

Future dominance by quaking aspen expected following short?interval, compounded disturbance interaction

www.nrfirescience.org/resource/22560

The spatial overlap of multiple ecological disturbances in close succession has the capacity to alter trajectories of ecosystem recovery. Widespread bark beetle outbreaks and wildfire have affected many forests in western North America in the past two decades in areas of important habitat for native ungulates. Bark beetle outbreaks...

Author(s): Robert A. Andrus, Sarah J. Hart, Niko Tutland, Thomas T. Veblen

Year Published: 2021

Type: Document

Book or Chapter or Journal Article

Thinning and Burning Effects on Long-Term Litter Accumulation and Function in Young Ponderosa Pine Forests

www.nrfirescience.org/resource/22418

We measured forest-floor accumulation in ponderosa pine forests of central Oregon and asked whether selected ecological functions of the organic layer were altered by thinning and repeated burning. Experimental treatments included three thinning methods applied in 1989 (stem only, whole tree, no thin—control) in factorial...

Author(s): Matt Busse, Ross Gerrard

Year Published: 2020

Type: Document

Book or Chapter or Journal Article

Increased fire severity triggers positive feedbacks of greater vegetation flammability and favors plant community?type conversions

www.nrfirescience.org/resource/21739

Questions: Increased wildfire activity is resulting in plant community?type conversions worldwide. In some regions, fire?sensitive forests are being replaced by flammable fire?resilient communities, increasing the likelihood of reburning due to positive fire feedbacks. Here we evaluated whether fire severity affects postfire...

Author(s): Jennifer B. Landesmann, Florencia Tiribelli, Juan Paritsis, Thomas T. Veblen, Thomas Kitzberger

Year Published: 2020

Type: Document

Book or Chapter or Journal Article

Influence of topography and fuels on fire refugia probability under varying fire weather conditions in forests of the Pacific Northwest, USA

www.nrfirescience.org/resource/21597

Fire refugia—locations that burn less severely or less frequently than surrounding areas—support late-successional and old-growth forest structure and function. This study investigates the influence of topography and fuels on the probability of forest fire refugia under varying fire weather conditions. We focused on recent large...

Author(s): Garrett W. Meigs, Christopher J. Dunn, Sean A. Parks, Meg A. Krawchuk

Year Published: 2020

Type: Document

Book or Chapter or Journal Article

Rethinking fire?adapted species in an altered fire regime

www.nrfirescience.org/resource/20919

Novel combinations of fire regime and forest type are emerging in areas affected by climate change, fire exclusion, and other stressors. Species interactions following wildfire in these areas are not well understood. In Sierra Nevada mixed-conifer forests, large patches of stand-replacing fire were once rare but are becoming...

Author(s): Carmen L. Tubbesing, Robert A. York, Scott L. Stephens, John J. Battles

Year Published: 2020

Type: Document

Book or Chapter or Journal Article

Structural diversity and development in active fire regime mixed-conifer forests

www.nrfirescience.org/resource/21923

Nearly a century of fire suppression in most forested land of the United States has limited researchers' ability to construct and rigorously test conceptual models of forest structural development in mixed-conifer ecosystems. As a result, land managers must rely on conceptual models of forest development that may overemphasize...

Author(s): Julia Berkey, R. Travis Belote, Colin T. Maher, Andrew J. Larson

Year Published: 2020

Type: Document

Book or Chapter or Journal Article

As wildfires flare up across West, research highlights risk of ecological change

www.nrfirescience.org/resource/21711

One of Jonathan Coop's first vivid memories as a child was watching the flames of the 1977 La Mesa Fire in north-central New Mexico. The human-caused fire burned more than 15,000 acres of pine forests in the Bandelier National Monument and areas surrounding the Los Alamos National Laboratory. Now a forest ecologist and professor at...

