FLN Networker No. 354: August 2, 2023

The FLN Networker is a publication of the Fire Learning Network—a partnership of the USDA Forest Service, agencies of the Department of the Interior and The Nature Conservancy—intended to foster communication within the network and among its friends. Submit comments, information to share, and subscription requests to Liz Rank.

For more about the FLN, visit www.conservationgateway.org/fln.

News from the Field

California: The **Central Coast PBA** hosted its first TREX in June, with reports in a University of California extension blog post "**Central Coast TREX** a Big Success" and the *GoodTimes* article "Burning Up: **Prescribed Burn Associations Could Be the Future** of Mitigating Wildfires in Santa Cruz County." For more, contact **Jared Childress** (childress.ember@gmail.com).

California: **Logan Krahenbuhl** (logan@plumasfiresafe.org) reported on the fourth **Plumas Cal-TREX**, which was held this spring to **build local prescribed fire capacity** in the latest *Notes from the Field*.

Texas: In mid-June, the **Alabama-Coushatta Tribe of Texas** and **The Nature Conservancy** conducted a burn on a TNC preserve as part of an **ongoing partnership** to protect and restore **longleaf pine forests**. For more, see the attached *Dallas News* article "Alabama-Coushatta Tribe of Texas Uses Fire to Save a Tree That's Part of Its Identity."

Southern Blue Ridge: **Dakota Wagner** (dakota@forestguild.org) reports that for the past several burn seasons, the Forest Stewards Guild and partners have attempted to host a number of **learn-and-burn workshops**, only to find the weather uncooperative. "Last year, we had the idea to **pivot to a listserv format** rather than the traditional set calendar date. This new format **acts like a call-when-needed crew**, where landowners and practitioners interested in attending an event sign up and are notified about burn windows when they occur. In the **burn notifications, I include educational content** like descriptions of terms and graphics on how to determine ventilation rates. This new format worked great! Partners enjoyed it, as did participants. Working with others in the **Fire Networks** helped us to brainstorm and come up with the idea."

Funding: Joint Chiefs / JFSP / CWDG / Tribal Climate Resilience

Joint Chiefs: The **U.S. Department of Agriculture** has announced that it is seeking proposals for its **Joint Chiefs' Landscape Restoration Partnership** program. The deadline is **September 4**.

JFSP: **Joint Fire Sciences Program** funding announcements have been posted in **eight areas of work** that include outreach, prescribed fire and water quality, social equity, WUI and the Graduate Research Innovation award. Details are on www.firescience.gov; proposals are due by **September 28**.

CWDG: Four funding opportunities in Round 2 of the **Forest Service Community Wildfire Defense Grant Program** are now live on grants.gov (search keyword CWDG). Applicant webinars will be held on August 4, August 9, August 10 and August 15, all at 2:00-4:00 Eastern. More about the program is also on the Forest Service website's CWDG page or in the **Wildfire Risk to Communities** CWDG Web Tool. In addition, **Headwaters Economics** issued a report analyzing the first round. Applications are due by **October 31**.

Tribal Climate Resilience: The **BIA Tribal Climate Resilience Annual Awards Program** will be accepting proposals from tribes and authorized tribal organizations through **October 13**. For more, see the program's webpage or register for the **FAQ webinar on August 2** (at 11:00 Pacific / 2:00 Eastern).

Feedback & Nominations: Rx Team Resilience Survey / AFE Awards

Rx Team Resilience Survey: **Dr. Chelsea LeNoble** (chelsea.lenoble@ucf.edu), an assistant professor in the Department of Psychology at the University of Central Florida, and colleagues are conducting a study to deepen our **understanding of team resilience in prescribed fire operations**. They are seeking **people certified to conduct prescribed fire** who would be willing to participate in a **one-hour interview**. For details and to sign up, see the study recruitment information.

AFE Awards: The **Association for Fire Ecology** is accepting **nominations for its annual awards**, offered in five categories—Student Excellence, Distinguished Leader, Early Career, Applied Fire Science and Lifetime Achievement. Nominations are due by **September 1**.

Resources: Rx Fire Basics / Lessons Learned Center / TEK

Rx Fire Basics: **Oregon State University Extension** has a **set of brief publications** that provide an introductory-level overview of prescribed fire—from "Why We Burn" through "Monitoring and Evaluation."

Lessons Learned Center: The **Wildland Fire Lessons Learned Center** has a **new website**—and a **new URL**: https://lessons.wildfire.gov/, so you'll want to update your bookmark.

TEK: The **Association for Fire Ecology** has produced a "Statement on **Traditional Ecological Knowledge**," along with a list of **resources for further learning**.

Smoke: The **Southern Fire Exchange** has posted a two-minute video on **wildfire smoke and public health**. It's targeted to the southern U.S. but has **research and mitigation information** widely relevant.

Articles & Reports: Wildfires & Climate / Public Opinion / Resources Assessment / Wildfire Season

Wildfires & Climate: The **Organisation for Economic Co-operation and Development** report "Taming Wildfires in the Context of Climate Change" discusses **drivers and impacts** of the growing incidence of extreme wildfires and looks at how **policies and practices** have evolved. It includes **case studies** from Australia, Costa Rica, Greece, Portugal and the U.S.

Public Opinion: The article "Variable **Support and Opposition to Fuels Treatments** for Wildfire Risk Reduction: Melding Frameworks for Local Context and Collaborative Potential" by **Travis Paveglio** and **Catrin Edgeley**, is based on interviews and case studies in the landscape around **Wenatchee**, WA.

Resources Assessment: The **Forest Service** has released the general technical report "Future of America's Forest and Rangelands: Forest Service **2020 Resources Planning Act Assessment**." The report "summarizes findings about the **status, trends, and projected future** of the nation's forests and rangelands and the renewable resources that they provide."

Wildfire Season: **Texas A&M Agrilife Extension** has published a new fact sheet, "**The New Wildfire Season**," giving an overview of the **increased temporal and spatial extent** of wildfire season across the **Great Plains**.

In the News: Next Generation / Post-Fire / Particulate Standards / Mushrooms

Next Generation: The youth-led group **FireGeneration Collaborative** "advocates for **centering Indigenous knowledge** and bringing **more young people into the wildfire space**." Read more in the *Yes!* article "The Young People Reshaping Wildfire Policy."

Post-Fire: In New Mexico, **landowners** will have opportunities to learn how to protect their land—and **develop skills** that may help replace some of the income streams lost to wildfire. Read more in the article "Luna Community College Program Teaches **Land Recovery From Devastating 2022 Wildfire**."

Particulate Standards: On the **American Bar Association** website, **Sara Clark** and **Jenna Archer** weigh in on the side of prescribed fire in the article "Fighting Fire with Fire: The **EPA Must Harness Beneficial Fire** to Reduce PM2.5 Emissions."

Mushrooms: A *Washington Post* article asks "**Can Mushrooms Prevent Megafires?**" Efforts in Colorado are exploring using fungi to help turn slash into soil.

