Burning increases post-fire carbon emissions in a heathland and a raised bog, but experimental manipulation of fire severity has no effect
www.nrfirescience.org/resource/19357
Large amounts of carbon are stored in northern peatlands. There is concern that greater wildfire severity following projected increases in summer drought will lead to higher post-fire carbon losses. We measured soil carbon dynamics in a Calluna heathland and a raised peat bog after experimentally manipulating fire severity. A...
Author(s): Roger Grau-Andrés, Alan Gray, G. Matt Davies, E. Marian Scott, Susan Waldron
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Investigating the application of a hybrid space discretisation for urban scale evacuation simulation
www.nrfirescience.org/resource/19336
The devastating effects of wildfires cannot be overlooked; these include massive resettlement of people, destruction of property and loss of lives. The considerable distances over which wild fires spread and the rates at which these fires can spread is a major concern as this places considerable challenges on the evacuation...
Author(s): Nitish Chooramun, Peter J. Lawrence, Edwin R. Galea
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Repeated fires reduce plant diversity in low?elevation Wyoming big sagebrush ecosystems (1984–2014)
www.nrfirescience.org/resource/19047
Sagebrush is one of the most imperiled ecosystems in western North America, having lost about half of its original 62 million hectare extent. Annual grass invasions are known to be increasing wildfire occurrence and burned area, but the lasting effects (greater than five years post?fire) that the resulting reburns have on these...
Author(s): Adam L. Mahood, Jennifer Balch
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Effects of fire severity on the composition and functional traits of litter-dwelling macroinvertebrates in a temperate forest
www.nrfirescience.org/resource/19034
High severity fires are likely to become more prevalent with global climate change, so it is critical that we understand their effects on forest ecosystems. Leaf litter dependent fauna are likely to be particularly vulnerable to habitat loss resulting from fire, which often destroys their leaf litter habitat. We hypothesised that,...
Author(s): Sebastian Buckingham, Nick P. Murphy, Heloise Gibb
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Postwildfire seeding to restore native vegetation and limit exotic annuals: an evaluation in juniper-dominated sagebrush steppe
www.nrfirescience.org/resource/19222

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: 2019
Type: Document
Book or Chapter or Journal Article

Comparison and integration of lidar and photogrammetric point clouds for mapping pre-fire forest structure
www.nrfirescience.org/resource/19424
Lidar is an established tool for mapping forest structure, but its sparse spatial and temporal coverage often preclude its use in studying forest disturbance. In contrast, aerial imagery has been and continues to be regularly collected in many regions, and advances in stereo image matching have automated the creation of dense...
Author(s): Steven K. Filippelli, Michael A. Lefsky, Monique E. Rocca
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Seed Availability Does Not Ensure Regeneration in Northern Ecosystems of the Endangered Limber Pine
www.nrfirescience.org/resource/18865
When biotic interactions such as disease alter both the seed production capacity of stands, and seedling survivorship, the relative importance of seed availability versus substrate specificity may alter future regeneration opportunities for plant populations. Background and Objectives: We investigated the importance of disease...
Author(s): Vernon S. Peters, Darcy R. Visscher
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Varying relationships between fire radiative power and fire size at a global scale
www.nrfirescience.org/resource/19174
Vegetation fires are an important process in the Earth system. Fire intensity locally impacts fuel consumption, damage to the vegetation, chemical composition of fire emissions and also how fires spread across landscapes. It has been observed that fire occurrence, defined as the frequency of active fires detected by the MODIS sensor...
Author(s): Pierre Laurent, Florent Mouillot, María Vanesa Moreno, Chao Yue, Philippe Ciais
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Fire and burn severity assessment: calibration of Relative Differenced Normalized Burn Ratio (RdNBR) with field data
www.nrfirescience.org/resource/19414
The assessment of burn severity is highly important in order to describe and measure the effects of fire on vegetation, wildlife habitat and soils. The estimation of burn severity based on remote sensing is a powerful tool that, to be useful, needs to be related and validated with field data. The present paper explores the...

Author(s): Adrián Cardil, Blas Mola-Yudego, Ángela Blázquez-Casado, José Ramón González-Olabarria
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Post-spruce beetle timber salvage drives short-term surface fuel increases and understory vegetation shifts
www.nrfirescience.org/resource/19317
Recent, widespread spruce beetle (Dendroctonus rufipennis) outbreaks have driven extensive tree mortality across western North America. Post-disturbance forest management often includes salvage logging to capture economic value of dead timber, reduce fire hazard, and meet other social or ecological objectives. Little is known about...
Author(s): Lucas R. Mattson, Jonathan D. Coop, Michael A. Battaglia, Anthony S. Cheng, Jason S. Sibold, Sara Viner
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Biophysical feedback of global forest fires on surface temperature
www.nrfirescience.org/resource/19109
The biophysical feedbacks of forest fire on Earth's surface radiative budget remain uncertain at the global scale. Using satellite observations, we show that fire-induced forest loss accounts for about 15% of global forest loss, mostly in northern high latitudes. Forest fire increases surface temperature by 0.15 K (0.12 to 0....
Author(s): Zhihua Liu, Ashley Ballantyne, L. Annie Cooper
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Effects of atmospheric oxygen on horizontal peat smoldering fires: experimental and numerical study
www.nrfirescience.org/resource/19396
The smoldering combustion of natural organic layers such as peatlands leads to the largest and most persistent wildland fires on the Earth. The atmospheric oxygen concentration (mass fraction of oxygen:) significantly influences the smoldering characteristics of peatlands. This work investigates the effects of on horizontal peat...
Author(s): Jiuling Yang, Naian Liu, Haixiang Chen, Wei Gao, Ran Tu
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Ponderosa Pine Regeneration, Wildland Fuels Management, and Habitat Conservation: Identifying Trade-Offs Following Wildfire
www.nrfirescience.org/resource/19304
Increasing wildfires in western North American conifer forests have led to debates surrounding the application of post-fire management practices. There is a lack of consensus on whether (and to what extent) post-fire management assists or hinders managers in achieving goals, particularly in under-studied regions like eastern...
Author(s): Victoria M. Donovan, Caleb P. Roberts, Carissa L. Wonkka, David A. Wedin, Dirac Twidwell
Year Published: 2019

Type: Document
Book or Chapter or Journal Article

Effect of moss crusts on mitigation of post-fire soil erosion
www.nrfirescience.org/resource/19387
Mosses and wildfires are ubiquitous occurrences. Their correlation has been assessed in few studies. Mosses have been pointed as pioneer species in post-fire environments. However, reasons for moss crusting in post-wildfire soils and their ecosystem role in preventing soil erosion have not been quantitatively assessed. Moss crusts...
Author(s): Flávio C. Silva, Diana C.S. Vieira, Els van der Spek, J. Jacob Keizer
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Pathways of change: predicting the effects of fire on flammability
www.nrfirescience.org/resource/19090
Impacts of wildfire on humans are increasing as urban populations continue to expand into fire prone landscapes. Effective fire risk management can only be achieved if we understand and quantify how ecosystems change in response to fire and how these changes affect flammability. However, there have been limited studies to this...
Author(s): Sarah C. McColl-Gausden, Trent D. Penman
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Vegetation succession in an old-growth ponderosa pine forest following structural restoration with fire: implications for retreatment and maintenance - JFSP Final Report
www.nrfirescience.org/resource/19272
Stand changes brought on by fire exclusion have contributed to reduced resilience to wildfire in ponderosa pine forests throughout the western US. Growing recognition of how structural attributes influence resilience has led to interest in restoring more heterogeneous conditions once common in these forests, but key information...
Author(s): Eric E. Knapp, Alan H. Taylor, Michelle Coppoletta, Natalie Pawlikowski
Year Published: 2019
Type: Document
Technical Report or White Paper

Belowground community responses to fire: meta?analysis reveals contrasting responses of soil microorganisms and mesofauna
www.nrfirescience.org/resource/19382
Global fire regimes are shifting due to climate and land use changes. Understanding the responses of belowground communities to fire is key to predicting changes in the ecosystem processes they regulate. We conducted a comprehensive meta?analysis of 1634 observations from 131 empirical studies to investigate the effect of fire on...
Author(s): Yamina Pressler, John C. Moore, M. Francesca Cotrufo
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

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

range
www.nrfirescience.org/resource/19087
Recent shifts in global forest area highlight the importance of understanding the causes and consequences of forest change. To examine the influence of several potential drivers of forest cover change, we used supervised classifications of historical (1938-1940) and contemporary (2015) aerial imagery covering a 2932?km2 study area...
Author(s): Kyle Rodman, Thomas T. Veblen, Sara Saraceni, Teresa B. Chapman
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Inferring energy incident on sensors in low-intensity surface fires from remotely sensed radiation and using it to predict tree stem injury
www.nrfirescience.org/resource/19263
Remotely sensed radiation, attractive for its spatial and temporal coverage, offers a means of inferring energy deposition in fires (e.g. on soils, fuels and tree stems) but coordinated remote and in situ (in-flame) measurements are lacking. We relate remotely sensed measurements of fire radiative energy density (FRED) from nadir (...
Author(s): Matthew B. Dickinson, Bret W. Butler, Andrew T. Hudak, Benjamin C. Bright, Robert L. Kremens, Carine Klauberg
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Historical patterns of fire severity and forest structure and composition in a landscape structured by frequent large fires: Pumice Plateau ecoregion, Oregon, USA
www.nrfirescience.org/resource/19358
Context: Lack of quantitative observations of extent, frequency, and severity of large historical fires constrains awareness of departure of contemporary conditions from those that demonstrated resistance and resilience to frequent fire and recurring drought. Objectives: Compare historical and contemporary fire and forest...
Author(s): R. Keala Hagmann, Andrew G. Merschel, Matthew J. Reilly
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Spatial-Temporal Patterns of Spruce Budworm Defoliation within Plots in Québec
www.nrfirescience.org/resource/19062
We investigated the spatial-temporal patterns of spruce budworm (Choristoneura fumiferana (Clem.); SBW) defoliation within 57 plots over 5 years during the current SBW outbreak in Québec. Although spatial-temporal variability of SBW defoliation has been studied at several scales, the spatial dependence between individual defoliated...
Author(s): Mingke Li, David A. MacLean, Chris R. Hennigar, Jae Ogilvie
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Tamm Review: Seedling-based ecology, management, and restoration in aspen (Populus tremuloides)
www.nrfirescience.org/resource/18788
Quaking or trembling aspen (Populus tremuloides Michx.) is a foundational tree species, which is

native, common, and broadly distributed in North America. The ecology of aspen has been extensively studied throughout its range, but both research and forest management practices have focused primarily on its ability to regenerate...
Author(s): Simon M. Landhäusser, Bradley D. Pinno, Karen Mock
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Beyond red crowns: complex changes in surface and crown fuels and their interactions 32 years following mountain pine beetle epidemics in south-central Oregon, USA
www.nrfirescience.org/resource/19250
Background: Mountain pine beetle (Dendroctonus ponderosae Hopkins; MPB), a bark beetle native to western North America, has caused vast areas of tree mortality over the last several decades. The majority of this mortality has been in lodgepole pine (Pinus contorta Douglas ex Loudon) forests and has heightened concerns over the...
Author(s): Travis J. Woolley, David C. Shaw, LaWen Hollingsworth, Michelle Agne, Stephen A. Fitzgerald, Andris Eglitis, Laurie L. Kurth
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Wildfire effects on soil properties in fire-prone pine ecosystems: indicators of burn severity legacy over the medium term after fire
www.nrfirescience.org/resource/19352
The aim of this study was to determine the effects of burn severity on soil properties (chemical, biochemical and microbiological) in fire-prone pine ecosystems three years after fire. To achieve these goals, we selected two large wildfires that occurred in summer 2012 within the Iberian Peninsula: the Sierra del Teleno wildfire,...
Author(s): Víctor Fernández-García, Jessica R. Miesel, Manuel Jaime Baeza, Elena Marcos, Leonor Calvo
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Incorporating biophysical gradients and uncertainty into burn severity maps in a temperate fire?prone forested region
www.nrfirescience.org/resource/19054
As forest fire activity increases worldwide, it is important to track changing patterns of burn severity (i.e., degree of fire?caused ecological change). Satellite data provide critical information across space and time, yet how satellite indices relate to individual measures of burn severity on the ground (e.g., tree mortality or...
Author(s): Brian J. Harvey, Robert A. Andrus, Sean C. Anderson
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Origins of abrupt change? Postfire subalpine conifer regeneration declines nonlinearly with warming and drying
www.nrfirescience.org/resource/19044
Robust tree regeneration following high?severity wildfire is key to the resilience of subalpine and boreal forests, and 21st century climate could initiate abrupt change in forests if postfire temperature and soil

moisture become less suitable for tree seedling establishment. Using two widespread conifer species, lodgepole pine (...
Author(s): Winslow D. Hansen, Monica G. Turner
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Wild bee diversity increases with local fire severity in a fire-prone landscape
www.nrfirescience.org/resource/19428
As wildfire activity increases in many regions of the world, it is imperative that we understand how key components of fire?prone ecosystems respond to spatial variation in fire characteristics. Pollinators provide a foundation for ecological communities by assisting in the reproduction of native plants, yet our understanding of...
Author(s): Sara M. Galbraith, James H. Cane, Andrew R. Moldenke, James W. Rivers
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

The next generation soil heating model - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/19006
Accurately modeling the duration and extent of soil heating from prescribed fires and wildfires is vital to predicting many second-order fire effects, including development of soil hydrophobicity and other biological, chemical, and physical effects. Advancements have been made in the process-based soil heating models that consider...
Author(s): Peter R. Robichaud, William J. Massman, Anthony S. Bova, Antonio Girona-García, Mathew Lesiecki
Year Published: 2019
Type: Document
Technical Report or White Paper

Belowground community responses to fire: meta?analysis reveals contrasting responses of soil microorganisms and mesofauna
www.nrfirescience.org/resource/19216
Global fire regimes are shifting due to climate and land use changes. Understanding the responses of belowground communities to fire is key to predicting changes in the ecosystem processes they regulate. We conducted a comprehensive meta?analysis of 1634 observations from 131 empirical studies to investigate the effect of fire on...
Author(s): Yamina Pressler, John C. Moore, M. Francesca Cotrufo
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Future fire scenarios: predicting the effect of fire management strategies on the trajectory of high-quality habitat for threatened species
www.nrfirescience.org/resource/19421
Prescribed (or 'planned') burning is used by land managers to reduce fuel-loads in order to mitigate the spread of wildfire, thereby protecting life and property, and to promote environmental heterogeneity to enhance biodiversity. Globally, many fire management agencies focus on increasing extent and frequency of prescribed burning...
Author(s): Jemima Connell, Simon J. Watson, Rick S. Taylor, Sarah C. Avitabile, Natasha Schedvin, Kathryn Schneider, Michael F. Clarke

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

Mountain big sagebrush - Fire regimes
www.nrfirescience.org/resource/18975
Estimates of historical fire regime parameters in mountain big sagebrush communities can be compared with current fire regimes and trends to establish general guidelines for ecological restoration. A synthesis of information on historical patterns and contemporary changes in fuels and fire regimes in mountain big sagebrush...
Author(s): Robin J. Innes
Year Published: 2019
Type: Document
Research Brief or Fact Sheet

A new pathway for hexavalent chromium formation in soil: fire-induced alteration of iron oxides
www.nrfirescience.org/resource/19410
Iron oxides are important pedogenic Cr(III)-bearing phases which experience high-temperature alteration via fire-induced heating of surface soil. In this study, we examine if heating-induced alteration of Cr(III)-substituted Fe oxides can potentially facilitate rapid high-temperature oxidation of solid-phase Cr(III) to hazardous Cr(...
Author(s): Edward D. Burton, Girish Choppala, Niloofar Karimian, Scott G. Johnston
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Fire Intensity Affects the Relationship between Species Diversity and the N Utilization Stability of Dominant Species
www.nrfirescience.org/resource/19307
Stabilizing the local elemental stoichiometry is an important step toward restoring species diversity in a damaged ecosystem, especially those affected by wildfire. Stability of nitrogen (N) utilization is mainly affected by wildfire through restoration, which is one of the most important parts of stoichiometric utilization. However...
Author(s): Zhaopeng Song, Yanhong Liu
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

A physiological understanding of organismal responses to fire
www.nrfirescience.org/resource/19390
Devastation of both natural and human habitats due to wildfires is becoming an increasingly prevalent global issue. Fire-adapted and fire-prone regions, such as California and parts of Australia, are experiencing more frequent and increasingly destructive wildfires, accompanied by longer wildfire seasons. Further, wildfires are...
Author(s): Clare Stawski, Anna C. Doty
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Archetypes of community wildfire exposure from national forests of the western US

www.nrfirescience.org/resource/19098
Risk management typologies and their resulting archetypes can structure the many social and biophysical drivers of community wildfire risk into a set number of strategies to build community resilience. Existing typologies omit key factors that determine the scale and mechanism by which exposure from large wildfires occur. These...
Author(s): Cody Evers, Alan A. Ager, Max W. Nielsen-Pincus, Palaiologos Palaiologou, Ken Bunzel
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Feast not famine: Nitrogen pools recover rapidly in 25?yr?old postfire lodgepole pine
www.nrfirescience.org/resource/19281
The extent of young postfire conifer forests is growing throughout western North America as the frequency and size of high?severity fires increase, making it important to understand ecosystem structure and function in early seral forests. Understanding nitrogen (N) dynamics during postfire stand development is especially important...
Author(s): Monica G. Turner, Timothy G. Whitby, William H. Romme
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Long-term effects of fire on vegetation structure and predicted fire behavior in Wyoming Big Sagebrush ecosystems
www.nrfirescience.org/resource/19385
Fire historically occurred across the sagebrush steppe, but little is known about how patterns of post-fire fuel accumulation influence future fire in Wyoming big sagebrush (Artemisia tridentata ssp. wyomingensis) communities. To quantify change in fuel composition and structure in intact sagebrush ecosystems, we sampled 17 years...
Author(s): Schyler A. Reis, Lisa M. Ellsworth, J. Boone Kauffman, David W. Wrobleski
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Generalized fire response strategies in plants and animals
www.nrfirescience.org/resource/19088
Despite the existing large body of research on plant?animal interactions, plant research and animal research are still relatively independent and asymmetrical in relation to disturbance. Animals and plants are likely to have different fire responses, yet biodiversity studies in relation to disturbance may benefit from a more...
Author(s): Juli G. Pausas
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Biological Aspects of Mountain Pine Beetle in Lodgepole Pine Stands of Different Densities in Colorado, USA
www.nrfirescience.org/resource/18813
Research highlights: The biology of mountain pine beetle (MPB), Dendroctonus ponderosae Hopkins, in Colorado’s lodgepole pine forests exhibits similarities and differences to other parts of its range. Brood emergence was not influenced by stand density nor related to tree diameter. The probability of individual tree attack is...

Author(s): Jose F. Negron
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Wildfire and Fuel Treatment Strategy Effects on Water Quantity across the Conterminous United States - JFSP Final Report
www.nrfirescience.org/resource/19270
Forest watersheds provide over half of our national water supplies. Millions of people depend on surface freshwater supplies from fire-prone headwater forests, used for drinking, irrigation, industry, and hydropower. However wildland fires in the contiguous United States (CONUS) have increased in frequency, size, and severity,...
Author(s): Ge Sun, Dennis W. Hallema, Erika C. Cohen, Steven G. McNulty, Peter V. Caldwell, Francois-Nicolas Robinne, Steven P. Norman, Yongqiang Liu
Year Published: 2019
Type: Document
Technical Report or White Paper

Peatland vegetation change and establishment of re-introduced Sphagnum moss after prescribed burning
www.nrfirescience.org/resource/19377
Fire, including prescribed burning, is common on peatlands globally and can affect vegetation, including peat-forming Sphagnum mosses, and affect ecosystem services. We monitored vegetation in different burn-age categories at three UK peatland sites over a 19-month period. Half of the plots had Sphagnum fragments added and their...
Author(s): Alice Noble, Sheila M. Palmer, David J. Glaves, Alistair Crowle, Joseph Holden
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Wildfire Alters Spatial Patterns of Available Soil Nitrogen and Understory Environments in a Valley Boreal Larch Forest
www.nrfirescience.org/resource/19067
Wildfire, a primary natural disturbance in many forests, affects soil nutrient availability and spatial distributions of forest plants. However, post-fire changes in soil nutrients and spatial patterns of understory environments at fine scales are poorly understood. Here, we characterized spatial patterns of soil nitrogen...
Author(s): Jian-jian Kong, Jian Yang, Bo Liu, Lin Qi
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

The myth of the biological threshold: A review of biological responses to soil heating associated with wildland fire
www.nrfirescience.org/resource/18790
Soil heating caused by prescribed or wildland fire commonly focuses on a single biological thermal threshold of 60 °C for the duration of one minute to represent organism death. This metric severely misrepresents the heterogeneity of the soil environment, the physiological attributes and tolerances of organisms, and the...
Author(s): Melissa R.A. Pingree, Leda N. Kobziar
Year Published: 2019

Type: Document
Book or Chapter or Journal Article

Short- and long-term hydrologic controls on smouldering fire in wetland soils
www.nrfirescience.org/resource/19258
Smouldering fire vulnerability in organic-rich, wetland soils is regulated by hydrologic regimes over short (by antecedent wetness) and long (through influences on soil properties) timescales. An integrative understanding of these controls is needed to inform fire predictions and hydrologic management to reduce fire vulnerability....
Author(s): Morgan L. Schulte, Daniel L. McLaughlin, Frederic C. Wurster, J. Morgan Varner, Ryan D. Stewart, W. Mike Aust, C. Nathan Jones, Bridget Gile
Year Published: 2019
Type: Document
Book or Chapter or Journal Article

Pinus albicaulis Engelm. (Whitebark Pine) in Mixed-Species Stands throughout Its US Range: Broad-Scale Indicators of Extent and Recent Decline
www.nrfirescience.org/resource/17184
We used data collected from >1400 plots by a national forest inventory to quantify population-level indicators for a tree species of concern. Whitebark pine (Pinus albicaulis) has recently experienced high mortality throughout its US range, where we assessed the area of land with whitebark pine present, size-class distribution of...
Author(s): Sara Goeking, Deborah Kay Izlar
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
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

Do post-fire fuel treatments and annual grasses interact to affect fire regimes in the Great Basin? - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/18252
Shifting climates and annual grass invasions have contributed to the increased number and size of fires in the western United States costing millions of dollars in fire suppression and post-fire rehabilitation. Post-fire rehabilitation implements fuel treatments, such as aerial and drill seeding, to control annual grass invasion and...
Author(s): Beth A. Newingham, Eva K. Strand
Year Published: 2018
Type: Document
Technical Report or White Paper

FEIS literature review: Pinus ponderosa var. benthamiana, P. p. var. ponderosa: Ponderosa pine
www.nrfirescience.org/resource/19055
This Species Review covers two varieties of ponderosa pine, Pinus ponderosa var. benthamiana and P. p. var. ponderosa. 'Ponderosa pine' refers to both varieties. Ponderosa pine adapted to dry environments but occupies a wide variety of sites. It dominates or codominates low-elevation, dry forests and tends to form savannas in which...
Author(s): Janet L. Fryer
Year Published: 2018
Type: Document
Management or Planning Document

Digital soil mapping for fire prediction and management in rangelands
www.nrfirescience.org/resource/18782
Background: Soil properties have important effects on fire occurrence and spread, but soils are often overlooked in fire prediction models. Quantifying soil?fire linkages is limited by information in conventional soil maps, but digital soil mapping products (e.g., detailed soil property maps) could improve both wildfire prediction...
Author(s): Matthew R. Levi, Brandon T. Bestelmeyer
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Empirical models of annual post-fire erosion on mulched and unmulched hillslopes
www.nrfirescience.org/resource/17283
Erosion is one of the primary land management concerns following wildfire. This study examines controls on post-fire hillslope-scale erosion for the 2012 High Park Fire in northern Colorado, develops simple empirical models for predicting post-fire sediment yields, and evaluates model performance on several nearby fires. From 2013...
Author(s): Sarah R. Schmeer, Stephanie Kampf, Lee H. MacDonald, Josh Hewitt, Codie Wilson
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Ecological effects and effectiveness of silvicultural restoration treatments in whitebark pine forests
www.nrfirescience.org/resource/18064
Silvicultural thinning treatments to restore whitebark pine (Pinus albicaulis) are widely used in subalpine forests throughout the western United States (US) and Canada. The objectives of these treatments are to (1) improve the condition of whitebark pine at all ages, (2) to improve seedling recruitment processes, and (3) mitigate...
Author(s): Colin T. Maher, Cara R. Nelson, Andrew J. Larson, Anna Sala
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Wildfire smoke cools summer river and stream water temperatures
www.nrfirescience.org/resource/18368
To test the hypothesis that wildfire smoke can cool summer river and stream water temperatures by attenuating solar radiation and air temperature, we analyzed data on summer wildfire smoke, solar radiation, air temperatures, precipitation, river discharge, and water temperatures in the lower Klamath

River Basin in Northern...
Author(s): Aaron T. David, J. Eli Asarian, Frank K. Lake
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Simulation of net ecosystem productivity of a lodgepole pine forest after mountain pine beetle attack using a modified version of 3-PG
www.nrfirescience.org/resource/17169
The most recent mountain pine beetle (MPB) (Dendroctonus ponderosae) outbreak in British Columbia (BC), which began in the late 1990s, killed ?54% of the mature merchantable lodgepole pine and was expected to impact gross primary productivity (GPP), ecosystem respiration (R) and thus net ecosystem productivity (NEP) of infested...
Author(s): Gesa Meyer, T. Andrew Black, Rachhpal S. Jassal, Zoran Nesic, Nicholas C. Coops, Andreas Christen, Arthur L. Fredeen, David L. Spittlehouse, Nicholas J. Grant, Vanessa N. Foord, Rebecca Bowler
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
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

Plant community factors correlated with wyoming big sagebrush site responses to fire
www.nrfirescience.org/resource/17273
Fire kills Wyoming big sagebrush (Artemisia tridentata Nutt. ssp. wyomingensis Beetle...
Author(s): John C. Swanson, Peter J. Murphy, Sherman R. Swanson, Brad W. Schultz, Kent J. McAdoo
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

The response of big sagebrush (Artemisia tridentata) to interannual climate variation changes across its range
www.nrfirescience.org/resource/17570
Understanding how annual climate variation affects population growth rates across a species' range may help us anticipate the effects of climate change on species distribution and abundance. We predict that populations in warmer or wetter parts of a species' range should respond negatively to periods of above average temperature or...
Author(s): Andrew R. Kleinhesselink, Peter B. Adler
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

It takes a few to tango: changing climate and fire regimes can cause regeneration failure of two subalpine conifers
www.nrfirescience.org/resource/18334
Environmental change is accelerating in the 21st century, but how multiple drivers may interact to alter forest resilience remains uncertain. In forests affected by large high-severity disturbances, tree regeneration is a resilience linchpin that shapes successional trajectories for decades. We modeled stands of two widespread...
Author(s): Winslow D. Hansen, Kristin H. Braziunas, Werner Rammer, Rupert Seidl, Monica G. Turner
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Long-term effects of restoration fire and thinning on soil fungi, fine root biomass, and duff levels - Final report to the Joint Fire Science Program
www.nrfirescience.org/resource/17150
The proposed research will help managers understand how early soil ecosystem responses to fuel reduction treatments with prescribed fire may or may not be indicative of longer term responses. This research is necessary for better establishing, in forest management plans and decision documents, the ecosystem costs and benefits of...
Author(s): Jane E. Smith, Daniel L. Luoma, Robyn L. Darbyshire, James D. McIver, Andrew P. Youngblood
Year Published: 2018
Type: Document
Technical Report or White Paper

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

Fire enhances the complexity of forest structure in alpine treeline ecotones
www.nrfirescience.org/resource/16637
Alpine treelines are expected to move upward in a warming climate, but downward in response to increases in wildfire. We studied the effects of fire on vegetation structure and composition across four alpine treeline ecotones extending from Abies lasiocarpa/Picea engelmannii forests at lower elevations, through Pinus albicaulis/...
Author(s): C. Alina Cansler, Donald McKenzie, Charles B. Halpern
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

How vegetation recovery and fuel conditions in past fires influences fuels and future fire management in five western U.S. ecosystems - JFSP Final Report

www.nrfirescience.org/resource/18062
Mixed severity wildfires burn large areas in western North America forest ecosystems in most years and this is expected to continue or increase with climate change. Little is understood about vegetation recovery and changing fuel conditions more than a decade post-fire because it exceeds the duration of most studies of fire effects...
Author(s): Andrew T. Hudak, Beth A. Newingham, Eva K. Strand, Penelope Morgan
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Fire and tree death: understanding and improving modeling of fire-induced tree mortality
www.nrfirescience.org/resource/18761
Each year wildland fires kill and injure trees on millions of forested hectares globally, affecting plant and animal biodiversity, carbon storage, hydrologic processes, and ecosystem services. The underlying mechanisms of fire-caused tree mortality remain poorly understood, however, limiting the ability to accurately predict...
Author(s): Sharon M. Hood, J. Morgan Varner, Phillip J. van Mantgem, C. Alina Cansler
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
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

Proceedings of the IUFRO joint conference: Genetics of five-needle pines, rusts of forest trees, and Strobusphere
www.nrfirescience.org/resource/17556
Proceedings from the 2014 IUFRO Joint Conference: Genetics of five-needle pines, rusts of forest trees, and Strobusphere in Fort Collins, Colorado. The published proceedings include 91 papers pertaining to research conducted on the genetics and pathology of five-needle pines and rusts of forest trees. Topic areas are: ecology and...
Year Published: 2018
Type: Document
Technical Report or White Paper

Managing Wildfire for Whitebark Pine Ecosystem Restoration in western North America
www.nrfirescience.org/resource/18304
Wildfire in declining whitebark pine forests can be a tool for ecosystem restoration or an ecologically harmful event. This document presents a set of possible wildfire management practices for facilitating the restoration of whitebark pine across its range in Western North America. These management actions are designed to enhance...
Author(s): Robert E. Keane
Year Published: 2018

Type: Document
Book or Chapter or Journal Article

Fire-adapted communities on the range: alternative models of wildfire response - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/16984
Growing and widespread concern regarding the social and ecological impacts of wildfire has sparked multiple innovations in planning, preparation, and management. Among these innovations are new models of coproduction in which government fire managers collaborate with non-governmental entities on wildfire response. The most prominent...
Author(s): Emily Jane Davis, Jesse Abrams, James E. Meacham
Year Published: 2018
Type: Document
Technical Report or White Paper

Drought, tree mortality, and wildfire in forests adapted to frequent fire
www.nrfirescience.org/resource/17144
Massive tree mortality has occurred rapidly in frequent-fire-adapted forests of the Sierra Nevada, California. This mortality is a product of acute drought compounded by the long-established removal of a key ecosystem process: frequent, low- to moderate-intensity fire. The recent tree mortality has many implications for the future...
Author(s): Scott L. Stephens, Brandon M. Collins, Christopher J. Fettig, Mark A. Finney, Chad M. Hoffman, Eric E. Knapp, Malcolm P. North, Hugh Safford, Rebecca Bewley Wayman
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
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

An experimental assessment of the impact of drought and fire on western larch injury, mortality and recovery
www.nrfirescience.org/resource/18020
Climate change is increasing drought and fire activity in many fire-prone regions including the western USA and circumpolar boreal forest. These changes highlight the need for improved understanding of how multiple disturbances impact trees in these regions. Recent studies linking fire behaviour to plant ecophysiology have improved...
Author(s): Aaron M. Sparks, Alan F. Talhelm, Raquel Partelli Feltrin, Alistair M. S. Smith, Daniel M. Johnson, Crystal A. Kolden, Luigi Boschetti
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Do Mixed Fire Regimes Shape Plant Flammability and Post-Fire Recovery Strategies?
www.nrfirescience.org/resource/18301
The development of frameworks for better-understanding ecological syndromes and putative evolutionary strategies of plant adaptation to fire has recently received a flurry of attention, including a new model hypothesizing that plants have diverged into three different plant flammability strategies due to natural selection. We...
Author(s): Helen M. Poulos, Andrew M. Barton, Jasper A. Slingsby, David M. J. S. Bowman
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Natural Areas Association Fire Compendium 2
www.nrfirescience.org/resource/18853
The Natural Areas Association Fire Compendium 2 compiles articles published in the Natural Areas Journal from 2010 to 2017. This is a supplement to the NAA Fire Compendium that was compiled in 2010 for articles published from 1983 to 2009. Like the first compendium, articles in the Fire Compendium 2 focus on fire ecology and...
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Unearthing belowground bud banks in fire-prone ecosystems
www.nrfirescience.org/resource/17350
Despite long-time awareness of the importance of the location of buds in plant biology, research on belowground bud banks has been scant. Terms such as lignotuber, xylopodium and sobole, all referring to belowground bud-bearing structures, are used inconsistently in the literature. Because soil efficiently insulates meristems from...
Author(s): Juli G. Pausas, Byron B. Lamont, Susana Paula, Beatriz Appezzato-da-Glória, Alessandra Fidelis
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Common ground on the role of wildfire in forested landscapes of the western United States
www.nrfirescience.org/resource/18203
For millennia, wildfires have markedly influenced forests and non-forested landscapes of the western United States (US), and they are increasingly seen as having substantial impacts on society and nature. There is growing concern over what kinds and amounts of fire will achieve desirable outcomes and limit harmful effects on people...
Author(s): Max A. Moritz, Christopher Topik, Craig D. Allen, Paul F. Hessburg, Penelope Morgan, Dennis C. Odion, Thomas T. Veblen, Ian M. McCullough
Year Published: 2018
Type: Document
Technical Report or White Paper

A method for extensive spatiotemporal assessment of soil temperatures during an experimental fire using distributed temperature sensing in optical fibre
www.nrfirescience.org/resource/17135
The use of distributed temperature sensing (DTS) for ecological applications has increased rapidly in the last 6 years. Here we demonstrate the first use of DTS to measure soil temperatures during a fuel

reduction burn – in an urban grassy Tuart–Banksia woodland remnant near Perth, Western Australia. Optical fibre with an...
Author(s): Ryan Tangney, Nader A. Issa, David J. Merritt, John N. Callow, Ben P. Miller
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Recovering from the mountain pine beetle
www.nrfirescience.org/resource/18838
Beginning in the late 1990s, the pine forests of Montana began to experience the largest mountain pine beetle outbreak in recorded history. Large swaths of forests began to turn red, then gray as the beetles ate their way through Pacific Northwest stands. At their peak in 2009, this native insect infested nearly 3.7 million acres...
Author(s): Dan R. Loeffler, Nathaniel Anderson
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Are germination cues for soil-stored seed banks different in structurally different fire-prone communities?
www.nrfirescience.org/resource/17336
Many plant species are dependent on soil-stored seeds for their persistence in fire-prone systems. Seed germination is often stimulated by fire-related cues including heat and smoke, but the way these cues promote germination may differ between structurally distinct plant communities with historically different fire regimes. In this...
Author(s): Gloria Neo Maikano, Janet S. Cohn, Julian Di Stefano
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Importance of internal refuges and the external unburnt area in the recovery of rodent populations after wildfire
www.nrfirescience.org/resource/17934
Rodent populations respond quickly to changes in habitat structure and composition resulting from disturbances such as wildfires. Rodents may recolonise burnt areas from individuals that survived the wildfire in ‘internal refuges’ or from the surrounding unburnt area (i.e. external colonisation). With the aim of assessing the...
Author(s): Roger Puig-Gironès, Miguel Clavero, Pere Pons
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
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

Bird conservation potential of fire and herbicide treatments in thinned pine stands
www.nrfirescience.org/resource/17324
Fire-maintained pine (Pinus spp.) forests, characterized by a diverse herbaceous layer, sparse midstory layer, and a dominant pine overstory, once covered approximately 30 million ha in the southeastern United States. Fire suppression, landscape changes, and land management changes have contributed to reduced suitability of many...
Author(s): Raymond B. Iglay, Rachel E. Greene, Bruce D. Leopold, Darren A. Miller
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Fire regimes of mountain big sagebrush communities
www.nrfirescience.org/resource/18139
This synthesis summarizes information available in the scientific literature on historical patterns and contemporary changes in fuels and fire regimes in mountain big sagebrush communities. This literature suggests that presettlement fires in the sagebrush biome were both lightning- and human-caused. Peak fire season occurred...
Author(s): Robin J. Innes
Year Published: 2018
Type: Document
Management or Planning Document

A conservation paradox in the Great Basin—Altering sagebrush landscapes with fuel breaks to reduce habitat loss from wildfire
www.nrfirescience.org/resource/18949
Interactions between fire and nonnative, annual plant species (that is, “the grass/fire cycle”) represent one of the greatest threats to sagebrush (Artemisia spp.) ecosystems and associated wildlife, including the greater sage-grouse (Centrocercus urophasianus). In 2015, U.S. Department of the Interior called for a “science-...
Author(s): Douglas J. Shinneman, Cameron L. Aldridge, Peter S. Coates, Matthew J. Germino, David S. Pilliod, Nicole M. Vaillant
Year Published: 2018
Type: Document
Technical Report or White Paper

Post-fire soil management
www.nrfirescience.org/resource/17876
Soils are an important natural capital and can be negatively affected by high severity fires. The capacity of soil to recover from the degradation caused by fire disturbance depends on fire history, ash properties, topography, post-fire weather, vegetation recuperation and post-fire management. These factors are interdependent, and...
Author(s): Paulo Pereira, Marcos Francos, Eric C. Brevik, Xavier Ubeda, Igor Bogunovic
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Fire history influences large?herbivore behavior at circadian, seasonal, and successional scales

www.nrfirescience.org/resource/18797
Recurrent environmental changes often prompt animals to alter their behavior leading to predictable patterns across a range of temporal scales. The nested nature of circadian and seasonal behavior complicates tests for effects of rarer disturbance events like fire. Fire can dramatically alter plant community structure, with...
Author(s): Derek B. Spitz, Darren A. Clark, Michael J. Wisdom, Mary M. Rowland, Bruce K. Johnson, Ryan A. Long, Taal Levi
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

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

How does forest recovery following moderate-severity fire influence effects of subsequent wildfire in mixed-conifer forests?
www.nrfirescience.org/resource/18117
Given regional increases in fire activity in western North American forests, understanding how fire influences the extent and effects of subsequent fires is particularly relevant. Remotely sensed estimates of fire effects have allowed for spatial portioning into different severity categories based on the degree of fire-caused...
Author(s): Brandon M. Collins, Jamie M. Lydersen, Richard G. Everett, Scott L. Stephens
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/17821
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...
Author(s): Kimberley T. Davis, Philip E. Higuera, Anna Sala
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Disturbance Alters the Relative Importance of Topographic and Biogeochemical Controls on Microbial Activity in Temperate Montane Forests
www.nrfirescience.org/resource/17196
Fire and pathogen-induced tree mortality are the two dominant forms of disturbance in Western U.S. montane forests. We investigated the consequences of both disturbance types on the controls of

microbial activity in soils from 56 plots across a topographic gradient one year after the 2012 High Park wildfire in Colorado. Topsoil...
Author(s): Rebecca A. Lybrand, Rachel E. Gallery, Nicole A. Trahan, David Moore
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

A conservation paradox in the Great Basin-altering sagebrush landscapes with fuel breaks to reduce habitat loss from wildfire
www.nrfirescience.org/resource/17420
Interactions between fire and nonnative, annual plant species (that is, 'the grass/fire cycle') represent one of the greatest threats to sagebrush (Artemisia spp.) ecosystems and associated wildlife, including the greater sage-grouse (Centrocercus urophasianus). In 2015, U.S. Department of the Interior called for a 'science-based...
Author(s): Douglas J. Shinneman, Cameron L. Aldridge, Peter S. Coates, Matthew J. Germino, David S. Pilliod, Nicole M. Vaillant
Year Published: 2018
Type: Document
Technical Report or White Paper

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

Comparing chemistry and bioactivity of burned vs. decomposed plant litter: different pathways but same result?
www.nrfirescience.org/resource/17300
Litter burning and biological decomposition are oxidative processes co-occurring in many terrestrial ecosystems, producing organic matter with different chemical properties and differently affecting plant growth and soil microbial activity. We tested the chemical convergence hypothesis, i.e., materials with different initial...
Author(s): Giuliano Bonanomi, Guido Incerti, Ahmed M. Abd El-Gawad, Gaspare Cesarano, Tushar C. Sarker, Luigi Saulino, Virginia Lanzotti, Antonio Saracino, Francisco C. Rego, Stefano Mazzoleni
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Plant community responses to historical wildfire in a shrubland–grassland ecotone reveal hybrid disturbance response
www.nrfirescience.org/resource/18067
Most ecotones include structural and taxonomic elements from both adjacent communities, but it remains unclear how these elements function and interact within ecotones. We investigated long?term plant community responses to wildfire in a 7000?km2 ecotone between mixed?grass prairie and

sagebrush steppe ecosystems, which have...
Author(s): Lauren M. Porensky, Justin D. Derner, David W. Pellatz
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Seasonal Patterns and Drivers of Ashe Juniper Foliar Live Fuel Moisture and Relevance to Fire Planning
www.nrfirescience.org/resource/17681
Foliar live fuel moisture (LFM)-the weight of water in living plant foliage expressed as a percentage of dry weight-typically affects fire behavior in live wildland fuels. In juniper communities, juniper LFM is important for planning prescribed burns and wildfire response but can be time consuming to obtain regularly. Also, there...
Author(s): W. Matt McCaw, Devin M. Grobert, S. Bruce Brown, Sam Strickland, Guy A. Thompson, Glen Gillman, Lucien M. Ball, Christopher D. Robinson
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Trophic cascades at multiple spatial scales shape recovery of young aspen in Yellowstone
www.nrfirescience.org/resource/17170
Throughout much of the 20th century, the heights of young quaking aspen (Populus tremuloides) in Yellowstone National Park's northern ungulate winter range were suppressed due to intensive herbivory by Rocky Mountain elk (Cervus elaphus). However, following the 1995–96 reintroduction of gray wolves (Canis lupus), completing the...
Author(s): Robert L. Beschta, Luke E. Painter, William J. Ripple
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Severity of forest wildfire had a major influence on early successional ectomycorrhizal macrofungi assemblages, including edible mushrooms
www.nrfirescience.org/resource/17414
Wildfires are likely to have a major influence on below-ground patterns and processes in forests but these effects and their consequences to forest succession are generally poorly known. Ectomycorrhizal macrofungi (ECM) is a key below-ground ecological group, mainly because of their functional relationships to trees. During severe...
Author(s): Kauko Salo, Jari Kouki
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Fuel dynamics after a bark beetle outbreak impacts experimental fuel treatments
www.nrfirescience.org/resource/18779
Background: Fuel reduction treatments have been widely implemented across the western US in recent decades for both fire protection and restoration. Although research has demonstrated that combined thinning and burning effectively reduces crown fire potential in the few years immediately following treatment, little research has...
Author(s): Justin S. Crotteau, Christopher R. Keyes, Sharon M. Hood, David L.R. Affleck, Anna Sala
Year Published: 2018
Type: Document

Book or Chapter or Journal Article

Hydrologic responses to restored wildfire regimes revealed by soil moisture-vegetation relationships
www.nrfirescience.org/resource/17280
Many forested mountain watersheds worldwide evolved with frequent fire, which Twentieth Century fire suppression activities eliminated, resulting in unnaturally dense forests with high water demand. Restoration of pre-suppression forest composition and structure through a variety of management activities could improve forest...
Author(s): Gabrielle Boisrame, Sally Thompson, Scott L. Stephens
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Burned forests impact water supplies
www.nrfirescience.org/resource/18342
Wildland fire impacts on surface freshwater resources have not previously been measured, nor factored into regional water management strategies. But, large wildland fires are increasing and raise concerns about fire impacts on potable water. Here we synthesize longterm records of wildland fire, climate, and river flow for 168...
Author(s): Dennis W. Hallema, Ge Sun, Peter V. Caldwell, Steven P. Norman, Erika C. Cohen, Yongqiang Liu, Kevin D. Bladon, Steven G. McNulty
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Genetic analysis of lodgepole pine (Pinus contorta) solid-wood quality traits
www.nrfirescience.org/resource/17155
Potential improvement of lodgepole pine (Pinus contorta Dougl. ex Loud. var. latifolia Engelm.) solid-wood properties was examined by estimating age trends of inheritance, age–age genetic correlations, and the efficiency of early selection using 823 increment cores sampled from 207 half-sib families at two independent progeny...
Author(s): Haleh Hayatgheibi, Anders Fries, Johan Kroon, Harry X. Wu
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Balancing ecological costs and benefits of fire for population viability of disturbance-dependent butterflies
www.nrfirescience.org/resource/17368
Disturbance is a fundamental ecological process and driver of population dynamics. Ecologists seek to understand the effects of disturbance on ecological systems and to use disturbance to modify habitats degraded by anthropogenic change. Demographic responses by plants to disturbance are often well described, but demographic...
Author(s): Norah Warchola, Elizabeth E. Crone, Cheryl B. Schultz
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
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

Fuel treatment planning: fragmenting high fuel load areas while maintaining availability and connectivity of faunal habitat
www.nrfirescience.org/resource/17258
Reducing the fuel load in fire-prone landscapes is aimed at mitigating the risk of catastrophic wildfires but there are ecological consequences. Maintaining habitat for fauna of both sufficient extent and connectivity while fragmenting areas of high fuel loads presents land managers with seemingly contrasting objectives. Faced with...
Author(s): Ramya Rachmawati, Melih Ozlen, John W. Hearne, Karin J. Reinke
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

The recovery of soil fungi following a fire
www.nrfirescience.org/resource/18315
Although burned trees are the most visible damage following a wildfire, a forest's soil can also be damaged. The heat generated by a wildfire can alter the soil's physical properties and kill the fungi and bacteria that are responsible for nutrient cycling and other ecosystem services. What isn't well understood is the extent...
Author(s): Andrea Watts, Jane E. Smith, Ariel D. Cowan, Ari A. Jumpponen
Year Published: 2018
Type: Document
Research Brief or Fact Sheet

Back to the Future: Building resilience in Colorado Front Range forests using research findings and a new guide for restoration of ponderosa and dry-mixed conifer landscapes
www.nrfirescience.org/resource/17145
Historically, the ponderosa and dry mixed-conifer forests of the Colorado Front Range were more open and grassy, and trees of all size classes were found in a grouped arrangement with sizable openings between the clumps. As a legacy of fire suppression, today's forests are denser, with smaller trees. Proactive restoration of this...
Author(s): Susan Miller, Rob Addington, Gregory H. Aplet, Michael A. Battaglia, Anthony S. Cheng, Jonas A. Feinstein, Jeffrey L. Underhill
Year Published: 2018
Type: Document
Research Brief or Fact Sheet

Effects of Disturbance on Tree Community Dynamics in Whitebark Pine (Pinus albicaulis Engelm.) Ecosystems
www.nrfirescience.org/resource/18870
Whitebark pine (Pinus albicaulis Engelm.), an ecologically important tree species in high-elevation ecosystems of western North America, is threatened by white pine blister rust (Cronartium ribicola

Fischer) and increased pressure from mountain pine beetle (Dendroctonus ponderosae Hopkins) due to climate warming. In addition, there...
Author(s): Jeremy T. Amberson, Megan P. Keville, Cara R. Nelson
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Spatiotemporal patterns of unburned areas within fire perimeters in the northwestern United States from 1984 to 2014
www.nrfirescience.org/resource/16632
A warming climate, fire exclusion, and land cover changes are altering the conditions that produced historical fire regimes and facilitating increased recent wildfire activity in the northwestern United States. Understanding the impacts of changing fire regimes on forest recruitment and succession, species distributions, carbon...
Author(s): Arjan J. H. Meddens, Crystal A. Kolden, James A. Lutz, John T. Abatzoglou
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Does repeated high severity fire in dry mixed conifer forests homogenize vegetation characteristics across scales? - JFSP Final Report
www.nrfirescience.org/resource/18039
When disturbances recur at rates shorter than an ecosystems rate of recovery, it has the potential to result in significant changes to ecosystem structure and function. In western US forests, wildfire activity has increased and many severely burned areas are now re-burning before reforestation occurs. Historically, some of these...
Author(s): Kristen L. Shive, Scott L. Stephens
Year Published: 2018
Type: Document
Technical Report or White Paper

Effects of prescribed fires on soil properties: a review
www.nrfirescience.org/resource/17247
Soils constitute one of the most valuable resources on earth, especially because soil is renewable on human time scales. During the 20th century, a period marked by a widespread rural exodus and land abandonment, fire suppression policies were adopted facilitating the accumulation of fuel in forested areas, exacerbating the effects...
Author(s): Meritxell Alcañiz, Luis R. Outeiro, Marcos Francos, Xavier Ubeda
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Vertical distribution of foliar biomass in western larch (Larix occidentalis)
www.nrfirescience.org/resource/16444
Western larch (Larix occidentalis Nutt.) is an endemic pioneer species in northwestern North America and unique as a deciduous conifer and the most shade-intolerant, fastest growing, and most fire-resistant species in the northwestern United States. To better understand its production ecology, we used a multilevel modeling approach...
Author(s): Geoffrey M. Williams, Andrew S. Nelson, David L.R. Affleck
Year Published: 2018
Type: Document

Book or Chapter or Journal Article

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

Fire refugia: What are they, and why do they matter for global change?
www.nrfirescience.org/resource/18303
Fire refugia are landscape elements that remain unburned or minimally affected by fire, thereby supporting postfire ecosystem function, biodiversity, and resilience to disturbances. Although fire refugia have been studied across continents, scales, and affected taxa, they have not been characterized systematically over space and...
Author(s): Arjan J. H. Meddens, Crystal A. Kolden, James A. Lutz, Alistair M. S. Smith, C. Alina Cansler, John T. Abatzoglou, Garrett W. Meigs, William M. Downing, Meg A. Krawchuk
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Long-term effects of restoration fire and thinning on soil fungi, fine root biomass, and litter depth - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/16982
To increase ecosystem resiliency, and achieve the desired future condition of stands with large tree retention and low fuel loads, federal agencies have actively implemented a large number of fuel reduction and forest restoration projects in low-elevation dry conifer forests throughout the western United States. A noteworthy example...
Author(s): Jane E. Smith, Daniel L. Luoma, Benjamin T. N. Hart
Year Published: 2018
Type: Document
Technical Report or White Paper

A numerical study of atmospheric perturbations induced by heat from a wildland fire: sensitivity to vertical canopy structure and heat source strength
www.nrfirescience.org/resource/17142
An improved understanding of atmospheric perturbations within and above a forest during a wildland fire has relevance to many aspects of wildland fires including fire spread, smoke transport and dispersion, and tree mortality. In this study, the ARPS-CANOPY model, a version of the Advanced Regional Prediction System (ARPS) model...
Author(s): Michael T. Kiefer, Shiyuan Zhong, Warren Heilman, Joseph J. Charney, Xindi Bian
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Wildfire-vegetation dynamics affect predictions of climate change impact on bird communities

www.nrfirescience.org/resource/17360
Community-level climate change indicators have been proposed to appraise the impact of global warming on community composition. However, non-climate factors may also critically influence species distribution and biological community assembly. The aim of this paper was to study how fire-vegetation dynamics can modify our ability to...
Author(s): Adrián Regos, Miguel Clavero, Manuela D'Amen, Antoine Guisan, Lluis Brotons
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Common ground on the role of wildfire in forested landscapes of the Western US
www.nrfirescience.org/resource/18204
Wildfire affects the health and well-being of people, yet the science behind its management grapples with uncertainties that have led to scientific debates. In particular, diverging views over how “natural” highseverity fire is in conifer forests across the western US have, in some cases, impeded the effective integration of...
Year Published: 2018
Type: Document
Research Brief or Fact Sheet

Testing the efficacy of tree-ring methods for detecting past disturbances
www.nrfirescience.org/resource/18295
The retrospective study of abrupt and sustained increases in the radial growth of trees (hereinafter ‘releases’)b y tree-ring analysis is an approach widely used for reconstructing past forest disturbances. Despite the range of dendrochronological methods used for release-detection, a lack of in-depth comparison between them can...
Author(s): Volodymyr Trotsiuk, Neil Pederson, Daniel L. Druckenbrod, David A. Orwig, Daniel A. Bishop, Audrey Barker-Plotkin, Shawn Fraver, Dario Martin-Benito
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Putting climate adaptation on the map: Developing spatial management strategies for whitebark pine in the Greater Yellowstone Ecosystem
www.nrfirescience.org/resource/18842
Natural resource managers face the need to develop strategies to adapt to projected future climates. Few existing climate adaptation frameworks prescribe where to place management actions to be most effective under anticipated future climate conditions. We developed an approach to spatially allocate climate adaptation actions and...
Author(s): Kathryn Ireland, Andrew J. Hansen, Robert E. Keane, Kristin Legg, Rob Gump
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Fire-induced change in floral abundance, density, and phenology benefits bumble bee foragers
www.nrfirescience.org/resource/17345
Fire is a dominant, and well-studied, structuring force in many temperate and semi-arid communities; yet, few studies have investigated the effects of fire on multi-trophic interactions. Here, we ask how fire-induced changes in flowering affect the abundance of bumble bee foragers (Bombus vosnesenskii) and whether differences in...
Author(s): John M. Mola, Neal M. Williams

Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Improved prediction of stream flow based on updating land cover maps with remotely sensed forest change detection
www.nrfirescience.org/resource/17965
The water balance in a watershed can be disrupted by forest disturbances such as harvests and fires. Techniques to accurately and efficiently map forest cover changes due to disturbance are evolving quickly, and it is of interest to ask how useful maps of different types of disturbances over time can be in the prediction of water...
Author(s): Alexander J. Hernandez, Sean P. Healey, Hongsheng Huang, R. Douglas Ramsey
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/16387
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

Evidence for declining forest resilience to wildfires under climate change
www.nrfirescience.org/resource/16189
Forest resilience to climate change is a global concern given the potential effects of increased disturbance activity, warming temperatures and increased moisture stress on plants. We used a multi-regional dataset of 1485 sites across 52 wildfires from the US Rocky Mountains to ask if and how changing climate over the last several...
Author(s): Camille Stevens-Rumann, Kerry Kemp, Philip E. Higuera, Brian J. Harvey, Monica T. Rother, Daniel C. Donato, Penelope Morgan, Thomas T. Veblen
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Vegetation dynamics at the woodland-shrubland interface: Role of climate, disturbance, and species interactions
www.nrfirescience.org/resource/18836
The boundary between woodlands and shrublands delineates the distribution of the tree biome in many regions across the globe. Woodlands and shrublands interface at multiple spatial scales, and many ecological processes operate at different spatial scales to determine the position of the woodland-shrubland boundary. The overall...
Author(s): Alexandra K. Urza
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Snowshoe hare multi-level habitat use in a fire-adapted ecosystem
www.nrfirescience.org/resource/17333
Prescribed burning has the potential to improve habitat for species that depend on pyric ecosystems or other early successional vegetation types. For species that occupy diverse plant communities over the extent of their range, response to disturbances such as fire might vary based on post-disturbance vegetation dynamics among plant...
Author(s): Laura C. Gigliotti, Benjamin C. Jones, Matthew J. Lovallo, Duane R. Diefenbach
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

The legacy of a severe wildfire on stream nitrogen and carbon in headwater catchments
www.nrfirescience.org/resource/18166
Large, high-severity wildfires alter the physical and biological conditions that determine how catchments retain and release nutrients and regulate streamwater quality. The short-term water quality impacts of severe wildfire are often dramatic, but the longer-term responses may better reflect terrestrial and aquatic ecosystem...
Author(s): Charles C. Rhoades, Alex T. Chow, Tim Covino, Timothy S. Fegel, Derek N. Pierson, Allison E. Rhea
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
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

Spectrophotometry of Artemisia tridentata to quantitatively determine subspecies
www.nrfirescience.org/resource/16752
Ecological restoration is predicated on our abilities to discern plant taxa. Taxonomic identification is a first step in ensuring that plants are appropriately adapted to the site. An example of the need to identify taxonomic differences comes from big sagebrush (Artemisia tridentata). This species is composed of three predominant...
Author(s): Bryce A. Richardson, Alicia A. Boyd, Tanner Tobiasson, Matthew J. Germino
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Human impacts on 20th century fire dynamics and implications for global carbon and water trajectories
www.nrfirescience.org/resource/17317
Fire is a fundamental Earth system process and the primary ecosystem disturbance on the global scale. It affects carbon and water cycles through changing terrestrial ecosystems, and at the same time, is

regulated by weather and climate, vegetation characteristics, and, importantly, human ignitions and suppression (i.e., the direct...
Author(s): Fang Li, David M. Lawrence, Ben Bond-Lamberty
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Multitemporal LiDAR improves estimates of fire severity in forested landscapes
www.nrfirescience.org/resource/18124
Landsat-based fire severity maps have limited ecological resolution, which can hinder assessments of change to specific resources. Therefore, we evaluated the use of pre- and post-fire LiDAR, and combined LiDAR with Landsat-based relative differenced Normalized Burn Ratio (RdNBR) estimates, to increase the accuracy and resolution of...
Author(s): Michael S. Hoe, Christopher J. Dunn, Hailemariam Temesgen
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Insect communities in big sagebrush habitat are altered by wildfire and post?fire restoration seeding
www.nrfirescience.org/resource/18948
Natural resource managers sow grass, forb, and shrub seeds across millions of hectares of public lands in the western United States to restore sagebrush?steppe ecosystems burned by wildfire. The effects of post?fire vegetation treatments on insect communities in these ecosystems have not been investigated. We conducted the first...
Author(s): Ashley T. Rohde, David S. Pilliod, Stephen J. Novak
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

The wildfire within: Firefighter perspectives on gender and leadership in wildland fire
www.nrfirescience.org/resource/17862
The large mediatic coverage of recent massive wildfires across the world has emphasized the vulnerability of freshwater resources. The extensive hydrogeomorphic effects from a wildfire can impair the ability of watersheds to provide safe drinking water to downstream communities and high-quality water to maintain riverine ecosystem...
Author(s): Francois-Nicolas Robinne, Kevin D. Bladon, Carol Miller, Marc-Andre Parisien, Jerome Mathieu, Michael D. Flannigan
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Looking beyond the mean: Drivers of variability in postfire stand development of conifers in Greater Yellowstone
www.nrfirescience.org/resource/18421
High-severity, infrequent fires in forests shape landscape mosaics of stand age and structure for decades to centuries, and forest structure can vary substantially even among same-aged stands. This variability among stand structures can affect landscape-scale carbon and nitrogen cycling, wildlife habitat availability, and...
Author(s): Kristin H. Braziunas, Winslow D. Hansen, Rupert Seidl, Werner Rammer, Monica G. Turner
Year Published: 2018

Type: Document
Book or Chapter or Journal Article

Everything You Wanted to Know About Wildland Fires in forests but were afraid to ask: Lessons learned, ways forward
www.nrfirescience.org/resource/17435
Executive summary: Wildfires are a fact of life for westerners. They mark the beginning of the spring season and have been a keystone architect of biodiverse ecosystems for millennia. While wildfires are not eco-catastrophes, they are a health concern, evoke public fear-of-fire exploited by decision makers seeking to push through...
Author(s): Dominick A. DellaSala, Timothy Ingalsbee, Chad T. Hanson
Year Published: 2018
Type: Document
Technical Report or White Paper

Not just about the trees: Key role of mosaic-meadows in restoration of ponderosa pine ecosystems
www.nrfirescience.org/resource/16726
Historical pre-settlement conditions in ponderosa pine ecosystems ranged from savannas (< 30% canopy cover) with contiguous grasslands and scattered tree groups, to forests with isolated mosaic-meadows surrounded by trees. We use the term mosaic-meadows for non-treed areas that weave around individual trees and tree groups,...
Author(s): Megan Matonis, Dan Binkley
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Survey design for precise fire management conservation targets
www.nrfirescience.org/resource/17305
Common goals of ecological fire management are to sustain biodiversity and minimize extinction risk. A novel approach to achieving these goals determines the relative proportions of vegetation growth stages (equivalent to successional stages, which are categorical representations of time since fire) that maximize a biodiversity...
Author(s): Holly Sitters, Julian Di Stefano, Timothy J. Wills, Matthew Swan, Alan York
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Water Quality Impacts of Wildland Fires
www.nrfirescience.org/resource/17753
Large fires have tremendous effects on the characteristics of water-producing watersheds and the quality of the water coming out of them. This article discusses the effects of wildland fires on water quality and suggests ways of managing fire-prone forested water source areas to prevent their degradation from wildfires. The article...
Author(s): Aregai Tecle, Daniel G. Neary
Year Published: 2018
Type: Document
Book or Chapter or Journal Article

Fire and floods: The recovery of headwater stream systems following high-severity wildfire

www.nrfirescience.org/resource/16326
This study examined the recovery of both physical and biotic characteristics of small (<0.1 m3 sec-1) headwater stream systems impacted by the Dude Fire, which occurred in central Arizona, USA, in 1990. Data collected prior to the fire from 1986 to1988 was compared to similar data collected at various points after the fire though...
Author(s): Jackson M. Leonard, Hugo A. Magana, Randy K. Bangert, Daniel G. Neary, Willson L. Montgomery
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Short-term effects of post-fire salvage logging on runoff and soil erosion
www.nrfirescience.org/resource/16690
Research has been undertaken on the hydrological and erosional impact of forest fires, but remarkably little work has been conducted on salvage logging operations that often follow them. We assessed the effects of mechanical salvage logging following wildfire on soil physical properties, ground cover, and runoff and erosion response...
Author(s): Maruxa C. Malvar, Flávio C. Silva, Sergio A. Prats, Diana C.S. Vieira, Celeste O.A. Coelho, J. Jacob Keizer
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Removal of perennial herbaceous species affects response of cold desert scrublands to fire
www.nrfirescience.org/resource/16529
Two of the primary global change factors that threaten shrublands worldwide are loss of native perennial herbaceous species due to inappropriate livestock grazing and loss of native shrubs due to altered fire regimes.We asked: (1) how do the separate and interacting effects of removal of perennial herbaceous species and burning...
Author(s): Jeanne C. Chambers, David Board, Bruce A. Roundy, Peter J. Weisberg
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Does the presence of large down wood at the time of a forest fire impact soil recovery?
www.nrfirescience.org/resource/15068
Fire may remove or create dead wood aboveground, but it is less clear how high severity burning of soils affects belowground microbial communities and soil processes, and for how long. In this study, we investigated soil fungal and bacterial communities and biogeochemical responses of severely burned “red” soil and less severely...
Author(s): Jane E. Smith, Laurel A. Kluber, Tara N. Jennings, Donaraye McKay, Greg Brenner, Elizabeth W. Sulzman
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Spatiotemporal Evaluation of Fuel Treatment and Previous Wildfire Effects on Suppression Costs - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/16999
This project quantifies the effects of fuel treatments and previously burned areas on daily fire management costs, as well as summarizes recent encounter rates between fuel treatments and

wildland fires across the conterminous United States. Using national-scale, spatially explicit data on recent fuel treatments and wildland fires,...
Author(s): Helen T. Naughton, Kevin M. Barnett
Year Published: 2017
Type: Document
Technical Report or White Paper

The effects of thinning and burning on understory vegetation in North America: A meta-analysis
www.nrfirescience.org/resource/16668
Management in fire-prone ecosystems relies widely upon application of prescribed fire and/or firesurrogate (e.g., forest thinning) treatments to maintain biodiversity and ecosystem function. The literature suggests fire and mechanical treatments proved more variable in their effects on understory vegetation as compared to their...
Author(s): Joshua Willms, Anne Bartuszevige, Dylan W. Schwilk, Patricia L. Kennedy
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Learn from the burn: The High Park Fire 5 years later
www.nrfirescience.org/resource/16520
It has been 5 years since the High Park Fire burned over 85,000 acres in Northern Colorado, causing extensive property damage, loss of life, and severe impacts to the water quality of the Poudre River. In the fall of 2016, a conference was organized by the USFS Rocky Mountain Research Station and the Coalition for the Poudre River...
Author(s): Charles C. Rhoades, Peter R. Robichaud, Sandra E. Ryan, Jen Kovecses, Carl Chambers, Sara Rathburn, Jared Heath, Stephanie Kampf, Codie Wilson, Dan Brogan, Brad Piehl, Mary Ellen Miller, John Giordanengo, Erin Berryman, Monique E. Rocca
Year Published: 2017
Type: Document
Research Brief or Fact Sheet

Estimating the Effects of Changing Climate on Fires and Consequences for U.S. Air Quality, Using a Set of Global and Regional Climate Models - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/16995
Emissions of aerosols and gases from fires have been shown to adversely affect US air quality at local to regional scales as well as downwind regions far away from the source. In addition, smoke from fires negatively affects humans, ecosystems, and climate. Recent observations have shown an upward trend of area burned over western...
Author(s): Jeffrey R. Pierce, Maria Val Martin, Colette L. Heald
Year Published: 2017
Type: Document
Technical Report or White Paper

Assessment of fire effects based on forest inventory and analysis data and a long-term fire mapping data set
www.nrfirescience.org/resource/15534
Integration of Forest Inventory and Analysis (FIA) plot data with Monitoring Trends in Burn Severity (MTBS) data can provide new information about fire effects on forests. This integration allowed broad-scale assessment of the cover types burned in large fires, the relationship between prefire stand conditions and fire severity, and...

