

## **Wilderness in the 21st Century: A framework for testing assumptions about ecological intervention in wilderness using a case study of fire ecology in the Rocky Mountains**

[www.nrfirescience.org/resource/14471](http://www.nrfirescience.org/resource/14471)

Changes in the climate and in key ecological processes are prompting increased debate about ecological restoration and other interventions in wilderness. The prospect of intervention in wilderness raises legal, scientific, and values-based questions about the appropriateness of possible actions. In this article, we focus on the role...

Author(s): Cameron Naficy, Eric G. Keeling, Peter Landres, Paul F. Hessburg, Thomas T. Veblen, Anna Sala

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

## **Effectiveness and longevity of wildland fire as a fuel treatment**

[www.nrfirescience.org/resource/14440](http://www.nrfirescience.org/resource/14440)

Wildland fires, especially wildfires, are not commonly thought of as fuel treatments; however, because fires consume fuels and alter vegetation structure, they can serve as fuel treatments similar to more traditional means (e.g., mechanical or prescribed fire). To consider previously burned areas when managing subsequent fires,...

Author(s): Sean A. Parks, Corey L. Gucker

Year Published: 2016

Type: Document

Research Brief or Fact Sheet

## **The passing of the Lolo Trail, with an introduction by Andrew J. Larson**

[www.nrfirescience.org/resource/14325](http://www.nrfirescience.org/resource/14325)

In 1935, Elers Koch argued in a Journal of Forestry article that a minimum fire protection model should be implemented in the backcountry areas of national forests in Idaho, USA. As a USDA Forest Service Supervisor and Assistant Regional Forester, Koch had led many major fire-fighting campaigns in the region, beginning with...

Author(s): Elers Koch

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

## **Time shows wisdom of letting some wilderness fires roam freely**

[www.nrfirescience.org/resource/14472](http://www.nrfirescience.org/resource/14472)

In August of 1972, the small Bad Luck Fire signaled the start of returning fire to the wilderness for the USDA Forest Service. Forty-three years later, the wisdom of allowing perhaps the most important of the "forces of nature" to prevail has been proven time and again. While climate change challenges fire managers across the...

Author(s): Dave Campbell, Robert W. Mutch

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

## **Progress in wilderness fire science: embracing complexity**

[www.nrfirescience.org/resource/14470](http://www.nrfirescience.org/resource/14470)

Wilderness has played an invaluable role in the development of wildland fire science. Since Agee's review of the subject 15 years ago, tremendous progress has been made in the development of models and data, in understanding the complexity of wildland fire as a landscape process, and in appreciating

the social factors that...

Author(s): Carol L. Miller, Gregory H. Aplet

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

### **A synthesis of the economic values of wilderness**

[www.nrfirescience.org/resource/14168](http://www.nrfirescience.org/resource/14168)

Early applications of wilderness economic research demonstrated that the values of natural amenities and commodities produced from natural areas could be measured in commensurate terms. To the surprise of many, the economic values of wilderness protection often exceeded the potential commercial values that might result from resource...

Author(s): Thomas P. Holmes, Jeffrey Englin, J. M. Bowker, Evan Hjerpe, John B. Loomis, Spencer Phillips, Robert Richardson

Year Published: 2016

Type: Document

Book or Chapter or Journal Article, Synthesis

### **Wildland fire limits subsequent fire occurrence**

[www.nrfirescience.org/resource/13605](http://www.nrfirescience.org/resource/13605)

Several aspects of wildland fire are moderated by site- and landscape-level vegetation changes caused by previous fire, thereby creating a dynamic where one fire exerts a regulatory control on subsequent fire. For example, wildland fire has been shown to regulate the size and severity of subsequent fire. However, wildland fire has...

Author(s): Sean A. Parks, Carol L. Miller, Lisa M. Holsinger, Scott L. Baggett, Benjamin J. Bird

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

### **Weather, fuels, and topography impede wildland fire spread in western US landscapes**

[www.nrfirescience.org/resource/14716](http://www.nrfirescience.org/resource/14716)

As wildland fire activity continues to surge across the western US, it is increasingly important that we understand and quantify the environmental drivers of fire and how they vary across ecosystems. At daily to annual timescales, weather, fuels, and topography are known to influence characteristics such as area burned and fire...