Year Published: 2020

Type: Document

Book or Chapter or Journal Article

Post-fire carbon dynamics in subalpine forests of the Rocky Mountains

www.nrfirescience.org/resource/20552

Forests store a large amount of terrestrial carbon, but this storage capacity is vulnerable to wildfire. Combustion, and subsequent tree mortality and soil erosion, can lead to increased carbon release and decreased carbon uptake. Previous work has shown that non-constant fire return intervals over the past 4000 years strongly...

Author(s): Kristina J. Bartowitz, Philip E. Higuera, Bryan N. Shuman, Kendra K. McLauchlan, Tara W. Hudiburg

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Long-term evidence for fire as an ecohydrologic threshold-reversal mechanism on woodland-encroached sagebrush shrublands

www.nrfirescience.org/resource/19828

Encroachment of sagebrush (*Artemisia* spp.) shrublands by pinyon (*Pinus* spp.) and juniper (*Juniperus* spp.) conifers (woodland encroachment) induces a shift from biotic-controlled resource retention to abiotic-driven loss of soil resources. This shift is driven by a coarsening of the vegetation structure with increasing dominance...

Author(s): C. Jason Williams, Frederick B. Pierson, Sayjro K. Nouwakpo, Patrick R. Kormos, Osama Z. Al-Hamdan, Mark A. Weltz

Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Distinguishing disturbance from perturbations in fire-prone ecosystems

www.nrfirescience.org/resource/19441

Fire is a necessary ecosystem process in many biomes and is best viewed as a natural disturbance that is beneficial to ecosystem functioning. However, increasingly, we are seeing human interference in fire regimes that alters the historical range of variability for most fire parameters and results in vegetation shifts. Such...

Author(s): Jon E. Keeley, Juli G. Pausas

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Vegetation succession in an old-growth ponderosa pine forest following structural restoration with fire: implications for retreatment and maintenance - JFSP Final Report

www.nrfirescience.org/resource/19272

Stand changes brought on by fire exclusion have contributed to reduced resilience to wildfire in ponderosa pine forests throughout the western US. Growing recognition of how structural attributes influence resilience has led to interest in restoring more heterogeneous conditions once common in these forests, but key information...

Author(s): Eric E. Knapp, Alan H. Taylor, Michelle Coppoletta, Natalie Pawlikowski

Year Published: 2019

Type: Document

Technical Report or White Paper

Post-fire forest regeneration shows limited climate tracking and potential for drought-induced type conversion

www.nrfirescience.org/resource/19037

Disturbance such as wildfire may create opportunities for plant communities to reorganize in response to climate change. The interaction between climate change and disturbance may be particularly important in forests, where many of the foundational plant species (trees) are long-lived and where poor initial tree establishment can...

Author(s): Derek J. N. Young, Chhaya M. Werner, Kevin R. Welch, Truman P. Young, Hugh Safford, Andrew Latimer

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Does burn severity affect plant community diversity and composition in mixed conifer forests of the United States Intermountain West one decade post fire?

www.nrfirescience.org/resource/19868

Background: Wildfire is an important ecological process in mixed conifer forests of the Intermountain West region of the USA. However, researchers and managers are concerned because climate warming has led to increased fire activity in recent decades. More area burned will result in larger land areas in early successional stages and...

Author(s): Eva K. Strand, K.L. Satterberg, Andrew T. Hudak, John C. Byrne, Azad Henareh Khalyani, Alistair M. S. Smith

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Frequent and intense fires in the final coals of the Paleozoic indicate elevated atmospheric oxygen levels at the onset of the End-Permian Mass Extinction Event

www.nrfirescience.org/resource/19515

During the End-Permian mass extinction event (EPME) there is extensive evidence for depletion of oxygen in the marine realm. Atmospheric models based upon biogeochemical cycling predict a comparable decline leading up to this event and have been postulated as a possible driver for marine depletion. However, these models contrast...

Author(s): Zhiming Yan, Longyi Shao, I. J. Glasspool, Xuetian Wang, Juan Wang, Hao Wang

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Feast not famine: Nitrogen pools recover rapidly in 25-yr-old postfire lodgepole pine

www.nrfirescience.org/resource/19281

The extent of young postfire conifer forests is growing throughout western North America as the frequency and size of high-severity fires increase, making it important to understand ecosystem structure and function in early seral forests. Understanding nitrogen (N) dynamics during postfire stand development is especially important...