More: Wildfire Communications Podcast / Lawyers Talk Fire / For Kids

Wildfire Communications: **Isabeau Ottolini** was interviewed for a recent episode of the Living With Fire podcast, "**Community-Informed Wildfire Communications**."

Lawyers Talk Fire: The **American Bar Association** Environment, Energy and Resources Section has posted a **podcast** episode, "**Prescribed Fires** on Federal Lands: Overview of Pressing **Management, Law, and Policy Issues**," with speakers from the **Cibola National Forest**.

For Kids: "Fire Shapes the World" is a rather **beautiful book** for children (download teachers' guide).

Jobs

Project Coordinator: The **Clear Lake Environmental Research Center** in Lake County, California, is hiring a **fire and forestry project coordinator**. Details are on CLERC's website; application review begins **August 4**.

Program Director: The **Mountain Studies Institute** is seeking a **forest program director** to lead the Forest Team in implementing a suite of **collaborative, research and monitoring projects** in the San Juan Mountain region, and **develop new initiatives** to lead the program into the future. See the job description for details; apply by **August 6**.

Collaborative Capacity: The **National Forest Foundation** is hiring a **collaborative capacity program manager** to manage the Conservation Connect program's efforts to build capacity for collaborative forest stewardship. Details are on NFF's careers page; applications are due by **August 7**.

Training Specialist: **Tall Timbers** is hiring a **fire training specialist** (RXB2, or within 18 months) to help implement training at the **National Interagency Prescribed Fire Training Center** in Tallahassee. See the position announcement for details; applications are due by **August 11**.

Info Coordinator: **Audubon Canyon Ranch** is hiring a **prescribed fire information coordinator** to join the growing **Fire Forward** team. Details are at egret.org/work-with-us; applications are due by **August 14**.

Hazard Coordinator: **Benton County**, Oregon, is looking for a **hazard mitigation and recovery coordinator** to coordinate, plan and manage hazard mitigation projects including community wildfire mitigation related projects. See the listing on governmentjobs.com for details; apply by **August 15**.

Spatial Analyst: The **Colorado Forest Restoration Institute** is hiring a **spatial analyst and decision support specialist** for work that includes PODs, quantitative wildfire risk assessments, vegetation condition analysis, watershed assessment and modeling, and modeling of potential wildfire mitigation and response actions. See the Colorado State University jobs site (posting 202301197AP) for details; applications are due by **August 15**.

Restoration Manager: **The Nature Conservancy** is hiring an **Allegheny Highlands restoration manager** to work with partners in the **Central Appalachians FLN** to implement restoration of fire-adapted oak and pine-dominated forests in **Virginia and West Virginia** with prescribed fire. Details are on the TNC careers page (job ID 53779); current employees should apply through PeopleSoft. Applications are due by **August 24**.

Program Director: **The Ember Alliance** is hiring a **director of resilient communities and ecosystems**. See the post on smartrecruiters.com for details. Interviews will begin **September 1**.

Plan Coordinator: **The Nature Conservancy** in Tennessee is seeking a **state forest action plan coordinator**. Details are on the TNC careers page (job ID 53736); current employees should apply through PeopleSoft.

Fire Advisor: **University of California Agriculture and Natural Resources** is hiring a **fire advisor** for **Del Norte and Humboldt counties**. See the recruitment post for details. Primary review of applications was July 25, but applications will be accepted until September 30 if the position has not been filled.

Policy: **The Nature Conservancy** is hiring a **senior policy advisor, forests & fire**. Details are on the TNC careers page (job ID 53738); current employees should apply through PeopleSoft.

Webinars

August 17
new listing
Climate-Driven Changes in Prescribed Fire in the Southeastern U.S.: Burner Concerns, Needs, and Alternatives
10:00 Pacific / 11:00 Mountain / noon Central / 1:00 Eastern
Megan Johnson will speak on this Southern Fire Exchange webinar (register).

September 27
LANDFIRE Office Hours
10:00 Pacific / 11:00 Mountain / noon Central / 1:00 Eastern
Kim Ernstrom, Brianna Schueller and Jennifer Anderson will speak on "A Picture Is Worth a Thousand Words: How IFTDSS Is Changing the Look of Fuels Planning," and LANDFIRE experts will be on hand to provide clarity and context to user questions (register).

September 27
Colorado Wildfire Risk Assessment Overview and Technical Discussion
noon Pacific / 1:00 Mountain / 2:00 Central / 3:00 Eastern
This webinar will provide an overview of the 2022 update to the Colorado Wildfire Risk Assessment (CO-WRA), and allow time for discussion (register).

October 25
LANDFIRE Office Hours
10:00 Pacific / 11:00 Mountain / noon Central / 1:00 Eastern
Robert Zeil and Jennifer Schmidt will speak on "Wildfire Exposure Assessment for Three Boreal Communities in Alaska," and LANDFIRE experts will be on hand to provide clarity and context to user questions (register).

Network Workshops & Field Tours

October 23-27
Fire Learning Network Workshop / Blackfoot Valley, MT
FLN leads from across the country will meet for this annual workshop.

November 2-4
Indigenous Peoples Burning Network Workshop / Santa Fe, NM
IPBN leads from across the country will meet for this annual workshop.

Prescribed Fire Training Exchanges (TREX) & Cooperative Burning

September 24-30
new listing
Yurok-CFMC Cultural Burn Training Exchange (Session 1) / Weitchpec, CA
This TREX is open to all prescribed fire and wildfire personnel with at least FFT2 qualifications (or all courses for FFT2 completed). See the announcement for details; applications are due September 10. Please apply for only one session.

October 2-8
new listing
Yurok-CFMC Cultural Burn Training Exchange (Session 2) / Weitchpec, CA
This TREX is open to all prescribed fire and wildfire personnel with at least FFT2 qualifications (or all courses for FFT2 completed). See the announcement for details; applications are due September 10. Please apply for only one session.

October 2-13
Selkirk Prescribed Fire Training Exchange / Loon Lake, WA
The deadline for this TREX has passed.

October 7-22
Intercambio y Entrenamiento en Quemas Prescritas en Español / Hayfork, CA
The deadline for this TREX has passed.

October 8-14
Karuk Indigenous Women+ Training / Karuk ancestral territory (CA)
The deadline for this TREX has passed.

October 9-20
Columbia Gorge Prescribed Fire Training Exchange / Glenwood, WA
The deadline for this TREX has passed.

October 16-20
new listing
Canadian Prairies Prescribed Fire Training Exchange / Saskatoon, Saskatchewan
Prior prescribed fire experience is not required for this TREX—see the announcement for prerequisites. Applications are due by September 1.

Oct. 30-Nov. 10
Blue Ridge Prescribed Fire Training Exchange / Pickens, SC
The deadline for this TREX has passed.

November 11-18
Santa Barbara Prescribed Fire Training Exchange / Santa Ynez Valley, CA
Save the date for this TREX. The application period will open in August.

Trainings, Conferences, Workshops, Etc.