Author(s): John D. Shaw, Sara Goeking, James Menlove, Charles E. Werstak
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

The normal fire environment - modeling environmental suitability for large forest wildfires using past, present, and future climate normals
www.nrfirescience.org/resource/15206
We modeled the normal fire environment for occurrence of large forest wildfires (>40 ha) for the Pacific Northwest Region of the United States. Large forest wildfire occurrence data from the recent climate normal period (1971-2000) was used as the response variable and fire season precipitation, maximum temperature, slope,...
Author(s): Raymond J. Davis, Zhiqiang Yang, Cole Belongie, Warren B. Cohen
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Synthesis of soil-hydraulic properties and infiltration timescales in wildfire-affected soils
www.nrfirescience.org/resource/15024
We collected soil-hydraulic property data from the literature for wildfire-affected soils, ash, and unburned soils. These data were used to calculate metrics and timescales of hydrologic response related to infiltration and surface runoff generation. Sorptivity (S) and wetting front potential (?f) were significantly different (...
Author(s): Brian A. Ebel, John A. Moody
Year Published: 2017
Type: Document
Book or Chapter or Journal Article, Synthesis

Development of remote sensing indicators for mapping episodic die-off of an invasive annual grass (Bromus tectorum) from the Landsat archive
www.nrfirescience.org/resource/16625
The exotic annual grass Bromus tectorum (cheatgrass) dominates vast acreages of rangeland in the western USA, leading to increased fire frequency and ecosystem degradation that is often irreversible. Episodic regeneration failure (“die-off”) has been observed in cheatgrass monocultures and can have negative ecosystem...
Author(s): Peter J. Weisberg, Thomas E. Dilts, Owen W. Baughman, Susan E. Meyer, Elizabeth A. Leger, K. Jane Van Gunst, Lauren Cleeves
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Fire regimes of ponderosa pine communities in the Black Hills and surrounding areas
www.nrfirescience.org/resource/16433
Wildfire is an important disturbance in ponderosa pine communities in the Black Hills and surrounding areas. Effective management of these communities requires an understanding of historical fire regimes. This review provides a synthesis of the available scientific literature on historical patterns and contemporary changes in fuels...
Author(s): Shannon K. Murphy
Year Published: 2017
Type: Document
Synthesis

Mountain big sagebrush - Fire ecology and management
www.nrfirescience.org/resource/15648
Nearly half of the area occupied by sagebrush (Artemisia spp.) ecosystems before European-American settlement has been lost due to conversion to other land cover types, and agriculture, urbanization, and industrial development. Thus, conservation and proper management of these ecosystems has been a priority, especially following the...
Author(s): Robin J. Innes
Year Published: 2017
Type: Document
Research Brief or Fact Sheet

Tree regeneration spatial patterns in ponderosa pine forests following stand-replacing fire: Influence of topography and neighbors
www.nrfirescience.org/resource/16295
Shifting fire regimes alter forest structure assembly in ponderosa pine forests and may produce structural heterogeneity following stand-replacing fire due, in part, to fine-scale variability in growing environments. We mapped tree regeneration in eighteen plots 11 to 15 years after stand-replacing fire in Colorado and South Dakota...
Author(s): Justin P. Ziegler, Chad M. Hoffman, Paula J. Fornwalt, Carolyn Hull Sieg, Michael A. Battaglia, Marin Chambers, Jose M. Iniguez
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

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

A new method for performing smouldering combustion field experiments in peatlands and rich-organic soils
www.nrfirescience.org/resource/16413
Smouldering ground fires have severe environmental implications. Their main effects are the release of large amounts of carbon to the atmosphere with loses of organic soil and its biota. Quantitative data on the behaviour of smouldering wildfires are very scarce and are needed to understand its ecological effects, to validate fuel...
Author(s): Elsa Pastor, I Oliveras, E. Urquiaga-Flores , J.A. Quintano-Loayza, M.I. Manta, E. Planas
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Simulations Inform Design Of Regional Occupancy-Based Monitoring For A Sparsely Distributed, Territorial Species

www.nrfirescience.org/resource/17463
Sparsely distributed species attract conservation concern, but insufficient information on population trends challenges conservation and funding prioritization. Occupancy-based monitoring is attractive for these species, but appropriate sampling design and inference depend on particulars of the study system. We employed spatially...
Author(s): Quresh Latif, Martha M. Ellis, Victoria A. Saab, Kim Mellen-McLean
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Artemisia tridentata subsp. vaseyana (mountain big sagebrush)
www.nrfirescience.org/resource/16200
Mountain big sagebrush is a widely distributed shrub native to the western United States. Mountain big sagebrush ecosystems support hundreds of plant and animal species, including several sagebrush obligates. The distribution of mountain big sagebrush has been reduced since European-American settlement, and is likely to be further...
Author(s): Robin J. Innes
Year Published: 2017
Type: Document
Synthesis

A spatial evaluation of global wildfire-water risks to human and natural systems
www.nrfirescience.org/resource/16561
The large mediatic coverage of recent massive wildfires across the world has emphasized the vulnerability of freshwater resources. The extensive hydrogeomorphic effects from a wildfire can impair the ability of watersheds to provide safe drinking water to downstream communities and high-quality water to maintain riverine ecosystem...
Author(s): Francois-Nicolas Robinne, Kevin D. Bladon, Carol Miller, Marc-Andre Parisien, Jerome Mathieu, Michael D. Flannigan
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Airborne measurements of western U.S. wildfire emissions: Comparison with prescribed burning and air quality implications
www.nrfirescience.org/resource/15367
Wildfires emit significant amounts of pollutants that degrade air quality. Plumes from three wildfires in the western U.S. were measured from aircraft during the Studies of Emissions and Atmospheric Composition, Clouds and Climate Coupling by Regional Surveys (SEAC4RS) and the Biomass Burning Observation Project (BBOP), both in...
Author(s): Xiaoxi Liu, L. Gregory Huey, Robert J. Yokelson, Vanessa Selimovic, Isobel J. Simpson, Markus Muller, Jose L. Jimenez, Pedro Campuzano-Jost, Andreas J. Beyersdorf, Donald R. Blake, Zachary Butterfield, Yonghoon Choi, John D. Crounse, Douglas A. Day, Glenn S. Diskin, Manvendra K. Dubey, Edward Fortner, Thomas F. Hanisco, Weiwei Hu, Laura E. King, Lawrence Kleinman, Simone Meinardi, Tomas Mikoviny, Timothy B. Onasch, Brett B. Palm, Jeff Peischl, Ilana B. Pollack, Thomas B. Ryerson, Glen W. Sachse, Arthur J. Sedlacek, John E. Shilling, Stephen Springston, Jason M. St. Clair, David J. Tanner, Alexander P. Teng, Paul O. Wennberg, Armin Wisthaler, Glenn M. Wolfe
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
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

Using resilience and resistance concepts to manage persistent threats to sagebrush ecosystems and greater sage-grouse
www.nrfirescience.org/resource/16558
Conservation of imperiled species often demands addressing a complex suite of threats that undermine species viability. Regulatory approaches, such as the US Endangered Species Act (1973), tend to focus on anthropogenic threats through adoption of policies and regulatory mechanisms. However, persistent ecosystem-based threats, such...
Author(s): Jeanne C. Chambers, Jeremy D. Maestas, David A. Pyke, Chad S. Boyd, Michael L. Pellant, Amarina Wuenschel
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Fire history and fire-climate interactions in high elevation whitebark pine dominated forest
www.nrfirescience.org/resource/15767
The objectives of this study were to identify whitebark pine fire-climate interactions, and tree establishment and mortality patterns in a landscape context. Specific objectives were to : 1) develop a whitebark pine tree-ring chronology to date fire scar samples and reconstruct climate from tree rings; 2) identify fire climate...
Author(s): Alan H. Taylor, Catherine Airey Lauvaux
Year Published: 2017
Type: Document
Technical Report or White Paper

Do Fuel Treatments Restore Ecosystem Function? Water Use Efficiency Before and After Fire Suppression and Fuels Treatments in Fire-Prone Pine Forests in the Western United States - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/17013
This project had three objectives. The first objective was to identify variation in discrimination of ?13C and intrinsic water use efficiency (iWUE) in Ponderosa pine (Pinus ponderosa) tree rings from 1800 to 2012 at two Fire and Fire Surrogate study sites (Arizona, Washington). The sites are both dominated by ponderosa pine but...
Author(s): Alan H. Taylor, Soumaya Belmecheri, Lucas B. Harris
Year Published: 2017
Type: Document
Technical Report or White Paper

Fire Severity and Regeneration Strategy Influence Shrub Patch Size and Structure Following Disturbance
www.nrfirescience.org/resource/17204

Climate change is increasing the frequency and extent of high-severity disturbance, with potential to alter vegetation community composition and structure in environments sensitive to tipping points between alternative states. Shrub species display a range of characteristics that promote resistance and resilience to disturbance, and...
Author(s): Jesse Minor, Donald A. Falk, Greg A. Barron-Gafford
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Effects of fire radiative energy density dose on Pinus contorta and Larix occidentalis seedling physiology and mortality
www.nrfirescience.org/resource/14914
Climate change is projected to exacerbate the intensity of heat waves and drought, leading to a greater incidence of large and high-intensity wildfires in forested ecosystems. Predicting responses of seedlings to such fires requires a process-based understanding of how the energy released during fires affects plant physiology and...
Author(s): Alistair M. S. Smith, Alan F. Talhelm, Daniel M. Johnson, Aaron M. Sparks, Crystal A. Kolden, Kara M. Yedinak, Kent G. Apostol, Wade T. Tinkham, John T. Abatzoglou, James A. Lutz, Anthony S. Davis, Kurt S. Pregitzer, Henry D. Adams, Robert L. Kremens
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/16738
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 (Abies...
Author(s): Sharon M. Hood, Duncan C. Lutes
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Spatial patterns of ponderosa pine regeneration in high-severity burn patches
www.nrfirescience.org/resource/16541
Contemporary wildfires in southwestern US ponderosa pine forests can leave uncharacteristically large patches of tree mortality, raising concerns about the lack of seed-producing trees, which can prevent or significantly delay ponderosa pine regeneration. We established 4-ha plots in high-severity burn patches in two Arizona...
Author(s): Suzanne M. Owen, Carolyn Hull Sieg, Andrew Sanchez Meador, Peter Z. Fule, Jose M. Iniguez, Scott L. Baggett, Paula J. Fornwalt, Michael A. Battaglia
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Wildland Fire Smoke Health Effects on Wildland Firefighters and the Public - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/17009
Wildland fire smoke is a complex mixture of air contaminants that have the potential cause adverse

health effects. Individuals can be exposed occupationally if they work as wildland firefighters or public exposure from ambient air that is contaminated with smoke from a nearby or distant wildland fire. Previous studies of public...
Author(s): Joe Domitrovich, George Broyles, Roger D. Ottmar, Timothy E. Reinhardt, Luke P. Naeher, Michael T. Kleinman, Kathleen M. Navarro, Christopher E. Mackay, Olorunfemi Adetona
Year Published: 2017
Type: Document
Technical Report or White Paper

Indicators of burn severity at extended temporal scales: A decade of ecosystem response in mixed conifer forests of western Montana
www.nrfirescience.org/resource/15315
We collected field and remotely sensed data spanning 10 years after three 2003 Montana wildfires to monitor ecological change across multiple temporal and spatial scales. Multiple endmember spectral mixture analysis was used to create post-fire maps of: char, soil, green (GV) and non-photosynthetic (NPV) vegetation from high-...
Author(s): Sarah A. Lewis, Andrew T. Hudak, Peter R. Robichaud, Penelope Morgan, K.L. Satterberg, Eva K. Strand, Alistair M. S. Smith, J Zamudio, Leigh B. Lentile
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Long-term effects of burn season and frequency on ponderosa pine forest fuels and seedlings
www.nrfirescience.org/resource/16327
Prescribed fire is widely applied in western US forests to limit future fire severity by reducing tree density, fuels, and excessive seedlings. Repeated prescribed burning attempts to simulate historical fire regimes in frequent-fire forests, yet there is limited long-term information regarding optimal burn season and frequency. In...
Author(s): Douglas J. Westlind, Becky K. Kerns
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Populus tremuloides seedling establishment: An underexplored vector for forest type conversion after multiple disturbances
www.nrfirescience.org/resource/16697
Ecosystem resilience to climate change is contingent on post-disturbance plant regeneration. Sparse gymnosperm regeneration has been documented in subalpine forests following recent wildfires and compounded disturbances, both of which are increasing. In the US Intermountain West, this may cause a shift to non-forest in some areas,...
Author(s): Nathan S. Gill, Florencia Sangermano, Brian Buma, Dominik Kulakowski
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Stream water quality concerns linger long after the smoke clears: Learning from Front Range wildfires
www.nrfirescience.org/resource/16534
Large, high-severity wildfires alter the ecological processes that determine how watersheds retain and release nutrients and affect stream water quality. These changes usually abate a few years after a fire but recent studies indicate they may persist longer than previously expected. Wildfires are a natural

disturbance agent, but...
Author(s): Charles C. Rhoades, Susan Miller, Tim Covino, Alex Chow, Frank McCormick
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Refining the cheatgrass–fire cycle in the Great Basin: Precipitation timing and fine fuel composition predict wildfire trends
www.nrfirescience.org/resource/18933
Larger, more frequent wildfires in arid and semi- arid ecosystems have been associated with invasion by non- native annual grasses, yet a complete understanding of fine fuel development and subsequent wildfire trends is lacking. We investigated the complex relationships among weather, fine fuels, and fire in the Great Basin, USA. We...
Author(s): David S. Pilliod, Justin L. Welty, Robert S. Arkle
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Effects of fire on pollinators and pollination
www.nrfirescience.org/resource/15080
Summary: 1) Increased incidence of landscape fire and pollinator declines with co-extinctions of dependent plant species are both globally significant. Fire can alter species distributions, but its effects on plant–pollinator interactions are poorly understood so its present and future role in coupled plant-pollinator declines...
Author(s): Julian Brown, Alan York, Fiona J. Christie, Michael A. McCarthy
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Post-fire forest regeneration in a changing climate - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/17003
Severe disturbance such as wildfire may create important opportunities for plant communities to reorganize in response to environmental change, including climate change. Disturbance may be particularly important in forests where the foundational plant species (trees) are long-lived and usually establish soon after disturbance. The...
Author(s): Derek J. N. Young, Andrew Latimer
Year Published: 2017
Type: Document
Technical Report or White Paper

Reburns and fire-on-fire interactions in the U.S. northern Rockies forests 1900-2014
www.nrfirescience.org/resource/15307
The interactions of fire on the landscape between 1900 and 2014 are explored in this master's thesis. A description of its content is not yet available from University of Idaho.
Author(s): Justin Barton Lauer
Year Published: 2017
Type: Document
Dissertation or Thesis

Prescribed fire in grassland butterfly habitat: targeting weather and fuel conditions to reduce soil temperature and burn severity
www.nrfirescience.org/resource/16319
Prescribed burning is a primary tool for habitat restoration and management in fire-adapted grasslands. Concerns about detrimental effects of burning on butterfly populations, however, can inhibit implementation of treatments. Burning in cool and humid conditions is likely to result in lowered soil temperatures and to produce...
Author(s): Kathryn C. Hill, Jonathan D. Bakker, Peter W. Dunwiddie
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Recent and future climate suitability for whitebark pine mortality from mountain pine beetles varies across the western US
www.nrfirescience.org/resource/16680
Recent mountain pine beetle outbreaks in whitebark pine forests have been extensive and severe. Understanding the climate influences on these outbreaks is essential for developing management plans that account for potential future mountain pine beetle outbreaks, among other threats, and informing listing decisions under the...
Author(s): Polly C. Buotte, Jeffrey A. Hicke, Haiganoush K. Preisler, John T. Abatzoglou, Kenneth F. Raffa, Jesse A. Logan
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Post-disturbance sediment recovery: Implications for watershed resilience
www.nrfirescience.org/resource/16527
Sediment recovery following disturbances is a measure of the time required to attain pre-disturbance sediment fluxes. Insight into the controls on recovery processes and pathways builds understanding of geomorphic resilience. We assess post-disturbance sediment recovery in three small (1.5–100 km2), largely unaltered watersheds...
Author(s): Sara Rathburn, Scott M. Shahverdian, Sandra E. Ryan
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
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

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
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

Predicting post-fire tree mortality for 14 conifers in the Pacific Northwest, USA: model evaluation, development, and thresholds
www.nrfirescience.org/resource/15546
Fire is a driving force in the North American landscape and predicting post-fire tree mortality is vital to land management. Post-fire tree mortality can have substantial economic and social impacts, and natural resource managers need reliable predictive methods to anticipate potential mortality following fire events. Current fire...
Author(s): Lindsay M. Grayson, Robert A. Progar, Sharon M. Hood
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Mortality predictions of fire-injured large Douglas-fir and ponderosa
www.nrfirescience.org/resource/16642
Wild and prescribed fire-induced injury to forest trees can produce immediate or delayed tree mortality but fire-injured trees can also survive. Land managers use logistic regression models that incorporate tree-injury variables to discriminate between fatally injured trees and those that will survive. We used data from 4024...
Author(s): Lisa Ganio, Robert A. Progar
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Prescribed burning in ponderosa pine: fuel reductions and redistributing fuels near boles to prevent injury
www.nrfirescience.org/resource/15214
Fire suppression and other factors have resulted in high wildfire risk in the western US, and prescribed burning can be an effective tool for thinning forests and reducing fuels to lessen wildfire risks. However, prescribed burning sometimes fails to substantially reduce fuels and sometimes damages and kills valuable, large trees....
Author(s): Robert Progar, Kathryn H. Hrinkevich, Edward S. Clark, Matthew J. Rinella
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Post-fire vegetation response at the woodland-shrubland interface is mediated by the pre-fire community
www.nrfirescience.org/resource/16496
Understanding the drivers of ecosystem responses to disturbance is essential for management aimed at maintaining or restoring ecosystem processes and services, especially where invasive species respond strongly to disturbance. In this study, we used repeat vegetation surveys from a network of prescribed fire treatments at the...
Author(s): Alexandra K. Urza, Peter J. Weisberg, Jeanne C. Chambers, Jessica M. Dhaemers, David

Board
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Native bee nesting habitat use after wildfire in Montana - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/17561
Changing fire regimes are leading to increasing scale and severity of burns, which may affect habitat for species of concern. Wood-cavity nesting bees are one such community, in that they have discrete foraging and nesting habitats which can both be maintained or removed by wildfire. Our objective is to provide data on how different...
Author(s): Michael P. Simanonok, Laura A. Burkle
Year Published: 2017
Type: Document
Technical Report or White Paper

Climate and seed availability initiate alternate post-fire trajectories in a lower subalpine forest
www.nrfirescience.org/resource/15035
Questions: Do functional traits explain individual tree species' responses to environmental filters and dispersal limitations following stand-replacing fire? Can post-fire conditions initiate alternate trajectories of community assembly? Location: Glacier National Park, Montana, USA. Methods: We characterized the species...
Author(s): Alexandra K. Urza, Jason S. Sibold
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Effects of time since burn, spatial scale and post-fire treatments on rainfall thresholds to produce runoff and erosion from plot to watershed-scale - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/16994
Colorado's Front Range forested watersheds provide municipal water supplies for downstream communities. Many of these watersheds have been affected by wildfires and subsequent runoff, erosion and sedimentation of waterways. Natural resource managers need information on the frequency and duration of post-fire runoff and erosion,...
Author(s): Stephanie Kampf, Codie Wilson, Joseph W. Wagenbrenner
Year Published: 2017
Type: Document
Technical Report or White Paper

Climate, wildfire, and erosion ensemble foretells more sediment in western USA watersheds
www.nrfirescience.org/resource/15526
The area burned annually by wildfires is expected to increase worldwide due to climate change. Burned areas increase soil erosion rates within watersheds, which can increase sedimentation in downstream rivers and reservoirs. However, which watersheds will be impacted by future wildfires is largely unknown. Using an ensemble of...
Author(s): Joel B. Sankey, Jason Kreitler, Todd J. Hawbaker, Jason L. McVay, Mary Ellen Miller, Erich R. Mueller, Nicole M. Vaillant, Scott E. Lowe, Temuulen T. Sankey
Year Published: 2017
Type: Document

Book or Chapter or Journal Article

Tree regeneration, understory development, and biomass dynamics following wildfire in a mountain hemlock (Tsuga mertensiana) forest
www.nrfirescience.org/resource/15021
Processes initiated by wildfire largely determine ecological characteristics of forested landscapes in subsequent decades, including vegetation composition, habitat quality, carbon balance, and probability of fire recurrence. Post-fire biomass dynamics have rarely been observed directly for high-elevation forests of the Pacific...
Author(s): Jane A. Kertis, Steven A. Acker, Robert J. Pabst
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Black carbon on coarse woody debris in once- and twice- burned mixed conifer forest
www.nrfirescience.org/resource/16584
One important outcome of wildfire is the production of charcoal. Charcoal is highly resistant to decomposition and its physical and chemical properties enhance soil fertility and influence nutrient cycling. We compared the amount of black C (the carbon fraction of charcoal) on coarse woody debris (CWD; ?7.6 cm diameter) and total...
Author(s): Aspen Ward, C. Alina Cansler, Andrew J. Larson
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Fine?scale spatial climate variation and drought mediate the likelihood of reburning
www.nrfirescience.org/resource/17220
In many forested ecosystems, it is increasingly recognized that the probability of burning is substantially reduced within the footprint of previously burned areas. This self?limiting effect of wildland fire is considered a fundamental emergent property of ecosystems and is partly responsible for structuring landscape...
Author(s): Sean A. Parks, Marc-Andre Parisien, Carol Miller, Lisa M. Holsinger, Scott L. Baggett
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Ventenata dubia (Ventenata)
www.nrfirescience.org/resource/16431
Ventenata is a nonnative, annual grass that is invasive in parts of the Pacific Northwest. A review of the literature and observational evidence shows that its establishment and spread is greatest in Palouse prairie and sagebrush communities and in previously barren scablands. It also occurs in low-elevation ponderosa pine stands.
Author(s): Janet L. Fryer
Year Published: 2017
Type: Document
Synthesis

Capturing spatiotemporal variation in wildfires for improving postwildfire debris?flow hazard assessments [Chapter 20]
www.nrfirescience.org/resource/14971

Wildfires can increase the frequency and magnitude of catastrophic debris flows. Integrated, proactive naturalhazard assessment would therefore characterize landscapes based on the potential for the occurrence and interactions of wildfires and postwildfire debris flows. This chapter presents a new modeling effort that can quantify...
Author(s): Jessica R. Haas, Matthew P. Thompson, Anne Tillery, Joe H. Scott
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

A large source of dust missing in particulate matter emission inventories? Wind erosion of post-fire landscapes
www.nrfirescience.org/resource/16292
Wind erosion of soils burned by wildfire contributes substantial particulate matter (PM) in the form of dust to the atmosphere, but the magnitude of this dust source is largely unknown. It is important to accurately quantify dust emissions because they can impact human health, degrade visibility, exacerbate dust-on-snow issues (...
Author(s): Natalie S. Wagenbrenner, Serena H. Chung, Brian K. Lamb
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Natural hazard modeling and uncertainty analysis [Chapter 2]
www.nrfirescience.org/resource/16564
Modeling can play a critical role in assessing and mitigating risks posed by natural hazards. These modeling efforts generally aim to characterize the occurrence, intensity, and potential consequences of natural hazards. Uncertainties surrounding the modeling process can have important implications for the development, application,...
Author(s): Matthew P. Thompson, Jord J. Warmink
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Fens and their rare plants in the Beartooth Mountains, Shoshone National Forest, Wyoming
www.nrfirescience.org/resource/15589
Fens are common wetlands in the Beartooth Mountains on the Shoshone National Forest, Clarks Fork Ranger District, in Park County, Wyoming. Fens harbor plant species found in no other habitats, and some rare plants occurring in Beartooth fens are found nowhere else in Wyoming. This report summarizes the studies on Beartooth fens from...
Author(s): Bonnie Heidel, Walter Fertig, Sabine Mellmann-Brown, Kent E. Houston, Kathleen A. Dwire
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
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 burned under varying conditions of temperature, fuel moisture, and relative humidity, resulting in fires of varying...
Year Published: 2017

Type: Document
Synthesis

Comparison of heat transfer and soil impacts of air curtain burner burning and slash pile burning
www.nrfirescience.org/resource/16559
We measured soil heating and subsequent changes in soil properties between two forest residue disposal methods: slash pile burning (SPB) and air curtain burner (ACB). The ACB consumes fuels more efficiently and safely via blowing air into a burning container. Five burning trials with different fuel sizes were implemented in northern...
Author(s): Woongsoon Jang, Deborah S. Page-Dumroese, Han-Sup Han
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

U.S. EPA Smoke Emissions, Chemistry, and Transport Modeling - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/17028
Photochemical grid models such as the Community Multiscale Air Quality Model (CMAQ) are used to estimate local to continental scale O3, PM, and haze for scientific and regulatory assessments. Field data from specific and well characterized wildland fires is critically important to improve wildland fire emissions estimation...
Author(s): Kirk R. Baker, Thomas E. Pierce
Year Published: 2017
Type: Document
Technical Report or White Paper

Separating Trends in Whitebark Pine Radial Growth Related to Climate and Mountain Pine Beetle Outbreaks in the Northern Rocky Mountains, USA
www.nrfirescience.org/resource/17206
Drought and mountain pine beetle (Dendroctonus ponderosae Hopkins) outbreaks have affected millions of hectares of high-elevation conifer forests in the Northern Rocky Mountains during the past century. Little research has examined the distinction between mountain pine beetle outbreaks and climatic influence on radial growth in...
Author(s): Saskia L. van de Gevel, Evan R. Larson, Henri D. Grissino-Mayer
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Phase dynamics of wildland fire smoke emissions and their secondary organic aerosols
www.nrfirescience.org/resource/15581
Biomass burning is an important source to the atmosphere of carbonaceous particulate matter that impacts air quality, climate, and human health. The semivolatile nature of directlyemitted organic particulate matter can result in particle evaporation as smoke plumes dilute. Further, oxidation of emitted and volatilized precursors can...
Author(s): Sonia M. Kreidenweis, Jeffrey R. Pierce
Year Published: 2017
Type: Document
Technical Report or White Paper

Impacts of fire radiative flux on mature Pinus ponderosa growth and vulnerability to secondary mortality agents
www.nrfirescience.org/resource/14915
Recent studies have highlighted the potential of linking fire behaviour to plant ecophysiology as an improved route to characterising severity, but research to date has been limited to laboratory-scale investigations. Fine-scale fire behaviour during prescribed fires has been identified as a strong predictor of post-fire tree...
Author(s): Aaron M. Sparks, Alistair M. S. Smith, Alan F. Talhelm, Crystal A. Kolden, Kara M. Yedinak, Daniel M. Johnson
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

GSD Update: Year in Review: Spotlight on 2016 Research by the Grassland, Shrubland and Desert Ecosystems Science Program
www.nrfirescience.org/resource/16548
In this issue of the GSD Update, we take a look back at selected studies of the Grassland, Shrubland and Desert Ecosystems Science Program (GSD) that depict its strengths and focus areas. Significant results of recent research and science delivery by GSD scientists are highlighted. We feature program research that lines up with the...
Author(s): Deborah M. Finch
Year Published: 2017
Type: Document
Management or Planning Document

Long-term impacts of wildfire on fuel loads, vegetation composition, and potential fire behavior and management in sagebrush-dominated ecosystems - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/17010
An understanding of the long-term vegetation structure, patterns of fuel succession, and potential for reburn in sagebrush-dominated ecosystems is important for managing the landscape at a temporal scale that is appropriate for the ecological interactions in these systems. Our overarching research objective was to fill existing...
Author(s): Lisa M. Ellsworth, J. Boone Kauffman
Year Published: 2017
Type: Document
Technical Report or White Paper

Fire Effects on Historical Wildfire Refugia in Contemporary Wildfires
www.nrfirescience.org/resource/17199
Wildfire refugia are forest patches that are minimally-impacted by fire and provide critical habitats for fire-sensitive species and seed sources for post-fire forest regeneration. Wildfire refugia are relatively understudied, particularly concerning the impacts of subsequent fires on existing refugia. We opportunistically re-...
Author(s): Crystal A. Kolden, Tyler M. Bleeker, Alistair M. S. Smith, Helen M. Poulos, A. E. Camp
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Ecological impacts of fire trails on plant assemblages in edge habitat adjacent to trails
www.nrfirescience.org/resource/16333

Fire trails provide access into vegetation for controlled burns in fire-prone regions of the world. We examined the ecological impacts of fire trails on plant assemblages in edge habitat adjacent to trails in eucalypt woodlands of World Heritage Blue Mountains National Park, southeastern Australia. We found that understory plant...
Author(s): Daniel W. Krix, Matthew C. Hingee, Leigh J. Martin, Megan L. Phillips, Brad R. Murray
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Effects of climate change on rangeland vegetation in the northern Rockies
www.nrfirescience.org/resource/16538
A longer growing season with climate change is expected to increase net primary productivity of many rangeland types, especially those dominated by grasses, although responses will depend on local climate and soil conditions. Elevated atmospheric carbon dioxide may increase water use efficiency and productivity of some species. In...
Author(s): Matthew C. Reeves, Mary Manning, Jeff P. DiBenedetto, Kyle Palmquist, William Lauenroth, John Bradford, Daniel Schlaepfer
Year Published: 2017
Type: Document
Book or Chapter or Journal Article

Restoring Sage-Grouse Habitat after Fire: Success of Different Restoration Methods across an Elevation Gradient - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/17006
Greater sage-grouse (Centrocercus urophasianus) are threatened by a continued loss of sagebrush (Artemisia ssp.) habitat. Recent, large scale wildfires have elevated the risk to sage-grouse as it may take up to several decades to more than a century for naturally recovery of sage-grouse habitat (i.e. reestablishment of sagebrush)....
Author(s): Kirk W. Davies, Matthew Madsen, Chad S. Boyd, Michael A. Gregg, April Hulet, Urban Strachan
Year Published: 2017
Type: Document
Technical Report or White Paper

Relating fire-caused change in forest structure to remotely sensed estimates of fire severity
www.nrfirescience.org/resource/14891
Fire severity maps are an important tool for understanding fire effects on a landscape. The relative differenced normalized burn ratio (RdNBR) is a commonly used severity index in California forests, and is typically divided into four categories: unchanged, low, moderate, and high. RdNBR is often calculated twice—from images...
Author(s): Jamie M. Lydersen, Brandon M. Collins, Jay D. Miller, Danny L. Fry, Scott L. Stephens
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Protecting the source: tools to evaluate fuel treatment cost vs. water quality protection
www.nrfirescience.org/resource/14698
High-intensity wildfires are one of the leading causes of severe soil erosion in western U.S. watersheds. This erosion can lead to disruptive deposits of sediment in reservoirs and water supply systems. Fuel treatments such as controlled burns and forest thinning can reduce wildfire intensity and help preserve topsoil. But while...

Author(s): Brian Cooke
Year Published: 2016
Type: Document
Research Brief or Fact Sheet

Fire effects on aquatic ecosystems: an assessment of the current state of science
www.nrfirescience.org/resource/13906
Fire is a prevalent feature of many landscapes and has numerous and complex effects on geological, hydrological, ecological, and economic systems. In some regions, the frequency and intensity of wildfire have increased in recent years and are projected to escalate with predicted climatic and landuse changes. In addition, prescribed...
Author(s): Rebecca J. Bixby, Scott D. Cooper, Robert E. Gresswell, Lee E. Brown, Clifford N. Dahm, Kathleen A. Dwire
Year Published: 2016
Type: Document
Book or Chapter or Journal Article, Synthesis

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

Recovering lost ground: effects of soil burn intensity on nutrients and ectomycorrhiza communities of ponderosa pine seedlings
www.nrfirescience.org/resource/14547
Fuel accumulation and climate shifts are predicted to increase the frequency of high-severity fires in ponderosa pine (Pinus ponderosa) forests of central Oregon. The combustion of fuels containing large downed wood can result in intense soil heating, alteration of soil properties, and mortality of microbes. Previous studies show...
Author(s): Ariel D. Cowan, Jane E. Smith, Stephen A. Fitzgerald
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Centrocercus minimus, Centrocercus urophasianus (Gunnison sage-grouse, greater sage-grouse)
www.nrfirescience.org/resource/10784
This FEIS species review synthesizes information on the relationship of Centrocercus minimus, Centrocercus urophasianus (Gunnison sage-grouse, greater sage-grouse) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided...
Author(s): Robin J. Innes
Year Published: 2016
Type: Document

Synthesis

Tree mortality and structural change following mixed-severity fire in Pseudotsuga forests of Oregon's western Cascades, USA
www.nrfirescience.org/resource/14256
Mixed-severity fires are increasingly recognized as common in Pseudotsuga forests of the Pacific Northwest and may be an important mechanism for developing or maintaining their structural diversity and complexity. Questions remain about how tree mortality varies and forest structure is altered across the disturbance gradient imposed...
Author(s): Christopher J. Dunn, John D. Bailey
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Variables associated with the occurrence of Ips beetles, red turpentine beetle and wood borers in live and dead ponderosa pines with post-fire injury
www.nrfirescience.org/resource/14690
Recently, wildfires and prescribed burning have become more frequent in conifer forests of western North America. Most studies examining the impacts of insects on trees with post-fire injury have focused on contributions to tree mortality. Few studies have examined fire-caused injuries to estimate the probability of attack by...
Author(s): Jose F. Negron, Joel D. McMillin, Carolyn Hull Sieg, James F. Fowler, Kurt K. Allen, Linda L. Wadleigh, John A. Anhold, Ken E. Gibson
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Flammability as an ecological and evolutionary driver
www.nrfirescience.org/resource/15049
We live on a flammable planet yet there is little consensus on the origin and evolution of flammability in our flora. We argue that part of the problem lies in the concept of flammability, which should not be viewed as a single quantitative trait or metric. Rather, we propose that flammability has three major dimensions that are not...
Author(s): Juli G. Pausas, Jon E. Keeley, Dylan W. Schwilk
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Infiltration and interrill erosion rates after a wildfire in western Montana, USA
www.nrfirescience.org/resource/14528
The 2000 Valley Complex wildfire burned in steep montane forests with ash cap soils in western Montana, USA. The effects of high soil burn severity on forest soil hydrologic function were examined using rainfall simulations (100mmh-1 for 1 h) on 0.5-m2 plots. Infiltration rates, sediment yields and sediment concentrations were...
Author(s): Peter R. Robichaud, Joseph W. Wagenbrenner, Frederick B. Pierson, Kenneth E. Spaeth, Louise E. Ashmun, Corey A. Moffet
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Forest fire policy: change conventional thinking of smoke management to prioritize long-term air quality and public health
www.nrfirescience.org/resource/14467
Wildland fire smoke is inevitable. Size and intensity of wildland fires are increasing in the western USA. Smoke-free skies and public exposure to wildland fire smoke have effectively been postponed through suppression. The historic policy of suppression has systematically both instilled a public expectation of a smoke-free...
Author(s): D.W. Schweizer, Richard Cisneros
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Ecohydrologic impacts of rangeland fire on runoff and erosion: a literature synthesis
www.nrfirescience.org/resource/14674
Fire can dramatically influence rangeland hydrology and erosion by altering ecohydrologic relationships. This synthesis presents an ecohydrologic perspective on the effects of fire on rangeland runoff and erosion through a review of scientific literature spanning many decades. The objectives are: (1) to introduce rangeland hydrology...
Author(s): Frederick B. Pierson, Christopher Jason Williams
Year Published: 2016
Type: Document
Synthesis, Technical Report or White Paper

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

Toward a more ecologically informed view of severe forest fires
www.nrfirescience.org/resource/14023
We use the historical presence of high-severity fire patches in mixed-conifer forests of the western United States to make several points that we hope will encourage development of a more ecologically informed view of severe wildland fire effects. First, many plant and animal species use, and have sometimes evolved to depend on,...
Author(s): Richard L. Hutto, Robert E. Keane, Rosemary L. Sherriff, Christopher T. Rota, Lisa A. Eby, Victoria A. Saab
Year Published: 2016
Type: Document
Book or Chapter or Journal Article, Synthesis

Shrub succession on eight mixed-severity wildfires in western Montana, northeastern Oregon, and northern Idaho
www.nrfirescience.org/resource/14523
The response of 28 shrub species to wildfire burn severity was assessed for 8 wildfires on 6 national forests in the northern Rocky Mountains, USA. Stratified random sampling was used to choose 224

stands based on burn severity, habitat type series, slope steepness, stand height, and stand density, which resulted in 896 plots...
Author(s): Dennis E. Ferguson, John C. Byrne
Year Published: 2016
Type: Document
Technical Report or White Paper

Secondary invasion: the bane of weed management
www.nrfirescience.org/resource/14387
Exotic plant invasions present a global threat to natural ecosystems, yet the efficacy of management efforts in mitigating invader impacts remains unclear. A rapidly emerging problem is that of secondary invasion — an increase in abundance of non-target exotics following treatment of targeted invasive plants. Here, we present a...
Author(s): Dean E. Pearson, Yvette K. Ortega, Justin B. Runyon, Jack L. Butler
Year Published: 2016
Type: Document
Book or Chapter or Journal Article, Synthesis

Area burned in alpine treeline ecotones reflects region-wide trends
www.nrfirescience.org/resource/14828
The direct effects of climate change on alpine treeline ecotones – the transition zones between subalpine forest and non-forested alpine vegetation – have been studied extensively, but climate-induced changes in disturbance regimes have received less attention. To determine if recent increases in area burned extend to these...
Author(s): C. Alina Cansler, Donald McKenzie, Charles B. Hansler
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

1984–2010 trends in fire burn severity and area for the conterminous US
www.nrfirescience.org/resource/14199
Burn severity products created by the Monitoring Trends in Burn Severity (MTBS) project were used to analyse historical trends in burn severity. Using a severity metric calculated by modelling the cumulative distribution of differenced Normalized Burn Ratio (dNBR) and Relativized dNBR (RdNBR) data, we examined burn area and burn...
Author(s): Joshua J. Picotte, Birgit Peterson, Gretchen Meier, Stephen M. Howard
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
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

Recovery and diversity of the forest shrub community 38 years after biomass harvesting in the northern Rocky Mountains
www.nrfirescience.org/resource/14660
We investigated the long-term impact of biomass utilization on shrub recovery, species composition, and biodiversity 38 years after harvesting at Coram Experimental Forest in northwestern Montana. Three levels of biomass removal intensity (high, medium, and low) treatments combined with prescribed burning treatment were nested...
Author(s): Woongsoon Jang, Christopher R. Keyes, Deborah S. Page-Dumroese
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Transferability of habitat suitability models for nesting woodpeckers associated with wildfire
www.nrfirescience.org/resource/15000
Following wildfire, forest managers are challenged with meeting both socioeconomic demands (e.g., salvage logging) and mandates requiring habitat conservation for disturbance-associated wildlife (e.g., woodpeckers). Habitat suitability models for nesting woodpeckers can be informative, but tests of model transferability are needed...
Author(s): Quresh Latif, Victoria A. Saab, Jeff P. Hollenbeck, Jonathan G. Dudley
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Tree mortality based fire severity classification for forest inventories: a Pacific Northwest national forests example
www.nrfirescience.org/resource/13821
Determining how the frequency, severity, and extent of forest fires are changing in response to changes in management and climate is a key concern in many regions where fire is an important natural disturbance. In the USA the only national-scale fire severity classification uses satellite image change-detection to produce maps for...
Author(s): Thomas R. Whittier, Andrew N. Gray
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Drivers and trends in landscape patterns of stand-replacing fire in forests of the US Northern Rocky Mountains (1984-2010)
www.nrfirescience.org/resource/14513
Resilience in fire-prone forests is strongly affected by landscape burn-severity patterns, in part by governing propagule availability around stand-replacing patches in which all or most vegetation is killed. However, little is known about drivers of landscape patterns of stand-replacing fire, or whether...
Author(s): Brian J. Harvey, Daniel C. Donato, Monica G. Turner
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Duff distribution influences fire severity and post-fire vegetation recovery in sagebrush steppe
www.nrfirescience.org/resource/14820
Woody plant expansion is a global phenomenon that alters the spatial distribution of nutrients, biomass,

and fuels in affected ecosystems. Altered fuel patterns across the landscape influences ecological processes including fire behavior, fire effects, and can impact post-fire plant germination and establishment. The purpose of this...
Author(s): Nathan I. Weiner, Eva K. Strand, Stephen C. Bunting, Alistair M. S. Smith
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Conservation and restoration of sagebrush ecosystems and sage-grouse: an assessment of USDA Forest Service Science
www.nrfirescience.org/resource/14004
Sagebrush ecosystems are among the largest and most threatened ecosystems in North America. Greater sage-grouse has served as the bellwether for species conservation in these ecosystems and has been considered for listing under the Endangered Species Act eight times. In September 2015, the decision was made not to list greater sage-...
Author(s): Deborah M. Finch, Douglas A. Boyce, Jeanne C. Chambers, Chris J. Colt, R. Kasten Dumroese, Stanley G. Kitchen, Clinton McCarthy, Susan E. Meyer, Bryce A. Richardson, Mary M. Rowland, Mark A. Rumble, Michael K. Schwartz, Monica S. Tomosy, Michael J. Wisdom
Year Published: 2016
Type: Document
Synthesis, Technical Report or White Paper

Sediment-phosphorus dynamics can shift aquatic ecology and cause downstream legacy effects after wildfire in large river systems
www.nrfirescience.org/resource/14183
Global increases in the occurrence of large, severe wildfires in forested watersheds threaten drinking water supplies and aquatic ecology. Wildfire effects on water quality, particularly nutrient levels and forms, can be significant. The longevity and downstream propagation of these effects as well as the geochemical mechanisms...
Author(s): Monica B. Emelko, Mike Stone, Uldis Silins, Adrian L. Collins, Chris H. S. Williams, Amanda M. Martens, Kevin D. Bladon
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Positive effects of fire on birds may appear only under narrow combinations of fire severity and time-since-fire
www.nrfirescience.org/resource/14642
We conducted bird surveys in 10 of the first 11 years following a mixed-severity fire in a dry, low-elevation mixed-conifer forest in western Montana, United States. By defining fire in terms of fire severity and time-since-fire, and then comparing detection rates for species inside 15 combinations of fire severity and time-since-...
Author(s): Richard L. Hutto, David A. Patterson
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Simulated water budget of a small forested watershed in the continental/maritime hydroclimatic region of the United States
www.nrfirescience.org/resource/15616
Annual streamflows have decreased across mountain watersheds in the Pacific Northwest of the United

States over the last ~70 years; however, in some watersheds, observed annual flows have increased. Physically based models are useful tools to reveal the combined effects of climate and vegetation on long-term water balances by...
Author(s): Liang Wei, Timothy E. Link, Andrew T. Hudak, John D. Marshall, Kathleen L. Kavanagh, John T. Abatzoglou, Hang Zhou, Robert E. Pangle, Gerald N. Flerchinger
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Using resilience and resistance concepts to manage threats to sagebrush ecosystems, Gunnison sage-grouse, and Greater sage-grouse in their eastern range: a strategic multi-scale approach
www.nrfirescience.org/resource/14967
This report provides a strategic approach developed by a Western Association of Fish and Wildlife Agencies interagency working group for conservation of sagebrush ecosystems, Greater sage-grouse, and Gunnison sage-grouse. It uses information on (1) factors that influence sagebrush ecosystem resilience to disturbance and resistance...
Author(s): Jeanne C. Chambers, Jeffrey L. Beck, Steven B. Campbell, John Carlson, Thomas J. Christiansen, Karen J. Clause, Jonathan B. Dinkins, Douglas W. Havlina, Kevin E. Doherty, Kathleen A. Griffin, Douglas W. Havlina, Kenneth F. Henke, Jacob D. Hennig, Laurie L. Kurth, Jeremy D. Maestas, Mary Manning, Kenneth E. Mayer, Brian A. Mealor, Clinton McCarthy, Marco A. Perea, David A. Pyke
Year Published: 2016
Type: Document
Technical Report or White Paper

Short-term effects of early fall prescribed fire on herbaceous species and arthropods important in the diet of greater sage-grouse in Wyoming big sagebrush habitats
www.nrfirescience.org/resource/18267
This document summarizes information from a project at Hart Mountain National Antelope Refuge, Oregon, that studied the effects of prescribed fires on important foods of prelaying greater sage-grouse females and chicks. As of 2007, prescribed fire is no longer used in sagebrush communities on this refuge in order to preserve...
Year Published: 2016
Type: Document
Synthesis

Evaluation of spectral indices for estimating burn severity in semiarid grasslands
www.nrfirescience.org/resource/13799
Using Landsat imagery, this study was conducted to evaluate a fire disturbance that occurred in Canada’s Grasslands National Park on 27 April 2013. We used spectral indices (e.g. Normalised Burn Ratio (NBR) and Mid-infrared Burn Index (MIRBI)) derived from Landsat images to evaluate burn severity and to analyse the vegetation...
Author(s): Bing Lu, Yuhong He, Alexander Tong
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Regeneration of lower-montane forests a quarter-century after the 1988 Yellowstone fires: a fire-catalyzed shift in lower treelines?
www.nrfirescience.org/resource/16885
Forests near the lower limit of montane tree cover are expected to be particularly vulnerable to warming

climate, potentially converting to non-forest for prolonged periods if affected by canopy-removing disturbances. Such disturbance-catalyzed shifts are by nature stochastic, offering few opportunities to test these predictions. We...
Author(s): Daniel C. Donato, Brian J. Harvey, Monica G. Turner
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Repeated wildfires alter forest recovery of mixed-conifer ecosystems
www.nrfirescience.org/resource/14805
Most models project warmer and drier climates that will contribute to larger and more frequent wildfires. However, it remains unknown how repeated wildfires alter post-fire successional patterns and forest structure. Here, we test the hypothesis that the number of wildfires, as well as the order and severity of wildfire events...
Author(s): Camille Stevens-Rumann, Penelope Morgan
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Can pore-clogging by ash explain post-fire runoff?
www.nrfirescience.org/resource/13995
Ash plays an important role in controlling runoff and erosion processes after wildfire and has frequently been hypothesised to clog soil pores and reduce infiltration. Yet evidence for clogging is incomplete, as research has focussed on identifying the presence of ash in soil; the actual flow processes remain unknown. We conducted...
Author(s): Cathelijine Stoof, Anouk I. Gevaert, Christine Baver, Bahareh Hassanpour, Veronica L. Morales, Wei Zhang, Deborah A. Martin, Shree K. Giri, Tammo S. Steenhuis
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

ARCBURN: Linking field-based and experimental methods to quantify, predict, and manage fire effects on cultural resources - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/17041
Cultural resources are physical features, both natural and anthropogenic, associated with human activity. These unique and non-renewable resources include sites, structures, and objects possessing significance in history, architecture, archaeology, or human development (Fowler 1982). Wildfires can alter cultural resources through...
Author(s): Rachel A. Loehman, Bret W. Butler, Jamie Civitello, Connie Constan, Jennifer Dyer, Zander Evans, Megan Friggens, Rebekah Kneifel, James J. Reardon, Madeline Scheintaub, Anastasia Steffen
Year Published: 2016
Type: Document
Technical Report or White Paper

Deterministic and stochastic processes lead to divergence in plant communities 25 years after the 1988 Yellowstone fires
www.nrfirescience.org/resource/14620
Young, recently burned forests are increasingly widespread throughout western North America, but forest development after large wildfires is not fully understood, especially regarding effects of variable burn severity, environmental heterogeneity, and changes in drivers over time. We followed development of subalpine forests after...

Author(s): William H. Romme, Timothy G. Whitby, Daniel B. Tinker, Monica G. Turner
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Critical assessment of wildland fire emissions inventories: methodology, uncertainty, effectiveness - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/15585
The project addressed the following tasks: 1) Review and summarize the technical details of major FEIS. 2) Quantify the uncertainty of the components of burned area, fuel loading, and emission factors of each FEIS. 3) Quantify the uncertainty of emissions estimated by each FEIS at scales relevant to modeling ozone, PM2.5 NAAQS, and...
Author(s): Wei Min Hao, Shawn P. Urbanski, Helen T. Naughton
Year Published: 2016
Type: Document
Technical Report or White Paper

Recent tree mortality in the western United States from bark beetles and forest fires
www.nrfirescience.org/resource/14323
Forests are substantially influenced by disturbances, and therefore accurate information about the location, timing, and magnitude of disturbances is important for understanding effects. In the western United States, the two major disturbance agents that kill trees are wildfire and bark beetle outbreaks. Our objective was to...
Author(s): Jeffrey A. Hicke, Arjan J. H. Meddens, Crystal A. Kolden
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

How will climate change affect wildland fire severity in the western US?
www.nrfirescience.org/resource/13983
Fire regime characteristics in North America are expected to change over the next several decades as a result of anthropogenic climate change. Although some fire regime characteristics (e.g., area burned and fire season length) are relatively well-studied in the context of a changing climate, fire severity has received less...
Author(s): Sean A. Parks, Carol Miller, John T. Abatzoglou, Lisa M. Holsinger, Marc-Andre Parisien, Solomon Z. Dobrowski
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western United States?
www.nrfirescience.org/resource/14718
There is a widespread view among land managers and others that the protected status of many forestlands in the western United States corresponds with higher fire severity levels due to historical restrictions on logging that contribute to greater amounts of biomass and fuel loading in less intensively managed areas, particularly...
Author(s): Curtis M. Bradley, Chad T. Hanson, Dominick A. DellaSala
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Occupancy and Abundance of American Badgers and Piute Ground Squirrels in the Sagebrush-Steppe: Implications of the Fire-Cheatgrass Cycle
www.nrfirescience.org/resource/18945
Sagebrush-steppe is experiencing vast changes due to biological invasions and changing fire characteristics. Understanding how these changes influence functionally important animals is essential for ecosystem management. American Badgers (Taxidea taxus) are an apex predator and ecosystem engineer within sagebrush ecosystems. Piute...
Author(s): Joseph D. Holbrook, Robert S. Arkle, Kerri T. Vierling, Janet L. Rachlow, David S. Pilliod, Michelle Wiest
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/14103
Total post-fire tree seedling establishment (all species combined) declined sharply with greater post-fire drought severity and with greater distance to seed sources (i.e. the interior of burn patches). Effects varied among key species groups. For conifers that dominate present-day subalpine forests (Picea engelmannii...
Author(s): Brian J. Harvey, Daniel C. Donato, Monica G. Turner
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Identifying key climate and environmental factors affecting rates of post-fire big sagebrush (Artemisia tridentata) recovery in the northern Columbia Basin, USA
www.nrfirescience.org/resource/14578
Sagebrush steppe of North America is considered highly imperilled, in part owing to increased fire frequency. Sagebrush ecosystems support numerous species, and it is important to understand those factors that affect rates of post-fire sagebrush recovery. We explored recovery of Wyoming big sagebrush (Artemisia tridentata ssp....
Author(s): Douglas J. Shinneman, Susan K. McIlroy
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Detecting unburned areas within wildfire perimeters using Landsat and ancillary data across the northwestern United States
www.nrfirescience.org/resource/14897
Wildfires shape the distribution and structure of vegetation across the inland northwestern United States. However, fire activity is expected to increase given the current rate of climate change, with uncertain outcomes. A fire impact that has not been widely addressed is the development of unburned islands; areas within the fire...
Author(s): Arjan J. H. Meddens, Crystal A. Kolden, James A. Lutz
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Towards a new paradigm in fire severity research using dose-response experiments
www.nrfirescience.org/resource/13917
Most landscape-scale fire severity research relies on correlations between field measures of fire effects and relatively simple spectral reflectance indices that are not direct measures of heat output or changes in plant physiology. Although many authors have highlighted limitations of this approach and called for improved...
Author(s): Alistair M. S. Smith, Aaron M. Sparks, Crystal A. Kolden, John T. Abatzoglou, Alan F. Talhelm, Daniel M. Johnson, Luigi Boschetti, James A. Lutz, Kent G. Apostol, Kara M. Yedinak, Wade T. Tinkham, Robert L. Kremens
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Avian relationships with wildfire at two dry forest locations with different historical fire regimes
www.nrfirescience.org/resource/14479
Wildfire is a key factor influencing bird community composition in western North American forests. We need to understand species and community responses to wildfire and how responses vary regionally to effectively manage dry conifer forests for maintaining biodiversity. We compared avian relationships with wildfire burn severity...
Author(s): Quresh Latif, Jamie Sanderlin, Victoria A. Saab, William M. Block, Jonathan G. Dudley
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Particulate air pollution from wildfires in the western US under climate change
www.nrfirescience.org/resource/14558
Wildfire can impose a direct impact on human health under climate change. While the potential impacts of climate change on wildfires and resulting air pollution have been studied, it is not known who will be most affected by the growing threat of wildfires. Identifying communities that will be most affected will inform development...
Author(s): Jia Coco Liu, Loretta J. Mickley, Melissa P. Sulprizio, Francesca Dominici, Xu Yue, Keita Ebisu, Georgiana Brooke Anderson, Rafi F.A. Khan, Mercedes Bravo, Michelle L. Bell
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Short-term impacts of fire-mediated habitat alterations on an isolated bighorn sheep population
www.nrfirescience.org/resource/14889
Habitat alterations may improve and expand wildlife habitats, and bolster waning wildlife populations. We used global positioning system (GPS) locations to monitor 38 bighorn sheep (Ovis canadensis Shaw) that were translocated to the Seminoe Mountains, Wyoming, USA, in 2009 and 2010, and 24 bighorns captured in 2011 to investigate...
Author(s): Justin G. Clapp, Jeffrey L. Beck
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Do insect outbreaks reduce the severity of subsequent forest fires?
www.nrfirescience.org/resource/14260
Understanding the causes and consequences of rapid environmental change is an essential scientific frontier, particularly given the threat of climate- and land use-induced changes in disturbance regimes.

