

Oak Woodlands & Forests Fire Consortium

A JESP Knowledge Exchange Consortium



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Our Mission:

To provide fire science to resource managers, landowners, and the public about the use, application and effects of fire within the region



Special points of interest:

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PARTNERS FOR FISH AND WILDLIFE PROGRAM: OUR ROLE IN PRESCRIBED FIRE

Andy Radomski, US Fish and Wildlife Service, West-Kentucky Private Lands Biologist

What is the Partners for Fish and Wildlife (PFW) Program? For private landowners, the PFW Program is the U.S. Fish and Wildlife Service's premier tool for conservation delivery on their land. It is a cost-assistance program for landowners offered by the U.S. Fish and Wildlife Service. The Program was developed to efficiently achieve voluntary habitat restoration on private lands, through financial and technical assistance for the benefit of Federal trust species. Federal trust species include threatened and endangered species, as well as migratory birds (e.g. waterfowl, wading birds, shorebirds, neotropical migratory songbirds), inter-jurisdictional fish, certain marine mammals, and species of international concern.

Prescribed fire is one of the top recovery actions for many rare and endangered species, as well as an efficient and effective tool to restore native habitats across the landscape. Assisting many of our partners, such as the USDA's Natural Resources Conservation Service (NRCS), state wildlife agencies, and The Nature Conservancy, we make it easier for landowners to plan prescribed fires.

Because roughly 73% of our nation's land is privately owned and the majority of our fish and wildlife resources occur on these lands, the PFW Program is within all 50 states. The Program, which recently celebrated its 25th anniversary, provides technical and financial assistance to private landowners, tribes, and schools on a voluntary basis to help meet the habitat needs of Federal trust species. Because this program adheres to the concept of restoring or enhancing habitats, such as wetlands or other unique habitat types, we will substantially benefit Federal trust species on private lands by providing food and cover or other essential needs.

How does the PFW Program work? Field biologists work one-on-one with voluntary participating landowners and enter into a "partnership" to assist in planning, implementing, and monitoring activities. General partnership requirements include: voluntary participation, protection of federal trust resources (described above), minimum 10-year agreements, and activities that benefit wildlife. Landowners do not forfeit property rights. To date, through hard work and willing landowners, our partnership activities include more than 45,000 landowners and 3,000 conservation partners. This Program has successfully restored over 1,000,000 acres of wetland habitat; 3,000,000 acres of upland habitat and 11,000 miles of streams.

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Crews conducting a prescribed burn near Greenville, KY.

Moving fire forward..

RESEARCH HIGHLIGHT:

