** Illinois Department of Natural Resources	**Mtg Room 5**
	◆ **Prairie Restoration and Prescribed Burning on a Reservation in the Urban/Rural Interface** **Shawn Kelley,** Shakopee Mdewakanton Sioux Community	**Mtg Room 6**
2:00 – 3:00 pm	**Concurrent Sessions - Round 6**	
	◆ **Burning Under Low-Humidity Conditions - How Low Can You Go?** **Jim Elleson,** Quercus Land Stewardship	**Mtg Room 1**
	◆ **Repeated prescribed fires favor oak regeneration in canopy gaps** **Todd Hutchinson,** U.S. Forest Service	**Mtg Room 2**
	◆ **LANDFIRE data and ecological departure: an analysis of ecosystem loss and structural change** **Sarah Hagen, Randy Swaty, Kori Blankenship, Jim Smith and Jeannie Patton,** The Nature Conservancy	**Mtg Room 3**
	◆ **Controlling invasive cool-season grass with fire – timing is everything** **Richard Henderson,** Wisconsin Department of Natural Resources	**Mtg Room 5**
	◆ **Stories about Fire: Fire Origin Stories, Traditional Knowledge, and Fire Management Today** **Jeremy Bennett,** Bureau of Indian Affairs	**Mtg Room 6**
3:00 – 3:30 pm	**Break with Refreshments**	**Riverfront Concourse**
3:30 – 5:00 pm	**Concurrent Workshops and Group Discussions - Round 1**	
	◆ **Workshop: First Aid For Prescribed Burns** **Jaya Elleson,** Quercus Land Stewardship	**Mtg Room 1**
	◆ **Panel Discussion: Fire's role in today's woodlands: How can we better utilize prescribed fire as a forest management/silvicultural tool as well as a land management/restoration tool?**	**Mtg Room 2**
	◆ **25 years of fire at Nachusa Grasslands - What is your fire return interval? Audience discussion on fire return intervals, and scaling up fire operations.** **Bill Kleiman** and **Cody Considine,** The Nature Conservancy	**Mtg Room 3**

WEDNESDAY, JANUARY 30 (CONTINUED)

◆ **Panel Discussion: Integrating College/University Students and Prescribed Fire** — **Mtg Room 5**
Stuart Allison, Knox College, Galesburg, IL
Nancy Braker, Cowling Arboretum, Carleton College, Northfield, MN
Daniel Godwin, Savanna Ecology Lab, University of Missouri, Columbia, MO
Jon Kellerman, Fox Valley Technical College, Appleton, WI
Joshua Martinez, Cofrin Center for Biodiversity, University of Wisconsin, Green Bay, WI
Kristen Miller, University of Wisconsin, Stevens Point, WI

◆ **The Origin of Fire Challenge** — **Mtg Room 6**
Jeremy Bennett, Bureau of Indian Affairs

5:00 – 6:00 pm — **Poster Session, Exhibitor Showcase, and Social** — **Riverfront Concourse**

6:00 pm — **Banquet** — **Ballroom**

7:00 pm — **Keynote Address: Developing Fire Science: Adding to Conservation Legacies**
Richard S. King, McGregor District Manager, Upper Mississippi National Wildlife and Fish Refuge, U.S. Fish and Wildlife Service, Marquette, Iowa

THURSDAY, JANUARY 31

8:00 am — **Coffee** — **Riverfront Concourse**

8:30 – 9:00 am — **Concurrent Sessions - Round 7**

◆ **Technical Colleges: Hands-on experience for students and prescribed fire practitioners including agencies, private entities and landowners.** — **Mtg Room 1**
Jon Kellermann, Fox Valley Technical College

◆ **Roles, Expectations, People and Permits: Tales and Tips About Landowner Interactions** — **Mtg Room 2**
Mike Healy, Adaptive Restoration

◆ **A Sleeper Lake Wildfire Experience** — **Mtg Room 3**
Dan Wallace, Wisconsin Prescribed Fire Council

◆ **Conducting a Statewide Fire Needs Assessment: A Michigan Example** — **Mtg Room 5**
Jack McGowan-Stinski, Cardno JFNew

◆ **Rosinweed stem gall wasp response to fire** — **Mtg Room 6**
Richard Henderson, Wisconsin Department of Natural Resources

9:10 – 10:00 am — **Concurrent Sessions - Round 8**

◆ **Hand Tools: Tips, Tricks, & Maintenance** — **Mtg Room 1**
Wayne Pauly, Dane County Parks

◆ **Evolution of a Prescribed Fire Program in Oak Savannah, Forest and Cattle Pasture at Whiterock Conservancy** — **Mtg Room 2**
Liz Garst, Whiterock Conservancy

◆ **Managing Smoke and Ignition Techniques** — **Mtg Room 3**
Scott Moats, The Nature Conservancy

◆ **Large-scale Prescribed Burning: pros, cons, and related issues** — **Mtg Room 5**
Matt Zine, Wisconsin Department of Natural Resources

◆ **Fire and Herpetofauna in Grassland Ecosystems** — **Mtg Room 6**
Dan Fogell, Southeast Community College

Thursday, January 31

10:00 – 10:15 am	**Break with Refreshments**	**Riverfront Concourse**
10:15 – 11:30 am	**Concurrent Workshops and Group Discussions - Round 2**	
	◆ **ATVs and UTVs on the fire line: How to pick the best rig for your needs and how to use it safely.** **Jerry Ziegler & Dave Feutz,** The Nature Conservancy	**Mtg Room 1**
	◆ **Workshop: Modeling for the rest of us: Using LANDFIRE models and Landscape Conservation Forecasting to develop cost-effective management plans and partnerships** **Randy Swaty, Sarah Hagen, Kori Blankenship, Jim Smith** and **Jeannie Patton,** The Nature Conservancy	**Mtg Room 2**
	◆ **Panel Discussion: Fire as a tool for establishment and restoration of prairie** **Greg Hoch,** Minnesota Department of Natural Resources	**Mtg Room 3**
	◆ **Roundtable: Midwestern Prescribed Fire Councils – A Discussion of Best Practices and Lessons Learned** **Daniel Godwin,** University of Missouri – Columbia, & Missouri Prescribed Fire Council	**Mtg Room 5**
	◆ **Panel Discussion: Incorporating fire sensitive species into prescribed fire planning and operations**	**Mtg Room 6**
11:40 – Noon	**Report from Group and Panel Discussions**	**Ballroom**
	Additional Closing Remarks TBA	
	Conference Closes	

SCHEDULE OF EVENTS WITH ABSTRACTS
TUESDAY, JANUARY 29

Noon – 1:00 pm **Registration** **Riverfront Concourse**

1:00 – 1:15 pm **Welcome and General Session** **Ballroom**

Welcome and Introduction to the Tallgrass Prairie and Oak Savanna Fire Science Consortium
Dr. Paul Zedler, Nelson Institute for Environmental Studies, University of Wisconsin – Madison
Paul Charland, U.S. Fish and Wildlife Service
Hannah Spaul, The Nature Conservancy
Nate Fayram, Tallgrass Prairie and Oak Savanna Fire Science Consortium

1:15 – 2:15 pm **Oak, Fire and Mesophication: Past, current and future trends of oak in the eastern United States**
Gregory J. Nowacki, Ecologist, US Forest Service, Eastern Region, Milwaukee, Wisconsin

Fire has been a preeminent force over much of the eastern United States for multi-millennia. As such, pyrogenic vegetation types dominated this region in pre-European times, including oak, oak-pine, and pine savannas/woodlands/forests and tallgrass prairies. Nation-wide fire suppression efforts began in earnest after particularly destructive fires in the early 1900s. Although subsequent structural and compositional changes were similar between the dry West and the humid East (increases in stand density and shade-tolerant species), the ecological consequences differed profoundly. While the conifer-dominated West experienced a precipitous rise in fire risk, the hardwood-dominated East generally did not. Instead, vegetation shifts from open lands to closed-canopy forests promoted cool and moist understory conditions and a concurrent shift in leaf litter from fire-promoting xerophytic species (oak, pine) to fire-suppressing mesophytic species (maple, beech, basswood). This caused fuel beds to be less receptive to fire. Mesophication refers to this positive feedback cycle, whereby microenvironmental conditions (cool, damp, and shaded conditions; less flammable fuel beds) continually improve for shade-tolerant, fire-sensitive competitors and deteriorate for shade-intolerant, fire-adapted species. This phenomenon unfolds most quickly and is most steadfast on rich mesic sites vs. more infertile drier sites.

2:15 – 3:15 pm **Role of fire and grazing in the evolution of grasslands and the implication for management**
Dr. Roger Anderson, Distinguished University Professor Emeritus of Plant Ecology, Illinois State University, Normal, Illinois

Major factors driving evolution of grassland plants were periodic droughts, frequent burning, and grazing animals; they are adapted to all three. Widespread grassland expansion occurred with appearance of the C4 photosynthetic pathway, which provides an advantage over the more common C3 pathway under high temperatures, arid conditions, and when atmospheric CO2 concentration is below 500 ppm. Grasslands dominated by C4 grasses developed quickly worldwide during the Miocene-Pliocene transition (6 to 8 million years ago) with expansion of the Antarctic Ice Sheet, which some believe increased aridity, and reduced atmospheric CO2, causing declines in forest and woodlands and an explosive evolution of grasses and forbs. Concomitantly, mammals with high-crowned teeth (hypsodonty) adapted to grazing increased, and more cursorial (running) and saltational (jumping) body forms began to evolve. In North America through the Pleistocene, grasslands supported a diverse grazing megafauna including 32 genera and dozens of species of mammals, but as the Pleistocene ended beginning about 25,000 years ago, grazing species sharply declined. When Europeans arrived, bison, elk, and other animals that characterized the grasslands were survivors of a massive extinction. Bison grazing can increase plant diversity and spatial heterogeneity of grasslands; however, until recently, few studies examined the potential of grazing and burning combined as a grassland management tool. Nonetheless, "patch-burn grazing," which combines the two, may increase prairie diversity, especially in the western portion of the tallgrass prairie, where it is used for cattle grazing. However, there is opposition to this practice in the eastern tallgrass prairie which supports grazing sensitive species. Despite the attention given to bison in prairies, white-tailed deer are currently the dominant large mammal herbivore in Midwestern prairies; however, unlike bison, deer consume little or no C4 prairie

grass, but readily browse forbs and can affect forb diversity, dominance, and floristic quality and, along with fire, the flowering of these species. Diversity of forbs is lowest at high and low deer densities and highest at intermediate density of deer, whereas floristic quality declines as deer density increases.

3:15 – 3:30 pm **Break with Refreshments** **Riverfront Concourse**

3:30 – 4:10 pm **Concurrent Sessions - Round 1**

◆ **Blowing in the wind: managing smoke from prescribed burning - The Flint Hills Experience** **Mtg Room 1**
Carol Blocksome, Kansas State University & **Tom Gross,** Kansas Department of Health and Environment

Each year approximately two and one-half million acres of largely privately-owned prairie in the Flint Hills region of Kansas and Oklahoma experiences a prescribed burn during the month of April. Smoke from concentrated period of burning sometimes impacts ozone levels in nearby cities. Urban and regulatory concerns resulted in the development of the Kansas Flint Hills Smoke Management Plan. The Plan acknowledges the need for prescribed burning to maintain the tallgrass prairie ecosystem. The Plan is largely dependent upon voluntary reductions in prescribed burning during times when weather patterns make it most likely that smoke will affect urban areas.

During the summer and fall of 2010, regulators chose to utilize a collaborative approach to formulating a smoke management plan. Urban, rural, and wildlife interests were represented on the committee that formulated the plan. Following approval of the plan in December 2010, an extensive outreach campaign was initiated to inform the public and encourage voluntary compliance with the plan. Models were developed and made available on a website to allow producers to see where smoke from their fire would travel. Further modeling each day predicted the likelihood of fire from a given county producing smoke that would impact urban areas. These predictions were also available on the comprehensive smoke management website.

Three non-attainment events related to smoke from prescribed burns were recorded in urban areas of Kansas in April 2011. Burn bosses indicated they knew about the Plan but burned additional acres due to fear of increased regulations in the future.

◆ **An analysis of 5 years of grassland bird data and restoration practices on a 500-acre Northern Illinois Conservation Area** **Mtg Room 2**
Gabriel Powers, McHenry County Conservation District

Restored grasslands have significant biological and structural differences than native systems, yet managers strive for native performance and function from restored systems. The 500-acre preserve case study evaluates the function of breeding habitat for grassland birds in restored grassland as it relates to management activities, and structural differences between restored grassland seed mixes. Five years of grassland bird data during active restoration practices; specifically prescribed burning and brush management, illustrate significant fluctuations in habitat function for bobolink, Henslow's and grasshopper sparrows.

◆ **Design and Build your own Fire Equipment** **Mtg Room 3**
Ben Halverson, U.S. Fish and Wildlife Service

Discussion will cover aspects involved in building water handling equipment for fire operations. We will cover establishing project objectives, design for a purpose, material selection, configuration and cost.
Specific topics include:
Tank design, material, determining size, mounting and sources.
Pump selection, including type, capacity, additional mandatory items, benefits and limitations.
Plumbing configuration, materials, valve types, fittings, reels and adapters.
Foam, spray bars, plus a few tips and tricks.

