

## **Climate will increasingly determine post-fire tree regeneration success in low-elevation forests, Northern Rockies, USA**

[www.nrfirescience.org/resource/18803](http://www.nrfirescience.org/resource/18803)

Climate change is expected to cause widespread shifts in the distribution and abundance of plant species through direct impacts on mortality, regeneration, and survival. At landscape scales, climate impacts will be strongly mediated by disturbances, such as wildfire, which catalyze shifts in species distributions through widespread...

Author(s): Kerry Kemp, Philip E. Higuera, Penelope Morgan, John T. Abatzoglou

Year Published: 2019

Type: Document

Book or Chapter or Journal Article

## **Post-fire water-quality response in the western United States**

[www.nrfirescience.org/resource/17502](http://www.nrfirescience.org/resource/17502)

Wildfires are increasing in size and severity in forested landscapes across the Western United States. Not only do fires alter land surfaces, but they also affect the surface water quality in downstream systems. Previous studies of individual fires have observed an increase in various forms of nutrients, ions, sediments and metals...

Author(s): Ashley J. Rust, Terri S. Hogue, Samuel Saxe, John McCray

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

## **Pre-fire drought and competition mediate post-fire conifer mortality in western U.S. National Parks**

[www.nrfirescience.org/resource/18275](http://www.nrfirescience.org/resource/18275)

Tree mortality is an important outcome of many forest fires. Extensive tree injuries from fire may lead directly to mortality, but environmental and biological stressors may also contribute to tree death. However, there is little evidence showing how the combined effects of two common stressors, drought and competition, influence...

Author(s): Phillip J. van Mantgem, Donald A. Falk, Emma C. Williams, Adrian J. Das, Nathan L. Stephenson

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

## **Recovery of small-scale infiltration and erosion after wildfires**

[www.nrfirescience.org/resource/18831](http://www.nrfirescience.org/resource/18831)

Wildfires naturally occur worldwide, however the potential disruption to ecosystem services from subsequent post-fire flooding and erosion often necessitates a response from land managers. The impact of high severity wildfire on infiltration and interrill erosion responses was evaluated for five years after the 2003 Hot Creek Fire...

Author(s): Sierra S. Larson-Nash, Peter R. Robichaud, Frederick B. Pierson, Corey A. Moffet, C. Jason Williams, Kenneth E. Spaeth, Robert E. Brown, Sarah A. Lewis

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

## **In ecoregions across western USA streamflow increases during post-wildfire recovery**

[www.nrfirescience.org/resource/17411](http://www.nrfirescience.org/resource/17411)

Continued growth of the human population on Earth will increase pressure on already stressed

terrestrial water resources required for drinking water, agriculture, and industry. This stress demands improved understanding of critical controls on water resource availability, particularly in water-limited regions. Mechanistic...

Author(s): Michael L. Wine, Daniel Cadol, Oleg Makhnin

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **The phosphorus-rich signature of fire in the soil-plant system: a global meta-analysis**

[www.nrfirescience.org/resource/17361](http://www.nrfirescience.org/resource/17361)

The biogeochemical and stoichiometric signature of vegetation fire may influence post-fire ecosystem characteristics and the evolution of plant 'fire traits'. Phosphorus (P), a potentially limiting nutrient in many fire-prone environments, might be particularly important in this context; however, the effects of fire on P cycling...

Author(s): Orpheus M. Butler, James J. Elser, Tom Lewis, Brendan Mackey, Chengrong Chen

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Three Fires**

[www.nrfirescience.org/resource/18154](http://www.nrfirescience.org/resource/18154)

This article covers the history of fire activities since 1910 and how recovery can depend on one of three methods in the forest - resistance, restoration, and resilience.

Author(s): Stephen Pyne

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Combination of Landsat and Sentinel-2 MSI data for initial assessing of burn severity**

[www.nrfirescience.org/resource/17251](http://www.nrfirescience.org/resource/17251)

Nowadays Earth observation satellites, in particular Landsat, provide a valuable help to forest managers in post-fire operations; being the base of post-fire damage maps that enable to analyze fire impacts and to develop vegetation recovery plans. Sentinel-2A MultiSpectral Instrument (MSI) records data in similar spectral...

Author(s): Carmen Quintano, Alfonso Fernández-Manso, O. Fernández-Manso

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Fuel mass and stand structure 13 years after logging of a severely burned ponderosa pine forest in northeastern Oregon, U.S.A**

[www.nrfirescience.org/resource/18135](http://www.nrfirescience.org/resource/18135)

Stand structure and fuel mass were measured in 2011, 13 years after logging of a seasonally dry, ponderosa pine-dominated forest that had burned severely in the 1996 Summit Wildfire, Malheur National Forest, northeastern Oregon, U.S.A. Data are compared to those taken one year after post-fire logging (1999), and analyzed in the...

Author(s): James D. McIver, Roger D. Ottmar

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Salvage logging effects on regulating and supporting ecosystem services - a systematic map**

[www.nrfirescience.org/resource/18101](http://www.nrfirescience.org/resource/18101)

Wildfires, insect outbreaks, and windstorms are increasingly common forest disturbances. Post-disturbance management often involves salvage logging, i.e., the felling and removal of the affected trees; however, this practice may represent an additional disturbance with effects on ecosystem processes and services. We developed a...

Author(s): Alexandro B. Leverkus, José María Rey Benayas, Jorge Castro, Dominique Boucher, Stephen Brewer, Brandon M. Collins, Daniel C. Donato, Shawn Fraver, Barbara E. Kishchuk, Eun-Jae Lee, David B. Lindenmayer, Emanuele Lingua, Ellen Macdonald, Raffaella Marzano, Charles C. Rhoades, Alejandro A. Royo, Simon Thorn, Joseph W. Wagenbrenner, Kaysandra Waldron, Thomas Wohlgemuth, Lena Gustafsson

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Mixed-severity fire fosters heterogeneous spatial patterns of conifer regeneration in a dry conifer forest**

[www.nrfirescience.org/resource/17138](http://www.nrfirescience.org/resource/17138)

We examined spatial patterns of post-fire regenerating conifers in a Colorado, USA, dry conifer forest 11–12 years following the reintroduction of mixed-severity fire. We mapped and measured all post-fire regenerating conifers, as well as all other post-fire regenerating trees and all residual (i.e., surviving) trees, in three 4-...

Author(s): Sparkle L. Malone, Paula J. Fornwalt, Michael A. Battaglia, Marin Chambers, Jose M. Iniguez, Carolyn Hull Sieg

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Post-wildfire seeding to restore native vegetation and limit exotic annuals: an evaluation in juniper-dominated sagebrush steppe**

[www.nrfirescience.org/resource/17926](http://www.nrfirescience.org/resource/17926)

Reestablishment of perennial vegetation is often needed after wildfires to limit exotic species and restore ecosystem services. However, there is growing body of evidence that questions if seeding after wildfires increases perennial vegetation and reduces exotic plants. The concern that seeding may not meet restoration goals is even...

Author(s): Kirk W. Davies, Jonathan D. Bates, Chad S. Boyd

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Advancing Fire Science with Large Forest Plots and a Long-Term Multidisciplinary Approach**

[www.nrfirescience.org/resource/17105](http://www.nrfirescience.org/resource/17105)

Large, spatially explicit forest plots have the potential to address currently understudied aspects of fire ecology and management, including the validation of physics-based fire behavior models and next-generation fire effects models. Pre-fire forest structures, fire-mediated mortality, and post-fire forest development can be...

Author(s): James A. Lutz, Andrew J. Larson, Mark E. Swanson

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Recent post-wildfire salvage logging benefits local and landscape floral and bee communities**

[www.nrfirescience.org/resource/17899](http://www.nrfirescience.org/resource/17899)

Understanding the implications of shifts in disturbance regimes for plants and pollinators is essential for successful land management. Wildfires are essential natural disturbances that are important drivers of forest biodiversity, and there is often pressure to respond to wildfire with management like post-wildfire logging (i.e.,...

Author(s): Laura J. Heil, Laura A. Burkle

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Salvage logging effects on regulating and supporting ecosystem services — a systematic map**

[www.nrfirescience.org/resource/18364](http://www.nrfirescience.org/resource/18364)

Wildfires, insect outbreaks, and windstorms are increasingly common forest disturbances. Post-disturbance management often involves salvage logging, i.e., the felling and removal of the affected trees; however, this practice may represent an additional disturbance with effects on ecosystem processes and services. We developed a...

Author(s): Alexandro B. Leverkus, José María Rey Benayas, Jorge Castro, Dominique Boucher, Stephen Brewer, Brandon M. Collins, Daniel C. Donato, Shawn Fraver, Barbara E. Kishchuk, Eun-Jae Lee, David B. Lindenmayer, Emanuele Lingua, Ellen Macdonald, Raffaella Marzano, Charles C. Rhoades, Alejandro A. Royo, Simon Thorn, Joseph W. Wagenbrenner, Kaysandra Waldron, Thomas Wohlgemuth, Lena Gustafsson

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Fire planning for multispecies conservation: integrating growth stage and fire severity**

[www.nrfirescience.org/resource/17417](http://www.nrfirescience.org/resource/17417)

Setting suitable conservation targets is an important part of ecological fire planning. Growth-stage optimisation (GSO) determines the relative proportions of post-fire growth stages (categorical representations of time since fire) that maximise species diversity, and is a useful method for determining such targets. Optimisation...

Author(s): Matthew Swan, Holly Sitters, Jane G. Cawson, Thomas J. Duff, Yohannes Wibisono, Alan York

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Overlapping bark beetle outbreaks, salvage logging and wildfire restructure a lodgepole pine ecosystem**

[www.nrfirescience.org/resource/17365](http://www.nrfirescience.org/resource/17365)

The 2010 Church's Park Fire burned beetle-killed lodgepole pine stands in Colorado, including recently salvage-logged areas, creating a fortuitous opportunity to compare the effects of salvage logging, wildfire and the combination of logging followed by wildfire. Here, we examine tree regeneration, surface fuels, understory plants...

Author(s): Charles C. Rhoades, Kristen Pelz, Paula J. Fornwalt, Brett Wolk, Anthony S. Cheng

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

## **Vegetation succession in post-fire seeding treatments - Final Report to the Joint Fire Science Program**

[www.nrfirescience.org/resource/18258](http://www.nrfirescience.org/resource/18258)

Seed mixes used for post-fire seeding in the Great Basin are often selected based on short-term rehabilitation objectives, such as ability to rapidly establish and suppress invasive exotic annuals that drive altered fire-regimes via fine build-up (e.g. cheatgrass, *Bromus tectorum* L.), but longer-term considerations are also...

Author(s): Francis F. Kilkenny, Jeffrey E. Ott, Daniel D. Summers, Tyler W. Thompson

Year Published: 2018

Type: Document

Technical Report or White Paper

## **Successional changes in trophic interactions support a mechanistic model of post-fire population dynamics**

[www.nrfirescience.org/resource/17313](http://www.nrfirescience.org/resource/17313)

Models based on functional traits have limited power in predicting how animal populations respond to disturbance because they do not capture the range of demographic and biological factors that drive population dynamics, including variation in trophic interactions. I tested the hypothesis that successional changes in vegetation...

Author(s): Annabel L. Smith

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

## **Estimating post-fire debris-flow hazards prior to wildfire using a statistical analysis of historical distributions of fire severity from remote sensing data**

[www.nrfirescience.org/resource/18131](http://www.nrfirescience.org/resource/18131)

Following wildfire, mountainous areas of the western United States are susceptible to debris flow during intense rainfall. Convective storms that can generate debris flows in recently burned areas may occur during or immediately after the wildfire, leaving insufficient time for development and implementation of risk mitigation...

Author(s): Dennis M. Staley, Anne Tillery, Jason W. Kean, Luke A. McGuire, Hannah E. Pauling, Francis K. Rengers, Joel B. Smith

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

## **Interactions between large high-severity fires and salvage logging on a short return interval reduce the regrowth of fire-prone serotinous forests**

[www.nrfirescience.org/resource/17175](http://www.nrfirescience.org/resource/17175)

New fire disturbance regimes under accelerating global environmental change can have unprecedented consequences for ecosystem resilience, lessening ecosystem natural regeneration. In the Mediterranean Basin, fire-dependent obligate seeder forests that are prone to increasingly frequent stand-replacing fires and then salvaged logged...

Author(s): Angela Taboada, Víctor Fernández-García, Elena Marcos, Leonor Calvo

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

## **Rainfall thresholds for post-fire runoff and sediment delivery from plot to watershed scales**

[www.nrfirescience.org/resource/18063](http://www.nrfirescience.org/resource/18063)

Wildfire increases the likelihood of runoff, erosion, and downstream sedimentation in many of the watersheds that supply water for Colorado's Front Range communities. The objectives of this study were to: (1) identify rainfall intensity thresholds for a post-fire runoff or sediment delivery response at plots (?0.06 ha),...