Author(s): Lisa M. Holsinger, Sean A. Parks, Carol L. Miller

Year Published: 2016

Type: Document

Book or Chapter or Journal Article

### **Wildland fire deficit and surplus in the western United States, 1984-2012**

[www.nrfirescience.org/resource/13740](http://www.nrfirescience.org/resource/13740)

Wildland fire is an important disturbance agent in the western US and globally. However, the natural role of fire has been disrupted in many regions due to the influence of human activities, which have the potential to either exclude or promote fire, resulting in a "fire deficit" or "fire surplus", respectively. In this study, we...

Author(s): Sean A. Parks, Carol L. Miller, Marc-Andre Parisien, Lisa M. Holsinger, Solomon Z. Dobrowski, John T. Abatzoglou

Year Published: 2015

Type: Document

Book or Chapter or Journal Article

## **Keeping it wild 2: an updated interagency strategy to monitor trends in wilderness character across the National Wilderness Preservation System**

[www.nrfirescience.org/resource/13591](http://www.nrfirescience.org/resource/13591)

Keeping It Wild 2 is an interagency strategy to monitor trends in selected attributes of wilderness character based on lessons learned from 15 years of developing and implementing wilderness character monitoring across the National Wilderness Preservation System. This document updates and replaces Keeping It Wild: An Interagency...

Author(s): Peter Landres, Chris Barns, Steve Boutcher, Tim Devine, Peter Dratch, Adrienne Lindholm, Linda Merigliano, Nancy Roeper, Emily Simpson

Year Published: 2015

Type: Document

Technical Report or White Paper

## **Northern Rockies pyrogeography: an example of fire atlas utility**

[www.nrfirescience.org/resource/12923](http://www.nrfirescience.org/resource/12923)

We demonstrated the utility of digital fire atlases by analyzing forest fire extent across cold, dry, and mesic forests, within and outside federally designated wilderness areas during three different fire management periods: 1900 to 1934, 1935 to 1973, and 1974 to 2008. We updated an existing atlas with a 12,070,086 ha recording...

Author(s): Penelope Morgan, Emily K. Heyerdahl, Carol L. Miller, Aaron M. Wilson, Carly E. Gibson

Year Published: 2014

Type: Document

Book or Chapter or Journal Article

## **The effects of previous wildfires on subsequent wildfire behavior and post-wildfire recovery**

[www.nrfirescience.org/resource/12650](http://www.nrfirescience.org/resource/12650)

Over the past several decades, size and extent of wildfires have been increasing in the western United States (Westerling et al. 2006; Littell et al. 2009). As the number and size of recent wildfires increases across landscapes, fire managers are questioning how past wildfires may influence the spread and effects of subsequent...

Author(s): Camille Stevens-Rumann, Susan J. Prichard, Penelope Morgan

Year Published: 2014

Type: Document

Synthesis

## **40 years of wilderness fire in the Selway-Bitterroot and Frank Church-River of No Return**

[www.nrfirescience.org/resource/12777](http://www.nrfirescience.org/resource/12777)

Wilderness fire, its history, challenges, teachings, and future were the focus of discussions and presentations during the 40 Years of Wilderness Fire in the Selway-Bitterroot field trip at the May 2014 Large Wildland Fires Conference. The trip took participants to observe recent fire patterns in the region between the Selway-...

Author(s): Corey L. Gucker

Year Published: 2014

Type: Document

Research Brief or Fact Sheet

## **Response of highly valued resources and assets to wildfire within Grand Teton National Park and Bridger-Teton National Forest**

[www.nrfirescience.org/resource/12744](http://www.nrfirescience.org/resource/12744)

Grand Teton National Park (GTNP) and the Bridger-Teton National Forest (BTNF) cover approximately 3.7 million acres within the Greater Yellowstone Ecosystem. The majority of this land base is fairly remote, much of it either designated Wilderness or roadless, and composed of fire-adapted ecosystems. To add complexity to the fire...