◆ **Neighbors Helping Neighbors: Fire Training Exchanges Spread Like Wildfire** **Mtg Room 5**
Kyle Lapham*, The Nature Conservancy
Jeremy Bailey, Susanne Hickey, Liz Rank, The Nature Conservancy
Ray Guse, Washington Department of Fish and Wildlife

Through the Fire Learning Network (FLN)—a project of The Nature Conservancy, US Forest Service and Department of the Interior agencies—partners have worked together to develop strategies to scale up the use of fire. One strategy has been the development of an innovative experiential learning program called prescribed fire training exchanges (TREX). Originating in the Great Plains, where most land is privately owned and firefighting capacity is limited, we have built upon the age-old ethos of neighbors helping neighbors. We have expanded the concept to include not only a rancher in Nebraska helping a neighbor across the fence, but also neighbors as far-flung as the US Forest Service in California or the Ministry of the Environment in Spain, working together to advance the use of fire.

Since 2008, the FLN has delivered tens of thousands of acres of prescribed fire treatments and provided learning and evaluation opportunities for fire practitioners from around the country and globe. In addition, local managers enhance their skills with prescribed fire—and contribute local knowledge to the events and the larger fire community. Host units receive capacity boosts, with a large temporary crew of qualified workers helping with large or complex burns.

Benefits of this integrated approach include:

- Sharing knowledge on fire ecology and restoring fire to landscapes
- Improved practitioner preparation for the challenges in an increasingly complex fire environment
- Reciprocal opportunities for fire practitioners to work on higher level qualifications
- Partnership development through working together on the fire line
- Integration of hands-on learning into academic programs for college students

◆ **Introduction to a select group of prairie butterflies and moths. A managers journey attempting to understand these critters for better management outcomes** **Mtg Room 6**
Armund Bartz, Wisconsin Department of Natural Resources

Invertebrates vastly outnumber, have more biomass per acre, and today contribute more to prairie function and stability than all other taxon groups combined. Attempting to learn even a subset of prairie inverts however can be overwhelming. With an estimated 2000 remnant dependent inverts, including numerous dependent/associated butterflies and moths, where does one even begin – ugh! Many managers know plants, birds, and reptiles of the prairie and how to address their management. Few have learned to ID even a subset of prairie butterflies and moths in an attempt to better understand them for better management outcomes. This manager will take you through basic id, natural history, survey tips and tricks to learning where to find some of our most "classic" prairie butterflies, skippers, and moths. Start your journey to the "new frontier" of prairie understanding and management with this presentation.

4:20 – 5:00 pm **Concurrent Sessions - Round 2**

◆ **Understanding the Wind** **Mtg Room 1**
Brad Woodson, McHenry County Conservation District

Wind may be the most important factor in prescribed burning. Understanding how terrain and vegetation (prairies, shrub lands, and woodlands) affect wind speed is vital to safe and successful prescribed burning. The midflame wind speed can be as much as 50% lower than the 20' wind forecast in open prairie. In oak woodlands, the midflame wind speed can be as much as 80% lower than the 20' wind forecast.

How much wind do you need to drive a fire through oak woodlands? Will local fire departments or the EPA allow us to burn in 30+ MPH winds? Prescribed fire practitioners need this information to write burn plans that are both safe and effective.

◆ **Trends in Prescribed Fire on Public Lands in Missouri** **Mtg Room 2**
Daniel Godwin, University of Missouri – Columbia

No group currently tracks public or private burning in Missouri. Although lacking information on fire on private lands, the results of this study present the most comprehensive overview of acres treated with prescribed fire on public lands to date. Climatic trends as drivers of prescribed fire activity are discussed, as well as comparisons to historical fire return intervals.

◆ **Online Prescribed Fire Planning Software** **Mtg Room 3**
Tom Buman, Agren Inc.

Writing a burn plan is an essential step in the process of planning and implementing a prescribed fire. Because of the variations in size and complexity of burns, there are no universal burn plans. However, most prescribed fire experts agree on the basic components of the burn plan. This session will demonstrate a new, easy-to-use, web-based software tool, RxFirePlanner. Developed for professional burn bosses, natural resource conservationists, and Volunteer Fire Departments, the tool enables users to plan prescribed fires more quickly and with greater accuracy. Using GIS map layers and electronically available data, the planning tool creates plans that automatically incorporate the essential components of a prescribed fire plan. Additionally, the tool provides a convenient way to communicate fire plans with the burn crew, emergency responders, and to report burns to the Iowa DNR. RxFirePlanner was developed by Agren, Inc. and funded in part by a grant from the USDA Forest Service.

◆ **Prescribed burning for fun and profit with volunteers** **Mtg Room 5**
Brian Buenzow, Wisconsin Department of Natural Resources

Prescribed burning takes manpower. Get more done using volunteers. Training, how to use volunteers, have insurance, set up work and even bill landowners for the work. Examples from a cooperative venture between Pheasants Forever and Wisconsin DNR.

◆ **Bee diversity on two tallgrass prairie remnants after 22 years of management** **Mtg Room 6**
Mike Arduser, Missouri Department of Conservation

Bees were collected and flowering plants monitored in 1988 and 2010 (April-September) on two adjacent TGP remnants embedded in an agricultural landscape in the Osage Plains of Missouri. Type, timing and extent of management (fire, haying, woody control, etc.) was tracked in the intervening years. In 1988 and 2010, the number of individual bees collected on the two sites (bees per hour) was similar, but bee diversity declined overall by about 30%. In addition, there was near-complete turnover of principal resource species (those plants most frequently visited by bees) from 1988 to 2010, but little change in the dominant (most frequently collected) bee species, all of which were either above or below ground nesting multivoltine solitary or social pollen generalists. The observed changes in bee diversity included species with a wide range of life history strategies: however, the life history group showing the most stability across years were the stem and twig nesting species. The possible role of management in these observed changes is discussed.

5:00 pm **Poster Session, Exhibitor Showcase, and Social** **Riverfront Concourse**

WEDNESDAY, JANUARY 30

8:00 am **Coffee** **Riverfront Concourse**

8:30 – 9:30 am **Lawyers, Risk Managers, and Politicians: How we can maintain the ability to utilize fire as a management tool!** **Ballroom**
Stephen Creech, Wildfire Management and Training Specialists
Bloomington, Indiana

This probably seems an unlikely topic for a conference dealing with prescribed fire as a management tool, but in reality as natural resource land managers we had better have a little bit of all three in our position descriptions. The "lawyer" part of us should know that the prescribed burn plans we develop, along with supporting documentation, constitutes a legal document. These documents don't preclude us from litigation, but rest assured how closely we follow these plans can have a huge impact on the monetary settlement. In some cases failure to follow the prescribed burn plan can even result in criminal charges against the practitioner. Some states have developed "limited liability" laws, but even these types of legislation won't protect you from negligence. Not all burn plan formats are identical and these can vary from agency to agency. However, there are some key components that every prescribed burn plan should contain including a "Go / No Go" decision process.

Our "Go / No Go" decision process highlights the second part of this discussion the "risk manager". Your risk manager may be your immediate supervisor, your supervisor's supervisor, or it may even be a standalone functional position within your agency or organization. In reality each of you becomes a "risk manager" every time you consider utilizing fire as a management tool. Every phase of prescribed fire has built in risk decision points. When you develop the burn window you have to make risk decisions regarding fine fuel moisture, relative humidity, wind speed and direction, atmospheric stability, and the list goes on and on. When you conduct your test burn you reach another risk decision point. Did the fire behave the way you expected; can you control the fire; do you have adequate personnel; will the weather hold; will the public or various wildlife species be negatively impacted; and, will the smoke produced from your burn disperse as planned. Once the prescribed burn is complete you have additional risk decisions to make. You have to decide to what degree you mop-up the burn; how much residual smoke will remain particularly through the nighttime hours; do you leave personnel on scene to monitor; and, did the burn accomplish the objectives. The burn boss has lots of resources to help with making some of these risk decisions, but in reality it is the burn boss that must assume the ultimate responsibility.

The last of the "Big 3" is the "politician". If you aren't a good politician you will never be able to fully utilize fire as a management tool. You may have a solid understanding of why we need to keep fire on the landscape, but if you can't communicate this to your agency, your personnel, and the public then your chances of success are sorely limited. If someone's child has asthma or other breathing disorder, all the science in the world won't convince them that prescribed fire is necessary. In this case you have to look at options. These options have to be viable for the parent as well as the land manager, but they have to be communicated just as delicately as a politician running in a contentious race.

Each of you may be the best natural resource manager on the planet, but you need to start looking at prescribed fire through the eyes of the lawyer, risk manager and politician in you. The more you know about each one of these fields, the more successful you will be and the more likely you will be able to maintain fire on the landscape.

9:30 – 10:00 **Break with Refreshments** **Riverfront Concourse**

10:00 – 10:50 **Concurrent Sessions - Round 3**

◆ **Beyond the Stability Index-Fire management & forecasting tools for air quality, weather & climate impacts of prescribed fires** **Mtg Room 1**
Dr. Scott Spak, University of Iowa

Smoke from prescribed fires in the Midwest can impact air quality at a regional scale, and even affect regional weather and climate. Air quality standards continue to grow more stringent, and air pollutants that influence climate are now regulated under the Clean Air Act, with black carbon and other warming particles increas-

ingly seen as important short-term contributors to climatic change. Meeting these emerging challenges and changes to the regulatory environment requires an updated toolkit for forecasting and controlling these effects of prescribed fires. This session will:

- present an overview of the science and regulatory landscapes for these issues
- introduce new web-based forecasting tools for predicting the local to regional air quality and climate effects of prescribed burns
- provide a simulated burn workshop for informing fire planning with multi-scale forecasts
- offer opportunities for custom forecast products and support from the NASA Air Quality Applied Science Team

◆ **Re-introducing prescribed fire to fire-dependent (but fire-excluded) woodland and forest urban ecosystems** **Mtg Room 2**
Matt Schramm, Thunderpaws Ecology & Fire, & **Angella Moorehouse,** Illinois Nature Preserves Commission

Prescribed (Rx) fire is a cost-efficient and arguably ecologically necessary tool for the restoration and maintenance of healthy woodland and forest ecosystems in the upper Midwest. Across the region, many oak woodland and forest community types that were historically subject to regular and frequent fire disturbances now show successional trends to more pyrogenically-resistant, closed canopy forest types dominated by mesic species such as maples, basswood, hackberry, and (too often) non-native trees and shrubs. Decadent oak woodland and forests also typically contain total fuel loads that are beyond the natural range of expected conditions for these communities. However, the safe and effective use of Rx fire presents a number of unique challenges for resource managers, particularly when working in smoke sensitive areas within the wildland-urban interface (WUI) where fire has been excluded from the landscape for a significant length of time.

This presentation summarizes results the results to date of a multiple-year project to bring fire back to two such WUI sites in western Illinois: Black Hawk State Historic Site (Rock Island) and the Lindahl-Collinson Ecological Preserve (Milan). Through support of a grant from the U.S. Forest Service, a public-private partnership has worked successfully over the past two years to implement hazardous fuels mitigation, conduct invasive species control, and start to re-introduce Rx fire to help restore high-quality oak woodland and forest communities. Challenges encountered during the project and lessons learned from process will be discussed, to include preliminary monitoring results on fire effects and management of invasive shrubs.

◆ **Summer Burns in Michigan: Growing Season Fire in Oak Barrens, Jack Pine Barrens, and other Natural Communities** **Mtg Room 3**
Jack McGowan-Stinski, Cardno JFNew

Summer prescribed burns were conducted in Michigan 1998 through 2011 in oak barrens and savanna, pine barrens, dry sand prairie, and prairie fen. First and second-order fire effects were compared to dormant season burns conducted in these natural communities. Summer burning provided an opportunity to expand the burn window, increased the rate of restoration, increased sub-dominant species diversity through competitive release (including threatened and endangered plant and animal species), and negatively-impacted invasive and competitive plant species. Burning during the growing season required a different prescription, but also allowed fires to be conducted in fuels that often are too hazardous to burn in during the dormant season.

◆ **The compatibility of prescribed burning and the conservation of insects in fragmented landscapes** **Mtg Room 5**
Karl Gnaedinger, The Nature Conservancy

Most plant and animal species are wide ranging and are therefore not impacted by prescribed fire done for habitat maintenance. Remnant dependent species are restricted to high quality habitats situated as isolated islands within degraded landscapes. Conservative insect species inhabit many of the remnant habitats that need periodic fire and could be at risk by some burning practices. Research from 1995 - 2006 by Panzer et al. examined species composition and the distribution of species richness within fire-managed and fire-excluded reserve systems, and examined post-fire insect population response and recovery within small, isolated

tallgrass prairie remnants in northern Illinois, northwest Indiana, and southeast Wisconsin. Most species (93%) were found to respond consistently to fires. Post-fire responses ranged from fire-positive (26%) to fire-negative (40%) for 151 species representing 33 families and seven orders. Among negatively impacted populations, 68% were found to recover within one year; all 163 populations tracked to recovery did so in two years or less. Fire-excluded sites did not support greater species richness, greater mean population densities, nor were large number of species absent from fire-managed sites. Insect recovery for an extreme fire event impacting an entire site shows severe burns of entire habitats may result in the loss of species. Consecutive season burning of habitats shows increased negative effects for duff-inhabiting insect species. The judicious use of rotational cool season burning is compatible with the conservation of insect biodiversity within highly fragmented systems.