In western North America, recent widespread insect outbreaks and wildfires have sparked acute concerns about potential insect–...
Author(s): Garrett W. Meigs, Harold S. Zald, John L. Campbell, William S. Keeton, Robert E. Kennedy
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
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

Shifting ecological filters mediate postfire expansion of seedling aspen (Populus tremuloides) in Yellowstone
www.nrfirescience.org/resource/13896
Determining how ecological filters (e.g., climate, soils, biotic interactions) influence where species succeed in heterogeneous landscapes is challenging for long-lived species (e.g., trees), because filters can vary over space and change slowly through time. Stand-replacing wildfires create opportunities for establishment of tree-...
Author(s): Winslow D. Hansen, William H. Romme, Aisha Ba, Monica G. Turner
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Smoke management photographic guide: a visual aid for communicating impacts
www.nrfirescience.org/resource/14538
Communicating emissions impacts to the public can sometimes be difficult because quantitatively conveying smoke concentrations is complicated. Regulators and land managers often refer to particulate-matter concentrations in micrograms per cubic meter, but this may not be intuitive or meaningful to everyone. The primary purpose of...
Author(s): Joshua C. Hyde, Jarod Blades, Troy E. Hall, Roger D. Ottmar, Alistair M. S. Smith
Year Published: 2016
Type: Document
Technical Report or White Paper

Burning the legacy? Influence of wildfire reburn on dead wood dynamics in a temperate conifer forest
www.nrfirescience.org/resource/14473
Dynamics of dead wood, a key component of forest structure, are not well described for mixed-severity fire regimes with widely varying fire intervals. A prominent form of such variation is when two stand-replacing fires occur in rapid succession, commonly termed an early-seral “reburn.” These events are thought to strongly...
Author(s): Daniel C. Donato, Joseph B. Fontaine, John L. Campbell
Year Published: 2016
Type: Document

Book or Chapter or Journal Article

Measurements relating fire radiative energy density and surface fuel consumption - RxCADRE 2011 and 2012
www.nrfirescience.org/resource/13845
Small-scale experiments have demonstrated that fire radiative energy is linearly related to fuel combusted but such a relationship has not been shown at the landscape level of prescribed fires. This paper presents field and remotely sensed measures of pre-fire fuel loads, consumption, fire radiative energy density (FRED) and fire...
Author(s): Andrew T. Hudak, Matthew B. Dickinson, Benjamin C. Bright, Robert L. Kremens, E. Louise Loudermilk, Joseph J. O'Brien, Benjamin Hornsby, Roger D. Ottmar
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Elevated Rocky Mountain elk numbers prevent positive effects of fire on quaking aspen (Populus tremuloides) recruitment
www.nrfirescience.org/resource/14027
Quaking aspen (Populus tremuloides) is the most widespread tree species in North America and has supported a unique ecosystem for tens of thousands of years, yet is currently threatened by dramatic loss and possible local extinctions. While multiple factors such as climate change and fire suppression are thought to contribute to...
Author(s): David Solance Smith, Stephen M. Fettig, Matthew A. Bowker
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Fire and drought
www.nrfirescience.org/resource/14525
Historical and presettlement relationships between drought and wildfire have been well documented in much of North America, with forest fire occurrence and area burned clearly increasing in response to drought. Drought interacts with other controls (forest productivity, topography, and fire weather) to affect fire intensity and...
Author(s): Jeremy S. Littell, David L. Peterson, Karen L. Riley, Yongqiang Liu, Charles H. Luce
Year Published: 2016
Type: Document
Technical Report or White Paper

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

Quaking aspen in Utah: integrating recent science with management
www.nrfirescience.org/resource/15175
Quaking aspen is widely regarded as a key resource for humans, livestock, and wildlife with these values often competing with each other, leading to overuse of aspen in some locations and declines. We review trends in aspen science and management, particularly in Utah. Historically, research conducted here holds a prestigious place...
Author(s): Paul C. Rogers, Sam St. Clair
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Riparian fuel treatments in the western USA: challenges and considerations
www.nrfirescience.org/resource/14663
Fuel reduction treatments are being conducted throughout watersheds of the western United States to reduce hazardous fuels in efforts to decrease the risk of high-severity fire. The number of fuel reduction projects that include near-stream environments is increasing, bringing new challenges to riparian management. Riparian areas...
Author(s): Kathleen A. Dwire, Kristen E. Meyer, Gregg M. Riegel, Timothy A. Burton
Year Published: 2016
Type: Document
Technical Report or White Paper

A global index for mapping the exposure of water resources to wildfire
www.nrfirescience.org/resource/13835
Wildfires are keystone components of natural disturbance regimes that maintain ecosystem structure and functions, such as the hydrological cycle, in many parts of the world. Consequently, critical surface freshwater resources can be exposed to post-fire effects disrupting their quantity, quality and regularity. Although well studied...
Author(s): Francois-Nicolas Robinne, Carol Miller, Marc-Andre Parisien, Monica B. Emelko, Kevin D. Bladon, Michael D. Flannigan
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Cumulative disturbance on the landscape: lessons from the Pole Creek fire, Oregon
www.nrfirescience.org/resource/14519
Previous research has focused on quantifying fuel loadings and using operational fire behavior models to understand changes in fire severity following MPB outbreaks. In this study however, researchers used direct field measurements taken from the 2012 Pole Creek Fire that burned in lodgepole pine forests in central Oregon's...
Author(s): Northwest Fire Science Consortium
Year Published: 2016
Type: Document
Research Brief or Fact Sheet

Long-term post-disturbance forest recovery in the Greater Yellowstone Ecosystem analyzed using landsat time series stack
www.nrfirescience.org/resource/14826
Forest recovery from past disturbance is an integral process of ecosystem carbon cycles, and remote sensing provides an effective tool for tracking forest disturbance and recovery over large areas. Although the disturbance products (tracking the conversion from forest to non-forest type) derived using

the Landsat Time Series Stack-...
Author(s): Feng R. Zhao, Ran Meng, Chengquan Huang, Maosheng Zhao, Feng A. Zhao, Peng Gong, Zhiliang Zhu, Le Yu
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Influences of vegetation disturbance on hydrogeomorphic response following wildfire
www.nrfirescience.org/resource/14186
Quantifying the linkages between vegetation disturbance by fire and the changes in hydrologic processes leading to post-fire erosional response remains a challenge. We measured the influence of fire severity, defined as vegetation disturbance (using a satellite-derived vegetation disturbance index, VDI), landscape features that...
Author(s): Kevin D. Hyde, Kelsey Jencso, Andrew C. Wilcox, Scott W. Woods
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Long-term soil changes from forest harvesting and residue management in the northern Rocky Mountains
www.nrfirescience.org/resource/14659
Soil changes associated with forest harvesting, differing utilization levels, and post-harvest prescribed burning were determined using an empirical study to investigate the long-term impacts on soil physical and chemical properties at Coram Experimental Forest in northwestern Montana. In 1974, two replications of three regeneration...
Author(s): Woongsoon Jang, Deborah S. Page-Dumroese, Christopher R. Keyes
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Wildfire may increase habitat quality for spring Chinook salmon in the Wenatchee River subbasin, WA, USA
www.nrfirescience.org/resource/13818
Pacific Northwest salmonids are adapted to natural disturbance regimes that create dynamic habitat patterns over space and through time. However, human land use, particularly long-term fire suppression, has altered the intensity and frequency of wildfire in forested upland and riparian areas. To examine the potential impacts of...
Author(s): Rebecca L. Flitcroft, Jeff Falke, Gordon H. Reeves, Paul F. Hessburg, Kris McNyset, Lee E. Benda
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Prior wildfires influence burn severity of subsequent large fires
www.nrfirescience.org/resource/14814
With longer and more severe fire seasons predicted, the incidence and extent of fires are expected to increase in western North America. As more area is burned, past wildfires may influence the spread and burn severity of subsequent fires, with implications for ecosystem resilience and fire management. We examined how previous burn...
Author(s): Camille Stevens-Rumann, Susan J. Prichard, Eva K. Strand, Penelope Morgan
Year Published: 2016

Type: Document
Book or Chapter or Journal Article

Post-fire morel (Morchella) mushroom abundance, spatial structure, and harvest sustainability
www.nrfirescience.org/resource/18200
Morel mushrooms are globally distributed, socially and economically important reproductive structures produced by fungi of the genus Morchella. Morels are highly prized edible mushrooms and significant harvests are collected throughout their range, especially in the first year after fire, when some morel species fruit prolifically....
Author(s): Andrew J. Larson, C. Alina Cansler, Seth G. Cowdery, Sienna Hiebert, Tucker J. Furniss, Mark E. Swanson, James A. Lutz
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Validation of a probabilistic post-fire erosion model
www.nrfirescience.org/resource/13996
Post-fire increases of runoff and erosion often occur and land managers need tools to be able to project the increased risk. The Erosion Risk Management Tool (ERMiT) uses the Water Erosion Prediction Project (WEPP) model as the underlying processor. ERMiT predicts the probability of a given amount of hillslope sediment delivery from...
Author(s): Peter R. Robichaud, William J. Elliot, Sarah A. Lewis, Mary Ellen Miller
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Fire-based management for promoting drought resistance of woody seedlings in a changing climate - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/17051
Shifts in rainfall patterns due to climate change are expected to increase drought-induced stress and mortality in forests, with widespread, negative consequences for forest productivity. Additionally, the extent, frequency and severity of natural and anthropogenic fires are rapidly changing, highlighting the need to understand the...
Author(s): Jennifer Fraterrigo, Tyler Refsland
Year Published: 2016
Type: Document
Technical Report or White Paper

Burned forest characterization at single-tree level with airborne laser scanning for assessing wildlife habitat
www.nrfirescience.org/resource/14180
Abundance, size, and spatial distribution of standing dead trees (snags), are key indicators of forest biodiversity and ecosystem health. These metrics represent critical habitat components for various wildlife species of conservation concern, including the Black-backed Woodpecker (Picoides arcticus), which is strongly associated...
Author(s): Angeles Casas, Mariano Garcia, Rodney B. Siegel, Alexander Koltunov, Carlos Ramirez, Susan L. Ustin
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Post-fire vegetation and fuel development influences fire severity patterns in reburns
www.nrfirescience.org/resource/14638
In areas where fire regimes and forest structure have been dramatically altered, there is increasing concern that contemporary fires have the potential to set forests on a positive feedback trajectory with successive reburns, one in which extensive stand-replacing fire could promote more stand-replacing fire. Our study utilized an...
Author(s): Michelle Coppoletta, Kyle E. Merriam, Brandon M. Collins
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Non-deforestation fire vs. fossil fuel combustion: the source of CO2 emissions affects the global carbon cycle and climate responses
www.nrfirescience.org/resource/14328
Non-deforestation fire – i.e., fire that is typically followed by the recovery of natural vegetation – is arguably the most influential disturbance in terrestrial ecosystems, thereby playing a major role in carbon exchanges and affecting many climatic processes. The radiative effect from a given atmospheric CO2 perturbation is...
Author(s): Jean-Sebastien Landry, H. Damon Matthews
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Burn me twice, shame on who? Interactions between successive forest fires across a temperate mountain region
www.nrfirescience.org/resource/14793
Increasing rates of natural disturbances under a warming climate raise important questions about how multiple disturbances interact. Escalating wildfire activity in recent decades has resulted in some forests re-burning in short succession, but how the severity of one wildfire affects that of a subsequent wildfire is not fully...
Author(s): Brian J. Harvey, Daniel C. Donato, Monica G. Turner
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

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

The effects of climate change and extreme wildfire events on runoff erosion over a mountain watershed
www.nrfirescience.org/resource/13982

Increases in wildfire occurrence and severity under an altered climate can substantially impact terrestrial ecosystems through enhancing runoff erosion. Improved prediction tools that provide high resolution spatial information are necessary for location-specific soil conservation and watershed management. However, quantifying the...
Author(s): Gregory K. Gould, Mingliang Liu, Michael E. Barber, Keith A. Cherkauer, Peter R. Robichaud, Jennifer C. Adam
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Determination of the effects of heating mechanisms and moisture content on ignition of live fuels
www.nrfirescience.org/resource/15576
Effect of moisture content and heat flux type on ignition of foliage from 10 live fuels was examined over the course of a year using two apparatuses: a flat-flame burner coupled with a radiant panel and a Forced Ignition and flame Spread Test (FIST) apparatus. Results of the experiments were compared to predictions made with the...
Author(s): David R. Weise, Thomas H. Fletcher, Shankar M. Mahalingam, Sara S. McAllister, Babak Shotorban, William Matt Jolly
Year Published: 2016
Type: Document
Technical Report or White Paper

Landscape variation in tree regeneration and snag fall drive fuel loads in 24-year old post-fire lodgepole pine forests
www.nrfirescience.org/resource/14901
Escalating wildfire in subalpine forests with stand-replacing fire regimes is increasing the extent of early-seral forests throughout the western USA. Post-fire succession generates the fuel for future fires, but little is known about fuel loads and their variability in young post-fire stands. We sampled fuel profiles in 24-year-old...
Author(s): Kellen N. Nelson, Monica G. Turner, William H. Romme, Daniel B. Tinker
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Effects of prescribed fire on wildlife and wildlife habitat in selected ecosystems of North America
www.nrfirescience.org/resource/14715
Prescribed fire is applied widely as a management tool in North America to meet various objectives such as reducing fuel loads and fuel continuity, returning fire to an ecosystem, enhancing wildlife habitats, improving forage, preparing seedbeds, improving watershed conditions, enhancing nutrient cycling, ...
Author(s): William M. Block, L. Mike Conner, Paul A. Brewer, Paulette Ford, Jonathan Haufler, Andrea Litt, Ronald E. Masters, Laura R. Mitchell, Jane Park
Year Published: 2016
Type: Document
Technical Report or White Paper

Trends in post-disturbance recovery rates of Canada's forests following wildfire and harvest
www.nrfirescience.org/resource/13930
The recovery of forests following stand-replacing disturbance is of widespread interest; however, there

is both a lack of definitional clarity for the term 'recovery' and a dearth of empirical data on the rates of forest recovery associated with different disturbance types. We conducted a quantitative review of literature to...
Author(s): Samuel F. Bartels, Han Y. H. Chen, Michael A. Wulder, Joanne C. White
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Cascading effects of fire retardant on plant-microbe interactions, community composition, and invasion
www.nrfirescience.org/resource/14485
Climate change, historical fire suppression, and a rise in human movements in urban-forest boundaries have resulted in an increased use of long-term fire retardant (LTFR). While LTFR is an effective fire-fighting tool, it contains high concentrations of nitrogen and phosphorus, and little is known about how this nutrient pulse...
Author(s): Abigail Marshall, Lauren Waller, Ylva Lekberg
Year Published: 2016
Type: Document
Book or Chapter or Journal Article

Interactions among climate, wildfire and tree regeneration at lower treeline in the U.S. northern rockies
www.nrfirescience.org/resource/15564
Recent increases in area burned in the western U.S. have raised concerns about the resilience of forests to large wildfires, particularly in dry mixed-conifer forests, where climate change and 20th-century land management have altered species composition, fuel loads, and fire regimes. To study forest resilience to recent wildfires,...
Author(s): Philip E. Higuera, Kerry Kemp
Year Published: 2015
Type: Document
Technical Report or White Paper

Using bird ecology to learn about the benefits of severe fire
www.nrfirescience.org/resource/15556
In this chapter in the book "The Ecological Importance of Mixed Severity Fires: Nature's Phoenix, the authors do not provide an encyclopedic review of the more than 450 published papers that describe some kind of effect of fire on birds. Instead, they chose to highlight underappreciated principles or lessons that emerge from...
Author(s): Richard L. Hutto, Monica L. Bond, Dominick A. DellaSala
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Increasing weight of evidence that thinning and burning treatments help restore understory plant communities in ponderosa pine forests
www.nrfirescience.org/resource/13692
For more than a century ecosystems around the world have experienced an increase in the dominance of woody species. While the drivers of woody plant proliferation are complex, interactions between climate and land-use change are commonly invoked as primary contributing factors. In ponderosa pine forests of western North America,...
Author(s): Robert T. Strahan, Michael T. Stoddard, Judith D. Springer, David W. Huffman

Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Mixed severity fire effects within the Rim fire: relative importance of local climate, fire weather, topography, and forest structure
www.nrfirescience.org/resource/13857
Recent and projected increases in the frequency and severity of large wildfires in the western U.S. makes understanding the factors that strongly affect landscape fire patterns a management priority for optimizing treatment location. We compared the influence of variations in the local environment on burn severity patterns on the...
Author(s): Van R. Kane, C. Alina Cansler, Nicholas A. Povak, Jonathan T. Kane, Bob McGaughey, James A. Lutz, Derek J. Churchill, Malcolm P. North
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Vegetation, topography and daily weather influenced burn severity in central Idaho and western Montana forests
www.nrfirescience.org/resource/13621
Burn severity as inferred from satellite-derived differenced Normalized Burn Ratio (dNBR) is useful for evaluating fire impacts on ecosystems but the environmental controls on burn severity across large forest fires are both poorly understood and likely to be different than those influencing fire extent. We related dNBR to...
Author(s): Donovan Birch, Penelope Morgan, Crystal A. Kolden, John T. Abatzoglou, Gregory K. Dillon, Andrew T. Hudak, Alistair M. S. Smith
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

A systematic review of the physical health impacts from non-occupational exposure to wildfire smoke
www.nrfirescience.org/resource/13262
Climate change is likely to increase the threat of wild fires, and little is known about how wild fires affect health in exposed communities. A better understanding of the impacts of the resulting air pollution has important public health implications for the present day and the future. Method: We performed a systematic search to...
Author(s): Jia C. Liu, Gavin Pereira, Sarah A. Uhl, Mercedes Bravo, Michelle L. Bell
Year Published: 2015
Type: Document
Synthesis

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

The effects of seed source health on whitebark pine (Pinus albicaulis) regeneration density after wildfire
www.nrfirescience.org/resource/13603
Whitebark pine (Pinus albicaulis Engelm.) populations are declining nearly rangewide from a combination of factors, including mountain pine beetle (Dendroctonus ponderosae Hopkins, 1902) outbreaks, the exotic pathogen Cronartium ribicola J.C. Fisch. 1872, which causes the disease white pine blister rust, and successional replacement...
Author(s): Signe B. Leirfallom, Robert E. Keane, Diana F. Tomback, Solomon Z. Dobrowski
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Impacts of fire on snowshoe hares in Glacier National Park, Montana, USA
www.nrfirescience.org/resource/13460
Forest fires fundamentally shape the habitats available for wildlife. Current predictions for fire under a warming climate suggest larger and more severe fires may occur, thus challenging scientists and managers to understand and predict impacts of fire on focal species, especially species of management concern. Snowshoe hares (...
Author(s): Ellen Cheng, Karen E. Hodges, Scott Mills
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Vegetation clearance distances to prevent wildland fire caused damage to telecommunication and power transmission infrastructure
www.nrfirescience.org/resource/16921
Towers and poles supporting power transmission and telecommunication lines have collapsed due to heating from wildland fires. Such occurrences have led to interruptions in power or communication in large municipal areas with associated social and political implications as well as increased immediate danger to humans. Unfortunately,...
Author(s): Bret W. Butler, James B. Webb, J. Hogge, Tim Wallace
Year Published: 2015
Type: Document
Conference Proceedings

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

Short-interval disturbance in lodgepole pine forests, British Columbia, Canada: understory and overstory response to mountain pine beetle and fire
www.nrfirescience.org/resource/14159
The recent mountain pine beetle (MPB) outbreak across western North America's interior lodgepole pine forests has altered the landscape such that the majority of wildfires in the region will now burn through MPB-affected stands. Study of plant community response to these combined disturbances is critical for our understanding and...
Author(s): Marc Edwards, Meg A. Krawchuk, Philip J. Burton
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

The role of fire in aspen ecology and restoration
www.nrfirescience.org/resource/16377
Quaking aspen is generally considered to be a fire-adapted species because it regenerates prolifically after fire, and it can be replaced by more shade-tolerant tree species in the absence of fire. As early-successional aspen stands transition to greater conifer-dominance, they become increasingly fire prone, until fire returns, and...
Author(s): Douglas J. Shinneman, Kevin Krasnow, Susan K. McIlroy
Year Published: 2015
Type: Document
Research Brief or Fact Sheet

A case study comparison of LANDFIRE fuel loading and emissions on a mixed conifer forest in northern Idaho, USA
www.nrfirescience.org/resource/13750
The use of fire as a land management tool is well recognized for its ecological benefits in many natural systems. To continue to use fire while complying with air quality regulations, land managers are often tasked with modeling emissions from fire during the planning process. To populate such models, the Landscape Fire...
Author(s): Joshua C. Hyde, Eva K. Strand, Andrew T. Hudak, Dale Hamilton
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Too hot to trot? Evaluating the effects of wildfire on patterns of occupancy and abundance for a climate-sensitive habitat specialist
www.nrfirescience.org/resource/13185
Wildfires are increasing in frequency and severity as a result of climate change in many ecosystems; however, effects of altered disturbance regimes on wildlife remain poorly quantified. Here, we leverage an unexpected opportunity to investigate how fire affects the occupancy and abundance of a climate-sensitive habitat specialist,...
Author(s): Johanna Varner, Mallory S. Lambert, Joshua J. Horns, Sean Laverty, Laurie Dizney, Erik A. Beever, M. Denise Dearing
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Impacts of changing fire regimes in the alpine treeline ecotone
www.nrfirescience.org/resource/15577
We studied the effects of a shift in the fire regime of an ecosystem that is very sensitive to climate

change: the ecotone from closed forest to open alpine tundra, hereafter the alpine treeline ecotone (ATE). Results suggest that ATEs will become more complex spatially in a warming climate, rather than moving up or down en masse....
Author(s): Donald McKenzie, C. Alina Cansler
Year Published: 2015
Type: Document
Technical Report or White Paper

Picea glauca (white spruce)
www.nrfirescience.org/resource/18261
Fire Effects and Management: Fire of any severity generally kills white spruce. After fire, white spruce typically establishes from seed from trees along fire edges or unburned trees within the burn area. Establishment depends on seed availability, seedbed conditions, fire characteristics, site and soil characteristics, and weather...
Author(s): Ilana L. Abrahamson
Year Published: 2015
Type: Document
Synthesis

Simulated big sagebrush regeneration supports predicted changes at the trailing and leading edges of distribution shifts
www.nrfirescience.org/resource/15432
Many semi-arid plant communities in western North America are dominated by big sagebrush. These ecosystems are being reduced in extent and quality due to economic development, invasive species, and climate change. These pervasive modifications have generated concern about the long-term viability of sagebrush habitat and sagebrush-...
Author(s): Daniel Schlaepfer, Kyle A. Taylor, Victoria E. Pennington, Kellen N. Nelson, Trace E. Martyn, Caitlin M. Rottler, William Lauenroth, John Bradford
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Belowground impacts of pile burning in the Inland Northwestern U.S.
www.nrfirescience.org/resource/15565
Forest restoration efforts require thinning operations to reduce tree density, wildfire risk, or insect and disease conditions to improve ecosystem processes and function. However, one issue with the thinned stands is to dispose of the residues. Slash pile burning is currently used on many forest sites as a preferred method for...
Author(s): Deborah S. Page-Dumroese, Christopher R. Keyes, Martin F. Jurgensen, William J. Massman, Bret W. Butler
Year Published: 2015
Type: Document
Technical Report or White Paper

Paths of recovery: landscape variability in forest structure, function, and fuels after the 1988 Yellowstone Fires
www.nrfirescience.org/resource/13720
Understanding the rates, trajectories, and spatial variability in succession following severe wildfire is increasingly important for forest managers in western North America and critical for anticipating the resilience or vulnerability of forested landscapes to changing environmental conditions. However, few long-term...

Author(s): Monica G. Turner, William H. Romme, Daniel B. Tinker, Daniel C. Donato, Brian J. Harvey
Year Published: 2015
Type: Document
Technical Report or White Paper

Post-wildfire debris flows in southern British Columbia, Canada
www.nrfirescience.org/resource/12886
Several post-wildfire debris flows and other landslides occurred after the extreme wildfire season of 2003 in the southern interior of British Columbia. Such events had not been previously reported in Canada, although they are common in lower latitudes. Severe wildfire seasons also were experienced in 2007 and 2009, and additional...
Author(s): Peter Jordan
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Postfire shrub cover dynamics: A 70-year fire chronosequence in mountain big sagebrush communities
www.nrfirescience.org/resource/15422
Fire is natural in sagebrush (Artemisia L.) communities. In this study, we quantify effects of time since last burn (TSLB) on shrub cover over a 70-year (yr) fire chronosequence. We sampled mountain big sagebrush communities with very large-scale aerial (VLSA) imagery and measured sagebrush, antelope bitterbrush (Purshia tridentata...
Author(s): Corey A. Moffet, J. Bret Taylor, D. Terrance Booth
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Deriving fundamental statistical shrub fuel models by laser scanning and combustion experimentation
www.nrfirescience.org/resource/15558
We exploited the measurement capacity of a terrestrial laser scanner to precisely characterize shrub fuel matrices in a laboratory setting, to abstract fuel elements for fire behavior modeling, and to identify strengths and limitations of TLS for these purposes. Simultaneously, we produced statistical distributions of combustion...
Author(s): Carl A. Seielstad, Thomas H. Fletcher, David R. Weise
Year Published: 2015
Type: Document
Technical Report or White Paper

Satellite versus ground-based estimates of burned area: a comparison between MODIS based burned area and fire agency reports over North America in 2007
www.nrfirescience.org/resource/13620
North American wildfire management teams routinely assess burned area on site during firefighting campaigns; meanwhile, satellite observations provide systematic and global burned-area data. Here we compare satellite and ground-based daily burned area for wildfire events for selected large fires across North America in 2007 on daily...
Author(s): Stephane Mangeon, Robert Field, Michael Fromm, Charles W. McHugh, Apostolos Voulgarakis
Year Published: 2015
Type: Document

Book or Chapter or Journal Article

Wildfire smoke and public health risk
www.nrfirescience.org/resource/13562
Wildfire activity is predicted to increase with global climate change, resulting in longer fire seasons and larger areas burned. The emissions from fires are highly variable owing to differences in fuel, burning conditions and other external environmental factors. The smoke that is generated can impact human populations spread over...
Author(s): Fabienne Reisen, Sandra M. Duran, Michael D. Flannigan, Catherine Elliott, Karen Rideout
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Fire legacies impact conifer regeneration across environmental gradients in the U.S. northern Rockies
www.nrfirescience.org/resource/14018
Context: An increase in the incidence of large wildfires worldwide has prompted concerns about the resilience of forest ecosystems, particularly in the western U.S., where recent changes are linked with climate warming and 20th-century land management practices. Objectives: To study forest resilience to recent wildfires, we examined...
Author(s): Kerry Kemp, Philip E. Higuera, Penelope Morgan
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Fire enhances whitebark pine seedling establishment, survival, and growth
www.nrfirescience.org/resource/13456
Periodic fire is thought to improve whitebark pine (Pinus albicaulis Engelm.) regeneration by reducing competition and creating openings, but the mechanisms by which fire affects seedling establishment are poorly understood. I compared seedling vegetation production in adjacent sites, one last burned in 1880 and the other in 1988,...
Author(s): Judy L. Perkins
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Collaborative fuels reduction and restoration - Experiences from the Southwestern Crown of the Continent
www.nrfirescience.org/resource/13064
Forests that historically burned in mixed-severity fire regimes prove difficult to manage, especially when they border homes and prized recreation areas. This management challenge was the focus of the Fuels Reduction and Restoration in Mixed-Conifer Forests of the Southwestern Crown of the Continent field trip, following the May...
Author(s): Corey L. Gucker
Year Published: 2015
Type: Document
Research Brief or Fact Sheet

Fire, fuels, and streams: the effects and effectiveness of riparian treatments
www.nrfirescience.org/resource/13214

Fire is an important disturbance in riparian systems—consuming vegetation; increasing light; creating snags and debris flows; altering habitat structure; and affecting stream conditions, erosion, and hydrology. For many years, land managers have worked to keep fire out of riparian systems through the use of buffers...
Author(s): Josh McDaniel
Year Published: 2015
Type: Document
Research Brief or Fact Sheet

Relations between soil hydraulic properties and burn severity
www.nrfirescience.org/resource/13987
Wildfire can affect soil hydraulic properties, often resulting in reduced infiltration. The magnitude of change in infiltration varies depending on the burn severity. Quantitative approaches to link burn severity with changes in infiltration are lacking. This study uses controlled laboratory measurements to determine relations...
Author(s): John A. Moody, Brian A. Ebel, Petter Nyman, Deborah A. Martin, Cathelijine Stoof, Randy McKinley
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
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

Does wildfire likelihood or severity increase following insect outbreaks in conifer forests?
www.nrfirescience.org/resource/14153
Although there is acute concern that insect-caused tree mortality increases the likelihood or severity of subsequent wildfire, previous studies have been mixed, with findings typically based on stand-scale simulations or individual events. This study investigates landscape- and regional-scale wildfire likelihood following outbreaks...
Author(s): Garrett W. Meigs, John L. Campbell, Harold S. Zald, John D. Bailey, David C. Shaw, Robert E. Kennedy
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Salix lucida (Shining willow)
www.nrfirescience.org/resource/18262
Shining willow grows in wet to moist sites at middle to high elevations. It dominates many tall willow shrublands, and codominates some riparian mixed-shrublands and mixed-deciduous woodlands. It commonly associates with other willows, cottonwoods, and balsam poplar. Shining willow usually grows

to tree height, although it grows as...
Author(s): Janet L. Fryer
Year Published: 2015
Type: Document
Synthesis

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

Polystichum munitum (western swordfern)
www.nrfirescience.org/resource/18260
Western swordfern occurs along the Pacific Coast from southeastern Alaska south to Baja, California [81,100,126,183], with disjunct populations in northeastern Washington, northern Idaho, northwestern Montana, northeastern Oregon [130,189], and the west Kootenays in British Columbia [74]. Western swordfern is most abundant and...
Author(s): Kristin L. Zouhar
Year Published: 2015
Type: Document
Synthesis

Western water threatened by wildfire: it's not just a public lands issue
www.nrfirescience.org/resource/13731
Water is the arid West’s most precious and most vulnerable resource. Western water allows metropolises to bloom in the desert, it fuels America’s largest agricultural economy and it supports a ski industry worth more than $6 billion to state and local economies (Burakowski and Magnusson, 2012). The delivery of clean and...
Author(s): American Forest Foundation
Year Published: 2015
Type: Document
Technical Report or White Paper

Effects of tree cutting and fire on understory vegetation in mixed conifer forests
www.nrfirescience.org/resource/12896
Mixed conifer forests of western North America are challenging for fire management, as historical fire regimes were highly variable in severity, timing, and spatial extent. Complex fire histories combined with site factors and other disturbances, such insect outbreaks, led to great variation in understory plant communities, and...
Author(s): Scott R. Abella, Judith D. Springer
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Corrigendum to - Challenges of establishing big sagebrush (Artemisia tridentata) in rangeland restoration: Effects of herbicide, mowing,whole-community seeding, and sagebrush seed sources
www.nrfirescience.org/resource/18934
The loss of big sagebrush (Artemisia tridentata Nutt.) on sites disturbed by fire has motivated restoration seeding and planting efforts. However, the resulting sagebrush establishment is often lower than desired, especially in dry areas. Sagebrush establishment may be increased by addressing factors such as seed source and...
Author(s): Martha M. Brabec, Matthew J. Germino, Douglas J. Shinneman, David S. Pilliod, Susan K. McIlroy, Robert S. Arkle
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Six basic smoke management practices for prescribed burning
www.nrfirescience.org/resource/12384
Smoke management has become one of the leading challenges facing prescribed fire practitioners in the Southeast and the continued use of prescribed fire in the region may depend on effective smoke and emission mitigation practices. While not a comprehensive list of smoke management strategies, the 2011 USFS-NRCS guide to Basic Smoke...
Author(s): David R. Godwin, Alan J. Long, Peter Lahm
Year Published: 2014
Type: Document
Research Brief or Fact Sheet

Integrating satellite imagery with simulation modeling to improve burn severity mapping
www.nrfirescience.org/resource/12957
Both satellite imagery and spatial fire effects models are valuable tools for generating burn severity maps that are useful to fire scientists and resource managers. The purpose of this study was to test a new mapping approach that integrates imagery and modeling to create more accurate burn severity maps. We developed and assessed...
Author(s): Eva C. Karau, Pamela G. Sikkink, Robert E. Keane, Gregory K. Dillon
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Modelling the effects of fire and rainfall regimes on extreme erosion events in forested landscapes
www.nrfirescience.org/resource/15758
Existing models of post-fire erosion have focused primarily on using empirical or deterministic approaches to predict the magnitude of response from catchments given some initial rainfall and burn conditions. These models are concerned with reducing uncertainties associated with hydro-geomorphic transfer processes and typically...
Author(s): Owen D. Jones, Petter Nyman, Gary J. Sheridan
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Quantifying restoration effectiveness using multi?scale habitat models: implications for

sage?grouse in the Great Basin
www.nrfirescience.org/resource/18932
A recurrent challenge in the conservation of wide-ranging, imperiled species is understanding which habitats to protect and whether we are capable of restoring degraded landscapes. For Greater Sage-grouse (Centrocercus urophasianus), a species of conservation concern in the western United States, we approached this problem by...
Author(s): Robert S. Arkle, David S. Pilliod, Steven E. Hanser, Matthew L. Brooks, Jeanne C. Chambers, James B. Grace, Kevin C. Knutson, David A. Pyke, Justin L. Welty, Troy A. Wirth
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Previous fires moderate burn severity of subsequent wildland fires in two large western US wilderness areas
www.nrfirescience.org/resource/12051
Wildland fire is an important natural process in many ecosystems. However, fire exclusion has reduced frequency of fire and area burned in many dry forest types, which may affect vegetation structure and composition, and potential fire behavior. In forests of the western U.S., these effects pose a challenge for fire and land...
Author(s): Sean A. Parks, Carol Miller, Cara R. Nelson, Zachary A. Holden
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Characterizing spatial reference conditions in southwestern warm/dry mixed-conifer forests
www.nrfirescience.org/resource/12951
Reference conditions describe attributes of ecosystem structure, composition, and function and are used to inform ecological restoration efforts. Reference condition information on tree spatial patterns that occurred prior to wide-spread fire exclusion is limited for warm/dry mixed-conifer forests of the western U.S., particularly...
Author(s): Kyle Rodman, Andrew Sanchez Meador
Year Published: 2014
Type: Document
Research Brief or Fact Sheet

Resin duct size and density as ecophysiological traits in fire scars of Pseudotsuga menziesii and Larix occidentalis
www.nrfirescience.org/resource/13015
BackgroundandAims: Resin ducts (RDs) are features present in most conifer species as defence structures against pests and pathogens; however, little is known about RD expression in trees following fire injury. This study investigates changes in RD size and density in fire scars of Douglas fir (Pseudotsuga menziesii) and western...
Author(s): Estelle Arbellay, Markus Stoffel, Elaine Kennedy Sutherland, Kevin T. Smith, Donald A. Falk
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
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

Recent mountain pine beetle outbreaks, wildfire severity, and postfire tree regeneration in the US northern Rockies
www.nrfirescience.org/resource/13007
Widespread tree mortality caused by outbreaks of native bark beetles (Circulionidae: Scolytinae) in recent decades has raised concern among scientists and forest managers about whether beetle outbreaks fuel more ecologically severe forest fires and impair postfire resilience. To investigate this question, we collected extensive...
Author(s): Brian J. Harvey, Daniel C. Donato, Monica G. Turner
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
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

Patterns and mechanisms of plant succession after fire on Artemisia-grass sites in southeastern Idaho
www.nrfirescience.org/resource/15400
Cover data for plant species on eight environmentally similar sites that were each burned in a different year (from 2 to 36 years ago) were used to construct a composite sequence of vegetational change after fire on Artemisia-grassland sites in southeastern Idaho. Some species were early successional such as Lithospermum ruderale,...
Author(s): David L. Humphrey
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Relative effects of climate change and wildfires on stream temperatures: a simulation modeling approach in a Rocky Mountain watershed
www.nrfirescience.org/resource/12998
Freshwater ecosystems are warming globally from the direct effects of climate change on air temperature and hydrology and the indirect effects on near-stream vegetation. In fire-prone landscapes, vegetative change may be especially rapid and cause significant local stream temperature increases but the importance of these increases...
Author(s): Lisa M. Holsinger, Robert E. Keane, Daniel J. Isaak, Lisa A. Eby, Michael K. Young
Year Published: 2014

Type: Document
Book or Chapter or Journal Article

Semiarid rangeland is resilient to summer fire and postfire grazing utilization
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

Stand density and age affect tree-level structural and functional characteristics of young, postfire lodgepole pine in Yellowstone National Park
www.nrfirescience.org/resource/12925
More frequent fire activity associated with climate warming is expected to increase the extent of young forest stands in fire-prone landscapes, yet growth rates and biomass allocation patterns in young forests that regenerated naturally following stand-replacing fire have not been well studied. We assessed the structural and...
Author(s): Paige E. Copenhaver, Daniel B. Tinker
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Using resistance and resilience concepts to reduce impacts of invasive annual grasses and altered fire regimes on the sagebrush ecosystem and greater sage-grouse: a strategic multi-scale approach
www.nrfirescience.org/resource/12989
This Report provides a strategic approach for conservation of sagebrush ecosystems and Greater Sage- Grouse (sage-grouse) that focuses specifically on habitat threats caused by invasive annual grasses and altered fire regimes. It uses information on factors that influence (1) sagebrush ecosystem resilience to disturbance and...
Author(s): Jeanne C. Chambers, David A. Pyke, Jeremy D. Maestas, Michael L. Pellant, Chad S. Boyd, Steven B. Campbell, Shawn Espinosa, Douglas W. Havlina, Kenneth E. Mayer, Amarina Wuenschel
Year Published: 2014
Type: Document
Management or Planning Document

Large wildfire trends in the western United States, 1984-2011
www.nrfirescience.org/resource/12971
We used a database capturing large wildfires (> 405 ha) in the western U.S. to document regional trends in fire occurrence, total fire area, fire size, and day of year of ignition for 1984-2011. Over the western U.S. and in a majority of ecoregions, we found significant, increasing trends in the number of large fires and/or total...
Author(s): Philip E. Dennison, Simon C. Brewer, James D. Arnold, Max A. Moritz
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Fire severity and tree regeneration following bark beetle outbreaks: the role of outbreak stage and burning conditions
www.nrfirescience.org/resource/13328
The degree to which recent bark beetle (Dendroctonus ponderosae) outbreaks may influence fire severity and postfire tree regeneration is of heightened interest to resource managers throughout western North America, but empirical data on actual fire effects are lacking. Outcomes may depend on burning conditions (i.e., weather during...
Author(s): Brian J. Harvey, Daniel C. Donato, William H. Romme, Monica G. Turner
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

A new metric for quantifying burn severity: the relativized burn ratio
www.nrfirescience.org/resource/13053
Satellite-inferred burn severity data have become increasingly popular over the last decade for management and research purposes. These data typically quantify spectral change between pre-and post-fire satellite images (usually Landsat). There is an active debate regarding which of the two main equations, the delta normalized burn...
Author(s): Sean A. Parks, Gregory K. Dillon, Carol Miller
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Resilience to stress and disturbance, and resistance to Bromus tectorum L. invasion in cold desert shrublands of western North America
www.nrfirescience.org/resource/12897
Alien grass invasions in arid and semi-arid ecosystems are resulting in grass-fire cycles and ecosystem-level transformations that severely diminish ecosystem services. Our capacity to address the rapid and complex changes occurring in these ecosystems can be enhanced by developing an understanding of the environmental factors and...
Author(s): Jeanne C. Chambers, Bethany A. Bradley, Cynthia S. Brown, Carla M. D'Antonio, Matthew J. Germino, James B. Grace, Stuart P. Hardegree, Richard F. Miller, David A. Pyke
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

The temporal evolution of wildfire ash and implications for post-fire infiltration
www.nrfirescience.org/resource/12966
Changes in the properties of an ash layer with time may affect the amount of post-fire runoff, particularly by the formation of ash surface crusts. The formation of depositional crusts by ash have been observed at the pore and plot scales, but the causes and temporal evolution of ash layers and associated crusts have not yet been...
Author(s): Victoria N. Balfour, Stefan H. Doerr, Peter R. Robichaud
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Future Forests Webinar Series, webinar proceedings and summary: ongoing research and management responses to the mountain pine beetle outbreak
www.nrfirescience.org/resource/12963

The Future Forest Webinar Series facilitated dialogue between scientists and managers about the challenges and opportunities created by the mountain pine beetle (MPB) epidemic. The series consisted of six webinar facilitated by the USFS Rocky Mountain Research Station, the Northern and Rocky Mountain Regions, and the Colorado Forest...
Year Published: 2014
Type: Document
Conference Proceedings

Mapping day-of-burning with coarse-resolution satellite fire-detection data
www.nrfirescience.org/resource/12764
Evaluating the influence of observed daily weather on observed fire-related effects (e.g. smoke production, carbon emissions and burn severity) often involves knowing exactly what day any given area has burned. As such, several studies have used fire progression maps - in which the perimeter of an actively burning fire is mapped at...
Author(s): Sean A. Parks
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

The climate-wildfire-air quality system: interactions and feedbacks across spatial and temporal scales
www.nrfirescience.org/resource/13698
Future climate change and its effects on social and ecological systems present challenges for preserving valued ecosystem services, including local and regional air quality. Wildfire is a major source of air-quality impact in some locations, and a substantial contributor to pollutants of concern, including nitrogen oxides and...
Author(s): E. Natasha Stavros, Donald McKenzie, Narasimhan K. Larkin
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Fire and nitrogen addition increase forage quality of Aristida purpurea
www.nrfirescience.org/resource/12956
Purple threeawn (Aristida purpurea Nutt.) is a native perennial bunchgrass with limited forage value that dominates sites with disturbed soils and persists with repeated severe grazing. Fire and nitrogen addition have been used to reduce threeawn and can increase grazing utilization of threeawn by livestock. We evaluated effects of...
Author(s): N. A. Dufek, Lance T. Vermeire, Richard C. Waterman
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Fire activity and severity in the western US vary along proxy gradients representing fuel amount and fuel moisture
www.nrfirescience.org/resource/13016
Numerous theoretical and empirical studies have shown that wildfire activity (e.g., area burned) at regional to global scales may be limited at the extremes of environmental gradients such as productivity or moisture. Fire activity, however, represents only one component of the fire regime, and no studies to date have characterized...
Author(s): Sean A. Parks, Marc-Andre Parisien, Carol Miller, Solomon Z. Dobrowski
Year Published: 2014

Type: Document
Book or Chapter or Journal Article

Perverse incentives: the case of wildfire smoke regulation
www.nrfirescience.org/resource/14235
Wildfire is on the rise. The United States is witnessing a spectacular increase in acres lost to catastrophic wildfires, a phenomenon fed by the generally hotter and dryer conditions associated with climate change. In addition to losses in lives, property, and natural resources, wildfires contribute thousands of tons of air...
Author(s): Kirsten H. Engel
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

A field guide for selecting the most appropriate treatment in sagebrush and pinon-juniper ecosystems in the Great Basin: Evaluating resilience to disturbance and resistance to invasive annual grasses, and predicting vegetation response
www.nrfirescience.org/resource/14682
This field guide identifies seven primary components that largely determine resilience to disturbance, as well as resistance to invasive grasses and plant succession following treatment of areas of concern. The primary components are (1) characteristics of the ecological site, (2) current vegetation prior to treatment, (3)...
Author(s): Richard F. Miller, Jeanne C. Chambers, Michael L. Pellant
Year Published: 2014
Type: Document
Technical Report or White Paper

Quantifying restoration effectiveness using multi-scale habitat models: implications for sage-grouse in the Great Basin
www.nrfirescience.org/resource/12947
A recurrent challenge in the conservation of wide-ranging, imperiled species is understanding which habitats to protect and whether we are capable of restoring degraded landscapes. For Greater Sage-grouse (Centrocercus urophasianus), a species of conservation concern in the western United States, we approached this problem by...
Author(s): Robert S. Arkle, David S. Pilliod, Steven E. Hanser, Matthew L. Brooks, Jeanne C. Chambers, James B. Grace, Kevin C. Knutson, David A. Pyke, Justin L. Welty, Troy A. Wirth
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
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 ecological importance of severe fire - Site visits to Lolo Creek and Blue Mountain burned areas
www.nrfirescience.org/resource/12652
Dr. Dick Hutto, professor of Organismal Biology and Ecology at the University of Montana, took participants of the May 2014 Large Wildland Fires Conference to recently burned sites to discuss fire effects. Hutto was enthused and excited about “the magical biology” occurring on recently burned sites. Magical biology includes...
Author(s): Corey L. Gucker
Year Published: 2014
Type: Document
Research Brief or Fact Sheet

Contrasting effects of wildfire and ecological restoration in old-growth western larch forests
www.nrfirescience.org/resource/13003
The scientific basis for restoration of fire-excluded western larch/mixed-conifer forests is not as well developed as that for dry fire-frequent forests. We compared the effects of wildfire and restoration (combined thinning and prescribed fire) in fire-excluded western larch forests. In 2012, the wildfire site had more, taller, and...
Author(s): Taylor Hopkins, Andrew J. Larson, R. Travis Belote
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
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

Briefing: climate and wildfire in western U.S. forests
www.nrfirescience.org/resource/12991
Wildfire in western U.S. federally managed forests has increased substantially in recent decades, with large (>1000 acre) fires in the decade through 2012 over five times as frequent (450 percent increase) and burned area over ten times as great (930 percent increase) as the 1970s and early 1980s. These changes are closely linked...
Author(s): Anthony L. Westerling, Timothy J. Brown, Tania L. Schoennagel, Thomas W. Swetnam, Monica G. Turner, Thomas T. Veblen
Year Published: 2014
Type: Document
Technical Report or White Paper

Northern Rockies pyrogeography: an example of fire atlas utility

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 Miller, Aaron M. Wilson, Carly E. Gibson
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Bromus tectorum response to fire varies with climate conditions
www.nrfirescience.org/resource/12979
The invasive annual grass Bromus tectorum (cheatgrass) forms a positive feedback with fire in some areas of western North America's sagebrush biome by increasing fire frequency and size, which then increases B. tectorum abundance post-fire and dramatically alters ecosystem structure and processes. However, this positive response to...
Author(s): Kimberly Taylor, Tyler Brummer, Lisa J. Rew, Matt Lavin, Bruce D. Maxwell
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Examining historical and current mixed-severity fire regimes in ponderosa pine and mixed-conifer forests of western north America
www.nrfirescience.org/resource/12904
There is widespread concern that fire exclusion has led to an unprecedented threat of uncharacteristically severe fires in ponderosa pine (Pinus ponderosa Dougl. ex. Laws) and mixed-conifer forests of western North America. These extensive montane forests are considered to be adapted to a low/moderate-severity fire regime that...
Author(s): Dennis C. Odion, Chad T. Hanson, Andre Arsenault, William L. Baker, Dominick A. DellaSala, Richard L. Hutto, Walt Klenner, Max A. Moritz, Rosemary L. Sherriff, Thomas T. Veblen, Mark A. Williams
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Cattle grazing and vegetation succession on burned sagebrush steppe
www.nrfirescience.org/resource/12968
There is limited information about the effects of cattle grazing to longer-term plant community composition and herbage production following fire in sagebrush steppe. This study evaluated vegetation response to cattle grazing over 7 yr (2007-2013) on burned Wyoming big sagebrush (Artemisia tridentata ssp. wyomingensis [Beetle &...
Author(s): Jonathan D. Bates, Kirk W. Davies
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
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, Marshell 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

Conflicting selection from fire and seed predation drives fine-scaled phenotypic variation in a widespread North American conifer
www.nrfirescience.org/resource/12964
Recent work has demonstrated that evolutionary processes shape ecological dynamics on relatively short timescales (eco-evolutionary dynamics), but demonstrating these effects at large spatial scales in natural landscapes has proven difficult. We used empirical studies and modeling to investigate how selective pressures from fire and...
Author(s): Matt V. Talluto, Craig W. Benkman
Year Published: 2014
Type: Document
Book or Chapter or Journal Article

Goodyera repens (northern rattlesnake plantain)
www.nrfirescience.org/resource/10928
This FEIS species review synthesizes information on the relationship of Goodyera repens (northern rattlesnake plantain) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Ilana L. Abrahamson
Year Published: 2013
Type: Document
Synthesis

Influence of wildland fire along a successional gradient in sagebrush steppe and western juniper woodlands
www.nrfirescience.org/resource/12149
Western juniper (Juniperus occidentalis Hook. var. occidentalis) has been expanding into sagebrush (Artemisia L. spp.) steppe over the past 130 years in Idaho, Oregon, and California. Fuel characteristics and expected fire behavior and effects change as sagebrush steppe transitions into juniper woodlands. Little is currently known...
Author(s): Eva K. Strand, Stephen C. Bunting, Robert F. Keefe
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Models for predicting fuel consumption in sagebrush-dominated ecosystems
www.nrfirescience.org/resource/11978
Fuel consumption predictions are necessary to accurately estimate or model fire effects, including pollutant emissions during wildland fires. Fuel and environmental measurements on a series of operational prescribed fires were used to develop empirical models for predicting fuel consumption in big sagebrush (Artemisia tridentata...
Author(s): Clinton S. Wright
Year Published: 2013
Type: Document

Book or Chapter or Journal Article

Assessing watershed-wildfire risks on national forest system lands in the Rocky Mountain region of the United States
www.nrfirescience.org/resource/12750
Wildfires can cause significant negative impacts to water quality with resultant consequences for the environment and human health and safety, as well as incurring substantial rehabilitation and water treatment costs. In this paper we will illustrate how state-of-the-art wildfire simulation modeling and geospatial risk assessment...
Author(s): Matthew P. Thompson, Joe H. Scott, Paul G. Langowski, Julie W. Gilbertson-Day, Jessica R. Haas, Elise M. Bowne
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Disease in a dynamic landscape: host behavior and wildfire reduce amphibian chytrid infection
www.nrfirescience.org/resource/12017
Disturbances are often expected to magnify effects of disease, but these effects may depend on the ecology, behavior, and life history of both hosts and pathogens. In many ecosystems, wildfire is the dominant natural disturbance and thus could directly or indirectly affect dynamics of many diseases. To determine how probability of...
Author(s): Blake R. Hossack, Winsor H. Lowe, Joy L. Ware, Paul S. Corn
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Managing high-elevation sagebrush steppe: do conifer encroachment and prescribed fire affect habitat for pygmy rabbits?
www.nrfirescience.org/resource/11999
Both fire and conifer encroachment can markedly alter big sagebrush communities and thus habitat quality and quantity for wildlife. We investigated how conifer encroachment and spring prescribed burning affected forage and cover resources for a sagebrush specialist, the pygmy rabbit. We studied these dynamics at spring prescribed...
Author(s): Bonnie A. Woods, Janet L. Rachlow, Stephen C. Bunting, Timothy R. Johnson, Kelly Bocking
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Combustion efficiency and emission factors for wildfire-season fires in mixed conifer forests of the northern Rocky Mountains, US
www.nrfirescience.org/resource/13481
In the US, wildfires and prescribed burning present significant challenges to air regulatory agencies attempting to achieve and maintain compliance with air quality regulations. Fire emission factors (EF) are essential input for the emission models used to develop wildland fire emission inventories. Most previous studies quantifying...
Author(s): Shawn P. Urbanski
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Accipiter gentilis (northern goshawk)
www.nrfirescience.org/resource/10662
This FEIS species review synthesizes information on the relationship of Accipiter gentilis (northern goshawk) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Katharine R. Stone
Year Published: 2013
Type: Document
Synthesis

Fire and nitrogen effects on purple threeawn (Aristida purpurea) abundance in northern mixed-grass prairie old fields
www.nrfirescience.org/resource/12019
Purple threeawn (Aristida purpurea Nutt. varieties) is a native grass capable of increasing on rangelands, forming near monocultures, and creating a stable state. Productive rangelands throughout the Great Plains and Intermountain West have experienced increases in purple threeawn abundance, reducing overall forage quality. Our...
Author(s): Dustin J. Strong, Lance T. Vermeire, Amy C. Ganguli
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Interactive effects of wildfire, forest management, and isolation on amphibian and parasite abundance
www.nrfirescience.org/resource/11970
Projected increases in wildfire and other climate-driven disturbances will affect populations and communities worldwide, including host-parasite relationships. Research in temperate forests has shown that wildfire can negatively affect amphibians, but this research has occurred primarily outside of managed landscapes where...
Author(s): Blake R. Hossack, Winsor H. Lowe, R. Ken Honeycutt, Sean A. Parks, Paul S. Corn
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Seeing red: new tools for mapping and understanding fire severity
www.nrfirescience.org/resource/11996
Large, severe fires are ecologically and socially important because they have lasting effects on vegetation and soils, can potentially threaten people and property, and can be costly to manage. The goals of the Fire Severity Mapping Project (FIRESEV), which covers lands in the continental western United States, are to understand...
Author(s): Rocky Mountain Research Station
Year Published: 2013
Type: Document
Research Brief or Fact Sheet

The relationship of post-fire white ash cover to surface fuel consumption
www.nrfirescience.org/resource/13119
White ash results from the complete combustion of surface fuels, making it a logically simple retrospective indicator of surface fuel consumption. However, the strength of this relationship has been neither tested nor adequately demonstrated with field measurements. We measured surface fuel loads

and cover fractions of white ash and...
Author(s): Andrew T. Hudak, Roger D. Ottmar, Robert E. Vihnanek, Nolan W. Brewer, Alistair M. S. Smith, Penelope Morgan
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Reduced ectoparasite loads of deer mice in burned forest: from fleas to trees?
www.nrfirescience.org/resource/12030
We tested whether reduced parasite loads might contribute to high post-fire abundances of deer mice (Peromyscus maniculatus). We performed parasite examinations of 54 mice captured in burned forest in the area of Davis Fire (western Montana, USA), and 26 mice captured in nearby unburned forest. Mean abundance of ectoparasites (fleas...
Author(s): Rafal Zwolak, S. Meagher, J. W. Vaughn, S. Dziemian, Elizabeth E. Crone
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Climatic stress increases forest fire severity across the western United States
www.nrfirescience.org/resource/12012
Pervasive warming can lead to chronic stress on forest trees, which may contribute to mortality resulting from fire-caused injuries. Longitudinal analyses of forest plots from across the western US show that high pre-fire climatic water deficit was related to increased post-fire tree mortality probabilities. This relationship...
Author(s): Phillip J. van Mantgem, Jonathan C. B. Nesmith, MaryBeth Keifer, Eric E. Knapp, Alan L. Flint, Lorraine E. Flint
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Wildland fire emissions, carbon, and climate: modeling fuel consumption
www.nrfirescience.org/resource/12442
Fuel consumption specifies the amount of vegetative biomass consumed during wildland fire. It is a two-stage process of pyrolysis and combustion that occurs simultaneously and at different rates depending on the characteristics and condition of the fuel, weather, topography, and in the case of prescribed fire, ignition rate and...
Author(s): Roger D. Ottmar
Year Published: 2013
Type: Document
Book or Chapter or Journal Article, Synthesis

Regional and forest-level estimates of carbon stored in harvested wood products from the United States Forest Service Northern Region, 1906-2010
www.nrfirescience.org/resource/13089
Global forests capture and store significant amounts of CO2 through photosynthesis. When carbon is removed from forests through harvest, a portion of the harvested carbon is stored in wood products, often for many decades. The United States Forest Service (USFS) and other agencies are interested in accurately accounting for carbon...
Author(s): Nathaniel Anderson, Jesse Young, Keith Stockmann, Kenneth E. Skog, Sean P. Healey, Dan R. Loeffler, J. Greg Jones, James F. Morrison
Year Published: 2013

Type: Document
Technical Report or White Paper

Comparison of debris-flow volumes from burned and unburned areas
www.nrfirescience.org/resource/15772
The goals of this work are to show the range of debris-flow volumes and watershed characteristics for several locations, and the differences in flow volumes for events triggered soon after wildfire. A dataset of 929 events was divided into groups based on location and burn status. The three unburned locations show significant...
Author(s): Paul M. Santi, Luca Morandi
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Wildfire smoke and health impacts: a closer look at fire attributes and their marginal effects
www.nrfirescience.org/resource/12143
Existing studies on the economic impact of wildfire smoke have focused on single fire events or entire seasons without considering the marginal effect of daily fire progression on downwind communities. In addition, neither approach allows for an examination of the impact of even the most basic fire attributes, such as distance and...
Author(s): K. Moeltner, Man-Kuen Kim, E. Zhu, W. Yang
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Introduced annual grass increases regional fire activity across the arid western USA (1980-2009)
www.nrfirescience.org/resource/12110
Non-native, invasive grasses have been linked to altered grass-fire cycles worldwide. Although a few studies have quantified resulting changes in fire activity at local scales, and many have speculated about larger scales, regional alterations to fire regimes remain poorly documented. We assessed the influence of large-scale Bromus...
Author(s): Jennifer Balch, Bethany A. Bradley, Carla M. D'Antonio, Jose Gomez-Dans
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Wind erosion from a sagebrush steppe burned by wildfire: measurements of PM10 and total horizontal sediment flux
www.nrfirescience.org/resource/12140
Wind erosion and aeolian transport processes are under studied compared to rainfall-induced erosion and sediment transport on burned landscapes. Post-fire wind erosion studies have predominantly focused on near-surface sediment transport and associated impacts such as on-site soil loss and site fertility. Downwind impacts, including...
Author(s): Natalie S. Wagenbrenner, Matthew J. Germino, Brian K. Lamb, Peter R. Robichaud, Randy B. Foltz
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Fuel moisture and prescribed burning

www.nrfirescience.org/resource/12397
Moisture is the overriding factor governing fuel flammability. It determines whether ignition will take place and to what depth the forest floor will be consumed. If one uses enough torch mix, he/she can ignite the immediate area, but if fuel moisture is much above 22% in pine litter or 16% in hardwood litter, a headfire is...
Author(s): Dale D. Wade
Year Published: 2013
Type: Document
Research Brief or Fact Sheet

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

Yellowstone National Park and the summer of fire
www.nrfirescience.org/resource/11997
Because of their close relationships with fires, western forest ecosystems are considered fire dependent. If we hope to sustain the communities of trees, plants, and animals that characterize these wildland forests, we need to understand the natural role of fire, changes brought about by suppressing fire, and alternatives for...
Author(s): Diane M. Smith
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

A technical guide for monitoring wildlife habitat
www.nrfirescience.org/resource/12383
Information about status and trend of wildlife habitat is important for the U.S. Department of Agriculture, Forest Service to accomplish its mission and meet its legal requirements. As the steward of 193 million acres (ac) of Federal land, the Forest Service needs to evaluate the status of wildlife habitat and how it compares with...
Author(s): Mary M. Rowland, Christina D. Vojta
Year Published: 2013
Type: Document
Technical Report or White Paper

Compartmentalization of pathogens in fire-injured trees
www.nrfirescience.org/resource/12007
Wildland fire is an episodic process that greatly influences the composition, structure, and developmental sequence of forests. Most news reports of wildland fire involves blazes fueled by slash, standing dead stems, and snags that reach into tree crowns and burn deeply into the forest floor, causing extensive tree mortality and the...
Author(s): Kevin T. Smith
Year Published: 2013

Type: Document
Conference Proceedings

Fuel moisture influences on fire-altered carbon in masticated fuels: an experimental study
www.nrfirescience.org/resource/12021
Biomass burning is a significant contributor to atmospheric carbon emissions, but may also provide an avenue in which fire-affected ecosystems can accumulate carbon over time, through the generation of highly resistant fire-altered carbon. Identifying how fuel moisture, and subsequent changes in the fire behavior, relates to the...
Author(s): Nolan W. Brewer, Alistair M. S. Smith, Jeff A. Hatten, Philip E. Higuera, Andrew T. Hudak, Roger D. Ottmar, Wade T. Tinkham
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Eriophorum viridicarinatum (green-keeled cottongrass)
www.nrfirescience.org/resource/11521
This FEIS species review synthesizes information on the relationship of Eriophorum viridicarinatum (green-keeled cottongrass) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution...
Author(s): Robin J. Innes
Year Published: 2013
Type: Document
Synthesis