Author(s): Codie Wilson, Stephanie Kampf, Joseph W. Wagenbrenner, Lee H. MacDonald

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

### **Post-fire surface fuel dynamics in California forests across three burn severity classes**

[www.nrfirescience.org/resource/17129](http://www.nrfirescience.org/resource/17129)

Forest wildfires consume fuel and are followed by post-fire fuel accumulation. This study examines post-fire surface fuel dynamics over 9 years across a wide range of conditions characteristic of California fires in dry conifer and hardwood forests. We estimated post-fire surface fuel loadings (Mg ha<sup>-1</sup>) from 191 repeatedly...

Author(s): Bianca N. I. Eskelson, Vicente J. Monleon

Year Published: 2018

Type: Document

Book or Chapter or Journal Article

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

[www.nrfirescience.org/resource/17910](http://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

### **The long-term legacy of the 2002 Hayman fire on water quality and treatability - Final Report to the Joint Fire Science Program**

[www.nrfirescience.org/resource/16997](http://www.nrfirescience.org/resource/16997)

Forested watersheds supply drinking water for millions of people in the United States. The increased frequency and severity of wildfires during recent decades have elevated public concern regarding source water protection. Large, high-severity wildfires alter the physical and biological conditions that determine how watersheds...

Author(s): Charles C. Rhoades, Alex Chow

Year Published: 2017

Type: Document

Technical Report or White Paper

### **Evaluating the effectiveness of agricultural mulches for reducing post-fire wind erosion**

[www.nrfirescience.org/resource/16578](http://www.nrfirescience.org/resource/16578)

Post-wildfire soil erosion can be caused by water or aeolian processes, yet most erosion research has focused on predominantly water-driven erosion. This study investigates the effectiveness of three agricultural mulches, with and without a tackifier, on aeolian sediment transport processes. A wind tunnel was used to simulate post-...

Author(s): Peter R. Robichaud, Jyoti Jennewein, B.S. Sharratt, Sarah A. Lewis, Robert E. Brown

Year Published: 2017

Type: Document  
Book or Chapter or Journal Article

### **Characterising resource use and potential inefficiencies during large-fire suppression in the western US**

[www.nrfirescience.org/resource/15492](http://www.nrfirescience.org/resource/15492)

Currently, limited research on large-fire suppression effectiveness suggests fire managers may over-allocate resources relative to values to be protected. Coupled with observations that weather may be more important than resource abundance to achieve control objectives, resource use may be driven more by risk aversion than...

Author(s): Hari Katuwal, Christopher J. Dunn, David E. Calkin

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

### **Do Post-Fire Mulching Treatments Affect Regeneration in Serotinous Lodgepole Pine?**

[www.nrfirescience.org/resource/16336](http://www.nrfirescience.org/resource/16336)

Broadcast mulching is a widely implemented post-fire erosion control method, although it remains uncertain how it affects post-fire regeneration in serotinous conifers. We used field data and unbiased conditional inference trees with random effects to test if mulching affects lodgepole pine (*Pinus contorta* Dougl. ex Loud. var....

Author(s): Micah Wright, Monique E. Rocca

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

### **Prescribed fire and wildfire in clearcut mixed-conifer forests on Miller Creek and Newman Ridge, Montana**

[www.nrfirescience.org/resource/18265](http://www.nrfirescience.org/resource/18265)

This review summarizes pioneering fire effects research conducted from 1966-1998 on two mixed-conifer sites in western Montana. Researchers studied the effect of fuel loads and fire severity on duff reduction; fire effects to roots and rhizomes of understory species; postfire natural and artificial regeneration of conifer species;...

Year Published: 2017

Type: Document

Synthesis

### **Impacts of salvage logging on biodiversity – A meta-analysis**

[www.nrfirescience.org/resource/15274](http://www.nrfirescience.org/resource/15274)

Logging to 'salvage' economic returns from forests impacted by natural disturbances has become increasingly prevalent globally. Despite potential negative effects on biodiversity, salvage logging is often conducted, even in areas otherwise excluded from logging and reserved for nature conservation, inter alia because...

Author(s): Simon Thorn, Claus Bassler, Roland Brandl, Philip J. Burton, John L. Campbell, Rebecca Cahall, Jorge Castro, Chang-Yong Choi, Tyler Cobb, Daniel C. Donato, Ewa Durska, Joseph B. Fontaine, Sylvie Gauthier, Christian Hebert, Torsten Hothorn, Richard L. Hutto, Eun-Jae Lee, Alexandro B. Leverkus, David B. Lindenmayer, Martin K. Obrist, Josep Rost, Sebastian Seibold, Rupert Seidl, Dominik Thom, Kaysandra Waldron, Beat Wermelinger, Maria-Barbara Winter, Michal Zmihorski, Jorg Muller

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

### **Estimating aboveground tree biomass for beetle-killed lodgepole pine in the Rocky Mountains of northern Colorado**

[www.nrfirescience.org/resource/16593](http://www.nrfirescience.org/resource/16593)

The recent mountain pine beetle (*Dendroctonus ponderosae* Hopkins) epidemic has affected millions of hectares of conifer forests in the Rocky Mountains. Land managers are interested in using biomass from beetle-killed trees for bioenergy and biobased products, but they lack adequate information to accurately estimate biomass in...

Author(s): Woodam Chung, Paul Evangelista, Nathaniel Anderson, Anthony Vorster, Hee Han, Krishna Poudel, Robert Sturtevant

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

### **The influence of incident management teams on the deployment of wildfire suppression resources**

[www.nrfirescience.org/resource/15494](http://www.nrfirescience.org/resource/15494)

Despite large commitments of personnel and equipment to wildfire suppression, relatively little is known about the factors that affect how many resources are ordered and assigned to wildfire incidents and the variation in resources across incident management teams (IMTs). Using detailed data on suppression resource assignments for...

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

### **Predicting post-fire tree mortality for 12 western US conifers using the First-Order Fire Effects Model (FOFEM)**

[www.nrfirescience.org/resource/16493](http://www.nrfirescience.org/resource/16493)

Accurate prediction of fire-caused tree mortality is critical for making sound land management decisions such as developing burning prescriptions and post-fire management guidelines. To improve efforts to predict post-fire tree mortality, we developed 3-year post-fire mortality models for 12 Western conifer species—white fir (...)

Author(s): Sharon M. Hood, Duncan C. Lutes

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

### **Literature review: effects of salvage logging on riparian zones in coniferous forests of eastern Washington and adjacent regions**

[www.nrfirescience.org/resource/17487](http://www.nrfirescience.org/resource/17487)

This Synthesis Report represents the contract final report for Washington State Department of Natural Resources [DNR] contract number PSC 93-095317, titled Literature Review and Synthesis Related to Salvage of Fire Damaged Timber. For this literature review project, contemporary research information was requested by the Scientific...

Author(s): Stephen W. Barrett, Matthew J. Reilly

Year Published: 2017

Type: Document

Technical Report or White Paper

### **Understory recovery after low- and high-intensity fires in ponderosa pine forests of northern Idaho**

[www.nrfirescience.org/resource/18266](http://www.nrfirescience.org/resource/18266)

Researchers compared early postfire vegetation recovery on sites burned with different intensities in seral ponderosa pine communities of the Douglas-fir/mallow ninebark habitat type. The plots were burned over 30 days under varying conditions of temperature, fuel moisture, and relative humidity, resulting in fires of varying...

Year Published: 2017

Type: Document

Synthesis

### **The effect of salvage logging on surface fuel loads and fuel moisture in beetle-infested lodgepole pine forests**

[www.nrfirescience.org/resource/15246](http://www.nrfirescience.org/resource/15246)

Widespread tree mortality from mountain pine beetle (MPB; *Dendroctonus ponderosae* Hopkins) outbreaks has prompted forest management activities to reduce crown fire hazard in the Rocky Mountain region. However, little is known about how beetle-related salvage logging and biomass utilization options affect woody surface fuel loads and...

Author(s): Paul R. Hood, Kellen N. Nelson, Charles C. Rhoades, Daniel B. Tinker

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

### **Mixed-severity fire and salvage logging in dry forests of Oregon's western Cascades**

[www.nrfirescience.org/resource/15054](http://www.nrfirescience.org/resource/15054)

Interest in PNW forests is shifting from a focus on old-growth forests alone to include the ecological value and processes of early-seral communities. However, focusing on the alpha and omega states of a linear successional model does not account for the suite of conditions derived from mixed-severity fire common in many forests....

Author(s): Christopher J. Dunn, John D. Bailey

Year Published: 2017

Type: Document

Technical Report or White Paper

### **Seed Production Estimation for Mountain Big Sagebrush (*Artemisia tridentata* ssp. *vaseyana*)**

[www.nrfirescience.org/resource/16095](http://www.nrfirescience.org/resource/16095)

Seed production is an essential component of post disturbance recovery for mountain big sagebrush (*Artemisia tridentata* Nutt. ssp. *vaseyana* [Rydb] Beetle; MBS). We tested a method for rapid estimation of MBS seed production using measurements of inflorescence morphology. We measured total stem length, stem length from first branchlet...

Author(s): Melissa L. Landeen, Loreen Allphen, Stanley G. Kitchen, Stephen L. Petersen

Year Published: 2017

Type: Document

Book or Chapter or Journal Article

### **Rapid response tools and datasets for post-fire modeling: linking earth observations and process-based hydrological models to support post-fire remediation**

[www.nrfirescience.org/resource/15538](http://www.nrfirescience.org/resource/15538)

Post-wildfire flooding and erosion can threaten lives, property and natural resources. Increased peak flows and sediment delivery due to the loss of surface vegetation cover and fire-induced changes in soil properties are of great concern to public safety. Burn severity maps derived from remote sensing data

reflect fire-induced...

Author(s): Mary Ellen Miller, Michael Billmire, William J. Elliot, Kevin A. Endsley, Peter R. Robichaud

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

### **Effects of post-fire logging on fuel dynamics in a mixed-conifer forest, Oregon, USA: a 10-year assessment**

[www.nrfirescience.org/resource/14429](http://www.nrfirescience.org/resource/14429)

Removal of fire-killed trees (i.e. post-fire or salvage logging) is often conducted in part to reduce woody fuel loads and mitigate potential reburn effects. Studies of post-salvage fuel dynamics have primarily used chronosequence or modelling approaches, with associated limitations; longitudinal studies tracking fuels over time...

Author(s): John L. Campbell, Daniel C. Donato, Joseph B. Fontaine

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

### **Response of native versus exotic plant guilds to cattle and elk herbivory in forested rangeland**

[www.nrfirescience.org/resource/13843](http://www.nrfirescience.org/resource/13843)

Are exotic plant species favoured by non-native ungulate herbivores and disadvantaged by native herbivores in forested rangelands? Do the impacts of ungulates on exotic vs native plants depend on forest management activities such as prescribed fire and stand thinning? Location: Northeastern Oregon, USA. Methods: We recorded changes...

Author(s): Burak K. Pekin, Michael J. Wisdom, Catherine G. Parks, Bryan A. Endress, Bridgett J. Naylor

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

### **Rapid-response tools and datasets for post-fire remediation: linking remote sensing and process-based hydrological models**

[www.nrfirescience.org/resource/14641](http://www.nrfirescience.org/resource/14641)

Post-wildfire flooding and erosion can threaten lives, property and natural resources. Increased peak flows and sediment delivery due to the loss of surface vegetation cover and fire-induced changes in soil properties are of great concern to public safety. Burn severity maps derived from remote sensing data reflect fire-induced...

Author(s): Mary Ellen Miller, William J. Elliot, Peter R. Robichaud, Kevin A. Endsley

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

### **Twenty-four years after the Yellowstone Fires: are postfire lodgepole pine stands converging in structure and function?**

[www.nrfirescience.org/resource/14475](http://www.nrfirescience.org/resource/14475)

Disturbance and succession have long been of interest in ecology, but how landscape patterns of ecosystem structure and function evolve following large disturbances is poorly understood. After nearly 25 years, lodgepole pine (*Pinus contorta* var. *latifolia*) forests that regenerated after the 1988 Yellowstone Fires (Wyoming, USA)...

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

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

**High and dry: post-fire tree seedling establishment in subalpine forests decreases with post-fire drought and large stand-replacing burn patches**

[www.nrfirescience.org/resource/18412](http://www.nrfirescience.org/resource/18412)

Aim Climate warming and increased wildfire activity are hypothesized to catalyse biogeographical shifts, reducing the resilience of fire-prone forests worldwide. Two key mechanisms underpinning hypotheses are: (1) reduced seed availability in large stand-replacing burn patches, and (2) reduced seedling establishment/survival...

Author(s): Brian J. Harvey, Daniel C. Donato, Monica G. Turner

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

**Post-fire logging produces minimal persistent impacts on understory vegetation in northeastern Oregon, USA**

[www.nrfirescience.org/resource/14354](http://www.nrfirescience.org/resource/14354)

Post-fire forest management commonly requires accepting some negative ecological impacts from management activities in order to achieve management objectives. Managers need to know, however, whether ecological impacts from post-fire management activities are transient or cause long-term ecosystem degradation. We studied the long...

Author(s): David W. Peterson, Erich K. Dodson

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

**Where do animals come from during post-fire population recovery? Implications for ecological and genetic patterns in post-fire landscapes**

[www.nrfirescience.org/resource/17232](http://www.nrfirescience.org/resource/17232)

Identifying where animals come from during population recovery can help to understand the impacts of disturbance events and regimes on species distributions and genetic diversity. Alternative recovery processes for animal populations affected by fire include external recolonization, nucleated recovery from refuges, or in situ...