Author(s): Monica G. Turner, Timothy G. Whitby, William H. Romme

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Wildfire activity and land use drove 20th-century changes in forest cover in the Colorado front range

www.nrfirescience.org/resource/19049

Recent shifts in global forest area highlight the importance of understanding the causes and consequences of forest change. To examine the influence of several potential drivers of forest cover change, we used supervised classifications of historical (1938-1940) and contemporary (2015) aerial imagery covering a 2932-km² study area...

Author(s): Kyle Rodman, Thomas T. Veblen, Sara Saraceni, Teresa B. Chapman

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Whitebark and Foxtail Pine in Yosemite, Sequoia, and Kings Canyon National Parks: Initial Assessment of Stand Structure and Condition

www.nrfirescience.org/resource/18866

The Inventory & Monitoring Division of the U.S. National Park Service conducts long-term monitoring to provide park managers information on the status and trends in biological and environmental attributes including white pines. White pines are foundational species in many subalpine ecosystems and are currently experiencing...

Author(s): Jonathan C. B. Nesmith, Micah Wright, Erik S. Jules, Shawn T. McKinney

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

Land surveys show regional variability of historical fire regimes and structure of dry forests of

the western USA

www.nrfirescience.org/resource/16421

An understanding of how historical fire and structure in dry forests (ponderosa pine, dry mixed conifer) varied across the western USA remains incomplete. Yet, fire strongly affects ecosystem services, and forest restoration programs are underway. We used General Land Office survey reconstructions from the late-1800s across 11...

Author(s): William L. Baker, Mark A. Williams

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Forest management for novelty, persistence, and restoration influenced by policy and society

www.nrfirescience.org/resource/21056

The ecological literature offers many conflicting recommendations for how managers should respond to ecosystem change and novelty. We propose a framework in which forest managers may achieve desired forest characteristics by combining strategies for (1) restoring historical conditions, (2) maintaining current conditions, and (3)...

Author(s): Adena R. Rissman, Kevin D. Burke, Heather A. Kramer, Volker C. Radeloff, Paul R. Schilke, Owen A. Selles, Rachel H. Toczydlowski, Chloe B. Wardropper, Lori A. Barrow, Jennifer L. Chandler, Katelyn Geleynse, Andrew W. L'roe, Katherine M. Laushman, A. Lisa Schomaker

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Annual climate impacts on tree growth and post-fire regeneration in ponderosa pine and Douglas-fir in the northern Rocky Mountains

www.nrfirescience.org/resource/18153

This thesis includes two studies focused on quantifying the impacts of climate change, climate variability, and wildfires on forest dynamics. In Chapter 1, I compared the accuracy of field-based methods to precise dendrochronological techniques to age ponderosa pine and Douglas-fir seedlings sampled from three study regions across...

Author(s): Lacey Hankin

Year Published: 2018

Type: Document

Dissertation or Thesis

Anticipating fire-mediated impacts of climate change using a demographic framework

www.nrfirescience.org/resource/17910

Climate change indirectly affects forest ecosystems through changes in the frequency, size, and/or severity of wildfires. In addition to its direct effects prior to fire, climate also influences immediate postfire recruitment, with consequences for future vegetation structure and fire activity. A major uncertainty, therefore, is if...

Author(s): Kimberley T. Davis, Philip E. Higuera, Anna Sala

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Fire-induced deforestation in drought-prone Mediterranean forests: drivers and unknowns from leaves to communities

www.nrfirescience.org/resource/17750

Over the past 15 years, 3 million hectares of forests have been converted into shrublands or grasslands

in the Mediterranean countries of the European Union. Fire and drought are the main drivers underlying this deforestation. Here we present a conceptual framework for the process of fire-induced deforestation based on the...