Author(s): Joe H. Scott, Don Helmbrecht, Martha A. Williamson

Year Published: 2013

Type: Document

Technical Report or White Paper

### **Escape probability: an alternative risk metric to support and evaluate wilderness fire management decisions**

[www.nrfirescience.org/resource/13478](http://www.nrfirescience.org/resource/13478)

Inside many U.S. federally designated wilderness areas, fire suppression is the dominant management strategy largely due to the risk that fires pose to resources adjacent to the wilderness boundary. Opportunities to exploit the fuel treatment and risk-mitigation benefits of allowing wilderness fires to burn are foregone when...

Author(s): Kevin M. Barnett

Year Published: 2013

Type: Document

Dissertation or Thesis

### **Wilderness shapes contemporary fire size distributions across landscapes of the western United States**

[www.nrfirescience.org/resource/12682](http://www.nrfirescience.org/resource/12682)

In many U.S. federally designated wilderness areas, wildfires are likely to burn of their own accord due to favorable management policies and remote location. Previous research suggested that limitations on fire size can result from the evolution of natural fire regimes, specifically in places where fuels were...

Author(s): Sandra L. Haire, Kevin McGarigal, Carol L. Miller

Year Published: 2013

Type: Document

Book or Chapter or Journal Article

### **Technical guide for monitoring selected conditions related to wilderness character**

[www.nrfirescience.org/resource/12437](http://www.nrfirescience.org/resource/12437)

The purpose of monitoring wilderness character is to improve wilderness stewardship by providing managers a tool to assess how selected actions and conditions related to wilderness character are changing over time. Wilderness character monitoring provides information to help answer two key questions about wilderness character and...

Author(s): Peter Landres, Steve Boutcher, Liese Dean, Troy E. Hall, Tamara Blett, Terry Carlson, Ann Mebane, Carol Hardy, Susan Rinehart, Linda Merigliano, David N. Cole, Andy Leach, Pam Wright, Deb Bumpus

Year Published: 2009

Type: Document

Technical Report or White Paper

### **Mapping tradeoffs in values at risk at the interface between wilderness and non-wilderness lands**

[www.nrfirescience.org/resource/11063](http://www.nrfirescience.org/resource/11063)

On the Flathead Indian Reservation in Montana, U.S., the Mission Mountains Tribal Wilderness is bordered by a buffer zone. To successfully improve forest health within that buffer zone and restore fire in the wilderness, the managing agency and the public need to work together to find solutions to

increasingly threatening fuel...

Author(s): Alan E. Watson, Roian Matt, Tim Waters, Kari Gunderson, Stephen J. Carver, Brett Davis

Year Published: 2009

Type: Document

Conference Proceedings, Technical Report or White Paper

### **Traditional ecological knowledge: applying principles of sustainability to wilderness resource management**

[www.nrfirescience.org/resource/12545](http://www.nrfirescience.org/resource/12545)

Traditional ecological knowledge within specific cultural and geographical contexts was explored during an interactive session at the 8th World Wilderness Congress to identify traditional principles of sustainability. Participants analyzed the traditional knowledge contained in ten posters from Canada and...

Author(s): Nancy C. Ratner, Davin L. Holen

Year Published: 2007

Type: Document

Conference Proceedings

### **CCE fire regimes and their management**

[www.nrfirescience.org/resource/8369](http://www.nrfirescience.org/resource/8369)

A spectacular forest in the center of the CCE cuts a 15- by 5-km swath along the Flathead River's South Fork around Big Prairie in the middle of the Bob Marshall Wilderness Area in Montana (Figure 13- 1). This wide valley bottom, which contains two patches (of about 1,000 ha each) of the last vestiges of the historic ponderosa pine...

Author(s): Robert E. Keane, Carl H. Key

Year Published: 2007

Type: Document

Book or Chapter or Journal Article, Synthesis

### **Trends in public attitudes towards the use of wildland fire**

[www.nrfirescience.org/resource/10983](http://www.nrfirescience.org/resource/10983)

This paper summarizes a select set of research studies conducted over the past 40 years, drawing conclusions on trends in public attitudes about the use of wildland fire in federally designated Wilderness. The research includes trend studies conducted with visitors to Wilderness areas in Washington, Oregon, California, Idaho and...