Author(s): Sam C. Banks, Lachlan McBurney, David Blair, Ian D. Davies, David B. Lindenmayer

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

**Evaluating the ecological impacts of salvage logging: can natural and anthropogenic disturbances promote coexistence?**

[www.nrfirescience.org/resource/17458](http://www.nrfirescience.org/resource/17458)

Salvage logging following windthrow is common throughout forests worldwide even though the practice is often considered inimical to forest recovery. Because salvaging removes trees, crushes seedlings, and compacts soils, many warn this practice may delay succession, suppress diversity, and alter composition. Here, over 8 yr...

Author(s): Alejandro A. Royo, Chris J. Peterson, John Stuart Stanovick, Walter P. Carson

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

### **The integrated rangeland fire management strategy actionable science plan**

[www.nrfirescience.org/resource/14697](http://www.nrfirescience.org/resource/14697)

The Integrated Rangeland Fire Management Strategy (hereafter Strategy, DOI 2015) outlined the need for coordinated, science-based adaptive management to achieve long-term protection, conservation, and restoration of the sagebrush (*Artemisia* spp.) ecosystem. A key component of this management approach is the...

Author(s): Integrated Rangeland Fire Management Strategy Actionable Science Plan Team

Year Published: 2016

Type: Document

Management or Planning Document

### **Soil heating during the complete combustion of mega-logs and broadcast burning in central Oregon USA pumice soils**

[www.nrfirescience.org/resource/14604](http://www.nrfirescience.org/resource/14604)

The environmental effect of extreme soil heating, such as occurs with the complete combustion of large downed wood during wildfires, is a post-fire management concern to forest managers. To address this knowledge gap, we stacked logs to create 'mega-log' burning conditions and compared the temperature, duration and penetration...

Author(s): Jane E. Smith, Ariel D. Cowan, Stephen A. Fitzgerald

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

### **Post-fire logging reduces surface woody fuels up to four decades following wildfire**

[www.nrfirescience.org/resource/16307](http://www.nrfirescience.org/resource/16307)

Severe wildfires create pulses of dead trees that influence future fuel loads, fire behavior, and fire effects as they decay and deposit surface woody fuels. Harvesting fire-killed trees may reduce future surface woody fuels and related fire hazards, but the magnitude and timing of post-fire logging effects on woody fuels have not...

Author(s): David W. Peterson, Erich K. Dodson, Richy J. Harrod

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

### **Effects of post-fire salvage logging and a skid trail treatment on ground cover, soils, and sediment production in the interior western United States**

[www.nrfirescience.org/resource/12829](http://www.nrfirescience.org/resource/12829)

Post-fire salvage logging adds another set of environmental effects to recently burned areas, and previous studies have reported varying impacts on vegetation, soil disturbance, and sediment production with limited data on the underlying processes. Our objectives were to determine how: (1) ground-based post-fire logging affects...

Author(s): Joseph W. Wagenbrenner, Lee H. MacDonald, Robert N. Coats, Peter R. Robichaud, Robert E. Brown

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

### **The ecological importance of mixed-severity fire: nature's phoenix**

[www.nrfirescience.org/resource/16303](http://www.nrfirescience.org/resource/16303)

If you are a curious reader with a knack for the analytical, you may be asking yourself, Why start a book about fire ecology with a mythological figure? And if you are a tried-and-true scientist, like we are, you

may also be asking, Isn't it a bit risky to mix myth with science, fact with fiction, observation with mystique, nature...

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

### **Rapid response tools and datasets for post-fire modeling: linking earth observations and process-based hydrological models to support post-fire remediation**

[www.nrfirescience.org/resource/13466](http://www.nrfirescience.org/resource/13466)

Preparation is key to utilizing Earth Observations and process-based models to support post-wildfire mitigation. Post-fire flooding and erosion can pose a serious threat to life, property and municipal water supplies. Increased runoff and sediment delivery due to the loss of surface cover and fire-induced changes in soil...

Author(s): Mary Ellen Miller, Michael Billmire, William J. Elliot, Kevin A. Endsley, Peter R. Robichaud

Year Published: 2015

Type: Document

Conference Proceedings

### **Ecological Effects of Post-fire Salvage Logging in the Pacific Northwest**

[www.nrfirescience.org/resource/15729](http://www.nrfirescience.org/resource/15729)

Post-fire salvage logging is typically proposed as a means of recovering some of the lost economic value in dead or damaged trees. The ecological consequences of salvage, however, are often considered negative from the perspective of soils, hydrology, and wildlife habitat resources, although species responses do vary. Early...

Author(s): Matthew J. Reilly, Thomas A. Spies, Paul F. Hessburg

Year Published: 2015

Type: Document

Research Brief or Fact Sheet

### **Hillslope erosion two and three years after wildfire, skyline salvage logging, and site preparation in southern Oregon, USA**

[www.nrfirescience.org/resource/16306](http://www.nrfirescience.org/resource/16306)

Harvest of dead timber following wildfire is contentious because of a perception that the benefits are outweighed by environmental costs. One primary concern is the potential for increased erosion susceptibility associated with timber extraction (i.e. salvage logging) and site preparation. We measured erosion at the Timbered Rock...

Author(s): Robert A. Slesak, Stephen H. Schoenholtz, Daniel Evans

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

### **Assessing soil and vegetation recovery following the 2005 School Fire, Umatilla National Forest - 10-year update**

[www.nrfirescience.org/resource/12811](http://www.nrfirescience.org/resource/12811)

Following the 2005 School Fire which burned ~ 50,000 acres across forest and grasslands, managers were particularly concerned with treating severely burned areas to mitigate weed spread and to limit soil erosion. Various mulching treatments (wheat straw, wood strand, and hydromulch) were implemented to control...

Author(s): Peter R. Robichaud, Penelope Morgan, Leigh B. Lentile, Sarah A. Lewis, Andrew T. Hudak, Deborah S. Page-Dumroese

Year Published: 2015

Type: Document  
Research Brief or Fact Sheet

### **Vegetation response to burn severity, native grass seeding, and salvage logging**

[www.nrfirescience.org/resource/13422](http://www.nrfirescience.org/resource/13422)

As the size and extent of wildfires has increased in recent decades, so has the cost and extent of post-fire management, including seeding and salvage logging. However, we know little about how burn severity, salvage logging, and post-fire seeding interact to influence vegetation recovery long-term. We sampled understory plant...

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

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

### **Prescribed fire effects on resource selection by cattle in mesic sagebrush steppe. part 1: spring grazing**

[www.nrfirescience.org/resource/12148](http://www.nrfirescience.org/resource/12148)

Prescribed fire is commonly applied world-wide as a tool for enhancing habitats and altering resource-selection patterns of grazing animals. A scientific basis for this practice has been established in some ecosystems but its efficacy has not been rigorously evaluated on mesic sagebrush steppe. Beginning in 2003, resource-selection...

Author(s): Patrick E. Clark, Jaechoul Lee, Kyungduk Ko, Ryan M. Nielson, Douglas E. Johnson, David C. Ganskopp, Joe Chigbrow, Frederick B. Pierson, Stuart P. Hardegree

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

### **Vegetation response after post-fire mulching and native grass seeding**

[www.nrfirescience.org/resource/15317](http://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

### **Ecological Consequences Of Mountain Pine Beetle Outbreaks For Wildlife In Western North American Forests**

[www.nrfirescience.org/resource/17469](http://www.nrfirescience.org/resource/17469)

Mountain pine beetle (*Dendroctonus ponderosae*) (MPB) outbreaks are increasingly prevalent in western North America, causing considerable ecological change in pine (*Pinus* spp.) forests with important implications for wildlife. We reviewed studies examining wildlife responses to MPB outbreaks and postoutbreak salvage logging to inform...

Author(s): Victoria A. Saab, Quresh Latif, Mary M. Rowland, Tracey N. Johnson, Anna D. Chalfoun, Steven W. Buskirk, Joslin E. Heyward, Matthew A. Dresser

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

### **The Bitterroot Valley fires of 2000 - Revisiting experiences and fire effects 13 years later**

[www.nrfirescience.org/resource/12673](http://www.nrfirescience.org/resource/12673)

During the Fires of 2000 field trip, held as part of the May 2014 Large Wildland Fires Conference, researchers, managers, residents, and stakeholders shared their experiences around the unprecedented number and size of fires that burned in the Bitterroot Valley in the summer of 2000.

Topics discussed included fire history, fire...

Author(s): Corey L. Gucker

Year Published: 2014

Type: Document

Research Brief or Fact Sheet

### **New insights into debris-flow hazards from an extraordinary event in the Colorado Front Range**

[www.nrfirescience.org/resource/18709](http://www.nrfirescience.org/resource/18709)

Rainfall on 9–13 September 2013 triggered at least 1,138 debris flows in a 3430 km<sup>2</sup> area of the Colorado Front Range. The historical record reveals that the occurrence of these flows over such a large area in the interior of North America is highly unusual. Rainfall that triggered the debris flows began after ~75 mm of antecedent...

Author(s): Jeffrey A. Coe, Jason W. Kean, Jonathan W. Godt, Rex L. Baum, Eric S. Jones, David Gochis, Gregory S. Anderson

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

### **A synthesis of post-fire Burned Area Reports from 1972 to 2009 for western US Forest Service lands: trends in wildfire characteristics and post-fire stabilisation treatments and expenditures**

[www.nrfirescience.org/resource/13010](http://www.nrfirescience.org/resource/13010)

Over 1200 post-fire assessment and treatment implementation reports from four decades (1970s-2000s) of western US forest fires have been examined to identify decadal patterns in fire characteristics and the justifications and expenditures for the post-fire treatments. The main trends found were: (1) the area burned by wildfire...

Author(s): Peter R. Robichaud, Hakjun Rhee, Sarah A. Lewis

Year Published: 2014

Type: Document

Book or Chapter or Journal Article, Synthesis

### **Semiarid rangeland is resilient to summer fire and postfire grazing utilization**

[www.nrfirescience.org/resource/12050](http://www.nrfirescience.org/resource/12050)

Most wildfires occur during summer in the northern hemisphere, the area burned annually is increasing, and fire effects during this season are least understood. Understanding plant response to grazing following summer fire is required to reduce ecological and financial risks associated with wildfire. Forty 0.75-ha plots were...

Author(s): Lance T. Vermeire, Jessica L. Crowder, David B. Wester

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

### **Does seeding after wildfires in rangelands reduce erosion or invasive species?**

[www.nrfirescience.org/resource/12132](http://www.nrfirescience.org/resource/12132)

Mitigation of ecological damage caused by rangeland wildfires has historically been an issue restricted to the western United States. It has focused on conservation of ecosystem function through reducing soil erosion and spread of invasive plants. Effectiveness of mitigation treatments has been debated recently. We reviewed recent...

Author(s): David A. Pyke

Year Published: 2013

Type: Document

Book or Chapter or Journal Article, Synthesis

### **Using native annual plants to restore post-fire habitats in western North America**

[www.nrfirescience.org/resource/12139](http://www.nrfirescience.org/resource/12139)

Increasing fire frequencies and uncharacteristic severe fires have created a need for improved restoration methods across rangelands in western North America. Traditional restoration seed mixtures of native perennial mid- to late-seral plant species may not be suitable for intensely burned sites that have been returned to an early-...

Author(s): Christopher M. Herron, Jayne L. Jonas, Paul J. Meiman, Mark W. Paschke

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

### **Effectiveness of post-fire Burned Area Emergency Response (BAER) road treatments: results from three wildfires**

[www.nrfirescience.org/resource/12142](http://www.nrfirescience.org/resource/12142)

Wildland fires often cause extreme changes in the landscape that drastically influence surface runoff and soil erosion, which can impact forest resources, aquatic habitats, water supplies, public safety, and forest access infrastructure such as forest roads. Little information is available on the effectiveness of various post-fire...

Author(s): Randy B. Foltz, Peter R. Robichaud

Year Published: 2013

Type: Document

Technical Report or White Paper

### **Perspectives on disconnects between scientific information and management decisions on post-fire recovery in western US**

[www.nrfirescience.org/resource/12035](http://www.nrfirescience.org/resource/12035)

Environmental regulations frequently mandate the use of 'best available' science, but ensuring that it is used in decisions around the use and protection of natural resources is often challenging. In the Western US, this relationship between science and management is at the forefront of post-fire land management decisions. Recent...

Author(s): Xiaoli Chen, Nathan Emery, Elizabeth S. Garcia, Erin J. Hanan, Heather E. Hodges, Tyrone Martin, Matthew A. Meyers, Lindsey E. Peavey, Hui Peng, Jaime Sainz Santamaria, Kellie A. Uyeda, Sarah E. Anderson, Christina Tague

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

### **Post-fire mulching for runoff and erosion mitigation; Part I: effectiveness at reducing hillslope erosion rates**

[www.nrfirescience.org/resource/11994](http://www.nrfirescience.org/resource/11994)

Mulch treatments often are used to mitigate post-fire increases in runoff and erosion rates but the comparative effectiveness of various mulches is not well established. The ability of mulch treatments to

reduce sediment yields from natural rainfall and resulting overland flow was measured using hillslope plots on areas burned at...