Author(s): Asaf Karavani, Matthias M. Boer, Mara Baudena, Carlos Colinas, Rubén Díaz-Sierra, Jesús Pemán, Martín de Luis, Álvaro Enríquez-de-Salamanca, Víctor Resco de Dios

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Do Perennial Bunchgrasses Competitively Exclude *Bromus tectorum* in Post-Fire Rehabilitation? - JFSP Final Report

www.nrfirescience.org/resource/17720

Globally, wildfire size and frequency has increased in the last thirty years across numerous ecosystems. Models predict that trend to continue with increases in temperature and shifts in seasonal precipitation caused by climate change. In the western United States, these trends are exacerbated by invasive annual grasses that create...

Author(s): Eva K. Strand, Beth A. Newingham, Chris Bowman-Prideaux

Year Published: 2018

Type: Document

Technical Report or White Paper

Biological and geophysical feedbacks with fire in the Earth system

www.nrfirescience.org/resource/17407

Roughly 3% of the Earth's land surface burns annually, representing a critical exchange of energy and matter between the land and atmosphere via combustion. Fires range from slow smouldering peat fires, to low-intensity surface fires, to intense crown fires, depending on vegetation structure, fuel moisture, prevailing climate, and...

Author(s): Sally Archibald, Caroline E. R. Lehmann, Claire M. Belcher, William J. Bond, Ross A. Bradstock, Anne Laure Daniau, K. G. Dexter, Elisabeth J. Forrestel, M. Greve, Tianhua He, Steven I. Higgins, William A. Hoffmann, Byron B. Lamont, D. J. McGlenn, G. R. Moncrieff, Colin P. Osborne, Juli G. Pausas, Owen F. Price, Brad S. Ripley, Brendan M. Rogers, Dylan W. Schwilk, M. F. Simon, Merritt R. Turetsky, Guido R. Van der Werf, Amy E. Zanne

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Fine-scale spatial climate variation and drought mediate the likelihood of reburning

www.nrfirescience.org/resource/16808

In many forested ecosystems, it is increasingly recognized that the probability of burning is substantially reduced within the footprint of previously burned areas. This self-limiting effect of wildland fire is considered a fundamental emergent property of ecosystems and is partly responsible for structuring landscape heterogeneity...

Author(s): Sean A. Parks, Marc-Andre Parisien, Carol Miller, Lisa M. Holsinger, Scott L. Baggett

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Prescribed fire regimes subtly alter ponderosa pine forest plant community structure

www.nrfirescience.org/resource/18802

Prescribed fire is an active management tool used to address wildfire hazard and ecological concerns associated with fire exclusion and suppression over the past century. Despite widespread application in

the United States, there is considerable inconsistency and lack of information regarding the extent to which specific outcomes...

Author(s): Becky K. Kerns, Michelle A. Day

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Assessing High-Cost Wildfires in Relation to the Natural Distribution of Ponderosa Pine in the 11 Western States (2000-2017)

www.nrfirescience.org/resource/18147

This coarse-resolution assessment suggests that much of the West's wildfire problem traces to the deteriorated condition of its dry ponderosa pine sites.

Author(s): Jerry T. Williams, Matthew Panunto

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Modelling the management of forest ecosystems: Importance of wood decomposition

www.nrfirescience.org/resource/17790

Scarce and uncertain data on woody debris decomposition rates are available for calibrating forest ecosystem models, owing to the difficulty of their empirical estimations. Using field data from three experimental sites which are part of the North American Long-Term Soil Productivity (LTSP) Study in south-eastern British Columbia (...)

Author(s): Juan A. Blanco, Deborah S. Page-Dumroese, Martin F. Jurgensen, Michael P. Curran, Joanne M. Tirocke, Joanna Walitalo

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

From the stand?scale to the landscape?scale: predicting the spatial patterns of forest regeneration after disturbance

www.nrfirescience.org/resource/17733

Shifting disturbance regimes can have cascading effects on many ecosystems processes. This is particularly true when the scale of the disturbance no longer matches the regeneration strategy of the dominant vegetation. In the yellow pine and mixed conifer forests of California, over a century of fire exclusion and the warming climate...