Predicting Fire Frequency with Chemistry and Climate

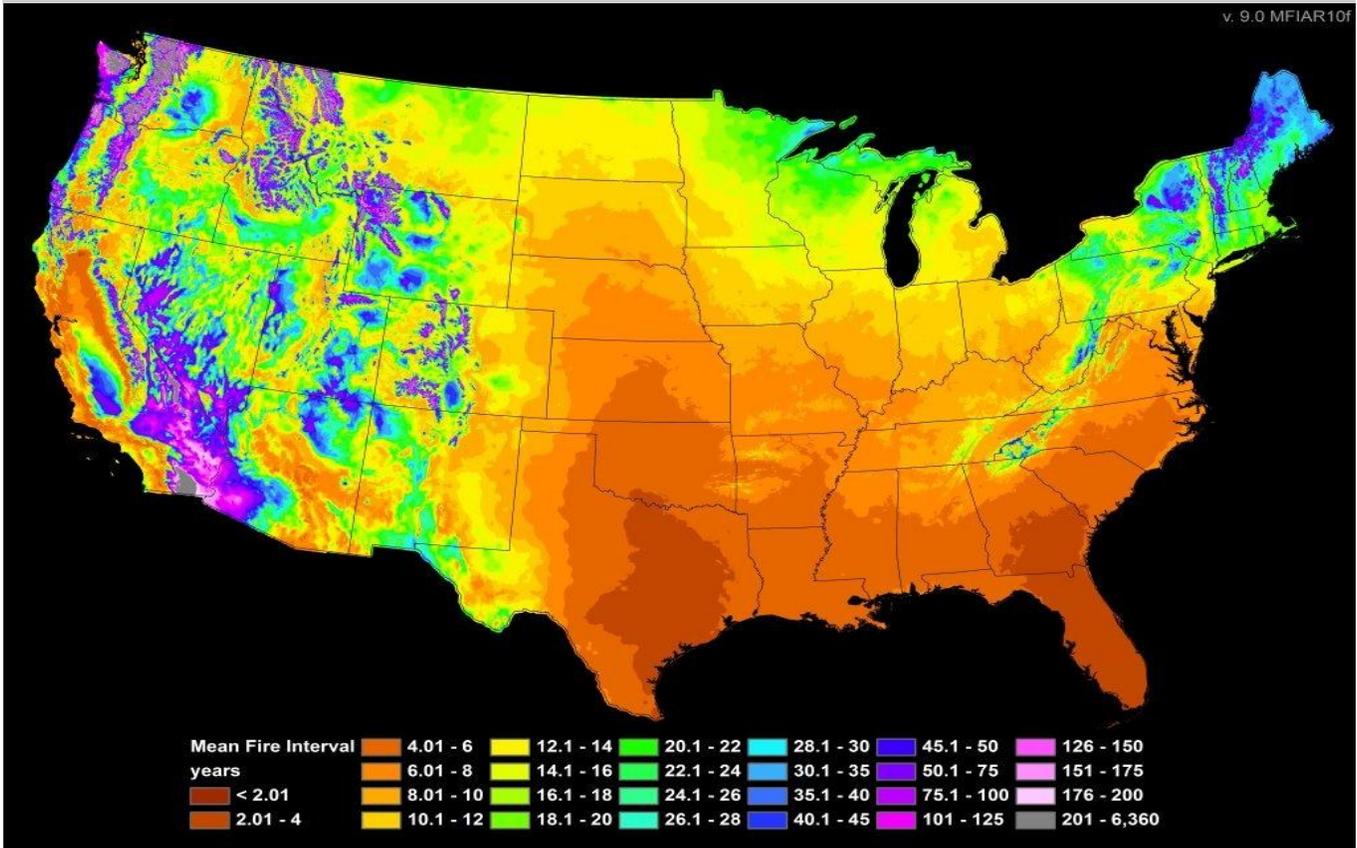
Richard P. Guyette, Michael C. Stambaugh, Daniel C. Dey, and Rose-Marie Muzika, *Ecosystems* (2012) 15: 322-335

This paper presents a model which uses theories and data in physical chemistry, ecosystem ecology, and climatology to predict fire frequency. Fire frequency data provides important information regarding past conditions and future activity and management. Additionally, this fire frequency data aids in assessing carbon emissions, fire-vegetation feedbacks and alternate stable states, and potential climate change effects on wildfires. Historic fire frequency information is often supplied by charcoal and tree-ring based fire-scar studies, though the resources necessary for such studies are not available at most sites. This study provides needed information regarding climate influences on fire frequency for ecosystems that lack empirical fire regime information.

The model described in this study, referred to as the Physical Chemistry Fire Frequency Model (PC2FM), utilizes mean maximum temperature, mean annual precipitation, and estimated reactant concentrations to predict historic mean fire intervals (MFI). The model is inspired by Arrhenius’ equation, which is a fundamental rate equation in physical chemistry. The authors state that “Faced with the problems and effects of wildland fire, it is easy to overlook that fire is fundamentally a chemical reaction”.

The PC2FM is calibrated with historic fire frequency datasets from 170 sites in North America. It purposely excludes topographic, vegetative, and ignition source variables. In doing so, the authors note that though fine-scale accuracy is reduced, it allows the model to be applied to broader spatial and temporal scales. MFI estimates derived from the PC2FM model using PRISM climate data and were mapped in the ArcGIS environment. The authors suggest that the resulting map can aid in the understanding of fire’s historic role at many locations, which otherwise would have no local or historical fire frequency information.

“Faced with the problems and effects of wildland fire, it is easy to overlook that fire is fundamentally a chemical reaction”



Mapped estimates of historic mean fire intervals for the period 1650 –1850 CE using the physical chemistry of climate.

Moving fire forward...