Highlights of satellite-based forest change recognition and tracking using the ForWarn System
www.nrfirescience.org/resource/12395
Satellite-based remote sensing can assist forest managers with their need to recognize disturbances and track recovery. Despite the long standing availability of raw imagery, the systematic delivery of spatially continuous, ready-to-use, processed products has evaded us until recently. The web-based ForWarn system moves us a step...
Author(s): Steven P. Norman, William W. Hargrove, Joseph P. Spruce, William M. Christie, Sean W. Schroeder
Year Published: 2013
Type: Document
Technical Report or White Paper

Landscape-scale eco-evolutionary dynamics: selection by seed predators and fire determine a major reproductive strategy
www.nrfirescience.org/resource/11982
Recent work in model systems has demonstrated significant effects of rapid evolutionary change on ecological processes (eco-evolutionary dynamics). Fewer studies have addressed whether eco-evolutionary dynamics structure natural ecosystems. We investigated variation in the frequency of serotiny in lodgepole pine (Pinus contorta), a...
Author(s): Matt V. Talluto, Craig W. Benkman
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Summary of science, activities, programs, and policies that influence the rangewide conservation of greater sage-grouse (Centrocercus urophanianus)
www.nrfirescience.org/resource/15420
Because of their broad range, variations in population traits and characteristics across this range, and the variability in habitat conditions and threats within this range, conservation of sage-grouse is a unique challenge compared to isolated or range-restricted species, primarily due to the scale of the effort. This complexity is...
Author(s): D.J. Manier, D.J.A. Wood, Z.H. Bowen, R.M. Donovan, M.J. Holloran, L.M. Juliusson, K.S. Mayne, S.J. Oyler-McCance, F.R. Quamen, D.J. Saher, A.J. Titolo
Year Published: 2013
Type: Document
Technical Report or White Paper

Comparing the effect of salvage logging on birds in the Mediterranean Basin and the Rocky Mountains: common patterns, different conservation implications
www.nrfirescience.org/resource/12016
Postfire salvage logging is currently a controversial issue because of the impact that the removal of snags has on ecosystem structure and function. Although it is a common practice worldwide, the absence of comparisons across regions hinders the development of broad generalizations. Here we compare bird response to postfire salvage...
Author(s): Josep Rost, Richard L. Hutto, Lluis Brotons, Pere Pons
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Restoring habitat for the northern Idaho ground squirrel (Urocitellus brunneus brunneus): effects of prescribed burning on dwindling habitat
www.nrfirescience.org/resource/12137
Land use and fire exclusion have contributed to an increase in ponderosa pine (Pinus ponderosa) forest extent and density in west-central Idaho. Open areas within ponderosa pine forests are decreasing, thus reducing habitat for the endemic northern Idaho ground squirrel (NIDGS; Urocitellus brunneus brunneus). In 2000, the NIDGS was...
Author(s): E. F. Suronen, Beth A. Newingham
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Trial by fire
www.nrfirescience.org/resource/12135
1) Conservation partners across 11 western states are rallying in unprecedented fashion to reduce threats to sage-grouse and the sagebrush ecosystem they occupy. 2) Improvements made in the Bureau of Land Management's (BLM) wildfire policy are a tremendous step forward but the 2012 wildfire season is a harsh reminder that more...
Author(s): Tim Murphy, David E. Naugle, Randall Eardley, Jeremy D. Maestas, Tim Griffiths, Michael L. Pellant, San J. Stiver
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Gas-particle partitioning of primary organic aerosol emissions: 3. Biomass burning
www.nrfirescience.org/resource/13476

Atmospheric organic aerosol concentrations depend in part on the gas-particle partitioning of primary organic aerosol (POA) emissions. Consequently, heating and dilution were used to investigate the volatility of biomass-burning smoke particles from combustion of common North American trees/shrubs/grasses during the third Fire Lab...
Author(s): Andrew A. May, Ezra Levin, Christopher J. Hennigan, Ilona Riipinen, Taehyoung Lee, Jeffrey L. Collett, Jose L. Jimenez, Sonia M. Kreidenweis, Allen L. Robinson
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Carbon stocks of trees killed by bark beetles and wildfire in the western United States
www.nrfirescience.org/resource/13090
Forests are major components of the carbon cycle, and disturbances are important influences of forest carbon. Our objective was to contribute to the understanding of forest carbon cycling by quantifying the amount of carbon in trees killed by two disturbance types, fires and bark beetles, in the western United States in recent...
Author(s): Jeffrey A. Hicke, Arjan J. H. Meddens, Craig D. Allen, Crystal A. Kolden
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Does Kochia prostrata spread from seeded sites? an evaluation from southwestern Idaho, USA
www.nrfirescience.org/resource/12145
Purposeful introductions of exotic species for rehabilitation efforts following wildfire are common on rangelands in the western United States, though ecological impacts of exotic species in novel environments are often poorly understood. One such introduced species, Kochia prostrata (L.) Schrad (forage kochia) has been seeded on...
Author(s): Erin C. Gray, Patricia S. Muir
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Fire, defoliation, and competing species alter Aristida purpurea biomass, tiller, and axillary bud production
www.nrfirescience.org/resource/11979
Aristida purpurea (purple threeawn) is a competitive native perennial grass with monoculturistic tendencies and poor palatability. We examined effects of fire, defoliation, and interspecific/intraspecific planting for 1) threeawn responses in the presence of threeawn, Bouteloua gracilis, or Pascopyrum smithii, and 2) B. gracilis and...
Author(s): M. L. Russell, Lance T. Vermeire, N. A. Dufek, Dustin J. Strong
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Is burn severity related to fire intensity? Observations from landscape scale remote sensing
www.nrfirescience.org/resource/12026
Biomass burning by wildland fires has significant ecological, social and economic impacts. Satellite remote sensing provides direct measurements of radiative energy released by the fire (i.e. fire intensity) and surrogate measures of ecological change due to the fire (i.e. fire or burn severity). Despite anecdotal observations...
Author(s): Heather Heward, Alistair M. S. Smith, David P. Roy, Wade T. Tinkham, Chad M. Hoffman,

Penelope Morgan, Karen O. Lannom
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Fire effects on basal area, tiller production, and mortality of the C4 bunchgrass, purple threeawn
www.nrfirescience.org/resource/12045
Fire behavior associated with wild and prescribed fires is variable, but plays a vital role in how a plant responds to fire. Understanding the relationship between fire behavior and rangeland plant community response will help to improve the use of prescribed fire to achieve management objectives. Fire is an important ecological...
Author(s): Dustin J. Strong, Amy C. Ganguli, Lance T. Vermeire
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

The impacts of changing disturbance regimes on serotinous plant populations and communities
www.nrfirescience.org/resource/12406
Climatic change is anticipated to alter disturbance regimes for many ecosystems. Among the most important effects are changes in the frequency, size, and intensity of wildfires. Serotiny (long-term canopy storage and the heat-induced release of seeds) is a fire-resilience mechanism found in many globally important terrestrial...
Author(s): Brian Buma, Carissa D. Brown, Daniel C. Donato, Joseph B. Fontaine, Jill F. Johnstone
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Latent resilience in ponderosa pine forest: effects of resumed frequent fire
www.nrfirescience.org/resource/12018
Ecological systems often exhibit resilient states that are maintained through negative feedbacks. In ponderosa pine forests, fire historically represented the negative feedback mechanism that maintained ecosystem resilience; fire exclusion reduced that resilience, predisposing the transition to an alternative ecosystem state upon...
Author(s): Andrew J. Larson, R. Travis Belote, C. Alina Cansler, Sean A. Parks, Matthew S. Dietz
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Resistance to invasives and altered fire regimes differs between cold and hot desert shrublands
www.nrfirescience.org/resource/12136
Settlement by Anglo-Americans in the desert shrublands of North America has resulted in the introduction and subsequent invasion of multiple nonnative invasive grass species. These invasions have altered pre-settlement fire regimes, converted native perennial shrublands to nonnative annual grasslands, and placed many native desert...
Author(s): Matthew L. Brooks, Jeanne C. Chambers
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Duff mound consumption and cambium injury for centuries-old western larch from prescribed

burning in western Montana
www.nrfirescience.org/resource/11974
Western larch is one of the most fire-adapted conifers in western North America. Its historical perpetuation depended upon regular fire disturbances, which creates open stand conditions and mineral seedbeds. A stand of 200- to 500-year-old larch in western Montana with deep duff mounds resulting from an unusually long 150-year fire-...
Author(s): Michael G. Harrington
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Frequency–magnitude distribution of debris flows compiled from global data, and comparison with post-fire debris flows in the western U.S.
www.nrfirescience.org/resource/15765
Forecasting debris flow hazard is challenging due to the episodic occurrence of debris flows in response to stochastic precipitation and, in some areas, wildfires. In order to facilitate hazard assessment, we have gathered available records of debris flow volumes into the first comprehensive global catalog of debris flows (n = 988...
Author(s): Karen L. Riley, Rebecca Bendick, Kevin D. Hyde, Emmanuel J. Gabet
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Influence of recent bark beetle outbreak on fire severity and postfire tree regeneration in montane Douglas-fir forests
www.nrfirescience.org/resource/12029
Understanding how disturbances interact to shape ecosystems is a key challenge in ecology. In forests of western North America, the degree to which recent bark beetle outbreaks and subsequent fires may be linked (e.g., outbreak severity affects fire severity) and/or whether these two disturbances produce compound effects on postfire...
Author(s): Brian J. Harvey, Daniel C. Donato, William H. Romme, Monica G. Turner
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Hydrologic and erosion responses of sagebrush steppe following juniper encroachment, wildfire, and tree cutting
www.nrfirescience.org/resource/12128
Extensive woodland expansion in the Great Basin has generated concern regarding ecological impacts of tree encroachment on sagebrush rangelands and strategies for restoring sagebrush steppe. This study used rainfall (0.5 m2 and 13 m2 scales) and concentrated flow simulations and measures of vegetation, ground cover, and soils to...
Author(s): Frederick B. Pierson, Stuart P. Hardegree, Patrick E. Clark, Patrick R. Kormos, Osama Z. Al-Hamdan
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Corydalis sempervirens (pink corydalis)
www.nrfirescience.org/resource/10933
This FEIS species review synthesizes information on the relationship of Corydalis sempervirens (pink

corydalis) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Rachelle Meyer
Year Published: 2013
Type: Document
Synthesis

A review of fire effects on vegetation and soils in the Great Basin Region: response and ecological site characteristics
www.nrfirescience.org/resource/12147
This review synthesizes the state of knowledge on fire effects on vegetation and soils in semi-arid ecosystems in the Great Basin Region, including the central and northern Great Basin and Range, Columbia River Basin, and the Snake River Plain. We summarize available literature related to: (1) the effects of environmental gradients...
Author(s): Richard F. Miller, Jeanne C. Chambers, David A. Pyke, Frederick B. Pierson
Year Published: 2013
Type: Document
Synthesis, Technical Report or White Paper

Hydro-geomorphic response models for burned areas and their applications in land management
www.nrfirescience.org/resource/15761
Erosion, flash floods and debris flows are hydro-geomorphic processes that intensify due to catchment disturbance by wildland fire. Predictive models of these processes are used by land managers to quantify rehabilitation effectiveness, prioritize resources and evaluate trade-offs between different management strategies. Predictions...
Author(s): Petter Nyman, Gary J. Sheridan, Patrick N. J. Lane
Year Published: 2013
Type: Document
Book or Chapter or Journal Article

Estimating critical climate-driven thresholds in landscape dynamics using spatial simulation modeling: climate change tipping points in fire management - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11983
Climate projections for the next 20-50 years forecast higher temperatures and variable precipitation for many landscapes in the western United States. Climate changes may cause or contribute to threshold shifts, or tipping points, where relatively small shifts in climate result in large, abrupt, and persistent changes in landscape...
Author(s): Robert E. Keane, Rachel A. Loehman
Year Published: 2013
Type: Document
Technical Report or White Paper

Fire-induced shifts in overstory tree species composition and associated understory plant composition in Glacier National Park, Montana
www.nrfirescience.org/resource/11980
In Rocky Mountain forests, fire can act as a mechanism of change in plant community composition if postfire conditions favor establishment of species other than those that dominated prefire tree communities. We sampled pre and postfire overstory and postfire understory species following recent

(1988-2006) stand-replacing fires in...
Author(s): David A. McKenzie, Daniel B. Tinker
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Wildfire severity mediates fluxes of plant material and terrestrial invertebrates to mountain streams
www.nrfirescience.org/resource/11477
Wildfire effects upon riparian plant community structure, composition, and distribution may strongly influence the dynamic relationships between riparian vegetation and stream ecosystems. However, few studies have examined the influence of fire on these processes. To that end, we compared the quantity and composition of...
Author(s): Breeanne K. Jackson, S. Mazeika P. Sullivan, Rachel L. Malison
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

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

Chapter 2: Fire behavior and effects: principles for archaeologists
www.nrfirescience.org/resource/12590
Fire is a natural component of earth's ecosystems. Fire has impacted most landscapes of the Americas, having left evidence of its passing in trees, soils, fossils, and cultural artifacts (Andreae 1991; Benton and Reardon 2006; Biswell 1989; Bowman and others 2009; Boyd and others 2005; Cochrane and others 1999; DeBano and others...
Author(s): Kevin C. Ryan, Cassandra L. Koerner
Year Published: 2012
Type: Document
Synthesis, Technical Report or White Paper

Effects of spring prescribed burning and wildfires on watershed nitrogen dynamics of central Idaho headwater areas
www.nrfirescience.org/resource/8294
Fire is known for its potential to profoundly affect nitrogen (N) dynamics in both terrestrial and aquatic ecosystems. However, few studies have investigated fire effects on several important watershed N pools simultaneously or have directly compared effects of spring prescribed burns and wildfires that occurred in the same...
Author(s): Kirsten Stephan, Kathleen L. Kavanagh, Akihiro Koyama
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Changing growth response to wildfire in old-growth ponderosa pine trees in montane forests of north central Idaho
www.nrfirescience.org/resource/8323
North American fire-adapted forests are experiencing changes in fire frequency and climate. These novel conditions may alter post-wildfire responses of fire-adapted trees that survive fires, a topic that has received little attention. Historical, frequent, low-intensity wildfire in many fire-adapted forests is generally thought to...
Author(s): Eric G. Keeling, Anna Sala
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Pattern and process of prescribed fires influence effectiveness at reducing wildfire severity in dry coniferous forests
www.nrfirescience.org/resource/11476
We examined the effects of three early season (spring) prescribed fires on burn severity patterns of summer wildfires that occurred 1-3 years post-treatment in a mixed conifer forest in central Idaho. Wildfire and prescribed fire burn severities were estimated as the difference in normalized burn ratio (dNBR) using Landsat imagery....
Author(s): Robert S. Arkle, David S. Pilliod, Justin L. Welty
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Genetic variation reveals influence of landscape connectivity on population dynamics and resiliency of western trout in disturbance-prone habitats
www.nrfirescience.org/resource/11272
Salmonid fishes have evolved and persisted in dynamic ecosystems (Waples and others 2008) where disturbance events vary in frequency, magnitude, timing, and duration (Gresswell 1999; Dale and others 2001), as well as the specific nature of associated effects (e.g., changes in thermal or flow regimes, geomorphology, or water...
Author(s): Helen M. Neville, Robert E. Gresswell, Jason B. Dunham
Year Published: 2012
Type: Document
Technical Report or White Paper

Fire as a tool for controlling Tamarix spp. seedlings
www.nrfirescience.org/resource/13506
Fire is often used in northern grasslands to control invasive grass species but has unknown effects on Tamarix spp., more recent invaders. Temperature (using an oven as a fire surrogate) and duration combinations that would be most lethal to Tamarix seeds and seedlings were determined. Tamarix seeds were sown in soil-lined dishes,...
Author(s): Michelle K. Ohrtman, Sharon A. Clay, David E. Clay, Alaexander J. Smart
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Odocoileus hemionus (mule deer)
www.nrfirescience.org/resource/10521

This FEIS species review synthesizes information on the relationship of Odocoileus hemionus (mule deer) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Robin J. Innes
Year Published: 2012
Type: Document
Synthesis

Betula occidentalis (water birch)
www.nrfirescience.org/resource/10582
This FEIS species review synthesizes information on the relationship of Betula occidentalis (water birch) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Corey L. Gucker
Year Published: 2012
Type: Document
Synthesis

Chapter 9: Implications of fire management on cultural resources
www.nrfirescience.org/resource/12571
Previous chapters in this synthesis have identified the important fuel, weather, and fire relationships associated with damage to cultural resources (CR). They have also identified the types of effects commonly encountered in various fire situations and provided some guidance on how to recognize damages and minimize their occurrence...
Author(s): Rebecca Timmons, Leonard F. DeBano, Kevin C. Ryan
Year Published: 2012
Type: Document
Synthesis, Technical Report or White Paper

Fire effects on noxious weeds
www.nrfirescience.org/resource/12003
The Fire Effects Information System (FEIS, www.fs.fed.us/database/feis/) has been providing reviews of scientific knowledge about fire effects since 1986. FEIS is an online collection of literature reviews on more than 1,100 species and their relationships with fire. Reviews cover plants and animals throughout the United States,...
Author(s): Robin J. Innes
Year Published: 2012
Type: Document
Research Brief or Fact Sheet

Management guide to ecosystem restoration treatments: two-aged lodgepole pine forests of central Montana, USA
www.nrfirescience.org/resource/11276
Lodgepole pine is one of the most widely distributed conifers in North America, with a mixed-severity rather than stand-replacement fire regime throughout much of its range. These lodgepole pine forests are patchy and often two-aged. Fire exclusion can reduce two-aged lodgepole pine heterogeneity. This management guide summarizes...
Author(s): Sharon M. Hood, Helen Y. Smith, David K. Wright, Lance S. Glasgow
Year Published: 2012

Type: Document
Synthesis, Technical Report or White Paper

Toxicodendron radicans, Toxicodendron rydbergii (eastern poison-ivy, western poison-ivy)
www.nrfirescience.org/resource/10525
This FEIS species review synthesizes information on the relationship of Toxicodendron radicans, Toxicodendron rydbergii (eastern poison-ivy, western poison-ivy) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on...
Author(s): Robin J. Innes
Year Published: 2012
Type: Document
Synthesis

Fish life histories, wildfire, and resilience - A case study of rainbow trout in the Boise River, Idaho
www.nrfirescience.org/resource/11514
In this short piece we address the question of how aquatic ecosystems and species can change in response to disturbances, such as those related to the influence of wildfire on stream ecosystems. Our focal species is rainbow trout (Oncorhynchus mykiss) in the Boise River, Idaho. Rainbow trout in this system have persisted in the face...
Author(s): Amanda E. Rosenberger, Jason B. Dunham, Helen M. Neville
Year Published: 2012
Type: Document
Technical Report or White Paper

Aquatic species invasions in the context of fire and climate change
www.nrfirescience.org/resource/11273
This paper focuses on the nexus among native and nonnative fishes with respect to fire and climate change in the western United States. Although many taxa are involved, I emphasize native and nonnative salmonids because these are obligate coldwater species that might be expected to respond strongly to fire and because most research...
Author(s): Michael K. Young
Year Published: 2012
Type: Document
Technical Report or White Paper

Mapped versus actual burned area within wildfire perimeters: characterizing the unburned
www.nrfirescience.org/resource/8350
For decades, wildfire studies have utilized fire occurrence as the primary data source for investigating the causes and effects of wildfire on the landscape. Fire occurrence data fall primarily into two categories: ignition points and perimeter polygons which are used to calculate a 'burned area' for a fire. However, understanding...
Author(s): Crystal A. Kolden, James A. Lutz, Carl H. Key, Jonathan T. Kane, Jan W. van Wagtendonk
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Postfire downy brome (Bromus tectorum) invasion at high elevations in Wyoming
www.nrfirescience.org/resource/12122

The invasive annual grass downy brome is the most ubiquitous weed in sagebrush systems of western North America. The center of invasion has largely been the Great Basin region, but there is an increasing abundance and distribution in the Rocky Mountain States. We evaluated postfire vegetation change using very large-scale aerial (...
Author(s): Brian A. Mealor, Samuel Cox, D. Terrance Booth
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

A review of logistic regression models used to predict post-fire tree mortality of western North American conifers
www.nrfirescience.org/resource/8303
Logistic regression models used to predict tree mortality are critical to post-fire management, planning prescribed burns and understanding disturbance ecology. We review literature concerning post-fire mortality prediction using logistic regression models for coniferous tree species in the western USA. We include synthesis and...
Author(s): Travis J. Woolley, David C. Shaw, Lisa Ganio, Stephen A. Fitzgerald
Year Published: 2012
Type: Document
Book or Chapter or Journal Article, Synthesis

A new forest fire paradigm: the need for high-severity fires
www.nrfirescience.org/resource/14505
During the 2012 fire season from June through August, wildfires in the droughtstricken western and central United States burned more than 3.6 million acres of forest and shrubland. In the hot, dry, windy conditions seen that season, a single spark can start an understory fire that ascends into the...
Author(s): Monica L. Bond, Rodney B. Siegel, Richard L. Hutto, Victoria A. Saab, Stephen A. Shunk
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

The effect of sampling rate on interpretation of the temporal characteristics of radiative and convective heating in wildland flames
www.nrfirescience.org/resource/8373
Time-resolved radiative and convective heating measurements were collected on a prescribed burn in coniferous fuels at a sampling frequency of 500 Hz. Evaluation of the data in the time and frequency domain indicate that this sampling rate was sufficient to capture the temporal fluctuations of radiative and convective heating. The...
Author(s): David Frankman, Brent W. Webb, Bret W. Butler, Daniel M. Jimenez, Michael G. Harrington
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Fire and fish: a synthesis of observation and experience
www.nrfirescience.org/resource/11271
The effects of wildfire on aquatic systems and fishes occurring in them has been linked to the direct or immediate influence of the fire on water quality and the indirect or subsequent effects on watershed characteristics and processes that influence water quality and quantity, stream channels, and aquatic biota (Gresswell 1999)....
Author(s): Bruce E. Rieman, Robert E. Gresswell, John N. Rinne
Year Published: 2012

Type: Document
Synthesis, Technical Report or White Paper

Rubus parviflorus (thimbleberry)
www.nrfirescience.org/resource/10676
This FEIS species review synthesizes information on the relationship of Rubus parviflorus (thimbleberry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Corey L. Gucker
Year Published: 2012
Type: Document
Synthesis

Ranunculus glaberrimus (sagebrush buttercup)
www.nrfirescience.org/resource/10794
This FEIS species review synthesizes information on the relationship of Ranunculus glaberrimus (sagebrush buttercup) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Rachelle Meyer
Year Published: 2012
Type: Document
Synthesis

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

Fire effects on the spatial patterning of soil properties in sagebrush steppe, USA: a meta-analysis
www.nrfirescience.org/resource/11484
Understanding effects of changes in ecological disturbance regimes on soil properties, and capacity of soil properties to resist disturbance, is important for assessing ecological condition. In this meta-analysis, we examined the resilience of surface soil properties and their spatial patterning to disturbance by fire in sagebrush...
Author(s): Joel B. Sankey, Temuulen T. Sankey, Matthew J. Germino
Year Published: 2012
Type: Document
Book or Chapter or Journal Article, Synthesis

Salix amygdaloides (peachleaf willow)
www.nrfirescience.org/resource/10658
This FEIS species review synthesizes information on the relationship of Salix amygdaloides (peachleaf

willow) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Janet L. Fryer
Year Published: 2012
Type: Document
Synthesis

Landscape composition in aspen woodlands under various modeled fire regimes
www.nrfirescience.org/resource/12114
Quaking aspen (Populus tremuloides) is declining across the western United States. Aspen habitats are diverse plant communities in this region and loss of these habitats can cause shifts in biodiversity, productivity, and hydrology across spatial scales. Western aspen occurs on the majority of sites seral to conifer species, and...
Author(s): Eva K. Strand, Stephen C. Bunting, Lee A. Vierling
Year Published: 2012
Type: Document
Conference Proceedings

Effects of bark beetle-caused tree mortality on wildfire
www.nrfirescience.org/resource/13294
Millions of trees killed by bark beetles in western North America have raised concerns about subsequent wildfire, but studies have reported a range of conclusions, often seemingly contradictory, about effects on fuels and wildfire. In this study, we reviewed and synthesized the published literature on modifications to fuels and fire...
Author(s): Jeffrey A. Hicke, Morris C. Johnson, Jane L. Hayes, Haiganoush K. Preisler
Year Published: 2012
Type: Document
Book or Chapter or Journal Article, Synthesis

Probabilistic assessment of wildfire hazard and municipal watershed exposure
www.nrfirescience.org/resource/12737
The occurrence of wildfires within municipal watersheds can result in significant impacts to water quality and ultimately human health and safety. In this paper, we illustrate the application of geospatial analysis and burn probability modeling to assess the exposure of municipal watersheds to wildfire. Our assessment of wildfire...
Author(s): Joe H. Scott, Don Helmbrecht, Matthew P. Thompson, David E. Calkin, Kate Marcille
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Spatially extensive reconstructions show variable-severity fire and heterogeneous structure in historical western United States dry forests
www.nrfirescience.org/resource/13484
Aim: Wildfire is often considered more severe now than historically in dry forests of the western United States. Tree-ring reconstructions, which suggest that historical dry forests were park-like with large, old trees maintained by low-severity fires, are from small, scattered studies. To overcome this limitation, we developed...
Author(s): William L. Baker, Mark A. Williams
Year Published: 2012
Type: Document

Book or Chapter or Journal Article

Cornus canadensis (bunchberry)
www.nrfirescience.org/resource/10680
This FEIS species review synthesizes information on the relationship of Cornus canadensis (bunchberry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Corey L. Gucker
Year Published: 2012
Type: Document
Synthesis

Wildfire provides refuge from local extinction but is an unlikely driver of outbreaks by mountain pine beetle
www.nrfirescience.org/resource/12013
Bark beetle outbreaks and wildfire are important disturbances in conifer ecosystems, yet their interactions are not well understood. We evaluated whether fire injury increased susceptibility of lodgepole pines (Pinus contorta) to mountain pine beetle (Dendroctonus ponderosae Hopkins), how it influenced beetle reproductive success,...
Author(s): Erinn N. Powell, Philip A. Townsend, Kenneth F. Raffa
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Can climate change increase fire severity independent of fire intensity? - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11228
We tested the idea that climate may affect forest fire severity independent of fire intensity. Pervasive warming can lead to chronic stress on forest trees (McDowell et al. 2008; Raffa et al. 2008), resulting in higher sensitivity to fire-induced damage (van Mantgem et al. 2003). Thus, there may be ongoing increases in fire severity...
Author(s): Phillip J. van Mantgem, MaryBeth Keifer, Robert C. Klinger, Eric E. Knapp
Year Published: 2012
Type: Document
Technical Report or White Paper

Fire-injured ponderosa pine provide a pulsed resource for bark beetles
www.nrfirescience.org/resource/8353
Bark beetles can cause substantial mortality of trees that would otherwise survive fire injuries. Resin response of fire-injured northern Rocky Mountain ponderosa pine (Pinus ponderosa Douglas ex P. Lawson...
Author(s): Ryan S. Davis, Sharon M. Hood, Barbara J. Bentz
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Cornus sericea (red-osier dogwood)
www.nrfirescience.org/resource/10629
This FEIS species review synthesizes information on the relationship of Cornus sericea (red-osier

dogwood) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Corey L. Gucker
Year Published: 2012
Type: Document
Synthesis

A common-garden study of resource-island effects on a native and an exotic, annual grass after fire
www.nrfirescience.org/resource/11474
Plant-soil variation related to perennial-plant resource islands (coppices) interspersed with relatively bare interspaces is a major source of heterogeneity in desert rangelands. Our objective was to determine how native and exotic grasses vary on coppice mounds and interspaces (microsites) in unburned and burned sites and...
Author(s): Amber N. Hoover, Matthew J. Germino
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Measurements of convective and radiative heating in wildland fires
www.nrfirescience.org/resource/8374
Time-resolved irradiance and convective heating and cooling of fast-response thermopile sensors were measured in 13 natural and prescribed wildland fires under a variety of fuel and ambient conditions. It was shown that a sensor exposed to the fire environment was subject to rapid fluctuations of convective transfer whereas...
Author(s): David Frankman, Brent W. Webb, Bret W. Butler, Daniel M. Jimenez, Jason M. Forthofer, Paul Sopko, Kyle S. Shannon, J. Kevin Hiers, Roger D. Ottmar
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Cheating cheatgrass: new research to combat a wily invasive weed
www.nrfirescience.org/resource/12130
Cheatgrass and its cousin, red brome, are exotic annual grasses that have invaded and altered ecosystem dynamics in more than 41 million acres of desert shrublands between the Rockies and the Cascade-Sierra chain. A fungus naturally associated with these Bromus species has been found lethal to the plants' soil-banked dormant seeds....
Author(s): Gail Wells
Year Published: 2012
Type: Document
Research Brief or Fact Sheet

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

Cumulative effects of fire and fuels management on stream water quality and ecosystem dynamics - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/18951
Prescribed fires and wildland fire-use are increasingly important management tools used to reduce fuel loads and restore the ecological integrity of western forests. Although a basic understanding of the effects of fire on aquatic ecosystems exists, the cumulative and possibly synergistic effects of wildfire following prescribed...
Author(s): David S. Pilliod, Robert S. Arkle
Year Published: 2012
Type: Document
Technical Report or White Paper

Fire effects on gross inorganic N transformation in riparian soils in coniferous forests of central Idaho, USA: wildfires v. prescribed fires
www.nrfirescience.org/resource/11469
We investigated differences between wildfires and prescribed fires in their effects on nitrogen (N) dynamics in mineral soils collected from riparian coniferous forests of central Idaho, USA. Specifically, we investigated how the two types of fires affected inorganic N concentrations, microbial biomass N and gross transformation...
Author(s): Akihiro Koyama, Kirsten Stephan, Kathleen L. Kavanagh
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Effects of ungulate herbivory on aspen, cottonwood, and willow development under forest fuels treatment regimes
www.nrfirescience.org/resource/8337
Herbivory by domestic and wild ungulates can dramatically affect vegetation structure, composition and dynamics in nearly every terrestrial ecosystem of the world. These effects are of particular concern in forests of western North America, where intensive herbivory by native and domestic ungulates has the potential to substantially...
Author(s): Bryan A. Endress, Michael J. Wisdom, Martin Vavra, Catherine G. Parks, Brian L. Dick, Bridgett J. Naylor, Jennifer M. Boyd
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Wildfire impacts on stream sedimentation: re-visiting the Boulder Creek Burn in Little Granite Creek, Wyoming, USA
www.nrfirescience.org/resource/11033
In this study of a burned watershed in northwestern Wyoming, USA, sedimentation impacts following a moderately-sized fire (Boulder Creek burn, 2000) were evaluated against sediment loads estimated for the period prior to burning. Early observations of suspended sediment yield showed substantially elevated loads (5x) the first year...
Author(s): Sandra E. Ryan, Kathleen A. Dwire
Year Published: 2012

Type: Document
Conference Proceedings

Research perspectives on the public and fire management: a synthesis of current social science on eight essential questions
www.nrfirescience.org/resource/12601
As part of a Joint Fire Science Program project, a team of social scientists reviewed existing fire social science literature to develop a targeted synthesis of scientific knowledge on the following questions: 1. What is the public's understanding of fire's role in the ecosystem? 2. Who are trusted sources of information about fire...
Author(s): Sarah M. McCaffrey, Christine Olsen
Year Published: 2012
Type: Document
Synthesis

Characterizing fire-on-fire interactions in three large wilderness areas
www.nrfirescience.org/resource/8339
The interaction of fires, where one fire burns into another recently burned area, is receiving increased attention from scientists and land managers wishing to describe the role of fire scars in affecting landscape pattern and future fire spread. Here, we quantify fire-on-fire interactions in terms of frequency, size, and time-since...
Author(s): Casey Teske, Carl A. Seielstad, Lloyd P. Queen
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Soils and nutrient considerations
www.nrfirescience.org/resource/11893
Fire suppression has resulted in a buildup of forest litter and an accumulation of organic nitrogen, and a decrease in available potassium. This has changed the historic structure of soils and their nutrient content. Studies at 15 sites in Montana have looked at a wide range of changes in soil productivity following prescribed fire...
Author(s): Thomas H. DeLuca
Year Published: 2012
Type: Document
Conference Proceedings

Rapid increases and time-lagged declines in amphibian occupancy after wildfire
www.nrfirescience.org/resource/11998
Climate change is expected to increase the frequency and severity of drought and wildfire. Aquatic and moisture-sensitive species, such as amphibians, may be particularly vulnerable to these modified disturbance regimes because large wildfires often occur during extended droughts and thus may compound environmental threats. However...
Author(s): Blake R. Hossack, Winsor H. Lowe, Paul S. Corn
Year Published: 2012
Type: Document
Book or Chapter or Journal Article

Antennaria parvifolia (littleleaf pussytoes)
www.nrfirescience.org/resource/10657

This FEIS species review synthesizes information on the relationship of Antennaria parvifolia (littleleaf pussytoes) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janet L. Fryer
Year Published: 2011
Type: Document
Synthesis

Fire and fish dynamics in a changing climate
www.nrfirescience.org/resource/13509
Wildland fire is a natural disturbance that affects the distribution and abundance of native fishes in the Rocky Mountain West (Rieman and others 2003). Fire can remove riparian vegetation, increasing direct solar radiation to the stream surface and leading to warmer summer water temperatures. Fire can also consume vegetation and...
Author(s): Lisa M. Holsinger, Robert E. Keane
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Getting results: measuring post-wildfire erosion control treatment effectiveness
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

Lack of fire has limited physiological impact on old-growth ponderosa pine in dry montane forests of north-central Idaho
www.nrfirescience.org/resource/8299
Reduced frequency of fire in historically fire-adapted ecosystems may have adverse effects on ecosystem structure, function, and resilience. Lack of fire increases stand density and promotes successional replacement of seral dominant trees by late-successional, more shade-tolerant species. These changes are thought to increase...
Author(s): Eric G. Keeling, Anna Sala, Thomas H. DeLuca
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Predicting post-fire hillslope erosion in forest lands of the western United States
www.nrfirescience.org/resource/8296
Many forests and their associated water resources are at increasing risk from large and severe wildfires due to high fuel accumulations and climate change. Extensive fuel treatments are being proposed, but it is not clear where such treatments should be focussed. The goals of this project were to: (1) predict potential post-fire...
Author(s): Mary Ellen Miller, Lee H. MacDonald, Peter R. Robichaud, William J. Elliot
Year Published: 2011

Type: Document
Book or Chapter or Journal Article

Effects of wildfire on stream temperatures in the Bitterroot River Basin, Montana
www.nrfirescience.org/resource/8269
Wildfire is a common natural disturbance that can influence stream ecosystems. Of particular concern are increases in water temperature during and following fires, but studies of these phenomena are uncommon. We examined effects of wildfires in 2000 on maximum water temperature for a suite of second- to fourth-order streams with a...
Author(s): Shad K. Mahlum, Lisa A. Eby, Michael K. Young, Chris G. Clancy, Mike Jakober
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Plains prickly pear response to fire: effects of fuel load, heat, fire weather, and donor site soil
www.nrfirescience.org/resource/8283
Plains prickly pear (Opuntia polyacantha Haw.) is common throughout the Great Plains and often becomes detrimental to agricultural production on noncultivated lands. We examined direct fire effects on plains prickly pear and mechanisms of tissue damage to facilitate development of fire prescriptions. Cladodes from clones on three...
Author(s): Lance T. Vermeire, Aaron D. Roth
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Physical, chemical, and hydrological properties of ponderosa pine ash
www.nrfirescience.org/resource/8274
In this study, ash is analyzed as a geological material; in particular, we focus on ash produced by the burning of Ponderosa pine, a conifer that is widespread throughout mountainous landscapes of western North America. One set of ash samples used in the analysis was collected from a wildfire site and another set was created in the...
Author(s): Emmanuel J. Gabet, Andy Bookter
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Influence of fire on mycorrhizal colonization of planted and natural whitebark pine seedlings: ecology and management implications
www.nrfirescience.org/resource/11898
Whitebark pine (Pinus albicaulis) is a threatened keystone species in subalpine zones of Western North America that plays a role in watershed dynamics and maintenance of high elevation biodiversity (Schwandt, 2006). Whitebark pine has experienced significant mortality due to white pine blister rust, mountain pine beetle outbreaks...
Author(s): Paul E. Trusty, Cathy L. Cripps
Year Published: 2011
Type: Document
Conference Proceedings

Hieracium caespitosum (meadow hawkweed)
www.nrfirescience.org/resource/10473

This FEIS species review synthesizes information on the relationship of Hieracium caespitosum (meadow hawkweed) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Katharine R. Stone
Year Published: 2011
Type: Document
Synthesis

Euphorbia esula (leafy spurge)
www.nrfirescience.org/resource/10451
This FEIS species review synthesizes information on the relationship of Euphorbia esula (leafy spurge) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Corey L. Gucker
Year Published: 2011
Type: Document
Synthesis

Fire, plant invasions, and erosion events on western rangelands
www.nrfirescience.org/resource/8290
Millions of hectares of rangeland in the western United States have been invaded by annual and woody plants that have increased the role of wildland fire. Altered fire regimes pose significant implications for runoff and erosion. In this paper we synthesize what is known about fire impacts on rangeland hydrology and erosion, and how...
Author(s): Frederick B. Pierson, Christopher Jason Williams, Stuart P. Hardegree, Mark A. Weltz, Jeffry J. Stone, Patrick E. Clark
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Both topography and climate affected forest and woodland burn severity in two regions of the western US
www.nrfirescience.org/resource/15318
Fire is a keystone process in many ecosystems of western North America. Severe fires kill and consume large amounts of above- and belowground biomass and affect soils, resulting in long-lasting consequences for vegetation, aquatic ecosystem productivity and diversity, and other ecosystem properties. We analyzed the occurrence of,...
Author(s): Gregory K. Dillon, Zachary A. Holden, Penelope Morgan, Michael A. Crimmins, Emily K. Heyerdahl, Charles H. Luce
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Amorpha canescens (leadplant)
www.nrfirescience.org/resource/10659
This FEIS species review synthesizes information on the relationship of Amorpha canescens (leadplant) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...

Author(s): Janet L. Fryer
Year Published: 2011
Type: Document
Synthesis

Influence of fire on native and nonnative salmonid populations and habitat in a western Montana basin
www.nrfirescience.org/resource/8286
Anticipated increases in the frequency and severity of wildfire may threaten the persistence of native salmonid populations in headwater streams in western North America. This study used extensive pre- and postfire data to assess whether wildfire leads to hypothesized declines in native westslope cutthroat trout Oncorhynchus clarkii...
Author(s): Clint M. Sestrich, Thomas E. McMahon, Michael K. Young
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Twenty years after the 1988 Yellowstone fires: lessons about disturbance and ecosystems
www.nrfirescience.org/resource/8308
The 1988 Yellowstone fires were among the first in what has proven to be an upsurge in large severe fires in the western USA during the past 20 years. At the time of the fires, little was known about the impacts of such a large severe disturbance because scientists had had few previous opportunities to study such an event....
Author(s): William H. Romme, Mark S. Boyce, Robert E. Gresswell, Evelyn H. Merrill, G. Wayne Minshall, Cathy L. Whitlock, Monica G. Turner
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Muhlenbergia racemosa (green muhly)
www.nrfirescience.org/resource/10939
This FEIS species review synthesizes information on the relationship of Muhlenbergia racemosa (green muhly) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Kristin L. Zouhar
Year Published: 2011
Type: Document
Synthesis

Emissions of air pollutants by Canadian wildfires from 2000 to 2004
www.nrfirescience.org/resource/14707
A wildfire emission model, based on the Canadian Forest Fire Behaviour Prediction System and the Canadian weather forecast Global Environmental Multiscale model, was applied to forest fires that occurred in Canada between 2000 and 2004. Emissions of 21 chemical species and injection heights were calculated hourly for a regular 0.4...
Author(s): David Lavoue, Brian J. Stocks
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Picoides arcticus (black-backed woodpecker)
www.nrfirescience.org/resource/10857
This FEIS species review synthesizes information on the relationship of Picoides arcticus (black-backed woodpecker) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Katharine R. Stone
Year Published: 2011
Type: Document
Synthesis

Modeling effects of climate change and fire management on western white pine (Pinus monticola) in the northern rocky mountains, USA
www.nrfirescience.org/resource/13512
Climate change is projected to profoundly influence vegetation patterns and community compositions, either directly through increased species mortality and shifts in species distributions or indirectly through disturbance dynamics such as increased wildfire activity and extent, shifting fire regimes, and pathogenesis. Mountainous...
Author(s): Rachel A. Loehman, Jason A. Clark, Robert E. Keane
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Assessing the susceptibility of semiarid rangelands to wildfires using Terra MODIS and Landsat Thematic Mapper data
www.nrfirescience.org/resource/11461
In order to monitor wildfires at broad spatial scales and with frequent periodicity, satellite remote sensing techniques have been used in many studies. Rangeland susceptibility to wildfires closely relates to accumulated fuel load. The normalised difference vegetation index (NDVI) and fraction of photosynthetically active radiation...
Author(s): Fang Chen, Keith T. Weber, Jamey Anderson, Bhushan Gokhal
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Canyon grassland vegetation changes following fire in northern Idaho
www.nrfirescience.org/resource/12049
Native and nonnative vegetation mosaics are common in western rangelands. If land managers could better predict changes in the abundance of native and nonnative species following disturbances, maintenance of native plant cover and diversity may be improved. In August 2000, during suppression of a wildfire near Lewiston, Idaho, a...
Author(s): Corey L. Gucker, Stephen C. Bunting
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Predicted fates of ground-nesting bees in soil heated by wildfire: thermal tolerances of life stages and a survey of nesting depths
www.nrfirescience.org/resource/12144
Periodic wildfire defines plant community composition and dynamics in many of the world's semi-arid

biomes, whose climates and floras also favor wild bee diversity. Invasive flammable grasses, deforestation, historical fire suppression and human ignition are increasing fire frequency and intensifying its severity, as well as...
Author(s): James H. Cane, John L. Neff
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Woodpecker habitat after the fire
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

Cervus elaphus (elk)
www.nrfirescience.org/resource/10523
This FEIS species review synthesizes information on the relationship of Cervus elaphus (elk) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Robin J. Innes
Year Published: 2011
Type: Document
Synthesis

Amphibian responses to wildfire in the western United States: emerging patterns from short-term studies
www.nrfirescience.org/resource/8285
The increased frequency and severity of large wildfires in the western United States is an important ecological and management issue with direct relevance to amphibian conservation. Although the knowledge of fire effects on amphibians in the region is still limited relative to most other vertebrate species, we reviewed the current...
Author(s): Blake R. Hossack, David S. Pilliod
Year Published: 2011
Type: Document
Book or Chapter or Journal Article, Synthesis

Fire effects on the mobilization and uptake of nitrogen by cheatgrass (Bromus tectorum L.)
www.nrfirescience.org/resource/11453
Cheatgrass (Bromus tectorum L.), an invasive annual grass, is displacing native species and causing increased fire frequency in the Great Basin of the southwestern United States. Growth and nitrogen uptake patterns by cheatgrass were examined in a greenhouse study using soils from sites with the same soil type but different fire...
Author(s): Brittany G. Johnson, Dale W. Johnson, Jeanne C. Chambers, Robert R. Blank
Year Published: 2011
Type: Document

Book or Chapter or Journal Article

Probabilistic soil erosion modeling using the Erosion Risk Management Tool (ERMiT) after wildfires
www.nrfirescience.org/resource/11030
The decision of whether or not to apply post-fire hillslope erosion mitigation treatments, and if so, where these treatments are most needed, is a multi-step process. Land managers must assess the risk of damaging runoff and sediment delivery events occurring on the unrecovered burned hillslope. We developed the Erosion Risk...
Author(s): Peter R. Robichaud, William J. Elliot, Joseph W. Wagenbrenner
Year Published: 2011
Type: Document
Conference Proceedings

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

Persistent effects of wildfire and debris flows on the invertebrate prey base of rainbow trout in Idaho streams
www.nrfirescience.org/resource/8287
Wildfire and debris flows are important physical and ecological drivers in headwater streams of western North America. Past research has primarily examined short-term effects of these disturbances; less is known about longer-term impacts. We investigated wildfire effects on the invertebrate prey base for drift-feeding rainbow trout...
Author(s): Amanda E. Rosenberger, Jason B. Dunham, John M. Buffington, Mark S. Wipfli
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Bonasa umbellus (ruffed grouse)
www.nrfirescience.org/resource/10793
This FEIS species review synthesizes information on the relationship of Bonasa umbellus (ruffed grouse) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Rachelle Meyer
Year Published: 2011
Type: Document
Synthesis

The wildland fire emission inventory: western United States emission estimates and an evaluation of uncertainty

www.nrfirescience.org/resource/8356
Biomass burning emission inventories serve as critical input for atmospheric chemical transport models that are used to understand the role of biomass fires in the chemical composition of the atmosphere, air quality, and the climate system. Significant progress has been achieved in the development of regional and global biomass...
Author(s): Shawn P. Urbanski, Wei Min Hao, Bryce L. Nordgren
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Oreamnos americanus (mountain goat)
www.nrfirescience.org/resource/10522
This FEIS species review synthesizes information on the relationship of Oreamnos americanus (mountain goat) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Robin J. Innes
Year Published: 2011
Type: Document
Synthesis

Variation in aboveground cover influences soil nitrogen availability at fine spatial scales following severe fire in subalpine conifer forests
www.nrfirescience.org/resource/12031
Following fire, fine-scale variation in early successional vegetation and soil nutrients may influence development of ecosystem structure and function. We studied conifer forests burned by stand-replacing wildfire in Greater Yellowstone (Wyoming, USA) to address two questions: (1) How do the variability and spatial structure of...
Author(s): Monica G. Turner, William H. Romme, Erica A. H. Smithwick, Daniel B. Tinker, Jun Zhu
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Rocky Mountain Research Station invasive species visionary white paper
www.nrfirescience.org/resource/11236
Invasive species represent one of the single greatest threats to natural ecosystems and the services they provide. Effectively addressing the invasive species problem requires management that is based on sound research. We provide an overview of recent and ongoing invasive species research conducted by Rocky Mountain Research...
Author(s): Dean E. Pearson, Mee-Sook Kim, Jack L. Butler
Year Published: 2011
Type: Document
Technical Report or White Paper

Plant community and soil environment response to summer fire in the northern Great Plains
www.nrfirescience.org/resource/8270
Fire is an important process in many ecosystems, especially grasslands. However, documentation of plant community and soil environment responses to fire is limited for semiarid grasslands relative to that for mesic grasslands. Replicated summer fire research is lacking but necessary because summer is the natural fire season and the...
Author(s): Lance T. Vermeire, Jessica L. Crowder, David B. Wester

Year Published: 2011
Type: Document
Book or Chapter or Journal Article

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

Rill erosion rates in burned forests
www.nrfirescience.org/resource/11032
Wildfires often produce large increases in runoff and erosion rates (e.g., Moody and Martin, 2009), and land managers need to predict the frequency and magnitude of postfire erosion to determine the needs for hazard response and possible erosion mitigation to reduce the impacts of increased erosion on public safety and valued...
Author(s): Joseph W. Wagenbrenner, Peter R. Robichaud
Year Published: 2011
Type: Document
Conference Proceedings

Economic and social impacts of wildfires and invasive plants in American deserts: lessons from the Great Basin
www.nrfirescience.org/resource/11463
Research on the impacts of wildfire and invasive plants in rangelands has focused on biophysical rather than human dimensions of these environmental processes. We offer a synthetic perspective on economic and social aspects of wildfire and invasive plants in American deserts, focusing on the Great Basin because greater research...
Author(s): Mark W. Brunson, John A. Tanaka
Year Published: 2011
Type: Document
Book or Chapter or Journal Article, Synthesis

Wildfire extent and severity correlated with annual streamflow distribution and timing in the Pacific Northwest, USA (1984-2005)
www.nrfirescience.org/resource/8375
Climate change effects on wildfire occurrence have been attributed primarily to increases in temperatures causing earlier snowpack ablation and longer fire seasons. Variability in precipitation is also an important control on snowpack accumulation and, therefore, on timing of meltwater inputs. We evaluate the correlation of total...
Author(s): Zachary A. Holden, Charles H. Luce, Michael A. Crimmins, Penelope Morgan
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Potential and pitfalls of prescribed burning big sagebrush habitat to enhance nesting and early brood-rearing habitats for greater sage-grouse
www.nrfirescience.org/resource/15379
We describe short-term (< or =10 yrs) and long-term (>10 yrs) responses of prescribed burning to enhance nesting and early brood-rearing habitat for greater sage-grouse (Centrocercus urophasianus). Our primary objective was to provide a literature synthesis to identify short- and long-term responses of prescribed burning to...
Author(s): Jeffrey L. Beck, J. Garrett Klein, Justin Wright, Kenneth P. Wolfley
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Situational awareness: nighttime smoke and fog on prescribed burns
www.nrfirescience.org/resource/12440
Nighttime smoke dispersal from most prescribed fires is critical for public health and safety. For this reason, prescribed fire training and guidelines include detailed information about smoke management and remind burn managers to be constantly aware of weather, fuel, and other situations that might lead to smoke dispersion...
Author(s): Anthony Matthews, Vince Carver
Year Published: 2011
Type: Document
Research Brief or Fact Sheet

The beauty of a burned forest
www.nrfirescience.org/resource/14506
In the Northern Rockies, forests that have escaped fire are rare. In the Crown, fire is just as important as rainfall and sunlight are to plants and animals. For the vast majority of forest types within the region, the predominant fire regime is one of infrequent, intense, stand-replacement fires—not one of...
Author(s): Richard L. Hutto
Year Published: 2011
Type: Document
Research Brief or Fact Sheet

Alnus incana, Alnus incana subsp. rugosa, Alnus incana subsp. tenuifolia (gray alder, speckled alder, thinleaf alder)
www.nrfirescience.org/resource/10660
This FEIS species review synthesizes information on the relationship of Alnus incana, Alnus incana subsp. rugosa, Alnus incana subsp. tenuifolia (gray alder, speckled alder, thinleaf alder) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations....
Author(s): Janet L. Fryer
Year Published: 2011
Type: Document
Synthesis

Fire effects on the cheatgrass seed bank pathogen Pyrenophora semeniperda
www.nrfirescience.org/resource/11450
The generalist fungal pathogen Pyrenophora semeniperda occurs primarily in cheatgrass (Bromus tectorum) seed banks, where it causes high mortality. We investigated the relationship between this pathogen and its cheatgrass host in the context of fire, asking whether burning would facilitate host

escape from the pathogen or increase...
Author(s): Julie Beckstead, Laura E. Street, Susan E. Meyer, Phil S. Allen
Year Published: 2011
Type: Document
Book or Chapter or Journal Article

Six-year post-fire mortality and health of relict ponderosa pines in the Bob Marshall Wilderness Area, Montana
www.nrfirescience.org/resource/11106
In 2003, lightning-caused fires burned through relict ponderosa pine (Pinus ponderosa) stands in the Bob Marshall Wilderness, Montana, after decades of fire exclusion. Since many trees in these stands had Native American bark-peeling scars, concern arose about the adverse fire effects on this cultural and ecological resource. In...
Author(s): Signe B. Leirfallom, Robert E. Keane
Year Published: 2011
Type: Document
Research Brief or Fact Sheet

Restoration of whitebark pine forests in the northern Rocky Mountains, USA
www.nrfirescience.org/resource/11900
Whitebark pine (Pinus albicaulis) has been declining across much of its range in North America because of the combined effects of mountain pine beetle epidemics, fire exclusion policies, and widespread exotic blister rust infections. Whitebark pine seed is dispersed by a bird, the Clark's nutcracker, which caches seed in open,...
Author(s): Robert E. Keane
Year Published: 2011
Type: Document
Conference Proceedings

Wind erosion of soils burned by wildfire
www.nrfirescience.org/resource/11492
Wind erosion and aeolian transport processes are largely unstudied in the post-wildfire environment, but recent studies have shown that wind erosion can play a major role in burned landscapes. A wind erosion monitoring system was installed immediately following a wildfire in southeastern Idaho, USA to measure wind erosion from the...
Author(s): Natalie S. Wagenbrenner, Matthew J. Germino, Brian K. Lamb, Randy B. Foltz, Peter R. Robichaud
Year Published: 2011
Type: Document
Conference Proceedings

Quercus macrocarpa (bur oak)
www.nrfirescience.org/resource/10669
This FEIS species review synthesizes information on the relationship of Quercus macrocarpa (bur oak) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Corey L. Gucker
Year Published: 2011
Type: Document
Synthesis

Field guide for mapping post-fire soil burn severity
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

Euphorbia cyparissias (cypress spruge)
www.nrfirescience.org/resource/10455
This FEIS species review synthesizes information on the relationship of Euphorbia cyparissias (cypress spruge) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Corey L. Gucker
Year Published: 2010
Type: Document
Synthesis

Coronilla varia (crownvetch)
www.nrfirescience.org/resource/10452
This FEIS species review synthesizes information on the relationship of Coronilla varia (crownvetch) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Corey L. Gucker
Year Published: 2010
Type: Document
Synthesis

Linanthus pungens (granite prickly-phlox)
www.nrfirescience.org/resource/10520
This FEIS species review synthesizes information on the relationship of Linanthus pungens (granite prickly-phlox) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Robin J. Innes
Year Published: 2010
Type: Document
Synthesis

Burn severity mapping using simulation modelling and satellite imagery
www.nrfirescience.org/resource/8205
Although burn severity maps derived from satellite imagery provide a landscape view of fire impacts, fire effects simulation models can provide spatial fire severity estimates and add a biotic context in which to interpret severity. In this project, we evaluated two methods of mapping burn severity in the

context of rapid post-fire...
Author(s): Eva C. Karau, Robert E. Keane
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Prunus americana (American plum)
www.nrfirescience.org/resource/10661
This FEIS species review synthesizes information on the relationship of Prunus americana (American plum) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Janet L. Fryer
Year Published: 2010
Type: Document
Synthesis

Martes americana (American marten)
www.nrfirescience.org/resource/10856
This FEIS species review synthesizes information on the relationship of Martes americana (American marten) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Katharine R. Stone
Year Published: 2010
Type: Document
Synthesis

Alces americanus (moose)
www.nrfirescience.org/resource/10524
This FEIS species review synthesizes information on the relationship of Alces americanus (moose) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Robin J. Innes
Year Published: 2010
Type: Document
Synthesis

Fire and mice: seed predation moderates fire's influence on conifer recruitment
www.nrfirescience.org/resource/8207
In fire-adapted ecosystems, fire is presumed to be the dominant ecological force, and little is known about how consumer interactions influence forest regeneration. Here, we investigated seed predation by deer mice (Peromyscus maniculatus) and its effects on recruitment of ponderosa pine (Pinus ponderosa) and Douglas-fir (...
Author(s): Rafal Zwolak, Dean E. Pearson, Yvette K. Ortega, Elizabeth E. Crone
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Hieracium aurantiacum (orange hawkweed)
www.nrfirescience.org/resource/10474
This FEIS species review synthesizes information on the relationship of Hieracium aurantiacum (orange hawkweed) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Katharine R. Stone
Year Published: 2010
Type: Document
Synthesis

Effects of climate change and wildfire on stream temperatures and salmonid thermal habitat in a mountain river network
www.nrfirescience.org/resource/11440
Mountain streams provide important habitats for many species, but their faunas are especially vulnerable to climate change because of ectothermic physiologies and movements that are constrained to linear networks that are easily fragmented. Effectively conserving biodiversity in these systems requires accurate downscaling of...
Author(s): Daniel J. Isaak, Charles H. Luce, Bruce E. Rieman, David E. Nagel, Erin E. Peterson, Dona L. Horan, Sharon Parkes, Gwynne L. Chandler
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Populus alba, Populus x canescens, Populus x heimburgeri, Populus x rouleauiana, Populus x tomentosa (white poplar, gray poplar, Heimburger's poplar, Roulwau's poplar, Chinese white poplar)
www.nrfirescience.org/resource/10457
This FEIS species review synthesizes information on the relationship of Populus alba, Populus x canescens, Populus x heimburgeri, Populus x rouleauiana, Populus x tomentosa (white poplar, gray poplar, Heimburger's poplar, Roulwau's poplar, Chinese white poplar) to fire--how fire affects the species and its habitat, invasiveness of...
Author(s): Corey L. Gucker
Year Published: 2010
Type: Document
Synthesis

Mitigating old tree mortality in long-unburned, fire-dependent forests: a synthesis
www.nrfirescience.org/resource/12618
This report synthesizes the literature and current state of knowledge pertaining to reintroducing fire in stands where it has been excluded for long periods and the impact of these introductory fires on overstory tree injury and mortality. Only forested ecosystems in the United States that are adapted to survive frequent fire are...
Author(s): Sharon M. Hood
Year Published: 2010
Type: Document
Synthesis, Technical Report or White Paper

Falco peregrinus (peregrine falcon)
www.nrfirescience.org/resource/10748
This FEIS species review synthesizes information on the relationship of Falco peregrinus (peregrine

falcon) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Peggy Luensmann
Year Published: 2010
Type: Document
Synthesis

Restoring whitebark pine forests of the northern Rocky Mountains, USA
www.nrfirescience.org/resource/8394
Whitebark pine (Pinus albicaulis) has been declining across much of its range in North America because of the combined effects of mountain pine beetle (Dendroctonus ponderosae) epidemics, fire exclusion policies, and widespread exotic blister rust infections. Whitebark pine seed is dispersed by a bird, the Clark's nutcracker (...
Author(s): Robert E. Keane, Russell A. Parsons
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Holodiscus dumosus (rockspirea)
www.nrfirescience.org/resource/10648
This FEIS species review synthesizes information on the relationship of Holodiscus dumosus (rockspirea) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Janet L. Fryer
Year Published: 2010
Type: Document
Synthesis

Forest road erosion control using multiobjective optimization
www.nrfirescience.org/resource/16187
Forest roads are associated with accelerated erosion and can be a major source of sediment delivery to streams, which can degrade aquatic habitat. Controlling road-related erosion therefore remains an important issue for forest stewardship. Managers are faced with the task to develop efficient road management strategies to achieve...
Author(s): Matthew P. Thompson, Jeff Sessions, Kevin Boston, Arne Skaugset, David Tomberlin
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Effect of fire on a seed bank pathogen and on seeds of its host Bromus tectorum
www.nrfirescience.org/resource/11462
The generalist pathogen Pyrenophora semeniperda (Brittlebank and Adam) Shoemaker occurs primarily in cheatgrass (Bromus tectorum L.) seed banks, where it causes high seed mortality (Beckstead et al. 2007; Meyer et al. 2007). How does fire impact survival of a fungal seed pathogen, P. semeniperda, versus survival of the seeds of its...
Author(s): Julie Beckstead, Susan E. Meyer, Laura E. Street, Phil S. Allen
Year Published: 2010
Type: Document
Conference Proceedings

Polygonum aviculare (prostrate knotweed)
www.nrfirescience.org/resource/10471
This FEIS species review synthesizes information on the relationship of Polygonum aviculare (prostrate knotweed) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Katharine R. Stone
Year Published: 2010
Type: Document
Synthesis

Holodiscus discolor (oceanspray)
www.nrfirescience.org/resource/10653
This FEIS species review synthesizes information on the relationship of Holodiscus discolor (oceanspray) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Janet L. Fryer
Year Published: 2010
Type: Document
Synthesis

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

Melilotus alba, Melilotus officinalis (white sweetclover, yellow sweetclover)
www.nrfirescience.org/resource/10456
This FEIS species review synthesizes information on the relationship of Melilotus alba, Melilotus officinalis (white sweetclover, yellow sweetclover) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is...
Author(s): Corey L. Gucker
Year Published: 2010
Type: Document
Synthesis