Author(s): Kristen L. Shive, Haiganoush K. Preisler, Kevin R. Welch, Hugh Safford, Ramona J. Butz, Kevin L. O'Hara, Scott L. Stephens

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

Dormant-Season Fire Inhibits Sixweeks Fescue and Enhances Forage Production in Shortgrass Steppe

www.nrfirescience.org/resource/17672

Semiarid rangelands experience substantial interannual variability in precipitation, which can determine the relative abundance of species in any given year and influence the way that fire affects plant community composition and productivity. Long-term studies are needed to examine potential interactions between fluctuating...

Author(s): N. A. Dufek, David J. Augustine, Dana M. Blumenthal, Julie A. Kray, Justin D. Derner

Year Published: 2018

Type: Document
Book or Chapter or Journal Article

Climate adaption and post-fire restoration of a foundational perennial in cold desert: Insights from intraspecific variation in response to weather

www.nrfirescience.org/resource/16523

1) The loss of foundational but fire-intolerant perennials such as sagebrush due to increases in fire size and frequency in semi-arid regions has motivated efforts to restore them, often with mixed or even no success. Seeds of sagebrush *Artemisia tridentata* and related species must be moved considerable distances from seed source to...

Author(s): Martha M. Brabec, Matthew J. Germino, Bryce A. Richardson

Year Published: 2017

Type: Document
Book or Chapter or Journal Article

Indicators of burn severity at extended temporal scales: A decade of ecosystem response in mixed conifer forests of western Montana

www.nrfirescience.org/resource/15315

We collected field and remotely sensed data spanning 10 years after three 2003 Montana wildfires to monitor ecological change across multiple temporal and spatial scales. Multiple endmember spectral mixture analysis was used to create post-fire maps of: char, soil, green (GV) and non-photosynthetic (NPV) vegetation from high-...

Author(s): Sarah A. Lewis, Andrew T. Hudak, Peter R. Robichaud, Penelope Morgan, K.L. Satterberg, Eva K. Strand, Alistair M. S. Smith, J Zamudio, Leigh B. Lentile

Year Published: 2017

Type: Document
Book or Chapter or Journal Article

Fire Severity and Regeneration Strategy Influence Shrub Patch Size and Structure Following Disturbance

www.nrfirescience.org/resource/17204

Climate change is increasing the frequency and extent of high-severity disturbance, with potential to alter vegetation community composition and structure in environments sensitive to tipping points between alternative states. Shrub species display a range of characteristics that promote resistance and resilience to disturbance, and...

Author(s): Jesse Minor, Donald A. Falk, Greg A. Barron-Gafford

Year Published: 2017

Type: Document
Book or Chapter or Journal Article

Forest succession along a productivity gradient following fire exclusion

www.nrfirescience.org/resource/16658

Numerous studies have documented significant change in conifer forests of the American West following the cessation of recurrent fire at the end of the 19th century. But the successional dynamics that characterize different forested settings in the absence of fire remain poorly understood. This study reconstructs structural and...

Author(s): James D. Johnston

Year Published: 2017

Type: Document
Book or Chapter or Journal Article

Tamm Review: Management of mixed-severity fire regime forests in Oregon, Washington, and Northern California

www.nrfirescience.org/resource/13976

Increasingly, objectives for forests with moderate- or mixed-severity fire regimes are to restore successional diversity and resilient to current and future stressors. Maintaining native species and characteristic processes requires this successional diversity, but methods to achieve it are poorly...

Author(s): Paul F. Hessburg, Thomas A. Spies, David A. Perry, Carl N. Skinner, Alan H. Taylor, Peter M. Brown, Scott L. Stephens, Andrew J. Larson, Derek J. Churchill, Nicholas A. Povak, Peter H. Singleton, Brenda McComb, William J. Zielinski, Brandon M. Collins, R. Brion Salter, Jerry F. Franklin, Gregg M. Riegel

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

Achievable future conditions as a framework for guiding forest conservation and management

www.nrfirescience.org/resource/13788

We contend that traditional approaches to forest conservation and management will be inadequate given the predicted scale of social-economic and biophysical changes in the 21st century. New approaches, focused on anticipating and guiding ecological responses to change, are urgently needed to ensure the full value of forest ecosystem...