August 8-10
new listing
Resilience in the Anthropocene / online
This free summit from the Loka Institute at the University of Wisconsin-Madison includes three days of keynotes, panels and contemplative practices (details).

August 24-25
new listing
Rocky Mountain Wildfire Smoke Symposium / Aurora, CO
This meeting will run concurrently with the Mountain West Society of Toxicology. Abstracts for posters or presentations are due by August 4.

August 29-31
Northeast–Midwest Regional Prescribed Fire Science and Management Workshop / Madison, WI
This workshop sponsored by Northeast Regional Strategy Committee will draw wildland fire partners from a 20-state region. The agenda will include topics ranging from applied research to prescribed fire program needs and opportunities to communication strategies. Registration is open; see the website for more.

September 6-7
Patch Burn Grazing Meeting / Auburn, KS
Registration is open; contact Lori Bammerlin (bammerlin@ksu.edu) for more.

September 19-21	**SyncroSim 2023 / Fort Collins, CO** SyncroSim is a free software platform for running and analyzing geospatial forecasting models. Registration and a call for abstracts are open. See the website for details.
October 25-28 **new listing**	**Society of American Foresters National Convention / Sacramento, CA** Registration is open. Details are at https://eforester.org/safconvention2023.
November 6-10	**6th National Cohesive Wildland Fire Management Strategy Workshop / Santa Fe, NM** Save the date—and watch http://cohesivestrategyworkshop.org/ for details.
Nov. 13-Dec. 18 **new listing**	**RX-310—Introduction to Fire Effects / online** This course is offered by the University of Idaho as a combination of self-paced study and live virtual sessions. See the attached flyer for details.
December 4-8	**10th International Fire Ecology and Management Congress / Monterey, CA** Abstracts for proposed poster presentations are due August 25; registration is open. See the website for details.
January-May 2024 **deadline**	**National Interagency Prescribed Fire Training Center (NIPFTC) 20-Day Sessions / Tallahassee, FL** PFTC Mixed Module and Fire Leadership for Women 20-day sessions are accepting applications through October 15, Agency Administrator through August 15. See the website for details.
April 15-17, 2024 **new listing**	**After the Flames / Estes Park, CO** Save the date for this post-fire recovery conference hosted by Coalitions & Collaboratives. Proposals for presentations are being accepted through December 15. See the website for details.

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Send News, Links & Comments

Liz Rank (editor) – lrank@tnc.org – Liz is out Thursdays.

Autumn Bjugstad – autumn.bjugstad@tnc.org – Autumn is in Austin August 21-25.

Emily Hohman – emily.hohman@tnc.org – Emily is in Arkansas August 7-11; out August 19-31.

James Miller – james.miller@tnc.org – James is in the office.

Jeremy Bailey – jeremy_bailey@tnc.org – Jeremy is in the office.

Laurel Kays – laurel.kays@tnc.org – Laurel is in Arkansas August 7-11.

Lemaine Peo – lemaine.peo@tnc.org – Lemaine is in the office.

Marek Smith – marek_smith@tnc.org – Marek is out August 7-8; in Austin, TX August 21-25.

Mary Huffman – mhuffman@tnc.org – Mary is in Reno [?] August 21-25 [?].

Miranda Flora – miranda.flora@tnc.org – Miranda is in the office.

Links

FLN Networker—an archive of back issues is kept at:
http://www.conservationgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/FLNNetworker/Pages/fln-networker.aspx

FLN Webinars—Information about upcoming FLN webinars and recordings of previous ones is at:
http://conservationgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/NetworkProducts/Pages/webinars.aspx

Notes from the Field—an index to all Notes is at:
http://www.conservationgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/USFLNPublications/Pages/Index-FLN-Notes-from-the-Field.aspx

TREX—The latest application information for upcoming TREX is always listed at:
http://www.conservationgateway.org/ConservationPractices/FireLandscapes/HabitatProtectionandRestoration/Training/TrainingExchanges/Pages/Upcoming-Training-Exchanges.aspx

The Fire Learning Network is supported by *Promoting Ecosystem Resilience and Fire Adapted Communities Together: Collaborative Engagement, Collective Action and Co-ownership of Fire*, a cooperative agreement between The Nature Conservancy, USDA Forest Service and agencies of the Department of the Interior.

Alabama-Coushatta Tribe of Texas uses fire to save a tree that’s part of its identity

dallasnews.com/news/2023/07/24/alabama-coushatta-tribe-of-texas-uses-good-fire-to-save-tree-thats-part-of-its-identity

July 24, 2023

The longleaf pine’s branches arch toward the sky, each bud bursting with spindly green fingers. As flames sweep the landscape, setting yuccas and loblolly pine saplings ablaze, the longleaf’s thick bark peels but protects the solid trunk underneath.

The longleaf loves fire. More important, it can’t survive without it.

Longleaf pines used to span 90 million acres of the southern United States from East Texas to Florida. Burns by Indigenous tribes and lightning fires allowed the pines to thrive in forests home to red-cockaded woodpeckers and pink Texas trailing phlox flowers.

Today, about 5 million acres remain.

In East Texas, the Alabama-Coushatta Tribe of Texas and The Nature Conservancy have teamed up to save the longleaf pines by bringing back “good fire.” Many Indigenous tribes have set small fires for centuries, and the approach is now being used across the country to curb wildfires and restore native grasslands.

For The Nature Conservancy, the burns aim to preserve an ecosystem of plants and animals that rely on the longleaf. For the Alabama-Coushatta Tribe, who have long used the tree to prepare medicines and make baskets, the stakes are higher.

“It’s tied to not only culture, but our identity,” said Rochellda Sylestine, the tribe’s interim Historical Preservation Officer. “And when you start losing those things, or those things start disappearing … you cease being Alabama-Coushatta.”

The basket tree

Gesse Bullock grew up on Alabama-Coushatta land, biking around the lake and hunting deer and rabbits in the woods. His aunts and uncles in the tribe’s firefighting program were often called away to suppress wildfires across the country. Upon their return, they captivated Bullock with tales of camping at Yellowstone or exploring mountains in Montana. By his early teens, Bullock knew he wanted to follow in their footsteps.

Gesse Bullock of the Alabama-Coushatta Tribe of Texas photographed at the tribe’s reservation on Tuesday, June 13, 2023, in Livingston, Texas. (Smiley N. Pool / Staff Photographer)

As a child, Bullock knew of the longleaf as the basket tree. The tribe relied on it for survival, Sylestine said, selling baskets through the Great Depression and into the 1980s, when Congress restored the tribe to federal recognition, allowing it to self-govern and receive funding for federal programs.

The tribe still weaves and sells baskets, and each basket-maker has a signature style, Sylestine said. Just from examining the pattern of stitches and colors, she said she can tell who created it. When she opens a basket's lid, she describes the scent as home.