Restoration treatment effects on stand structure, tree growth, and fire hazard in a ponderosa pine/Douglas-fir forest in Montana
www.nrfirescience.org/resource/8159
Crown fires that burned thousands of ha of ponderosa pine (Pinus ponderosa Dougl. ex Laws.) forests in recent years attest to the hazardous conditions extant on the western landscape. Managers have

responded with broad-scale implementation of fuel reduction treatments; however. because threats to pine forests extend beyond fire, so...
Author(s): Carl E. Fiedler, Kerry L. Metlen, Erich K. Dodson
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Using fuzzy C-means and local autocorrelation to cluster satellite-inferred burn severity classes
www.nrfirescience.org/resource/11447
Burn severity classifications derived from multitemporal Landsat Thematic Mapper images and the Normalised Burn Ratio (NBR) are commonly used to assess the post-fire ecological effects of wildfires. Ongoing efforts to retrospectively map historical burn severity require defensible, objective methods of classifying continuous...
Author(s): Zachary A. Holden, Jeffrey S. Evans
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

The validity and utility of MODIS data for simple estimation of area burned and aerosols emitted by wildfire events
www.nrfirescience.org/resource/8371
Wildfire emissions are challenging to measure and model, but simple and realistic estimates can benefit multiple disciplines. We evaluate the potential of MODIS (Moderate Resolution Imaging Spectroradiometer) data to address this objective. A total of 11,004 fire pixels detected over 92 days were clustered into 242 discrete fire...
Author(s): Sarah B. Henderson, Charles Ichoku, Benjamin J. Burkholder, Michael Brauer, Peter L. Jackson
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Prescribed fires as ecological surrogates for wildfires: a stream and riparian perspective
www.nrfirescience.org/resource/11444
Forest managers use prescribed fire to reduce wildfire risk and to provide resource benefits, yet little information is available on whether prescribed fires can function as ecological surrogates for wildfire in fire-prone landscapes. Information on impacts and benefits of this management tool on stream and riparian ecosystems is...
Author(s): Robert S. Arkle, David S. Pilliod
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Response of six non-native plant species to wildfires in the northern Rocky Mountains, USA
www.nrfirescience.org/resource/11216
This paper presents early results on the response of six non-native invasive plant species to eight wildfires on six National Forests (NFs) in the northern Rocky Mountains, USA. Stratified random sampling was used to choose 224 stands based on burn severity, habitat type series, slope steepness, stand height, and stand density. Data...
Author(s): Dennis E. Ferguson, Christine L. Craig
Year Published: 2010
Type: Document

Technical Report or White Paper

Predicting the probability and volume of postwildfire debris flows in the intermountain western United States
www.nrfirescience.org/resource/15738
Empirical models to estimate the probability of occurrence and volume of postwildfire debris flows can be quickly implemented in a geographic information system (GIS) to generate debris-flow hazard maps either before or immediately following wildfires. Models that can be used to calculate the probability of debris-flow production...
Author(s): Susan H. Cannon, J. E. Gartner, M. G. Rupert, J. A. Michael, A.H. Rea, C. Parrett
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
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

Development of post-fire crown damage mortality thresholds in ponderosa pine
www.nrfirescience.org/resource/8400
Previous research has shown that crown scorch volume and crown consumption volume are the major predictors of post-fire mortality in ponderosa pine. In this study, we use piecewise logistic regression models of crown scorch data from 6633 trees in five wildfires from the Intermountain West to locate a mortality threshold at 88%...
Author(s): James F. Fowler, Carolyn Hull Sieg, Joel D. McMillin, Kurt K. Allen, Jose F. Negron, Linda L. Wadleigh, John A. Anhold, Ken E. Gibson
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Wildfire and management of forests and native fishes: conflict or opportunity for convergent solutions?
www.nrfirescience.org/resource/18722
Wildfire is a critical land management issue in the western United States. Efforts to mitigate the effects of altered fire regimes have led to debate over ecological restoration versus species conservation framed at the conjuncture of terrestrial and aquatic ecosystems and their respective management regimes. Fire-related management...
Author(s): Bruce E. Rieman, Paul F. Hessburg, Charles H. Luce, Matthew R. Dare
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

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

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

Tree injury and mortality in fires: developing process-based models
www.nrfirescience.org/resource/16901
Wildland fire managers are often required to predict tree injury and mortality when planning a prescribed burn or when considering wildfire management options; and, currently, statistical models based on post-fire observations are the only tools available for this purpose. Implicit in the derivation of statistical models is the...
Author(s): Bret W. Butler, Matthew B. Dickinson
Year Published: 2010
Type: Document
Book or Chapter or Journal Article

Populus alba and hybrids
www.nrfirescience.org/resource/16368
This document covers several species of Populus and includes their general distribution, habitat types, plant communities, and fire adaptations.
Author(s): Corey L. Gucker
Year Published: 2010
Type: Document
Synthesis

Ailanthus altissima (tree-of-heaven)
www.nrfirescience.org/resource/10450
This FEIS species review synthesizes information on the relationship of Ailanthus altissima (tree-of-heaven) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Janet L. Fryer
Year Published: 2010
Type: Document
Synthesis

Schedonorus pratensis (meadow fescue)
www.nrfirescience.org/resource/10472
This FEIS species review synthesizes information on the relationship of Schedonorus pratensis (meadow fescue) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Katharine R. Stone
Year Published: 2010
Type: Document
Synthesis

Widespread increase of tree mortality rates in the western United States
www.nrfirescience.org/resource/8321
Persistent changes in tree mortality rates can alter forest structure, composition, and ecosystem services such as carbon sequestration. Our analyses of longitudinal data from unmanaged old forests in the western United States showed that background (noncatastrophic) mortality rates have increased rapidly in recent decades, with...
Author(s): Phillip J. van Mantgem, Nathan L. Stephenson, John C. Byrne, Lori D. Daniels, Jerry F. Franklin, Peter Z. Fule, Mark E. Harmon, Andrew J. Larson, Jeremy M. Smith, Alan H. Taylor, Thomas T. Veblen
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

Integrated analysis for management of fire and fuels, terrestrial and aquatic - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/12111
The potential for fire to negatively impact habitat that supports a threatened or endangered species, either directly or indirectly through phenomena such as debris flows, presents resource managers with a tough choice: treat fuels to reduce the risk of fire but potentially degrade stream habitat or do not treat fuels knowing an...
Author(s): Charles H. Luce, Bruce E. Rieman, Paul F. Hessburg, Anne E. Black, Matthew R. Dare
Year Published: 2009
Type: Document
Technical Report or White Paper

Fire intensity, fire severity and burn severity: a brief review
www.nrfirescience.org/resource/16309
Several recent papers have suggested replacing the terminology of fire intensity and fire severity. Part of the problem with fire intensity is that it is sometimes used incorrectly to describe fire effects, when in fact it is justifiably restricted to measures of energy output. Increasingly, the term has created confusion because...
Author(s): Jon E. Keeley
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

Three years of hillslope sediment yields following the Valley Complex fires, western Montana
www.nrfirescience.org/resource/11147
The 2000 Bitterroot Valley wildfires provided an opportunity to measure post-fire effects and recovery rates. We established 24 small (0.01 ha [0.02 acre]) plots in four high-severity burn sites. We measured sediment yields at each site with silt fences. We also measured rainfall characteristics, soil water repellency, vegetative...
Author(s): Peter R. Robichaud, Joseph W. Wagenbrenner, Robert E. Brown, Kevin M. Spigel
Year Published: 2009
Type: Document
Technical Report or White Paper

Recovery of greater sage-grouse habitat features in Wyoming big sagebrush following prescribed fire

www.nrfirescience.org/resource/12127
The ability of prescribed fire to enhance habitat features for Greater Sage-Grouse (Centrocercus urophasianus) in Wyoming big sagebrush (Artemisia tridentata wyomingensis) in western North America is poorly understood. We evaluated recovery of habitat features important to wintering, nesting, and early brood-rearing Sage-Grouse in...
Author(s): Jeffrey L. Beck, John W. Connelly, Kerry P. Reese
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

Listening to the message of the Black-backed Woodpecker, a hot fire specialist
www.nrfirescience.org/resource/11083
The Black-backed Woodpecker is an uncommon bird of the northern coniferous forests of North America. It is one of several species of fauna that are considered fire specialists. This woodpecker nests in cavities it creates in dead standing trees and feeds on wood-boring beetles and their larvae, which are also attracted to stressed...
Author(s): Elise LeQuire
Year Published: 2009
Type: Document
Research Brief or Fact Sheet

A MODIS direct broadcast algorithm for mapping wildfire burned area in the western United States
www.nrfirescience.org/resource/8191
Improved wildland fire emission inventory methods are needed to support air quality forecasting and guide the development of air shed management strategies. Air quality forecasting requires dynamic fire emission estimates that are generated in a timely manner to support real-time operations. In the regulatory and planning realm,...
Author(s): Shawn P. Urbanski, J. Meghan Salmon, Bryce L. Nordgren, Wei Min Hao
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

Ecological effects of prescribed fire season: a literature review and synthesis for managers
www.nrfirescience.org/resource/12616
This synthesis project on season of prescribed burning is to summarize results from studies to date in order to provide managers a resource for predicting fire effects and understanding what variables drive these fire effects in different areas of the country with varying fire regimes. A secondary objective will be to identify key...
Author(s): Eric E. Knapp, Becky L. Estes, Carl N. Skinner
Year Published: 2009
Type: Document
Synthesis, Technical Report or White Paper

Influence of wildfire severity on riparian plant community heterogeneity in an Idaho, USA wilderness
www.nrfirescience.org/resource/11445
Despite the increasing recognition of riparian zones as important ecotones that link terrestrial and aquatic ecosystems and of fire as a critical natural disturbance, much remains unknown regarding the influence of fire on stream-riparian ecosystems. To further this understanding, we evaluated the effects of mixed severity wildfire...

Author(s): Breeanne K. Jackson, S. Mazeika P. Sullivan
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

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

Festuca thurberi (Thurber fescue)
www.nrfirescience.org/resource/10797
This FEIS species review synthesizes information on the relationship of Festuca thurberi (Thurber fescue) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Rachelle Meyer
Year Published: 2009
Type: Document
Synthesis

Variable impacts of imazapic rate on downy brome (Bromus tectorum) and seeded species in two rangeland communities
www.nrfirescience.org/resource/8332
The herbicide imazapic is registered for use on rangelands and provides effective short-term control of certain invasive annual grasses. However, details about optimal application rates for downy brome and susceptibility of simultaneously seeded species are lacking. Thus, we investigated downy brome and seeded species responses to...
Author(s): Christo Morris, Thomas A. Monaco, Craig W. Rigby
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

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
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

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

Tanacetum vulgare (common tansy)
www.nrfirescience.org/resource/10453
This FEIS species review synthesizes information on the relationship of Tanacetum vulgare (common tansy) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Corey L. Gucker
Year Published: 2009
Type: Document
Synthesis

Filling in the blanks for prescribed fire in shrublands: developing information to support improved fire planning
www.nrfirescience.org/resource/11086
By collecting information on fuel loading, fuel consumption, fuel moisture, site conditions and fire weather on fires in a variety of shrubland types, researchers are developing a fuller knowledge of shrubland fire effects. Results are being integrated into the software package CONSUME, a user-friendly software tool for predicting...
Author(s): Jake Delwiche
Year Published: 2009
Type: Document
Research Brief or Fact Sheet

Lubrecht State Experimental Forest prescribed fire effects study 1973-2006
www.nrfirescience.org/resource/11134
This data product contains pre and post fires stand and fuels data collected over a 33 year period. Rod Norum as part of his PhD dissertation work, began this study in 1973. He laid out 32 small (25 by 25 meter) plots in a Douglas fir/western larch stand on the University of Montana's Lubrecht Experimental Forest. Twenty of the...
Author(s): Elizabeth D. Reinhardt
Year Published: 2009
Type: Document
Technical Report or White Paper

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

Breakthrough at the Missouri River Breaks: a quick tool for comparing burned and unburned sites
www.nrfirescience.org/resource/11085
A quantitative understanding of how forests work, both before and after (prescribed and wild) fire, is essential to management. Yet acquiring the kind of broad yet detailed information needed for many management decisions can be costly, tedious, and time-consuming. After two sweeping wildfires in the Missouri River Breaks area of...
Author(s): Rachel Clark
Year Published: 2009
Type: Document
Research Brief or Fact Sheet

Isatis tinctoria (dyer's woad)
www.nrfirescience.org/resource/10498
This FEIS species review synthesizes information on the relationship of Isatis tinctoria (dyer's woad) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Kristin L. Zouhar
Year Published: 2009
Type: Document
Synthesis

Effects of timber harvest following wildfire in western North America
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

Grus canadensis, Grus canadensis canadensis, Grus canadensis nesiotes, Grus canadensis pratensis, Grus canadensis pulla, Grus canadensis rowani, Grus canadensis tabida (sandhill crane species)
www.nrfirescience.org/resource/10855
[Full Title: Grus canadensis, Grus canadensis canadensis, Grus canadensis nesiotes, Grus canadensis pratensis, Grus canadensis pulla, Grus canadensis rowani, Grus canadensis tabida (sandhill crane, lesser sandhill crane, Cuban sandhill crane, Florida sandhill crane, Mississippi sandhill crane, Canadian sandhill crane, greater...
Author(s): Katharine R. Stone

Year Published: 2009
Type: Document
Synthesis

Potentilla hippiana (woolly cinquefoil)
www.nrfirescience.org/resource/10792
This FEIS species review synthesizes information on the relationship of Potentilla hippiana (woolly cinquefoil) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Rachelle Meyer
Year Published: 2009
Type: Document
Synthesis

Synthesis of sediment yields after wildland fire in different rainfall regimes in the western United States
www.nrfirescience.org/resource/8197
Measurements of post-fire sediment erosion, transport, and deposition collected within 2 years of a wildfire were compiled from the published literature (1927-2007) for sites across the western United States. Annual post-fire sediment yields were computed and grouped into four measurement methods (hillslope point and plot...
Author(s): John A. Moody, Deborah A. Martin
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

Muhlenbergia cuspidata (stonyhills muhly)
www.nrfirescience.org/resource/10652
This FEIS species review synthesizes information on the relationship of Muhlenbergia cuspidata (stonyhills muhly) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janet L. Fryer
Year Published: 2009
Type: Document
Synthesis

Assessing fuel treatment effectiveness using satellite imagery and spatial statistics
www.nrfirescience.org/resource/8227
Understanding the influences of forest management practices on wildfire severity is critical in fire-prone ecosystems of the western United States. Newly available geospatial data sets characterizing vegetation, fuels, topography, and burn severity offer new opportunities for studying fuel treatment effectiveness at regional to...
Author(s): Michael C. Wimberly, Mark A. Cochrane, Adam D. Baer, Kari Pabst
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

Synthesis of knowledge on the effects of fire and fire surrogates on wildlife in U.S. dry forests

www.nrfirescience.org/resource/12617
Dry forests throughout the United States are fire-dependent ecosystems, and much attention has been given to restoring their ecological function. As such, land managers often are tasked with reintroducing fire via prescribed fire, wildland fire use, and fire-surrogate treatments such as thinning and mastication. During planning,...
Author(s): Patricia L. Kennedy, Joseph B. Fontaine
Year Published: 2009
Type: Document
Synthesis, Technical Report or White Paper

Berberis vulgaris (common barberry)
www.nrfirescience.org/resource/10454
This FEIS species review synthesizes information on the relationship of Berberis vulgaris (common barberry) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Corey L. Gucker
Year Published: 2009
Type: Document
Synthesis

Carex inops subsp. heliophila, Carex inops subsp. inops (sun sedge, long-stolon sedge)
www.nrfirescience.org/resource/10649
This FEIS species review synthesizes information on the relationship of Carex inops subsp. heliophila, Carex inops subsp. inops (sun sedge, long-stolon sedge) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on...
Author(s): Janet L. Fryer
Year Published: 2009
Type: Document
Synthesis

Artemisia papposa (Owyhee sagebrush)
www.nrfirescience.org/resource/10799
This FEIS species review synthesizes information on the relationship of Artemisia papposa (Owyhee sagebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Rachelle Meyer
Year Published: 2009
Type: Document
Synthesis

The effects of fire on avian communities: spatio-temporal attributes of the literature 1912-2003
www.nrfirescience.org/resource/12608
We reviewed the temporal, geographic, and biogeographic distribution, as well as relevant research and publication attributes, of 512 documents addressing the effects of fire on avian communities, to provide an assessment of the scope of this literature and recommendations for future research. We summarized relevant attributes of...
Author(s): Andreas Leidolf, John A. Bissonette
Year Published: 2009

Type: Document
Book or Chapter or Journal Article, Synthesis

Variation in foliar nitrogen and aboveground net primary production in young postfire lodgepole pine
www.nrfirescience.org/resource/18424
Understanding nutrient dynamics of young postfire forests may yield important insights about how stands develop following stand-replacing wildfires. We studied 15-year-old lodgepole pine stands that regenerated naturally following the 1988 Yellowstone fires to address two questions: (1) How do foliar nitrogen (N) concentration and...
Author(s): Monica G. Turner, Erica A. H. Smithwick, Daniel B. Tinker, William H. Romme
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

The national fire and fire surrogate study: effects of fuel reduction methods on forest vegetation structure and fuels
www.nrfirescience.org/resource/13351
Changes in vegetation and fuels were evaluated from measurements taken before and after fuel reduction treatments (prescribed fire, mechanical treatments, and the combination of the two) at 12 Fire and Fire Surrogate (FFS) sites located in forests with a surface fire regime across the conterminous United States. To test the relative...
Author(s): Dylan W. Schwilk, Jon E. Keeley, Eric E. Knapp, James D. McIver, John D. Bailey, Christopher J. Fettig, Carl E. Fiedler, Richy J. Harrod, Jason J. Moghaddas, Kenneth W. Outcalt, Carl N. Skinner, Scott L. Stephens, Thomas A. Waldrop, Daniel A. Yaussy, Andrew P. Youngblood
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

Short-term effects of forest restoration management on non-symbiotic nitrogen-fixation in western Montana
www.nrfirescience.org/resource/13154
Forest restoration treatments involving selection harvest and prescribed fire have been applied throughout the Rocky Mountain West with only a limited understanding of how these treatments influence plant community composition and soil processes. Forest restoration treatments, especially those involving fire, have the potential to...
Author(s): Tricia A. Burgoyne, Thomas H. DeLuca
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

Adapting the Water Erosion Prediction Project (WEPP) model for forest applications
www.nrfirescience.org/resource/11423
There has been an increasing public concern over forest stream pollution by excessive sedimentation due to natural or human disturbances. Adequate erosion simulation tools are needed for sound management of forest resources. The Water Erosion Prediction Project (WEPP) watershed model has proved useful in forest applications where...
Author(s): Shuhui Dun, Joan Q. Wu, William J. Elliot, Peter R. Robichaud, Dennis C. Flanagan, James R. Frankenberger, Robert E. Brown, Arthur C. Xu
Year Published: 2009
Type: Document

Book or Chapter or Journal Article

Thermal characteristics of amphibian microhabitats in a fire-disturbed landscape
www.nrfirescience.org/resource/8402
Disturbance has long been a central issue in amphibian conservation, often regarding negative effects of logging or other forest management activities, but some amphibians seem to prefer disturbed habitats. After documenting increased use of recently burned forests by boreal toads (Bufo boreas), we hypothesized that burned habitats...
Author(s): Blake R. Hossack, Lisa A. Eby, C. Gregory Guscio, Paul S. Corn
Year Published: 2009
Type: Document
Book or Chapter or Journal Article

Artemisia nova (black sagebrush)
www.nrfirescience.org/resource/10650
This FEIS species review synthesizes information on the relationship of Artemisia nova (black sagebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Janet L. Fryer
Year Published: 2009
Type: Document
Synthesis

Trout Creek 1999 Burn
www.nrfirescience.org/resource/11478
A small prescribed fire near the mouth of Trout Creek in Strawberry Valley, Wasatch County, Utah, on the Uinta National Forest provided an opportunity to compare production and vascular plant composition in unburned and burned areas. At four years post burn, production of herbaceous plants was about four times greater in the burned...
Author(s): Sherel Goodrich
Year Published: 2008
Type: Document
Conference Proceedings

Cladonia arbuscula, Cladonia mitis, Cladonia rangeferia, Cladonia stellaris (shrubby reindeer lichen, green reindeer lichen, gray reindeer lichen, alpine reindeer lichen)
www.nrfirescience.org/resource/10800
This FEIS species review synthesizes information on the relationship of Cladonia arbuscula, Cladonia mitis, Cladonia rangeferia, Cladonia stellaris (shrubby reindeer lichen, green reindeer lichen, gray reindeer lichen, alpine reindeer lichen) to fire--how fire affects the species and its habitat, effects of the species on fuels and...
Author(s): Gregory T. Munger
Year Published: 2008
Type: Document
Synthesis

Buried treasures help plants survive fire
www.nrfirescience.org/resource/8165
This is an article geared towards children's education. It encourages kids to go outside and match

plants with their underground root structures, ie 'buried treasure.' There are answers provided on page 12.
Author(s): Jane Kapler Smith, Nancy E. McMurray
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

The tao of treating weeds: reaching for restoration in the northern Rocky Mountains
www.nrfirescience.org/resource/11093
Noxious weeds are a serious problem that is spreading across the West. Herbicides such as Picloram have proven to be powerful tools in reducing weed invaders, although use of this tool has often produced unintended consequences. Broadleaf herbicides kill forbs, such as the noxious knapweed, but also harm native forbs such as...
Author(s): Lisa-Natalie Anjozian
Year Published: 2008
Type: Document
Research Brief or Fact Sheet

A morphometric analysis of gullies scoured by post-fire progressively bulked debris flows in southwest Montana, USA
www.nrfirescience.org/resource/15739
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

Very Large Scale Aerial (VLSA) imagery for assessing postfire bitterbrush recovery
www.nrfirescience.org/resource/11024
Very large scale aerial (VLSA) imagery is an efficient tool for monitoring bare ground and cover on extensive rangelands. This study was conducted to determine whether VLSA images could be used to detect differences in antelope bitterbrush (Purshia tridentata Pursh DC) cover and density among similar ecological sites with varying...
Author(s): Corey A. Moffet, J. Bret Taylor, D. Terrance Booth
Year Published: 2008
Type: Document
Conference Proceedings

Nucifraga columbiana (Clark's nutcracker)
www.nrfirescience.org/resource/10782
This FEIS species review synthesizes information on the relationship of Nucifraga columbiana (Clark's nutcracker) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Nancy E. McMurray
Year Published: 2008
Type: Document
Synthesis

Chapter 2. Effects of fire on nonnative invasive plants and invasibility of wildland ecosystems
www.nrfirescience.org/resource/12532
Considerable experimental and theoretical work has been done on general concepts regarding nonnative species and disturbance, but experimental research on the effects of fire on nonnative invasive species is sparse. We begin this chapter by connecting fundamental concepts from the literature of invasion ecology to fire. Then we...
Author(s): Kristin L. Zouhar, Jane Kapler Smith, Steve Sutherland
Year Published: 2008
Type: Document
Synthesis, Technical Report or White Paper

Fire, native species, and soil resource interactions influence the spatio-temporal invasion pattern of Bromus tectorum
www.nrfirescience.org/resource/8362
Bromus tectorum (cheatgrass) is an invasive annual that occupies perennial grass and shrub communities throughout the western United States. Bronus tectorum exhibits an intriguing spatio-temporal pattern of invasion in low elevation ponderosa pine Pinus ponderosa/bunchgrass communities in western Montana where it forms dense rings...
Author(s): Michael J. Gundale, Steve Sutherland, Thomas H. DeLuca
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Big changes in the Great Basin
www.nrfirescience.org/resource/12131
JFSP-funded researchers are exploring the ecological functioning of sagebrush-steppe communities in the Great Basin and other places in the dry Intermountain West. Their work is helping managers effectively use tools such as tree mastication and prescribed fire to help these communities become more resilient in the face of invasive...
Author(s): Gail Wells
Year Published: 2008
Type: Document
Research Brief or Fact Sheet

The response of Thurber's needlegrass to fall prescribed burning
www.nrfirescience.org/resource/11454
Thurber's needlegrass (Achnatherum thurberianum [Piper] Barkworth) is an important component of many sagebrush communities in the Intermountain West. Prescribed fall burning is often implemented in sagebrush plant communities to mimic historic wildfires, improve wildlife habitat, and increase livestock forage production. Burning is...
Author(s): Kirk W. Davies, Jonathan D. Bates
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Zuckia brandegeei (siltbush)
www.nrfirescience.org/resource/10667
This FEIS species review synthesizes information on the relationship of Zuckia brandegeei (siltbush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire

management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Corey L. Gucker
Year Published: 2008
Type: Document
Synthesis

Real time monitoring of the three dimensional distribution of smoke aerosol levels from prescribed fires and wildfires - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11168
Particulates emitted by wildfires and prescribed fires can severely affect visibility and air quality resulting in car accidents, airport and road closures, and public health problems. Researchers have developed a new remote-sensing instrument (lidar) and are now calibrating and testing this and auxiliary instrumentation and new...
Author(s): Wei Min Hao, Vladimir A. Kovalev
Year Published: 2008
Type: Document
Technical Report or White Paper

Reproductive output of ponderosa pine in response to thinning and prescribed burning in western Montana
www.nrfirescience.org/resource/8230
Thinning and thinning followed by prescribed fire are common management practices intended to restore historic conditions in low-elevation ponderosa pine (Pinus ponderosa Dougl. ex P....
Author(s): Gregory D. Peters, Anna Sala
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Wildfire smoke: a guide for public health officials
www.nrfirescience.org/resource/12451
Smoke rolls into town, blanketing the city, turning on streetlights, creating an eerie and choking fog. Switchboards light up as people look for answers. Citizens want to know what they should do to protect themselves. School officials want to know if outdoor events should be cancelled. The news media want to know how dangerous the...
Author(s): Michael Lipsett, Barbara Materna, Susan Lyon Stone, Shannon Therriault, Robert Blaisdell, Jeff Cook
Year Published: 2008
Type: Document
Technical Report or White Paper

Carex rossii (Ross's sedge)
www.nrfirescience.org/resource/10594
This FEIS species review synthesizes information on the relationship of Carex rossii (Ross's sedge) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Michelle B. Anderson
Year Published: 2008
Type: Document
Synthesis

Sambucus racemosa (red elderberry)
www.nrfirescience.org/resource/10654
This FEIS species review synthesizes information on the relationship of Sambucus racemosa (red elderberry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Janet L. Fryer
Year Published: 2008
Type: Document
Synthesis

Holocene records of Dendroctonus bark beetles in high elevation pine forests of Idaho and Montana, USA
www.nrfirescience.org/resource/8224
Paleoecological reconstructions from two lakes in the U.S. northern Rocky Mountain region of Idaho and Montana revealed the presence of bark beetle elytra and head capsules (cf. Dendroctonus spp., most likely D. ponderosae, mountain pine beetle). Occurrence of these macrofossils during the period of time associated with the 1920/...
Author(s): Andrea R. Brunelle, Gerald E. Rehfeldt, Barbara J. Bentz, A. Steven Munson
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Carex rostrata, Carex utriculata (swollen beaked sedge, Northwest Territory sedge)
www.nrfirescience.org/resource/10595
This FEIS species review synthesizes information on the relationship of Carex rostrata, Carex utriculata (swollen beaked sedge, Northwest Territory sedge) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the...
Author(s): Michelle B. Anderson
Year Published: 2008
Type: Document
Synthesis

Indirect effects of fire severity on avian communities in ponderosa pine and aspen forests in western North America: a review
www.nrfirescience.org/resource/8365
description
Author(s): Kerri T. Vierling, Leigh B. Lentile
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Burn and they will come! The western regional birds and burns study examines bird responses to prescribed fire
www.nrfirescience.org/resource/11088
Although prescribed fire is increasingly being used in ponderosa pine forests as a management tool to reduce the risk of future high-severity wildfire, its effects on wildlife habitat have rarely been examined. The Birds and Burns Network was created to assist managers in planning prescribed fire projects that

will reduce fuels and...
Author(s): Jonathan Thompson
Year Published: 2008
Type: Document
Research Brief or Fact Sheet

Using bark char codes to predict post-fire cambium mortality
www.nrfirescience.org/resource/8171
Cambium injury is an important factor in post-fire tree survival. Measurements that quantify the degree of bark charring on tree stems after fire are often used as surrogates for direct cambium injury because they are relatively easy to assign and are non-destructive. However, bark char codes based on these measurements have been...
Author(s): Sharon M. Hood, Danny R. Cluck, Sheri L. Smith, Kevin C. Ryan
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Dryopteris campyloptera, Dryopteris carthusiana, Dryopteris expansa, Dryopteris intermedia (mountain woodfern, spinulose woodfern, spreading woodfern, fancy fern)
www.nrfirescience.org/resource/10803
This FEIS species review synthesizes information on the relationship of Dryopteris campyloptera, Dryopteris carthusiana, Dryopteris expansa, Dryopteris intermedia (mountain woodfern, spinulose woodfern, spreading woodfern, fancy fern) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire...
Author(s): Gregory T. Munger
Year Published: 2008
Type: Document
Synthesis

Empirical models to predict the volumes of debris flows generated by recently burned basins in the western U.S.
www.nrfirescience.org/resource/15742
Recently burned basins frequently produce debris flows in response to moderate-to-severe rainfall. Post-fire hazard assessments of debris flows are most useful when they predict the volume of material that may flow out of a burned basin. This study develops a set of empirically-based models that predict potential volumes of wildfire...
Author(s): J. E. Gartner, Susan H. Cannon, Paul M. Santi, Victor G. Dewolfe
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Chapter 16. Fire and nonnative plants—summary and conclusions
www.nrfirescience.org/resource/12583
This volume synthesizes scientific information about interactions between fire and nonnative invasive plants in wildlands of the United States. If the subject were clear and simple, this volume would be short; obviously, it is not.
Author(s): Jane Kapler Smith, Kristin L. Zouhar, Steve Sutherland, Matthew L. Brooks
Year Published: 2008
Type: Document
Synthesis, Technical Report or White Paper

Sanguisorba minor (small burnet)
www.nrfirescience.org/resource/10656
This FEIS species review synthesizes information on the relationship of Sanguisorba minor (small burnet) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Janet L. Fryer
Year Published: 2008
Type: Document
Synthesis

Cheatgrass and red brome; the history and biology of two invaders
www.nrfirescience.org/resource/11023
In recent history, there has not been a more ecologically important event than the introduction of cheatgrass (Bromus tectorum) and red brome (Bromus rubens) into the Intermountain West. These grasses are very similar in ecology and history and are separated mostly by function of elevation. Both species are from the Mediterranean...
Author(s): Chad R. Reid, Sherel Goodrich, James E. Bowns
Year Published: 2008
Type: Document
Conference Proceedings

Polytrichum juniperinum (juniper haircap moss)
www.nrfirescience.org/resource/10647
This FEIS species review synthesizes information on the relationship of Polytrichum juniperinum (juniper haircap moss) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janet L. Fryer
Year Published: 2008
Type: Document
Synthesis

A 2000-year environmenal history of Jackson Hole, Wyoming, inferred from lake-sediment records
www.nrfirescience.org/resource/15402
Little is known about the disturbance history of low-elevation forest and steppe vegetation in the western United States, nor about the relative importance of climate and human activity in shaping present-day plant communities. We analyzed pollen and high-resolution macroscopic charcoal records spanning the last 2100, 1000, and 550...
Author(s): Karen Jacobs, Cathy L. Whitlock
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Earth and fire: forests rely on healthy soils for a well-rounded diet
www.nrfirescience.org/resource/11081
Historically, frequent low-intensity, dormant-season fire shaped the landscape across a variety of forests in the United States, from eastern hardwood and hardwood/conifer mixtures to western coniferous forests. Decades of fire exclusion have resulted in heavy fuel loads and increased threat of

severe wildfire compared to historic...
Author(s): Elise LeQuire
Year Published: 2008
Type: Document
Research Brief or Fact Sheet

Chapter 12. Gaps in scientific knowledge about fire and nonnative invasive plants
www.nrfirescience.org/resource/12563
The potential for nonnative, invasive plants to alter an ecosystem depends on species traits, ecosystem characteristics, and the effects of disturbances, including fire. This study identifies gaps in science-based knowledge about the relationships between fire and nonnative invasive plants in the United States. The literature was...
Author(s): Kristin L. Zouhar, Gregory T. Munger, Jane Kapler Smith
Year Published: 2008
Type: Document
Synthesis, Technical Report or White Paper

Wildland fire in ecosystems: fire and nonnative invasive plants
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

Aulacomnium palustre (ribbed bog moss)
www.nrfirescience.org/resource/10646
This FEIS species review synthesizes information on the relationship of Aulacomnium palustre (ribbed bog moss) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Janet L. Fryer
Year Published: 2008
Type: Document
Synthesis

Gulo gulo (wolverine)
www.nrfirescience.org/resource/10747
This FEIS species review synthesizes information on the relationship of Gulo gulo (wolverine) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Peggy Luensmann
Year Published: 2008
Type: Document
Synthesis

Arctostaphylos rubra (red fruit bearberry)

www.nrfirescience.org/resource/10655
This FEIS species review synthesizes information on the relationship of Arctostaphylos rubra (red fruit bearberry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janet L. Fryer
Year Published: 2008
Type: Document
Synthesis

Sources of debris flow material in burned areas
www.nrfirescience.org/resource/15770
The vulnerability of recently burned areas to debris flows has been well established. Likewise, it has been shown that many, if not most, post-fire debris flows are initiated by runoff and erosion and grow in size through erosion and scour by the moving debris flow, as opposed to landslide-initiated flows with little growth. To...
Author(s): Paul M. Santi, Victor G. Dewolfe, J.D. Higgins, Susan H. Cannon, J. E. Gartner
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Soil water repellency and infiltration in coarse-textured soils of burned and unburned sagebrush ecosystems
www.nrfirescience.org/resource/11424
Millions of dollars are spent each year in the United States to mitigate the effects of wildfires and reduce the risk of flash floods and debris flows. Research from forested, chaparral, and rangeland communities indicate that severe wildfires can cause significant increases in soil water repellency resulting in increased runoff and...
Author(s): Frederick B. Pierson, Peter R. Robichaud, Corey A. Moffet, Kenneth E. Spaeth, Christopher Jason Williams, Stuart P. Hardegree, Patrick E. Clark
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

The effect of ash on runoff and erosion after a severe forest wildfire, Montana, USA
www.nrfirescience.org/resource/8199
Ash formed by the combustion of vegetation and the litter and duff layers may affect runoff and erosion rates in the period immediately following wildfires, but only a handful of studies have specifically measured its effect. Approximately 1 month after the 2005 Tarkio Fire in western Montana, we applied simulated rainfall for 1 h...
Author(s): Scott W. Woods, Victoria N. Balfour
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Potentilla glandulosa (sticky cinquefoil)
www.nrfirescience.org/resource/10822
This FEIS species review synthesizes information on the relationship of Potentilla glandulosa (sticky cinquefoil) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...

Author(s): Sonja L. Reeves
Year Published: 2008
Type: Document
Synthesis

The ecological importance of severe wildfires: some like it hot
www.nrfirescience.org/resource/8229
Many scientists and forest land managers concur that past fire suppression, grazing, and timber harvesting practices have created unnatural and unhealthy conditions in the dry, ponderosa pine forests of the western United States. Specifically, such forests are said to carry higher fuel loads and experience fires that are more severe...
Author(s): Richard L. Hutto
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Fire is for the birds in northern mixed-grass prairie
www.nrfirescience.org/resource/11082
Roughly 25,000 acres of grassland in the National Wildlife Refuges of North Dakota and eastern Montana are treated every year with prescribed fire, mostly on northern mixed-grass prairie. Although this shrinking ecosystem is fire-adapted, there have been very few studies of the effects of prescribed fire on wildlife, introduced and...
Author(s): Marjie Brown
Year Published: 2008
Type: Document
Research Brief or Fact Sheet

Postfire recovery of sagebrush communities: assessment using spot-5 and very large-scale aerial imagery
www.nrfirescience.org/resource/8278
Much interest lies in long-term recovery rates of sagebrush communities after fire in the western United States, as sagebrush communities comprise millions of hectares of rangelands and are an important wildlife habitat. Little is known about postfire changes in sagebrush canopy cover over time, especially at a landscape scale. We...
Author(s): Temuulen T. Sankey, Corey A. Moffet, Keith T. Weber
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

Spatial characteristics of fire severity in relation to fire growth in a Rocky Mountain subalpine forest
www.nrfirescience.org/resource/11485
We compared the spatial characteristics of fire severity patches within individual fire "runs" (contiguous polygons burned during a given day) resulting from a 72,000 ha fire in central Idaho in 1994. Our hypothesis was that patch characteristics of four fire severity classes (high, moderate, low, and unburned), as captured by five...
Author(s): Calvin A. Farris, Ellis Q. Margolis, John A. Kupfer
Year Published: 2008
Type: Document
Conference Proceedings, Technical Report or White Paper

Recoupling fire and aspen recruitment after wolf reintroduction in Yellowstone National Park, USA
www.nrfirescience.org/resource/8232
We report on the recent growth of upland aspen (Populus tremuloides Michx.) thickets in northwestern Yellowstone National Park, USA following wolf (Canis lupus L.) reintroduction in 1995. We compared aspen growth patterns in an area burned by the 1988 fires to aspen growth patterns in an adjacent unburned area. Elk (Cervus elaphus L...
Author(s): Joshua S. Halofsky, William J. Ripple, Robert L. Beschta
Year Published: 2008
Type: Document
Book or Chapter or Journal Article

The relation between tree burn severity and forest structure in the Rocky Mountains
www.nrfirescience.org/resource/11987
Many wildfire events have burned thousands of hectares across the western United States, such as the Bitterroot (Montana), Rodeo-Chediski (Arizona), Hayman (Colorado), and Biscuit (Oregon) fires. These events led to Congress enacting the Healthy Forest Restoration Act of 2003, which, with other policies, encourages federal and state...
Author(s): Theresa B. Jain, Russell T. Graham
Year Published: 2007
Type: Document
Conference Proceedings, Technical Report or White Paper

Guide to fuel treatments in dry forests of the Western United States: assessing forest structure and fire hazard
www.nrfirescience.org/resource/11166
Guide to Fuel Treatments analyzes a range of fuel treatments for representative dry forest stands in the Western United States with overstories dominated by ponderosa pine (Pinus ponderosa), Douglas-fir (Pseudotsuga menziesii), and pinyon pine (Pinus edulis). Six silvicultural options (no thinning; thinning from below to 50 trees...
Author(s): Morris C. Johnson, David L. Peterson, Crystal L. Raymond
Year Published: 2007
Type: Document
Technical Report or White Paper

Fuel consumption and flammability thresholds in shrub-dominated ecosystems - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11164
Research to quantify fuel consumption and flammability in shrub-dominated ecosystems has received little attention despite the widespread occurrence of fire-influenced, shrub-dominated landscapes across the arid lands of the western United States. While some research has addressed issues relating to fire behavior in some shrub-...
Author(s): Clinton S. Wright, Roger D. Ottmar, Sue A. Ferguson, Robert E. Vihnanek
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

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

Martes pennanti (fisher)
www.nrfirescience.org/resource/10796
This FEIS species review synthesizes information on the relationship of Martes pennanti (fisher) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Rachelle Meyer
Year Published: 2007
Type: Document
Synthesis

Big and black sagebrush landscapes
www.nrfirescience.org/resource/15405
Perhaps no plant evokes a common vision of the semi-arid landscapes of western North America as do the sagebrushes. A collective term, sagebrush is applied to shrubby members of the mostly herbaceous genus, Artemisia L. More precisely, the moniker is usually restricted to members of subgenus Tridentatae, a collection of some 20...
Author(s): Stanley G. Kitchen, E. Durant McArthur
Year Published: 2007
Type: Document
Conference Proceedings

Hedysarum alpinum (alpine sweetvetch)
www.nrfirescience.org/resource/10672
This FEIS species review synthesizes information on the relationship of Hedysarum alpinum (alpine sweetvetch) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Corey L. Gucker
Year Published: 2007
Type: Document
Synthesis

Poa bulbosa (bulbous bluegrass)
www.nrfirescience.org/resource/10682
This FEIS species review synthesizes information on the relationship of Poa bulbosa (bulbous bluegrass) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Corey L. Gucker
Year Published: 2007
Type: Document

Synthesis

Recovery of big sagebrush following fire in southwest Montana
www.nrfirescience.org/resource/8279
Fire plays a large role in structuring sagebrush ecosystems; however, we have little knowledge of how vegetation changes with time as succession proceeds from immediate postfire to mature stands. We sampled at 38 sites in southwest Montana dominated by 3 subspecies of big sagebrush (Artemisia tridentata Nutt.). At each site we...
Author(s): Peter Lesica, Stephen V. Cooper, Greg Kudray
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Salix discolor (pussy willow)
www.nrfirescience.org/resource/10679
This FEIS species review synthesizes information on the relationship of Salix discolor (pussy willow) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Corey L. Gucker
Year Published: 2007
Type: Document
Synthesis

Post-fire recovery of Wyoming big sagebrush shrub-steppe in central and southeast Montana
www.nrfirescience.org/resource/15386
Sagebrush is a widespread habitat throughout our study area and a number of species including Greater Sage-grouse, pronghorn, Brewers Sparrow, Sage Sparrow, Sage Thrasher and sagebrush vole are sagebrush dependent, at least at some stage of their life cycles. Fire constitutes an important driver in structuring sagebrush ecosystems;...
Author(s): Stephen V. Cooper, Peter Lesica, Greg Kudray
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Predicting postfire Douglas-fir beetle attacks and tree mortality in the Northern Rocky Mountains
www.nrfirescience.org/resource/8363
Douglas-fir (Pseudotsuga menziesii (Mirb.) Franco) were monitored for 4 years following three wildfires. Logistic regression analyses were used to develop models predicting the probability of attack by Douglas-fir beetle (Dendroctonus pseudotsugae Hopkins, 1905) and the probability of Douglas-fir mortality within 4 years following...
Author(s): Sharon M. Hood, Barbara J. Bentz
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Runoff and erosion effects after prescribed fire and wildfire on volcanic ash-cap soils
www.nrfirescience.org/resource/11041
After prescribed burns at three locations and one wildfire, rainfall simulations studies were completed to

compare postfire runoff rates and sediment yields on ash-cap soil in conifer forest regions of northern Idaho and western Montana. The measured fire effects were differentiated by burn severity (unburned, low, moderate, and...
Author(s): Peter R. Robichaud, Frederick B. Pierson, Robert E. Brown
Year Published: 2007
Type: Document
Conference Proceedings

Postfire invasion potential of rush skeletonweed (Chondrilla juncea)
www.nrfirescience.org/resource/11455
North American sagebrush steppe communities have been transformed by the introduction of invasive annual grasses and subsequent increase in fire size and frequency. We examined the effects of wildfires and environmental conditions on the ability of rush skeletonweed (Chondrilla juncea L.), a perennial Eurasian composite, to invade...
Author(s): Cecilia Lynn Kinter, Brian A. Mealor, Nancy L. Shaw, Ann L. Hild
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Vegetation and soil effects from prescribed, wild, and combined fire events along a ponderosa pine and grassland mosaic
www.nrfirescience.org/resource/11241
We describe the efficacy of prescribed fires after two wildfires burned through and around these fires located in eastern Montana within the Missouri River Breaks. The objectives of the prescribed fires were to decrease tree density and favor increased herbaceous cover, thus decreasing the potential for crown fire. Our objective was...
Author(s): Theresa B. Jain, Molly Juillerat, Jonathan Sandquist, Mike Ford, Brad Sauer, Robert J. Mitchell, Scott McAvoy, Justin Hanley, Jon David
Year Published: 2007
Type: Document
Technical Report or White Paper

Rapid assessment of postfire plant invasions in coniferous forests of the western United States
www.nrfirescience.org/resource/18957
Fire is a natural part of most forest ecosystems in the western United States, but its effects on nonnative plant invasion have only recently been studied. Also, forest managers are engaging in fuel reduction projects to lessen fire severity, often without considering potential negative ecological consequences such as nonnative...
Author(s): Jonathan P. Freeman, Thomas J. Stohlgren, Molly E. Hunter, Philip N. Omi, Erik J. Martinson, Geneva W. Chong, Cynthia S. Brown
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Betula glandulosa (bog birch)
www.nrfirescience.org/resource/10740
This FEIS species review synthesizes information on the relationship of Betula glandulosa (bog birch) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Jennifer E. Tollefson

Year Published: 2007
Type: Document
Synthesis

Rangifer tarandus (caribou)
www.nrfirescience.org/resource/10746
This FEIS species review synthesizes information on the relationship of Rangifer tarandus (caribou) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Peggy Luensmann
Year Published: 2007
Type: Document
Synthesis

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

Charcoal effects on soil solution chemistry and growth of Koeleria macrantha in the ponderosa pine/Douglas-fir ecosystem
www.nrfirescience.org/resource/7896
We conducted laboratory and greenhouse experiments to determine whether charcoal derived from the ponderosa pine/Douglas-fir ecosystem may influence soil solution chemistry and growth of Koeleria macrantha, a perennial grass that thrives after fire. In our first experiment, we incubated forest soils with a factorial combination of...
Author(s): Michael J. Gundale, Thomas H. DeLuca
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Modeling erosion on steep sagebrush rangeland before and after prescribed fire - proceedings
www.nrfirescience.org/resource/11481
Fire in sagebrush rangelands significantly alters canopy cover, ground cover, and soil properties that influence runoff and erosion processes. Runoff is generated more quickly and a larger volume of runoff is produced following prescribed fire. The result is increased risk of severe erosion and downstream flooding. The Water Erosion...
Author(s): Corey A. Moffet, Frederick B. Pierson, Kenneth E. Spaeth
Year Published: 2007
Type: Document
Conference Proceedings

Mustela nigripes (black-footed ferret)
www.nrfirescience.org/resource/10903
This FEIS species review synthesizes information on the relationship of Mustela nigripes (black-footed ferret) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Elena D. Ulev
Year Published: 2007
Type: Document
Synthesis

Modeling soil erosion on steep sagebrush rangeland before and after prescribed fire
www.nrfirescience.org/resource/11425
Fire in sagebrush rangelands significantly alters canopy cover, ground cover, and soil properties which influence runoff and erosion processes. Runoff can be generated more quickly and in larger volume following fire resulting in increased risk of severe erosion and downstream flooding. The Water Erosion Prediction Project (WEPP)...
Author(s): Corey A. Moffet, Frederick B. Pierson, Peter R. Robichaud, Kenneth E. Spaeth, Stuart P. Hardegree
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

The relationship of multispectral satellite imagery to immediate fire effects
www.nrfirescience.org/resource/8390
The Forest Service Remote Sensing Applications Center (RSAC) and the U.S. Geological Survey Earth Resources Observation and Science (EROS) Data Center produce Burned Area Reflectance Classification (BARC) maps for use by Burned Area Emergency Response (BAER) teams in rapid response to wildfires. BAER teams desire maps indicative of...
Author(s): Andrew T. Hudak, Penelope Morgan, Michael J. Bobbitt, Alistair M. S. Smith, Sarah A. Lewis, Leigh B. Lentile, Peter R. Robichaud, Jess T. Clark, Randy McKinley
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Hieracium albiflorum (white hawkweed)
www.nrfirescience.org/resource/10816
This FEIS species review synthesizes information on the relationship of Hieracium albiflorum (white hawkweed) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Sonja L. Reeves
Year Published: 2007
Type: Document
Synthesis

Geranium bicknellii (Bicknell's geranium)
www.nrfirescience.org/resource/10817
This FEIS species review synthesizes information on the relationship of Geranium bicknellii (Bicknell's geranium) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,

distribution, basic...
Author(s): Sonja L. Reeves
Year Published: 2007
Type: Document
Synthesis

First-year post-fire erosion rates in Bitterroot National Forest, Montana
www.nrfirescience.org/resource/8169
Accelerated runoff and erosion commonly occur following forest fires due to combustion of protective forest floor material, which results in bare soil being exposed to overland flow and raindrop impact, as well as water repellent soil conditions. After the 2000 Valley Complex Fires in the Bitterroot National Forest of west-central...
Author(s): Kevin M. Spigel, Peter R. Robichaud
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Lynx canadensis (Canada lynx)
www.nrfirescience.org/resource/10897
This FEIS species review synthesizes information on the relationship of Lynx canadensis (Canada lynx) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Elena D. Ulev
Year Published: 2007
Type: Document
Synthesis

Home range size of Black-backed Woodpeckers in burned forests of southwestern Idaho
www.nrfirescience.org/resource/11416
We examined home range size of Black-backed Woodpeckers (Picoides arcticus) in burned ponderosa pine (Pinus ponderosa) / Douglas-fir (Pseudotsuga menziesii) forests of southwestern Idaho during 2000 and 2002 (6 and 8 years following fire). Home range size for 4 adult males during the post-fledging period was 115.6-420.9 ha using the...
Author(s): Jonathan G. Dudley, Victoria A. Saab
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Delayed Conifer Tree Mortality Following Fire in California
www.nrfirescience.org/resource/16311
Fire injury was characterized and survival monitored for 5,246 trees from five wildfires in California that occurred between 1999 and 2002. Logistic regression models for predicting the probability of mortality were developed for incense-cedar, Jeffrey pine, ponderosa pine, red fir and white fir. Two-year post-fire preliminary...
Author(s): Sharon M. Hood, Sheri L. Smith, Danny R. Cluck
Year Published: 2007
Type: Document
Technical Report or White Paper

Pyrola asarifolia (pink wintergreen)
www.nrfirescience.org/resource/10668
This FEIS species review synthesizes information on the relationship of Pyrola asarifolia (pink wintergreen) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Corey L. Gucker
Year Published: 2007
Type: Document
Synthesis

Habitat suitability models for cavity-nesting birds in a postfire landscape
www.nrfirescience.org/resource/11411
Models of habitat suitability in postfire landscapes are needed by land managers to make timely decisions regarding postfire timber harvest and other management activities. Many species of cavity-nesting birds are dependent on postfire landscapes for breeding and other aspects of their life history and are responsive to postfire...
Author(s): Robin E. Russell, Victoria A. Saab, Jonathan G. Dudley
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Cone production in young post-fire Pinus contorta stands in Greater Yellowstone (USA)
www.nrfirescience.org/resource/8248
Spatial and temporal variability in cone production may influence post-disturbance succession, yet it is not well understood. We sampled 15-year old lodgepole pine (Pinus contorta var. latifolia) stands (n = 16) that regenerated naturally after the 1988 Yellowstone fires and varied in stand density (566-545,200 stems ha-1) and...
Author(s): Monica G. Turner, Devin M. Turner, William H. Romme, Daniel B. Tinker
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Responses of western toads (Bufo boreas) to changes in terrestrial habitat resulting from wildfire
www.nrfirescience.org/resource/18212
Physical disturbances can play a major role in the creation and maintenance of landscape heterogeneity, ecosystem processes, and population and community dynamics. Pickett and White (1985:7) defined disturbance as “any relatively discrete event in time that disrupts ecosystem, community, or population structure and changes...
Author(s): C. Gregory Guscio
Year Published: 2007
Type: Document
Dissertation or Thesis

Mertensia paniculata (tall bluebells)
www.nrfirescience.org/resource/10821
This FEIS species review synthesizes information on the relationship of Mertensia paniculata (tall bluebells) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...