◆ **i. The Plains and Prairie Potholes Landscape Conservation Cooperative – Addressing our Partnerships Science Needs** **Mtg Room 6**
Mike Olson* & Rick Nelson, U.S. Fish and Wildlife Service, &
Max Post van der Burg, USGS Northern Prairie Wildlife Research Center

The emerging conservation challenges of the 21st Century are unlike any faced by the conservation community in the past. Landscape level stressors such as climate change increase scientific uncertainties and require a new model for conservation that builds on past successes while acknowledging the need for improved conservation delivery. The Plains and Prairie Potholes Landscape Conservation Cooperative (PPP-LCC) is working to reduce the uncertainties associated with landscape scale stressors impacting the Northern Great Plains. This paper will discuss the initial establishment of the PPP-LCC, the rationale for the expanded nature of partnerships being developed by LCCs as a new conservation model and examine some of the on-going research projects funded by the cooperative during our first 24 months. The PPP LCC is committed to the delivery of landscape scale science that will "increase conservation delivery by reducing scientific uncertainty related to landscape level stressors which are important to our partnership". The PPP LCC will continue to focus on the science needed by managers to effectively address myriad 21st Century challenges.

◆ **ii. Native Prairie Adaptive Management: a way to speed up learning about what works**
Pauline Drobney, U.S. Fish and Wildlife Service

11:00 – Noon **Concurrent Sessions - Round 4**

◆ **Climate Projections for the Midwest United States and Implications to Natural Ecosystems** **Mtg Room 1**
Dr. Michael Notaro, University of Wisconsin – Madison

A recently-developed climate projections dataset of the Wisconsin Initiative on Climate Change Impacts (WICCI) will be discussed, which was produced by the Nelson Center for Climatic Research. Statistical downscaling was applied to thirteen global climate models (GCMs) from the Climate Model Intercomparison Project Phase Three (CMIP3); the CMIP3 GCMs were the primary source of climate projection information applied in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR4). Through the downscaling, the GCM biases were eliminated, the spatial resolution was greatly enhanced (from roughly 250-km to 8-km), weather extremes were more accurately represented, and future climate projections were developed in a probabilistic fashion through the application of cumulative distribution functions.

Furthermore, potential impacts of a changing climate and rising levels of atmospheric CO2 will be explored using the Lund Potsdam Jena dynamic vegetation model across Wisconsin, with focus on changes to the tension zone, terrestrial carbon, soil moisture, and the prairie-forest ecotone.

◆ **Prescribed Burns in Southern Iowa Oak Savannas: Grassroots efforts to promote savanna ecology and management** **Mtg Room 2**
Gregg Pattison, U.S. Fish and Wildlife Service

The southern Iowa landscape has some of the best opportunities for landscape scale habitat and ecological restorations in the state of Iowa. Much of the land has not been row-cropped and has native prairie vegetation and oak savanna rem-

nants. A grassroots effort ignited by the passion of local landowners has strived to promote the necessity of prescribed fire in oak savanna and prairie management in the region. The Southern Iowa Oak Savanna Alliance was formed to help promote, educate and fund savanna restoration work in South Central Iowa with a focus on Decatur and Clarke Counties. The work has led to many ongoing savanna restorations and long-term managed savanna areas.

The key concept being proposed and utilized by SIOSA is frequent low-intensity fires to maintain oak savanna. Many of the partners in the program are completing annual dormant season burns to manage their savannas. Annual burns have encouraged native vegetation, improved oak regeneration, opened canopies and reduced run-off and soil erosion from the sites. These sites are seeing increased biodiversity and better utilization of the sites by multiple wildlife species.

Discussion will include the pros and cons of annual prescribed fire; fire effects seen on specific project sites and long-term goals in southern Iowa for oak savanna restoration and management.

◆ **Short-term effects of burn season on flowering phenology of savanna plants** **Mtg Room 3**
Noel B. Pavlovic* & Ralph Grundel, U.S. Geological Survey and
Stacey A. Leicht-Young, University of Rhode Island

Midwest oak savannas are a globally threatened habitat. Despite their conservation importance, we do not know how season of burning affects flower production of savanna species. Prescribed burning of oak savannas is most often performed during the spring or fall dormant seasons, however, historically, oak savannas may also have burned during the growing season. We examined the effect of season of burn on flowering phenology of understory species in a mesic oak savanna in northwestern Indiana at Indiana Dunes National Lakeshore. Burn treatments consisted of both burned and unburned controls as well as a burn during the dormant season prior to sampling (early November), early season burn (early April), growing season burn (mid June), and late season burn (early October). We compared the number of flowering stems and the number of flowers for species overall as well as for early, midseason and late flowering species, for perennial forbs, graminoids and shrubs, and for the twenty most prolifically flowering species. We also examined how burning affected the height of flowering stems of three species in the Asteraceae. We found that there were five distinct flowering phenoperiods corresponding to the peaks of flowering throughout the sampling period. Overall, burns that occurred while plants were actively growing had a significant negative effect on number of flowering stems and total number of flowers. Shrubs as a group were most negatively affected by the burns, with significantly fewer flowering stems and flowers during four of the five phenoperiods as a result of the early and growing season burns. Only six individual species showed negative effects from the burns while they were in active growth. We did not observe flowering enhanced by burns that occurred during the dormant season or when plants were not actively growing. Flowering stems of the late blooming Asteraceae were significantly shorter for plants burned during the growing season than in other burn seasons or controls. Burns that occur when oak savanna plants are actively growing could negatively affect future growth and reproduction of these species, especially if the burns occur annually at the same time of year or if they occur in the early spring when early blooming forbs and shrubs can be the most damaged. If these species fail to flower each year, there will be a lower potential for long distance dispersal from seeds and fruits. Therefore, it may be important to either allow a reprieve between burning, or burn at alternative times of the year to allow species to flower in between burns.

◆ **Incorporating refugia into prescribed burns – what to think about and how to do it** **Mtg Room 5**
Matt Zine, Wisconsin Department of Natural Resources

For those that have already decided to incorporate refugia into their prescribed burns, I'll present some things you should think about when you are trying to determine things like when, type, location, size, and return interval. Most of the talk, however, will be spent on the logistics of actually incorporating refugia into a prescribed burn, including: site accessibility, breaks, staffing, shape, lighting sequence, equipment needs, and safety.

◆ **i. Fire Use Modules** **Mtg Room 6**
Dan Paulson, U.S. Fish and Wildlife Service

A fire use module is a highly skilled 7 to 10 person crew of personnel dedicated to planning, implementing and monitoring prescribed and wildland fires. As an interagency national resource, fire use modules have expertise in all areas of prescribed fire and wildland fire, and are a huge benefit to land managers across the country. As of 2011, nationally there were 17 fire use modules between the NPS, USFS, and BLM.
Modules are configured with a module leader, an assistant and 5-8 crewmembers all having to meet and maintain the national minimum qualifications for fire use modules.

◆ **ii. NWCG Leadership Development Program: Engaging Leadership Development by Prescribed Burners and Non-Operational Fire Managers**
Jeremy Bennett, Bureau of Indian Affairs

I will present an overview of the NWCG Leadership development program, outline some of the current initiatives, share some of the resources available, and discuss ways that non-operational (fire suppression focused), prescribed fire practitioners, and land managers can become engaged in this program.

Noon – 1:00 pm **Lunch** **Ballroom**

1:00 – 1:50 pm **Concurrent Sessions - Round 5**

◆ **Mixing Heights and their impact on Smoke Dispersion** **Mtg Room 1**
Casey Sullivan, National Weather Service

Mixing heights are one of the most important weather parameters for prescribed burning. They're relatively easy to forecast, in terms of forecast computer model data, but are nearly impossible to verify due to a lack of data. Mixing heights rise quickly in the morning, plateau during midday and fall quickly in the late afternoon. A detailed discussion of this diurnal change with examples through different seasons will be presented. Transport winds, which occur in the mixed layer, will also be discussed, as both of these parameters determine smoke dispersion of ventilation.

◆ **Prescribed Burning as a Woodland & Forest Management Tool** **Mtg Room 2**
Brad Hutnik, Wisconsin Department of Natural Resources

While prescribed burning has a long history as a land management tool in the Upper Midwest, its use as tool for woodland and forest management is still in its infancy. This talk will review the ecological precedent for prescribed fire. It will also review the possible uses of fire in forest management, its role in oak regeneration, research needs and review several examples.

◆ **Assessing threats to grasslands in the prairie peninsula: eastern redcedar encroachment in the Grand River Grasslands** **Mtg Room 3**
Ryan Harr, Iowa State University

In the central U.S., loss and degradation of grasslands has presented problems for wildlife dependent on these ecosystems as well as the grazing livestock industry for decades. Suppression of fire has led to increased encroachment by woody species on remaining grasslands, and further exacerbates losses to conversion to rowcrop and other uses by rendering the habitats that remain less productive for wildlife and grazing animals. Eastern redcedar is a particularly aggressive colonizer of grasslands in the eastern two-thirds of the U.S., and has invaded millions of acres of the Great Plains and beyond. We assessed the current extent and rate of increase by eastern redcedar in the Grand River Grasslands of southern Iowa and northern Missouri to better understand the threat encroachment may pose to grassland-based agriculture, recreation, and habitats in the region. We documented a dramatic increase in redcedar cover, number of stands, and number of individual trees throughout the region. Encroachment has likely reached a point in which it poses an economic threat to landowners through degradation of forage production and other ecosystem services.

◆ **Long-term Studies of Bird-Fire Interactions in Illinois Grasslands** — **Mtg Room 5**
Dr. James Herkert, Illinois Department of Natural Resources

As part of a long-term study of breeding grassland birds in Illinois (1995-2012), I have been studying the effects of fire on birds in a variety of different grassland sites including native prairie remnants, restored prairies and conservation areas planted primarily to non-native grasses. Analysis of data collected to date indicate that fire has influenced six of the 12 most commonly encountered bird species. Three species tended to favor recently burned areas and three species showed signs of avoiding recently burned areas. Two of the three species that appeared to avoid burned areas, Henslow's sparrows and sedge wrens, are also known to be somewhat irregular in occurrence with populations fluctuating from year to year, even at unmanaged sites. As a result it may be difficult to determine if the species absence in a given year from a previously occupied site was due to burning or the apparent low site-fidelity these species display. I use data from this long-term study to tease apart fire and site-fidelity effects, and assess the influence of fire on local extinction (i.e., sites occupied in one year then absent the next) and recolonization rates for these species in Illinois grasslands.

◆ **Prairie Restoration and Prescribed Burning on a Reservation in the Urban/Rural Interface** — **Mtg Room 6**
Shawn Kelley, Shakopee Mdewakanton Sioux Community

This presentation will discuss some of the difficulties establishing a prescribed fire program on the Shakopee Mdewakanton Sioux Community (SMSC) reservation; home to the most popular casino destination in the Minneapolis/St. Paul metropolitan area. Fee or Trust land, multiple jurisdictions, municipal fire chiefs, regional foresters, local burn permits, proximity to expensive homes, control lines, traffic concerns, and most critically, smoke mitigation, are some of the difficulties burning on a reservation in urban/rural interface. Also discussed will be some of the major accomplishments of burning in this environment, how implementing fire has enhanced SMSC's prairie restorations, and lessons learned for those who may be starting a burn program in similar conditions.

2:00 – 3:00 pm **Concurrent Sessions - Round 6**

◆ **Burning Under Low-Humidity Conditions - How Low Can You Go?** — **Mtg Room 1**
Jim Elleson, Quercus Land Stewardship

During the spring burn season in our region we often see relative humidity levels drop to below 25%, and even below 20%. These dry conditions complicate the decision whether to proceed with a prescribed burn. This session will discuss the many factors that affect the decision to burn at low humidities, including establishing prescriptions, getting permission to burn, humidity forecasts, humidity measurements, and contingency planning.

◆ **Repeated prescribed fires favor oak regeneration in canopy gaps** — **Mtg Room 2**
Todd Hutchinson, U.S. Forest Service

Oak dominance is declining in the central hardwoods region, as canopy oaks are being replaced by shade-tolerant trees that are abundant in the understory of mature stands. Although prescribed fire can reduce understory density, oak seedlings often fail to show increased vigor after fire, as the canopy remains intact. In this study, we examine the response of tree regeneration to a sequence of repeated prescribed fires followed by canopy gap formation. We sampled advance regeneration (stems >30 cm tall) in 52 gaps formed by synchronous mortality of white oak (Quercus alba L.); 28 gaps were in three burned stands and 24 gaps were in three unburned stands. Five years after gap formation, unburned gaps were being filled by shade-tolerant saplings and poles, and were heavily-shaded (7% full sun). By contrast, tolerant saplings had been virtually eliminated in the burned gaps, which averaged 19% full sun. Larger oak and hickory regeneration was much more abundant in burned gaps, as was sassafras, while shade-tolerant stems were equally abundant in burned and unburned gaps. Our results suggest that the regeneration of oak, particularly that of white oak, may be improved with multiple prescribed fires, followed by the creation of moderate-sized canopy gaps (200 – 400 m2).

◆ **LANDFIRE data and ecological departure: an analysis of ecosystem loss and structural change** — **Mtg Room 3**
Sarah Hagen, Randy Swaty, Kori Blankenship, Jim Smith and **Jeannie Patton,** The Nature Conservancy

LANDFIRE data was developed to depict vegetation, fuels and fire characteristics across the United States. Due to its cross ownership and comprehensive nature, it is valuable for large scale ecological assessments among other land management planning needs. Here we present an analysis of the level of ecosystem loss and structural conditions change for the remaining non-agricultural or urban vegetation of the mid-western region of the US. We acknowledge the many valuable similar assessments done at local and statewide scales and hope that this regional view will contribute to prioritization and communication efforts underway.