Author(s): Stephen W. Golladay, Katherine L. Martin, James M. Vose, David N. Wear, Alan P. Covich, Richard J. Hobbs, Kier D. Klepzig, Gene E. Likens, Robert J. Naiman, Allan W. Shearer

Year Published: 2016

Type: Document

Book or Chapter or Journal Article, Synthesis

Temperate forest health in an era of emerging megadisturbance

www.nrfirescience.org/resource/13722

Although disturbances such as fire and native insects can contribute to natural dynamics of forest health, exceptional droughts, directly and in combination with other disturbance factors, are pushing some temperate forests beyond thresholds of sustainability. Interactions from increasing temperatures, drought, native insects and...

Author(s): Constance I. Millar, Nathan L. Stephenson

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

Corrigendum to - Challenges of establishing big sagebrush (*Artemisia tridentata*) in rangeland restoration: Effects of herbicide, mowing, whole-community seeding, and sagebrush seed sources

www.nrfirescience.org/resource/18934

The loss of big sagebrush (*Artemisia tridentata* Nutt.) on sites disturbed by fire has motivated restoration seeding and planting efforts. However, the resulting sagebrush establishment is often lower than desired, especially in dry areas. Sagebrush establishment may be increased by addressing factors such as seed source and...

Author(s): Martha M. Brabec, Matthew J. Germino, Douglas J. Shinneman, David S. Pilliod, Susan K. McIlroy, Robert S. Arkle

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

Vegetation response after post-fire mulching and native grass seeding

www.nrfirescience.org/resource/15317

Post-fire mulch and seeding treatments, often applied on steep, severely burned slopes immediately after large wildfires, are meant to reduce the potential of erosion and establishment of invasive plants, especially non-native plants, that could threaten values at risk. However, the effects of these treatments on native vegetation...

Author(s): Penelope Morgan, Marshall Moy, Christine A. Droske, Leigh B. Lentile, Sarah A. Lewis, Peter R. Robichaud, Andrew T. Hudak

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

Using resistance and resilience concepts to reduce impacts of invasive annual grasses and altered fire regimes on the sagebrush ecosystem and greater sage-grouse: a strategic multi-scale approach

www.nrfirescience.org/resource/12989

This Report provides a strategic approach for conservation of sagebrush ecosystems and Greater Sage- Grouse (sage-grouse) that focuses specifically on habitat threats caused by invasive annual grasses and altered fire regimes. It uses information on factors that influence (1) sagebrush ecosystem resilience to disturbance and...

Author(s): Jeanne C. Chambers, David A. Pyke, Jeremy D. Maestas, Michael L. Pellant, Chad S. Boyd, Steven B. Campbell, Shawn Espinosa, Douglas W. Havlina, Kenneth E. Mayer, Amarina Wuenschel

Year Published: 2014

Type: Document

Management or Planning Document

Climate change and United States forests

www.nrfirescience.org/resource/12393

This volume offers a scientific assessment of the effects of climatic variability and change on forest resources in the United States. Derived from a report that provides technical input to the 2013 U.S. Global Change Research Program National Climate Assessment, the book serves as a framework for managing U.S. forest resources in...

Author(s): David L. Peterson, James M. Vose, Toral Patel-Weynand

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

The merits of prescribed fire outweigh potential carbon emission effects

www.nrfirescience.org/resource/12426

While North American ecosystems vary widely in their ecology and natural historical fire regimes, they are unified in benefitting from prescribed fire when judiciously applied with the goal of maintaining and restoring native ecosystem composition, structure, and function. On a modern landscape in which historical fire regimes...