Author(s): Katie Knotek

Year Published: 2006

Type: Document

Conference Proceedings

### **Wilderness fire management in a changing world**

[www.nrfirescience.org/resource/7963](http://www.nrfirescience.org/resource/7963)

Several strategies are available for reducing accumulated forest fuels and their associated risks, including naturally or accidentally ignited wildland fires, management ignited prescribed fires, and a variety of mechanical and chemical methods (Omi 1996). However, a combination of policy, law, philosophy, and logistics suggest...

Author(s): Carol L. Miller

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **The complexity of managing fire-dependent ecosystems in wilderness: relict ponderosa pine in the Bob Marshall Wilderness**

[www.nrfirescience.org/resource/7953](http://www.nrfirescience.org/resource/7953)

Isolated wilderness ecosystems with a history of frequent, low-severity fires have been altered due to many decades of fire exclusion and, as a result, are difficult to restore for philosophical and logistical reasons. In this paper, we describe the successional conditions of ponderosa pine (*Pinus ponderosa*) communities along the...

Author(s): Robert E. Keane, Stephen F. Arno, Laura J. Dickinson

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Understanding place meanings on the Bitterroot National Forest - A landscape-level assessment of personal and community values**

[www.nrfirescience.org/resource/7934](http://www.nrfirescience.org/resource/7934)

Information about human relationships with wilderness is important for wilderness management decisions, including decisions pertaining to the use of wildland fire. In a study about meanings attached to a national forest, local residents were asked to identify places they valued on the forest, why they valued them, and how fuel...

Author(s): Kari Gunderson, Alan E. Watson

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **Organizational characteristics that contribute to success in engaging the public to accomplish fuels management at the wilderness/non-wilderness interface**

[www.nrfirescience.org/resource/10984](http://www.nrfirescience.org/resource/10984)

In the fall of 2003, the Rocky Mountain Ranger District of the Lewis and Clark National Forest initiated a multi-year, large-scale prescribed burn in the Scapegoat Wilderness. The objectives of this burn were to make the non-wilderness side of the wilderness boundary more defensible from wildfire and to establish conditions that...

Author(s): Katie Knotek, Alan E. Watson

Year Published: 2006

Type: Document

Conference Proceedings

### **Understanding social influences on wilderness fire stewardship decisions**

[www.nrfirescience.org/resource/7954](http://www.nrfirescience.org/resource/7954)

Federal land managers and the public engage in many decisions about stewardship of wilderness in the United States, including decisions about stewardship of fire. To date, social science research lacks a holistic examination of the decision-making context of managers and the public about stewardship of fire inside wilderness and...

Author(s): Katie Knotek

Year Published: 2006

Type: Document

Book or Chapter or Journal Article

### **The Bitterroot Ecosystem Management Research Project: what we have learned, symposium proceedings; May 18-20, 1999; Missoula, MT**

[www.nrfirescience.org/resource/11890](http://www.nrfirescience.org/resource/11890)

The varied topics presented in these symposium proceedings represent the diverse nature of the Bitterroot Ecosystem Management Research Project (BEMRP). Separated into six sections, the papers cover the different themes researched by BEMRP collaborators as well as brief overviews of five other ecosystem management projects. The...

Author(s): Helen Y. Smith

Year Published: 2000

Type: Document

Conference Proceedings

### **Testing transferability of forest recreation demand in three intermountain states with application to forest fire effects**

[www.nrfirescience.org/resource/11052](http://www.nrfirescience.org/resource/11052)

Surveys of visitors to National Forests in Colorado, Idaho, and Wyoming were conducted to determine whether non-motorized recreation visitation responded to different fire ages and fire intensities. Actual and intended behavior data was combined using a negative binomial count data travel cost model. The intended behavior trip...

Author(s): John B. Loomis, Jeffrey Englin, Jared McDonald, Armando Gonzalez-Caban

Year Published: 2000

Type: Document

Conference Proceedings

### **Twentieth-century fire patterns in the Selway-Bitterroot Wilderness Area, Idaho/ Montana, and the Gila/Aldo Leopold Wilderness Complex, New Mexico**

[www.nrfirescience.org/resource/11001](http://www.nrfirescience.org/resource/11001)

Twentieth century fire patterns were analyzed for two large, disparate wilderness areas in the Rocky Mountains. Spatial and temporal patterns of fires were represented as GIS-based digital fire atlases compiled from archival Forest Service data. We find that spatial and temporal fire patterns are related to landscape features and...