◆ **Controlling invasive cool-season grass with fire – timing is everything** — **Mtg Room 5**
Richard Henderson, Wisconsin Department of Natural Resources

Non-native cool-season grasses can become invasive in, and greatly alter, native prairie, sedge meadow, and oak savanna communities. Use of prescribed fire can be effective at alleviating this problem. Information will be presented on how frequency and timing of fire affects cool-season grass response to fire.

◆ **Stories about Fire: Fire Origin Stories, Traditional Knowledge, and Fire Management Today** — **Mtg Room 6**
Jeremy Bennett, Bureau of Indian Affairs

Linked to the Fire Origin Challenge workshop. This presentation will share a number of Native American and Aboriginal fire origin stories and discuss why these stories have meaning today.

The presentation will share how these stories are being utilized by various Tribes today to create their own fire management/prevention messages. Examples to be discussed are the "Fire on the Land Project" completed by the Confederated Salish Kootenai Tribes of Montana, the Menominee Fire Management Program, as well as others.

This presentation will suggest ways that Non-Tribal programs can develop and incorporate their own unique stories into their fire management efforts.

3:00 – 3:30 pm **Break with Refreshments** — **Riverfront Concourse**

3:30 – 5:00 pm **Concurrent Workshops and Group Discussions - Round 1**

◆ **Workshop: First Aid For Prescribed Burns** — **Mtg Room 1**
Jaya Elleson, Quercus Land Stewardship

This workshop will discuss those injuries and illnesses most likely to occur at prescribed burns: how to recognize the symptoms; first aid treatment steps; knowing when the situation can be handled on site and when to call 911; and how to best prepare for a local 911 response.

◆ **Panel Discussion: Fire's role in today's woodlands: How can we better utilize prescribed fire as a forest management/silvicultural tool as well as a land management/restoration tool?** — **Mtg Room 2**

◆ **25 years of fire at Nachusa Grasslands - What is your fire return interval? Audience discussion on fire return intervals, and scaling up fire operations.** — **Mtg Room 3**
Bill Kleiman and Cody Considine, The Nature Conservancy

How much fire is enough? After a short presentation from our experience of 25 years of fire at Nachusa Grasslands we want to hear from you. Our second question is: How do we increase efficiency of our fire operations to burn more acres on more sites? We have a short presentation on this topic, but let's share our lessons learned.

◆ **Panel Discussion: Integrating College/University Students and Prescribed Fire** — **Mtg Room 5**

Many colleges and universities manage land for conservation purposes in addition to providing sites for field based research and classroom options for their campuses. Students are provided with opportunities to learn about fire effects first hand, participate in fire-related research projects, observe fire operations, participate in fire crews, and in some cases, become NWCG crew member certified. Academic institutions provide a unique setting for undergraduate and graduate level students to learn about fire as a natural process and land management tool. This session will provide a summary of how these institutions organize and implement their fire program and will include a panel session with representatives of several academic sites.

Stuart Allison, Knox College, Galesburg, IL
Nancy Braker, Cowling Arboretum, Carleton College, Northfield, MN
Daniel Godwin, Savanna Ecology Lab, University of Missouri, Columbia, MO
Jon Kellerman, Fox Valley Technical College, Appleton, WI
Joshua Martinez, Cofrin Center for Biodiversity, University of Wisconsin, Green Bay, WI
Kristen Miller, University of Wisconsin, Stevens Point, WI

◆ **The Origin of Fire Challenge** — **Mtg Room 6**
Jeremy Bennett, Bureau of Indian Affairs

Create fire. Reconnect to and learn about your most primal survival need.

The single characteristic, or better yet, requirement for our survival as living beings, is the need for fire. The human need or relationship with fire creates a unique distinction from other animals. Cultures from all over the world have stories about how fire originated. There are many similarities in these stories, often about how humans received fire from the other animals or gods. Fire was treated as a gift; it was respected, honored, and never taken for granted.

Fire is the one thing that connects us as humans. We have evolved as fire creatures, needing fire a little more than other animals, whereas we have developed a unique relationship requiring that we manage and use fire properly for the benefit of all other living things on earth. This workshop will involve working as a team to create fire using the bow drill method or other primitive means. Actual participants will have to be limited to 35 (5 groups of 7). A sign-in sheet will be used to allow me to create groups prior to the workshop.

5:00 – 6:00 pm — **Poster Session, Exhibitor Showcase, and Social** — **Riverfront Concourse**

6:00 pm — **Banquet** — **Ballroom**

7:00 pm — **Keynote Address: Developing Fire Science: Adding to Conservation Legacies**
Richard S. King, McGregor District Manager, Upper Mississippi National Wildlife and Fish Refuge, U.S. Fish and Wildlife Service, Marquette, Iowa

Within the past two decades fire practitioners have been challenged with increased burn complexity, planning, and risk management; prescribed burns accomplished with six of fewer crew members, now require a dozen or more. The need to monitor the ecological effects of prescribed fire and demonstrate success has not changed. While some inventory or monitoring programs have a specific question in mind, others simply demonstrate baseline conditions. Regardless, results inevitably present new questions, challenges, and opportunities. Embracing change is the key to success, but it must be viewed in a greater ecological, economical, and political context. With a little investigating, fire practitioners will likely find today's challenges are not new and pioneering conservationists struggled with the same or similar issues. An examination of the different strategies these conservationists used to accomplish their objective provides useful insight. Examining their failures is equally insightful. Building on past accomplishments in the face of new challenges will define success of prescribed burn programs. Identifying new opportunities and techniques to achieve goals and objectives established but not attained by pioneering conservationists, will define the conservation legacy of today's fire practitioner.

THURSDAY, JANUARY 31

8:00 am **Coffee** **Riverfront Concourse**

8:30 – 9:00 am **Concurrent Sessions - Round 7**

◆ **Technical Colleges: Hands-on experience for students and prescribed fire practitioners including agencies, private entities and landowners.** **Mtg Room 1**
Jon Kellermann, Fox Valley Technical College

Fox Valley Technical College offers technical training in many fields including Wildland Firefighting. Students gain valuable hands-on live fire training not seen anywhere in the Midwest. Students get first-hand experience working with agency professionals on wildland fire suppression and prescribed burning. Students enrolled in the degree program also get to experience prescribed fire conducted solely by FVTC for private landowners. The need for prescribed burning of grasslands, woodlands and wetlands in Northeast Wisconsin offers a unique opportunity for FVTC. FVTC works with many agencies and private landowners to accomplish their habitat needs by prescribed burning, with over 25+ landowners helped in the spring of 2012 alone. FVTC also includes many NWCG, National Wildfire Coordinating Group, courses in its core curriculum as well as certificates for the working professional looking to further their knowledge in wildland fire control.

◆ **Roles, Expectations, People and Permits: Tales and Tips About Landowner Interactions** **Mtg Room 2**
Mike Healy, Adaptive Restoration

Promoting and maintaining healthy relationships with landowners is an important part of maintaining a professional prescribed burn program.
As prescribed burn practitioners in the Upper Midwest, we interact with a myriad of stakeholders before, during, and after we put fire on the ground. In this session we'll share some stories about these interactions and lessons learned, as well as tips for integrating these lessons into your burn planning process.

◆ **A Sleeper Lake Wildfire Experience** **Mtg Room 3**
Dan Wallace, Wisconsin Prescribed Fire Council

A controlled burner shares experiences, pictures and lessons learned from the 2007, 20,000 acre, Sleeper Lake Wildfire in Michigan's UP.

◆ **Conducting a Statewide Fire Needs Assessment: A Michigan Example** **Mtg Room 5**
Jack McGowan-Stinski, Cardno JFNew

In 2008-2010 a process was designed to rank conservation areas with respect to priority for fire management to guide the development of a Fire Needs Assessment for Michigan. Criteria were developed to analyze and emphasize conservation targets (species and natural communities) that depend on fire as a natural disturbance. Criteria included: Complementarity, Conservation Value, Threat (level of urgency), Feasibility (probability of conservation success), and Leverage. Criteria were scored and sites prioritized as Very High, High, Medium, and Low. This coarse-filter assessment provided an estimate of the number of acres per year that need fire, or a fire surrogate, in order to restore or maintain a specific fire-dependent natural community.

◆ **Rosinweed stem gall wasp response to fire** **Mtg Room 6**
Richard Henderson, Wisconsin Department of Natural Resources

Rosinweed (Silphium integrifolium), and to a lesser extent cup plant (S. perfoliatum), appear to be the exclusive hosts for a Cynipidae (Hymenoptera) gall-forming wasp, Antistrophus silphii. This wasp forms distinctive terminal stem galls than can reach the size of a golf ball. The wasps spend 95% of their annual life cycle above ground within the galls, making them exceedingly sensitive to fire. In addition, their apparent restriction to hosts plants that are now limited on the landscape make them a species of conservation concern, especially in light of their extreme vulnerability to fire. To test A. silphii recover from a spring fire, I laid out a sampling grid, in September 2008, across a 5-acre site with a healthy rosinweed population supporting gall wasps. A portion of the site had been burned in April, 2008.

I counted the number of rosinweed stems and terminal stem-galls per unit area across the site, both burned and un-burned areas. The site averaged more than 400 galls per acre, an infestation rate per stem of nearly 2%. Surprisingly, I found no reduction in gall frequency in the burned areas, which had a maximum distance of 80 meters from un-burned habitat. In fact, the rate of stems with galls was nearly 5 times greater in the burned area than the unburned, and there was no decline in gall occurrence with increasing distance from the un-burned areas. I will present possible explanations for these findings and additional data from follow-up surveys of burned and un-burned areas of the study area done in 2011 and 2012.

9:10 – 10:00 am **Concurrent Sessions - Round 8**

◆ **Hand Tools: Tips, Tricks, & Maintenance** **Mtg Room 1**
Wayne Pauly, Dane County Parks

I've been burning small prairies and woods with volunteers since 1972 and maintaining and modifying equipment for less youthful volunteers. If you get just one new idea…it'll be worth your time, for example with the standard Indian brass pump, drilling out the single hole nozzle to ¼ inch makes pumping a heck of lot easier and doesn't cut down on distance. Never again use the two hole nozzle and learn to use your finger properly to get a variety of sprays from large drops to spraying up under a log. In 1982 I wrote the pamphlet "How to Manage Small Prairie Fires" as a simple guide for beginners and I'm amazed that it's still in print.

◆ **Evolution of a Prescribed Fire Program in Oak Savannah, Forest and Cattle Pasture at Whiterock Conservancy** **Mtg Room 2**
Liz Garst, Whiterock Conservancy

Whiterock Conservancy is a 4,200 acre non-profit land trust in west central Iowa dedicated to balancing land preservation and restoration, sustainable economic activity, and low-impact outdoor recreation on its 4200 acre property. Prescribed fire in oak forest and savannah areas of the property has been used for almost 20 years. Today 1,200 to 2,000 acres are burned each year on Whiterock and neighboring land.

Restoration goals are grounded in the savanna soils found on the property, early landscape surveys and the native community response to the fire regime.

Timber stand improvement, slash management, burn unit planning, fire line preparation, equipment lists, communications, and crew deployment are discussed. The presentation also covers lessons learned over 20 years of burning timber , and shows some of the effects of fire on the Whiterock landscape.

◆ **Managing Smoke and Ignition Techniques** **Mtg Room 3**
Scott Moats, The Nature Conservancy

Utilizing different ignition techniques to mitigate smoke impacts and also looking at prescription parameters (i.e. weather, fuel conditions, and options).

◆ **Large-scale Prescribed Burning: pros, cons, and related issues** **Mtg Room 5**
Matt Zine, Wisconsin Department of Natural Resources

Given the inherent difficulty of restoring disturbance-dependent remnant plant communities, it is critical that we are as efficient as possible, yet remain conscious of the sensitive nature of these areas. To that end, the State Natural Areas program, whose charge includes the restoration and maintenance of over 650 of the best remaining examples of Wisconsin's remnant landscape, has been steadily increasing the size of our prescribed burns for the last 10 years. I will present some of the pros, cons, and why's surrounding such an approach, as well as some of the on-the-ground logistics and related issues one will likely face, including planning, implementation, safety, rare species, air quality, and public-relations.

◆ **Fire and Herpetofauna in Grassland Ecosystems** **Mtg Room 6**
Dan Fogell, Southeast Community College

While fire has long been understood to be an important tool for managing plant communities, its effects on amphibian and reptile communities is not well understood or documented. Changes in food availability, microclimate, soil moisture

content, and availability of cover, among others, are all effects of fire that are likely to have profound effects on herpetofaunal (amphibian and reptile) communities. Few studies have investigated how amphibians and reptiles respond to fire as a management tool for grassland and savanna ecosystems, however the scientific literature does provide a few significant accounts. I will summarize many of these studies as well as offer remarks from some of my own accounts and observations and present many of the direct and indirect effects of fire on this often overlooked group of animals.

10:00 – 10:15 am **Break with Refreshments** **Riverfront Concourse**

10:15 – 11:30 am **Concurrent Workshops and Group Discussions - Round 2**

◆ **ATVs and UTVs on the fire line: How to pick the best rig for your needs and how to use it safely.** **Mtg Room 1**
Jerry Ziegler & Dave Feutz, The Nature Conservancy

We will discuss ATV/UTV safety, including why UTVs are becoming the vehicle of choice for fire crews. We'll also compare various ATV and UTV setups around the country, and discuss the cost of tricking out a typical rig. What are the advantages and disadvantages of each type? We also talk about some basic requirements for any ATV being used as a firefighting platform. We will delve into the mechanics of the units, explaining the pluses and minuses of various setups. We will discuss various types of pumps, and why some are absolutely no good for our kind of work. We will have dismantled pumps, an ATV, and a UTV in the room so that we can point out various elements as we talk about them.