Author(s): Sonja L. Reeves
Year Published: 2007
Type: Document
Synthesis

Whitebark pine diameter growth response to removal of competition
www.nrfirescience.org/resource/19319
Silvicultural cutting treatments may be needed to restore whitebark pine (Pinus albicaulis) forests, but little is known of the response of this species to removal of competition through prescribed burning or silvicultural cuttings. We analyzed stem cross-sections from 48 whitebark pine trees in Montana around which most of the...
Author(s): Robert E. Keane, Kathy L. Gray, Laura J. Dickinson
Year Published: 2007
Type: Document
Technical Report or White Paper

Erosion Risk Management Tool (ERMiT) user manual
www.nrfirescience.org/resource/15776
The decision of where, when, and how to apply the most effective post-fire erosion mitigation treatments requires land managers to assess the risk of damaging runoff and erosion events occurring after a fire. To aid in this assessment, the Erosion Risk Management Tool (ERMiT) was developed. This user manual describes the input...
Author(s): Peter R. Robichaud, William J. Elliot, Frederick B. Pierson, David E. Hall, Corey A. Moffet, Louise E. Ashmun
Year Published: 2007
Type: Document
Technical Report or White Paper

Symphoricarpos occidentalis (western snowberry)
www.nrfirescience.org/resource/10698
This FEIS species review synthesizes information on the relationship of Symphoricarpos occidentalis (western snowberry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution,...
Author(s): Alan S. Hauser
Year Published: 2007
Type: Document
Synthesis

Evaluation of a post-fire tree mortality model for western USA conifers
www.nrfirescience.org/resource/8364
Accurately predicting fire-caused mortality is essential to developing prescribed fire burn plans and post-fire salvage marking guidelines. The mortality model included in the commonly used USA fire behaviour and effects models, the First Order Fire Effects Model (FOFEM), BehavePlus, and the Fire and Fuels Extension to the Forest...
Author(s): Sharon M. Hood, Charles W. McHugh, Kevin C. Ryan, Elizabeth D. Reinhardt, Sheri L. Smith
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Understanding the influence of local and landscape conditions on the occurrence and abundance of Black-backed Woodpeckers in burned forest patches
www.nrfirescience.org/resource/15635
Wildfire is the predominant disturbance agent in the Northern Rockies. The nearly annual occurrence of wildfire at some point in a larger landscape has served as the environmental backdrop against which our native wildlife species have evolved. A number of native species have, in fact, become dependent on wildfires or wildfire-...
Author(s): Richard L. Hutto, Deborah Austin, Sallie Hejl
Year Published: 2007
Type: Document
Technical Report or White Paper

Linum lewisii (Lewis flax)
www.nrfirescience.org/resource/10815
This FEIS species review synthesizes information on the relationship of Linum lewisii (Lewis flax) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Sonja L. Reeves
Year Published: 2007
Type: Document
Synthesis

The effect of spring prescribed fires on nitrogen dynamics within riparian and stream ecosystems - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11173
The effects of prescribed fires on nitrogen dynamics in N limited headwater ecosystems in the northern Rocky Mountains of central Idaho are being investigated. This replicated study studies causal mechanisms that regulate nitrogen (N) dynamics between small headwater streams, riparian vegetation and soil following spring prescribed...
Year Published: 2007
Type: Document
Technical Report or White Paper

Cynomys ludovicianus (black-tailed prairie dog)
www.nrfirescience.org/resource/10898
This FEIS species review synthesizes information on the relationship of Cynomys ludovicianus (black-tailed prairie dog) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution,...
Author(s): Elena D. Ulev
Year Published: 2007
Type: Document
Synthesis

Do high-density patches of coarse wood and regenerating saplings create browsing refugia for aspen (Populus tremuloides) in Yellowstone National Park (USA)?
www.nrfirescience.org/resource/13546
Following the extensive 1988 fires in Yellowstone, a mosaic of high-density patches of fallen logs and regenerating lodgepole pine (Pinus contorta var. latifolia Engelm. ex Wats.) saplings developed in the landscape. Such patches could potentially provide browsing refugia for post-fire aspen (Populus

tremuloides Michx.)...
Author(s): James D. Forester, Dean P. Anderson, Monica G. Turner
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Assessing accuracy of manually-mapped wildfire perimeters in topographically dissected areas
www.nrfirescience.org/resource/11430
Accurate mapping of wildfires is critical to fire management. Technological advances in remotesensing and Geographic Information Systems (GIS) over the last decade have been widely incorporated into wildfire mapping and management, but neither have been assessed for accuracy nor compared to established manual methods. Since Landsat-...
Author(s): Crystal A. Kolden, Peter J. Weisberg
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Arctostaphylos patula (greenleaf manzanita)
www.nrfirescience.org/resource/10705
This FEIS species review synthesizes information on the relationship of Arctostaphylos patula (greenleaf manzanita) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Alan S. Hauser
Year Published: 2007
Type: Document
Synthesis

Ten-year responses of ponderosa pine growth, vigor, and recruitment to restoration treatments in the Bitterroot Mountains, Montana, USA
www.nrfirescience.org/resource/13370
Little is known about ponderosa pine forest ecosystem responses to restoration practices in the Northern Rocky Mountains, USA. In this study, restoration treatments aimed at approximating historical forest structure and disturbances included modified single-tree selection cutting, with and without prescribed burning. We compared the...
Author(s): Alex Fajardo, Jon Graham, John M. Goodburn, Carl E. Fiedler
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Birds and burns of the Interior West: descriptions, habitats, and management in western forests
www.nrfirescience.org/resource/11123
This publication provides information about prescribed fire effects on habitats and populations of birds of the interior West and a synthesis of existing information on bird responses to fire across North America. Our literature synthesis indicated that aerial, ground, and bark insectivores favored recently burned habitats, whereas...
Author(s): Victoria A. Saab, William M. Block, Robin E. Russell, John F. Lehmkuhl, Lisa Bate, Rachel White
Year Published: 2007
Type: Document
Synthesis, Technical Report or White Paper

Strix nebulosa (great gray owl)
www.nrfirescience.org/resource/10900
This FEIS species review synthesizes information on the relationship of Strix nebulosa (great gray owl) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Elena D. Ulev
Year Published: 2007
Type: Document
Synthesis

Emissions of levoglucosan, methoxy pehnols, and organic acids from prescribed burns, laboratory combustion of wildland fuels, and residential wood combustion
www.nrfirescience.org/resource/11426
Biomass combustion emissions make a significant contribution to the overall particulate pollution in the troposphere. Wildland or prescribed burns and residential wood combustion emissions can vary due to differences in fuel, season, time of day, and the nature of the combustion. Inadequate understanding of the relevance of these...
Author(s): Lynn R. Mazzoleni, Barbara Zielinska, Hans Moosmuller
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Responses of pond-breeding amphibians to wildfire: short-term patterns in occupancy and colonization
www.nrfirescience.org/resource/8249
Wildland fires are expected to become more frequent and severe in many ecosystems, potentially posing a threat to many sensitive species. We evaluated the effects of a large, stand-replacement wildfire on three species of pond-breeding amphibians by estimating changes in occupancy of breeding sites during the three years before and...
Author(s): Blake R. Hossack, Paul S. Corn
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

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

Neotoma cinerea (bushy-tailed woodrat)
www.nrfirescience.org/resource/10902

This FEIS species review synthesizes information on the relationship of Neotoma cinerea (bushy-tailed woodrat) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Elena D. Ulev
Year Published: 2007
Type: Document
Synthesis

Artemisia campestris (field sagewort)
www.nrfirescience.org/resource/10675
This FEIS species review synthesizes information on the relationship of Artemisia campestris (field sagewort) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Corey L. Gucker
Year Published: 2007
Type: Document
Synthesis

Post-fire burn severity and vegetation response following eight large wildfires across the western United States
www.nrfirescience.org/resource/8168
Vegetation response and burn severity were examined following eight large wildfires that burned in 2003 and 2004: two wildfires in California chaparral, two each in dry and moist mixed-conifer forests in Montana, and two in boreal forests in interior Alaska. Our research objectives were: 1) to characterize one year post-fire...
Author(s): Leigh B. Lentile, Penelope Morgan, Andrew T. Hudak, Michael J. Bobbitt, Sarah A. Lewis, Alistair M. S. Smith, Peter R. Robichaud
Year Published: 2007
Type: Document
Book or Chapter or Journal Article

Fragaria vesca (woodland strawberry)
www.nrfirescience.org/resource/10802
This FEIS species review synthesizes information on the relationship of Fragaria vesca (woodland strawberry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Gregory T. Munger
Year Published: 2007
Type: Document
Synthesis

Sphaeralcea grossulariifolia (gooseberryleaf globemallow)
www.nrfirescience.org/resource/10894
This FEIS species review synthesizes information on the relationship of Sphaeralcea grossulariifolia (gooseberryleaf globemallow) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Jennifer E. Tollefson

Year Published: 2007
Type: Document
Synthesis

Perisoreus canadensis (gray jay)
www.nrfirescience.org/resource/10901
This FEIS species review synthesizes information on the relationship of Perisoreus canadensis (gray jay) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Elena D. Ulev
Year Published: 2006
Type: Document
Synthesis

Rosa arkansana (prairie rose)
www.nrfirescience.org/resource/10699
This FEIS species review synthesizes information on the relationship of Rosa arkansana (prairie rose) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Alan S. Hauser
Year Published: 2006
Type: Document
Synthesis

Sphaeralcea coccinea (scarlet globemallow)
www.nrfirescience.org/resource/10892
This FEIS species review synthesizes information on the relationship of Sphaeralcea coccinea (scarlet globemallow) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Jennifer E. Tollefson
Year Published: 2006
Type: Document
Synthesis

Vulpia myuros (rattail sixweeks grass)
www.nrfirescience.org/resource/10460
This FEIS species review synthesizes information on the relationship of Vulpia myuros (rattail sixweeks grass) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Janet L. Howard
Year Published: 2006
Type: Document
Synthesis

Snag longevity in relation to wildfire and postfire salvage logging
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

Juniperus horizontalis (creeping juniper)
www.nrfirescience.org/resource/10671
This FEIS species review synthesizes information on the relationship of Juniperus horizontalis (creeping juniper) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Corey L. Gucker
Year Published: 2006
Type: Document
Synthesis

Carex filifolia (threadleaf sedge)
www.nrfirescience.org/resource/10696
This FEIS species review synthesizes information on the relationship of Carex filifolia (threadleaf sedge) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Alan S. Hauser
Year Published: 2006
Type: Document
Synthesis

Prunus pumila (sand cherry)
www.nrfirescience.org/resource/10868
This FEIS species review synthesizes information on the relationship of Prunus pumila (sand cherry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Jane E. Taylor
Year Published: 2006
Type: Document
Synthesis

Vegetation response to restoration treatments in ponderosa pine-Douglas-fir forests
www.nrfirescience.org/resource/11503
The study site is located at the University of Montana's Lubrecht Experimental Forest, Missoula County, Montana, USA. This study is 1 of 13 in a nationwide network of Fire/Fire Surrogate (FFS) studies investigating the interdisciplinary effects of treatments designed to reduce fire hazard and restore the structure and function of...
Author(s): Kerry L. Metlen, Erich K. Dodson, Carl E. Fiedler
Year Published: 2006
Type: Document

Research Brief or Fact Sheet

Adapting the Water Erosion Prediction Project (WEPP) model to forest conditions
www.nrfirescience.org/resource/8433
Adequate and reliable erosion prediction tools are needed for sound forest resources management. Numerous watershed models have been developed during the past. These models, however, are often limited in their applications largely due to their inappropriate representations of the hydrological processes involved. The Water Erosion...
Author(s): Shuhui Dun, William J. Elliot, Peter R. Robichaud, Dennis C. Flanagan
Year Published: 2006
Type: Document
Conference Proceedings

Best predictors for postfire mortality of ponderosa pine trees in the Intermountain West
www.nrfirescience.org/resource/8135
Numerous wildfires in recent years have highlighted managers' needs for reliable tools to predict postfire mortality of ponderosa pine (Pinus ponderosa Dougl. ex Laws.) trees. General applicability of existing mortality models is uncertain, as researchers have used different sets of variables. We quantified tree attributes, crown...
Author(s): Carolyn Hull Sieg, Joel D. McMillin, James F. Fowler, Kurt K. Allen, Jose F. Negron, Linda L. Wadleigh, John A. Anhold, Ken E. Gibson
Year Published: 2006
Type: Document
Book or Chapter or Journal Article

Vulpia octoflora (sixweeks grass)
www.nrfirescience.org/resource/10710
This FEIS species review synthesizes information on the relationship of Vulpia octoflora (sixweeks grass) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Janet L. Howard
Year Published: 2006
Type: Document
Synthesis

Wildlife and invertebrate response to fuel reduction treatments in dry coniferous forests of the Western United States: a synthesis
www.nrfirescience.org/resource/11192
This paper synthesizes available information on the effects of hazardous fuel reduction treatments on terrestrial wildlife and invertebrates in dry coniferous forest types in the West. We focused on thinning and/or prescribed fire studies in ponderosa pine (Pinus ponderosa) and dry-type Douglas-fir (Pseudotsuga menziesii), lodgepole...
Author(s): David S. Pilliod, Evelyn L. Bull, Jane L. Hayes, Barbara C. Wales
Year Published: 2006
Type: Document
Synthesis, Technical Report or White Paper

Cercocarpus ledifolius (curlleaf mountain-mahogany)
www.nrfirescience.org/resource/10678

This FEIS species review synthesizes information on the relationship of Cercocarpus ledifolius (curlleaf mountain-mahogany) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution,...
Author(s): Corey L. Gucker
Year Published: 2006
Type: Document
Synthesis

Goodyera oblongifolia (western rattlesnake plantain)
www.nrfirescience.org/resource/10820
This FEIS species review synthesizes information on the relationship of Goodyera oblongifolia (western rattlesnake plantain) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution...
Author(s): Sonja L. Reeves
Year Published: 2006
Type: Document
Synthesis

Biomass consumption during prescribed fires in big sagebrush ecosystems
www.nrfirescience.org/resource/11419
Big sagebrush (Artemisia tridentata) ecosystems typically experience stand replacing fires during which some or all of the ignited biomass is consumed. Biomass consumption is directly related to the energy released during a fire, and is an important factor that determines smoke production and the effects of fire on other resources....
Author(s): Clinton S. Wright, Susan J. Prichard
Year Published: 2006
Type: Document
Conference Proceedings

Calamagrostis montanensis (plains reedgrass)
www.nrfirescience.org/resource/10702
This FEIS species review synthesizes information on the relationship of Calamagrostis montanensis (plains reedgrass) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Alan S. Hauser
Year Published: 2006
Type: Document
Synthesis

Artemisia norvegica (boreal sagebrush)
www.nrfirescience.org/resource/10865
This FEIS species review synthesizes information on the relationship of Artemisia norvegica (boreal sagebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Jane E. Taylor
Year Published: 2006
Type: Document

Synthesis

Apocynum cannabinum (Indianhemp)
www.nrfirescience.org/resource/10819
This FEIS species review synthesizes information on the relationship of Apocynum cannabinum (Indianhemp) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Sonja L. Reeves
Year Published: 2006
Type: Document
Synthesis

Changes in downed wood and forest structure after prescribed fire in ponderosa pine forests
www.nrfirescience.org/resource/11002
Most prescribed fire plans focus on reducing wildfire hazards with little consideration given to effects on wildlife populations and their habitats. To evaluate effectiveness of prescribed burning in reducing fuels and to assess effects of fuels reduction on wildlife, we began a large-scale study known as the Birds and Burns Network...
Author(s): Victoria A. Saab, Lisa Bate, John F. Lehmkuhl, Brett G. Dickson, Scott Story, Stephanie Jentsch, William M. Block
Year Published: 2006
Type: Document
Conference Proceedings

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

Patagioenas fasciata (band-tailed pigeon)
www.nrfirescience.org/resource/10896
This FEIS species review synthesizes information on the relationship of Patagioenas fasciata (band-tailed pigeon) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Elena D. Ulev
Year Published: 2006
Type: Document
Synthesis

Vulpia microstachys (small sixweeks grass)
www.nrfirescience.org/resource/10709

This FEIS species review synthesizes information on the relationship of Vulpia microstachys (small sixweeks grass) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janet L. Howard
Year Published: 2006
Type: Document
Synthesis

Impacts of restoration treatments on alien plant invasion in Pinus ponderosa forests, Montana, USA
www.nrfirescience.org/resource/7897
Invasion by alien plant species represents a challenge to land managers throughout the world as they attempt to restore frequent fire-adapted ecosystems following decades of fire exclusion. In ponderosa pine Pinus ponderosa forests of western North America, the response of alien species to restoration treatments has not been well...
Author(s): Erich K. Dodson, Carl E. Fiedler
Year Published: 2006
Type: Document
Book or Chapter or Journal Article

Wildfire as a hydrological and geomorphological agent
www.nrfirescience.org/resource/15775
Wildfire can lead to considerable hydrological and geomorphological change, both directly by weathering bedrock surfaces and changing soil structure and properties, and indirectly through the effects of changes to the soil and vegetation on hydrological and geomorphological processes. This review summarizes current knowledge and...
Year Published: 2006
Type: Document
Book or Chapter or Journal Article

Combustion properties of Bromus tectorum L.: influence of ecotype and growth under four CO2 concentrations
www.nrfirescience.org/resource/11409
We grew from seed the exotic invasive annual grass Bromus tectorum L., collected from three elevation ecotypes in northern Nevada, USA. Plants were exposed to four CO2 atmosphere concentrations: 270, 320, 370, and 420 umol mol-1. After harvest on day 87, above-ground tissue was milled, conditioned to 30% relative humidity, and...
Author(s): Robert R. Blank, Robert H. White, Lewis H. Ziska
Year Published: 2006
Type: Document
Book or Chapter or Journal Article

Piranga ludoviciana (western tanager)
www.nrfirescience.org/resource/10795
This FEIS species review synthesizes information on the relationship of Piranga ludoviciana (western tanager) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Rachelle Meyer
Year Published: 2006

Type: Document
Synthesis

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

Gymnorhinus cyanocephalus (pinyon jay)
www.nrfirescience.org/resource/10904
This FEIS species review synthesizes information on the relationship of Gymnorhinus cyanocephalus (pinyon jay) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Elena D. Ulev
Year Published: 2006
Type: Document
Synthesis

Ledum groenlandicum (bog Labrador tea)
www.nrfirescience.org/resource/10670
This FEIS species review synthesizes information on the relationship of Ledum groenlandicum (bog Labrador tea) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Corey L. Gucker
Year Published: 2006
Type: Document
Synthesis

Nitrogen spatial heterogeneity influences diversity following restoration in a ponderosa pine forest, Montana
www.nrfirescience.org/resource/7898
The resource heterogeneity hypothesis (RHH) is frequently cited in the ecological literature as an important mechanism for maintaining species diversity. The RHH has rarely been evaluated in the context of restoration ecology in which a commonly cited goal is to restore diversity. In this study we focused on the spatial...
Author(s): Michael J. Gundale, Thomas H. DeLuca, Carl E. Fiedler, Kerry L. Metlen
Year Published: 2006
Type: Document
Book or Chapter or Journal Article

Berberis repens (Oregon grape)

www.nrfirescience.org/resource/10905
This FEIS species review synthesizes information on the relationship of Berberis repens (Oregon grape) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Elena D. Ulev
Year Published: 2006
Type: Document
Synthesis

Artemisia pedatifida (birdfoot sagebrush)
www.nrfirescience.org/resource/10864
This FEIS species review synthesizes information on the relationship of Artemisia pedatifida (birdfoot sagebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Jane E. Taylor
Year Published: 2006
Type: Document
Synthesis

Balsamorhiza hookeri (Hooker balsamroot)
www.nrfirescience.org/resource/10804
This FEIS species review synthesizes information on the relationship of Balsamorhiza hookeri (Hooker balsamroot) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Gregory T. Munger
Year Published: 2006
Type: Document
Synthesis

Fire effects on vegetation recovery following eight large western wildfires
www.nrfirescience.org/resource/10986
We examined vegetation diversity and landscape pattern relative to burn severity following eight large wildfires that burned in 2003 and 2004 in California chaparral, in mixed conifer forests in Montana, and in boreal forests in interior Alaska. Our goal was to relate post-fire vegetation recovery and field and remotely sensed...
Author(s): Leigh B. Lentile, Penelope Morgan, Michael J. Bobbitt, Sarah A. Lewis, Andrew T. Hudak, Peter R. Robichaud
Year Published: 2006
Type: Document
Conference Proceedings

Acer grandidentatum (bigtooth maple)
www.nrfirescience.org/resource/10895
This FEIS species review synthesizes information on the relationship of Acer grandidentatum (bigtooth maple) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Jennifer E. Tollefson

Year Published: 2006
Type: Document
Synthesis

Fuels Management - How to Measure Success: Conference Proceedings
www.nrfirescience.org/resource/18399
Fuels management programs are designed to reduce risks to communities and to improve and maintain ecosystem health. The International Association of Wildland Fire initiated the 1st Fire Behavior and Fuels Conference to address development, implementation, and evaluation of these programs. The focus was on how to measure success....
Author(s): Patricia L. Andrews, Bret W. Butler
Year Published: 2006
Type: Document
Conference Proceedings

Evaluate sensitivities of burn-severity mapping algorithms for different ecosystems and fire histories in the United States - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/18930
This research effort is designed to investigate effectiveness of burn severity mapping, using differenced Normalized Burn Ratio (dNBR) for ecosystem monitoring at the 30m scale. The hypothesis of our research is that the differenced normalized burn ratio, calibrated and validated using post-fire ground data (Composite Burn Index, or...
Author(s): Zhiliang Zhu, Carl H. Key, Donald Ohlen, Nathan C. Benson
Year Published: 2006
Type: Document
Technical Report or White Paper

Fire exclusion and nitrogen mineralization in low elevation forests of western Montana
www.nrfirescience.org/resource/8291
Little is known regarding how fire exclusion influences nitrogen (N) cycling in low elevation forests of western Montana. Nor is it clear how the change in fire frequency that has resulted from forest management has influenced ecosystem function in terms of plant-soil-microbe interactions. A fire chronosequence approach was used to...
Author(s): M. Derek MacKenzie, Thomas H. DeLuca, Anna Sala
Year Published: 2006
Type: Document
Book or Chapter or Journal Article

Eleocharis palustris (common spikerush)
www.nrfirescience.org/resource/10694
This FEIS species review synthesizes information on the relationship of Eleocharis palustris (common spikerush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Alan S. Hauser
Year Published: 2006
Type: Document
Synthesis

Bromus carinatus var. carinatus, Bromus carinatus var. marginatus (California brome, mountain

brome)
www.nrfirescience.org/resource/10893
This FEIS species review synthesizes information on the relationship of Bromus carinatus var. carinatus, Bromus carinatus var. marginatus (California brome, mountain brome) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also...
Author(s): Jennifer E. Tollefson
Year Published: 2006
Type: Document
Synthesis

Developing statistical wildlife habitat relationships for assessing cumulative effects of fuels treatments - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11160
The primary weakness in our current ability to evaluate future landscapes in terms of wildlife lies in the lack of quantitative models linking wildlife to forest stand conditions, including fuels treatments. This project focuses on 1) developing statistical wildlife habitat relationships models (WHR) utilizing Forest Inventory and...
Author(s): Samuel A. Cushman, Kevin S. McKelvey
Year Published: 2006
Type: Document
Technical Report or White Paper

Managing fire-prone forests in the Western United
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

Prediction and measurement of thermally induced cambial tissue necrosis in tree stems
www.nrfirescience.org/resource/7949
A model for fire-induced heating in tree stems is linked to a recently reported model for tissue necrosis. The combined model produces cambial tissue necrosis predictions in a tree stem as a function of heating rate, heating time, tree species, and stem diameter. Model accuracy is evaluated by comparison with experimental...
Author(s): Joshua L. Jones, Brent W. Webb, Bret W. Butler, Matthew B. Dickinson, Daniel M. Jimenez, James J. Reardon, Anthony S. Bova
Year Published: 2006
Type: Document
Book or Chapter or Journal Article

Zigadenus venenosus (meadow deathcamas)
www.nrfirescience.org/resource/10704
This FEIS species review synthesizes information on the relationship of Zigadenus venenosus (meadow deathcamas) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the

species' taxonomy, distribution, basic...
Author(s): Alan S. Hauser
Year Published: 2006
Type: Document
Synthesis

Cercocarpus montanus (true mountain-mahogany)
www.nrfirescience.org/resource/10673
This FEIS species review synthesizes information on the relationship of Cercocarpus montanus (true mountain-mahogany) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Corey L. Gucker
Year Published: 2006
Type: Document
Synthesis

Foliar nitrogen patterns following stand-replacing fire in lodgepole pine (Pinus contorta var. latifolia) forests of the Rocky Mountains, USA
www.nrfirescience.org/resource/8268
Little previous work has been conducted on effects of natural, high-severity wildfires on nitrogen (N) dynamics. We measured aboveground plant biomass, foliar N, and net N mineralization 2 years after stand-replacing fires in lodgepole pine (Pinus contorta var. latifolia) forests in Grand Teton National Park, Wyoming, USA. We...
Author(s): Kristine L. Metzger, William H. Romme, Monica G. Turner
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
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

Geum triflorum (prairie smoke)
www.nrfirescience.org/resource/10801
This FEIS species review synthesizes information on the relationship of Geum triflorum (prairie smoke) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Gregory T. Munger
Year Published: 2006
Type: Document
Synthesis

Restoration treatment effects on the understory of ponderosa pine/Douglas-fir forests in western Montana, USA
www.nrfirescience.org/resource/7900
Fire exclusion and high-grade logging have altered the structure and function of ponderosa pine (Pinus ponderosa) forests across the American West. Restoration treatments are increasingly being used in these forests to move stand density, structure, and species composition toward more historically sustainable conditions. Yet little...
Author(s): Kerry L. Metlen, Carl E. Fiedler
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
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

Distichlis spicata (saltgrass)
www.nrfirescience.org/resource/10695
This FEIS species review synthesizes information on the relationship of Distichlis spicata (saltgrass) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Alan S. Hauser
Year Published: 2006
Type: Document
Synthesis

Calypso bulbosa (fairy slipper)
www.nrfirescience.org/resource/10818
This FEIS species review synthesizes information on the relationship of Calypso bulbosa (fairy slipper) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Sonja L. Reeves
Year Published: 2006
Type: Document
Synthesis

Evaluation of post-wildfire debris flow mitigation methods and development of decision-support tools
www.nrfirescience.org/resource/15774
In this study we analyzed the effectiveness of erosion control treatments in reducing post-fire debris-flow volume. We used detailed surveys of series channel cross sections in 46 basins in Colorado, Utah

and California to develop graphs of the cumulative volume gain down the length of a channel. These graphs provide information...
Author(s): Paul M. Santi, J.D. Higgins, Susan H. Cannon, Jerome DeGraff
Year Published: 2006
Type: Document
Book or Chapter or Journal Article

The relation between forest structure and soil burn severity
www.nrfirescience.org/resource/10978
A study funded through National Fire Plan evaluates the relation between pre-wildfire forest structure and post-wildfire soil burn severity across three forest types: dry, moist, and cold forests. Over 73 wildfires were sampled in Idaho, Oregon, Montana, Colorado, and Utah, which burned between 2000 and 2003. Because of the study's...
Author(s): Theresa B. Jain, Russell T. Graham, David S. Pilliod
Year Published: 2006
Type: Document
Conference Proceedings

Short- and longer-term effects of fire and herbivory on sagebrush communities in south-central Montana
www.nrfirescience.org/resource/15440
To better understand the role of herbivory and fire as potential disturbance processes in sagebrush communities, we examined responses of a grazing ungulate, elk (Cervus elaphus), following prescribed burning of sagebrush (Artemisia tridentata ssp. vaseyana) in south-central Montana (USA.) with concurrent monitoring of changes in...
Author(s): Fred Van Dyke, Jeffrey A. Darragh
Year Published: 2006
Type: Document
Book or Chapter or Journal Article

Rosa woodsii (Wood's rose)
www.nrfirescience.org/resource/10700
This FEIS species review synthesizes information on the relationship of Rosa woodsii (Wood's rose) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Alan S. Hauser
Year Published: 2006
Type: Document
Synthesis

Opuntia humifusa (eastern pricklypear)
www.nrfirescience.org/resource/10863
This FEIS species review synthesizes information on the relationship of Opuntia humifusa (eastern pricklypear) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Jane E. Taylor
Year Published: 2006
Type: Document
Synthesis

Using focus groups to involve citizens in resource management - investigating perceptions of smoke as a barrier to prescribed forest burning
www.nrfirescience.org/resource/11214
Participants in a series of focus groups discussed how their tolerance for smoke varied by the source of the smoke and found their opinions changing as they talked with other participants. Even those opposed to smoke from agricultural burning eventually found smoke from prescribed forest burning would be acceptable under appropriate...
Author(s): Brad R. Weisshaupt, Matthew S. Carroll, Keith A. Blatner, Pamela J. Jakes
Year Published: 2006
Type: Document
Technical Report or White Paper

Carex aquatilis (leafy tussock sedge)
www.nrfirescience.org/resource/10693
This FEIS species review synthesizes information on the relationship of Carex aquatilis (leafy tussock sedge) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Alan S. Hauser
Year Published: 2006
Type: Document
Synthesis

Scales of Stream Disturbance Patterns and Population Structure in Bull Trout
www.nrfirescience.org/resource/11406
Ecological theory proposes that the geometry and dynamics of suitable habitats are important predictors for the persistence of a population or metapopulation. A key finding supporting a metapopulation-like conceptualization of extinction and colonization in fragmented salmonid populations is that individuals of particular species...
Author(s): Charles H. Luce, Bruce E. Rieman, Jason B. Dunham
Year Published: 2005
Type: Document
Conference Proceedings

Clintonia uniflora (queencup beadlily)
www.nrfirescience.org/resource/10798
This FEIS species review synthesizes information on the relationship of Clintonia uniflora (queencup beadlily) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Rachelle Meyer
Year Published: 2005
Type: Document
Synthesis

Physiological response of ponderosa pine in western Montana to thinning, prescribed fire, and burning season
www.nrfirescience.org/resource/8147
Low-elevation ponderosa pine (Pinus ponderosa Dougl. ex. Laws.) forests of the northern Rocky

Mountains historically experienced frequent low-intensity fires that maintained open uneven-aged stands. A century of fire exclusion has contributed to denser ponderosa pine forests with greater competition for resources, higher tree stress...
Author(s): Anna Sala, Gregory D. Peters, Lorna R. McIntyre, Michael G. Harrington
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Wildfire, channel disturbance, and stream temperature: spatio-temporal patterns and associations with the distribution of fish and amphibians in central Idaho
www.nrfirescience.org/resource/8407
Temperature is a critical factor in stream ecosystems, and one that is very likely to be altered by wildfire and associated channel disturbance. In central Idaho streams, temperatures after wildfires may increase following loss of shade from riparian vegetation, and changes in channel structure that increase exposure to solar...
Author(s): Jason B. Dunham, Charles H. Luce, Amanda E. Rosenberger, B. Gutierrez-Teira, David E. Nagel, Bruce E. Rieman
Year Published: 2005
Type: Document
Conference Proceedings

Sagebrush steppe and pinyon-juniper ecosystems - effects of changing fire regimes, increased fuel loads, and invasive species - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11152
Pinyon-juniper woodlands and Wyoming big sagebrush ecosystems have undergone major changes in vegetation structure and composition since settlement by European Americans. These changes are resulting in dramatic shifts in fire frequency, size and severity. Effective management of these systems has been hindered by lack of information...
Author(s): Jeanne C. Chambers, E. Durant McArthur, Stephen B. Monsen, Susan E. Meyer, Nancy L. Shaw, Robin J. Tausch, Robert R. Blank, Stephen C. Bunting, Richard R. Miller, Michael L. Pellant, Bruce A. Roundy, Scott C. Walker
Year Published: 2005
Type: Document
Technical Report or White Paper

The role of fire in structuring sagebrush habitats and bird communities
www.nrfirescience.org/resource/15408
Fire is a dominant and highly visible disturbance in sagebrush (Artemisia spp.) ecosystems. In lower elevation, xeric sagebrush communities, the role of fire has changed in recent decades from an infrequent disturbance maintaining a landscape mosaic and facilitating community processes to frequent events that alter sagebrush...
Author(s): Steve Knick, Aaron L. Holmes, Richard F. Miller
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Compilation of data relating to the erosive respose of 606 recently-burned basins in the Western U.S.
www.nrfirescience.org/resource/15745
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. (Figure 1). The data presented here are a combination of those...
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

Artemisia dracunculus (tarragon)
www.nrfirescience.org/resource/10665
This FEIS species review synthesizes information on the relationship of Artemisia dracunculus (tarragon) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Amy H. Groen
Year Published: 2005
Type: Document
Synthesis

Elaeagnus angustifolia (Russian-olive)
www.nrfirescience.org/resource/10486
This FEIS species review synthesizes information on the relationship of Elaeagnus angustifolia (Russian-olive) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Kristin L. Zouhar
Year Published: 2005
Type: Document
Synthesis

The response of mammals to forest fire and timber harvest in the North American boreal forest
www.nrfirescience.org/resource/18219
1. This paper reviews and compares the effects of forest fire and timber harvest on mammalian abundance and diversity, throughout successional time in the boreal forest of North America. 2. Temporal trends in mammal abundance and diversity are generally similar for both harvested and burned stands, with some differences occurring...
Author(s): Jason T. Fisher, Lisa Wilkinson
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Apocynum androsaemifolium (spreading dogbane)
www.nrfirescience.org/resource/10666
This FEIS species review synthesizes information on the relationship of Apocynum androsaemifolium (spreading dogbane) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Amy H. Groen
Year Published: 2005
Type: Document
Synthesis

Near real-time emissions of trace gases and aerosol particles from biomass burning based on MODIS direct broadcast data
www.nrfirescience.org/resource/10961
Biomass burning is an important source of many atmospheric trace gases and aerosol particles. Quantitative characterization of biomass burning emissions is critical for modeling atmospheric chemistry and assessing the impact of fires on air quality, tropospheric ozone chemistry, and global climate. However, advancement in...
Author(s): Wei Min Hao, J. Meghan Salmon, Bryce L. Nordgren, Shawn P. Urbanski
Year Published: 2005
Type: Document
Conference Proceedings

Simple algorithm to determine the near-edge smoke boundaries with scanning lidar
www.nrfirescience.org/resource/7957
We propose a modified algorithm for the gradient method to determine the near-edge smoke plume boundaries using backscatter signals of a scanning lidar. The running derivative of the ratio of the signalstandard deviation (STD) to the accumulated sum of the STD is calculated, and the location of the global maximum of this function is...
Author(s): Vladimir A. Kovalev, Cyle E. Wold, Jenny O. Newton, Wei Min Hao
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Prescribed fire strategies to restore wildlife habitat in ponderosa pine forests of the intermountain west (birds and burns network) - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11400
The goal of this project was to help evaluate the effectiveness of prescribed fire in reducing fuels, and to assess the effects of fuel reduction on habitats and populations of birds in ponderosa pine forests throughout the Interior West. Known as the Birds and Burns Network, we have study areas located on National Forest and The...
Author(s): Victoria A. Saab, William M. Block
Year Published: 2005
Type: Document
Technical Report or White Paper

Effects of prescribed fire on the invasion of northern mixed-grass prairie by non-native plant species - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11162
We seek to measure the effects of fire and grazing on weeds of the northern mixed grass prairie. To accomplish this we are interpreting measurements from two management experiments, one at Lostwood National Wildlife Refuge (NWR) and one at Des Lacs NWR. At Lostwood we found a nearly balanced 2x7 treatment experiment with seven...
Author(s): Jennifer S. Hartz-Rubin, Tad Weaver, Cory S. Rubin, Jack Plaggemeyer
Year Published: 2005
Type: Document
Technical Report or White Paper

Psathyrostachys juncea (Russian wildrye)
www.nrfirescience.org/resource/10476

This FEIS species review synthesizes information on the relationship of Psathyrostachys juncea (Russian wildrye) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Jane E. Taylor
Year Published: 2005
Type: Document
Synthesis

New technology for fuel breaks and green strips in urban interface and wildland areas
www.nrfirescience.org/resource/11039
Threat from wildfire can be greatly minimized through proactive efforts that reduce and slow spread through use of green strips or fuel breaks, and decrease fire volatility by reducing fuel load. This results in greater safety to fire fighters and protection to key urban interface areas or wildlife habitat. The fight against western...
Author(s): Jennifer L. Vollmer
Year Published: 2005
Type: Document
Conference Proceedings

Artemisia ludoviciana (prairie sage)
www.nrfirescience.org/resource/10605
This FEIS species review synthesizes information on the relationship of Artemisia ludoviciana (prairie sage) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Michelle B. Anderson
Year Published: 2005
Type: Document
Synthesis

Measurement of post-fire hillslope erosion to evaluate and model rehabilitation treatment effectiveness and recovery
www.nrfirescience.org/resource/8137
The increasing size and severity of wildfires in the western United States has caused a corresponding increase in post-fire emergency erosion control activities. Hillslope treatments, such as broadcast seeding, mulching and installed barriers, are applied to reduce runoff and erosion, as well as downslope sedimentation. However,...
Author(s): Peter R. Robichaud
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Land use and land cover effects on runoff processes: fire
www.nrfirescience.org/resource/18720
Fire dramatically alters hydrologic processes in many regions of the world. Individual fires reduce vegetation and change soil characteristics, sometimes producing dramatic runoff events in the years shortly after a fire. The greatest determinant of the effect of fire on runoff generation is the severity of the fire, which relates...
Author(s): Charles H. Luce
Year Published: 2005

Type: Document
Book or Chapter or Journal Article

Bouteloua barbata (sixweeks grama)
www.nrfirescience.org/resource/10703
This FEIS species review synthesizes information on the relationship of Bouteloua barbata (sixweeks grama) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Alan S. Hauser
Year Published: 2005
Type: Document
Synthesis

Cytisus scoparius, Cytisus striatus (Scotch broom, Portuguese broom)
www.nrfirescience.org/resource/10488
This FEIS species review synthesizes information on the relationship of Cytisus scoparius, Cytisus striatus (Scotch broom, Portuguese broom) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also...
Author(s): Kristin L. Zouhar
Year Published: 2005
Type: Document
Synthesis

The potential influence of stair-step morphology on the initiation of bulking debris flows in southwestern Idaho, USA
www.nrfirescience.org/resource/11436
Hillside hollows which produced bulking debris flows in southwestern Idaho in 2003-2005 consistently show a stair-step morphology with vertical risers and planar, roughly horizontal treads. We propose a process model of step formation by plunging flow which increases sediment detachment and transport, thereby encouraging the...
Author(s): C. W. Welcker, John M. Buffington, Charles H. Luce, J. A. McKean
Year Published: 2005
Type: Document
Conference Proceedings

Fall-prescribed burn and spring-applied herbicide effects on Canada thistle control and soil seedbank in a northern mixed-grass prairie
www.nrfirescience.org/resource/8280
Prescribed burning in Theodore Roosevelt National Park has played an important role in maintaining a natural ecosystem. However, changes in plant community dynamics caused by burning may have led to an invasion of weedy species such as Canada thistle (Cirsium arvense L.). The objectives of this research were to evaluate the effect...
Author(s): Andrea J. Travnicek, Rodney G. Lym, Chad Prosser
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Establishment, persistence, and growth of aspen (Populus tremuloides) seedlings in

Yellowstone National Park
www.nrfirescience.org/resource/13543
Quaking aspen (Populus tremuloides Michx.) is a long-lived clonal species in which many genetically identical stems (ramets) arise from a common root system. Establishment by seed is extremely rare in the Rocky Mountain region, where most clones that exist today are thought to have established hundreds or thousands of...
Author(s): William H. Romme, Monica G. Turner, Gerald A. Tuskan, Rebecca A. Reed
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Automated forecasting of smoke dispersion and air quality using NASA terra and aqua satellite data (Task 5) - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11150
This document contains a description of the air quality forecasting system in operation at the Missoula Fire Science Laboratory. This air quality forecasting system has been steadily assimilating new techniques and algorithms as they have been developed over the past four years. Individual components as well as assemblies of...
Author(s): Wei Min Hao, Shawn P. Urbanski
Year Published: 2005
Type: Document
Technical Report or White Paper

Leucopoa kingii (spike fescue)
www.nrfirescience.org/resource/10599
This FEIS species review synthesizes information on the relationship of Leucopoa kingii (spike fescue) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Michelle B. Anderson
Year Published: 2005
Type: Document
Synthesis

Variability and convergence in stand structural development on a fire-dominated subalpine landscape
www.nrfirescience.org/resource/13538
The 1988 Yellowstone fires resulted in a complex mosaic within which postfire lodgepole pine seedling densities varied by over five orders of magnitude. Investigators have speculated that such postfire mosaics of vegetation structure may persist until the next large disturbance, but the fate of the initial structural variability of...
Author(s): Daniel M. Kashian, Monica G. Turner, William H. Romme, Craig G. Lorimer
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Fire on the mountain: birds and burns in the Rocky Mountains
www.nrfirescience.org/resource/14591
Here we review the current state of knowledge about past fire regimes and how they have been altered by human activities. We also highlight the limited information on how avian communities respond to fire. We conclude with implications for fire management programs in the Rocky Mountains. See Kotliar et al.

(...
Author(s): Natasha B. Kotliar, Victoria A. Saab, Richard L. Hutto
Year Published: 2005
Type: Document
Technical Report or White Paper

Sage-grouse habitat restoration symposium proceedings
www.nrfirescience.org/resource/11007
Declines in habitat of greater sage-grouse and Gunnison sage-grouse across the western United States are related to degradation, loss, and fragmentation of sagebrush ecosystems resulting from development of agricultural lands, grazing practices, changes in wildfire regimes, increased spread of invasive species, gas and oil...
Author(s): Nancy L. Shaw, Michael L. Pellant, Stephen B. Monsen
Year Published: 2005
Type: Document
Conference Proceedings

Dalea purpurea (purple prairie clover)
www.nrfirescience.org/resource/10745
This FEIS species review synthesizes information on the relationship of Dalea purpurea (purple prairie clover) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Kevin R. League
Year Published: 2005
Type: Document
Synthesis

A web-based information system for estimating fuel characteristics, fire hazard, and treatment effectiveness - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11879
This project has three objectives: 1) Classify ponderosa pine, Douglas-fir, and dry mixed-conifer forests types in Montana and New Mexico into appropriate fuel characteristic classes (FCC's), and display the results by forest type, density, and structural classes, 2) Develop web-based applications by which users can evaluate the...
Author(s): Carl E. Fiedler, Roger D. Ottmar
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
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

Stream succession: channel changes after wildfire disturbance
www.nrfirescience.org/resource/11414
One concept in geomorphology is that vegetation is a fundamental control on sediment and water supplies to streams and, therefore, on downstream fluvial processes and channel morphology. Within this paradigm, wildfire has been implicated as a major driving force behind landscape erosion and changes to stream channels, periodically...
Author(s): Nicholas E. Schiedt
Year Published: 2005
Type: Document
Dissertation or Thesis

Juncus balticus (Baltic rush)
www.nrfirescience.org/resource/10701
This FEIS species review synthesizes information on the relationship of Juncus balticus (Baltic rush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Alan S. Hauser
Year Published: 2005
Type: Document
Synthesis

Restoring Wyoming big sagebrush
www.nrfirescience.org/resource/8420
The widespread occurrence of big sagebrush can be attributed to many adaptive features. Big sagebrush plays an essential role in its communities by providing wildlife habitat, modifying local environmental conditions, and facilitating the reestablishment of native herbs. Currently, however, many sagebrush steppe communities are...
Author(s): Cindy R. Lysne
Year Published: 2005
Type: Document
Conference Proceedings, Synthesis

Home range size and foraging habitat of Black-backed Woodpeckers
www.nrfirescience.org/resource/11417
We examined home range size of Black-backed Woodpeckers (Picoides arcticus) in burned ponderosa pine (Pinus ponderosa) / Douglas-fir (Pseudotsuga menziesii) forests of southwestern Idaho during 2000 and 2002 (6 and 8 years following fire). Home range size for 4 adult males during the post-fledging period was 115.6-420.9 ha using the...
Author(s): Jonathan G. Dudley
Year Published: 2005
Type: Document
Dissertation or Thesis

Galium aparine (stickywilly)
www.nrfirescience.org/resource/10677
This FEIS species review synthesizes information on the relationship of Galium aparine (stickywilly) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic

biology, and...
Author(s): Corey L. Gucker
Year Published: 2005
Type: Document
Synthesis

Spatially distributed estimates of riparian stream shading from remote sensing: effects of disturbance and relationship to stream temperature
www.nrfirescience.org/resource/11405
Solar radiation has long been recognized as a major component of the energy budget of streams, and modeling of stream temperature across stream basins requires estimates of riparian stream shade over extensive areas. A variety of methods are available for measuring shade locally, including hemispherical photography, however these...
Author(s): Charles H. Luce, B. Gutierrez-Teira, David E. Nagel
Year Published: 2005
Type: Document
Conference Proceedings

Fish and stream habitat risks from uncharacteristic wildfire: observations from 17 years of fire-related disturbances on the Boise National Forest, Idaho
www.nrfirescience.org/resource/11451
Several large, uncharacteristic wildfires occurred on the Boise National Forest in Southwest Idaho, from 1986 to 2003. From 1987 to 1994, severe wildfires burned almost 50% of the ponderosa pine forest types (about 200,000 ha). The intensity of the fires varied across the landscape, with a mix of low to moderate severity, and lesser...
Author(s): Timothy A. Burton
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Calamovilfa longifolia (prairie sandreed)
www.nrfirescience.org/resource/10697
This FEIS species review synthesizes information on the relationship of Calamovilfa longifolia (prairie sandreed) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Alan S. Hauser
Year Published: 2005
Type: Document
Synthesis

Opuntia fragilis (brittle pricklypear)
www.nrfirescience.org/resource/10867
This FEIS species review synthesizes information on the relationship of Opuntia fragilis (brittle pricklypear) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Jane E. Taylor
Year Published: 2005
Type: Document
Synthesis

Yucca glauca (soapweed yucca)
www.nrfirescience.org/resource/10664
This FEIS species review synthesizes information on the relationship of Yucca glauca (soapweed yucca) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Amy H. Groen
Year Published: 2005
Type: Document
Synthesis

Lonicera fragrantissima, Lonicera maackii, Lonicera morrowii, Lonicera tatarica, Lonicera x bella, Lonicera xylosteum (winter honeysuckle, Amur honeysuckle, Morrow's honeysuckle, Tatarian honeysuckle, Bell's honeysuckle, European fly honeysuckle)
www.nrfirescience.org/resource/10465
This FEIS species review synthesizes information on the relationship of Lonicera fragrantissima, Lonicera maackii, Lonicera morrowii, Lonicera tatarica, Lonicera x bella, Lonicera xylosteum (winter honeysuckle, Amur honeysuckle, Morrow's honeysuckle, Tatarian honeysuckle, Bell's honeysuckle, European fly honeysuckle) to fire--how...
Author(s): Gregory T. Munger
Year Published: 2005
Type: Document
Synthesis

Prescribed fire for fuel reduction in northern mixed-grass prairie: influence on habitat and population dynamics of indigenous wildlife - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11171
Prescribed fire is used increasingly to reduce accumulated fuels on National Wildlife Refuges (NWRs) and other reserves in the mixed-grass prairie region of the northern Great Plains. There is sparse documentation, however, on effects of prescribed fire on habitat and population dynamics of wildlife in the region. This multi-...
Author(s): Robert K. Murphy, Todd A. Grant, Elizabeth M. Madden
Year Published: 2005
Type: Document
Technical Report or White Paper

Understory recovery after low-and high-intensity fires in northern Idaho ponderosa pine forests
www.nrfirescience.org/resource/11502
Comparisons between unburned sites, low-intensity fires, and high-intensity fires in this ponderosa pine-dominated community indicate that a majority of the species coverages and frequencies are unchanged regardless of burn treatment. Also, a majority of species that were impacted by the fires showed increased coverage and/or...
Author(s): Corey L. Gucker
Year Published: 2005
Type: Document
Research Brief or Fact Sheet

Impacts of prescribed burning on the survival of Douglas-fir and Ponderosa pine in the Boise National Forest - Final Report to the Joint Fire Science Program

www.nrfirescience.org/resource/11399
This study was generated by the need for information on the impact of prescribed burning on the primary and secondary mortality of ponderosa pine (Pinus ponderosa Dougl.) and Douglas-fir (Pseudotsuga menziesii var. glauca (Beissn.) Franco) in the Intermountain Region and addresses Task 2 of the Request for Proposals. This need is...
Author(s): Robert Progar, Kathy Geier-Hayes, Tom Jackson, Tammy Cook
Year Published: 2005
Type: Document
Technical Report or White Paper

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
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

Post-fire vegetative dynamics as drivers of microbial community structure and function in forest soils
www.nrfirescience.org/resource/7938
Soil microorganisms have numerous functional roles in forest ecosystems, including: serving as sources and sinks of key nutrients and catalysts of nutrient transformations; acting as engineers and maintainers of soil structure; and forming mutualistic relationships with roots that improve plant fitness. Although both prescribed and...
Author(s): Stephen C. Hart, Thomas H. DeLuca, Gregory S. Newman, M. Derek MacKenzie, Sarah I. Boyle
Year Published: 2005
Type: Document
Book or Chapter or Journal Article, Synthesis

Asclepias speciosa (showy milkweed)
www.nrfirescience.org/resource/10899
This FEIS species review synthesizes information on the relationship of Asclepias speciosa (showy milkweed) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Elena D. Ulev
Year Published: 2005
Type: Document
Synthesis

Nitrogen cycling and spatial heterogeneity following fire and restoration treatments in the ponderosa pine/douglas-fir ecosystem
www.nrfirescience.org/resource/11281
Lower elevation ponderosa pine ecosystems of the Rocky Mountain West (U.S.) historically experienced a frequent, low- intensity fire regime that promoted dominance of large diameter

ponderosa pine (Pinus ponderosa). An abrupt change in this historical disturbance regime occurred upon Euro-American settlement of the West in the late...
Author(s): Michael J. Gundale
Year Published: 2005
Type: Document
Dissertation or Thesis

Changes in bird abundance after wildfire: importance of fire severity and time since fire
www.nrfirescience.org/resource/8256
Fire can cause profound changes in the composition and abundance of plant and animal species, but logistics, unpredictability of weather, and inherent danger make it nearly impossible to study high-severity fire effects experimentally. We took advantage of a unique opportunity to use a before-after/control-impact (BACI) approach to...
Author(s): Kristina M. Smucker, Richard L. Hutto, Brian M. Steele
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Effects of prescribed and wildland fire on aquatic ecosystems in western forests - Final Report to the Joint Fire Science Program
www.nrfirescience.org/resource/11161
The goal of the project is to understand how fire in upland and riparian forests influence stream communities and whether prescription burning mimics the ecological function of fire in a watershed. The project has two components: wildland fire and prescribed fire. To document the range of biotic and abiotic responses to wildland...
Author(s): David S. Pilliod, R. Bruce Bury, Paul S. Corn
Year Published: 2005
Type: Document
Technical Report or White Paper

Hypericum perforatum (common St Johnswort)
www.nrfirescience.org/resource/10499
This FEIS species review synthesizes information on the relationship of Hypericum perforatum (common St Johnswort) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Kristin L. Zouhar
Year Published: 2005
Type: Document
Synthesis

Long-term impacts of fire and mass wasting on solar loading and stream heating in mountain streams of central Idaho
www.nrfirescience.org/resource/11433
The immediate impacts of watershed disturbances such as forest fires, debris flows, and hyperconcentrated flows to lotic systems can include the local decimation of fish, amphibian, and insect populations, but the long-term impacts to biota may have more to do with the trajectory of stream habitat recovery from disturbance. This...
Author(s): C. W. Welcker, John M. Buffington, Bruce E. Rieman, Charles H. Luce, J. A. McKean
Year Published: 2005
Type: Document

Conference Proceedings

Predicting cumulative watershed effects of fuel management with improved WEPP technology
www.nrfirescience.org/resource/8436
The increase in severe wildfires in recent years is due in part to an abundance of fuels in forests. In an effort to protect values at risk, and decrease the severity of wildfires, forest managers have embarked on a major program of fuel reduction. Past research has shown that such fuel reduction may have minimal impact at a...
Author(s): William J. Elliot, Joan Q. Wu
Year Published: 2005
Type: Document
Conference Proceedings

Restoration treatments in a Montana ponderosa pine forest: effects on soil physical, chemical, and biological properties
www.nrfirescience.org/resource/7899
Low-elevation ponderosa pine ecosystems of the inland northwestern United States experienced frequent, low-severity fire that promoted open stands dominated by large diameter ponderosa pine (Pinus ponderosa). Fire exclusion has led to increased stand densities, often due to proliferation of less fire-tolerant species and an...
Author(s): Michael J. Gundale, Thomas H. DeLuca, Carl E. Fiedler, Philip W. Ramsey, Michael G. Harrington, James E. Gannon
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

Symphoricarpos longiflorus (longflower snowberry)
www.nrfirescience.org/resource/10790
This FEIS species review synthesizes information on the relationship of Symphoricarpos longiflorus (longflower snowberry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution,...
Author(s): Jack McWilliams
Year Published: 2005
Type: Document
Synthesis

Cornus nuttallii (Pacific dogwood)
www.nrfirescience.org/resource/10681
This FEIS species review synthesizes information on the relationship of Cornus nuttallii (Pacific dogwood) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Corey L. Gucker
Year Published: 2005
Type: Document
Synthesis

Wildland fire in ecosystems: effects of fire on soils and water
www.nrfirescience.org/resource/12596

This state-of-knowledge review about the effects of fire on soils and water can assist land and fire managers with information on the physical, chemical, and biological effects of fire needed to successfully conduct ecosystem management, and effectively inform others about the role and impacts of wildland fire. Chapter topics...
Author(s): Daniel G. Neary, Kevin C. Ryan, Leonard F. DeBano
Year Published: 2005
Type: Document
Technical Report or White Paper

Five-year operational trial of verbenone to deter mountain pine beetle (Dendroctonus ponderosae; Coleoptera: Scolytidae) attack of lodgepole pine (Pinus contorta)
www.nrfirescience.org/resource/11410
The antiaggregation pheromone verbenone was operationally tested for 5 yr to deter mass attack by the mountain pine beetle on lodgepole pine in campgrounds and administrative areas surrounding Redfish and Little Redfish Lakes at the Sawtooth National Recreation Area in central Idaho. Each year, five-gram verbenone pouches were...
Author(s): Robert Progar
Year Published: 2005
Type: Document
Book or Chapter or Journal Article

The relationship of field burn severity measures to satellite-derived Burned Area Reflectance Classification (BARC) maps
www.nrfirescience.org/resource/10971
Preliminary results are presented from ongoing research on spatial variability of fire effects on soils and vegetation from the Black Mountain Two and Cooney Ridge wildfires, which burned in western Montana during the 2003 fire season. Extensive field fractional cover data were sampled to assess the efficacy of quantitative...
Author(s): Andrew T. Hudak, Penelope Morgan, Carter Stone, Peter R. Robichaud, Theresa B. Jain, Jess T. Clark
Year Published: 2004
Type: Document
Conference Proceedings

Prunus pensylvanica (pin cherry)
www.nrfirescience.org/resource/10607
This FEIS species review synthesizes information on the relationship of Prunus pensylvanica (pin cherry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Michelle B. Anderson
Year Published: 2004
Type: Document
Synthesis

Forest structure and organic horizon analysis along a fire chronosequence in the low elevation forests of western Montana
www.nrfirescience.org/resource/8271
Although fire consumes much of the forest floor, few studies have examined the change in forest floor characteristics with increasing time since fire. Mixed forests of ponderosa pine (Pinus ponderosa Doug. Ex. laws) and Douglas-fir (Pseudotsuga mensizii (Mirb.) Franco) in the inland northwest once burned

with greater frequency than...
Author(s): M. Derek MacKenzie, Thomas H. DeLuca, Anna Sala
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Fuels planning: science synthesis and integration; environmental consequences fact sheet 2: First Order Fire Effects Model (FOFEM)
www.nrfirescience.org/resource/11098
FOFEM 5.2 is a simple, yet versatile computer program that predicts first order fire effects using text and graphic outputs. It can be used in a variety of situations including: determining acceptable upper and lower fuel moistures for conducting prescribed burns, determining the number of acres that may be burned on a given day...
Author(s): Steve Sutherland
Year Published: 2004
Type: Document
Research Brief or Fact Sheet

Sorghum halepense (Johnson grass)
www.nrfirescience.org/resource/10459
This FEIS species review synthesizes information on the relationship of Sorghum halepense (Johnson grass) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Janet L. Howard
Year Published: 2004
Type: Document
Synthesis

Monitoring change in exotic plant abundance after fuel reduction/restoration treatments in ponderosa pine forests of western Montana
www.nrfirescience.org/resource/11279
Exotic species were monitored following treatments designed to reduce wildfire hazard and initiate restoration of forest structure and process in ponderosa pine (Pinus ponderosa)/Douglas-fir (Pseudotsuga mensiezii) forests to compare response among treatments. Treatments included: no treatment (control), prescribed burning,...
Author(s): Erich K. Dodson
Year Published: 2004
Type: Document
Dissertation or Thesis

Smoke produced from residual combustion
www.nrfirescience.org/resource/11140
Considerable research has been carried out to estimate the chemical composition and the amount of trace gases and particulate matter emitted during short-duration flaming and smoldering combustion of fuels in the fire-prone forest and grassland ecosystems. For other forest ecosystems, where long-duration residual smoldering...
Author(s): Ronald E. Babbitt, Wei Min Hao
Year Published: 2004
Type: Document
Technical Report or White Paper

Vascular cambium necrosis in forest fires: using hyperbolic temperature regimes to estimate parameters of a tissue-response model
www.nrfirescience.org/resource/7921
Hyperbolic temperature exposures (in which the rate of temperature rise increases with time) and an analytical solution to a rate-process model were used to characterise the impairment of respiration in samples containing both phloem (live bark) and vascular-cambium tissue during exposures to temperatures such as those experienced...
Author(s): Matthew B. Dickinson, Joan Jolliff, Anthony S. Bova
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Sonchus arvensis (perennial sowthistle)
www.nrfirescience.org/resource/10464
This FEIS species review synthesizes information on the relationship of Sonchus arvensis (perennial sowthistle) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Jack McWilliams
Year Published: 2004
Type: Document
Synthesis

Impacts of fire and mass wasting on channel morphology and stream temperature in mountain rivers of central Idaho (abstract)
www.nrfirescience.org/resource/11432
Debris flows and hyperconcentrated flows immediately impact streams by changing channel morphology, grain size, sediment storage and transport, amount of incision, riparian vegetation, large woody debris dynamics, and extirpating fish, amphibian, and insect populations. In central Idaho, these disturbances are commonly triggered by...
Author(s): C. W. Welcker, John M. Buffington, Bruce E. Rieman, Charles H. Luce, J. A. McKean
Year Published: 2004
Type: Document
Conference Proceedings

Fuels planning: science synthesis and integration; environmental consequences fact sheet 4: wildlife responses to fuels treatments: key considerations
www.nrfirescience.org/resource/14942
Managers face a difficult task in predicting the effects of fuels treatments on wildlife populations, mostly because information on how animals respond to fuels treatments is scarce or does not exist. This paper discusses key considerations-aspects of an animal's ecology and available information-that, despite the scarcity of...
Author(s): David S. Pilliod
Year Published: 2004
Type: Document
Research Brief or Fact Sheet

Is forest structure related to fire severity? Yes, no, and maybe: methods and insights in quantifying the answer

www.nrfirescience.org/resource/10977
Wildfires in 2000 burned over 500,000 forested ha in the Northern Rocky Mountains. In 2001, National Fire Plan funding became available to evaluate the influence of pre-wildfire forest structure on post wildfire fire severity. Results from this study will provide information on forest structures that are resilient to wildfire. Three...
Author(s): Theresa B. Jain, Russell T. Graham
Year Published: 2004
Type: Document
Conference Proceedings

Rosaceous shrubs
www.nrfirescience.org/resource/11117
This chapter provides descriptions of various species in the rose family (Rosaceae).
Author(s): Nancy L. Shaw, Stephen B. Monsen, Richard Stevens
Year Published: 2004
Type: Document
Technical Report or White Paper

Factors influencing occupancy of nest cavities in recently burned forests
www.nrfirescience.org/resource/8143
Recently burned forests in western North America provide nesting habitat for many species of cavity-nesting birds. However, little is understood about the time frame and the variables affecting occupancy of postfire habitats by these birds. We studied factors influencing the occupancy and reuse of nest cavities from 1-7 years after...
Author(s): Victoria A. Saab, Jonathan G. Dudley, William L. Thompson
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Fire-induced erosion and millennial-scale climate change in northern ponderosa pine forests
www.nrfirescience.org/resource/15763
Western US ponderosa pine forests have recently suffered extensive stand-replacing fires followed by hill slope erosion and sedimentation. These fires are usually attributed to increased stand density as a result of fire suppression, grazing and other land use, and are often considered uncharacteristic or unprecedented. Tree-ring...
Author(s): Jennifer L. Pierce, Grant A. Meyer, A. J. Timothy Jull
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Sarcobatus vermiculatus (black greasewood)
www.nrfirescience.org/resource/10592
This FEIS species review synthesizes information on the relationship of Sarcobatus vermiculatus (black greasewood) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Michelle B. Anderson
Year Published: 2004
Type: Document
Synthesis

Asarum caudatum (wild ginger)
www.nrfirescience.org/resource/10674
This FEIS species review synthesizes information on the relationship of Asarum caudatum (wild ginger) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Corey L. Gucker
Year Published: 2004
Type: Document
Synthesis

Effects of Wildfire on soils and watershed processes
www.nrfirescience.org/resource/15751
Wildfire can cause water repellency and consume plant canopy, surface plants and litter, and structure-enhancing organics within soil. Changes in soil moisture, structure, and infiltration can accelerate surface runoff, erosion, sediment transport, and deposition. Intense rainfall and some soil and terrain conditions can contribute...
Author(s): George G. Ice, Daniel G. Neary, Paul W. Adams
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Chondrilla juncea (rush skeletonweed)
www.nrfirescience.org/resource/10483
This FEIS species review synthesizes information on the relationship of Chondrilla juncea (rush skeletonweed) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Kristin L. Zouhar
Year Published: 2004
Type: Document
Synthesis

Monitoring changes in weed populations: post-fire and post-herbicide treatment
www.nrfirescience.org/resource/11040
Description not entered
Author(s): Elaine Kennedy Sutherland
Year Published: 2004
Type: Document
Conference Proceedings

Convolvulus arvensis (field bindweed)
www.nrfirescience.org/resource/10487
This FEIS species review synthesizes information on the relationship of Convolvulus arvensis (field bindweed) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Kristin L. Zouhar
Year Published: 2004
Type: Document

Synthesis

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

Incorporating wildlife habitat needs into restoration and rehabilitation projects
www.nrfirescience.org/resource/11119
Description not entered
Author(s): Richard Stevens
Year Published: 2004
Type: Document
Technical Report or White Paper

Lepidium latifolium (perennial pepperweed)
www.nrfirescience.org/resource/10491
This FEIS species review synthesizes information on the relationship of Lepidium latifolium (perennial pepperweed) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Kristin L. Zouhar
Year Published: 2004
Type: Document
Synthesis

How much do we know about the effects of wildfire on the occurrence and expansion of non-native plant species' distributions in natural areas?
www.nrfirescience.org/resource/10980
Invasion of non-native plant species into natural and managed ecosystems is a widespread problem, with potentially devastating ecological and economic consequences. Increased occurrence and severity of wildland fires has been identified as a potential threat to natural and managed ecosystems. Wildfire is often linked with the...
Author(s): Mara Johnson, Lisa J. Rew, Bruce D. Maxwell, Steve Sutherland
Year Published: 2004
Type: Document
Conference Proceedings, Synthesis

Leymus salinus (Salina wildrye)
www.nrfirescience.org/resource/10602
This FEIS species review synthesizes information on the relationship of Leymus salinus (Salina wildrye) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...