Author(s): Peter R. Robichaud, Sarah A. Lewis, Joseph W. Wagenbrenner, Louise E. Ashmun, Robert E. Brown

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

### **Probability and volume of potential postwildfire debris flows in the 2012 High Park Burn Area near Fort Collins, Colorado**

[www.nrfirescience.org/resource/18725](http://www.nrfirescience.org/resource/18725)

This report presents a preliminary emergency assessment of the debris-flow hazards from drainage basins burned by the 2012 High Park fire near Fort Collins in Larimer County, Colorado. Empirical models derived from statistical evaluation of data collected from recently burned basins throughout the intermountain western United States...

Author(s): Kristine L. Verdin, Jean A. Dupree, John G. Elliott

Year Published: 2012

Type: Document

Technical Report or White Paper

### **Utility of remotely sensed imagery for assessing the impact of salvage logging after forest fires**

[www.nrfirescience.org/resource/8352](http://www.nrfirescience.org/resource/8352)

Remotely sensed imagery provides a useful tool for land managers to assess the extent and severity of post-wildfire salvage logging disturbance. This investigation uses high resolution QuickBird and National Agricultural Imagery Program (NAIP) imagery to map soil exposure after ground-based salvage operations. Three wildfires with...

Author(s): Sarah A. Lewis, Peter R. Robichaud, Andrew T. Hudak, Brian Austin, Robert J. Liebermann

Year Published: 2012

Type: Document

Book or Chapter or Journal Article

### **Enhanced sediment delivery in a changing climate in semi-arid mountain basins: implications for water resource management and aquatic habitat in the northern Rocky Mountains**

[www.nrfirescience.org/resource/18718](http://www.nrfirescience.org/resource/18718)

The delivery and transport of sediment through mountain rivers affects aquatic habitat and water resource infrastructure. While climate change is widely expected to produce significant changes in hydrology and stream temperature, the effects of climate change on sediment yield have received less attention. In the northern Rocky...

Author(s): Jaime R. Goode, Charles H. Luce, John M. Buffington

Year Published: 2012

Type: Document

Book or Chapter or Journal Article

### **Assessing the success of postfire reseeding in semiarid rangelands using terra MODIS**

[www.nrfirescience.org/resource/11489](http://www.nrfirescience.org/resource/11489)

Successful post-fire reseeding efforts may aid rangeland ecosystem recovery by rapidly establishing a desired plant community and thereby reducing the likelihood of infestation by invasive plants. While the success of post-fire remediation is critical, few efforts have been made to leverage existing geospatial technologies to...

Author(s): Fang Chen, Keith T. Weber, John L. Schnase

Year Published: 2012

Type: Document  
Book or Chapter or Journal Article

### **Salvage Logging Versus the Use of Burnt Wood as a Nurse Object to Promote Post-Fire Tree Seedling Establishment**

[www.nrfirescience.org/resource/17440](http://www.nrfirescience.org/resource/17440)

Intense debate surrounds the effects of post-fire salvage logging (SL) versus nonintervention policies on forest regeneration, but scant support is available from experimental studies. We analyze the effect of three post-fire management treatments on the recruitment of a serotinous pine (*Pinus pinaster*) at a Mediterranean mountain....

Author(s): Jorge Castro, Craig D. Allen, M. Molina-Morales, Sara Maranon-Jimenez, A. Sanchez-Miranda, R. Zamora

Year Published: 2011

Type: Document  
Book or Chapter or Journal Article

### **Recent trends in post-wildfire seeding in western US forests: costs and seed mixes**

[www.nrfirescience.org/resource/8284](http://www.nrfirescience.org/resource/8284)

Broadcast seeding is one of the most commonly used post-fire rehabilitation treatments to establish ground cover for erosion control and mitigation of non-native plant species invasions. Little quantitative information is available on overall trends of post-fire seeding expenditures and seed mixes used over time in forested...

Author(s): Donna Peppin, Peter Z. Fule, Carolyn Hull Sieg, Jan L. Beyers, Molly E. Hunter, Peter R. Robichaud

Year Published: 2011

Type: Document  
Book or Chapter or Journal Article, Synthesis

### **Effects of post-fire salvage logging on cavity-nesting birds and small mammals in southeastern Montana**

[www.nrfirescience.org/resource/12052](http://www.nrfirescience.org/resource/12052)

We investigated how post-fire salvage logging of Ponderosa Pine (*Pinus ponderosa*) affected populations of cavity-nesting birds and small mammals in southeastern Montana in 2004 and 2005. We examined two salvage and two control plots with three point-count stations and one small mammal trap site randomly distributed across each plot...

Author(s): William J. Kronland, Marco Restani

Year Published: 2011

Type: Document  
Book or Chapter or Journal Article

### **The forgotten stage of forest succession: early successional ecosystems on forest sites**

[www.nrfirescience.org/resource/17459](http://www.nrfirescience.org/resource/17459)

Early-successional forest ecosystems that develop after stand-replacing or partial disturbances are diverse in species, processes, and structure. Post-disturbance ecosystems are also often rich in biological legacies, including surviving organisms and organically derived structures, such as woody debris. These legacies and...

Author(s): Mark E. Swanson, Jerry F. Franklin, Robert L. Beschta, Charles M. Crisafulli, Dominick A. DellaSala, Richard L. Hutto, David B. Lindenmayer, Frederick J. Swanson

Year Published: 2011

Type: Document  
Book or Chapter or Journal Article

### **Greater sage-grouse: Ecology and conservation of a landscape species and its habitats**

[www.nrfirescience.org/resource/15406](http://www.nrfirescience.org/resource/15406)

The greater sage-grouse is at the center of a complex challenge to conserve sagebrush ecosystems. The species has declined across much of its range, including 11 western states and 2 Canadian provinces, mostly due to loss of critical sagebrush habitat. Agriculture, roads, development of energy resources, wildfire, and invasive...

Author(s): Steve Knick, John W. Connelly

Year Published: 2011

Type: Document

Book or Chapter or Journal Article

### **Woodpecker habitat after the fire**

[www.nrfirescience.org/resource/13508](http://www.nrfirescience.org/resource/13508)

Public land managers are asked to minimize fuel levels after fires, including using techniques such as salvage logging. They are also responsible for maintaining suitable wildlife habitat, especially for species of concern to state and federal agencies. An area where these responsibilities could conflict is in the use of salvage...

Author(s): Victoria A. Saab

Year Published: 2011

Type: Document

Research Brief or Fact Sheet

### **Does seeding after severe forest fires in western USA mitigate negative impacts on soils and plant communities?**

[www.nrfirescience.org/resource/11501](http://www.nrfirescience.org/resource/11501)

Broadcast seeding is one of the most widely used post-wildfire emergency response treatments intended to reduce soil erosion, increase vegetative ground cover, and minimize establishment and spread of non-native plant species. However, seeding treatments can also have negative effects such as competition with recovering native...

Author(s): Donna Peppin, Peter Z. Fule, Jan L. Beyers, Carolyn Hull Sieg, Molly E. Hunter

Year Published: 2011

Type: Document

Synthesis, Technical Report or White Paper

### **Getting results: measuring post-wildfire erosion control treatment effectiveness**

[www.nrfirescience.org/resource/11031](http://www.nrfirescience.org/resource/11031)

In the past decade, wildfires around the world have continued to increase in size, severity, and cost. The number of people living in wildland areas has also increased, putting public safety, homes, roads, public infrastructure, water quality, and valued natural resources at risk from wildfire and secondary fire effects. Major...

Author(s): Peter R. Robichaud, Robert E. Brown, Peter M. Wohlgemuth, Joseph W. Wagenbrenner

Year Published: 2011

Type: Document

Conference Proceedings

### **Using native annual plant species to suppress weedy invasive species in post-fire habitats - Final Report to the Joint Fire Science Program**

[www.nrfirescience.org/resource/11467](http://www.nrfirescience.org/resource/11467)

Increasing fire frequencies and uncharacteristic severe fires have created a need for improved

restoration methods across rangelands in western North America. Traditional restoration seed mixtures of perennial mid- to late-seral plant species may not be suitable for intensely burned sites that have been returned to an early-seral...

Author(s): Mark W. Paschke, Paul J. Meiman, William H. Romme, Cynthia S. Brown

Year Published: 2011

Type: Document

Technical Report or White Paper

### **Post-wildfire seeding in forests of the western United States: an evidence-based review**

[www.nrfirescience.org/resource/12595](http://www.nrfirescience.org/resource/12595)

Broadcast seeding is one of the most widely used post-wildfire emergency response treatments intended to reduce soil erosion, increase vegetative ground cover, and minimize establishment and spread of non-native plant species. We conducted an evidence-based review to examine the effectiveness and effects of post-wildfire seeding...

Author(s): Donna Peppin, Peter Z. Fule, Carolyn Hull Sieg, Jan L. Beyers, Molly E. Hunter

Year Published: 2010

Type: Document

Book or Chapter or Journal Article, Synthesis

### **Delaying sheep grazing after wildfire in sagebrush steppe may not affect vegetation recovery**

[www.nrfirescience.org/resource/11439](http://www.nrfirescience.org/resource/11439)

Although many land managers prohibit grazing for 2 years after a fire, little research has been conducted to determine the interaction of grazing with vegetation recovery after fire. In a study conducted in sagebrush steppe rangelands after a 2000 wildfire at the United States Sheep Experiment Station in Idaho, the influence of...

Author(s): Lovina Roselle, Steven S. Seefeldt, Karen Launchbaugh

Year Published: 2010

Type: Document

Book or Chapter or Journal Article

### **Continued evaluation of post-fire recovery and treatment effectiveness for validation of the ERMiT erosion model (combined proposals P07-2-2-10 and P07-2-3-06) - Final Report to the Joint Fire Science Program**

[www.nrfirescience.org/resource/11227](http://www.nrfirescience.org/resource/11227)

The use and cost of post-fire emergency stabilization treatments continues to grow. To help maximize the impact of these treatments, many assessment teams use the Erosion Risk Management Tool (ERMiT) erosion model to predict postfire erosion and mitigation effects. However, despite several completed JFSP projects, the long-term...

Author(s): Peter R. Robichaud, William J. Elliot, Joseph W. Wagenbrenner, Sarah A. Lewis, Louise E. Ashmun, Peter M. Wohlgenuth, Robert E. Brown

Year Published: 2010

Type: Document

Technical Report or White Paper

### **Field guide for mapping post-fire soil burn severity**

[www.nrfirescience.org/resource/15310](http://www.nrfirescience.org/resource/15310)

Following wildfires in the United States, the U.S. Department of Agriculture and U.S. Department of the Interior mobilize Burned Area Emergency Response (BAER) teams to assess immediate post-fire watershed conditions. BAER teams must determine threats from flooding, soil erosion, and instability. Developing a postfire soil burn...

Author(s): Annette Parson, Peter R. Robichaud, Sarah A. Lewis, Carolyn Napper, Jess T. Clark

Year Published: 2010  
Type: Document  
Book or Chapter or Journal Article

### **The myth of "catastrophic" wildfire - a new ecological paradigm of forest health**

[www.nrfirescience.org/resource/16302](http://www.nrfirescience.org/resource/16302)

Every fire season in the western United States, we see on television the predictable images of 100-foot flames spreading through tree crowns, while grim-faced news anchors report how many acres of forest were "destroyed" by the latest "catastrophic" fire. The reaction is understandable. For decades, countless Smokey the Bear...

Author(s): Chad T. Hanson  
Year Published: 2010  
Type: Document  
Technical Report or White Paper

### **Post-fire treatment effectiveness for hillslope stabilization**

[www.nrfirescience.org/resource/12594](http://www.nrfirescience.org/resource/12594)

This synthesis of post-fire treatment effectiveness reviews the past decade of research, monitoring, and product development related to post-fire hillslope emergency stabilization treatments, including erosion barriers, mulching, chemical soil treatments, and combinations of these treatments. In the past ten years, erosion barrier...

Author(s): Peter R. Robichaud, Louise E. Ashmun, Bruce D. Sims  
Year Published: 2010  
Type: Document  
Synthesis, Technical Report or White Paper

### **Nest-site selection by cavity-nesting birds in relation to postfire salvage logging**

[www.nrfirescience.org/resource/8383](http://www.nrfirescience.org/resource/8383)

Large wildfire events in coniferous forests of the western United States are often followed by postfire timber harvest. The long-term impacts of postfire timber harvest on fire-associated cavity-nesting bird species are not well documented. We studied nest-site selection by cavity-nesting birds over a 10-year period (1994-2003),...

Author(s): Victoria A. Saab, Robin E. Russell, Jonathan G. Dudley  
Year Published: 2009  
Type: Document  
Book or Chapter or Journal Article

### **Effects of timber harvest following wildfire in western North America**

[www.nrfirescience.org/resource/11122](http://www.nrfirescience.org/resource/11122)

Timber harvest following wildfire leads to different outcomes depending on the biophysical setting of the forest, pattern of burn severity, operational aspects of tree removal, and other management activities. Fire effects range from relatively minor, in which fire burns through the understory and may kill a few trees, to severe, in...