◆ **Workshop: Modeling for the rest of us: Using LANDFIRE models and Landscape Conservation Forecasting to develop cost-effective management plans and partnerships** **Mtg Room 2**
Randy Swaty, Sarah Hagen, Kori Blankenship, Jim Smith and **Jeannie Patton,** The Nature Conservancy

Conservation and land planning efforts are increasingly working at landscape scale, which often necessitates consideration of multiple objectives, many stakeholders and many landowners. While this approach is ecologically beneficial, it presents data and planning challenges. In this workshop, we will explore Landscape Conservation Forecasting TM, a collaborative learning approach used to develop and test multiple management scenarios. The tangible goal of the process is to prepare a land-management approach that will result in the best combination of management actions for the money.

We will work in teams to build relatively simple ecological models, test management assumptions and consider how modeling and teamwork can help managers with difficult management decisions. Through the process we will develop the best management plan to restore an ecosystem based on cost effectiveness. This modeling effort will not require runways, high heels or a Master's Degree in Business Administration.

◆ **Panel Discussion: Fire as a tool for establishment and restoration of prairie** **Mtg Room 3**
Greg Hoch, Minnesota Department of Natural Resources

The tallgrass prairie is the North American ecosystem most impacted by hmans. The prairie was also the focus of the first efforts at ecosystem restoration. Often it takes several years for the invasive weeds to die out and the desirable native species to become established. After establishment, many restorations are characterized by late-summer blooming forbs, especially members of the aster and legume families, and warm-season grasses. Cool-season grasses and early growing season forbs are usually rare or absent. Grass density is often much higher and forb abundance much lower than native prairie. In some cases, we start with soybean stubble while at other sites there may be existing but undesirable vegetation such as brome. Each presents different challenges. How can fire managers best use fire during this establishment phase to keep invasives under control and set the plant community on a trajectory to have high native plant diversity and abundant populations of wildlife? What is the optimal frequency(ies) of fires during the first three to six years of establishment as well as the season of fire; dormant season burns in fall or early spring versus growing season burns in late spring or late

summer? What's the best application of fire to encourage native cool-season grasses and early growing season forbs? How can fire best be applied in combination with chemical treatments and mowing/haying? This panel will discuss experiences people have had using fire and other management treatments during the early years of a restoration.

◆ **Roundtable: Midwestern Prescribed Fire Councils – A Discussion of Best Practices and Lessons Learned** — **Mtg Room 5**
Daniel Godwin, University of Missouri – Columbia, & Missouri Prescribed Fire Council

Cooperation and knowledge sharing between prescribed fire practitioners is often ad hoc and limited in reach. Prescribed Fire Councils have proven themselves as a useful tool in many areas to improve communication between various practitioners and stakeholders. There are a few Councils established or forming in the Midwest, all with locally specific goals. This roundtable would allow representatives from Councils across the US, with a focus on Midwestern Councils, to exchange best practices and lessons learned on establishing, organizing, and maintaining themselves as value-adding components of their respective fire communities.

◆ **Panel Discussion: Incorporating fire sensitive species into prescribed fire planning and operations** — **Mtg Room 6**

Box turtles, birds, bugs…So many species that can be directly impacted by fire, or indirectly through changes to their habitat. Insects, small mammals, birds, reptiles, amphibians, even snails! How can we get enough fire on the landscape to restore these fire dependent communities, without killing the rare species that depend on these sites for habitat? This panel will discuss a range of issues such as species phenology and life histories; burn timing, intensity, return interval, and prescriptions; incidental take protocols, site context, burn unit design, and more. Come share your questions and experiences, so we can all 'burn smarter' and do the best we can to plan for all the biodiversity within our burn units.

11:40 – Noon — **Report from Group and Panel Discussions** — **Ballroom**

Additional Closing Remarks TBA

Conference Closes

POSTER ABSTRACTS

Pattern and process: 60 years of change in Wisconsin prairie remnants
Amy Alstad, University of Wisconsin-Madison

Long-term datasets improve our ability to detect and explain ecological change. This study makes use of plant community data collected by John Curtis and his students at 47 prairie sites across Southern Wisconsin between 1947 and 1953. Preliminary results indicate that while overall species richness hasn't changed dramatically in 60 years, there has been a significant increase in the proportion of woody and exotic species, and a significant decrease in the mean coefficient of conservatism. However, today, these prairie remnants display a wide range quality, with some remaining in very good condition, while others have been severely degraded. What factors are driving these observed changes? Future analysis will focus on how fire, habitat loss and fragmentation, and climate change are impacting these changes in the plant community. These results will help inform and prioritize effective management decisions in threatened grassland communities.

Butterfly responses to fire and grazing management
John Delaney*, Dr. Diane Debinski, Dr. Ray Moranz, Iowa State University
Dr. Dave Engle, Oklahoma State University
Dr. James Miller, University of Illinois

The development of methods for maintaining and increasing diversity on an array of grassland types, including those primarily used for production (e.g. rearing cattle), is paramount for long-term and large-scale conservation. Butterflies are of interest in this regard, as prairie butterflies are experiencing declines throughout the Midwest. We used two types of grazing and burning treatments, and one burning without grazing treatment to test their effects on grassland butterflies in the Grand River Grasslands of southern Iowa and northern Missouri. Patch-burn graze pastures are divided into three patches with one patch burned each year. Graze-and-burn treatments are burned in their entirety every 3 years and grazed. In both grazing treatments cattle have access to the entire pasture, but cattle should focus their grazing in the most recently burned patch in the patch-burn graze treatment. Burn-only treatments are also burned in their entirety every three years but not grazed. We hypothesized that the heterogeneity created by the patch-burn graze treatment would lead to heterogeneity in community composition of butterflies thus increasing diversity in this treatment. Contrary to our expectations we found no dfference among treatment types for heterogeneity of community composition or diversity of butterflies. We also tested the ability of the patch-burn graze treatment to provide refuge from the direct effects of fire, but found no difference among heterogeneously and homogenously burned treatments. In our study area, where grasslands are common within the matrix, any of these treatments may be adequate for a specific goal of maintaining butterfly diversity.

Prescribed Fire as a Management Tool for Oak Savanna Restoration: Quantifying Aspects of Fire Regime on Vegetation Response
Peter Duerkop, St. Cloud State University and Sherburne National Wildlife Refuge

Remnant Midwestern oak savanna is present in less than 0.02% of its former range due to conversion to agriculture, the extirpation of native browsers, as well as fire suppression. Sherburne National Wildlife Refuge (Zimmerman, MN) contains some of the best oak savanna remnants in existence today and is working to restore its uplands to an oak savanna habitat type. Prescribed fire has been the most often used management tool used in this process.

Management units are generally burned every 2-6 years.Vegetation data has been collected beginning in 1993 according the National Park Service's Fire Monitoring Handbook. Monitoring plots are divided into three strata: grassland, savanna, and forest. Herbaceous cover, as well as tree size and species measurements are taken 1, 5 and 10 years after burn treatments.

Burn frequency is the most often used aspect of fire history used to quantify fire regime and is usually applied as a number of treatments over time. This study examines two additional aspects of fire regime: the amount of time between burns (burn interval), and the variability in time between treatments (burn interval deviation). Vegetation response measures include species richness, relative percent cover of plant functional groups and basal area. Vegetation response has differed among habitat types as well as plant functional groups.

The Association for Fire Ecology: The Premier Professional Organization
Daniel Godwin, University of Missouri - Columbia

The Association for Fire Ecology (AFE) is an international non-profit organization for fire professionals. Membership is open to anyone interested in Fire Ecology. We have many projects and actively welcome the participation of our members. Some of our projects include regional and international conferences, an open access, peer reviewed scientific e-journal, Fire Ecology, and a new Wildland Fire Certification Program. AFE also sponsors student groups across the country, and actively funds students to attend conferences and training opportunities.

Mizzou Student Association for Fire Ecology
Daniel Godwin, University of Missouri - Columbia

The University of Missouri - Columbia Student Association for Fire Ecology (SAFE) is a new and growing chapter dedicated to advancing fire education, research, and providing experiential learning opportunities for students. We organize informal and formal training events for students with local and regional partners, and discuss the nuances of policy, ecology, and management. With a growing cache of fire equipment and strict adherence to NWCG training standards, Mizzou SAFE is always searching for more opportunities to work with more partners and support the professional fire community in the Midwest. To date we have helped restore fire as a natural process to over 500 acres.

Conservation value of oak savannas for birds.
Ralph Grundel, Krystalynn J. Frohnapple, and Noel B. Pavlovic*, U.S. Geological Survey

Managers considering restoration of landscapes often face a fundamental challenge– what should be the habitat composition of the restored landscape? We present a method, based on bird distributions, for examining an important conservation trade-off inherent in making that decision. We evaluated how different proportions of five habitats – open grassland, savanna, woodland, scrub, and forest - might affect the conservation value of the Indiana Dunes landscape for birds. Two variables that resource managers typically value were examined, Species Diversity, a measure of avian community richness, and Conservation Index, the percentage of a bird species'global population occurring on a hectare of landscape, summed across all bird species present. Higher values of Conservation Indexwere associated with higher local densities of globally rarer and more threatened species. Conservation Index and Species Diversitywere negatively correlated across hypothetical landscapes composed of different proportions of the five habitats. Therefore, a management trade-off existed between Conservation Index and Species Diversitybecause landscapes that maximized Species Diversity differed from landscapes that maximized Conservation Index. The effect of fire on bird density is also examined. The landscape model predicts landscape compositions that correspond to tradeoffs between helping threatened species and maximizing species diversity. This tradeoff varies by season. Therefore, application of the landscape model requires a decision as to whether a particular landscape is more important as a bird breeding locale, as a migration stopover, or integrated over the entire annual cycle, and whether species diversity or helping threatened species is a greater management goal.

Effects of fire, ground and canopy cover, and habitat diversity on amphibian and reptile distribution in northwest Indiana.
Ralph Grundel, David Beamer, Krystalynn J. Frohnapple, Gary A. Glowacki, and Noel B. Pavlovic*, U.S. Geological Survey

Oak savannas were historically common in the Midwest U.S. but are rare today. Towards the goal of improving the scientific basis for savanna restoration, we are studying how animal and plant taxa vary along a woody vegetation gradient from open grasslands to forests to understand how restoration of savannas from other habitats might affect biotic composition. As part of the study of animal and plant distributions along the woody vegetation gradient, we examined distribution of amphibians and reptiles at 25 sites in northwest Indiana.

We used drift fences and funnel traps to sample amphibians and reptiles at Indiana Dunes National Lakeshore, Tefft Savanna Nature Preserve, and Hoosier Prairie Nature Preserve in northwest Indiana. Fifty arrays were placed out in twenty-five upland areas along a gradient of woody vegetation density. Amphibians and reptiles were sampled for three years.

We examined the independent effects of six predictors of herpetofaunal distribution using hierarchical partitioning (HP). HP determines what percentage of the variability in abundance of 22 amphibian and reptile species can be independently attributed to each of the six predictors - canopy cover, fire frequency over the 18 years prior to the study, diversity of fourteen habitat types (including four classes of obligate wetlands, three classes of facultative wetlands, five classes of woodlands, grasslands, and developed areas) and cover of permanent wetlands within 200 m of arrays, and ground cover of litter, dead woody vegetation, and short (< 30 cm) herbaceous vegetation.

Calibrating charcoal, fire, and fuel sources at the prairie-forest boundary
Scott C. McConaghy*, Joshua R. Mueller, Kendra K. McLauchlan, Kansas State University

Fire has been an important component of maintaining grassland prairie globally for approximately the last four million years. Wildfire history can be reconstructed by measuring charcoal patterns preserved in sediments. These records have shown that global grassland burning has varied throughout the Holocene (last 10,000 years) likely due to change in climate, fuel load, and human ignition. Not much is known of the relative proportion of grass versus woody fuel sources in grassland fires; therefore, it is unknown how these fires are represented in sediments. At Konza Prairie Biological Station in northeastern Kansas, we placed twenty-eight Tauber traps to collect charcoal produced by prescribed wildfires at a mixed tall grass prairie-woody cover biome, and we then measured percentage and type of vegetation cover around each trap. The purpose of this is to calibrate what data is found at Konza Prairie with charcoal records from lacustrine sediments. We

found that there was a significant spatial variation in the amount of annual charcoal collected in the Tauber traps; it varied 19 fold, from 165 to 3,210 particles. Woody cover around the traps, within 100m, varied from less than 25 percent to 100 percent, which indicates a variation in woody versus herbaceous fuel sources for fires at Konza Prairie. We have found that charcoal counts in a prairie-forest biome indicate significant variation in charcoal produced by fires in grassland and wooded vegetation.