Author(s): Michelle B. Anderson
Year Published: 2004
Type: Document
Synthesis

Spatial heterogeneity of lodgepole pine sapling densities following the 1988 fires in Yellowstone National Park, Wyoming, USA
www.nrfirescience.org/resource/8255
Large disturbances create spatial heterogeneity in vegetation re-establishment, and documenting such variability is critical for understanding and predicting succession. We quantified the spatial heterogeneity of lodgepole pine sapling densities 10 years after the 1988 fires in Yellowstone National Park using color infrared...
Author(s): Daniel M. Kashian, Daniel B. Tinker, Monica G. Turner, Frank L. Scarpace
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Cardaria chalapensis, Cardaria draba, Cardaria pubescens (lens-podded hoary cress, heart-podded hoary cress, globe-podded hoary cress)
www.nrfirescience.org/resource/10490
This FEIS species review synthesizes information on the relationship of Cardaria chalapensis, Cardaria draba, Cardaria pubescens (lens-podded hoary cress, heart-podded hoary cress, globe-podded hoary cress) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire...
Author(s): Kristin L. Zouhar
Year Published: 2004
Type: Document
Synthesis

Role of fire in determining annual water yield in mountain watersheds
www.nrfirescience.org/resource/7901
This paper presents the computation procedures for estimating average annual water yields based on annual precipitation and vegetation cover types. This procedures allows for an estimation of water yields under current conditions, under various levels of vegetation management, or under historic water yield based on fire history. Two...
Author(s): Phillip E. Farnes, Ward W. McCaughey, Katherine J. Hansen
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Fuels planning: science synthesis and integration; environmental consequences fact sheet 7: fire and weeds
www.nrfirescience.org/resource/14945
Weed infestations cause an economic loss of $13 billion per year even though $9.5 billion per year is spent on weed control measures. In addition to these economic costs, weeds are replacing native species, altering native plant and animal communities, affecting ecosystem health and function, threatening biodiversity and Threatened...
Author(s): Steve Sutherland
Year Published: 2004
Type: Document
Research Brief or Fact Sheet

Leymus ambiguus (Colorado wildrye)
www.nrfirescience.org/resource/10600
This FEIS species review synthesizes information on the relationship of Leymus ambiguus (Colorado wildrye) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Michelle B. Anderson
Year Published: 2004
Type: Document
Synthesis

Western white pine growth relative to forest openings
www.nrfirescience.org/resource/7946
In northern Rocky Mountains moist forests, timber harvesting, fire exclusion, and an introduced stem disease have contributed to the decline in western white pine (Pinus monticola Dougl. ex D. Don) abundance (from 90% to 10% of the area). Relations between canopy openings (0.1-15 ha) and western white pine growth within different...
Author(s): Theresa B. Jain, Russell T. Graham, Penelope Morgan
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Rhus trilobata (skunkbush sumac)
www.nrfirescience.org/resource/10596
This FEIS species review synthesizes information on the relationship of Rhus trilobata (skunkbush sumac) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Michelle B. Anderson
Year Published: 2004
Type: Document
Synthesis

Landscape patterns of sapling density, leaf area, and aboveground net primary production in postfire lodgepole pine forests, Yellowstone National Park
www.nrfirescience.org/resource/13536
Causes and implications of spatial variability in postfire tree density and understory plant cover for patterns of aboveground net primary production (ANPP) and leaf area index (LAI) were examined in ninety 11-year-old lodgepole pine (Pinus contorta var. latifolia Engelm.) stands across the landscape of Yellowstone National Park (...
Author(s): Monica G. Turner, Daniel B. Tinker, William H. Romme, Daniel M. Kashian, Creighton M. Litton
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Field validation of Burned Area Reflectance Classification (BARC) products for post fire assessment
www.nrfirescience.org/resource/10972

The USFS Remote Sensing Applications Center (RSAC) and the USGS EROS Data Center (EDC) produce Burned Area Reflectance Classification (BARC) maps for use by Burned Area Emergency Rehabilitation (BAER) teams in rapid response to wildfires. BAER teams desire maps indicative of soil burn severity, but photosynthetic and...
Author(s): Andrew T. Hudak, Peter R. Robichaud, Jeffrey B. Evans, Jess T. Clark, Keith Lannom, Penelope Morgan, Carter Stone
Year Published: 2004
Type: Document
Conference Proceedings

Temperature-dependent rate models of vascular cambium cell mortality
www.nrfirescience.org/resource/7922
We use two rate-process models to describe cell mortality at elevated temperatures as a means of understanding vascular cambium cell death during surface fires. In the models, cell death is caused by irreversible damage to cellular molecules that occurs at rates that increase exponentially with temperature. The models differ in...
Author(s): Matthew B. Dickinson, Edward A. Johnson
Year Published: 2004
Type: Document
Book or Chapter or Journal Article

Hayman Fire case study: summary
www.nrfirescience.org/resource/16315
This publication summarizes the findings in the 400-page companion document, Hayman Fire Case Study, Gen. Tech. Rep. RMRS-GTR-114. This summary document's purpose is to convey information quickly and succinctly to a wide array of audiences. In 2002 much of the Front Range of the Rocky Mountains in Colorado was rich in dry vegetation...
Author(s): Russell T. Graham
Year Published: 2003
Type: Document
Technical Report or White Paper

Postfire erosional processes in the Pacific Northwest and Rocky Mountain regions
www.nrfirescience.org/resource/8387
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
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

Artemisia frigida (fringed sagebrush)
www.nrfirescience.org/resource/10788
This FEIS species review synthesizes information on the relationship of Artemisia frigida (fringed sagebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Jack McWilliams
Year Published: 2003
Type: Document
Synthesis

Fire and amphibians in North America
www.nrfirescience.org/resource/16476
Information on amphibian responses to fire and fuel reduction practices is critically needed due to potential declines of species and the prevalence of new, more intensive fire management practices in North American forests. The goals of this review are to summarize the known and potential effects of fire and fuels management on...
Author(s): David S. Pilliod, R. Bruce Bury, Erin J. Hyde, Christopher A. Pearl, Paul S. Corn
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

Effects of thinning and prescribed burning on birds and small mammals
www.nrfirescience.org/resource/11504
Land management agencies are restoring ponderosa pine forests and reducing fuel loads by thinning followed by prescribed burning. However, little is known about how this combination of treatments will affect local wildlife. In this study, I focus on the following short-term wildlife responses: 1) differences in avian and small-...
Author(s): Jennifer Woolf
Year Published: 2003
Type: Document
Dissertation or Thesis

Stem mortality in surface fires. Part II: experimental methods for characterizing the thermal response of tree stems to heating by fires
www.nrfirescience.org/resource/10979
Current methods for predicting fire-induced plant mortality in shrubs and trees are largely empirical. These methods do not exhibit a wide range of applicability and are not readily linked to duff burning, soil heating, and surface fire behavior models. A detailed model predicting the temperature distribution through a tree stem as...
Author(s): Daniel M. Jimenez, Bret W. Butler, James J. Reardon
Year Published: 2003
Type: Document
Conference Proceedings

The normalized burn ratio (NBR): A Landsat TM radiometric measure of burn severity
www.nrfirescience.org/resource/11185

We used the Composite Burn Indices sampled in the field to test performance of radiometric measures as estimators of burn severity. Two 1994 fires occurring at Glacier National Park, Montana, were investigated. Indices incorporated band ratios and multi-temporal differencing derived from the Landsat Thematic Mapper, including: 1)...
Author(s): Carl H. Key, Nathan C. Benson
Year Published: 2003
Type: Document
Technical Report or White Paper

Linaria dalmatica, Linaria vulgaris (Dalmatian toadflax, yellow toadflax)
www.nrfirescience.org/resource/10489
This FEIS species review synthesizes information on the relationship of Linaria dalmatica, Linaria vulgaris (Dalmatian toadflax, yellow toadflax) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is...
Author(s): Kristin L. Zouhar
Year Published: 2003
Type: Document
Synthesis

Effects of prescribed fire and season of burn on recruitment of the invasive exotic plant, Potentilla recta, in a semiarid grassland
www.nrfirescience.org/resource/7944
Prescribed fire is often used to restore grassland systems to presettlement conditions; however, fire also has the potential to facilitate the invasion of exotic plants. Managers of wildlands and nature reserves must decide whether and how to apply prescribed burning to the best advantage in the face of this dilemma. Herbicide is...
Author(s): Peter Lesica, B. Martin
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

Pinus contorta var. latifolia (Rocky Mountain lodgepole pine)
www.nrfirescience.org/resource/10597
This FEIS species review synthesizes information on the relationship of Pinus contorta var. latifolia (Rocky Mountain lodgepole pine) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Michelle B. Anderson
Year Published: 2003
Type: Document
Synthesis

Artemisia filifolia (sand sagebrush)
www.nrfirescience.org/resource/10787
This FEIS species review synthesizes information on the relationship of Artemisia filifolia (sand sagebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Jack McWilliams
Year Published: 2003

Type: Document
Synthesis

Schoenocrambe linifolia (flaxleaf plainsmustard)
www.nrfirescience.org/resource/10712
This FEIS species review synthesizes information on the relationship of Schoenocrambe linifolia (flaxleaf plainsmustard) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution,...
Author(s): Janet L. Howard
Year Published: 2003
Type: Document
Synthesis

Wildfire and weeds in the Northern Rockies
www.nrfirescience.org/resource/8414
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. These fires increased light and nutrient levels, reduced plant competition, and increased exposure of bare soil. These conditions favor the invasion and expansion of...
Author(s): Elaine Kennedy Sutherland
Year Published: 2003
Type: Document
Conference Proceedings

Mapping the cheatgrass-caused departure from historical natural fire regimes in the Great Basin, USA
www.nrfirescience.org/resource/11490
Cheatgrass (Bromus tectorum) is an exotic grass that has increased fire hazard on millions of square kilometers of semi-arid rangelands in the western United States. Cheatgrass aggressively out competes native vegetation after fire and significantly enhances fire size and frequency. To evaluate the effect of cheatgrass on historical...
Author(s): James P. Menakis, Dianne Osborne, Melanie Miller
Year Published: 2003
Type: Document
Conference Proceedings

Descurainia pinnata (pinnate tansymustard)
www.nrfirescience.org/resource/10723
This FEIS species review synthesizes information on the relationship of Descurainia pinnata (pinnate tansymustard) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janet L. Howard
Year Published: 2003
Type: Document
Synthesis

Impacts of fire on hydrology and erosion in steep mountain big sagebrush communities
www.nrfirescience.org/resource/11407

Wildfire is an important ecological process and management issue on western rangelands. Major unknowns associated with wildfire are its affects on vegetation and soil conditions that influence hydrologic processes including infiltration, surface runoff, erosion, sediment transport, and flooding. Post wildfire hydrologic response was...
Author(s): Frederick B. Pierson, Peter R. Robichaud, Kenneth E. Spaeth, Corey A. Moffet
Year Published: 2003
Type: Document
Conference Proceedings

Establishment and growth of conifer regeneration following harvest and residue treatments in a western larch-Douglas-fir forest
www.nrfirescience.org/resource/13144
Forest managers often choose prescriptions that promote natural regeneration of various species that differ in relative shade tolerance. Assessing the response of forest vegetation to alternative treatments in the Inland Northwest is challenging, given that the process takes decades to unfold. In this study, conifer regeneration was...
Author(s): Sarah Jane Pierce
Year Published: 2003
Type: Document
Dissertation or Thesis

Effects of fire on fish populations: landscape perspectives on persistence of native fishes and non-native fish invasions
www.nrfirescience.org/resource/18537
Our limited understanding of the short and long-term effects of fire on fish contributes to considerable uncertainty in assessments of the risks and benefits of fire management alternatives. A primary concern among the many potential effects of fire is the effects of fire and fire management on persistence of native fish populations...
Author(s): Jason B. Dunham, Michael K. Young, Robert E. Gresswell, Bruce E. Rieman
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

Time, space, and episodicity of physical disturbance in streams
www.nrfirescience.org/resource/15759
Storm-driven episodes of gully erosion and landsliding produce large influxes of sediment to stream channels that have both immediate, often detrimental, impacts on aquatic communities and long-term consequences that are essential in the creation and maintenance of certain channel and riparian landforms. Together, these effects form...
Author(s): Daniel Miller, Charles H. Luce, Lee E. Benda
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

The influence of fire interval and serotiny on postfire lodgepole pine density in Yellowstone National Park
www.nrfirescience.org/resource/8259
The time interval between stand-replacing fires can influence patterns of initial postfire succession if the abundance of postfire propagules varies with prefire stand age. We examined the effect of fire interval on initial postfire lodgepole pine (Pinus contorta var. latifolia Engelm.) density in Yellowstone National Park (YNP)...

Author(s): Tania L. Schoennagel, Monica G. Turner, William H. Romme
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

Effects of post-wildfire erosion on channel environments, Boise River, Idaho
www.nrfirescience.org/resource/18491
What is the geological or ecological context that earth scientists, biologists, and resource managers use to understand large-scale watershed disturbances, such as fires, mass wasting, and floods? We address this question using a field study of post-fire channel changes in the Boise River basin in central Idaho based on surveys of...
Author(s): Lee E. Benda, Daniel Miller, Paul Bigelow, Kevin Andras
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

Performance of fuel treatments subjected to wildfires
www.nrfirescience.org/resource/11038
Fire severity was evaluated in eight recent wildfires with standardized methods in adjacent treated and untreated stands. Sampled sites occurred in a variety of conifer forests throughout the Western United States. Treatments included reduction of surface fuels and crown fuels, both in isolation and in combination. Synthesis of our...
Author(s): Erik J. Martinson, Philip N. Omi
Year Published: 2003
Type: Document
Conference Proceedings

Bouteloua gracilis (blue grama)
www.nrfirescience.org/resource/10604
This FEIS species review synthesizes information on the relationship of Bouteloua gracilis (blue grama) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Michelle B. Anderson
Year Published: 2003
Type: Document
Synthesis

Pinus ponderosa var. scopulorum (interior ponderosa pine)
www.nrfirescience.org/resource/10718
This FEIS species review synthesizes information on the relationship of Pinus ponderosa var. scopulorum (interior ponderosa pine) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Janet L. Howard
Year Published: 2003
Type: Document
Synthesis

Performance of high temperature heat flux plates and soil moisture probes during controlled

surface fires
www.nrfirescience.org/resource/10987
Natural and prescribed fires play an important role in managing and maintaining most ecosystems in the western United States. The high soil temperatures associated with fire influence forests and their ability to regenerate after a fire by altering soil properties and soil chemistry and by killing microbes, plant roots, and seeds....
Author(s): William J. Massman, John M. Frank, S. M. Massman, Wayne D. Shepperd
Year Published: 2003
Type: Document
Conference Proceedings

Wildfire effects on stream food webs and nutrient dynamics in Glacier National Park, USA
www.nrfirescience.org/resource/8150
We documented immediate and mid-term (5 y) impacts on streams from a large (15,500 ha) wildfire in northwestern Montana. Fire-related impacts were ecosystem-wide, extending from water chemistry to fish. During the initial firestorm, phosphorus and nitrogen levels increased 5- to 60-fold above background levels resulting from aerial...
Author(s): Craig N. Spencer, Kristin O. Gabel, F. Richard Hauer
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

The role of wildland fire and subsequent insect attack on ponderosa pine mortality
www.nrfirescience.org/resource/10990
Survival of ponderosa pine following wildfire events depends on a number of factors, including the level of injury to the tree from the fire and the environmental conditions following the fire. The unprecedented fire year of 2000 provided an opportunity to quantify cumulative impacts of wildland fires and subsequent insect attack on...
Author(s): Joel D. McMillin, Linda L. Wadleigh, Carolyn Hull Sieg, Jose F. Negron, Ken E. Gibson, Kurt K. Allen, John A. Anhold
Year Published: 2003
Type: Document
Conference Proceedings

Sisymbrium altissimum (tumble mustard)
www.nrfirescience.org/resource/10458
This FEIS species review synthesizes information on the relationship of Sisymbrium altissimum (tumble mustard) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Janet L. Howard
Year Published: 2003
Type: Document
Synthesis

Responses of stream benthic macroinvertebrates to fire
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

Potentilla recta (sulfur cinquefoil)
www.nrfirescience.org/resource/10497
This FEIS species review synthesizes information on the relationship of Potentilla recta (sulfur cinquefoil) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Kristin L. Zouhar
Year Published: 2003
Type: Document
Synthesis

Tamarix chinensis, Tamarix gallica, Tamarix parviflora, Tamarix ramosissima (tamarisk, French tamarisk, small-flowered tamarisk, saltcedar)
www.nrfirescience.org/resource/10485
This FEIS species review synthesizes information on the relationship of Tamarix chinensis, Tamarix gallica, Tamarix parviflora, Tamarix ramosissima (tamarisk, French tamarisk, small-flowered tamarisk, saltcedar) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and...
Author(s): Kristin L. Zouhar
Year Published: 2003
Type: Document
Synthesis

Acer platanoides (Norway maple)
www.nrfirescience.org/resource/10466
This FEIS species review synthesizes information on the relationship of Acer platanoides (Norway maple) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Gregory T. Munger
Year Published: 2003
Type: Document
Synthesis

Climatic controls on fire-induced sediment pulses in Yellowstone National Park and central Idaho: a long-term perspective
www.nrfirescience.org/resource/7962
Fire management addressing postfire erosion and aquatic ecosystems tends to focus on short-term effects persisting up to about a decade after fire. A longer perspective is important in understanding natural variability in postfire erosion and sedimentation, the role of these processes in structuring habitat, and future expectations...
Author(s): Grant A. Meyer, Jennifer L. Pierce
Year Published: 2003
Type: Document
Book or Chapter or Journal Article, Synthesis

Picrothamnus desertorum (budsage)
www.nrfirescience.org/resource/10791
This FEIS species review synthesizes information on the relationship of Picrothamnus desertorum (budsage) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Jack McWilliams
Year Published: 2003
Type: Document
Synthesis

Prescribed fire effects on dalmation toadflax
www.nrfirescience.org/resource/8281
Prescribed fires are important for rangeland restoration and affect plant community composition and species interactions. Many rangeland plant communities have been, or are under the threat of noxious weed invasion, however there is little information on how fire effects weeds. Our objective was to determine the effects of...
Author(s): James S. Jacobs, Roger L. Sheley
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

Descurainia sophia (flixweed tansymustard)
www.nrfirescience.org/resource/10463
This FEIS species review synthesizes information on the relationship of Descurainia sophia (flixweed tansymustard) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Janet L. Howard
Year Published: 2003
Type: Document
Synthesis

Status of native fishes in the western United States and issues for fire and fuels management
www.nrfirescience.org/resource/8131
Conservation of native fishes and changing patterns in wildfire and fuels are defining challenges for managers of forested landscapes in the western United States. Many species and populations of native fishes have declined in recorded history and some now occur as isolated remnants of what once were larger more complex systems....
Author(s): Bruce E. Rieman, Danny C. Lee, Denver P. Burns, Robert E. Gresswell, Michael K. Young, Rick Stowell, John N. Rinne, Phil Howell
Year Published: 2003
Type: Document
Book or Chapter or Journal Article, Synthesis

Artemisia rigida (stiff sagebrush)
www.nrfirescience.org/resource/10785
This FEIS species review synthesizes information on the relationship of Artemisia rigida (stiff sagebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,

distribution, basic biology,...
Author(s): Jack McWilliams
Year Published: 2003
Type: Document
Synthesis

Postfire aspen seedling recruitment across the Yellowstone (USA) landscape
www.nrfirescience.org/resource/13542
Landscape patterns of quaking aspen (Populus tremuloides) seedling occurrence and abundance were studied after a rare recruitment event following the 1988 fires in Yellowstone National Park, Wyoming, USA. Belt transects (1 to 17 km in length, 4 m width) along 18 foot trails were surveyed for aspen seedlings on the...
Author(s): Monica G. Turner, William H. Romme, Gerald A. Tuskan, Rebecca A. Reed
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

Bromus tectorum (cheatgrass)
www.nrfirescience.org/resource/10495
This FEIS species review synthesizes information on the relationship of Bromus tectorum (cheatgrass) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Kristin L. Zouhar
Year Published: 2003
Type: Document
Synthesis

Atriplex canescens (fourwing saltbush)
www.nrfirescience.org/resource/10727
This FEIS species review synthesizes information on the relationship of Atriplex canescens (fourwing saltbush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Janet L. Howard
Year Published: 2003
Type: Document
Synthesis

Fire and aquatic ecosystems of the western USA: current knowledge and key questions
www.nrfirescience.org/resource/7912
Understanding of the effects of wildland fire and fire management on aquatic and riparian ecosystems is an evolving field, with many questions still to be resolved. Limitations of current knowledge, and the certainty that fire management will continue, underscore the need to summarize available information. Integrating fire and...
Author(s): Peter A. Bisson, Bruce E. Rieman, Charles H. Luce, Paul F. Hessburg, Danny C. Lee, Jeffrey L. Kershner, Gordon H. Reeves, Robert E. Gresswell
Year Published: 2003
Type: Document
Book or Chapter or Journal Article, Synthesis

Fire and riparian ecosystems in landscapes of the western USA
www.nrfirescience.org/resource/8158
Despite the numerous values of riparian areas and the recognition of fire as a critical natural disturbance, few studies have investigated the behavior, properties, and influence of natural fire in riparian areas of the western USA. Riparian areas frequently differ from adjacent uplands in vegetative composition and structure,...
Author(s): Kathleen A. Dwire, J. Boone Kauffman
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

Surprises and lessons from the 1988 Yellowstone fires
www.nrfirescience.org/resource/13534
The size and severity of the fires in Yellowstone National Park in 1988 surprised ecologists and managers alike. Much has been learned about the causes and consequences of crown fires from studies of the Yellowstone fires, and some results were surprising. Plant cover in burned areas was restored rapidly by native species, making...
Author(s): Monica G. Turner, William H. Romme, Daniel B. Tinker
Year Published: 2003
Type: Document
Book or Chapter or Journal Article

Effect of thinning and prescribed burning on crown fire severity in ponderosa pine forests
www.nrfirescience.org/resource/8121
Fire exclusion policies have affected stand structure and wildfire hazard in north American ponderosa pine forests. Wildfires are becoming more severe in stands where trees are densely stocked with shade-tolerant understory trees. Although forest managers have been employing fuel treatment techniques to reduce wildfire hazard for...
Author(s): Jolie Pollet, Philip N. Omi
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
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

Fire as a coarse filter for snags and logs
www.nrfirescience.org/resource/11075
Fire played an important role in maintaining and creating conditions suitable for native flora and fauna in the forests of western North America. Recent coarse filter conservation strategies have advocated creating future landscapes that incorporate historic or natural ranges of variability, including fire regimes. Historic fire...
Author(s): James K. Agee

Year Published: 2002
Type: Document
Conference Proceedings, Technical Report or White Paper

Scale of severe channel disturbances relative to the structure of fish populations
www.nrfirescience.org/resource/11404
Stream temperature and channel disturbance are two potentially important controls on the distribution and persistence of fish populations. Temperature regulates primary physiological processes that constrain the demographic response of populations to their environments. Ultimately temperature may be a first order determinant of the...
Author(s): Charles H. Luce, Bruce E. Rieman, John G. King, Jason B. Dunham
Year Published: 2002
Type: Document
Conference Proceedings

Using a MODIS direct broadcast system to monitor fires and smoke, and forecast air quality
www.nrfirescience.org/resource/10960
The MODIS instrument on the NASA Terra satellite has been conducting routine global measurements of active fires and aerosol optical depths since late 2000. Currently, it takes more than 4 days to acquire MODIS data from the NASA DAAC Center, making it difficult to use the results to understand air quality and the extent of fire and...
Author(s): Wei Min Hao, Yoram J. Kaufman, Jacques Descloitres, Christopher O. Justice, Robert Sohlberg, Thomas Bobbe
Year Published: 2002
Type: Document
Conference Proceedings

Artemisia cana, Artemisia cana subsp. Bolanderi, Artemisia cana subsp. cana, Artemisia cana subsp. viscidula (silver sagebrush, Bolander silver sagebrush, plains silver sagebrush, mountain silver sagebrush)
www.nrfirescience.org/resource/10729
This FEIS species review synthesizes information on the relationship of Artemisia cana, Artemisia cana subsp. Bolanderi, Artemisia cana subsp. cana, Artemisia cana subsp. viscidula (silver sagebrush, Bolander silver sagebrush, plains silver sagebrush, mountain silver sagebrush) to fire--how fire affects the species and its habitat,...
Author(s): Janet L. Howard
Year Published: 2002
Type: Document
Synthesis

Elymus lanceolatus (thickspike wheatgrass)
www.nrfirescience.org/resource/10825
This FEIS species review synthesizes information on the relationship of Elymus lanceolatus (thickspike wheatgrass) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janette S. Scher
Year Published: 2002
Type: Document
Synthesis

Carduus nutans (musk thistle)
www.nrfirescience.org/resource/10494
This FEIS species review synthesizes information on the relationship of Carduus nutans (musk thistle) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Kristin L. Zouhar
Year Published: 2002
Type: Document
Synthesis

Leymus cinereus (basin wildrye)
www.nrfirescience.org/resource/10601
This FEIS species review synthesizes information on the relationship of Leymus cinereus (basin wildrye) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Michelle B. Anderson
Year Published: 2002
Type: Document
Synthesis

Larix occidentalis (western larch)
www.nrfirescience.org/resource/10826
This FEIS species review synthesizes information on the relationship of Larix occidentalis (western larch) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Janette S. Scher
Year Published: 2002
Type: Document
Synthesis

Disturbance in riparian zones on foothills and mountain landscapes of Alberta
www.nrfirescience.org/resource/18474
This third report in the FMF Natural Disturbance Program research series looks at fire patterns within riparian zones at four different scales using three different sets of data and methods. The report is essentially an integrated synthesis of all or parts of four separate research projects under the auspices of the FMF Natural...
Author(s): David W. Andison, K. McCleary
Year Published: 2002
Type: Document
Technical Report or White Paper

Carex geyeri (elk sedge)
www.nrfirescience.org/resource/10615
This FEIS species review synthesizes information on the relationship of Carex geyeri (elk sedge) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...

Author(s): Amy C. Chadwick
Year Published: 2002
Type: Document
Synthesis

Cirsium vulgare (bull thistle)
www.nrfirescience.org/resource/10492
This FEIS species review synthesizes information on the relationship of Cirsium vulgare (bull thistle) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Kristin L. Zouhar
Year Published: 2002
Type: Document
Synthesis

Frogs flee from the sound of fire
www.nrfirescience.org/resource/18555
Fire has an important role in the sensory ecology of many animals. Using acoustic cues to detect approaching fires may give slow-moving animals a head start when fleeing from fires. We report that aestivating juvenile reed frogs (Hyperolius nitidulus) respond to playbacks of the sound of fire by fleeing in the direction of...
Author(s): T. Ulmar Grafe, Stefanie Dobler, K. Eduard Linsenmair
Year Published: 2002
Type: Document
Book or Chapter or Journal Article

Schizachyrium scoparium (little bluestem)
www.nrfirescience.org/resource/10852
This FEIS species review synthesizes information on the relationship of Schizachyrium scoparium (little bluestem) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Peter D. Steinberg
Year Published: 2002
Type: Document
Synthesis

Cynoglossum officinale (houndstongue)
www.nrfirescience.org/resource/10500
This FEIS species review synthesizes information on the relationship of Cynoglossum officinale (houndstongue) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Kristin L. Zouhar
Year Published: 2002
Type: Document
Synthesis

Selection of fire-created snags at two spatial scales by cavity-nesting birds

www.nrfirescience.org/resource/11198
We examined the use of snag stands by seven species of cavity-nesting birds from 1994-1998. Selection of snags was studied in logged and unlogged burned forests at two spatial scales: microhabitat (local vegetation characteristics) and landscape (composition and patterning of surrounding vegetation types). We modeled nest occurrence...
Author(s): Victoria A. Saab, Ree Brannon, Jonathan G. Dudley, Larry Donohoo, Dave Vanderzanden, Vicky Johnson, Henry Lachowski
Year Published: 2002
Type: Document
Technical Report or White Paper

Conservation of greater sage-grouse on public lands in the Western U.S.: implications of recovery and management policies
www.nrfirescience.org/resource/11076
The role of the Policy Analysis Center for Western Public Lands is to provide integrated social, economic and ecological analyses of public land policies that affect communities in the West. Its mission is to help rural communities, policy makers, resource managers, resource users and others understand, analyze and engage...
Author(s): Carl L. Wambolt, Aaron J. Harp, Bruce L. Welch, Nancy L. Shaw, John W. Connelly, Kerry P. Reese, Clait E. Braun, Donald A. Klebenow, E. Durant McArthur, James G. Thompson, L. Allen Torell, John A. Tanaka
Year Published: 2002
Type: Document
Management or Planning Document

Tetradymia glabrata (littleleaf horsebrush)
www.nrfirescience.org/resource/10735
This FEIS species review synthesizes information on the relationship of Tetradymia glabrata (littleleaf horsebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janet L. Howard
Year Published: 2002
Type: Document
Synthesis

Pinus albicaulis (whitebark pine)
www.nrfirescience.org/resource/10651
This FEIS species review synthesizes information on the relationship of Pinus albicaulis (whitebark pine) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Janet L. Fryer
Year Published: 2002
Type: Document
Synthesis

Pseudotsuga menziesii var. glauca (Rocky Mountain Douglas-fir)
www.nrfirescience.org/resource/10853
This FEIS species review synthesizes information on the relationship of Pseudotsuga menziesii var. glauca (Rocky Mountain Douglas-fir) to fire--how fire affects the species and its habitat, effects of the

species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Peter D. Steinberg
Year Published: 2002
Type: Document
Synthesis

Microbial activity and nitrogen mineralization in forest mineral soils following heating: evaluation of post-fire effects
www.nrfirescience.org/resource/8292
Heat generated during fire induces chemical oxidation of soil organic matter thereby altering carbon (C) and nitrogen (N) transformations. Prior soil fire history and soil moisture content at the time of heating can be confounding factors in the interpretation of the influence of heat on soil processes. In this study we evaluated...
Author(s): Urszula Choromanska, Thomas H. DeLuca
Year Published: 2002
Type: Document
Book or Chapter or Journal Article

Wildfire and erosion: when to expect the unexpected
www.nrfirescience.org/resource/10999
Wildfire is a major ecological process and management issue in the western U.S. The 2000, 2001 and 2002 fire seasons were some of the biggest in history with over 2 million ha burned annually. What happens when the rains come? Most wildfires create a patchwork of low, moderate, and high severity burn areas, often causing spatially...
Author(s): Peter R. Robichaud
Year Published: 2002
Type: Document
Conference Proceedings

Lythrum salicaria (purple loosestrife)
www.nrfirescience.org/resource/10467
This FEIS species review synthesizes information on the relationship of Lythrum salicaria (purple loosestrife) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Gregory T. Munger
Year Published: 2002
Type: Document
Synthesis

Linkages between streams and riparian vegetation at increasing in time-since-fire in western Montana watersheds
www.nrfirescience.org/resource/11042
Succession in upland vegetation following fire is well studied, yet the concurrent changes in riparian zones and streams have received little attention. Our objective was to examine variation in riparian and stream characteristics in three headwaters basins of the Bitterroot River in western Montana in summer 2001. These watersheds...
Author(s): Elaine Kennedy Sutherland, Michael K. Young, Ethan Mace, Robert S. Ahl
Year Published: 2002
Type: Document

Conference Proceedings

Wildland fire in ecosystems: effects of fire on air
www.nrfirescience.org/resource/12587
This state-of-knowledge review about the effects of fire on air quality can assist land, fire, and air resource managers with fire and smoke planning, and their efforts to explain to others the science behind fire-related program policies and practices to improve air quality. Chapter topics include air quality regulations and fire;...
Author(s): David V. Sandberg, Roger D. Ottmar, Janice L. Peterson, John Core
Year Published: 2002
Type: Document
Technical Report or White Paper

Balsamorhiza sagittata (arrowleaf balsamroot)
www.nrfirescience.org/resource/10789
This FEIS species review synthesizes information on the relationship of Balsamorhiza sagittata (arrowleaf balsamroot) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Jack McWilliams
Year Published: 2002
Type: Document
Synthesis

Bird counts of burned versus unburned big sagebrush sites
www.nrfirescience.org/resource/11090
Burned-over big sagebrush sites dominated by perennial grasses supported fewer species of birds and fewer total number of birds than sites of unburned big sagebrush sites.
Author(s): Bruce L. Welch
Year Published: 2002
Type: Document
Research Brief or Fact Sheet

Juniperus scopulorum (Rocky Mountain juniper)
www.nrfirescience.org/resource/10827
This FEIS species review synthesizes information on the relationship of Juniperus scopulorum (Rocky Mountain juniper) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janette S. Scher
Year Published: 2002
Type: Document
Synthesis

Perspectives on persistence of native fishes and nonnative fish invasions in fire-prone landscapes - Slide presentation
www.nrfirescience.org/resource/11517
Powerpoint presentation about direct and indirect effects of fire on fish populations. Presented at the Fire and Aquatic Ecosystems Workshop, April 22-24, 2002 in Boise, Idaho.
Author(s): Jason B. Dunham, Michael K. Young, Robert E. Gresswell, Bruce E. Rieman

Year Published: 2002
Type: Document
Conference Proceedings

Pinus edulis (Colorado pinyon)
www.nrfirescience.org/resource/10598
This FEIS species review synthesizes information on the relationship of Pinus edulis (Colorado pinyon) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Michelle B. Anderson
Year Published: 2002
Type: Document
Synthesis

The role of fire in riparian zones of the northern Rocky Mountains
www.nrfirescience.org/resource/11137
While the importance of riparian systems in the northern Rocky Mountains as sources of productivity and diversity is recognized, there is little information about the interaction between pattern and process. To sustain these areas, we need to understand the characteristics of disturbance processes and how they result in patterns in...
Author(s): Elaine Kennedy Sutherland, Kevin S. McKelvey
Year Published: 2002
Type: Document
Conference Proceedings, Technical Report or White Paper

Postfire logging: is it beneficial to a forest?
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

Tetradymia spinosa (spiny horsebrush)
www.nrfirescience.org/resource/10733
This FEIS species review synthesizes information on the relationship of Tetradymia spinosa (spiny horsebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Janet L. Howard
Year Published: 2002
Type: Document
Synthesis

Artemisia arbuscula (low sagebrush)
www.nrfirescience.org/resource/10854

This FEIS species review synthesizes information on the relationship of Artemisia arbuscula (low sagebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Peter D. Steinberg
Year Published: 2002
Type: Document
Synthesis

Impacts of wildfire on soil hydrological properties of steep sagebrush-steppe rangeland
www.nrfirescience.org/resource/11441
In late August 1996, a wildfire swept across the sagebrush-dominated foothills above Boise, Idaho. Fire impacts on infiltration and inter-rill erosion were examined 1 year following the fire with simulated rainfall. Densely vegetated north-facing slopes were compared with sparsely vegetated south-facing slopes under both burned (...
Author(s): Frederick B. Pierson, D. H. Carlson, Kenneth E. Spaeth
Year Published: 2002
Type: Document
Book or Chapter or Journal Article

Centaurea solstitialis (yellow starthistle)
www.nrfirescience.org/resource/10484
This FEIS species review synthesizes information on the relationship of Centaurea solstitialis (yellow starthistle) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Kristin L. Zouhar
Year Published: 2002
Type: Document
Synthesis

Tetradymia nuttallii (Nuttall's horsebrush)
www.nrfirescience.org/resource/10734
This FEIS species review synthesizes information on the relationship of Tetradymia nuttallii (Nuttall's horsebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Janet L. Howard
Year Published: 2002
Type: Document
Synthesis

Reproductive success of Lewis's woodpecker in burned pine and cottonwood riparian forests
www.nrfirescience.org/resource/11418
Lewis's Woodpecker (Melanerpes lewis) has been characterized as a "burn specialist" because of its preference for nesting within burned pine forests. No prior study, however, has demonstrated the relative importance of crown-burned forests to this woodpecker species by examining its reproductive success in different forest types. We...
Author(s): Victoria A. Saab, Kerri T. Vierling
Year Published: 2001
Type: Document

Book or Chapter or Journal Article

Ceanothus velutinus (snowbrush ceanothus)
www.nrfirescience.org/resource/10593
This FEIS species review synthesizes information on the relationship of Ceanothus velutinus (snowbrush ceanothus) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Michelle B. Anderson
Year Published: 2001
Type: Document
Synthesis

Ephedra viridis (green ephedra)
www.nrfirescience.org/resource/10603
This FEIS species review synthesizes information on the relationship of Ephedra viridis (green ephedra) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Michelle B. Anderson
Year Published: 2001
Type: Document
Synthesis

Abies concolor (white fir)
www.nrfirescience.org/resource/10936
This FEIS species review synthesizes information on the relationship of Abies concolor (white fir) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Kristin L. Zouhar
Year Published: 2001
Type: Document
Synthesis

Atriplex confertifolia (shadscale)
www.nrfirescience.org/resource/10832
This FEIS species review synthesizes information on the relationship of Atriplex confertifolia (shadscale) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Kevin A. Simonin
Year Published: 2001
Type: Document
Synthesis

Ghost forests, global warming, and the mountain pine beetle (Coleoptera: Scolytidae)
www.nrfirescience.org/resource/19322
The mountain pine beetle, Dendroctonus ponderosae Hopkins, is a significant ecological force at the landscape level. The majority of the life cycle is spent as larvae feeding in the phloem tissue (inner

bark) of host pine trees. This feeding activity eventually girdles and kills successfully attacked trees (Amman and Cole 1983,...
Author(s): Jesse A. Logan, James A. Powell
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Post-fire runoff and erosion from simulated rainfall on small plots, Colorado Front Range
www.nrfirescience.org/resource/18485
Wildfires in the Colorado Front Range can trigger dramatic increases in runoff and erosion. A better understanding of the causes of these increases is needed to predict the effects of future wildfires, estimate runoff and erosion risks from prescribed fires, and design effective post?fire rehabilitation treatments. The objective...
Author(s): J. Benavides-Solorio, Lee H. MacDonald
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Dasiphora floribunda (shrubby cinquefoil)
www.nrfirescience.org/resource/10608
This FEIS species review synthesizes information on the relationship of Dasiphora floribunda (shrubby cinquefoil) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Michelle B. Anderson
Year Published: 2001
Type: Document
Synthesis

Aspen's ecological role in the West
www.nrfirescience.org/resource/11883
Aspen exhibits a variety of ecological roles. In southern Colorado, the 1880 landscape mosaic contained a range of stand ages, of which half were >70 years old and half were younger. Pure aspen stands in southern Colorado are widespread and may result from previous short fire intervals that eliminated local conifer seed sources....
Author(s): William H. Romme, Lisa Floyd-Hanna, David D. Hanna, Elisabeth Bartlett
Year Published: 2001
Type: Document
Conference Proceedings

Centaurea maculosa (spotted knapweed)
www.nrfirescience.org/resource/10493
This FEIS species review synthesizes information on the relationship of Centaurea maculosa (spotted knapweed) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): Kristin L. Zouhar
Year Published: 2001
Type: Document
Synthesis

Populus angustifolia (narrowleaf cottonwood)
www.nrfirescience.org/resource/10829
This FEIS species review synthesizes information on the relationship of Populus angustifolia (narrowleaf cottonwood) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Kevin A. Simonin
Year Published: 2001
Type: Document
Synthesis

Aspen response to prescribed fire and wild ungulate herbivory
www.nrfirescience.org/resource/12104
Land management agencies in northwest Wyoming have implemented an active prescribed fire program to address historically altered fire regimes, regenerate aspen, and improve overall watershed functions. Treated clones are susceptible to extensive browsing from elk concentrated on supplemental feedgrounds and from wintering moose....
Author(s): Steve Kilpatrick, Diane Abendroth
Year Published: 2001
Type: Document
Conference Proceedings

Acroptilon repens (Russian knapweed)
www.nrfirescience.org/resource/10496
This FEIS species review synthesizes information on the relationship of Acroptilon repens (Russian knapweed) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Kristin L. Zouhar
Year Published: 2001
Type: Document
Synthesis

Effects of disturbance and management of forest health on fish and fish habitat in eastern Oregon and Washington
www.nrfirescience.org/resource/18562
Effects of fire, forest insects and diseases, grazing, and forest health treatments on fish populations and habitat are reviewed. Fire, insects, and disease affect fish habitat by their influence on the rate and volume of woody debris recruitment to streams, canopy cover and water temperature, stream flow, channel erosion,...
Author(s): Phil Howell
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
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

The relative importance of fire and watercourse proximity in determining stand composition in mixed conifer riparian forests
www.nrfirescience.org/resource/18653
Factors related to the composition of riparian forest stands on three streams in the northern Sierra Nevada mixed conifer forest type were related to proximity to the water course and years since fire. Using a linear regression analysis 46 variables were correlated to the natural log of distance from the thalweg “ln(distance)”...
Author(s): William H. Russell, Joe R. McBride
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

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
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

Elymus elymoides (bottlebrush squirreltail)
www.nrfirescience.org/resource/10834
This FEIS species review synthesizes information on the relationship of Elymus elymoides (bottlebrush squirreltail) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Kevin A. Simonin
Year Published: 2001
Type: Document
Synthesis

Taeniatherum caput-medusae (medusahead)
www.nrfirescience.org/resource/10447
This FEIS species review synthesizes information on the relationship of Taeniatherum caput-medusae (medusahead) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species'...
Author(s): Amy Archer
Year Published: 2001
Type: Document
Synthesis

Water quality, substratum and biotic responses of five central Idaho (USA) streams during the first year following the Mortar Creek fire
www.nrfirescience.org/resource/11442
The Mortar Creek Fire burned 26 000 ha of mixed-conifer Rocky Mountain forest in July-August 1979. Changes in burn stream conditions were examined relative to reference streams for various ecological factors on two to six occasions, from October 1979 to August 1980. Factors included major ions and nutrients, suspended and benthic...
Author(s): G. Wayne Minshall, James T. Brock, Douglas A. Andrews, Christopher T. Robinson
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Water quality substratum and biotic responses of five central Idaho (USA) streams during the first year following the Mortar Creek fire
www.nrfirescience.org/resource/18606
The Mortar Creek Fire burned 26 000 ha of mixed-conifer Rocky Mountain forest in July-August 1979. Changes in burn stream conditions were examined relative to reference streams for various ecological factors on two to six occasions, from October 1979 to August 1980. Factors included major ions and nutrients, suspended and benthic...
Author(s): G. Wayne Minshall, James T. Brock, Douglas A. Andrews, Christopher T. Robinson
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Large woody debris in a headwater stream: long-term legacies of forest disturbance
www.nrfirescience.org/resource/18689
We excluded litter (leaves and wood) inputs to an Appalachian headwater stream for 5 years. Leaves disappeared from the streambed very rapidly (<1 year) following litter exclusion, however, a large residual mass of woody debris remained. After excluding inputs of leaf litter and wood to the stream for 3 years we removed all small...
Author(s): J. Bruce Wallace, Jackson R. Webster, Sue L. Eggert, Judy L. Meyer, Edward R. Siler
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Cirsium arvense (Canada thistle)
www.nrfirescience.org/resource/10482
This FEIS species review synthesizes information on the relationship of Cirsium arvense (Canada thistle) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Kristin L. Zouhar
Year Published: 2001
Type: Document
Synthesis

The role of postfire coarse woody debris in aspen regeneration
www.nrfirescience.org/resource/18643
The paucity of aspen (Populus tremuloides) regeneration in the western United States and on

Yellowstone National Park's (YNP) northern range has been of concern to managers and scientists for much of the 20th century, with the effects of ungulate browsing, climate fluctuation, and fire suppression being vigorously debated. We...
Author(s): William J. Ripple, Eric J. Larsen
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Catastrophic wildfire and number of populations as factors influencing risk of extinction for Gila trout (Onchorhnchus gilae)
www.nrfirescience.org/resource/18501
We used the computer program RAMAS to explore the sensitivity of an extinction-risk model for the Gila trout (Oncorhynchus gibe) to management of wildfires and number of populations of the species. The Gila trout is an endangered salmonid presently restricted to very few headwaters of the Gila and San Francisco river tributaries in...
Author(s): D. K. Brown, A. A. Echelle, D. L. Propst, J. E. Brooks, W. L. Fisher
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

The management of insects, diseases, fire, and grazing and implications for terrestrial vertebrates using riparian habitats in eastern Oregon and Washinton
www.nrfirescience.org/resource/18683
Riparian habitats in eastern Oregon and Washington compose a small percentage of the landscape, and yet these habitats are essential for many species of vertebrates. Riparian areas are sensitive to disturbance agents, which can pose a formidable challenge to effective management of these habitats. Moreover, few studies have...
Author(s): Barbara C. Wales
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Populus deltoides, Populus deltoides var. deltoides, Populus deltoides var. mislizeni, Populus deltoides var. monilifera (eastern cottonwood, eastern cottonwood, Rio Grande cottonwood, plains cottonwood)
www.nrfirescience.org/resource/10862
This FEIS species review synthesizes information on the relationship of Populus deltoides, Populus deltoides var. deltoides, Populus deltoides var. mislizeni, Populus deltoides var. monilifera (eastern cottonwood, eastern cottonwood, Rio Grande cottonwood, plains cottonwood) to fire--how fire affects the species and its habitat,...
Author(s): Jane E. Taylor
Year Published: 2001
Type: Document
Synthesis

Salix scouleriana (Scouler willow)
www.nrfirescience.org/resource/10606
This FEIS species review synthesizes information on the relationship of Salix scouleriana (Scouler willow) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...

Author(s): Michelle B. Anderson
Year Published: 2001
Type: Document
Synthesis

Sporobolus airoides (alkali sacaton)
www.nrfirescience.org/resource/10744
This FEIS species review synthesizes information on the relationship of Sporobolus airoides (alkali sacaton) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Kathleen A. Johnson
Year Published: 2001
Type: Document
Synthesis

Comparing erosion risks from forest operations to wildfire
www.nrfirescience.org/resource/8435
Wildfire and forest operations remove vegetation and disturb forest soils. Both of these effects can lead to an increased risk of soil erosion. Operations to reduce forest fuel loads, however, may reduce the risk of wildfire. This paper presents research and modeling results which show that under many conditions, carefully planned...
Author(s): William J. Elliot, Peter R. Robichaud
Year Published: 2001
Type: Document
Conference Proceedings

Vaccinium scoparium (grouse whortleberry)
www.nrfirescience.org/resource/10501
This FEIS species review synthesizes information on the relationship of Vaccinium scoparium (grouse whortleberry) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic...
Author(s): Kathleen A. Johnson
Year Published: 2001
Type: Document
Synthesis

Manipulations to regenerate aspen ecosystems
www.nrfirescience.org/resource/11882
Vegetative regeneration of aspen can be initiated through manipulations that provide hormonal stimulation, proper growth environment, and sucker protection - the three elements of the aspen regeneration triangle. The correct course of action depends upon a careful evaluation of the size, vigor, age, and successional status of the...
Author(s): Wayne D. Shepperd
Year Published: 2001
Type: Document
Conference Proceedings

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

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

Tetradymia canescens (gray horsebrush)
www.nrfirescience.org/resource/10824
This FEIS species review synthesizes information on the relationship of Tetradymia canescens (gray horsebrush) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Janette S. Scher
Year Published: 2001
Type: Document
Synthesis

Bromus madritensis, Bromus rubens (foxtail chess, red brome)
www.nrfirescience.org/resource/10469
This FEIS species review synthesizes information on the relationship of Bromus madritensis, Bromus rubens (foxtail chess, red brome) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on...
Author(s): Kevin A. Simonin
Year Published: 2001
Type: Document
Synthesis

Whitebark pine decline: infection, mortality, and population trends
www.nrfirescience.org/resource/19321
None available
Author(s): Katherine Kendall, Robert E. Keane
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Pinus flexilis (limber pine)
www.nrfirescience.org/resource/10741
This FEIS species review synthesizes information on the relationship of Pinus flexilis (limber pine) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and...
Author(s): Kathleen A. Johnson
Year Published: 2001
Type: Document
Synthesis

Delayed seed germination in whitebark pine and regeneration patterns following the Yellowstone fires
www.nrfirescience.org/resource/8185
Whitebark pine (Pinus albicaulis) seeds are dispersed by Clark's Nutcracker (Nucifraga columbiana), a bird that makes caches under 2-3 cm of soil. Cached seeds may delay germination for one or more years in part because of underdeveloped embryos at the time of seed dispersal. Consequently, whitebark pine may show a soil seed bank...
Author(s): Diana F. Tomback, Angela J. Anderies, Katherine S. Carsey, Mary L. Powell, Sabine Mellmann-Brown
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Benthic macroinvertebrate assemblages in five central Idaho (USA) streams over a 10-year period following disturbance by wildfire
www.nrfirescience.org/resource/11443
The effects of wildfire on benthic macroinvertebrate assemblages of streams in mixed-conifer forest were examined for 10 successive years following the Mortar Creek Fire of 1979. Changes in burned-catchment streams were evaluated relative to a paired set of reference-catchment streams. Taxa richness and total abundance tended to be...
Author(s): G. Wayne Minshall, Christopher T. Robinson, Deron E. Lawrence, Douglas A. Andrews, James T. Brock
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Acer glabrum (Rocky Mountain maple)
www.nrfirescience.org/resource/10609
This FEIS species review synthesizes information on the relationship of Acer glabrum (Rocky Mountain maple) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Michelle B. Anderson
Year Published: 2001
Type: Document
Synthesis

Post-fire, rainfall intensity-peak discharge relations for three mountainous watersheds in the western USA
www.nrfirescience.org/resource/18613
Wildfire alters the hydrologic response of watersheds, including the peak discharges resulting from subsequent rainfall, Improving predictions of the magnitude of flooding that follows wildfire is needed because of the increase in human population at risk in the wildland-urban interface. Because this wildland-urban interface is...
Author(s): John A. Moody, Deborah A. Martin
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
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

Pinus monophylla (singleleaf pinyon)
www.nrfirescience.org/resource/10935
This FEIS species review synthesizes information on the relationship of Pinus monophylla (singleleaf pinyon) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology,...
Author(s): Kristin L. Zouhar
Year Published: 2001
Type: Document
Synthesis

Centaurea diffusa (diffuse knapweed)
www.nrfirescience.org/resource/10481
This FEIS species review synthesizes information on the relationship of Centaurea diffusa (diffuse knapweed) to fire--how fire affects the species and its habitat, invasiveness of the species, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Kristin L. Zouhar
Year Published: 2001
Type: Document
Synthesis

Infiltration rates after wildfires in the Bitterroot Valley
www.nrfirescience.org/resource/8425
Recent fires have renewed interest in fire's effect on different components of the ecosystem, in particular fire's effects on infiltration and runoff. Forests subjected to high severity burns often develop water repellent soil conditions. Under this condition, the infiltration of water into the soil is lowered and consequently...
Author(s): Juli A. Brady, Peter R. Robichaud, Frederick B. Pierson
Year Published: 2001
Type: Document
Conference Proceedings

Real-time smoke particulate sampling; fire storm 2000
www.nrfirescience.org/resource/11202
Reports the findings of a study comparing the results of instruments measuring smoke particulate in real time to gravimetric samplers in Missoula and Hamilton, Montana, during the summer of 2000. Real-time, particulate monitoring instruments were evaluated to determine their accuracy when measuring smoke particulate concentrations...
Author(s): Andy Trent, Mary A. Davies, Richard Karsky, Richard W. Fisher

Year Published: 2001
Type: Document
Technical Report or White Paper

Response of the Cache Creek macroinvertebrates during the first 10 years following disturbance by the 1988 Yellowstone wildfires
www.nrfirescience.org/resource/18604
We evaluated the effects of disturbance on stream benthic macroinvertebrates at the ecological scales of time, stream size, and burn extent in six segments of Cache Creek over the first 10 postfire years. Postfire changes in macroinvertebrate taxa richness, density, and dominant taxa in the burn streams were significantly different...
Author(s): G. Wayne Minshall, Todd V. Royer, Christopher T. Robinson
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Developing a post-fire flood chronology and recurrence probability from alluvial stratigraphy in the Buffalo Creek watershed, Colorado, USA
www.nrfirescience.org/resource/18540
Stratigraphic and geomorphic evidence indicate floods that occur soon after forest fires have been intermittent but common events in many mountainous areas during the past several thousand years. The magnitude and recurrence of these post?fire flood events reflects the joint probability between the recurrence of fires and the...
Author(s): John G. Elliott, R. S. Parker
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Educational program about wildland fire integrates plant science into curriculum
www.nrfirescience.org/resource/8386
A science fiction story by Edmond Hamilton entitled 'Alien Earth' (Hamilton 1949) describes the experience of a young scientist in a tropical country. The scientist obtains a potion that slows his physiology to a rate at which he can perceive plant growth and interactions between plants in rapid, aggressive, even violent motion. He...
Author(s): Jane Kapler Smith, Nancy E. McMurray, Garon C. Smith
Year Published: 2001
Type: Document
Book or Chapter or Journal Article

Nassella viridula (green needlegrass)
www.nrfirescience.org/resource/10869
This FEIS species review synthesizes information on the relationship of Nassella viridula (green needlegrass) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology...
Author(s): Jennifer L. Taylor
Year Published: 2001
Type: Document
Synthesis

Populus balsamifera subsp. trichocarpa (black cottonwood)
www.nrfirescience.org/resource/10851
This FEIS species review synthesizes information on the relationship of Populus balsamifera subsp. trichocarpa (black cottonwood) to fire--how fire affects the species and its habitat, effects of the species on fuels and fire regimes, and fire management considerations. Information is also provided on the species' taxonomy,...
Author(s): Peter D. Steinberg
Year Published: 2001
Type: Document
Synthesis

Database for early postfire succession in Northern Rocky Mountain forests
www.nrfirescience.org/resource/11201
Provided data on quantitative postfire changes of plant species and forest vegetation components for up to the first 25 years of secondary plant succession for 55 forest sites in northern Idaho and northwestern Montana. Cover (aerial crown) and volume (aerial crown space occupied) data are presented as percent cover (m2/0.01 ha) and...
Author(s): Peter F. Stickney, Robert B. Campbell
Year Published: 2000
Type: Document
Technical Report or White Paper

Miller Creek: ecosystem recovery in a western Montana forest 30 years after prescribed burning and wildfire
www.nrfirescience.org/resource/18682
Thirty years ago the effects of timber harvest, prescribed burning, and wildfire were investigated in a western larch/Douglas-fir forest on the Flathead National Forest in western Montana. The original study was designed to investigate the effects of prescribed burning on soil physical and biological properties, and on subsequent...
Author(s): Jonalea R. Tonn, Martin F. Jurgensen, G. D. Mroz, Deborah S. Page-Dumroese
Year Published: 2000
Type: Document
Conference Proceedings

Fallugia paradoxa (Apache plume)
www.nrfirescience.org/resource/10786
This FEIS species review synthesizes information on the relationship of Fallugia paradoxa (Apache plume) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Jack McWilliams
Year Published: 2000
Type: Document
Synthesis

Koeleria macrantha (prairie Junegrass)
www.nrfirescience.org/resource/10830
This FEIS species review synthesizes information on the relationship of Koeleria macrantha (prairie Junegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...

Author(s): Kevin A. Simonin
Year Published: 2000
Type: Document
Synthesis

The role of fire and soil heating on water repellency in wildland environments
www.nrfirescience.org/resource/18529
This paper describes the heat transfer mechanisms operating as heat moves downward in the soil along steep temperature gradients during both wildfires and prescribed fires. The transfer of heat downward in the upper part of the soil is enhanced by the vaporization and movement of water and organic compounds. Available information on...
Author(s): Leonard F. DeBano
Year Published: 2000
Type: Document
Book or Chapter or Journal Article

Wildland fire in ecosystems: effects of fire on fauna
www.nrfirescience.org/resource/12584
Fires affect animals mainly through effects on their habitat. Fires often cause short-term increases in wildlife foods that contribute to increases in populations of some animals. These increases are moderated by the animals' ability to thrive in the altered, often simplified, structure of the postfire environment. The extent of...
Year Published: 2000
Type: Document
Technical Report or White Paper

Fire effects on infiltration rates after prescribed fire in Northern Rocky Mountain forests, USA
www.nrfirescience.org/resource/8134
Infiltration rates in undisturbed forest environments are generally high. These high infiltration rates may be reduced when forest management activities such as timber harvesting and/or prescribed fires are used. Post-harvest residue burning is a common site preparation treatment used in the Northern Rocky Mountains, USA, to reduce...
Author(s): Peter R. Robichaud
Year Published: 2000
Type: Document
Book or Chapter or Journal Article

Achnatherum nelsonii (Columbia needlegrass)
www.nrfirescience.org/resource/10938
This FEIS species review synthesizes information on the relationship of Achnatherum nelsonii (Columbia needlegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Kristin L. Zouhar
Year Published: 2000
Type: Document
Synthesis

Impacts of major watershed perturbations on aquatic ecosystems
www.nrfirescience.org/resource/18522

This Supplement presents data syntheses and new evidence from temperate (primarily boreal) North American studies of aquatic ecosystem response to episodic watershed deforestation and acid rain. These studies confirm the dominant role of the watershed in modulating aquatic response to terrestrial disturbance and quantify important...
Author(s): Richard Carignan, Robert J. Steedman
Year Published: 2000
Type: Document
Book or Chapter or Journal Article

Disturbance regimes of stream and riparian systems — a disturbance?cascade perspective
www.nrfirescience.org/resource/18615
Geomorphological processes that commonly transport soil down hillslopes and sediment and woody debris through stream systems in steep, mountainous, forest landscapes can operate in sequence down gravitational flowpaths, forming a cascade of disturbance processes that alters stream and riparian ecosystems. The affected stream and...
Author(s): Futoshi Nakamura, Frederick J. Swanson, Steven M. Wondzell
Year Published: 2000
Type: Document
Book or Chapter or Journal Article

Effects of selection harvest and prescribed fire on the soil nitrogen status of ponderosa pine forests
www.nrfirescience.org/resource/8272
One hundred years of timber harvest and reduced fire frequency have resulted in the conversion of once open stands of ponderosa pine (Pinus ponderosa) forests to dense forests dominated by Douglas-fir (Pseudotsuga menziesii). Selection harvest and harvest with prescribed fire have been identified as possible tools to restore...
Author(s): Thomas H. DeLuca, Kristin L. Zouhar
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
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

The role of fire in management of watershed responses
www.nrfirescience.org/resource/12004
Hydrologic responses of watersheds are strongly related to vegetation and soil disturbances. Many of the storage and transfer components of the global hydrologic cycle are altered by the occurrence of fire. The major effect of fire on the hydrologic functioning of watersheds is the removal of vegetation and litter materials that...
Author(s): Malcomb J. Zwolinski

Year Published: 2000
Type: Document
Conference Proceedings

Symphoricarpos albus (common snowberry)
www.nrfirescience.org/resource/10783
This FEIS species review synthesizes information on the relationship of Symphoricarpos albus (common snowberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Jack McWilliams
Year Published: 2000
Type: Document
Synthesis

Festuca altaica, Festuca campestris, Festuca hallii (northern rough fescue, alpine rough fescue, plains rough fescue)
www.nrfirescience.org/resource/10881
This FEIS species review synthesizes information on the relationship of Festuca altaica, Festuca campestris, Festuca hallii (northern rough fescue, alpine rough fescue, plains rough fescue) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy...
Author(s): D. A. Tirmenstein
Year Published: 2000
Type: Document
Synthesis

Chapter 1: Introduction to wildland fire in ecosystems: effects of fire on fauna
www.nrfirescience.org/resource/12603
Fires affect animals mainly through effects on their habitat. Fires often cause short-term increases in wildlife foods that contribute to increases in populations of some animals. These increases are moderated by the animals' ability to thrive in the altered, often simplified, structure of the postfire environment. The extent of...
Author(s): Jack L. Lyon, James K. Brown, Mark H. Huff, Jane Kapler Smith
Year Published: 2000
Type: Document
Technical Report or White Paper

Ceanothus sanguineus (redstem ceanothus)
www.nrfirescience.org/resource/10742
This FEIS species review synthesizes information on the relationship of Ceanothus sanguineus (redstem ceanothus) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Kathleen A. Johnson
Year Published: 2000
Type: Document
Synthesis

Smoke exposure at western wildfires

www.nrfirescience.org/resource/11193
Smoke exposure measurements among firefighters at wildfires in the Western United States between 1992 and 1995 showed that altogether most exposures were not significant, between 3 and 5 percent of the shift-average exposures exceeded occupational exposure limits for carbon monoxide and respiratory irritants. Exposure to benzene and...
Author(s): Timothy E. Reinhardt, Roger D. Ottmar
Year Published: 2000
Type: Document
Technical Report or White Paper

Quercus gambelii (Gambel oak)
www.nrfirescience.org/resource/10835
This FEIS species review synthesizes information on the relationship of Quercus gambelii (Gambel oak) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Kevin A. Simonin
Year Published: 2000
Type: Document
Synthesis

Achnatherum lettermanii (Letterman's needlegrass)
www.nrfirescience.org/resource/10866
This FEIS species review synthesizes information on the relationship of Achnatherum lettermanii (Letterman's needlegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Jane E. Taylor
Year Published: 2000
Type: Document
Synthesis

Chapter 2: Fire autecology
www.nrfirescience.org/resource/12597
Fire is a key ecological process within most ecosystems in the United States and Canada. An understanding of factors controlling the initial response of vegetation to fire is essential to its management. Fire effects on plants can vary significantly among fires on different areas of the same fire. Fire behavior, fire duration, the...
Author(s): Melanie Miller
Year Published: 2000
Type: Document
Synthesis, Technical Report or White Paper

Fire in western shrubland, woodland, and grassland ecosystems
www.nrfirescience.org/resource/11116
This state-of-knowledge review about the effects of fire on flora and fuels can assist land managers with ecosystem and fire management planning and in their efforts to inform others about the ecological role of fire. Chapter topics include fire regime classification, autecological effects of fire, fire regime characteristics and...
Author(s): Timothy E. Paysen, R. James Ansley, James K. Brown, Gerald J. Gottfried, Sally M. Haase, Michael G. Harrington, Marcia G. Narog, Stephen S. Sackett, Ruth C. Wilson

Year Published: 2000
Type: Document
Synthesis, Technical Report or White Paper

Measuring and modelling soil erosion processes in forests
www.nrfirescience.org/resource/7923
A prime forest resource is clean water for downstream beneficial uses. Sediment from forests may impair those beneficial uses. Sedimentation by water erosion is rare unless road activities, timber harvesting, or fire disturb the forest. We have been researching forest soil erosion processes and developing erosion prediction models...
Author(s): William J. Elliot, Randy B. Foltz, Peter R. Robichaud
Year Published: 2000
Type: Document
Book or Chapter or Journal Article

Sporobolus cryptandrus (sand dropseed)
www.nrfirescience.org/resource/10836
This FEIS species review synthesizes information on the relationship of Sporobolus cryptandrus (sand dropseed) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Kevin A. Simonin
Year Published: 2000
Type: Document
Synthesis

Calamagrostis rubescens (pinegrass)
www.nrfirescience.org/resource/10755
This FEIS species review synthesizes information on the relationship of Calamagrostis rubescens (pinegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews
Year Published: 2000
Type: Document
Synthesis

Influence of fire on native nitrogen-fixing plants and soil nitrogen status in ponderosa pine-Douglas-fir forests in western Montana
www.nrfirescience.org/resource/8258
Nitrogen fixing plants have been reported to play an important role in replacing N lost from soil in fire dominated ecosystems. Exclusion of fire from ponderosa pine (Pinus ponderosa Dougl. ex Laws.)-Douglas-fir (Pseudotsuga menziesii (Mirb.) Franco) forests of western Montana has lead to widespread changes in forest structure,...
Author(s): J. A. Newland, Thomas H. DeLuca
Year Published: 2000
Type: Document
Book or Chapter or Journal Article

Achnatherum thurberiana (Thurber needlegrass)

www.nrfirescience.org/resource/10610
This FEIS species review synthesizes information on the relationship of Achnatherum thurberiana (Thurber needlegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Amy Archer
Year Published: 2000
Type: Document
Synthesis

Restoration of whitebark pine ecosystems in western Montana and central Idaho
www.nrfirescience.org/resource/19232
No description available
Author(s): Robert E. Keane, Stephen F. Arno
Year Published: 2000
Type: Document
Conference Proceedings