Author(s): David L. Peterson, James K. Agee, Gregory H. Aplet, Dennis P. Dykstra, Russell T. Graham, John F. Lehmkuhl, David S. Pilliod, Donald F. Potts, Robert F. Powers, John D. Stuart  
Year Published: 2009  
Type: Document  
Technical Report or White Paper

### **Emergency post-fire rehabilitation treatment effects on burned area ecology and long-term**

## **restoration**

[www.nrfirescience.org/resource/12591](http://www.nrfirescience.org/resource/12591)

The predicted continuation of strong drying and warming trends in the southwestern United States underlies the associated prediction of increased frequency, area, and severity of wildfires in the coming years. As a result, the management of wildfires and fire effects on public lands will continue to be a major land management...

Author(s): Peter R. Robichaud, Sarah A. Lewis, Robert E. Brown, Louise E. Ashmun

Year Published: 2009

Type: Document

Book or Chapter or Journal Article, Synthesis

## **Sediment production following severe wildfire and post-fire salvage logging in the Rocky Mountain headwaters of the Oldman River Basin, Alberta**

[www.nrfirescience.org/resource/17441](http://www.nrfirescience.org/resource/17441)

In 2003, the Lost Creek fire burned 21,000 ha of nearly contiguous crown land forests in the headwater regions of the Oldman River Basin, Alberta. Seven small watersheds with various levels of land disturbance (burned, post-fire salvage logged, unburned) were instrumented and monitored for four years to measure stream discharge,...

Author(s): Uldis Silins, Monica B. Emelko, Kevin D. Bladon

Year Published: 2009

Type: Document

Book or Chapter or Journal Article

## **A synthesis of postfire road treatments for BAER teams: methods, treatment effectiveness, and decisionmaking tools for rehabilitation**

[www.nrfirescience.org/resource/12622](http://www.nrfirescience.org/resource/12622)

We synthesized post-fire road treatment information to assist BAER specialists in making road rehabilitation decisions. We developed a questionnaire; conducted 30 interviews of BAER team engineers and hydrologists; acquired and analyzed gray literature and other relevant publications; and reviewed road rehabilitation procedures and...

Author(s): Randy B. Foltz, Peter R. Robichaud, Hakjun Rhee

Year Published: 2009

Type: Document

Synthesis, Technical Report or White Paper

## **Influences of postfire salvage logging on forest birds in the Eastern Cascades, Oregon, USA**

[www.nrfirescience.org/resource/17447](http://www.nrfirescience.org/resource/17447)

In coniferous forests of western North American, fire is an important disturbance that influences the structure and composition of floral and faunal communities. The impacts of postfire management, including salvage logging and replanting, on these forests are not well known. We compared densities and relative abundances of forest...

Author(s): Rebecca Cahall, John P. Hayes

Year Published: 2009

Type: Document

Book or Chapter or Journal Article

## **The increasing wildfire and post-fire debris-flow threat in Western USA, and implications for consequences of climate change**

[www.nrfirescience.org/resource/18703](http://www.nrfirescience.org/resource/18703)

In southern California and the intermountain west of the USA, debris flows generated from recently-burned basins pose significant hazards. Increases in the frequency and size of wildfires throughout the

western USA can be attributed to increases in the number of fire ignitions, fire suppression practices, and climatic influences....

Author(s): Susan H. Cannon, Jerome DeGraff

Year Published: 2009

Type: Document

Book or Chapter or Journal Article

### **Measuring effectiveness of three postfire hillslope erosion barrier treatments, western Montana, USA**

[www.nrfirescience.org/resource/8389](http://www.nrfirescience.org/resource/8389)

After the Valley Complex Fire burned 86 000 ha in western Montana in 2000, two studies were conducted to determine the effectiveness of contour-felled log, straw wattle, and hand-dug contour trench erosion barriers in mitigating postfire runoff and erosion. Sixteen plots were located across a steep, severely burned slope, with a...

Author(s): Peter R. Robichaud, Frederick B. Pierson, Robert E. Brown, Joseph W. Wagenbrenner

Year Published: 2008

Type: Document

Book or Chapter or Journal Article

### **Effectiveness of aerial seeding and straw mulch for reducing post-wildfire erosion, north-western Montana, USA**

[www.nrfirescience.org/resource/8200](http://www.nrfirescience.org/resource/8200)

Various methods are available to reduce post-wildfire erosion, but there is limited quantitative information on the relative effectiveness of these techniques. We used rainfall simulations to compare the erosion and runoff rates from adjacent 0.5-m<sup>2</sup> plots treated with aerial grass seeding and straw mulch with untreated control plots...

Author(s): Amy H. Groen, Scott W. Woods

Year Published: 2008

Type: Document

Book or Chapter or Journal Article

### **A morphometric analysis of gullies scoured by post-fire progressively bulked debris flows in southwestern Montana, USA**

[www.nrfirescience.org/resource/18714](http://www.nrfirescience.org/resource/18714)

In the fall of 2001, an intense thunderstorm in southwest Montana triggered many debris flows in the burned area of Sleeping Child Creek. In most instances, the debris flows cut deep gullies into previously unchannelized colluvial hollows and deposited large volumes of sediment onto the valley floor. The presence of rill networks...

Author(s): Emmanuel J. Gabet, Andy Bookter

Year Published: 2008

Type: Document

Book or Chapter or Journal Article

### **Evaluating the effectiveness of contour-felled log erosion barriers as a post-fire runoff and erosion mitigation treatment in the western United States**

[www.nrfirescience.org/resource/8167](http://www.nrfirescience.org/resource/8167)

Between 1998 and 2002, six sites were established immediately after large wildfires in the western United States to determine the effectiveness of contour-felled log erosion barriers in mitigating post-wildfire runoff and erosion. In each pair of matched, burned, and small watersheds (1-13 ha), one was treated with contour-felled...

Author(s): Peter R. Robichaud, Joseph W. Wagenbrenner, Robert E. Brown, Peter M. Wohlgemuth, Jan

L. Beyers  
Year Published: 2008  
Type: Document  
Book or Chapter or Journal Article

### **Wildland fire in ecosystems: fire and nonnative invasive plants**

[www.nrfirescience.org/resource/12531](http://www.nrfirescience.org/resource/12531)

This state-of-knowledge review of information on relationships between wildland fire and nonnative invasive plants can assist fire managers and other land managers concerned with prevention, detection, and eradication or control of nonnative invasive plants. The 16 chapters in this volume synthesize ecological and botanical...

Year Published: 2008  
Type: Document  
Synthesis, Technical Report or White Paper

### **Assessing post-fire Douglas-fir mortality and Douglas-fir beetle attacks in the Northern Rocky Mountains**

[www.nrfirescience.org/resource/11126](http://www.nrfirescience.org/resource/11126)

Douglas-fir has life history traits that greatly enhance resistance to injury from fire, thereby increasing post-fire survival rates. Tools for predicting the probability of tree mortality following fire are important components of both pre-fire planning and post-fire management efforts. Using data from mixed-severity wildfire in...

Author(s): Sharon M. Hood, Barbara J. Bentz, Ken E. Gibson, Kevin C. Ryan, Gregg DeNitto  
Year Published: 2007  
Type: Document  
Technical Report or White Paper

### **Nest densities of cavity-nesting birds in relation to postfire salvage logging and time since wildfire**

[www.nrfirescience.org/resource/8145](http://www.nrfirescience.org/resource/8145)

We monitored the nest densities and nest survival of seven cavity-nesting bird species, including four open-space foragers (American Kestrel [*Falco sparverius*], Lewis's Woodpecker [*Melanerpes lewis*], Western Bluebird [*Sialia mexicana*], and Mountain Bluebird [*S. currucoides*]) and three wood-foragers (Hairy Woodpecker [*Picoides*...

Author(s): Victoria A. Saab, Robin E. Russell, Jonathan G. Dudley  
Year Published: 2007  
Type: Document  
Book or Chapter or Journal Article

### **Assessing post-fire values-at-risk with a new calculation tool**

[www.nrfirescience.org/resource/11127](http://www.nrfirescience.org/resource/11127)

Wildfire effects include loss of vegetative cover and changes to soil properties that may lead to secondary effects of increased runoff, erosion, flooding, sedimentation, and vulnerability to invasive weeds. These secondary effects may threaten human life and safety, cultural and ecological resources, land use, and existing...

Author(s): David E. Calkin, Kevin D. Hyde, Peter R. Robichaud, J. Greg Jones, Louise E. Ashmun, Dan R. Loeffler  
Year Published: 2007  
Type: Document  
Technical Report or White Paper

### **Predicting postfire erosion and mitigation effectiveness with a web-based probabilistic erosion model**

[www.nrfirescience.org/resource/8138](http://www.nrfirescience.org/resource/8138)

The decision of where, when, and how to apply the most effective postfire erosion mitigation treatments requires land managers to assess the risk of damaging runoff and erosion events occurring after a fire. To meet this challenge, the Erosion Risk Management Tool (ERMiT) was developed. ERMiT is a web-based application that uses the...

Author(s): Peter R. Robichaud, William J. Elliot, Frederick B. Pierson, David E. Hall, Corey A. Moffet

Year Published: 2007

Type: Document

Book or Chapter or Journal Article

### **Toward meaningful snag-management guidelines for postfire salvage logging in North American conifer forests**

[www.nrfirescience.org/resource/14507](http://www.nrfirescience.org/resource/14507)

The bird species in western North America that are most restricted to, and therefore most dependent on, severely burned conifer forests during the first years following a fire event depend heavily on the abundant standing snags for perch sites, nest sites, and food resources. Thus, it is critical to develop and apply appropriate...

Author(s): Richard L. Hutto

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Post-wildfire logging hinders regeneration and increases fire risk**

[www.nrfirescience.org/resource/17443](http://www.nrfirescience.org/resource/17443)

We present data from a study of early conifer regeneration and fuel loads after the 2002 Biscuit Fire, Oregon, USA, with and without postfire logging. Natural conifer regeneration was abundant after the high-severity fire. Postfire logging reduced median regeneration density by 71%, significantly increased downed woody fuels, and...

Author(s): Daniel C. Donato, Joseph B. Fontaine, John L. Campbell, William D. Robinson, J. Boone Kauffman, Beverly E. Law

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Influence of fire regimes on lodgepole pine stand age and density across the Yellowstone National Park (USA) landscape**

[www.nrfirescience.org/resource/18410](http://www.nrfirescience.org/resource/18410)

A probabilistic spatial model was created based on empirical data to examine the influence of different fire regimes on stand structure of lodgepole pine (*Pinus contorta* var. *latifolia*) forests across a >500,000-ha landscape in Yellowstone National Park, Wyoming, USA. We asked how variation in the frequency of large fire events...

Author(s): Tania L. Schoennagel, Monica G. Turner, Daniel M. Kashian, Andrew Fall

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Fire management impacts on invasive plants in the western United States**

[www.nrfirescience.org/resource/12024](http://www.nrfirescience.org/resource/12024)

Fire management practices affect alien plant invasions in diverse ways. I considered the impact of six fire management practices on alien invasions: fire suppression, forest fuel reduction, prescription burning in crown-fire ecosystems, fuel breaks, targeting of noxious aliens, and postfire rehabilitation. Most western United States...

Author(s): Jon E. Keeley

Year Published: 2006

Type: Document

Book or Chapter or Journal Article, Synthesis

### **Snag longevity in relation to wildfire and postfire salvage logging**

[www.nrfirescience.org/resource/8142](http://www.nrfirescience.org/resource/8142)

Snags create nesting, foraging, and roosting habitat for a variety of wildlife species. Removal of snags through postfire salvage logging reduces the densities and size classes of snags remaining after wildfire. We determined important variables associated with annual persistence rates (the probability a snag remains standing from 1...

Author(s): Robin E. Russell, Victoria A. Saab, Jonathan G. Dudley, Jay J. Rotella

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Wildfire, timber salvage, and the economics of expediency**

[www.nrfirescience.org/resource/8124](http://www.nrfirescience.org/resource/8124)

Administrative planning rules and legal challenges can have significant economic impacts on timber salvage programs on public lands. This paper examines the costs of the delay in salvage caused by planning rules and the costs associated with the volume reductions forced by legal challenges in one case study. The fires on the...

Author(s): Jeffrey P. Prestemon, David N. Wear, Fred J. Stewart, Thomas P. Holmes

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Salvage logging, ecosystem processes, and biodiversity conservation**

[www.nrfirescience.org/resource/16297](http://www.nrfirescience.org/resource/16297)

We summarize the documented and potential impacts of salvage logging—a form of logging that removes trees and other biological material from sites after natural disturbance. Such operations may reduce or eliminate biological legacies, modify rare postdisturbance habitats, influence populations, alter community composition, impair...

Author(s): D.B. Lindenmeyer, Reed F. Noss

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Salvage harvesting—past lessons and future issues**

[www.nrfirescience.org/resource/17454](http://www.nrfirescience.org/resource/17454)

The increasing prevalence and/or increasing intensity of large-scale natural disturbance events in forests means that post-disturbance salvage logging is becoming more widespread. Salvage logging can have a wide range of environmental impacts, but some of these are not well known or not well understood by policy makers and natural...