Author(s): Matthew G. Rollins, Thomas W. Swetnam, Penelope Morgan

Year Published: 2000

Type: Document

Conference Proceedings

### **Wilderness fire science: a state of knowledge review**

[www.nrfirescience.org/resource/14386](http://www.nrfirescience.org/resource/14386)

Wilderness fire science has progressed since the last major review of the topic, but it was significantly affected by the large fire events of 1988. Strides have been made in both fire behavior and fire effects, and in the issues of scaling, yet much of the progress has not been specifically tied to wilderness areas or funding....

Author(s): James K. Agee

Year Published: 2000

Type: Document

Synthesis, Technical Report or White Paper

### **Appropriate management responses to wildland fire: options and costs**

[www.nrfirescience.org/resource/11068](http://www.nrfirescience.org/resource/11068)

The Federal Wildland Fire Management Policy and Program Review, chartered and completed in 1995, represents the latest stage in the evolution of wildland fire management. The concept of appropriate management response is central to this policy. Through this approach, management responses are developed to reflect resource management...

Author(s): G. Thomas Zimmerman

Year Published: 1999  
Type: Document  
Conference Proceedings, Technical Report or White Paper

### **Effects of fire on the economic value of forest recreation in the Intermountain West: preliminary results**

[www.nrfirescience.org/resource/11051](http://www.nrfirescience.org/resource/11051)

Visitors to National Forests in Colorado, Idaho, and Wyoming were asked how their visitation rates would change with the presence of a high-intensity crown fire, prescribed fire, and a 20-year-old high-intensity fire at the area they were visiting. By using pairwise t-tests, visitors to forests in Colorado showed a statistically...

Author(s): John B. Loomis, Jeffrey Englin, Armando Gonzalez-Caban

Year Published: 1999

Type: Document

Conference Proceedings, Technical Report or White Paper

### **Effects of the Gates Park Fire on recreation choices**

[www.nrfirescience.org/resource/11094](http://www.nrfirescience.org/resource/11094)

The 1988 Gates Park Fire, along the North Fork of the Sun River in the Bob Marshall Wilderness, provided an opportunity to explore fire effects on wilderness visitor choices. Recreation visitors along the North and South Fork drainages were interviewed to assess the effects of 1988 fires on their 1989 visits. The Gates Park fire had...

Author(s): Timothy G. Love, Alan E. Watson

Year Published: 1992

Type: Document

Research Brief or Fact Sheet

### **Some thoughts on prescribed natural fires**

[www.nrfirescience.org/resource/12420](http://www.nrfirescience.org/resource/12420)

Wildland fire is a significant component of nearly all North American ecosystems. High intensity, stand-replacement fires are normal in certain ecosystems, especially in the northern Rocky Mountains. Wilderness fire managers are obligated to let fire operate as a natural influence to the extent that this is possible. Where...

Author(s): Jack D. Cohen

Year Published: 1991

Type: Document

Conference Proceedings, Technical Report or White Paper

### **Visitor attitudes toward wilderness fire management policy - 1971-84**

[www.nrfirescience.org/resource/11962](http://www.nrfirescience.org/resource/11962)

Visitors to the Selway-Bitterroot Wilderness, MT, were asked about their knowledge of fire effects and attitudes toward fire management in wilderness settings. In comparison to a similar 1971 study, visitors were more knowledgeable about fire effects and more supportive of fire management rather than fire suppression. About half the...

Author(s): Stephen F. McCool, George H. Stankey

Year Published: 1985

Type: Document

Technical Report or White Paper

### **Fire-dependent forests in the Northern Rocky Mountains**



[www.nrfirescience.org/resource/7935](http://www.nrfirescience.org/resource/7935)

One objective of wilderness and parkland fire-ecology research is to describe the relationships between fire and unmanaged ecosystems, so that strategies can be determined that will provide a more nearly natural incidence of fire. More than 50 yr of efforts directed toward exclusion of wildland fires in the Northern Rocky Mountains...