A basket in the shape of an armadillo, made from the needles and cones of a longleaf pine, is seen at the Alabama-Coushatta Tribe of Texas reservation on Tuesday, June 13, 2023, in Livingston, Texas. (Smiley N. Pool / Staff Photographer)

It was only as an adult that Bullock realized longleaf forests were dwindling on tribal lands. In the early 2010s, tribal leadership worked with the National Resources Conservation Service to plant saplings across 400 acres. But that wasn't enough: The forests needed regular mowing and burning for the longleaf to return in full force.

"The longleaf were surviving," Bullock said. "They weren't thriving."

After working for the U.S. Forest Service's wildlife and fire programs for about 14 years, Bullock returned home in 2018 to lead the tribe's fire management program. The longleaf forests had grown into a thicket, overrun with vegetation so dense he couldn't see from one end to the other.

He remembers thinking: "We've got to open up these areas really quick, before we lose these trees."

Bringing back good fire

For centuries, many Indigenous tribes have burned forests to keep trade and hunting routes open, renew the landscape for livestock or clear underbrush. European settlers suppressed Indigenous burns when they arrived, and the U.S. government has long suppressed fires, including those caused naturally by lightning.

"As we see more and more fire events happening, it's important to understand how we might

intervene in ways that promote healthy forests," said Kerry Thompson, an anthropology professor at Northern Arizona University.

Thompson, along with Southern Methodist University anthropologist Christopher Roos, found that Indigenous cultural burns weakened the climate's ability to cause fires for 400 years in the American Southwest. The small fires cleared vegetation that could have fed larger ones.

Indigenous tribes, nonprofits and government agencies are working to return fire to landscapes. In California, the Washoe Tribe is partnering with the U.S. Forest Service and California Tahoe Conservancy to restore a 300-acre meadow called Máyala Wáta. And at Cedar Hill State Park in Dallas, biennial burns aim to replenish the area's native grasslands.

The Nature Conservancy and Alabama-Coushatta partnership was formed about four years ago with support from the Indigenous Peoples Burning Network. The Nature Conservancy and the tribe burn together, both on tribal land and on about 6,000 acres of The Nature Conservancy's Roy E. Larsen Sandyland Sanctuary near Lumberton in East Texas.

A team sets a line of fire during a prescribed burn at the Roy E. Larsen Sandyland Sanctuary on Tuesday, June 13, 2023, near Lumberton in East Texas.
(Smiley N. Pool / Staff Photographer)

Ninety percent of a burn's work lies in planning, said the Nature Conservancy's Shawn Benedict. Before confirming a date, the tribe and the Nature Conservancy make sure the humidity, wind speed and wind direction will keep the fire contained and the smoke from drifting into the highway.

Rather than igniting fires with a pine branch or log, as some tribes did in the past, 8 to 15 burn crew members use drip torches to drop "dots" of fire along and within the perimeter. The dots smolder, smoke and spread with the wind. Nature Conservancy and Alabama- Coushatta staff ride off-road vehicles around the fire, listening to digital radios for instructions from the "burn boss" — usually Bullock or Benedict — amid the crackling flames.

Unlike a wildfire, the burn is controlled. The crew digs a line in the dirt between the flames and the highway called a "fire break," so the fire fizzles out at the borders while logs and plants smoke within. Some large stumps or logs can burn for days.

For Bullock, fire is a family business. Among the Alabama-Coushatta burn crew are his sister-in-law Charity Battise and nephew Austin Thompson. Thompson said burns with his uncle feel like they're hanging out at home, with Bullock poking fun if he spots Thompson trip over a log or stumble into the brush.

The fire crew burns 50 to 400 acres at a time and hits the same area every 1 to 3 years. The timing is key to allow native grasses to grow back and clear invasive species that could stunt the longleaf's growth.

After a recent burn, Alabama-Coushatta youth piled into a white fire truck and headed to a Woodville cafe to scarf down burgers and chicken sandwiches. The burn boss, Benedict, stayed behind to circle the perimeter in an ATV, snuffing out any particularly smoky bits.

Inside the burn, loblolly pine saplings keeled over, their leaves shriveling. But the baby longleafs endured, streaks of green amid the blackened dirt.

Lucien Ball checks on vegetation on the forest floor after a prescribed burn at the Roy E. Larsen Sandyland Sanctuary on Tuesday, June 13, 2023, near Lumberton, Texas. (Smiley N. Pool / Staff Photographer)

Benefits of the burn

At Sandyland Sanctuary, the Nature Conservancy collects data at over 100 locations to measure the amount of longleafs and their loblolly pine competitors as well as the amount of competing vegetation and brush.

The first planned fire at Sandyland took place in 1978 and data collection began in 2014. The Nature Conservancy has yet to wrap up analysis on changes in the forests since 2014, but the nonprofit says the forests are trending in the right direction. From 2014 to 2021, the longleaf tree density at Sandyland increased by 4%.

Since trees don't grow overnight, it could take decades to fully restore the longleaf forests, according to the conservancy.

Measuring progress at an outdoor sanctuary involves more variables than in a lab. After Hurricane Harvey in 2017, The Nature Conservancy diverted its efforts to measure how the forests recovered from flooding. And in 2020, the conservancy said the pandemic halted the burns, allowing forest brush to grow back and reversing some of the progress.

Despite the lack of data, Bullock said he's seen the benefits of the burns. Pawpaw trees and mountain mint flowers, which he hasn't seen in the forests for years, are returning. Longleaf branches dance in the wind, their needles nearly long enough to be plucked for basket weaving.

Rochellda R. Sylestine, Language Programs Coordinator for the Alabama-Coushatta Tribe of Texas, holds needles from a longleaf pine at the tribe's reservation on Tuesday, June 13, 2023, in Livingston, Texas. (Smiley N. Pool / Staff Photographer)

Last year, the tribe won an award from the Big Thicket Association, a southeast Texas conservation group, for its longleaf preservation efforts. Losing the forests would mean losing livelihood and history, Bullock said. He is determined not to let that happen.

"Fire has always been a part of our culture," he said. "Our people were known as the thicket- clearers, so [we're] … ensuring that we're living up to that name."

Adithi Ramakrishnan is a science reporting fellow at The Dallas Morning News. Her fellowship is supported by the University of Texas at Dallas. The News makes all editorial decisions.

Did you know that what you just read was a solutions journalism story? It didn't just examine a problem; it scrutinized a response. By presenting evidence of who is making progress, we remove any excuse that a problem is intractable. This story was supported by a grant from the Solutions Journalism Network.

Adithi Ramakrishnan, Science reporting fellow. Adithi graduated from the College of William and Mary with a degree in neuroscience and has previously written for WUNC - North Carolina Public Radio, the National Association of Science Writers, and Massive Science.