Author(s): Association for Fire Ecology, International Association of Wildland Fire, Tall Timbers Research Station, The Nature Conservancy

Year Published: 2013

Type: Document

Technical Report or White Paper

Effects of climatic variability and change on forest ecosystems: a comprehensive science synthesis for the U.S. forest sector

www.nrfirescience.org/resource/12567

This report is a scientific assessment of the current condition and likely future condition of forest resources in the United States relative to climatic variability and change. It serves as the U.S. Forest Service forest sector technical report for the National Climate Assessment and includes descriptions of key regional issues and...

Year Published: 2012

Type: Document

Synthesis, Technical Report or White Paper

What are Plants Doing and When? Using Plant Phenology to Promote Sustainable Natural Resources Management

www.nrfirescience.org/resource/18955

Climate change models for the northern Rocky Mountains predict changes in temperature and water availability that in turn will alter vegetation. Changes include timing of plant life-history events, or phenology, such as green-up, flowering and senescence, and shifts in species composition. Moreover, climate changes may favor...

Author(s): Geneva W. Chong, Leslie A. Allen

Year Published: 2012

Type: Document

Research Brief or Fact Sheet

The ecology of mixed severity fire regimes in Washington, Oregon, and Northern California

www.nrfirescience.org/resource/13580

Forests characterized by mixed-severity fires occupy a broad moisture gradient between lower elevation forests typified by low-severity fires and higher elevation forests in which high-severity, stand replacing fires are the norm. Mixed-severity forest types are poorly documented and little understood but likely occupy significant...

Author(s): David A. Perry, Paul F. Hessburg, Carl N. Skinner, Thomas A. Spies, Scott L. Stephens, Alan H. Taylor, Jerry F. Franklin, Brenda McComb, Gregg M. Riegel

Year Published: 2011

Type: Document

Book or Chapter or Journal Article

Fire ecology in Rocky Mountain landscapes

www.nrfirescience.org/resource/15378

Fire Ecology in Rocky Mountain Landscapes brings a century of scientific research to bear on improving the relationship between people and fire. In recent years, some scientists have argued that current patterns of fire are significantly different from historical patterns, and that landscapes should be managed with an eye toward...

Author(s): William L. Baker

Year Published: 2009

Type: Document

Book or Chapter or Journal Article

Landscape heterogeneity following large fires: insights from Yellowstone National Park, USA

www.nrfirescience.org/resource/8198

We characterised the remarkable heterogeneity following the large, severe fires of 1988 in Yellowstone National Park (YNP), in the northern Rocky Mountains, Wyoming, USA, by focussing on spatial variation in post-fire structure, composition and ecosystem function at broad, meso, and fine scales.

Ecological heterogeneity at multiple...

Author(s): Tania L. Schoennagel, Erica A. H. Smithwick, Monica G. Turner

Year Published: 2008

Type: Document

Book or Chapter or Journal Article

Carbon cycling at the landscape scale: the effect of changes in climate and fire frequency on age distribution, stand structure, and net ecosystem production - Final Report to the Joint Fire Science Program

www.nrfirescience.org/resource/11151

We are working in Yellowstone National Park to determine how initial post-fire structural heterogeneity controls carbon dynamics over the full cycle of individual forest stands, and how climate-mediated changes in the fire regime could potentially alter the behavior of the entire Yellowstone ecosystem as a net sink or net source in...

Author(s): Michael G. Ryan, Daniel M. Kashian, Erica A. H. Smithwick, William H. Romme, Monica G. Turner, Daniel B. Tinker

Year Published: 2005

Type: Document

Technical Report or White Paper

Sagebrush steppe and pinyon-juniper ecosystems - effects of changing fire regimes, increased fuel loads, and invasive species - Final Report to the Joint Fire Science Program

www.nrfirescience.org/resource/11152

Pinyon-juniper woodlands and Wyoming big sagebrush ecosystems have undergone major changes in vegetation structure and composition since settlement by European Americans. These changes are resulting in dramatic shifts in fire frequency, size and severity. Effective management of these systems has been hindered by lack of information...