SPOTLIGHT

In an effort to introduce you to new people and information from the region we interview fire practitioners and researchers about timely topics. In this issue we asked these questions of Andrew Rueter, Indiana Department of Natural Resources Wildfire Specialist. *Update: since answering these questions Andrew has moved on to a new position as Natural Resource Coordinator at Camp Atterbury, also in Indiana.*

What are some of the greatest fire research needs for the Indiana?

AR: Timing is everything when it comes to desired resource management outcomes. Most of the fire research in the Indiana seems to be focused on oak and hickory regeneration. More and more studies have outlined the successful oak/hickory recipe by identifying site prerequisites, seasonal influence, location preparations and proper treatments. I think the most pertinent research needs hinge on discovering measurable climatic and ecological cut-off points (not just dates) to best influence desired ecosystem responses. There has been some interesting research coming out of Indiana Purdue Fort Wayne on reptile response (eastern box turtle, timber rattlesnake and copperhead) to prescribed fire in Indiana. The research focused on heating degree days and identified an imaginary cut-off point that linked statistically significant reptile mortality with a specified number of heating degree days in the spring. This kind of research can really help the land manager refine the use of fire in oak ecosystems, maximizing the benefits, and ideally, reducing detriments to less vagile forest fauna.

What is your biggest concern when deciding to use fire to manage oak woodlands and forests?

AR: The number one concern is and always will be safety of the fire fighting resources and greater public. Although the resource objectives can often seem to outweigh any other focus, the public and firefighter safety are paramount. The end results of any prescribed fire or managed wildfire are only as good as the resources that can proactively engage the dynamic nature of fire ground. Larger landscape level burns seem to be gaining more support, thus both the realistic and perceived danger of the fire has an even greater potential of becoming actualized danger as more resources are needed and used for Rx treatments.

In your opinion what is the greatest advantage to using prescribed fire when managing oak woodlands and forests?

AR: Prescribed fire creates a great outreach and education opportunity, an interpretive foundation to bridge the often superficial understanding of society, ecology and history as separate entities. There is something to be said about returning an ancient variable to the ecosystem, especially in an area of the country where the human-fire influence is so known and intertwined. Some of the best connections I've ever made with a group or class revolved around the identity of our human ancestry in connection with shaping, forming and being formed by the ecosystems in which we live. On every continent among hundreds of cultures, humans have statistically been drawn to or created the woodland-esc landscape for centuries, often with fire. These practices birthed a positive feedback loop: societies used fire to shape the land, the land garnered species with fire adaptations, fire tolerant ecosystems were fostered and the land in turn shaped the societies. I could talk about other benefits of fire like cost savings, forest aesthetics and oak regeneration, but what intrigues me most is the human/fire/ecosystem connection galvanized through the process of fire restoration and oak woodland/forest burning. It's primal to set fire to the forest for positive purposes. Not only returning fire to the forest for the forest's sake, but returning fire and people to the forest for our greater ecosystem and human ecological benefit may outgrow any quantifying system that tries to measure it.

Andrew Rueter,
Wildfire Specialist
Division of Forestry, Indiana
Department of Natural
Resources:

I've worked for several organizations over the span of my career, including US Forest Service, National Park Service, Student Conservation Association, Indiana Department of Natural Resources and Indiana General Adjutants Office; I've been engaged in wildland fire since 2004. My fire ecology interests are engrained in the unique history and adaptations of Indiana's landscape to historic fire regimes. Components of the natural world undoubtedly show aversion or adaptations towards fire, but the role of humanity through ecological history is indeed a much hazier component in the discussion at fire ecology's core validity in today's society. These aspects of fire ecology, species impacts, and the human element are worth discussion and exploration with the wider audience of Hoosiers.



PARTNERS FOR FISH AND WILDLIFE continued:

Interested landowners should contact a Partner for Fish and Wildlife Biologist (located in every state, sometimes with an office within a National Wildlife Refuge) to discuss proposed projects and arrange site visits. Site visit are used to determine which activities the landowner desires and how those activities will enhance habitat for trust resources and overall habitat quality. Technical advice on the proposed activities is provided by the Service, as appropriate. Proposed cost estimates are discussed by the Service and landowner. A detailed proposal that describes the proposed activities is developed by the Service biologist and the landowner. Funds are competitive therefore, the proposal is ranked prior to approval. Once approved and the landowner and the Service co-sign an Agreement, then the project can begin. When the project is completed, the Service reimburses the landowner.