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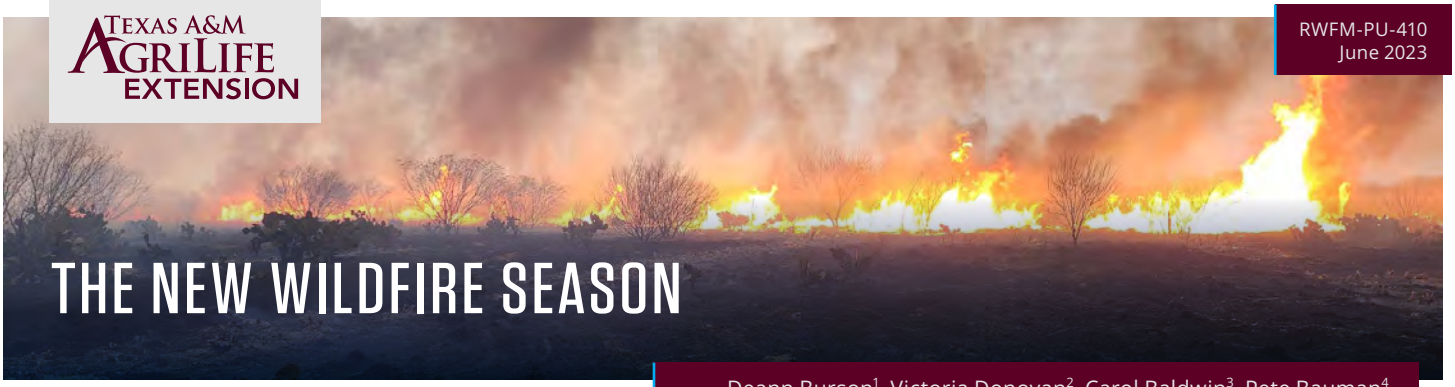

THE NEW WILDFIRE SEASON

Deann Burson[1], Victoria Donovan[2], Carol Baldwin[3], Pete Bauman[4], Morgan Treadwell[5], Dirac Twidwell[6], John Weir[7], and Carissa L. Wonkka[8]

INTRODUCTION

Extreme wildfire events result in considerable economic, environmental, and agricultural losses yearly in the United States. The financial burden, regional impact, and seasonal length of wildfires have significantly expanded in recent decades, causing national and global concerns. Annual records dating back to 1983 indicate that three of the five largest wildfire years for acreage burned in the United States have occurred since 2015 (2015, 2017, and 2020, respectively) (National Interagency Fire Center [NIFC], 2021a). Changing weather patterns, human activity, and the ever-growing number of people moving into rural lands have increased wildfire risks and resulted in an extended wildfire season. As the threat of wildfires escalates, so do potential consequences to landowners in the North American Great Plains. Of the major wildfire events in the continental United States between 1984 to 2019, up to 95 percent of these included some rangelands, and 54 percent occurred primarily in rangelands (Donovan, n.d.).

Changing climate patterns have increased the incidence of warm, dry conditions favorable to dangerous and unpredictable wildfire behavior. Extended dry periods, droughts, and increased lightning frequency are becoming more common with more and longer periods of elevated temperatures that dry vegetation and increase the probability of ignition. While lightning-started wildfires comprise a portion of wildfires each year, particularly in the mountainous western states, human ignitions (e.g., negligence, electrical, burning debris, etc.) are the leading contributors to recent shifts in wildfire activity. Human-caused fires accounted for 86 percent of all wildfires occurring over the 21 years between 2001 to 2021 (NIFC, 2021a) and have a significantly longer season than lightning-caused fires. The Great Plains has experienced the most significant increase in human-related wildfire events of any United States ecoregion (Balch et al., 2017). As people and infrastructure rapidly expand into rural landscapes, wildfire impacts increase due to the extended length of the fire season and the growing expanse of wildfire-affected acres.

WILDLAND-URBAN INTERFACE

The wildland-urban interface (WUI) is a term used to describe an area or zone where human development intersects unoccupied lands, often characterized by vegetative fuels. The potential for structure ignition further complicates wildfire relief efforts in the WUI. It is a major concern as working lands rapidly become fragmented and converted to non-agricultural uses. Texas is currently ranked second in the nation in the number of houses in the WUI, only behind California (United States Fire Administration, 2022), and Texas led the nation in population growth from 2000 to 2019 (United States Census Bureau, 2022). *Texas Land Trends* is a decision-support website that can be used to monitor land use, value, and ownership trends to assist in strategic planning for WUI expansion based on current trends and develop wildfire mitigation approaches.

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Other Great Plains states with large growth in the WUI include New Mexico, with one of the highest percentages of homes in WUI areas compared to the total homes in the state, and Oklahoma, where about 40 percent of the state's total population now lives in the WUI. Colorado and Nebraska have also seen recent rises in WUI-related incidents.

HUMAN-CAUSED WILDFIRES EXTEND THE TIME AND AREA BURNED

Human-caused fires in the United States are estimated to extend the fire season by over 3 months, especially in the spring, while changing weather patterns have only expanded the fire weather season by a few weeks (Abatzoglou & Williams, 2016; Jolly et al., 2015). Findings show that human-caused wildfires can ignite under higher fuel moisture conditions than lightning-started fires, and they occur less predictably than lightning ignitions, which show a strong seasonal pattern. Most lightning fires ignite during the summer when vegetation is drier and the weather is likelier to favor stormy conditions capable of producing lightning. Compared to the 78 percent of lightning-induced fire events that are sparked in the summer, 76 percent of human-started wildfires occur in the spring, fall, and winter (Balch et al., 2017). Although human-driven fires tend to be smaller and less intense, they extend the wildfire season throughout the year, presenting new challenges to wildland firefighters and landowners.

The longer wildfire season and expanding rural infrastructure that needs to be defended from wildfire are increasing pressure on the already-stretched resources of volunteer fire departments (VFDs), which are primarily responsible for wildfire suppression in the Great Plains. The possibility of direct attack during initial suppression efforts is dangerous, and most often, local resources are easily overwhelmed by intense, immediate fire behavior resulting in more expensive wildfire suppression via indirect attack and aerial support.

The geographic distribution of wildfires varies between human and lightning-started wildfires. At the state level, human-started fires in Texas accounted for 95 percent of wildfire ignitions and 78 percent of the total area burned by wildfires between 1992 and 2012 (Balch et al., 2017). Cultural drivers like roadway networks, densely populated urban areas, and land-use patterns strongly affect human wildfire ignitions and frequencies. Population growth in the Great Plains, particularly in vulnerable ecosystems where woody vegetation and houses intermingle, has increased the likelihood of human-driven wildfire activity. As development increases and the WUI expands, fires are expected to play an increasing role in traditionally low-risk areas. In contrast, local topography and climate are the main variables driving lightning-related wildfires.