Author(s): Jeanne C. Chambers, E. Durant McArthur, Stephen B. Monsen, Susan E. Meyer, Nancy L. Shaw, Robin J. Tausch, Robert R. Blank, Stephen C. Bunting, Richard R. Miller, Michael L. Pellant, Bruce A. Roundy, Scott C. Walker

Year Published: 2005

Type: Document

Technical Report or White Paper

Mapping the cheatgrass-caused departure from historical natural fire regimes in the Great Basin, USA

www.nrfirescience.org/resource/11490

Cheatgrass (*Bromus tectorum*) is an exotic grass that has increased fire hazard on millions of square kilometers of semi-arid rangelands in the western United States. Cheatgrass aggressively out competes native vegetation after fire and significantly enhances fire size and frequency. To evaluate the effect of cheatgrass on historical...

Author(s): James P. Menakis, Dianne Osborne, Melanie Miller

Year Published: 2003

Type: Document

Conference Proceedings

Comparing historic and modern forests on the Bitterroot Front

www.nrfirescience.org/resource/10967

A study was initiated in 1995 to measure landscape changes in forest structures between 1900 and 1995. A systematic sampling system was used to collect data on three forested faces on the Bitterroot Front. Over 1,200 tree cores were taken on 216 plots between the elevation range of 4,500 to 7,500

feet. Historic forests were...

Author(s): Michael G. Hartwell, Paul B. Alaback, Stephen F. Arno

Year Published: 2000

Type: Document

Conference Proceedings

Miller Creek: ecosystem recovery in a western Montana forest 30 years after prescribed burning and wildfire

www.nrfirescience.org/resource/18682

Thirty years ago the effects of timber harvest, prescribed burning, and wildfire were investigated in a western larch/Douglas-fir forest on the Flathead National Forest in western Montana. The original study was designed to investigate the effects of prescribed burning on soil physical and biological properties, and on subsequent...

Author(s): Jonalea R. Tonn, Martin F. Jurgensen, G. D. Mroz, Deborah S. Page-Dumroese

Year Published: 2000

Type: Document

Conference Proceedings

Yellowstone fires: a decade later

www.nrfirescience.org/resource/18476

Atop a ridge in Yellowstone National Park in 1984, a freak summer wind—perhaps a tornado or a downburst from a thunderstorm—leveled an ancient lodge-pole pine forest, piling up a head-high maze of logs. In the notorious summer of 1988, when wildfires burned one-third of the park, a fire front swept across the same ridge,...

Author(s): Y. Baskin

Year Published: 1999

Type: Document

Book or Chapter or Journal Article

Western national forests: a cohesive strategy is needed to address catastrophic wildfire threats

www.nrfirescience.org/resource/11224

National forests of the dry, interior portion of the western United States that are managed by the Department of Agriculture's Forest Service have undergone significant changes over the last century and a half, becoming much denser, with fewer large trees and many more small, tightly spaced trees and underbrush. These changes have...

Author(s): United States General Accounting Office

Year Published: 1999

Type: Document

Technical Report or White Paper

Riparian vegetation dynamics in relation to channel shifting and fire

www.nrfirescience.org/resource/18466

The riparian vegetation along the Bighorn River in Wyoming forms a complex mosaic comprised of cottonwood (*Populus deltoides*) groves, meadows, marshes, and several kinds of shrubland. Changes in the riparian mosaic during the last 50 years were reconstructed using tree ring analysis and aerial photos taken over the river in 1938,...

Author(s): Y. Akashi, Dennis H. Knight

Year Published: 1988

Type: Document

Conference Proceedings

Effects of disturbance frequency on stream benthic community structure in relation to canopy cover and season

www.nrfirescience.org/resource/18645

Field experiments were conducted to examine the effects of disturbance frequency on invertebrates and periphyton colonizing bricks in a third order Rocky Mountain (USA) stream. After an initial colonization period (30 days), sets of bricks were turned over at intervals of 0, 3, 9, 27, or 54 days. Invertebrate species richness and...

Author(s): Christopher T. Robinson, G. Wayne Minshall

Year Published: 1986

Type: Document

Book or Chapter or Journal Article