Author(s): James R. Habeck, Robert W. Mutch

Year Published: 1973

Type: Document

Book or Chapter or Journal Article, Synthesis

### **Wild science: wilderness and fire**

[www.nrfirescience.org/resource/15519](http://www.nrfirescience.org/resource/15519)

The Aldo Leopold Wilderness Research Institute presents this short film about the critical importance of wilderness fire science to understanding the complex nature of forest fires, and to informing natural resource management across all landscapes

Type: Media

Video

### **The foundation and qualities of wilderness character**

[www.nrfirescience.org/resource/14393](http://www.nrfirescience.org/resource/14393)

This webinar was hosted by the Arthur Carhart National Wilderness Training Center, precise date of the 2012 webinar is unknown.

Type: Media

Webinar

### **The next 50 years: opportunities for diversifying the ecological representation of the National Wilderness Preservation System**

[www.nrfirescience.org/resource/14391](http://www.nrfirescience.org/resource/14391)

Jocelyn Aycrigg, Department of Fish and Wildlife Sciences, University of Idaho; Matthew Dietz, The Wilderness Society; and James Tricker, University of Montana & Aldo Leopold Wilderness Research Institute, presented a simulation on how adding different types of lands (ex. National Park Service non-wilderness lands, Bureau of...

Type: Media

Webinar

### **Wilderness and fire: lessons learned from wilderness fire and challenges for the next 50 years of wilderness**

[www.nrfirescience.org/resource/13778](http://www.nrfirescience.org/resource/13778)

The presentation shows examples and fire history from the 40+ years of Wilderness fire management in the Selway-Bitterroot Wilderness as well as the Frank Church – River of no Return Wilderness focusing on what has been learned and challenges that lay ahead. Climate change as well as public engagement and education are challenges...

Type: Media

Webinar

### **The ability of wildfire to act as a fuel treatment**

[www.nrfirescience.org/resource/12802](http://www.nrfirescience.org/resource/12802)

This webinar highlighted results from a study investigating the ability of wildfire to act as a fuel treatment. The study evaluated whether or not wildfires limited the occurrence, size, and severity of subsequent wildfires in four large wilderness complexes in Idaho, Montana, and New Mexico. The study

focused on protected areas to...

Type: Media

Webinar

### **FIREHouse: The Northwest and Alaska Fire Research Clearinghouse**

[www.nrfirescience.org/resource/144](http://www.nrfirescience.org/resource/144)

FIREHouse provides user-friendly, web-based information about fire science and technology relevant to Washington, Oregon, Idaho and Alaska. For each project posted, the goal is to provide, as applicable, online, searchable access to: (1) project and tool descriptions, contact information and links; (2) on-line publications; (3)...

Type: Website

Website

### **Integrating wilderness character with land management planning efforts**

[www.nrfirescience.org/resource/14395](http://www.nrfirescience.org/resource/14395)

This webinar was hosted by the Arthur Carhart National Wilderness Training Center.

Type: Media

Webinar

### **The unique legal, scientific, and ethical challenges of restoration in wilderness**

[www.nrfirescience.org/resource/14392](http://www.nrfirescience.org/resource/14392)

This webinar presents a preliminary framework to help make defensible decisions regarding restoration in wilderness.

Type: Media

Webinar

### **Progress in wilderness fire science: embracing complexity for the 21st century**

[www.nrfirescience.org/resource/14338](http://www.nrfirescience.org/resource/14338)

Wilderness has played an invaluable role in the development of wildland fire science. In the last fifteen years, since the last state-of-knowledge review, tremendous progress has been made in the development of models and data, in understanding the complexity of wildland fire as a landscape process, and in...

Type: Media

Webinar

### **The structure of fire size distributions: a broad view of interacting gradients in wilderness management, spatial climate, and topography in three western regions**

[www.nrfirescience.org/resource/12813](http://www.nrfirescience.org/resource/12813)

Determining the effects of land management on fire regime characteristics is complicated by the interaction of several factors that vary in space and time. First, fire size and frequency are linked to climate conditions, including drought, as well as wind and temperature that define weather conditions during burning. Second,...

Type: Media

Webinar