INCREASED FIRE ACTIVITY IN THE GREAT PLAINS

Humans significantly affect multiple ecosystem processes, including fire frequency. Euro-American settlement in the Great Plains led to widespread fire suppression in a grassland ecosystem that was previously one of North America's most frequently burned landscapes. Urbanization, agricultural fields, land fragmentation, and social influences over the last century have drastically altered the fire regime so that large wildfires have been almost absent in the ecoregion. Years of wildfire suppression, combined with ecological and climatic changes in the Great Plains, have rapidly led to recent shifts in wildfire potential (Fig. 1). Recent analysis indicates that in the 30 years

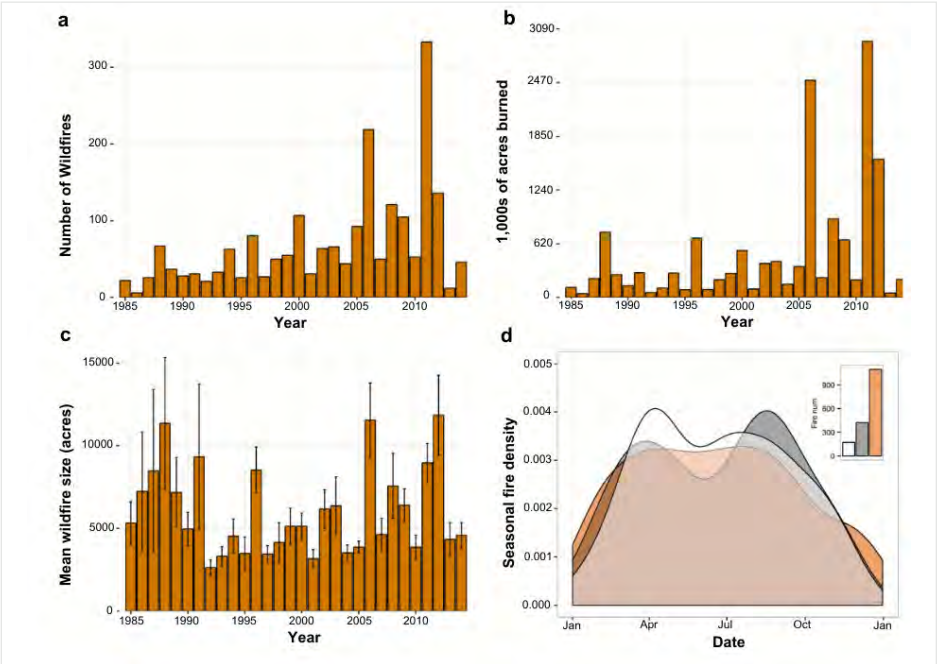

Figure 1. (a) The annual total number of large wildfires in the Great Plains from 1985 to 2014. (b) The total area (thousands of acres) burned in large wildfires in the Great Plains from 1985 to 2014. (c) The average size (acres) of wildfires in the Great Plains from 1985 to 2014. Error bars represent standard error. (d) Seasonal distribution of large wildfires per decade in each Great Plains ecoregion. *Altered from Donovan et al., 2017.*

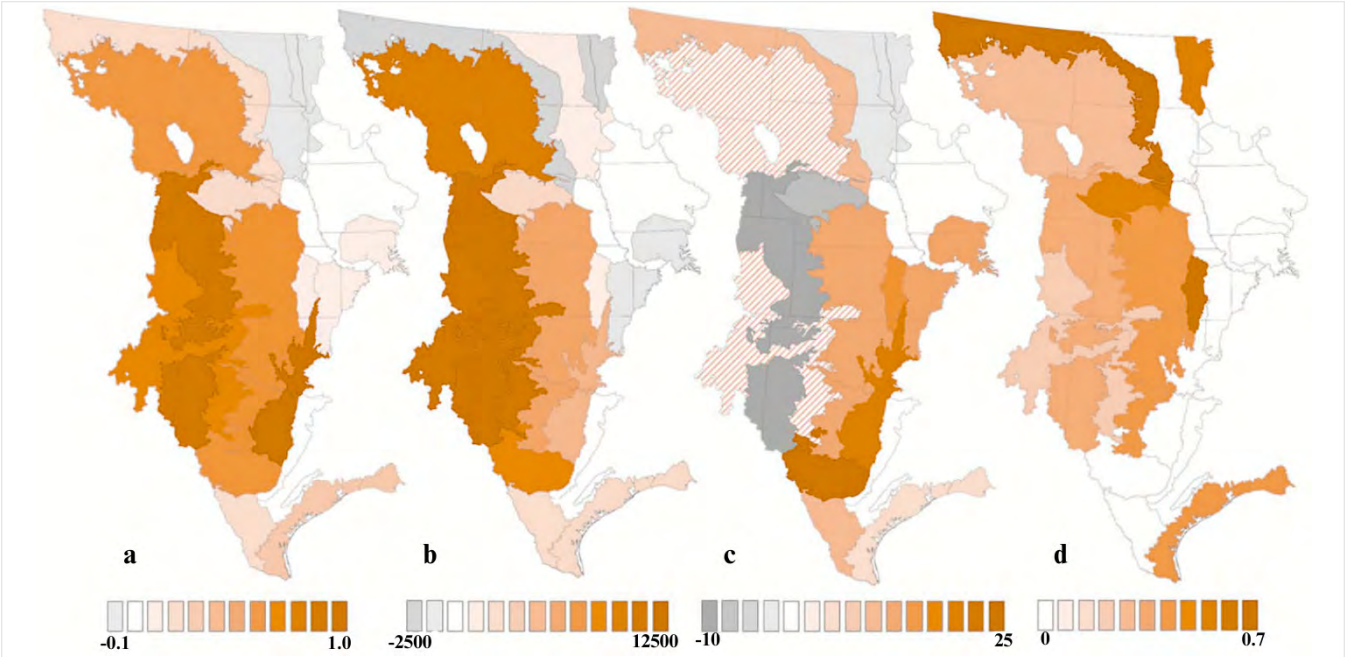

Figure 2. (a) Relative rate of change in the total number of wildfires from 1985 to 2014. (b) Relative rate of change in the total acreage burned by wildfires from 1985 to 2014. (c) Change in the probability of a large wildfire occurring from 1985 to 2014. Areas marked with hatching indicate that large wildfires occur every year. (d) Variation in wildfire seasonality from 1985 to 1994 compared to 2004 to 2014. *Altered from Donovan et al., 2017.*

between 1985 to 2014, the Great Plains experienced a 400 percent increase in the total acreage burned by large wildfires. Additionally, the average number of large wildfire events in the biome increased from an average of about 33 per year from 1985 to 1994 to nearly 117 from 2005 to 2014 (Donovan et al., 2017). The southern and west-central regions of the Great Plains have been especially affected by increasing wildfire numbers and acreage burned (Figs. 2a and 2b), and southeastern portions of the biome have experienced increasing chances of large wildfires occurring in recent decades (Fig. 2c). Although wildfire seasonality has not varied much in the entire biome since 1984 (Fig. 1d), at an ecoregional level, seasonal variations in wildfires have occurred in northeastern and central areas (Fig. 3).