Author(s): David B. Lindenmayer

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Monitoring changes in soil quality from post-fire logging in the inland northwest**

[www.nrfirescience.org/resource/11015](http://www.nrfirescience.org/resource/11015)

The wildland fires of 2000, 2002, and 2003 created many opportunities to conduct post-fire logging operations in the Inland Northwest. Relatively little information is available on the impact of post-fire logging on long-term soil productivity or on the best method for monitoring these changes. We present a USDA Forest Service...

Author(s): Deborah S. Page-Dumroese, Martin F. Jurgensen, Ann Abbott, Thomas M. Rice, Joanne M. Tirocke, Sue Farley, Sharon DeHart

Year Published: 2006

Type: Document

Conference Proceedings

### **Post-fire logging debate ignores many issues**

[www.nrfirescience.org/resource/14599](http://www.nrfirescience.org/resource/14599)

Recent controversy concerning post-fire logging in Oregon is emblematic of the problems of "salvage logging" globally. Although tree regeneration after disturbances in forested areas is important, a narrow view of this issue ignores important ecological lessons, especially the role of disturbances in diversifying and rejuvenating...

Author(s): Dominick A. DellaSala, James R. Karr, Tania L. Schoennagel, David A. Perry, Reed F. Noss, David B. Lindenmayer, Robert L. Beschta, Richard L. Hutto, Mark E. Swanson, Jon Evans

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Managing fire-prone forests in the Western United**

[www.nrfirescience.org/resource/16308](http://www.nrfirescience.org/resource/16308)

The management of fire-prone forests is one of the most controversial natural resource issues in the US today, particularly in the west of the country. Although vegetation and wildlife in these forests are adapted to fire, the historical range of fire frequency and severity was huge. When fire regimes are altered by human activity,...

Author(s): Reed F. Noss, Jerry F. Franklin, William L. Baker, Tania L. Schoennagel, Peter B. Moyle

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **The effects of postfire salvage logging on cavity-nesting birds**

[www.nrfirescience.org/resource/12933](http://www.nrfirescience.org/resource/12933)

We investigated the effects of postfire salvage logging on cavity-nesting birds by comparing nest densities and patterns of nest reuse over a three-year period in seven logged and eight unlogged patches of mixed-conifer forest in the Blackfoot-Clearwater Wildlife Management Area, Montana. We found 563 active nests of 18 cavity-...

Author(s): Richard L. Hutto, Susan M. Gallo

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Postfire logging in riparian ecosystems**

[www.nrfirescience.org/resource/8126](http://www.nrfirescience.org/resource/8126)

We reviewed the behavior of wildfire in riparian zones, primarily in the western United States, and the potential ecological consequences of postfire logging. Fire behavior in riparian zones is complex, but many aquatic and riparian organisms exhibit a suite of adaptations that allow relatively rapid recovery after fire. Unless...

Author(s): Gordon H. Reeves, Peter A. Bisson, Bruce E. Rieman, Lee E. Benda

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Protection from erosion following wildfire**

[www.nrfirescience.org/resource/11053](http://www.nrfirescience.org/resource/11053)

Erosion in the first year after a wildfire can be up to three orders of magnitude greater than the erosion from undisturbed forests. To mitigate potential postfire erosion, various erosion control treatments are applied on highly erodible areas with downstream resources in need of protection. Because postfire erosion rates generally...

Author(s): Peter R. Robichaud, William J. Elliot

Year Published: 2006

Type: Document

Conference Proceedings

### **Compilation of data relating to the erosive response of 606 recently burned basins in the western U.S.**

[www.nrfirescience.org/resource/18716](http://www.nrfirescience.org/resource/18716)

This report presents a compilation of data on the erosive response, debris-flow initiation processes, basin morphology, burn severity, event-triggering rainfall, rock type, and soils for 608 basins recently burned by 53 fires located throughout the Western United States. The data presented here are a combination of those collected...

Author(s): J. E. Gartner, Susan H. Cannon, Erica R. Bigio, Nicole K. Davis, C. Parrett, Kenneth L. Pierce, M. G. Rupert, Brandon L. Thurston, Matthew J. Trebesch, Steve P. Garcia, A.H. Rea

Year Published: 2005

Type: Document

Technical Report or White Paper

### **Variation in fire regimes of the Rocky Mountains: implications for avian communities and fire management**

[www.nrfirescience.org/resource/8144](http://www.nrfirescience.org/resource/8144)

Information about avian responses to fire in the U.S. Rocky Mountains is based solely on studies of crown fires. However, fire management in this region is based primarily on studies of low-elevation ponderosa pine (*Pinus ponderosa*) forests maintained largely by frequent understory fires. In contrast to both of these trends, most...

Author(s): Victoria A. Saab, Hugh D. W. Powell, Natasha B. Kotliar, Karen R. Newlon

Year Published: 2005

Type: Document

Book or Chapter or Journal Article, Synthesis

### **Assessing the causes, consequences and spatial variability of burn severity: a rapid response proposal - Final Report to the Joint Fire Science Program**

[www.nrfirescience.org/resource/11149](http://www.nrfirescience.org/resource/11149)

In this rapid response project, we have collected data on post-fire effects and pre-fire fuels and vegetation from 10 large fires that burned in 2003 and 2004. We use field and remotely sensed data collected during and soon after wildfires to quantify the interactions and spatial variability in fire effects,

fuels, fire behavior,...

Author(s): Penelope Morgan, Andrew T. Hudak, Peter R. Robichaud, Kevin C. Ryan

Year Published: 2005

Type: Document

Technical Report or White Paper

### **Postfire seeding for erosion control: effectiveness and impacts on native plant communities**

[www.nrfirescience.org/resource/7911](http://www.nrfirescience.org/resource/7911)

Large, high-severity wildfires remove vegetation cover and expose mineral soil, often causing erosion and runoff during postfire rain events to increase dramatically. Land-management agencies in the United States are required to assess site conditions after wildfire and, where necessary, implement emergency watershed rehabilitation...

Author(s): Jan L. Beyers

Year Published: 2004

Type: Document

Book or Chapter or Journal Article, Synthesis

### **Fuels planning: science synthesis and integration; environmental consequences fact sheet 5: prescriptions and fire effects**

[www.nrfirescience.org/resource/14943](http://www.nrfirescience.org/resource/14943)

While our understanding of the causes for variation in postfire effects is increasing, burn prescriptions may not always include parameters that control the long-term heat pulse from fire. This paper discusses (1) fuel consumption and fire effects, (2) prescription design considerations, and (3) planning a prescribed fire.

Author(s): Melanie Miller

Year Published: 2004

Type: Document

Research Brief or Fact Sheet

### **Lewis's Woodpecker (*Melanerpes lewis*): a technical conservation assessment**

[www.nrfirescience.org/resource/11498](http://www.nrfirescience.org/resource/11498)

Lewis's woodpecker (*Melanerpes lewis*) is a locally common but patchily distributed woodpecker species usually seen in open forests of western North America. The combination of its sporadic distribution, its diet of adult-stage free-living insects (primarily aerial), its preference to nest in burned landscapes, and its variable...

Author(s): Stephen C. Abele, Victoria A. Saab, Edward O. Garton

Year Published: 2004

Type: Document

Technical Report or White Paper

### **Establishment of aerially seeded big sagebrush following southern Idaho wildfires**

[www.nrfirescience.org/resource/11412](http://www.nrfirescience.org/resource/11412)

In the western United States, big sagebrush (*Artemisia tridentata*) steppe communities dominate approximately 60 million ha (148 million acres) and comprise the largest vegetation type (Wambolt and Hoffman 2001). However, due to the invasion of exotic plants, fire has become a driving force in the ecology and management of sagebrush...

Author(s): Cindy R. Lysne, Michael L. Pellant

Year Published: 2004

Type: Document

Technical Report or White Paper

### **Monitoring changes in weed populations: post-fire and post-herbicide treatment**

[www.nrfirescience.org/resource/11040](http://www.nrfirescience.org/resource/11040)

Description not entered

Author(s): Elaine Kennedy Sutherland

Year Published: 2004

Type: Document

Conference Proceedings

### **The effects of postfire salvage logging on aquatic ecosystems in the American West**

[www.nrfirescience.org/resource/16298](http://www.nrfirescience.org/resource/16298)

Recent changes in the forest policies, regulations, and laws affecting public lands encourage postfire salvage logging, an activity that all too often delays or prevents recovery. In contrast, the 10 recommendations proposed here can improve the condition of watersheds and aquatic ecosystems.

Author(s): James R. Karr, Jonathan J. Rhodes, G. Wayne Minshall, F. Richard Hauer, Robert L.

Beschta, Christopher A. Frissell, David A. Perry

Year Published: 2004

Type: Document

Book or Chapter or Journal Article

### **Salvage harvesting policies after natural disturbance**

[www.nrfirescience.org/resource/17453](http://www.nrfirescience.org/resource/17453)

The [authors][1] of this Policy Forum examine a range of issues associated with salvage harvesting policies after major natural disturbances such as fire, windstorms, and volcanic eruptions. Although natural disturbances can have important benefits for ecosystems, salvage harvesting can have major negative impacts on ecosystem...

Author(s): David B. Lindenmayer, D. R. Foster, Jerry F. Franklin, M. L. Hunter, Reed F. Noss, Fiona K. A. Schmiegelow, David A. Perry

Year Published: 2004

Type: Document

Book or Chapter or Journal Article

### **Postfire management on forested public lands of the western United States**

[www.nrfirescience.org/resource/7913](http://www.nrfirescience.org/resource/7913)

Forest ecosystems in the western United States evolved over many millennia in response to disturbances such as wildfires. Land use and management practices have altered these ecosystems, however, including fire regimes in some areas. Forest ecosystems are especially vulnerable to postfire management practices because such practices...

Author(s): Robert L. Beschta, Jonathan J. Rhodes, J. Boone Kauffman, Robert E. Gresswell, G. Wayne Minshall, James R. Karr, David A. Perry, F. Richard Hauer, Christopher A. Frissell

Year Published: 2004

Type: Document

Book or Chapter or Journal Article

### **Quick response small catchment monitoring techniques for comparing postfire rehabilitation treatment effectiveness**

[www.nrfirescience.org/resource/11000](http://www.nrfirescience.org/resource/11000)

Increased runoff and erosion commonly occur after wildfires with the onset of precipitation events.

Various erosion mitigation treatments are often used after wildfires to reduce flooding and sedimentation. The effectiveness of these treatments has not been well documented in the literature; therefore we undertook a rapid response...

Author(s): Peter R. Robichaud, Robert E. Brown  
Year Published: 2003  
Type: Document  
Conference Proceedings

### **Post-fire erosional processes: In the Pacific Northwest and Rocky Mountain region**

[www.nrfirescience.org/resource/18693](http://www.nrfirescience.org/resource/18693)

The objective of this paper is to provide a general overview of the influence of wildland fires on the erosional processes common to the forested landscapes of the western United States. Wildfire can accelerate erosion rates because vegetation is an important factor controlling erosion. There can be great local and regional...

Author(s): Steven M. Wondzell, John G. King  
Year Published: 2003  
Type: Document  
Book or Chapter or Journal Article

### **On the impact of fire suppression and BAER restoration on weeds**

[www.nrfirescience.org/resource/11043](http://www.nrfirescience.org/resource/11043)

In 2000, wildfires burned more than 200,000 acres on the Bitterroot National Forest of Montana and nearly 1.5 million acres in the Northern and Intermountain Regions. Management activities associated with fire suppression and post-fire restoration have had the unintentional consequence of promoting invasive weeds. As part of fire...

Author(s): Elaine Kennedy Sutherland  
Year Published: 2003  
Type: Document  
Conference Proceedings

### **A review of prescribed burning effectiveness in fire hazard reduction**

[www.nrfirescience.org/resource/18713](http://www.nrfirescience.org/resource/18713)

Wildfire hazard abatement is one of the major reasons to use prescribed burning. Computer simulation, case studies, and analysis of the fire regime in the presence of active prescribed burning programs in forest and shrubland generally indicate that this fuel management tool facilitates fire suppression efforts by reducing the...

Author(s): Paulo M. Fernandes, Herminio S. Botelho  
Year Published: 2003  
Type: Document  
Book or Chapter or Journal Article

### **Responses of stream benthic macroinvertebrates to fire**

[www.nrfirescience.org/resource/7964](http://www.nrfirescience.org/resource/7964)

Synthesis of published research on the responses of stream benthic macroinvertebrates to fire in western United States indicates a consistent pattern of response that can guide resource management and future research. Direct effects of fire generally are minor or indiscernible. Indirect effects, resulting primarily from increased...

Author(s): G. Wayne Minshall  
Year Published: 2003  
Type: Document  
Book or Chapter or Journal Article

### **Postfire logging: is it beneficial to a forest?**

[www.nrfirescience.org/resource/17445](http://www.nrfirescience.org/resource/17445)

Public debate on postfire logging has intensified in recent years, particularly since passage of the 'salvage rider' in 1995, directing accelerated harvest of dead trees in the western United States. Supporters of postfire logging argue that it is part of a suite of restoration techniques, and that removal of timber means reduction...