UWSP Fire Crew: A Tool for Restoration Suppression and Preparing the Next Generation of Fire Managers for Over 25 Years
Kristen Lee Miller & Taylor R. Schenk, University of Wisconsin-Stevens Point

The University of Wisconsin Stevens Point (UWSP) developed a Fire Crew in 1986. Making it, the first fire crew directly associated with a university. The UWSP Fire Crew is a para-professional organization that assists with fire management throughout the state of Wisconsin. The Fire Crew assists both public and private landowners with prescribed burns. Many of the agencies managing public lands in Central Wisconsin call upon the Fire Crew members to augment their own personnel during prescribe burns. They are identified as a source for burning assistance for landowners wishing to participate in prairie and oak savannah restoration. UWSP's Fire Crew also assists suppression agencies whenever their own resources are overwhelmed, or whenever a hand crew is required for suppression. For the past twenty-five years, perhaps the greatest impact the UWSP Fire Crew has had may be the hundreds of students who completed their basic fire training and gained valuable experience through their participation in Fire Crew. By already having their basic fire training completed, students have a competitive edge when seeking summer employment. In an average year, the Fire Crew has 100 members who spread across the nation for summer jobs and permanent jobs upon graduation. The spread of Fire Crew members throughout the country has established a legacy that the current Fire Crew strives to build upon.

Relative Role of Fuel Source Fluctuations on Disturbance Fire Regimes within Mesic Deciduous and Oak-Savannah Forests in Southern Wisconsin, USA
Josh Mueller*, Kendra McLauchlan, Kansas State University
Colin Long, University of Wisconsin-Oshkosh

Fire is a result of interactions between climate (precipitation and temperature), vegetation (fuel availability and fuel taxonomy) and ignition (lightning or human), but understanding the individual effects of these variables on fire regimes can be challenging due to the substantial ecological complexity among them. Several studies have suggested that climate variability is the primary driver of changes in vegetation throughout the upper Midwestern USA. However, long-term studies suggest that fire may be more of a significant driving force on vegetation and available fuel bed fluctuation than previously suggested. To address the relative roles of climate and fire in the long-term composition of deciduous forests, a transect of four study sites were investigated across the prairie/forest boundary. Sediment cores were analyzed to understand the sensitivity of vegetation as fire regime and moisture availability changed over the past 10,000 years. High-resolution charcoal analysis from lacustrine sediment of Butler Lake, Lake Seven, Comstock Lake, and Lake George characterized fire activity and fuel source fluctuation across a moisture gradient from wet southern Mesic forest towards dry Prairie Oak Savannah over the last 10,000 years. Fire frequency ranged from X to Y fire events per 1,000 years across sites during the Holocene. Changes in fire frequency were more synchronous at the two sites with higher moisture availability.Fire intensity was likely varying over time between stand-replacing crown fires and low-intensity surface fires as reconstructed from the charcoal morphology classification method. Both climate and fire were shown to influence long-term vegetation composition through feedbacks between fire and fuels.

PRESENTER BIOGRAPHIES

Amy Alstad, University of Wisconsin – Madison
Amy Alstad is a currently a second year PhD student studying plant ecology. Her project involves revisiting John Curtis's prairie sites to describe and explain 60+ years of changes in the plant community. Prior to starting her program, she served as coordinator for the TPOS Fire Consortium and worked with The Nature Conservancy updating the conservation plan for the Baraboo Hills.

Dr. Roger Anderson, Illinois State University
My Ph.D. degree is in Botany from University of Wisconsin-Madison (1968). I joined the Illinois State University faculty in 1976 where I am currently a Distinguished University Professor Emeritus of Plant Ecology. I was the Director of the University of Wisconsin-Madison Arboretum (1970-1973). My service to professional organizations includes membership on the Editorial Boards of Restoration Ecology (1993-present) and American Midland Naturalist (2010-present). I served two terms on the Illinois Nature Preserves Commission (1985-1990). I have authored 143 peer reviewed publications, and I am a co-editor of "Savannas, Barrens, and Rock Outcrop Plant Communities of North America," Cambridge University Press. I have been the major professor for 4 doctoral students and 31 Master Degree students. I am a fellow of the Illinois State Academy of Sciences (ISAS) and was named the organization's Centennial Scientist in 2007. I am a member of the ISAS Council and serve as President of the Board of the Midwest Great Lake Chapter of the Society for Ecological Restoration.

Mike Arduser, Missouri Department of Conservation
Mike Arduser has been a natural history biologist with the Missouri Department of Conservation for the past 18 years, and serves as the Department's insect Heritage biologist. He is also an instructor for MDC's fire training courses, a burn boss and prescribed fire planner. Prior to this he served as an urban wildlife specialist and urban wildlife biologist for MDC, and has also worked for Michigan State University's Department of Entomology, and The National Park Service. He has been studying native bees throughout the US for over 30 years, and has organized and taught courses on native bees for the US Fish and Wildlife Service, Washington University, the University of Wisconsin, The Nature Conservancy, Missouri Botanical Garden and others. He has authored and coauthored a number of popular and scientific publications on bees and pollination ecology, and identified bees for many pollination projects throughout the Midwest. He is currently finishing work on the bees of Missouri and writing a book on tallgrass prairie bees.

Armund Bartz, Wisconsin Department of Natural Resources
Armund is a District Ecologist for the Wisconsin DNR's Endangered Resources Program. The focus of his career for the last 16 years has been the inventory, management, and protection of Wisconsin's rare species and natural communities with emphasis on prairies and savanna's. Armund says he frequently "molts" by learning about new critters and looks forward to sharing some of his discoveries with you.
Jeremy Bennett, WUI and Prevention Specialist, Bureau Indian Affairs
Jeremy received a Bachelor's degree from Colorado State University in 2003. He started his fire career in Colorado in 1994 working for Larimer County Emergency Services, worked for the Forest Service in the Black Hills of South Dakota, and spent two years in Alaska on the Midnight Sun Hotshot crew. In 2001, he became an Engine Supervisor for the Arapaho/Roosevelt National Forest. Jeremy moved to Wisconsin in 2004 and worked as the Fuels Specialist for the Menominee Tribe, later becoming the Fire Management Officer. In 2010, he started another chapter in his fire career becoming the WUI/Prevention Specialist for the BIA Midwest and Eastern Regions. Jeremy is the BIA Agency Representative for the NWCG Leadership Sub-committee and also sits on the Eastern Area Operation Working Team.

Dr. Carol Blocksome, Kansas State University
Dr. Carol Blocksome is a faculty member in the Department of Agronomy at Kansas State University. Dr. Blocksome received her bachelors and doctoral degrees from Kansas State University in production agronomy and range management, and her master's degree from Fort Hays State University in range management. Her interests focus on environmental and ecological issues related to range management. For the past several years, she has worked on water quality and prescribed burning as they relate to range management and grassland ecology. For the past two years, Dr. Blocksome has worked on smoke management emanating from prescribed burning activities. She was active in the multi-agency groups that wrote and promoted the Kansas Flint Hills Smoke Management Plans.

Brian Buenzow, Wisconsin Department of Natural Resources
Brian has lived in Janesville, WI and worked for WI DNR since 1981 in Rock and Green counties. Much of this work is in establishing native grass cover on public and private lands. Married to Mary Ann, they have four kids with only one left at home. That leaves a lot of time to be spent appreciating a good grass field with their two golden retrievers and Springer spaniel.

Tom Buman, Agren
Tom founded Agren in 1996 with a love for both agriculture and the environment and the ability to see a more cooperative union between the two. The kid on the tractor from southwest Iowa graduated with a B.S. in Agronomy and MBA from Iowa State University. Fourteen years with the Natural Resources Conservation

Service helped him recognize the need for creative solutions to critical problems. At Agren, Tom fosters an atmosphere of resourcefulness and can-do attitude to dream big and produce innovative results for all clients.

Stephen W. Creech, CF, Wildfire Management & Training Specialists
Like several of the instructor cadre, my fascination with fire started early in my youth. I served on Damage Control Teams in the Navy and later received considerable fire experience with International Paper Company managing their pinelands in Mississippi. Most recently I served as the State Fire Management Officer for the Indiana DNR, Division of Forestry from 1978 thru my retirement in 2003. Upon retirement I started a 'sole proprietorship' business offering advanced wildland and prescribed fire training. I have served as an Operations Branch Director (OPBD) for a Northern Rockies Type 1 Incident Management Team since 2002. I serve as an Adjunct Professor at Purdue University teaching FNR-333 Fire Ecology and as the Director for Purdue's Forestry and Natural Resources Summer Practicum program. I maintain current NWCG qualifications as an OSC2, OPBD, FBAN, SOF2, ICT3, RXM1, and RXB1. My wife Peggy and I reside in Bloomington, Indiana; have two (2) daughters Wendi and Christin; and, have three granddaughters Baileigh, Sydne and Ashlin and a grandson Tyler.

John Delaney, Iowa State University
My name is John Delaney and I am a PhD student at Iowa State University. I work under Dr. Diane Debinski on a project investigating the effects of grassland management and restoration techniques, involving fire and grazing, on butterfly communities in the Grand Rivers Grasslands of southern Iowa and northern Missouri. I received my B. A. in Biology at Luther College in Decorah, Iowa, where I worked with Dr. Eric Baack to investigate the potential of ploidal level mismatch between restoration seed sources and native prairie remnants.

Pauline M. Drobney, U.S. Fish and Wildlife Service
Pauline Drobney is an Iowa native, born in the Prairie Pothole region in Pocahontas, Iowa. In these flat lands, Drobney grew a deep appreciation of her farming heritage, and was introduced to prairie by her farmer grandfather who took her to Kelsow Prairie, and by her hard-working, artist mother. Post college training, her 35 years of prairie and savanna ecological restoration experience has been cultivated at the University of Northern Iowa Biological Preserves, as a self-employed natural areas consultant in a business called "Compass Plant Consultants", and with the US Fish and Wildlife Service in the last 20 years. She has served as Refuge Biologist for Neal Smith National Wildlife Refuge, shifting to regional position as Land Management and Research Demonstration Ecologist and recently as Prairie and Savanna Zone Biologist. A combination of getting her fingers dirty working in the field to rebuild and preserve prairies and savannas, coordinating and performing research, and working with biologists, managers and private landowners in several states to struggle with the issues of natural land conservation in the Midwest has provided a depth to her passion about conserving native ecosytems.

Peter Duerkop, St. Cloud State University and Sherburne National Wildlife Refuge
Peter graduated from the University of Wisconsin – Stevens Point majoring in Wildlife Ecology & Management and minoring in Soil Science. While attending UWSP he spent 4 summers working for the National Park Service at the St. Croix National Scenic Riverway performing maintenance and resource management. After graduating he worked seasonally as a biological and range technician for the US Fish and Wildlife Service in Morris, MN, and Anahuac, TX as well as Apostle Islands National Lakeshore. Most recently he has spent 3 seasons at Sherburne NWR. In addition to fire ecology, Peter enjoys hiking, paddling and sampling micro-brews.

Jaya Elleson, Quercus Land Stewardship
Jaya Elleson is a crew boss for Quercus Land Stewardship and a Red Cross certified Instructor in CPR, First Aid, Wilderness First Aid, and Emergency Response.

Jim Elleson, Quercus Land Stewardship
Jim Elleson is the owner of Quercus Land Stewardship Services, a contracting firm offering prescribed burning, invasive species control, and other ecological restoration and land management services. He is the past Chair and current Treasurer of the Wisconsin Prescribed Fire Council.

Dave Feutz, The Nature Conservancy
Dave Feutz is a longtime TNC volunteer and a mechanical genius who custom-builds ATV and UTV fire units. He has put together rigs for The Prairie Enthusiasts and several other groups.

Dan Fogell, Southeast Community College
Dan Fogell is a herpetologist as well as a Life and Human Sciences Instructor at Southeast Community College in Lincoln. He earned a master's degree from the University of Nebraska at Omaha studying the seasonal activity, spatial ecology, and natural history of Timber Rattlesnakes in Nebraska. Current research interests are centered on the distributions of Great Plains amphibians and reptiles as well as the various factors that affect those distributions, such as habitat availability, alterations in land use, and global climate change. He has conducted field work and herpetofaunal surveys in Nebraska, Kansas, South Dakota, Iowa, and Minnesota.

Presenter Biographies (continued)

Liz Garst, Whiterock Conservancy
Liz Garst is a founder, board member and active volunteer for Whiterock Conservancy, a non-profit land trust which stewards a 4,200 acre river valley in west central Iowa. As a private landowner, she initiated a timber burn program in the mid 1990s, and has remained active in the fire program ever since, often as the burn boss. She has served on the boards of the Iowa Natural Resources Commission, the Iowa Chapter of the Nature Conservancy and the Iowa Environmental Council. She also manages community banks and farming businesses for her family.

Karl Gnaedinger, The Nature Conservancy
In 1995 I started working with Dr. Ron Panzer of Northeastern Illinois University (NEIU) in his research on remnant-dependency in prairie insects and on the effects of fire on insects. I am the Project Manager of the Indian Boundary Prairies, where I work with the difficulties of acquiring, restoring, and maintaining a remnant Nature Preserve in an urban environment. I coordinate with partner landowner NEIU. I continue work with Dr. Panzer on research activities concerning the evaluation of success in ecological restorations using biotic indices and concerning the effect of fires on insects.

Daniel Godwin, University of Missouri – Columbia
Daniel Godwin works in the savanna ecology lab at the University of Missouri – Columbia, studying fire ecology in African and North American savannas and working with the Mizzou Student Association for Fire Ecology to organize trainings and fire experiential education opportunities for students. He serves on the board of the Missouri Prescribed Fire Council.