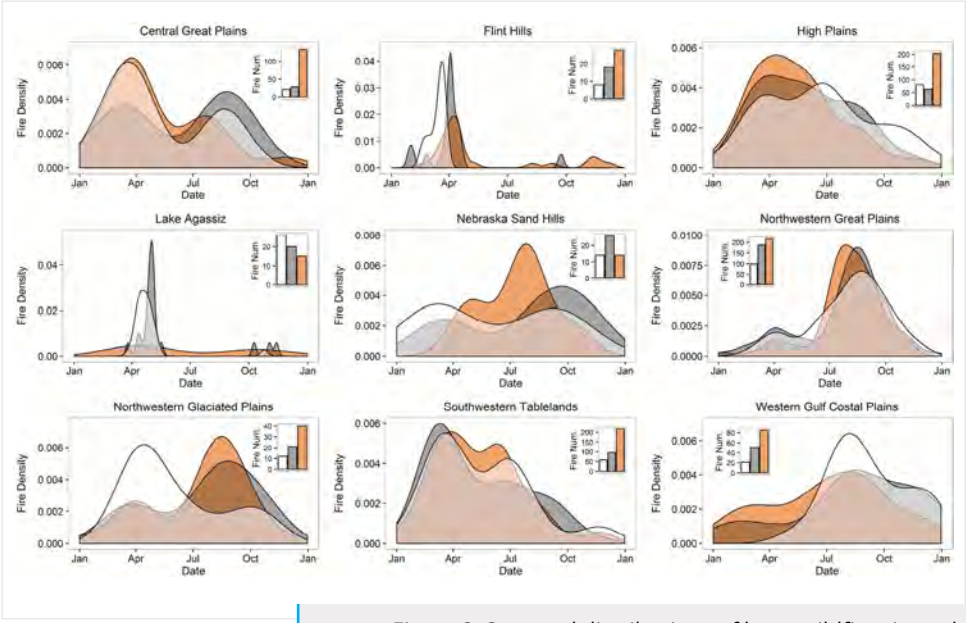

Figure 3. Seasonal distributions of large wildfires in each decade for ecoregions with more than five wildfires per decade. *Altered from Donovan et al., 2017.*

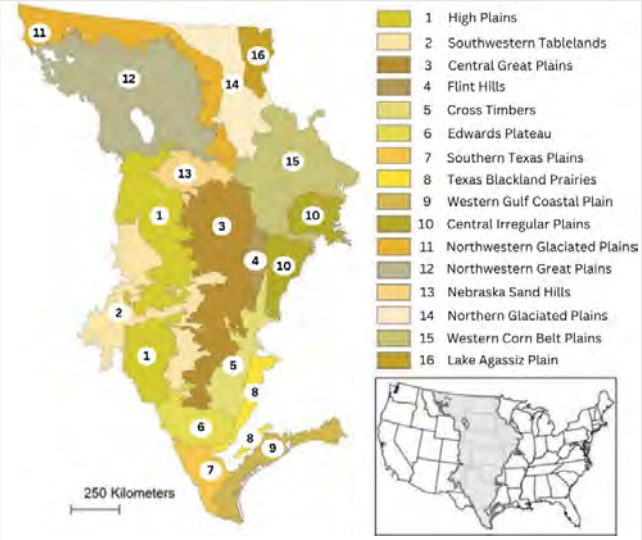

Figure 4. Great Plains L3 ecoregions designated by the United States Environmental Protection Agency. *Altered from Donovan et al., 2017.*

All ecoregions used in this analysis were designated according to the United States Environmental Protection Agency (EPA) (Fig. 4).

Proactively addressing dynamic vegetation shifts in the Great Plains should be a top management priority for mitigating the probability of future large wildfire events. Woody plant encroachment is linked to the recent increase in large wildfire activity in the Great Plains, with large wildfires occurring more frequently in landscapes consisting of more than 20 percent woody cover (Donovan et al., 2020). Further, invasive annual grass species can promote wildfire probability and frequency (Fusco et al., 2019). Emerging strategies are currently focused on the preemptive dedication to defend and grow core rangeland areas consisting primarily of intact, native grasslands.

This preventative approach capitalizes on identifying, maintaining, and expanding key conservation areas least vulnerable to invasive woody and grass species. Healthy rangelands should be the top priority for management efforts, emphasizing early detection and maintenance. Restoration precedence then follows with a spectrum of ecological states from seedling recruitment to degraded conditions. Landowner awareness of the spectrum of transitions on their lands is crucial to reducing wildfire risk. As rangelands are introduced to invasive species, they become increasingly susceptible to further invasions and require significantly more resources to manage. In the many areas of the Great Plains that have already transitioned to closed-canopy states, fire break establishment and targeted grazing to reduce the extent of wildfires may be more feasible than restoration efforts.

ECONOMICS

Wildfire events can economically devastate communities. Billions of dollars are spent annually fighting wildfires in the United States. The annual cost of federal wildfire suppression exceeded 4 billion dollars in 2021—a greater than 210 percent growth since 2000 (Fig. 5) (NIFC, 2021b). The total economic impact of wildfire suppression on communities and infrastructure would far surpass this number. The financial losses from wildfires are especially detrimental to farmers and ranchers in the Great Plains. Texas A&M AgriLife Extension economists estimated $23.1 million in preliminary agricultural losses resulting from March 2022 wildfire events in Texas that burned 433,000 acres and killed over 400 head of livestock (Fannin, 2022). Likewise, an April 2018 wildfire burned 350,000 acres in northwest Oklahoma, killing 1,600 head of cattle (Bechtel, 2018).

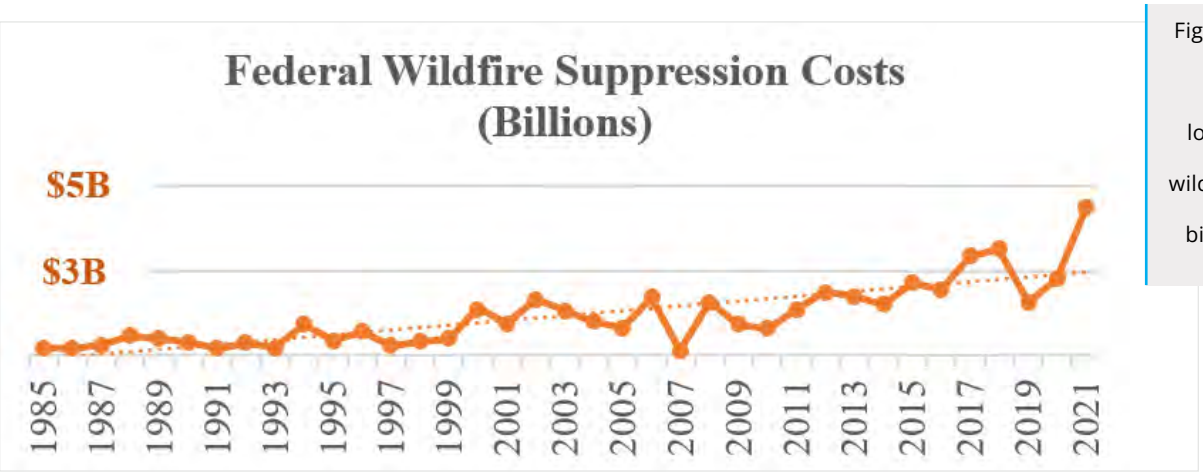

Figure 5. Studies suggest that the range of economic losses annually generated by wildfire damages is $37 to $88 billion (Thomas et al., 2017).

