

### **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

### **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

### **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

### **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

### **Is proportion burned severely related to daily area burned?**

[www.nrfirescience.org/resource/13018](http://www.nrfirescience.org/resource/13018)

The ecological effects of forest fires burning with high severity are long-lived and have the greatest

impact on vegetation successional trajectories, as compared to low-to-moderate severity fires. The primary drivers of high severity fire are unclear, but it has been hypothesized that wind-driven, large fire-growth days play a...

Author(s): Donovan Birch, Penelope Morgan, Crystal A. Kolden, Andrew T. Hudak, Alistair M. S. Smith

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

### **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

### **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

### **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

### **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

### **Wildland fire in ecosystems: effects of fire on cultural resources and archaeology**

[www.nrfirescience.org/resource/141](http://www.nrfirescience.org/resource/141)

This state-of-knowledge review provides a synthesis of the effects of fire on cultural resources, which can be used by fire managers, cultural resource (CR) specialists, and archaeologists to more effectively manage wildland vegetation, fuels, and fire. The goal of the volume is twofold: (1) to provide cultural resource/...

Year Published: 2012

Type: Document

Synthesis

### **Climate change, forests, fire, water, and fish: building resilient landscapes, streams, and managers**

[www.nrfirescience.org/resource/11270](http://www.nrfirescience.org/resource/11270)

Fire will play an important role in shaping forest and stream ecosystems as the climate changes. Historic observations show increased dryness accompanying more widespread fire and forest die-off. These events punctuate gradual changes to ecosystems and sometimes generate stepwise changes in ecosystems. Climate vulnerability...

Author(s): Charles H. Luce, Penelope Morgan, Kathleen A. Dwire, Daniel J. Isaak, Zachary A. Holden, Bruce E. Rieman

Year Published: 2012

Type: Document

Technical Report or White Paper

### **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

### **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

### **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

### **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. Wohlgemuth, Robert E. Brown

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

### **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

### **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

### **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

### **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. Wohlgenuth, Jan L. Beyers

Year Published: 2008

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

### **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

### **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

### **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

**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 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

**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

**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

### **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

### **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-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

### **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

### **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



### **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

### **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