Tom Gross, Kansas Department of Health and Environment
Mr. Gross is a native Kansan who received a B.S. in Biology and a Masters in Public Administration from the University of Kansas. He has worked for the Kansas Department of Health and Environment for over 35 years. He has worked in the fields of environmental health, hazardous waste management, solid waste management and air quality. Mr. Gross has served as Chief of the Air Monitoring and Planning Section for the last ten years. Over that time, the section's responsibilities have expanded to include managing the following areas of the air quality program in Kansas: maintaining a statewide ambient air quality monitoring program; air quality data analysis; preparing an annual air pollutant emissions inventory; conducting dispersion and photochemical modeling activities, performing public outreach; developing regulations; and performing air quality planning for all National Ambient Air Quality standards. Current major priorities include ensuring that Kansas meets the national ozone and sulfur dioxide standards, managing the transition of Kansas utilities into the cap and trade program of the Cross State Air Pollution Rule, and implementing the recently completed Flint Hills Smoke Management Plan.

Ralph Grundel, U.S. Geological Survey
Ralph Grundel is a research ecologist with the US Geological Survey's Great Lakes Science Center in Porter, Indiana. He received his Ph.D. from the University of Texas at Austin. His current research includes studies of the effects of climate change on native bees, bird populations, and on the federally endangered Karner blue butterfly and on improving the scientific basis of restoring oak savannas.

Sarah Hagen, The Nature Conservancy
Sarah Hagen has been with TNC in varying capacities since starting as an intern with the Wisconsin chapter in 2005. Sarah's undergraduate studies at the University of Wisconsin earned her a bachelor's degree in Wildlife Ecology, as well as a certificate in Environmental Studies from the Gaylord Nelson Institute for Environmental Studies. Her graduate certificate in Geographic Information Systems was awarded from the University of Wisconsin. Sarah worked for the stewardship and land protection departments of the Wisconsin Chapter of TNC until September of 2007 when she took a position as the GIS Analyst for the Central Region of TNC. Sarah divides her time between the Illinois Chapter science team and the LANDFIRE team. Her primary focus with LANDFIRE is analyzing National Datasets within various geographies across the Continental United States.

Ben Halverson, U.S. Fish and Wildlife Service
Started working in wildland fire in 2000 as a casual hire with the WIDNR. Graduated from University of Wisconsin – Platteville with a BS in Reclamation, Environment and Conservation in 2002. Then began working for the US Fish and Wildlife Service at the Leopold Wetland Management District in 2003. Since then I have been on fires in 25 states, wildfire and prescribed burns. I completed the training at the Prescribed Fire Training Center, been an Engine Academy instructor in Florida and Wisconsin, ATV/UTV Safety instructor. I have been involved in designing, building and modifying many pieces of equipment including Marshmasters, Engines, UTVs, and ATVs.

Ryan N. Harr, Iowa State University
Ryan Harr is a wildlife biologist and assistant scientist in Iowa State University's Department of Natural Resource Ecology and Management, where he manages a long-term evaluation using prescribed fire and grazing to manage grassland habitats in south-central Iowa and northern Missouri. Working with research colleagues at Iowa State University, the University of Illinois, and Oklahoma State University, the team studies fire-grazing interactions to enhance heterogeneity of prairie remnant pastures with and without grazing

histories. Ryan works extensively with federal, state, and NGO partners, and private landowners to develop and implement strategies for grassland and savanna management.

Michael Healy, Adaptive Restoration LLC
Mike is the founder and principal ecologist of Adaptive Restoration LLC, based in Dane County, Wisconsin. Mike holds a M.S. in Environment and Resources from the University of Wisconsin-Madison and a B.S. in Environmental Science and Biology from Dickinson College. Mike's graduate research focused on wetland restoration, native plant establishment and invasive species management. Mike and his burn crew conduct 50-70 burns each year in rural, suburban and urban environments. He is currently working on establishing enough defensible space to protect his house from driptorch-wielding neighbors.

Richard Henderson, Wisconsin Department of Natural Resources
Thirty-six years of experience in natural area inventory, assessment, and management of prairie, sedge meadow, oak savanna, and oak woodland ecosystems. Research projects have included effects of the seasonal timing of fire on prairie plants, purple loosestrife ecology and control, prairie insect inventory and management, and effects of fire in oak woodlands.
Active volunteer with the Wisconsin Chapter of The Nature Conservancy land stewardship program since 1975, and The Prairie Enthusiasts land management program since 1992. Served on the board of Wisconsin Chapter of The Nature Conservancy for 8 years. Served on the board of The Prairie Enthusiasts from 1992 to present, including 5 years as president.

Jim Herkert, Illinois Department of Natural Resources
Jim Herkert directs the Office of Resource Conservation for the Illinois Department of Natural Resources, a position he has held since 2009. The Office includes the Fisheries, Forestry, Natural Heritage, Wildlife, and Private Lands and Watersheds Divisions. Prior to joining the DNR, he worked for The Nature Conservancy and the Illinois Endangered Species Protection Board. Herkert received his Ph.D. from the University of Illinois-Champaign (Department of Ecology, Ethology, and Evolution), has authored several publications on the conservation and management of grassland birds, and has written two species accounts in the Birds of North America series.

Greg Hoch, Minnesota Department of Natural Resources
I attended Kansas State University for my graduate work where I conducted research at Konza Prairie Biological Station as well as studying regional land cover change, the invasion of redcedar into prairie. I moved to Minnesota ten years ago for an academic position. I then spent two years as a GIS specialist with the USFWS before taking my current job as Prairie Habitat Biologist with the MN DNR.

Todd F. Hutchinson, USDA Forest Service, Northern Research Station
I am a Research Ecologist with the Northern Research Station of the US Forest Service. I'm located in Delaware, Ohio. My research is focused on how forest management, natural disturbances, and historical factors affect woody and herbaceous vegetation in forests and is conducted in the "hill country" of southern Ohio.

Brad Hutnik, Wisconsin Department of Natural Resources
Brad Hutnik is a Forest Ecologist / Silviculturist with the Wisconsin Department of Natural Resources, stationed in Madison. As Silviculturist, Brad works with statewide forest ecology and silviculture programs, with responsibility for developing, implementing, monitoring, and evaluating both programs and policies. Brad formerly worked as Forester for the Lower Wisconsin State Riverway where his duties included coordinating forest management for State land and administering the LWSR's unique aesthetic protection standards. Brad graduated with a bachelor's degree in forest management from The University of Wisconsin – Stevens Point in 1994. Before joining the DNR, Brad worked with the Lake County Forest Preserve District, IL before joining Clark Forestry (Baraboo, WI). Brad is currently Chair of the Membership and Policy Committee of The Forest Guild.

Jon Kellermann, Fox Valley Technical College
Jon Kellermann is an instructor in the Wildland Firefighter Program at Fox Valley Technical College. His 10 years of prescribed fire experience comes from working for the private and public sector including his current position with FVTC.

Shawn Kelley, Shakopee Mdewakanton Sioux Community
Shawn Kelley has worked for the Shakopee Mdewakanton Sioux Community for 10 years managing the Tribe's natural resources and was asked to start a prescribed burn program in 2004. The program has grown from one federally trained red card to 14 with additional firefighting tools and equipment. The end goal was to independently conduct burns on Tribal land and to have wildfire firefighting capability. Shawn started his fire career in 2001 with The Nature Conservancy in northern California where he was trained by the U.S. Forest Service. He has worked with various organizations participating, implementing, and coordinating prescribed burns including the U.S. Fish and Wildlife Service, Bureau of Indian Affairs, Minnesota Department of Natural Resources, local municipalities, and other Tribes. A Biologist by education, he believes in fire as an ecosystem management tool, especially as it relates to Tallgrass prairie restoration and management. Shawn has a Master's degree in Natural Resources and a graduate certification in Restoration Ecology from the University of Idaho.

Presenter Biographies (continued)

Richard S. King, U.S. Fish and Wildlife Service
I received my Master of Science Degree in Natural Resource Management from the University of Wisconsin-Stevens Point in 1995. For my Thesis topic, I chose to study the effects of fire on interior forest songbird and plant populations. To make the topic more interesting, I focused on a key management question of the day: Can severely degraded savannas be restored solely with fire? I spent more than twenty years in Wisconsin's Sand Counties. During my central Wisconsin tenure, I was fortunate to be given freedom to pursue fire science and publish results of that science in regional and national journals. Moreover, I learned from conservation pioneers who came before me including: Norman Fassett, Aldo Leopold, John Thomson, and Frederick Hamerstrom. Each of these conservationists understood the role of fire and ecological consequences of its elimination; they tediously chronicled the loss of species and landscape changes resulting from fire suppression. Their conservation legacy is advanced by today's fire practitioners. My family has now migrated to the Upper Mississippi River Valley, where I find new but familiar conservation challenges: bluff prairies choked with redcedar; suppressed bur and swamp white oak saplings in need of release. The Valley also provides lessons from a new cadre of conservation pioneers as well as opportunities to forge new conservation partnerships. The need to mentor and develop a new generation of fire practitioners to foster our conservation legacy remains unchanged.

Kyle Lapham, The Nature Conservancy
Kyle Lapham is The Nature Conservancy's Loess Hills Fire Coordinator arriving in 2010 after having worked in fire management with the US Fish and Wildlife Service in Montana and with The Nature Conservancy in Arkansas. As Fire Coordinator, Kyle incorporates his experience of working in other areas as well as Iowa to work with partners to develop local and regional approaches to increase the use of safe and effective fire including the use of TREX's, working with volunteer fire departments and landowner burn associations. Kyle holds a B.S. in Geography/Environmental Studies from the University of Iowa.

Scott C. McConaghy, Kansas State University
I am an undergraduate researcher in my junior year at Kansas State University, majoring in Geography. I have worked as a lab technician in Dr. Kendra McLauchlan's Paleoenvironmental Lab for a year and a half. My main task in the lab is to examine sediment samples from cores taken from the bottom of lakes at the prairie-forest boundary to study wildfire history and frequency within that biome. Last summer I had the opportunity to do an independent research project where I calibrated data from the previously mentioned lakes with vegetation surveys that I took at Konza Prairie Biological Station.

Jack McGowan-Stinski, Cardno JFNew
Jack McGowan-Stinski received his B.S. in Natural Resources from UW-Stevens Point and his M.S. in Conservation Biology from Central Michigan University. Over the past 25 years Jack has worked as a Fire Manager and Land Steward for The Nature Conservancy, a biological technician for the Forest Service, and Department of Natural Resources in Wisconsin and Michigan, as an adjunct professor in Conservation Biology at Central Michigan University, and as a Consultant with Cardno JFNew. Jack has been responsible for management of natural communities such as prairie fens, sedge meadows, dry sand prairies, oak/white pine barrens, jack pine barrens, oak savannas, coastal plain marshes, and dune systems. He has developed and coordinated: a Michigan Statewide Fire Strategy and Business Plan, and a Statewide Fire Needs Assessment, that provided a coarse-filter prioritization of fire-dependent landscapes and landscape-scale fire planning; a Michigan Fire Learning Network; a coarse-level metrics monitoring protocol for oak barrens, pine barrens, and dry sand prairie; Cooperative Fire Management Agreements with USFS and USFWS; a Fire Ecology graduate-level course for Central Michigan University. Jack was one of the founding members of the Michigan Prescribed Fire Council (Steering Committee, and Training and Certification Task Group co-lead since 1999). Jack has also served on: TNC's Fire Management Advisory Team; Mitchell's Satyr and Karner Blue Butterfly Recovery Groups; Massasauga Working Group; Michigan Invasive Plant Council; steering committees for two clusters of The Stewardship Network; and six graduate student committees involving research with rare species and fire.

Kristen Miller, University of Wisconsin-Stevens Point
Kristen Lee Miller is a senior Forest Recreation major at the University of Wisconsin-Stevens Point. She is a second generation fire manager and has participated in over 14 burns on over 5,000 acres. She currently serves as the Crew Leader for the UWSP Fire Crew and was the Crew Secretary for the 2011-2012 school year. She plans to graduate in December 2013 and go on to earn a masters in Wildland Fire Management. The high point of her fire career so far was serving as a Public Information Officer on the Honey Prairie Wildfire on the Okefenokee National Wildlife Refuge in 2011.

Scott Moats, The Nature Conservancy

Josh Mueller, Kansas State University
I began my research as a sophomore undergraduate student at the University of Wisconsin-Oshkosh working with Dr. Colin Long on reconstructing south-eastern Wisconsin fire regimes and obtaining the skillsets and knowledge that I then applied to my graduate studies. I began my graduate work in 2011 at Kansas State University working under Dr. Kendra K. McLauchlan and continuing my southern Wisconsin fire regime reconstructions which will has now been applied as my masters thesis which will be completed in Spring 2013. I

also work at the paleo-environmental lab manager at Kansas State University working on various sediment cores from the upper midwestern United States from a variety of research collaborators.

Dr. Michael Notaro, University of Wisconsin-Madison
Dr. Michael Notaro is the Associate Director of the Nelson Center for Climatic Research at the University of Wisconsin-Madison. He received his PhD in Atmospheric Sciences in 2002 from the State University of New York at Albany. His areas of expertise include global and regional climate modeling, land-atmosphere interactions, and ecological impacts of climate change.

Greg Nowacki, US Forest Service
Greg was born and raised in Wisconsin's "Northwoods" and attended University of Wisconsin-Stevens Point where he received B.S. and M.S. degrees in Forestry and Natural Resources in the mid-1980s. Thereafter, Greg went eastward, successfully attaining a Ph.D. in Forestry at Penn State University. At both institutions, Greg's graduate studies were keenly focused on oak ecology, relating changes in oak abundance to land-use and fire. Immediately after college, Greg served as an old-growth forest ecologist with The Nature Conservancy for two years prior to signing on with the US Forest Service in Alaska. Greg transferred to Milwaukee, Wisconsin in 2001, where he presently serves as the Regional Ecologist and Soils Program Manager for the Eastern Region. Throughout his career, Greg has dedicated his work to facilitate the transfer of science to land management.