Author(s): Sally Duncan

Year Published: 2002

Type: Document

Book or Chapter or Journal Article

### **Effects of wildfire and post-fire salvage logging on avian communities in conifer-dominated forests of the western United States**

[www.nrfirescience.org/resource/7956](http://www.nrfirescience.org/resource/7956)

Description not entered

Author(s): Natasha B. Kotliar, Sallie Hejl, Richard L. Hutton, Victoria A. Saab, C. P. Melcher, Mary E. McFadzen

Year Published: 2002

Type: Document

Book or Chapter or Journal Article

### **Spatial and temporal effects of wildfire on the hydrology of a steep rangeland watershed**

[www.nrfirescience.org/resource/18620](http://www.nrfirescience.org/resource/18620)

Wildfire is a major ecological process and management issue on western rangelands. The impacts of wildfire on hydrologic processes such as infiltration, runoff, and erosion are not well understood. Small-plot rainfall simulation methods were applied in a rangeland wildfire setting to determine post-fire hydrologic response....

Author(s): Frederick B. Pierson, Peter R. Robichaud, Kenneth E. Spaeth

Year Published: 2001

Type: Document

Book or Chapter or Journal Article

### **Post-fire runoff and erosion from rainfall simulation: contrasting forests with shrublands and grasslands**

[www.nrfirescience.org/resource/18566](http://www.nrfirescience.org/resource/18566)

Rainfall simulations allow for controlled comparisons of runoff and erosion among ecosystems and land cover conditions. Runoff and erosion can increase greatly following fire, yet there are few rainfall simulation studies for post-fire plots, particularly after severe fire in semiarid forest. We conducted rainfall simulations...

Author(s): Matthew P. Johansen, Thomas E. Hakonson, David D. Breshears

Year Published: 2001

Type: Document

Book or Chapter or Journal Article

### **Effects of stand-replacement fire and salvage logging on a cavity-nesting bird community in eastern Cascades, Washington**

[www.nrfirescience.org/resource/17449](http://www.nrfirescience.org/resource/17449)

We monitored the response of cavity-nesting species to three snag density treatments (high = 37-80 snags/ha, medium = 15-35 snags/ha, and low = 0-12 snags/ha) during two breeding seasons 4-5 yr post-fire and logging in Douglas-fir-ponderosa pine forests in the eastern Cascades, Washington. Snag surveys were used to describe habitat...

Author(s): Maryellen Haggard, William L. Gaines

Year Published: 2001  
Type: Document  
Book or Chapter or Journal Article

**Channel characteristics and large organic debris in adjacent burned and unburned watersheds a decade after wildfire**

[www.nrfirescience.org/resource/18698](http://www.nrfirescience.org/resource/18698)

Description available at link.

Author(s): Ronald B. Zelt

Year Published: 2001

Type: Document

Conference Proceedings

**The influence of forest health and protection treatments on erosion and stream sedimentation in forested watersheds of eastern Oregon and Washington**

[www.nrfirescience.org/resource/18692](http://www.nrfirescience.org/resource/18692)

A variety of Forest Health and Protection treatments have been proposed to reduce long-term risks to forests from wildfire, insects, and disease. This review examines the potential effects of these treatments on sediment production in watersheds of eastern Oregon and Washington, USA, channel forming processes, riparian vegetation,...

Author(s): Steven M. Wondzell

Year Published: 2001

Type: Document

Book or Chapter or Journal Article

**Initial hydrologic and geomorphic response following a wildfire in the Colorado Front Range**

[www.nrfirescience.org/resource/18612](http://www.nrfirescience.org/resource/18612)

A wildfire in May 1996 burned 4690 hectares in two watersheds forested by ponderosa pine and Douglas fir in a steep, mountainous landscape with a summer, convective thunderstorm precipitation regime. The wildfire lowered the erosion threshold in the watersheds, and consequently amplified the subsequent erosional response to shorter...

Author(s): John A. Moody, Deborah A. Martin

Year Published: 2001

Type: Document

Book or Chapter or Journal Article

**Evaluating the effectiveness of postfire rehabilitation treatments**

[www.nrfirescience.org/resource/11194](http://www.nrfirescience.org/resource/11194)

Spending on postfire emergency watershed rehabilitation has increased during the past decade. A west-wide evaluation of USDA Forest Service burned area emergency rehabilitation (BAER) treatment effectiveness was undertaken as a joint project by USDA Forest Service Research and National Forest System staffs. This evaluation covers...

Author(s): Peter R. Robichaud, Jan L. Beyers, Daniel G. Neary

Year Published: 2000

Type: Document

Technical Report or White Paper

**Environmental effects of postfire logging: literature review and annotated bibliography**

[www.nrfirescience.org/resource/18597](http://www.nrfirescience.org/resource/18597)

The scientific literature on logging after wildfire is reviewed, with a focus on environmental effects of

logging and removal of large woody structure. Rehabilitation, the practice of planting or seeding after logging, is not reviewed here. Several publications are cited that can be described as 'commentaries,' intended to help...

Author(s): James D. McIver, Lynn Starr

Year Published: 2000

Type: Document

Book or Chapter or Journal Article

### **Fire and invasive species within the temperate and boreal coniferous forests of western North America**

[www.nrfirescience.org/resource/10966](http://www.nrfirescience.org/resource/10966)

Invasive, nonnative plant species have been a concern of land managers within the temperate and boreal coniferous forest eco-region for nearly a century. Fire management, timber harvest, grazing, mining, recreation, and agriculture have not only exacerbated invasive species establishment and spread, but have been impacted by such...

Author(s): Richy J. Harrod, Sarah Reichard

Year Published: 2000

Type: Document

Conference Proceedings, Synthesis

### **What happened after the smoke cleared: Onsite erosion rates after a wildfire in Eastern Oregon**

[www.nrfirescience.org/resource/18644](http://www.nrfirescience.org/resource/18644)

Recent fires have renewed interest in fire's effect on different components of the ecosystems, particularly erosion and soil productivity. Our objectives were to (1) determine hillslope erosion rates after a high severity wildfire in an unmanaged forest stand; (2) determine fire's short-term effects on nutrient loss. The study site...

Author(s): Peter R. Robichaud, Robert E. Brown

Year Published: 1999

Type: Document

Conference Proceedings

### **Responses of cavity-nesting birds to stand-replacement fire and salvage logging in ponderosa pine/douglas-fir forests of southwestern Idaho**

[www.nrfirescience.org/resource/11413](http://www.nrfirescience.org/resource/11413)

From 1994 to 1996, researchers monitored 695 nests of nine cavity-nesting bird species and measured vegetation at nest sites and at 90 randomly located sites in burned ponderosa pine forests of southwestern Idaho. Site treatments included two types of salvage logging, and unlogged controls. All bird species selected nest sites with...

Author(s): Victoria A. Saab, Jonathan G. Dudley

Year Published: 1998

Type: Document

Technical Report or White Paper

### **Length and timing of grazing on postburn productivity of two bunchgrasses in an Idaho experimental range**

[www.nrfirescience.org/resource/8213](http://www.nrfirescience.org/resource/8213)

Plant mortality and productivity in semiarid grasslands may be affected by the length of time grazing is excluded during the postfire regeneration period. The degree of grazing tolerance for the semiarid bunchgrass species, *Festuca idahoensis* and *Agropyron spicatum*, exposed to fire, and how the variation in grazing tolerance was...

Author(s): Stephen C. Bunting, Ronald Robberecht, Guillermo E. Defosse

Year Published: 1998  
Type: Document  
Book or Chapter or Journal Article

### **Stochastic forcing of sediment supply to channel networks from landsliding and debris flow**

[www.nrfirescience.org/resource/18700](http://www.nrfirescience.org/resource/18700)

Sediment influx to channel networks is stochastically driven by rainstorms and other perturbations, which are discrete in time and space and which occur on a landscape with its own spatial variability in topography, colluvium properties, and state of recovery from previous disturbances. The resulting stochastic field of sediment...

Author(s): Lee E. Benda, Thomas Dunne  
Year Published: 1997  
Type: Document  
Book or Chapter or Journal Article

### **Forest Service Review of Wildfire and Salvage Logging**

[www.nrfirescience.org/resource/16301](http://www.nrfirescience.org/resource/16301)

This is a summary of comments by Forest Service reviewers of the Beschta, et al. paper, "Wildfire and Salvage Logging". The paper was reviewed by a diverse and highly qualified group of Forest Service researchers and managers with expertise in a broad range of disciplines pertinent to the subject presented. Thus, the reviews present...

Author(s): Susan G. Conard, Richard L. Everett, Susan Husari, Alan E. Harvey, Gordon H. Reeves, James M. Saveland, Phil Weatherspoon, Robert R. Ziemer  
Year Published: 1995  
Type: Document  
Technical Report or White Paper

### **Vegetal recovery following wildfire in seeded and unseeded sagebrush steppe**

[www.nrfirescience.org/resource/11459](http://www.nrfirescience.org/resource/11459)

Following an August wildfire, sagebrush (*Artemisia L.*)/grass benchlands adjacent to Pocatello, Ida., were seeded with a mixture of exotic wheatgrasses and forbs by rangeland drill in November 1987. The effects of seeding on vegetation development in the immediate postfire years were evaluated by comparing plant density, vegetal...

Author(s): Teresa D. Ratzlaff, Jay E. Anderson  
Year Published: 1995  
Type: Document  
Book or Chapter or Journal Article

### **Wildfire and salvage logging: recommendations for ecologically sound post-fire salvage logging and other post-fire treatments on federal lands in the West**

[www.nrfirescience.org/resource/18495](http://www.nrfirescience.org/resource/18495)

From the text: 'This paper offers a scientific framework of principles and practices that are provided to guide development of federal policy concerning wildfire and salvage logging and other post-fire treatments. A common thread throughout the -recommendations is that most native species are adapted to natural patterns and...

Author(s): R.L. Beschta, Christopher A. Frissell, R. Gresswell, R. Hauer, James R. Karr, G. Wayne Minshall, David A. Perry, Jonathan J. Rhodes  
Year Published: 1995  
Type: Document  
Technical Report or White Paper

### **Hydrologic and erosional responses of a granitic watershed to helicopter logging and broadcast burning**

[www.nrfirescience.org/resource/18600](http://www.nrfirescience.org/resource/18600)

Forest land managers are concerned about the effects of logging and site preparation on erosion, site productivity, streamflow, and water quality. Effects of helicopter logging and prescribed burning on streamflow and sediment yields from headwater drainages in the Idaho Batholith were evaluated, using paired watersheds monitored...

Author(s): Walter F. Megahan, John G. King, Kathleen A. Seyedbagheri

Year Published: 1995

Type: Document

Book or Chapter or Journal Article

### **Deterioration of fire-killed and fire-damaged timber in the Western United States**

[www.nrfirescience.org/resource/11159](http://www.nrfirescience.org/resource/11159)

Fire-killed and fire-damaged timber are an important source of fiber and are becoming more important because of a decrease in the land base available for timber harvest. Forest managers need to know the causes of deterioration and degrade, the expected losses in product volume and value, and the impact of time on deterioration. This...

Author(s): Eini C. Lowell, Susan A. Willits, Robert L. Krahmer

Year Published: 1992

Type: Document

Technical Report or White Paper

### **A simple definition of a landslide**

[www.nrfirescience.org/resource/18711](http://www.nrfirescience.org/resource/18711)

A landslide is the movement of a mass of rock, earth or debris down a slope.

Author(s): David Milne Cruden

Year Published: 1991

Type: Document

Book or Chapter or Journal Article

### **Predicting deposition of debris flows in mountain channels**

[www.nrfirescience.org/resource/18702](http://www.nrfirescience.org/resource/18702)

An empirical model for predicting deposition of coarse-textured debris flows in confined mountain channels is developed based on field measurements of 14 debris flows in the Pacific Northwest, U.S.A. The model uses two criteria for deposition: channel slope (less than 3.5°) and tributary junction angle (greater than 70°). The...

Author(s): Lee E. Benda, Terrance W. Cundy

Year Published: 1990

Type: Document

Book or Chapter or Journal Article

### **Runoff and soil loss following the 1988 Yellowstone fires**

[www.nrfirescience.org/resource/18589](http://www.nrfirescience.org/resource/18589)

abstract available at link but unable to capture.

Author(s): Richard A. Marston, David H. Haire

Year Published: 1990

Type: Document

Book or Chapter or Journal Article

### **Sediment routing by debris flow**

[www.nrfirescience.org/resource/18487](http://www.nrfirescience.org/resource/18487)

Forty-six debris flows in a fifth-order basin in the Oregon Coast Range, U.S.A., were studied to determine the role and significance of debris flows in sediment routing. Dating of charcoal from basal colluvium in three bedrock hollows and in one first-order channel yielded an average landslide recurrence interval of approximately...