For more detailed information, see either <http://www.fws.gov/partners/aboutus.html> or <http://www.fws.gov/partners/docs/783.pdf>

Moving fire forward...

HEADS UP!

Deadline extended!!!!

2014 Joint Fire Science Program Funding Opportunity Notice

Closes: December 11, 2013 5 PM Mountain Standard Time

VIEW and APPLY [HERE](#)

Primary Funding Opportunity

1. Fuels treatment effectiveness across landscapes
2. Influence of past wildfires on wildfire behavior, effects and management
3. Contribution of smoke emissions to secondary organic aerosols
4. Effects of smoke from wildland fires on human health in urban centers
5. Compatibility of fire and fuel treatments with threatened and endangered bats
6. Effects of wildfire on water
7. Fire weather data resolution



For more information contact OWFFC at oakfirescience@gmail.com

Symposium presentations now available online



Effects of Wildland Fire and Fire Management on Amphibians and Reptiles

on our *VIMEO* page! Check them out [HERE](#)

Mid-South Fire Science Tour and Conference

3 fieldtrips, 1 conference!

Fire Tour

June 2, 2014: Land Between the Lakes, near Murray, KY

June 3, 2014: Stones River National Battlefield, in Murfreesboro, TN

June 4, 2014: Bridgestone/Firestone WMA, near Crossville, TN

Fire Science Conference

(Cumberland County Fairgrounds Community complex in Crossville, TN)

June 4, 2014: Evening plenary lecture by Dr. Stephen Pyne, Regent's Professor at Arizona State University
Social / mixer- Light refreshments will be provided.

June 5, 2014: Full day of invited fire science presentations (TBA)

More information coming soon at: www.oakfirescience.com



Moving fire forward...

UPCOMING EVENTS

Webinars:

Reconstructing pre-European fire regimes, forests and wildlife habitats in the eastern United States:
Mammoth Cave National Park, Kentucky

Dr. Cecil Frost, Landscape Fire Ecologist and Research Collaborator at the University of North Carolina will discuss historic fire regimes and vegetative characteristics at Mammoth Cave National Park.

Tuesday November 5, 2013 at 1pm Central

Attend here: <http://forestry.adobeconnect.com/r7h37tu0nhr/>

Oak, Fire and Mesophication: Past, current and future trends of oak in the eastern United States

Dr. Gregory J. Nowacki, Ecologist with the US Forest Service, Eastern Region, will discuss current and future trends of oaks in the eastern U.S.

Tuesday December 10, 2013 at 1pm Central

Attend here: <http://forestry.adobeconnect.com/r8oc1tgd6le/>

FOR BOTH WEBINARS:

**seats are limited to the first 100 attendees, please attend as a group if possible

1 hour Continuing Education Credit
for SAF and TWS!!



See our [calendar](http://oakfirescience.com) at oakfirescience.com for a full schedule of upcoming events

Dec. 5-6, 2013: Shortleaf Pine Workshop: Ecology and management for multiple objectives in the Interior Highlands
Ft. Smith, AR. Holiday Inn. For more information contact Rod Will: rodney.will@okstate.edu

January 13-29, 2014: TN/KY Wildland Fire Academy
Bell Buckle, TN, details at: <http://gacc.nifc.gov/sacc/dc/kykic/academy/index.htm>

January 17-18, 2014: The Science, Practice, & Art of Restoring Native Ecosystems Conference
East Lansing, Michigan, details at: <http://www.stewardshipnetworkconference.org>

January 26-29, 2014: the 74th Midwest Fish and Wildlife Conference
Kansas City, Missouri, details at: <http://www.midwestfw.org/html/call.shtml>

March 10-12, 2014: 19th Central Hardwoods Forest Conference
Carbondale, Illinois, details at: <http://centralhardwood.org/>

June 2-5, 2014: Mid-south Fire Tour and Conference
Crossville, TN, details coming soon

October 20-24, 2014: 5th Fire in Eastern Oak Forests Conference
College Station, PA. Details coming soon

Please contribute your event announcements. Send information to: oakfirescience@gmail.com

Moving fire forward...