Angella Moorehouse, Illinois Nature Preserves Commission
Angella Moorehouse has worked as the field representative for the State of Illinois, Illinois Nature Preserves Commission for 16 years providing assistance to private and public landowners for the protection and management of natural areas in western Illinois. She has 20 years of experience in prescribed burn operations and has been an Illinois Certified Burn Manager since 2009. Angella has extensive experience managing stewardship contracts, conducting vegetative community analysis, and working with legal counsel to defend conservation easements. Additionally, Angella works as a private contractor performing plant surveys and training others in plant identification for the U.S. Fish and Wildlife Service.

Mike Olson, Plains and Prairie Potholes Landscape Conservation Cooperative
Mike Olson is the Science Coordinator for the Plains and Prairie Potholes Landscape Conservation Cooperative (PPP-LCC). Rick Nelson is the Coordinator for the partnership. Rick and Mike have been working for about two years to help build a strong partnership with active members. Our overall goal is to improve on-the-ground conservation efforts by reducing scientific uncertainty associated with landscape scale stressors that are important to our entire partnership. We encourage folks to visit our website http://www.plainsandprairiepotholeslcc.org to learn more about the important work of the partnership.

Gregg Pattison, U.S. Fish and Wildlife Service

Wayne Pauly, Dane County Parks
Restoration Ecologist with Dane County Parks since 1977 and in 2002 recognized for Career Excellence in Environmental Restoration by the UW Arboretum's John T. Curtis award.

Dan Paulson, US Fish and Wildlife Service
Dan Paulson is a Fire Management Specialist with the USFWS, responsible for the fire and fuels management at Union Slough NWR and the Iowa Wetland Management District.

Dr. Noel B. Pavlovic, U.S. Geological Survey
Dr. Noel B. Pavlovic is a research ecologist with the U.S. Geological Survey, stationed at the Lake Michigan Ecological Research Station in Porter, Indiana, where he has worked for 30 years. He received his PhD in biological sciences from the University of Illinois at Chicago, MSc. in ecology from the University of Tennessee, and BS in biology from Earlham College. His dissertation focused on the biology and demography of fame flower (Phemeranthus rugospermum), a Midwestern endemic succulent plant. He has studied fire effects on the structure, phenology, and floral and faunal composition of Midwest oak savannas. His research on oriental bittersweet focuses on two areas; 1) the potential for hybridization between the invasive Oriental bittersweet (Celastrus orbiculatus) and the native American bittersweet (C. scandens) and 2) fire effects on the invasion and spread of Oriental bittersweet. He has conducted surveys on the distribution and abundance to exotic plants in three Great Lakes National Parks.

Gabriel Powers, McHenry County Conservation District
Gabriel Powers is a Restoration Ecologist and burn manager with the McHenry County Conservation District. He manages 8 sites and approximately 4000 acres of District holdings, including 10 years prescribed burning experience. Today's presentation highlights management efforts on one of those sites, North Branch Conservation Area in Richmond, IL.

Presenter Biographies (continued)

Taylor Schenk, University of Wisconsin-Stevens Point
Taylor R. Schenk is a senior at the University of Wisconsin Stevens Point with a double major in Forest Management and Urban Forestry and a minor in GIS. He has had one season of wild land fire experience on a Type 6 Engine for the US Forest Service out of Wall, South Dakota and is in his fourth year as a UW-Stevens Point Fire Crew member. Taylor served as crew secretary for the 2010-2011 school year and is currently the Cache Manager. He plans to graduate in December of 2013 and pursue a career in his major.

Matt Schramm, Thunderpaws Ecology and Fire
Matt Schramm is a consultant ecologist and Illinois Certified Prescribed Burn Manager with over 20 years of experience in the study and management of woodland and forest ecosystems in the Midwest. Since 2010, he has worked as contract project manager for Interstate RC&D to lead implementation of a multi-agency forest restoration project valued at $242,000. Over his career, his extensive project experience includes wetlands delineations, rare plant surveys, natural resources management, erosion control, and National Environmental Policy Act compliance for many federal and utility sector clients. Matt is also a member of the Illinois Interagency Wildland Fire Crew.

Dr. Scott Spak, University of Iowa
Scott Spak is an Assistant Professor at the University of Iowa Public Policy Center, with appointments in the School of Urban & Regional Planning and Department of Civil & Environmental Engineering. A member of the NASA Air Quality Applied Science Team, Spak works with local, state, and national agencies to develop integrated environmental forecasting systems and decision support tools for air quality, climate, and energy. He holds a PhD in Atmospheric & Oceanic Sciences from the University of Wisconsin-Madison and an AB in Engineering Sciences from Dartmouth College.

Casey Sullivan, National Weather Service
I'm a forecaster and meteorologist at the National Weather Service, Chicago/Romeoville office and am the fire weather program manager, working with fire/land managers who perform prescribed fires or respond to wildfires.

Randy Swaty, The Nature Conservancy
Randy Swaty joined The Nature Conservancy in 2002 He earned his Bachelor and Master's degrees in Science from Northern Arizona University in Flagstaff. His scientific specialty is spatial scales, ranging from mycorrhizal ecology to landscape-scale planning. As an ecologist with TNC's LANDFIRE team, Randy works to insure appropriate use of LANDFIRE data, tools and concepts through workshops, data review, data analysis and collaboration. Currently he is working on cost benefit analyses with National Forests, modeling climate change and conservation scenarios with University of Wisconsin researchers and assisting Nature Conservancy field offices with landscapes-scale assessments.

Dan Wallace, Wisconsin Prescribed Fire Council
Dan Wallace has had the benefit of working with several agencies and private landowners on over 180 prescribed burns, over the past 20 years. He has had roles ranging from wildfire mop-up to burn leader, mentor and class instructor. Formally trained in Physics and Education, he has applied those principles to prescribed fire and fire training. As a strong advocate for native landscape restoration with natural processes Dan also is an active "weed warrior" and serves of the boards of the Wisconsin Prescribed Fire Council, The Friends of the Brooklyn State Wildlife Area and the Friends of Sylvania.

Brad Woodson, McHenry County Conservation District
Brad Woodson is the Natural Resource Supervisor and Burn Boss at the McHenry County Conservation District. He has been conducting prescribed burns for more than 20 years on private and public lands. Brad has been part of the District's effort to burn more than 3000 acres annually.

Jerry Ziegler, The Nature Conservancy
Jerry Ziegler is The Nature Conservancy's land steward for Southeast Wisconsin and has been on fire crews for 20 years.

Matt Zine, Wisconsin Department of Natural Resources
Matt is a Conservation Biologist with the Wisconsin DNR State Natural Areas program, where he oversees stewardship of state-owned Natural Areas throughout Wisconsin. He's been leading the SNA prescribed burn program in southern Wisconsin for 13 years.

Attendees by Last Name

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Notes . . .

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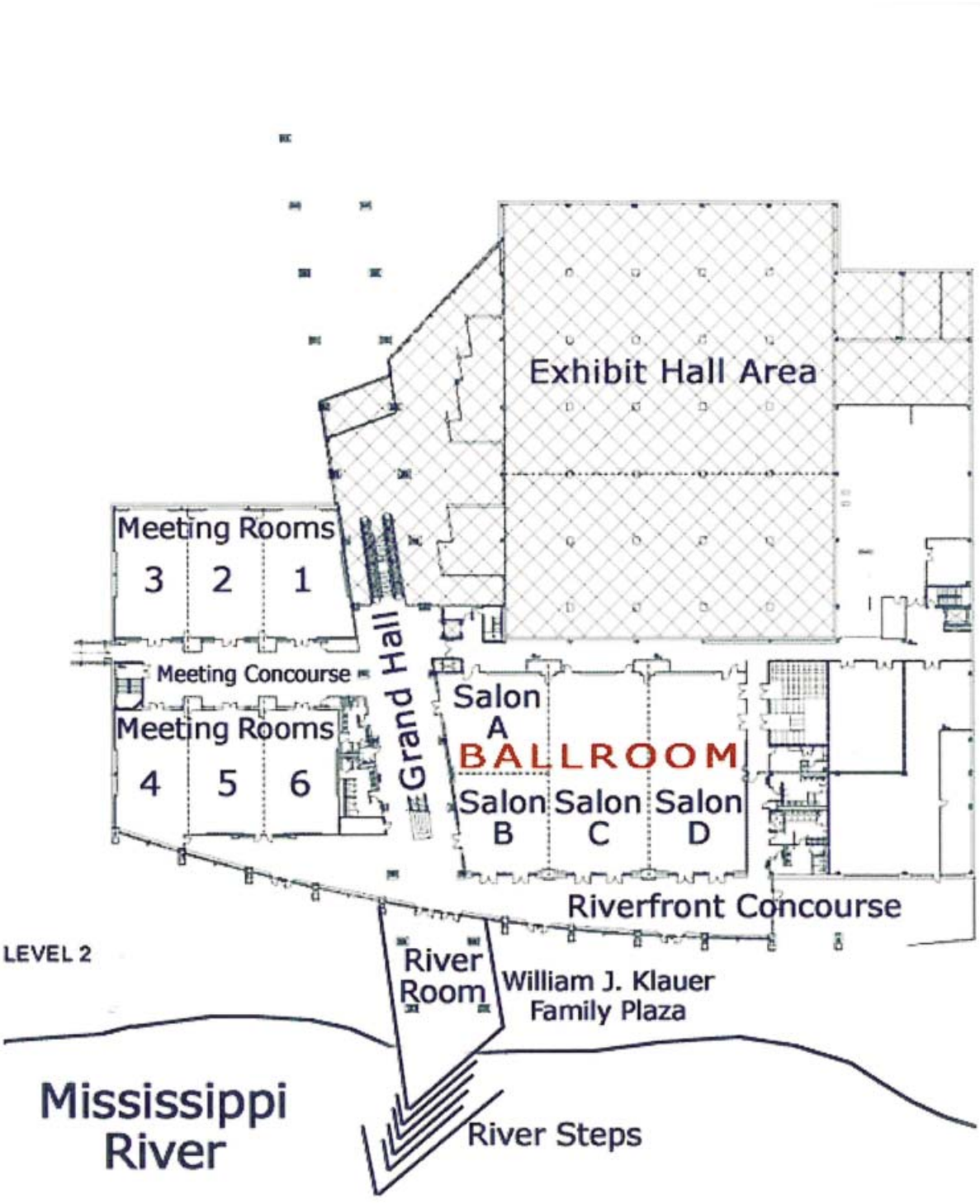
Grand River Center
Level 2 Layout



2013 Tallgrass Prairie & Oak Savanna Regional Fire Conference

Dubuque, Iowa at the Grand River Center

Schedule of Events

Tuesday, January 29

Noon – 1:00 pm	Registration	Riverfront Concourse
1:00 – 1:15 pm	Welcome and Introduction	Ballroom
1:15 – 2:15 pm	Plenary: Oak, Fire and Mesophication: Past, current and future trends of oak in the eastern United States Gregory J. Nowacki	Ballroom
2:15 – 3:15 pm	Plenary: Role of fire and grazing in the evolution of grasslands and the implication for management Dr. Roger Anderson	Ballroom
3:15 – 3:30 pm	Break with Refreshments	Riverfront Concourse
3:30 – 4:10 pm	Concurrent Sessions - Round 1	Mtg Rooms 1-3, 5-6
4:20 – 5:00 pm	Concurrent Sessions - Round 2	Mtg Rooms 1-3, 5-6
5:00 pm	Poster Session, Exhibitor Showcase, and Social	Riverfront Concourse

Wednesday, January 30

8:00 am	Coffee	Riverfront Concourse
8:30 – 9:30 am	Lawyers, Risk Managers, and Politicians: How we can maintain the ability to utilize fire as a management tool! Stephen Creech	Ballroom
9:30 – 10:00 am	Break with Refreshments	Riverfront Concourse
10:00 – 10:50 am	Concurrent Sessions - Round 3	Mtg Rooms 1-3, 5-6
11:00 – Noon	Concurrent Sessions - Round 4	Mtg Rooms 1-3, 5-6
Noon – 1:00 pm	Lunch	Ballroom
1:00 – 1:50 pm	Concurrent Sessions - Round 5	Mtg Rooms 1-3, 5-6
2:00 – 3:00 pm	Concurrent Sessions - Round 6	Mtg Rooms 1-3, 5-6
3:00 – 3:30 pm	Break with Refreshments	Riverfront Concourse
3:30 – 5:00 pm	Concurrent Workshops & Group Discussions - Round 1	Mtg Rooms 1-3, 5-6
5:00 – 6:00 pm	Poster Session, Exhibitor Showcase, and Social	Riverfront Concourse
6:00 pm	Banquet	Ballroom
7:00 pm	Keynote Address: Developing Fire Science: Adding to Conservation Legacies Richard S. King	

Thursday, January 31

8:00 am	Coffee	Riverfront Concourse
8:30 – 9:00 am	Concurrent Sessions - Round 7	Mtg Rooms 1-3, 5-6
9:10 – 10:00 am	Concurrent Sessions - Round 8	Mtg Rooms 1-3, 5-6
10:00 – 10:15 am	Break with Refreshments	Riverfront Concourse
10:15 – 11:30 am	Concurrent Workshops & Group Discussions - Round 2	Mtg Rooms 1-3, 5-6
11:40 – Noon	Report from Group and Panel Discussions, and Additional Closing Remarks TBA	Ballroom
	Conference Closes	