Author(s): Lee E. Benda, Thomas Dunne

Year Published: 1987

Type: Document

Conference Proceedings

### **Early postfire revegetation in a western Montana Douglas-fir forest**

[www.nrfirescience.org/resource/11960](http://www.nrfirescience.org/resource/11960)

Development of natural vegetation and seeded grasses on a severely burned Douglas-fir forest area is described for the first 5 postfire years. Results are described separately for ravine and upland sites. Results of special studies of moss recovery and tree seedling distribution are also reported.

Author(s): Marilyn F. Crane, James R. Habeck, William C. Fischer

Year Published: 1984

Type: Document

Technical Report or White Paper

### **The Sleeping Child Burn - 21 years of postfire change**

[www.nrfirescience.org/resource/11961](http://www.nrfirescience.org/resource/11961)

In early August 1961, more than 26,000 acres (10,500 ha) of upper montane and subalpine forest on the Bitterroot National Forest burned in a lightning-caused wildfire. At the time, the Sleeping Child Burn represented the single largest forest fire in the Northern Rocky Mountains in more than 20 years.

Historically, large wildfires...

Author(s): L. Jack Lyon

Year Published: 1984

Type: Document

Technical Report or White Paper

### **Fire and geomorphic processes**

[www.nrfirescience.org/resource/18669](http://www.nrfirescience.org/resource/18669)

Fire, geomorphic processes, and landforms interact to determine natural patterns of ecosystems over landscapes. Fire alters vegetation and soil properties which change soil and sediment movement through watersheds. Landforms affect fire behavior and form firebreaks which determine burn boundaries. Geomorphic consequences of fire in...

Author(s): Frederick J. Swanson

Year Published: 1981

Type: Document

Conference Proceedings

### **Vegetal development on the Sleeping Child burn in western Montana, 1961 to 1973**

[www.nrfirescience.org/resource/11951](http://www.nrfirescience.org/resource/11951)

In the year following the 1961 Sleeping Child forest fire on the Bitterroot National Forest, Montana, 11 permanent transects were established within the burn. Vegetation development was recorded through 1973, but only four transects were considered indicative of seral forest succession independent of superimposed management...

Author(s): L. Jack Lyon

Year Published: 1976  
Type: Document  
Technical Report or White Paper

### **Erosional effects of wildfire and logging in Idaho**

[www.nrfirescience.org/resource/18602](http://www.nrfirescience.org/resource/18602)

The effects of wildfire and logging on erosion from two small catchments of the Pine Creek drainage in Idaho, USA, were investigated. One catchment was clearfelled in 1972 and a wildfire burned in the study areas in 1973. The fire was more intense on the clear felled area (estimated fuels were 90 and 10 tons/acre on felled and...

Author(s): Walter F. Megahan, D. C. Molitor  
Year Published: 1975  
Type: Document  
Conference Proceedings

### **Plant nutrients and soil losses in overland flow from burned forest clearcuts**

[www.nrfirescience.org/resource/18531](http://www.nrfirescience.org/resource/18531)

No description found

Author(s): Norbert V. DeByle, P.E. Packer  
Year Published: 1972  
Type: Document  
Conference Proceedings

### **Climate, weather, and sagebrush seed sources: experimental insights on challenges and opportunities**

[www.nrfirescience.org/resource/13219](http://www.nrfirescience.org/resource/13219)

Matt Germino, Research Ecologist, USGS Snake River Field Station, Boise, ID, discusses experimental insights on challenges and opportunities regarding climate, weather, and sagebrush seed sources.

Type: Media

Webinar

### **Hayman fire: short- and long-term geomorphic change and recovery**

[www.nrfirescience.org/resource/13027](http://www.nrfirescience.org/resource/13027)

Lee MacDonald, Professor, Colorado State University, Department of Forest, Rangeland, and Watershed Stewardship, discusses geomorphic changes following the Hayman and Schoonover wildfires at the Hayman Fire Science Symposium: Lessons Learned after Ten Years of Recovery, Rehabilitation, and Restoration.

Type: Media

Webinar

### **The U.S. Forest Service says salvage logging, or the removal of dead trees, is needed**

[www.nrfirescience.org/resource/17481](http://www.nrfirescience.org/resource/17481)

This two-minute video explains salvage operations after large fire in Groveland, California.

Type: Media

Video

### **Post-fire tree mortality and management**

[www.nrfirescience.org/resource/14214](http://www.nrfirescience.org/resource/14214)

This presentation was recorded during the 2016 State of the State and Forest Health Conference in

Corvallis, OR.

Type: Media

Video

### **10 years of post-fire treatment monitoring - Learning about soil and vegetation recovery**

[www.nrfirescience.org/resource/12937](http://www.nrfirescience.org/resource/12937)

Following the 2005 School Fire that burned about 50,000 acres of forests and grasslands on the Umatilla National Forest, Washington, managers wanted to limit weed spread and soil erosion in severely burned areas. Various mulch treatments (wheat straw, wood strand, and hydromulch) were used to control erosion on steep slopes above...

Type: Media

Webinar

### **Sierra Pacific Industries timber salvage after the Rim fire**

[www.nrfirescience.org/resource/17475](http://www.nrfirescience.org/resource/17475)

Sierra Pacific Industries timber salvage after the Rim fire is displayed in this 3 minute video.

Type: Media

Video

### **Landslide hazards**

[www.nrfirescience.org/resource/18728](http://www.nrfirescience.org/resource/18728)

The primary objective of the National Landslide Hazards Program is to reduce long-term losses from landslide hazards by improving our understanding of the causes of ground failure and suggesting mitigation strategies.

Type: Website

Website

### **Quaking aspen: a burning desire in an 'asbestos forest'**

[www.nrfirescience.org/resource/13673](http://www.nrfirescience.org/resource/13673)

Speaker: Paul Rogers, Director, Western Aspen Alliance, Adjunct Associate Professor, Utah State University. Event: Restoring the West Conference 2015 - Restoration and Fire in the Interior West.

Type: Media

Video

### **Who's to blame? Fire management in mixed-ownership landscapes**

[www.nrfirescience.org/resource/15097](http://www.nrfirescience.org/resource/15097)

Fuels are the only component of the fire triangle that forest and fire managers can alter to change fire behavior. There have been numerous studies examining how fuel reduction treatments and salvage logging alter fire behavior, severity, and its' ecological impacts. However, less attention has been paid to how different forest...

Type: Media

Webinar

### **Quantifying Post-fire Recovery of Rangeland Productivity**

[www.nrfirescience.org/resource/17215](http://www.nrfirescience.org/resource/17215)

This 55 minute seminar was presented for the Firelab Seminar Series 2018. It covers ways to quantify post-fire recovery on rangelands.

Type: Media

Seminar

### **Burned area recovery project: a stakeholder perspective**

[www.nrfirescience.org/resource/13320](http://www.nrfirescience.org/resource/13320)

In this video, Larry Campbell, member of Friends of the Bitterroot, spoke about his organization's opposition to the salvage logging component of the BNF's Burned Area Recovery project following the Fires of 2000. This was filmed along Rye Creek, which was one of the stops during the Fires of 2000 field trip that was part of...

Type: Media

Video

### **Bridging the Divide - Video 3: Forest Management**

[www.nrfirescience.org/resource/15943](http://www.nrfirescience.org/resource/15943)

This video series is a compilation of post-fire interviews, workshops, and research presentations, highlighting the special conditions of the fire and the unique community outcomes. Through collaboration and partnerships, these mountain communities are learning to live with fire in the landscape. During the summer of 2013 over 1000...

Type: Media

Webinar

### **Burned area emergency response**

[www.nrfirescience.org/resource/13309](http://www.nrfirescience.org/resource/13309)

In this video, Marilyn Wildey, Hydrology Technician with the Bitterroot National Forest, describes the Burned Area Emergency Response following the Bitterroot fires of 2000. This was filmed at the Bitterroot National Forest headquarters in Hamilton, MT, which was one of the stops during the Fires of 2000 field trip that was part of...

Type: Media

Video

### **Post-fire reforestation considerations**

[www.nrfirescience.org/resource/13221](http://www.nrfirescience.org/resource/13221)

Post-fire environments are dynamic and complex and trends of recent fires within the Sierra mixed conifer type include uncharacteristically large areas of high vegetation burn severity. These trends add to the complexity of opportunities and challenges for post-fire restoration efforts - a key component of which is reforestation....

Type: Media

Webinar

### **Post-wildfire seeding in forests of the West: effectiveness, trends over time, and fire management perspectives**

[www.nrfirescience.org/resource/13037](http://www.nrfirescience.org/resource/13037)

Dr. Pete Fule presented results from the Joint Fire Science Program (JFSP) project synthesizing existing information on post-wildfire seeding. The webinar covered key findings from an evidence-based systematic review conducted to examine the effectiveness and effects of post-fire seeding treatments on soil stabilization and plant...

Type: Media

Webinar

### **Harvest of wildfire-charred timber fraught with problems for private landowners**

[www.nrfirescience.org/resource/17479](http://www.nrfirescience.org/resource/17479)

From mills glutted with trees from Forest Service land to “blue stain,” a fungus that colors dead wood the longer it sits unmilled and renders it virtually worthless, it can be difficult for private landowners to salvage value from trees burned by the Canyon Creek wildfire. This two minute video explains some of the problems for...

Type: Media

Video

### **Post-fire restoration considerations**

[www.nrfirescience.org/resource/14074](http://www.nrfirescience.org/resource/14074)

Post-fire environments are dynamic and complex and trends of recent fires within the Sierra mixed conifer type include uncharacteristically large areas of high vegetation burn severity. These trends add to the complexity of opportunities and challenges for post-fire restoration efforts - a key component of which is...

Type: Media

Webinar

### **Meet Dr. Victoria Saab, Research Wildlife Biologist**

[www.nrfirescience.org/resource/17473](http://www.nrfirescience.org/resource/17473)

Nesting woodpeckers, including the white-backed woodpecker, rely on snags for nest building. Dr. Saab talks about her work in the mid-1990s on snag management and a new GIS tool that helps map the suitability of the landscape for nesting woodpeckers of concern.

Type: Media

Video

### **Burned Area Emergency Response - BAER**

[www.nrfirescience.org/resource/18727](http://www.nrfirescience.org/resource/18727)

While many wildfires cause little damage to the land and pose few threats to fish, wildlife and people downstream, some fires create situations that require special efforts to prevent further problems after the fire. Loss of vegetation exposes soil to erosion; runoff may increase and cause flooding, sediments may move downstream and...

Type: Website

Website

### **Linking basic and applied research, multi-resource management, public education, and enforcement: post-fire archeology on the Shoshone National Forest**

[www.nrfirescience.org/resource/13738](http://www.nrfirescience.org/resource/13738)

Especially in remote, Wilderness settings, fires produce a complex array of both direct and indirect impacts to heritage resources that creates a cascade of complex research and management issues and opportunities. Over the last decade we have been working to align goals of academic research programs and...

Type: Media

Video

### **The effects of post-wildfire salvage logging on plant reproductive success and pollination in *Symphoricarpos albus*, a fire-tolerant shrub**

[www.nrfirescience.org/resource/18151](http://www.nrfirescience.org/resource/18151)

Post-wildfire salvage logging is an increasingly used land management tool with poorly understood ecological consequences for understory flowering plants and their interactions with pollinators. Understanding these consequences of salvage logging is important because an essential aspect of post-wildfire forest succession involves...

Author(s): Laura J. Heil, Laura A. Burkle

Type: Document

Book or Chapter or Journal Article

### **Tree and Forest Restoration - Pros and Cons to Salvage Logging**

[www.nrfirescience.org/resource/17460](http://www.nrfirescience.org/resource/17460)

On this website are listed some pros and cons of salvage logging to aid managers or landowners in a forest treatment decision.

Type: Website

Website

### **Burned area recovery project: the Bitterroot National Forest experience**

[www.nrfirescience.org/resource/13312](http://www.nrfirescience.org/resource/13312)

In this video, Marilyn Wildey, Hydrology Technician with the Bitterroot National Forest, describes the Burned Area Recovery Project proposed after the Bitterroot fires of 2000. This was filmed at the Bitterroot National Forest headquarters in Hamilton, MT, which was one of the stops during the Fires of 2000 field trip that was part...

Type: Media

Video

### **Patterns of Conifer Regeneration following High Severity Wildfire in Ponderosa Pine-Dominated Forests**

[www.nrfirescience.org/resource/15847](http://www.nrfirescience.org/resource/15847)

Wildfires in ponderosa pine - dominated forests of the southern Rocky Mountains are increasingly burning with a high severity component that is unprecedented in the available historical record. The ability of ponderosa pine and other co-occurring conifers (e.g., Douglas-fir, Rocky Mountain juniper, Colorado blue spruce) to...

Type: Media

Webinar

### **Ten years of post-fire treatment monitoring - Learning about soil and vegetation recovery**

[www.nrfirescience.org/resource/13234](http://www.nrfirescience.org/resource/13234)

Following the 2005 School Fire that burned about 50,000 acres of forests and grasslands on the Umatilla National Forest, Washington, managers wanted to limit weed spread and soil erosion in severely burned areas. Various mulch treatments (wheat straw, wood strand, and hydromulch) were used to control erosion on steep slopes above...

Type: Media

Webinar