BUILDING FIRE-RESILIENT COMMUNITIES

Rural areas often rely on VFDs, and funding, equipment, and trained personnel are frequently insufficient for adequate wildfire suppression. Although the Great Plains comprises nearly one-third of the land area in the United States, most federal funds and resources are allocated toward wildfire suppression in the forested regions in the western United States (United States Department of Agriculture, 2010). In the face of increased wildfire activity, communities in the Great Plains must be proactive. The employment of additional local resources and labor, such as assets used in prescribed burn associations (PBAs), may effectively be integrated into VFDs and could become crucial when property and lives are threatened in a major wildfire. PBAs are locally organized, landowner-driven cooperatives that take a neighbor-helping-neighbor approach to getting prescribed fire on the ground. PBAs combine experience, manpower, and equipment to implement prescribed fire as a management tool. By working together, PBAs reduce prescribed fire's financial and liability risks while increasing efficiency and community engagement. The fire knowledge PBA members gain in prescribed fire applications often makes them well-qualified to assist with wildfire suppression.

CLIMATE-SMART AGRICULTURE

Climate change impacts virtually all natural resources and complicates wildfire threats in the Great Plains. As climate and weather patterns continue to change, so must producers and land managers. Recognizing and improving adaptive management practices during variable and extreme climatic shifts is critical for landowners susceptible to wildfire threats, especially agricultural enterprises, because of their direct role in the global water, energy, and food supply. Climate-smart agriculture is a concept involving the integrated approach toward managing landscapes to increase natural resources' sustainability, productivity, and resilience in the face of environmental and climate change factors. With climate-smart agricultural practices, fire and grazing work together to maintain open spaces on rangelands and influence plant succession and wildfire resiliency.

The development of fire-adapted landscapes supports climate-smart agricultural principles. Fire-smart management practices, like prescribed fire, enable communities to mitigate fuel loads safely and effectively to enhance the landscape's natural resilience to extreme wildfire events. In addition to hazardous fuel reduction, prescribed fire can increase plant vigor and biodiversity. Targeted livestock grazing can also be used as another climate-smart tool to reduce wildfire risk. Proper grazing management diminishes fuel loads as livestock selectively consume and reduce biomass. Cattle grazing alters plant community structure by shortening plant height and creating disconnected patches of fine, flashy fuels, limiting fire spread. Due to their browsing preferences, goats are among the most suitable livestock species for fuel reduction because they preferentially browse woody plant species that are potentially volatile fuel loads. After a fire, goat preference for palatable regrowth may also assist in the continued suppression of woody plants. Although targeted livestock grazing can complement fire and may be preferable in the WUI because of its aesthetic and social appeal, it is not a substitute for prescribed fire or other fuel treatments, especially in areas with moderate to high tree densities.

In addition to woody fuels, invasive grasses have been implicated in altering fire regimes in many Great Plains systems. In areas where fire frequency or intensity is enhanced by the transitioning of native communities to invasive grass-dominated communities, invasive grass management can reduce fire behavior and enhance suppression capacity during wildfires. Climate-smart agriculture should include a management plan for invasive herbaceous plants that alter fuel properties, as well as invasive woody plants. Failing to manage woody encroachment and annual grass invasions is not climate-smart. Both have altered fire regimes and increased the threat of natural disasters across many Great Plains systems. Wildfire danger is becoming worse in the Great Plains due to the expansion of volatile woody fuels, which is also implicated in the degradation of water quality and quantity, whereas invasions of annual invasive grasses are increasing the frequency of wildfire occurrence and wildfire intensity. Along with prescribed burning, other climate-smart agricultural practices, like mechanical brush management and herbaceous weed spraying, should be part of a long-term, integrated management plan to reduce vulnerability to invasions by woody plants and annual grasses.

CONCLUSION

As human ignition pressure increases, wildfires are becoming more frequent and expanding seasonally and spatially. The Great Plains ecoregion is particularly vulnerable to these extended wildfire risks. Obtaining adequate resources to effectively suppress wildfires will likely be a challenge for the Great Plains states moving forward because they may be less equipped to handle the increase in wildfire activity than historically at-risk regions. A future with wildfire is inevitable, but with long-term, strategic planning, the extent to which wildfires and subsequent damages occur can be lessened. Tactical solutions, including national and regional policy interventions, must be developed in the Great Plains to achieve a more sustainable coexistence with fire.

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NWCG Course Description

RX-310 - Introduction to Fire Effects is designed to provide students with the knowledge and skills necessary to recognize and communicate the relationships between basic fire regimes and fire effects, the effects of fire treatments on fire effects, and to manipulate fire treatments to achieve desired fire effects.

NWCG Course Objectives

- Demonstrate an understanding of fire as an ecological process using the concepts of fire regimes and first-order fire effects at multiple scales.
- Identify realistic management solutions in an adaptive management framework.
- Communicate effectively with fire and resource professionals based on a common understanding of first-order fire effects.
- Demonstrate an understanding of how fire management-related resource issues interact.
- Demonstrate an understanding of how to manipulate treatments to achieve desired first-order fire effects.

Course Structure

This course provides quality content in a way that you can absorb at your own pace and in your own space. Come ready to engage in the discussion boards and the live sessions. Use the task sheet as a chance to measure fire effects and talk to professionals in the field.

To earn a certificate, students will

1. Complete 11 online, self-paced units and associated practice assessments.
2. Pass a final assessment
3. Complete and pass a task sheet assignment for applying fire effects
4. Attend at least 2 of the 4 live sessions (ideally, attend all of them)

The course is roughly 40 hours

Upon successful completion of the class, you will receive

- NWCG certificate for RX 310 Introduction to Fire Effects
- MOU between University of Idaho and Idaho Department of Lands permitting for UI to issue NWCG certificates.

Registration

1. Pay online Cost = $300
2. You will receive detailed registration information one month prior to the course.
3. Make an account on https://wildlandfirelearningportal.net/ and enroll in the course when you receive the detailed registration information.

Dates

November 13		Class material turns on the Wildland Fire Learning Portal
November 20	**1000 to 1130 PT**	Meeting #1 - Official start of class and kick-off meeting
November 27	**1000 to 1130 PT**	Meeting #2 – Meet with a subject matter expert and have a group discussion
December 4	**1000 to 1130 PT**	Meeting #3 – Meet with a subject matter expert and have a group discussion
December 11	**1000 to 1130 PT**	Meeting #4 – Meet with a subject matter expert and have a group discussion
December 18		All material due

There is going to be another offering of RX-310 from **March 11 to April 15, 2024** with the same pattern of Monday meetings. There will be an offering in the winter and spring each year as long as there is enough demand for the class. Contact Heather Heward for more information.

Thank you for your interest in RX-310 – We look forward to learning with you!

Heather Heward

Senior Instructor

University of Idaho

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