Fire-induced water repellency: an erosional factor in wildland environments
www.nrfirescience.org/resource/12006
Watershed managers and scientists throughout the world have been aware of fire-induced water-repellent soils for over three decades. Water repellency affects many hydrologic processes, including infiltration, overland flow, and surface erosion (rill and sheet erosion). This paper describes; the formation of fire-induced water-...
Author(s): Leonard F. DeBano
Year Published: 2000
Type: Document
Conference Proceedings

Long-term effects of fire on sage grouse habitat
www.nrfirescience.org/resource/11456
This study documented the long-term (>10 years) impact of fire on sage grouse (Centrocercus urophasianus Bonaparte) nesting and brood-rearing habitats on the Upper Snake River Plain in southeastern Idaho.
Author(s): Pamela J. Nelle, Kerry P. Reese, John W. Connelly
Year Published: 2000
Type: Document
Book or Chapter or Journal Article

Ecosystem-based management in the lodgepole pine zone
www.nrfirescience.org/resource/10963
The significant geographic extent of lodgepole pine (Pinus contorta) in the interior West and the large proportion within the mixed-severity fire regime has led to efforts for more ecologically based management of lodgepole pine. New research and demonstration activities are presented that may provide knowledge and techniques to...
Author(s): Colin C. Hardy, Robert E. Keane, Catherine A. Stewart
Year Published: 2000
Type: Document
Conference Proceedings

Festuca idahoensis (Idaho fescue)
www.nrfirescience.org/resource/10937
This FEIS species review synthesizes information on the relationship of Festuca idahoensis (Idaho fescue) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Kristin L. Zouhar
Year Published: 2000
Type: Document
Synthesis

Prunus virginiana (chokecherry)
www.nrfirescience.org/resource/10503
This FEIS species review synthesizes information on the relationship of Prunus virginiana (chokecherry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Kathleen A. Johnson
Year Published: 2000
Type: Document
Synthesis

Vaccinium membranaceum (big huckleberry)
www.nrfirescience.org/resource/10828
This FEIS species review synthesizes information on the relationship of Vaccinium membranaceum (big huckleberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Kevin A. Simonin
Year Published: 2000
Type: Document
Synthesis

Wildland fire in ecosystems: effects of fire on flora
www.nrfirescience.org/resource/12639
This state-of-knowledge review about the effects of fire on flora and fuels can assist land managers with ecosystem and fire management planning and in their efforts to inform others about the ecological role of fire. Chapter topics include fire regime classification, autecological effects of fire, fire regime characteristics and...
Year Published: 2000
Type: Document
Technical Report or White Paper

Water repellency by laboratory burning of four Northern Rocky Mountain forest soils
www.nrfirescience.org/resource/8133
Highly variable water repellent soil conditions have been reported after forest fires. We examined interactions among heating, soil water content and soil texture on water repellency. Undisturbed, 305-mm diameter cores were collected in the field from four soils commonly referred to as ash-cap, mixed ash-cap, no ash-cap and granitic...
Author(s): Peter R. Robichaud, Roger D. Hungerford
Year Published: 2000

Type: Document
Book or Chapter or Journal Article

Acute toxicity of fire-control chemicals, nitrogenous chemicals, and surfactants to rainbow trout
www.nrfirescience.org/resource/18506
Laboratory studies were conducted to determine the acute toxicity of three ammonia-based fire retardants (Fire-Trol LCA-F, Fire-Trol LCM-R, and Phos-Chek 259F), five surfactant-based fire-suppressant foams (FireFoam 103B, FireFoam 104, Fire Quench, ForExpan S, and Pyrocap B-136), three nitrogenous chemicals (ammonia, nitrate, and...
Author(s): Kevin J. Buhl, Steven J. Hamilton
Year Published: 2000
Type: Document
Book or Chapter or Journal Article

Abies grandis (grand fir)
www.nrfirescience.org/resource/10739
This FEIS species review synthesizes information on the relationship of Abies grandis (grand fir) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Janet L. Howard, Keith Aleksoff
Year Published: 2000
Type: Document
Synthesis

Fuel: logs, sticks, needles, duff, and much more
www.nrfirescience.org/resource/10957
Fuels burned by either prescribed or wildfires are complex and important components of forested ecosystems. Fine fuels consisting of fallen limbs, twigs, and leaves of shrubs and trees are rich in nutrients. If these fuels are not immediately burned, nutrients can leach from these materials into the forest floor, especially if they...
Author(s): Russell T. Graham, Theresa B. Jain, Alan E. Harvey
Year Published: 2000
Type: Document
Conference Proceedings, Synthesis

Elymus canadensis (Canada wildrye)
www.nrfirescience.org/resource/10831
This FEIS species review synthesizes information on the relationship of Elymus canadensis (Canada wildrye) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Kevin A. Simonin
Year Published: 2000
Type: Document
Synthesis

Danthonia unispicata (onespike oatgrass)
www.nrfirescience.org/resource/10754
This FEIS species review synthesizes information on the relationship of Danthonia unispicata (onespike

oatgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Robin F. Matthews
Year Published: 2000
Type: Document
Synthesis

Danthonia spicata (poverty oatgrass)
www.nrfirescience.org/resource/10620
This FEIS species review synthesizes information on the relationship of Danthonia spicata (poverty oatgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Daniel Covington
Year Published: 2000
Type: Document
Synthesis

Pleuraphis jamesii (galleta)
www.nrfirescience.org/resource/10833
This FEIS species review synthesizes information on the relationship of Pleuraphis jamesii (galleta) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Kevin A. Simonin
Year Published: 2000
Type: Document
Synthesis

Wildlife habitat considerations
www.nrfirescience.org/resource/11034
Fire, insects, disease, harvesting, and precommercial thinning all create mosaics on Northern Rocky Mountain landscapes. These mosaics are important for faunal habitat. Consequently, changes such as created openings or an increase in heavily stocked areas affect the water, cover, and food of forest habitats. The 'no action'...
Author(s): Helen Y. Smith
Year Published: 2000
Type: Document
Conference Proceedings

Fire in western forest ecosystems
www.nrfirescience.org/resource/11115
Description not entered
Author(s): Stephen F. Arno
Year Published: 2000
Type: Document
Technical Report or White Paper

Distribution, composition, and classification of current juniper-pinyon woodlands and savannas

across western North America
www.nrfirescience.org/resource/11886
Pinyon-juniper woodlands involve vegetation dominated by about seven species of Pinus and 17 species of Juniperus scattered over more than 75 million acres of the Southwestern United States and Mexico. The junipers are more widespread latitudinally, longitudinally, and elevationally than the pinyons. The understory is much more...
Author(s): Neil E. West
Year Published: 1999
Type: Document
Conference Proceedings

Artemisia tridentata subsp. wyomingensis (Wyoming big sagebrush)
www.nrfirescience.org/resource/10738
This FEIS species review synthesizes information on the relationship of Artemisia tridentata subsp. wyomingensis (Wyoming big sagebrush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management...
Author(s): Janet L. Howard
Year Published: 1999
Type: Document
Synthesis

Achillea millefolium (western yarrow)
www.nrfirescience.org/resource/10591
This FEIS species review synthesizes information on the relationship of Achillea millefolium (western yarrow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Keith Aleksoff
Year Published: 1999
Type: Document
Synthesis

Bouteloua hirsuta (hairy grama)
www.nrfirescience.org/resource/10583
This FEIS species review synthesizes information on the relationship of Bouteloua hirsuta (hairy grama) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Elena Zlatnik
Year Published: 1999
Type: Document
Synthesis

Grayia spinosa (spiny hopsage)
www.nrfirescience.org/resource/10879
This FEIS species review synthesizes information on the relationship of Grayia spinosa (spiny hopsage) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): D. A. Tirmenstein

Year Published: 1999
Type: Document
Synthesis

Muhlenbergia richardsonis (mat muhly)
www.nrfirescience.org/resource/10589
This FEIS species review synthesizes information on the relationship of Muhlenbergia richardsonis (mat muhly) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Keith Aleksoff
Year Published: 1999
Type: Document
Synthesis

Artemisia tridentata subsp. tridentata (basin big sagebrush)
www.nrfirescience.org/resource/10886
This FEIS species review synthesizes information on the relationship of Artemisia tridentata subsp. tridentata (basin big sagebrush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management....
Author(s): D. A. Tirmenstein
Year Published: 1999
Type: Document
Synthesis

Artemisia tripartita subsp. rupicola, Artemisia tripartita subsp. tripartita (Wyoming threetip sagebrush, tall threetip sagebrush)
www.nrfirescience.org/resource/10887
This FEIS species review synthesizes information on the relationship of Artemisia tripartita subsp. rupicola, Artemisia tripartita subsp. tripartita (Wyoming threetip sagebrush, tall threetip sagebrush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the...
Author(s): D. A. Tirmenstein
Year Published: 1999
Type: Document
Synthesis

Debris-flow generation from recently burned watersheds
www.nrfirescience.org/resource/18516
Evaluation of the erosional response of 95 recently burned drainage basins in Colorado, New Mexico and southern California to storm rainfall provides information on the conditions that result in fire-related debris flows. Debris flows were produced from only 37 of 95 (approximately 40 percent) basins examined; the remaining basins...
Author(s): Susan H. Cannon
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Purshia tridentata (antelope bitterbrush)

www.nrfirescience.org/resource/10584
This FEIS species review synthesizes information on the relationship of Purshia tridentata (antelope bitterbrush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Elena Zlatnik
Year Published: 1999
Type: Document
Synthesis

Antelope bitterbrush and Scouler's willow response to a shelterwood harvest and prescribed burn in western Montana
www.nrfirescience.org/resource/13367
In many western Montana ponderosa pine (Pinus ponderosa) stands, fire suppression and past selective logging of large trees have resulted in conditions favoring succession to dense stands of shade-tolerant, but insect- and disease-prone Douglas-fir (Pseudotsuga menziesii). Stand thinning and understory prescribed burning have been...
Author(s): Donald J. Bedunah, Michael G. Harrington, Dayna M. Ayers
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Fire induces clonal sprouting of riparian cottonwoods
www.nrfirescience.org/resource/18549
The principal native trees in the semiarid regions of southern Alberta are riparian cottonwoods. These include narrowleaf cottonwood, Populus angustifolia James, balsam poplar, Populus balsamifera ssp. balsamifera L., black cottonwood, Populus balsamifera ssp.trichocarpa Torr. & Gray, and prairie cottonwood, Populus deltoides...
Author(s): Lori A. Gom, Stewart B. Rood
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Prefire heterogeneity, fire severity and plant reestablishment in subalpine forests of Yellowstone National Park, Wyoming
www.nrfirescience.org/resource/18423
The 1988 fires in Yellowstone National Park provided an opportunity to study effects of a large infrequent disturbance on a natural community. This study addressed two questions: (1) How does prefire heterogeneity of the landscape affect postfire patterns of fire severity? and (2) How do postfire patterns of burn severity influence...
Author(s): Monica G. Turner, William H. Romme, Robert H. Gardner
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Chrysothamnus viscidiflorus (green rabbitbrush)
www.nrfirescience.org/resource/10884
This FEIS species review synthesizes information on the relationship of Chrysothamnus viscidiflorus (green rabbitbrush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...

Author(s): D. A. Tirmenstein
Year Published: 1999
Type: Document
Synthesis

Natural regeneration after harvest and residue treatment in a mixed-conifer forest of northwestern Montana
www.nrfirescience.org/resource/13147
In 1974, two clearcuts, two shelterwoods, and two sets of eight group selections (equally divided between two elevation zones) were harvested on the Coram Experimental Forest in northwestern Montana. Four levels of tree and residue utilization were compared. Moist fuels on approximately half of each area were poorly burned by...
Author(s): Raymond C. Shearer, Jack A. Schmidt
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Amelanchier utahensis (Utah serviceberry)
www.nrfirescience.org/resource/10588
This FEIS species review synthesizes information on the relationship of Amelanchier utahensis (Utah serviceberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Elena Zlatnik
Year Published: 1999
Type: Document
Synthesis

Juniperus occidentalis (western juniper)
www.nrfirescience.org/resource/10878
This FEIS species review synthesizes information on the relationship of Juniperus occidentalis (western juniper) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): D. A. Tirmenstein
Year Published: 1999
Type: Document
Synthesis

Pseudoroegneria spicata (bluebunch wheatgrass)
www.nrfirescience.org/resource/10585
This FEIS species review synthesizes information on the relationship of Pseudoroegneria spicata (bluebunch wheatgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Elena Zlatnik
Year Published: 1999
Type: Document
Synthesis

Danthonia intermedia (timber oatgrass)
www.nrfirescience.org/resource/10882
This FEIS species review synthesizes information on the relationship of Danthonia intermedia (timber oatgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): D. A. Tirmenstein
Year Published: 1999
Type: Document
Synthesis

Prefire heterogeneity, fire severity, and early postfire plant reestablishment in subalpine forests of Yellowstone National Park, Wyoming
www.nrfirescience.org/resource/8212
The 1988 fires in Yellowstone National Park provided an opportunity to study effects of a large infrequent disturbance on a natural community. This study addressed two questions: (1) How does prefire heterogeneity of the landscape affect postfire patterns of fire severity? and (2) How do postfire patterns of burn severity influence...
Author(s): Monica G. Turner, William H. Romme, Robert H. Gardner
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Symphoricarpos oreophilus (mountain snowberry)
www.nrfirescience.org/resource/10590
This FEIS species review synthesizes information on the relationship of Symphoricarpos oreophilus (mountain snowberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Keith Aleksoff
Year Published: 1999
Type: Document
Synthesis

Forest fire’s influence on yellow hedysarum habitat and its use by grizzly bears in Banff National Park, Alberta
www.nrfirescience.org/resource/18221
Hedysarum (Hedysarum spp.) roots are a primary food of grizzly bears (Ursus arctos) in the Front Ranges of the Canadian Rocky Mountains. I studied the effects of recent forest fire on yellow hedysarum (H. sulphurescens) habitat by comparing root density, mass, fibre content, ease of digging, and use by grizzly bears in and adjacent...
Author(s): David Hamer
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Pascopyrum smithii (western wheatgrass)
www.nrfirescience.org/resource/10877
This FEIS species review synthesizes information on the relationship of Pascopyrum smithii (western wheatgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general

management. This species review can...
Author(s): D. A. Tirmenstein
Year Published: 1999
Type: Document
Synthesis

Effects of long-term disturbance on riparian vegetation and in-stream characteristics
www.nrfirescience.org/resource/18667
We assessed the influence of riparian disturbance on 26 stream variables in Linesville Creek and six tributaries, in northwestern Pennsylvania, USA. Redundancy analysis, a canonical ordination technique. was used in three separate analyses to test for significant relationships between riparian characteristics and the multivariate...
Author(s): M. Henry H. Stevens, Kenneth W. Cummins
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Chrysothamnus nauseosus (rubber rabbitbrush)
www.nrfirescience.org/resource/10883
This FEIS species review synthesizes information on the relationship of Chrysothamnus nauseosus (rubber rabbitbrush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): D. A. Tirmenstein
Year Published: 1999
Type: Document
Synthesis

Spatial interpolation and simulation of post-burn duff thickness after prescribed fire
www.nrfirescience.org/resource/8132
Prescribed fire is used as a site treatment after timber harvesting. These fires result in spatial patterns with some portions consuming all of the forest floor material (duff) and others consuming little. Prior to the burn, spatial sampling of duff thickness and duff water content can be used to generate geostatistical spatial...
Author(s): Peter R. Robichaud, S. M. Miller
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

The budgetary, ecological, and managerial impacts of pinyon-juniper and cheatgrass fires
www.nrfirescience.org/resource/12108
The 1996 fire season illustrated the potential impacts of wildland fires on the Bureau of Land Management (BLM) administered lands through numerous western states. During the 1996 fire season, over six million acres burned in the United States through unplanned ignitions (wildfires). Over two million acres burned on BLM administered...
Author(s): Thomas C. Roberts
Year Published: 1999
Type: Document
Conference Proceedings

Bromus tectorum expansion and biodiversity loss on the Snake River Plain, southern Idaho, U.S.A.
www.nrfirescience.org/resource/11420
The Snake River Plain forms a 6 million ha arc-shaped depression across southern Idaho. Basalt flows, fresh water sediments, loess and volcanic deposits cover its surface. Elevation increases eastward from 650 to 2,150 m altitude. Climate is semi-arid with annual precipitation ranging from 150 to 400 mm, arriving primarily in winter...
Author(s): Nancy L. Shaw, Victoria A. Saab, Stephen B. Monsen, T. D. Rich
Year Published: 1999
Type: Document
Conference Proceedings

Yellowstone fires: a decade later
www.nrfirescience.org/resource/18476
Atop a ridge in Yellowstone National Park in 1984, a freak summer wind—perhaps a tornado or a downburst from a thunderstorm—leveled an ancient lodge-pole pine forest, piling up a head-high maze of logs. In the notorious summer of 1988, when wildfires burned one-third of the park, a fire front swept across the same ridge,...
Author(s): Y. Baskin
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Prescribed fire effects on herpetofauna: review and management implications
www.nrfirescience.org/resource/18650
Prescribed burning is used to achieve a variety of silvicultural objectives, including controlling heavy fuel accumulation, exposing mineral soil, releasing available nutrients for seedbed preparation, and controlling certain insects, diseases, and competing vegetation (Hunter 1990, Pyne et al. 1996). Prescribed burning also is an...
Author(s): Kevin R. Russell, David H. Van Lear, David C. Guynn, Jr.
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Achnatheruum hymenoides (Indian ricegrass)
www.nrfirescience.org/resource/10870
This FEIS species review synthesizes information on the relationship of Achnatheruum hymenoides (Indian ricegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): D. A. Tirmenstein
Year Published: 1999
Type: Document
Synthesis

Birds in a sagebrush sea: Managing sagebrush habitat for bird communities
www.nrfirescience.org/resource/15329
This booklet presents land management recommendations to help bird communities in sagebrush habitats. It was prepared for the Western Working Group of Partners in Flight, a partnership of private citizens, industry groups, government agencies, universities, nongovernment organizations, and others interested in bird conservation. Why...

Author(s): Christine Paige, Sharon Ritter
Year Published: 1999
Type: Document
Management or Planning Document

Effects of succession on species richness of the western juniper woodland/sagebrush steppe mosaic
www.nrfirescience.org/resource/12106
The development of mature juniper woodlands has often been associated with decreases in the herbaceous and shrub components of the community. This study focused on changes in species richness and diversity along a successional gradient at both the community and watershed scale in the Owyhee Mountains in southwestern Idaho. Community...
Author(s): Stephen C. Bunting
Year Published: 1999
Type: Document
Conference Proceedings

Proceedings: ecology and management of pinyon-juniper communities within the Interior West; September 15-18, 1997; Provo, UT
www.nrfirescience.org/resource/11884
A symposium held September 15-18, 1997, in Provo, UT, and Sanpete County, UT, provided information on the ecology, management, resource values, and restoration of pinyon-juniper communities in the Interior Western United States. The conference was hosted by the USDA Forest Service, Rocky Mountain Research Station and the Utah...
Author(s): Stephen B. Monsen, Richard Stevens
Year Published: 1999
Type: Document
Conference Proceedings

Flumes, historic water yield and climatological data for Tenderfoot Creek Experimental Forest, Montana
www.nrfirescience.org/resource/11275
The objectives of this Research Joint Venture Agreement were to install and calibrate three flumes on the Tenderfoot Creek Experimental Forest (TCEF) in central Montana; check calibration of the existing seven flumes on TCEF; estimate the influence of fire on water yields over the 400-year fire history period; and estimate back...
Author(s): Phillip E. Farnes, Ward W. McCaughey, Katherine J. Hansen
Year Published: 1999
Type: Document
Technical Report or White Paper

Juniperus osteosperma (Utah juniper)
www.nrfirescience.org/resource/10586
This FEIS species review synthesizes information on the relationship of Juniperus osteosperma (Utah juniper) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Elena Zlatnik
Year Published: 1999
Type: Document
Synthesis

Elymus glaucus (blue wildrye)
www.nrfirescience.org/resource/10502
This FEIS species review synthesizes information on the relationship of Elymus glaucus (blue wildrye) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Kathleen A. Johnson
Year Published: 1999
Type: Document
Synthesis

Prescribed fire effects on biological control of leafy spurge
www.nrfirescience.org/resource/8282
The flea beetle, Aphthona nigriscutis Foudras, is a potentially useful agent for biological control of leafy spurge (Euphorbia esula L.) in grasslands devoted to wildlife conservation. However, effects of other grassland management practices on the persistence and dynamics of flea beetle populations are not well understood. We...
Author(s): David P. Fellows, Wesley E. Newton
Year Published: 1999
Type: Document
Book or Chapter or Journal Article

Gutierrezia sarothrae (broom snakeweed)
www.nrfirescience.org/resource/10880
This FEIS species review synthesizes information on the relationship of Gutierrezia sarothrae (broom snakeweed) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): D. A. Tirmenstein
Year Published: 1999
Type: Document
Synthesis

Hesperostipa comata (needle-and-thread grass)
www.nrfirescience.org/resource/10587
This FEIS species review synthesizes information on the relationship of Hesperostipa comata (needle-and-thread grass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Elena Zlatnik
Year Published: 1999
Type: Document
Synthesis

Bromus hordeaceus (soft chess)
www.nrfirescience.org/resource/10461
This FEIS species review synthesizes information on the relationship of Bromus hordeaceus (soft chess) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic

biology, and general management....
Author(s): Janet L. Howard
Year Published: 1998
Type: Document
Synthesis

Modeling effects of prescribed fire on wildlife habitat: stand structure, snag recruitment and coarse woody debris
www.nrfirescience.org/resource/11027
Tenderfoot Creek Experimental Forest is used as a case study to model the effects of prescribed fire and silvicultural treatments on stand structure, snag recruitment, and coarse woody debris. The Forest Vegetation Simulator (FVS) and the Fire and Fuels Extension simulate the effects of the following treatment prescriptions:...
Author(s): Colin C. Hardy, Elizabeth D. Reinhardt
Year Published: 1998
Type: Document
Conference Proceedings

Appendix A - Biological assessment, TCEF research project for Lewis and Clark National Forest
www.nrfirescience.org/resource/11505
An environmental analysis has been prepared which describes and evaluates the management alternatives for the timber harvest and burning within the Tenderfoot Creek Experimental Forest (TCEF) project area. The project area lies within the headwaters of the Tenderfoot drainage of the Lewis and Clark National Forest. The purpose of...
Author(s): Donald Godtel
Year Published: 1998
Type: Document
Management or Planning Document

Phosphorus and Nitrogen Dynamics in Streams Associated With Wildfire: a Study of Immediate and Longterm Effects
www.nrfirescience.org/resource/18590
Stream nutrient data were collected both during a wildfire and over a subsequent five-year period. Sampling was from a series of paired watersheds located within and outside of the wildfire. Phosphorus and nitrogen concentrations increased from 5 to 60 fold over background levels during the first few days of the month-long wildfire...
Author(s): F. Richard Hauer, Craig N. Spencer
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

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
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
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

Acute toxicity of fire-retardant and foam-suppressant chemicals to early life stages of chinook salmon (Oncorhynchus tshawytscha)
www.nrfirescience.org/resource/18505
Laboratorys studies were conducted to determine the acute toxicity of three fire retardants (Fire?Trol GTS?R, Fire?Trol LCG?R, and Phos?Chek D75?F), and two fire?suppressant foams (Phos?Chek WD?881 and Ansul Silv?Ex) to early life stages of chinook salmon, Oncorhynchus tshawytscha, in hard and soft water....
Author(s): Kevin J. Buhl, Steven J. Hamilton
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

Reduce fire hazards in ponderosa pine by thinning
www.nrfirescience.org/resource/8148
Forest stands of fire-dependent ponderosa pine cover about 40 million acres (16 million ha) in the Western United States. Ponderosa pine is commonly found in pure stands on dry sites, but in more moist conditions, it is associated with Douglas-fir, lodgepole pine, western larch, and others. Historically, these were often widely...
Author(s): Joe H. Scott
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

Poa arida (plains bluegrass)
www.nrfirescience.org/resource/10715
This FEIS species review synthesizes information on the relationship of Poa arida (plains bluegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Janet L. Howard
Year Published: 1998
Type: Document
Synthesis

Germination and initial growth of four coniferous species on varied duff depths in northern Idaho

www.nrfirescience.org/resource/13129
Four conifer species [Douglas-fir (Pseudotsuga menziesii var. glauca (Beissn.) Franco), ponderosa pine (Pinis ponderosa Dougl. ex. Laws.), western larch (Larix occidentalis Nutt.), and western white pine (Pinus monticola Dougl. ex. D. Don)], growing on three different duff depths on burned and unburned seedbeds, were examined for...
Author(s): Brian P. Oswald, Kent Wellner, Robin Boyce, Leon F. Neuenschwander
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

Effects of slash pile burning on the physical and chemical soil properties of Vassar soils
www.nrfirescience.org/resource/13125
To determine the initial effects of slash pile burning on chemical and physical properties in the Vassar soil series, mineral soil samples from two depths (2.5 cm and 12.5 cm) were collected before and after burning slash piles of four fuel loadings (0.5 m, 1 m, 2 m and 3 m) over wet and dry soils, as well as from burned and...
Author(s): Brian P. Oswald, Douglas Davenport, Leon F. Neuenschwander
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

Mycorrhization, physiognomy, and first-year survivability of conifer seedlings following natural fire in Grand Teton National Park
www.nrfirescience.org/resource/11448
Ectomycorrhiza formation, survivability, and physiognomic characteristics were assessed for conifer seedlings encountered 1 and 2 years postfire in the Huck burn site near Grand Teton National Park. Pinus contorta Dougl. ex Loud. germinated and was abundant throughout the first growing season. Abies lasiocarpa (Hook.) Nutt....
Author(s): Steven L. Miller, Therese M. McClean, Nancy L. Stanton, Stephen E. Williams
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

Fire-related hyperconcentrated and debris flows on Storm King Mountain, Glenwood Springs, Colorado
www.nrfirescience.org/resource/18519
The South Canyon Fire of July 1994 burned 800 ha of vegetation on Storm King Mountain near Glenwood Springs, Colorado, USA. On the night of 1 September 1994, in response to torrential rains, debris flows inundated seven areas along a 5-km length of Interstate Highway 70. Mapping from aerial photographs, along with field...
Author(s): Susan H. Cannon, P. S. Powers, W. Z. Savage
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

Seventeen years of forest succession following the Waterfalls Canyon Fire in Grand Teton National Park, Wyoming
www.nrfirescience.org/resource/8214
Plant species composition has been sampled periodically since the 1974 Waterfalls Canyon Fire in Grand Teton National Park, Wyoming. Prior to the fire, the forests were dominated by mature Abies lasiocarpa, Picea engelmannii and Finns contorta. All three tree species have reestablished. After 17

years, P. engelmannii sapling density...
Author(s): Kathleen M. Doyle, Dennis H. Knight, Dale L. Taylor, William J. Barmore, James M. Benedict
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

Riverine landscapes: biodiversity patterns, disturbance regimes, and aquatic conservation
www.nrfirescience.org/resource/18691
The term riverine landscape implies a holistic geomorphic perspective of the extensive interconnected series of biotopes and environmental gradients that, with their biotic communities, constitute fluvial systems. Natural disturbance regimes maintain multiple interactive pathways (connectivity) across the riverine landscape....
Author(s): J. V. Ward
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

Patterns of lodgepole pine regeneration following the 1988 Yellowstone fires
www.nrfirescience.org/resource/8276
In 1988, fires killed extensive lodgepole pine (Pinus contorta Dougl. ex. Loud) in Yellowstone National Park. This species bears both serotinous and non-serotinous cones, with the former most common in fire-origin stands of an even-aged character. Reconnaissance of burned stands indicated that former even-aged communities...
Author(s): Ralph D. Nyland
Year Published: 1998
Type: Document
Book or Chapter or Journal Article

An introduction to the Fire and Fuels Extension to FVS
www.nrfirescience.org/resource/11073
The Fire Effects Model Extension is a new extension to FVS and the PPE that allows users to simulate the effects of fire on a number of indicators, including stand structure and composition, fuel loading, and size and density of snags. In the absence of fire, the model can be used to simulate snag and fuel dynamics resulting from...
Author(s): Sarah J. Beukema, Julee A. Greenough, Donald C. E. Robinson, Werner A. Kurz, Elizabeth D. Reinhardt, Nicholas L. Crookston, Albert R. Stage
Year Published: 1997
Type: Document
Conference Proceedings, Technical Report or White Paper

Acute toxicity of fire-retardant and foam-suppressant chemicals to Hyalella azteca (Saussure)
www.nrfirescience.org/resource/18595
Acute toxicity tests were conducted with Hyalella azteca Saussure (an amphipod) exposed in soft and hard waters to three fire retardants (Fire?Trol GTS?R, Fire?Trol LCG?R, and Phos?Chek D75?F) and two foam suppressants (Phos?Chek WD?881 and Silv?Ex). The chemicals were slightly to moderately toxic to amphipods. The...
Author(s): S. F. McDonald, Steven J. Hamilton, Kevin J. Buhl, James F. Heisinger
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Stocastic forcing of sediment supply to the channel network from landsliding and debris flow
www.nrfirescience.org/resource/18488
The stochastic field of sediment supply to the channel network of a drainage basin depends on the large?scale interactions among climatically driven processes such as forest fire and rainstorms, topography, channel network topology, and basin scale. During infrequent periods of intense erosion, large volumes of colluvium are...
Author(s): Lee E. Benda, Thomas Dunne
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Poa fendleriana (Fendler bluegrass)
www.nrfirescience.org/resource/10708
This FEIS species review synthesizes information on the relationship of Poa fendleriana (Fendler bluegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet L. Howard
Year Published: 1997
Type: Document
Synthesis

Amelanchier alnifolia (Saskatoon serviceberry)
www.nrfirescience.org/resource/10730
This FEIS species review synthesizes information on the relationship of Amelanchier alnifolia (Saskatoon serviceberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Janet L. Howard
Year Published: 1997
Type: Document
Synthesis

Wildfire and native fish: issues of forest health and conservation of sensitive species
www.nrfirescience.org/resource/8129
Issues related to forest health and the threat of larger, more destructive wildfires have led to major new initiatives to restructure and recompose forest communities in the western United States. Proposed solutions will depend, in part, on silvicultural treatments and prescribed burning. Large fires can produce dramatic changes in...
Author(s): Bruce E. Rieman, Jim Clayton
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Historic role of fire in determining annual water yield from Tenderfoot Creek Experimental Forest, Montana
www.nrfirescience.org/resource/11029
Water production from mountain watersheds depends on total precipitation input, the type and distribution of precipitation, the amount intercepted in tree canopies, and losses to evaporation, transpiration and groundwater. A systematic process was developed to estimate historic average

annual runoff based on fire patterns, habitat...
Author(s): Ward W. McCaughey, Phillip E. Farnes, Katherine J. Hansen
Year Published: 1997
Type: Document
Conference Proceedings

A rare episode of sexual reproduction in aspen (Populus tremuloides Michx) following the 1988 Yellowstone fires
www.nrfirescience.org/resource/8236
No description available.
Author(s): William H. Romme, Monica G. Turner, Robert H. Gardner, William W. Hargrove, Gerald A. Tuskan, Don G. Despain, Roy A. Renkin
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Temperature patterns in small streams following wildfire
www.nrfirescience.org/resource/18647
We examined the influence of a moderately severe wildfire on the thermal patterns in three small streams in central Idaho, USA, for an 11-month period beginning ten months after the fire. Two streams in unburned catchments served as reference sites. No differences were observed between the burned and reference streams in daily...
Author(s): Todd V. Royer, G. Wayne Minshall
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Betula nana L. and Betula glandulosa Michx.
www.nrfirescience.org/resource/7918
Species descriptions for Betula nana and Betula glandulosa.
Author(s): William J. de Groot, P. A. Thomas, Ross W. Wein
Year Published: 1997
Type: Document
Book or Chapter or Journal Article, Synthesis

Plant species richness and composition following the 1988 Yellowstone fires
www.nrfirescience.org/resource/8341
How do plant species richness and community composition vary during initial postfire succession in relation to fire severity and local environmental conditions? We recorded vascular plant species present within 10-m2 plots at 589 permanent sampling points distributed throughout nine patches of crown fire from the 1988 Yellowstone...
Author(s): William H. Romme, Robert H. Gardner, Monica G. Turner, Daniel B. Tinker, Rebecca A. Reed
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Effects of fire size and pattern on succession in Yellowstone National Park
www.nrfirescience.org/resource/13535
The Yellowstone fires of 1988 affected >250000 ha, creating a mosaic of burn severities across the

landscape and providing an ideal opportunity to study effects of fire size and pattern on postfire succession. We asked whether vegetation responses differed between small and large burned patches within the fire-created mosaic in...
Author(s): Monica G. Turner, William H. Romme, Robert H. Gardner, William W. Hargrove
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Ambystoma macrodactylum (long-toed salamander)
www.nrfirescience.org/resource/10732
This FEIS species review synthesizes information on the relationship of Ambystoma macrodactylum (long-toed salamander) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Janet L. Howard
Year Published: 1997
Type: Document
Synthesis

Fire and fish: issues of forest health and conservation of sensitive species
www.nrfirescience.org/resource/18636
Issues related to forest health and the threat of larger, more destructive wildfires have led to major new initiatives to restructure and recompose forest communities in the western United States. Proposed solutions will depend, in part, on silvicultural treatments and prescribed burning. Large fires can produce dramatic changes in...
Author(s): Bruce E. Rieman, James L. Clayton
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Vegetation development of boreal riparian plant communities after flooding, fire, and logging, Peace River, Canada
www.nrfirescience.org/resource/18681
In this study vegetation development is compared and contrasted following natural and logging disturbances in a major boreal river valley in Alberta. Permanent sample plots and releves were established and sampled for vegetation and landscape attributes in the Peace River Lowlands, Wood Buffalo National Park (now a UNESCO World...
Author(s): Kevin P. Timoney, George Peterson, Ross W. Wein
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Fire and fish: fish habitat attributes of watersheds with pulse and press disturbance patterns
www.nrfirescience.org/resource/18528
The native salmonids of the Idaho Panhandle National Forests, bull chaff (Salvelinus confluentus) and westslope cutthroat trout (Oncorhynchus clarki lewisz) evolved with natural pulse disturbances of which the most common were fire and flood. These fish are indicator species in the Forest Plan, listed as sensitive species by Region...
Author(s): D. Cross
Year Published: 1997
Type: Document

Conference Proceedings

Poa secunda (Sandberg bluegrass)
www.nrfirescience.org/resource/10716
This FEIS species review synthesizes information on the relationship of Poa secunda (Sandberg bluegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet L. Howard
Year Published: 1997
Type: Document
Synthesis

Geostatistics: a new tool for describing spatially-varied surface conditions from timber harvested and burned hillslopes
www.nrfirescience.org/resource/11012
Geostatistics provides a method to describe the spatial continuity of many natural phenomena. Spatial models are based upon the concept of scaling, kriging and conditional simulation. These techniques were used to describe the spatially-varied surface conditions on timber harvest and burned hillslopes. Geostatistical techniques...
Author(s): Peter R. Robichaud
Year Published: 1997
Type: Document
Conference Proceedings

Poa cusickii (Cusick's bluegrass)
www.nrfirescience.org/resource/10706
This FEIS species review synthesizes information on the relationship of Poa cusickii (Cusick's bluegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet L. Howard
Year Published: 1997
Type: Document
Synthesis

Aristida purpurea (purple threeawn)
www.nrfirescience.org/resource/10728
This FEIS species review synthesizes information on the relationship of Aristida purpurea (purple threeawn) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet L. Howard
Year Published: 1997
Type: Document
Synthesis

Spatially-varied erosion modeling using WEPP for timber harvested and burned hillslopes
www.nrfirescience.org/resource/11035
Spatially-varied hydrologic surface conditions exist on steep hillslopes after timber harvest operation

and site preparation burning treatments. Site preparation burning creates low- and high-severity burn surface conditions or disturbances. In this study, a hillslope was divided into multiple combinations of surface conditions to...
Author(s): Peter R. Robichaud, T. M. Monroe
Year Published: 1997
Type: Document
Conference Proceedings

Effects of fire size and pattern on early succession in Yellowstone National Park
www.nrfirescience.org/resource/8238
The Yellowstone fires of 1988 affected >250000 ha, creating a mosaic of burn severities across the landscape and providing an ideal opportunity to study effects of fire size and pattern on postfire succession. We asked whether vegetation responses differed between small and large burned patches within the fire-created mosaic in...
Author(s): Monica G. Turner, William H. Romme, Robert H. Gardner, William W. Hargrove
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Postfire responses of lotic ecosystems in Yellowstone National Park, U.S.A.
www.nrfirescience.org/resource/18607
Wildfire is a major large-scale disturbance affecting terrestrial landscapes and lotic ecosystems in many regions of the world. We examined environmental and biological responses of 20 streams in Yellowstone National Park, U.S.A., over 5 years following extensive wildfires in 1988. Streams of burned catchments displayed increases in...
Author(s): G. Wayne Minshall, Christopher T. Robinson, Deron E. Lawrence
Year Published: 1997
Type: Document
Book or Chapter or Journal Article

Wildfire case study: Butte City Fire, southeastern Idaho, July 1, 1994
www.nrfirescience.org/resource/11146
The Butte City Fire occurred on July 1, 1994, west of Idaho Falls, ID. Ignited from a burning flat tire, the blaze was driven by high winds that caused it to cover over 20,500 acres in just over 6.5 hours. Sagebrush (Artemisia tridentata ssp. wyomingensis) is the principal shrub species of this high desert rangeland. With the...
Author(s): Bret W. Butler, Timothy D. Reynolds
Year Published: 1997
Type: Document
Technical Report or White Paper

Fire ecology of the forest habitat types of northern Idaho
www.nrfirescience.org/resource/11234
Provides information on fire ecology in forest habitat and community types occurring in northern Idaho. Identifies fire groups based on presettlement fire regimes and patterns of succession and stand development after fire. Describes forest fuels and suggests considerations for fire management.
Author(s): Jane Kapler Smith, William C. Fischer
Year Published: 1997
Type: Document
Synthesis, Technical Report or White Paper

Does wildfire threaten extinction for salmonids? responses of redband trout and bull trout following recent large fires on the Boise National Forest
www.nrfirescience.org/resource/18641
From the introduction... "The magnitude and intensity of recent fires heighten concerns regarding forest/ecosystem health, the potential loss of valuable wood fiber and private property, and the apparent threat to sensitive species. Such concerns have galvanized new efforts to reduce fuel loads and stand densities through mechanical...
Author(s): Bruce E. Rieman, Danny C. Lee, Gwynne L. Chandler, Deborah Myers
Year Published: 1997
Type: Document
Conference Proceedings

Effects of competition on the postfire recovery of 2 bunchgrass species
www.nrfirescience.org/resource/11458
The effect of competition on the postfire recovery of Festuca idahoensis Elmer and Agropyron spicatum (Pursh) Scrib...
Author(s): Guillermo E. Defosse, Ronald Robberecht
Year Published: 1996
Type: Document
Book or Chapter or Journal Article

Simulation of crown fire effects on canopy seed bank in lodgepole pine
www.nrfirescience.org/resource/8215
Analysis of video footage taken of crown fires during the 1988 fire season in Yellowstone National Park indicated that the most frequent length of time required to completely burn tree crowns was 15-20 seconds. Lodge-pole pine (Pinus contorta Laws.) seeds were tested for ability to germinate after exposing both serotinous and...
Author(s): Don G. Despain, D. L. Clark, James J. Reardon
Year Published: 1996
Type: Document
Book or Chapter or Journal Article

Perognathus parvus (Great Basin pocket mouse)
www.nrfirescience.org/resource/10719
This FEIS species review synthesizes information on the relationship of Perognathus parvus (Great Basin pocket mouse) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Janet L. Howard
Year Published: 1996
Type: Document
Synthesis

Urocyon cinereoargenteus (common gray fox)
www.nrfirescience.org/resource/10506
This FEIS species review synthesizes information on the relationship of Urocyon cinereoargenteus (common gray fox) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Janet Sullivan

Year Published: 1996
Type: Document
Synthesis

An investigation on fire effects within xeric sage grouse brood habitat
www.nrfirescience.org/resource/11457
We investigated the short-term influence of fire on xeric sage grouse (Centrocercus urophasianus Bonaparte) brood habitat in southeastern Idaho from 1990-92.
Author(s): Richard A. Fischer, Kerry P. Reese, John W. Connelly
Year Published: 1996
Type: Document
Book or Chapter or Journal Article

Consequences of fire on aquatic nitrate and phosphate dynamics in Yellowstone National Park
www.nrfirescience.org/resource/11990
Airborne remotely sensed data were collected and analyzed during and following the 1988 Greater Yellowstone Ecosystem (GYE) fires in order to characterize the fire front movements, burn intensities and various vegetative components of selected watersheds. Remotely sensed data were used to categorize the burn intensities as: severely...
Author(s): James A. Brass, Vincent G. Ambrosia, Philip J. Riggan, Paul D. Sebesta
Year Published: 1996
Type: Document
Conference Proceedings

Long-term recovery of Wyoming big sagebrush after four treatments
www.nrfirescience.org/resource/15445
Long-term recovery of Wyoming big sagebrush (Artemisia tridentatassp.wyomingensisBeetle and Young) after four treatments was investigated. Treatments at a south-western Montana site were spraying with 2,4-D, plowing and rotocutting, all applied in 1963, and burning applied in 1964. The treatments and an experimental control (no...
Author(s): Myles J. Watts, Carl L. Wambolt
Year Published: 1996
Type: Document
Book or Chapter or Journal Article

Scophiopus intermontanus (Great Basin spadefoot)
www.nrfirescience.org/resource/10713
This FEIS species review synthesizes information on the relationship of Scophiopus intermontanus (Great Basin spadefoot) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Janet L. Howard
Year Published: 1996
Type: Document
Synthesis

Spermophilus townsendii (Townsend's ground squirrel)
www.nrfirescience.org/resource/10711
This FEIS species review synthesizes information on the relationship of Spermophilus townsendii (Townsend's ground squirrel) to fire--how fire affects the species and its habitat, and fire management

considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This...
Author(s): Janet L. Howard
Year Published: 1996
Type: Document
Synthesis

Acute toxicity of firefighting chemical formulations to four life stages of fathead minnow
www.nrfirescience.org/resource/18544
Laboratory studies were conducted with four early life stages of fathead minnow, Pimephales promelas, to determine the acute toxicity of five firefighting chemical formulations in standardized soft and hard water. Egg, fry, 30-day posthatch, and 60-day posthatch life stages were tested with three fire retardants (Fire-Trol GTS-R,...
Author(s): M. P. Gaikowski, Steven J. Hamilton, Kevin J. Buhl, S. F. McDonald, C. H. Summers
Year Published: 1996
Type: Document
Book or Chapter or Journal Article

Examples of fire restoration in Glacier National Park
www.nrfirescience.org/resource/11252
Covering just over 1 million acres, Glacier National Park straddles the Continental Divide in northwestern Montana. Diverse vegetation communities include moist western cedar- western hemlock (Thuja plicata - Tsuga heterophylla) old growth forests similar to those of the Pacific Coast, dry western grasslands and prairies, dense...
Author(s): Laurie L. Kurth
Year Published: 1996
Type: Document
Technical Report or White Paper

FIRE-BGC - a mechanistic ecological process model for simulating fire succession on coniferous forest landscapes of the northern Rocky Mountains
www.nrfirescience.org/resource/11182
An ecological process model of vegetation dynamics mechanistically simulates long-term stand dynamics on coniferous landscapes of the Northern Rocky Mountains. This model is used to investigate and evaluate cumulative effects of various fire regimes, including prescribed burning and fire exclusion, on the vegetation and fuel complex...
Author(s): Robert E. Keane, Penelope Morgan, Steven W. Running
Year Published: 1996
Type: Document
Technical Report or White Paper

Acute toxicity of fire control chemicals to Daphnia magna (Straus) and Selenastrum capricornutum (Printz)
www.nrfirescience.org/resource/18594
Acute toxicity tests were conducted exposing Daphnia magna Straus (daphnid) in soft and hard reconstituted waters (hardness 42 and 162 mg/liter as $CaCO_3$, respectively), and Selenastrum capricornutum Printz (algae) in ASTM algal assay medium (hardness 15 mg/liter as $CaCO_3$) to fire retardants Fire-Trol GTS-R, Fire-Trol LCG-R, and Phos...
Author(s): S. F. McDonald, Steven J. Hamilton, Kevin J. Buhl, James F. Heisinger
Year Published: 1996
Type: Document

Book or Chapter or Journal Article

Populus tremuloides (quaking aspen)
www.nrfirescience.org/resource/10717
This FEIS species review synthesizes information on the relationship of Populus tremuloides (quaking aspen) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet L. Howard
Year Published: 1996
Type: Document
Synthesis

Taxidea taxus (American badger)
www.nrfirescience.org/resource/10507
This FEIS species review synthesizes information on the relationship of Taxidea taxus (American badger) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Janet Sullivan
Year Published: 1996
Type: Document
Synthesis

Mustela vison (American mink)
www.nrfirescience.org/resource/10513
This FEIS species review synthesizes information on the relationship of Mustela vison (American mink) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Janet Sullivan
Year Published: 1996
Type: Document
Synthesis

The ecological implications of fire in Greater Yellowstone, proceedings of the second biennial conference on the Greater Yellowstone Ecosystem
www.nrfirescience.org/resource/11989
Proceedings of the second biennial conference on the Greater Yellowstone Ecosystem.
Author(s): Jason Greenlee
Year Published: 1996
Type: Document
Conference Proceedings

Remote sensing of forest fire severity and vegetation recovery
www.nrfirescience.org/resource/8152
Burned forested areas have patterns of varying burn severity as a consequence of various topographic, vegetation, and meteorological factors. These patterns are detected and mapped using satellite data. Other ecological information can be abstracted from satellite data regarding rates of recovery of vegetation foliage and variation...

Author(s): Joseph D. White, Kevin C. Ryan, Carl H. Key, Steven W. Running
Year Published: 1996
Type: Document
Book or Chapter or Journal Article

Open-path Fourier transform infrared studies of large-scale laboratory biomass fires
www.nrfirescience.org/resource/8401
A series of nine large-scale, open fires was conducted in the Intermountain Fire Sciences Laboratory (IFSL) controlled-environment combustion facility. The fuels were pure pine needles or sagebrush or mixed fuels simulating forest-floor, ground fires; crown fires; broadcast burns; and slash pile burns. Mid-infrared spectra of the...
Author(s): Robert J. Yokelson, David W. T. Griffith, Darold E. Ward
Year Published: 1996
Type: Document
Book or Chapter or Journal Article

Comparative effects of elk herbivory and 1988 fires on northern Yellowstone National Park grasslands
www.nrfirescience.org/resource/8265
The drought, frequent lightning strikes, and resultant large fires of 1988 in Yellowstone National Park were considered a several-century event for the area. They presented an unparalleled opportunity to document the effects of large fires on forage production, forage quality, and herbivory for the largest elk (Cervus elaphus)...
Author(s): Francis J. Singer, M. K. Harter
Year Published: 1996
Type: Document
Book or Chapter or Journal Article

Athene cunicularia (burrowing owl)
www.nrfirescience.org/resource/10726
This FEIS species review synthesizes information on the relationship of Athene cunicularia (burrowing owl) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet L. Howard
Year Published: 1996
Type: Document
Synthesis

Acute toxicity of three fire-retardant and two fire-suppressant foam formulations to the early life stages of rainbow trout (Oncorhynchus mykiss)
www.nrfirescience.org/resource/18545
Laboratory studies were conducted with five early life stages of rainbow trout, Oncorhynchus mykiss, to determine the acute toxicities of five fire?fighting chemical formulations in standardized soft and hard water. Eyed egg, embryo–larvae, swim?up fry, and 60? and 90?d posthatch juveniles were exposed to three fire...
Author(s): M. P. Gaikowski, Steven J. Hamilton, Kevin J. Buhl, S. F. McDonald, C. H. Summers
Year Published: 1996
Type: Document
Book or Chapter or Journal Article

Microtus pennsylvanicus (meadow vole)
www.nrfirescience.org/resource/10514
This FEIS species review synthesizes information on the relationship of Microtus pennsylvanicus (meadow vole) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Janet Sullivan
Year Published: 1996
Type: Document
Synthesis

Urtica dioica (stinging nettle)
www.nrfirescience.org/resource/10612
This FEIS species review synthesizes information on the relationship of Urtica dioica (stinging nettle) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Jennifer H. Carey
Year Published: 1995
Type: Document
Synthesis

Dipodomys ordii (Ord's kangaroo rat)
www.nrfirescience.org/resource/10504
This FEIS species review synthesizes information on the relationship of Dipodomys ordii (Ord's kangaroo rat) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

Sialia mexicana (western bluebird)
www.nrfirescience.org/resource/10505
This FEIS species review synthesizes information on the relationship of Sialia mexicana (western bluebird) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

Restoration of upper subalpine whitebark pine ecosystems in western Montana
www.nrfirescience.org/resource/19233
Description not available
Author(s): Robert E. Keane, Stephen F. Arno, Catherine A. Stewart
Year Published: 1995
Type: Document

Conference Proceedings

Spiraea douglasii (Douglas' spirea)
www.nrfirescience.org/resource/10633
This FEIS species review synthesizes information on the relationship of Spiraea douglasii (Douglas' spirea) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Lora L. Esser
Year Published: 1995
Type: Document
Synthesis

Puma concolor (mountain lion)
www.nrfirescience.org/resource/10534
This FEIS species review synthesizes information on the relationship of Puma concolor (mountain lion) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Julie L. Tesky
Year Published: 1995
Type: Document
Synthesis

Mortality of western larch seedlings in relation to seedbed characteristics at the dry end of its ecological range
www.nrfirescience.org/resource/13130
The effects of different seedbeds on western larch (Larix occidentalis) germination and seedling mortality were assessed in a grandfir/ninebark (Abies grandis/Physocarpus malvaceus) habitat type in northern, Idaho, U.S.A. Two plots were established on each off our sites, and 150 western larch seeds (66% viable) were...
Author(s): Brian P. Oswald, Leon F. Neuenschwander
Year Published: 1995
Type: Document
Book or Chapter or Journal Article

Ribes oxyacanthoides (northern gooseberry)
www.nrfirescience.org/resource/10611
This FEIS species review synthesizes information on the relationship of Ribes oxyacanthoides (northern gooseberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Jennifer H. Carey
Year Published: 1995
Type: Document
Synthesis

Dichanthelium acuminatum (woolly panicum)
www.nrfirescience.org/resource/10914
This FEIS species review synthesizes information on the relationship of Dichanthelium acuminatum

(woolly panicum) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Roberta A. Walsh
Year Published: 1995
Type: Document
Synthesis

Festuca rubra (red fescue)
www.nrfirescience.org/resource/10923
This FEIS species review synthesizes information on the relationship of Festuca rubra (red fescue) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Roberta A. Walsh
Year Published: 1995
Type: Document
Synthesis

Buteo lagopus (rough-legged hawk)
www.nrfirescience.org/resource/10517
This FEIS species review synthesizes information on the relationship of Buteo lagopus (rough-legged hawk) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

The composition of bird communities following stand-replacement fires in northern Rocky Mountain (U.S.A.) conifer forests
www.nrfirescience.org/resource/12934
During the two breeding seasons immediately following the numerous and widespread fires of 1988, I estimated bird community composition in each of 34 burned-forest sites in western Montana and northern Wyoming. I detected an average of 45 species per site and a total of 87 species in the sites combined. A compilation of these data...
Author(s): Richard L. Hutto
Year Published: 1995
Type: Document
Book or Chapter or Journal Article

Poecile atricapillus (black-capped chickadee)
www.nrfirescience.org/resource/10511
This FEIS species review synthesizes information on the relationship of Poecile atricapillus (black-capped chickadee) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document

Synthesis

Procyon lotor (northern raccoon)
www.nrfirescience.org/resource/10533
This FEIS species review synthesizes information on the relationship of Procyon lotor (northern raccoon) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1995
Type: Document
Synthesis

Winter habitat use by large ungulates following fire in northern Yellowstone National Park
www.nrfirescience.org/resource/8266
The effect of fire and habitat heterogeneity on winter foraging by ungulates was studied in northern Yellowstone National Park (YNP). Grazing was monitored at 15 study sites for 14 wk during the winters of 1991 and 1992. The location and intensity of grazing activity within each site were recorded on topographic maps and digitized...
Author(s): Scott M. Pearson, Monica G. Turner, Linda L. Wallace, William H. Romme
Year Published: 1995
Type: Document
Book or Chapter or Journal Article

Tamiasciurus hudsonicus (red squirrel)
www.nrfirescience.org/resource/10509
This FEIS species review synthesizes information on the relationship of Tamiasciurus hudsonicus (red squirrel) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

Benthic community structure in two adjacent streams in Yellowstone National Park five years after the 1988 wildfires
www.nrfirescience.org/resource/18609
Physical characteristics, benthic macroinvertebrates, and periphyton assemblages in two adjacent headwater streams in Yellowstone National Park were evaluated five years after the 1988 wildfires. The catchment of one stream was burned by wildfire (burned stream) while the other catchment was unburned (unburned stream). Physical...
Author(s): G. Wayne Minshall, Christopher T. Robinson, Todd V. Royer, Samuel R. Rushforth
Year Published: 1995
Type: Document
Book or Chapter or Journal Article

Peromyscus maniculatus (deer mouse)
www.nrfirescience.org/resource/10512
This FEIS species review synthesizes information on the relationship of Peromyscus maniculatus (deer

mouse) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

Aspen, elk, and fire in northern Yellowstone Park
www.nrfirescience.org/resource/8261
Most stands of trembling aspen (Populus tremuloides) in northern Yellowstone National Park appear to have become established between 1870 and 1890, with little regeneration since 1900. There has been controversy throughout this century regarding the relative roles of browsing by elk (Cervus elaphus) and fire suppression in...
Author(s): William H. Romme, Monica G. Turner, Linda L. Wallace, Jennifer S. Walker
Year Published: 1995
Type: Document
Book or Chapter or Journal Article

Bos bison (American bison)
www.nrfirescience.org/resource/10549
This FEIS species review synthesizes information on the relationship of Bos bison (American bison) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Julie L. Tesky
Year Published: 1995
Type: Document
Synthesis

Lepus americanus (snowshoe hare)
www.nrfirescience.org/resource/10515
This FEIS species review synthesizes information on the relationship of Lepus americanus (snowshoe hare) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

Krascheninnikovia lanata (winterfat)
www.nrfirescience.org/resource/10614
This FEIS species review synthesizes information on the relationship of Krascheninnikovia lanata (winterfat) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Jennifer H. Carey
Year Published: 1995
Type: Document
Synthesis

Trophic generalists vs. trophic specialists: implications for food web dynamics in post-fire streams
www.nrfirescience.org/resource/8260
The trophic ecology of 11 benthic macroinvertebrate taxa found in Cache Creek, Yellowstone National Park (YNP) was studied to determine if burned organic matter is an important resource and how resource utilization patterns may be altered in post-fire streams. Laboratory food quality experiments were conducted to determine the...
Author(s): Timothy B. Mihuc, G. Wayne Minshall
Year Published: 1995
Type: Document
Book or Chapter or Journal Article

Sylvilagus floridanus (eastern cottontail)
www.nrfirescience.org/resource/10508
This FEIS species review synthesizes information on the relationship of Sylvilagus floridanus (eastern cottontail) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

Ribes cereum (wax currant)
www.nrfirescience.org/resource/10753
This FEIS species review synthesizes information on the relationship of Ribes cereum (wax currant) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Anna Marshall
Year Published: 1995
Type: Document
Synthesis

Shepherdia argentea (silver buffaloberry)
www.nrfirescience.org/resource/10634
This FEIS species review synthesizes information on the relationship of Shepherdia argentea (silver buffaloberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Lora L. Esser
Year Published: 1995
Type: Document
Synthesis

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

Prunus emarginata (bitter cherry)
www.nrfirescience.org/resource/10635
This FEIS species review synthesizes information on the relationship of Prunus emarginata (bitter cherry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Lora L. Esser
Year Published: 1995
Type: Document
Synthesis

Vegetal recovery following wildfire in seeded and unseeded sagebrush steppe
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

Ribes aureum (golden currant)
www.nrfirescience.org/resource/10749
This FEIS species review synthesizes information on the relationship of Ribes aureum (golden currant) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Anna Marshall
Year Published: 1995
Type: Document
Synthesis

Lynx rufus (bobcat)
www.nrfirescience.org/resource/10526
This FEIS species review synthesizes information on the relationship of Lynx rufus (bobcat) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for fire...
Author(s): Julie L. Tesky
Year Published: 1995
Type: Document
Synthesis

Sialia currucoides (mountain bluebird)
www.nrfirescience.org/resource/10510
This FEIS species review synthesizes information on the relationship of Sialia currucoides (mountain bluebird) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

Schedonorus arundinaceus (tall fescue)
www.nrfirescience.org/resource/10479
This FEIS species review synthesizes information on the relationship of Schedonorus arundinaceus (tall fescue) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Roberta A. Walsh
Year Published: 1995
Type: Document
Synthesis

Muhlenbergia montana (mountain muhly)
www.nrfirescience.org/resource/10919
This FEIS species review synthesizes information on the relationship of Muhlenbergia montana (mountain muhly) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Roberta A. Walsh
Year Published: 1995
Type: Document
Synthesis

Canis latrans (coyote)
www.nrfirescience.org/resource/10548
This FEIS species review synthesizes information on the relationship of Canis latrans (coyote) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for fire...
Author(s): Julie L. Tesky
Year Published: 1995
Type: Document
Synthesis

Deschampsia cespitosa (tufted hairgrass)
www.nrfirescience.org/resource/10913
This FEIS species review synthesizes information on the relationship of Deschampsia cespitosa (tufted hairgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general

management. This species review...
Author(s): Roberta A. Walsh
Year Published: 1995
Type: Document
Synthesis

Bubo virginianus (great horned owl)
www.nrfirescience.org/resource/10518
This FEIS species review synthesizes information on the relationship of Bubo virginianus (great horned owl) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

Molothrus ater (brown-headed cowbird)
www.nrfirescience.org/resource/10444
This FEIS species review synthesizes information on the relationship of Molothrus ater (brown-headed cowbird) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Janet Sullivan
Year Published: 1995
Type: Document
Synthesis

Ribes velutinum (desert gooseberry)
www.nrfirescience.org/resource/10750
This FEIS species review synthesizes information on the relationship of Ribes velutinum (desert gooseberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Anna Marshall
Year Published: 1995
Type: Document
Synthesis

Heracleum lanatum (cow parsnip)
www.nrfirescience.org/resource/10630
This FEIS species review synthesizes information on the relationship of Heracleum lanatum (cow parsnip) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Lora L. Esser
Year Published: 1995
Type: Document
Synthesis

Phasianus colchicus (ring-necked pheasant)
www.nrfirescience.org/resource/10535
This FEIS species review synthesizes information on the relationship of Phasianus colchicus (ring-necked pheasant) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Julie L. Tesky
Year Published: 1995
Type: Document
Synthesis

Lepus californicus (black-tailed jackrabbit)
www.nrfirescience.org/resource/10721
This FEIS species review synthesizes information on the relationship of Lepus californicus (black-tailed jackrabbit) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Janet L. Howard
Year Published: 1995
Type: Document
Synthesis

Philadelphus lewisii (Lewis' mockorange)
www.nrfirescience.org/resource/10613
This FEIS species review synthesizes information on the relationship of Philadelphus lewisii (Lewis' mockorange) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Jennifer H. Carey
Year Published: 1995
Type: Document
Synthesis

Ribes lacustre (bristly black currant)
www.nrfirescience.org/resource/10752
This FEIS species review synthesizes information on the relationship of Ribes lacustre (bristly black currant) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Anna Marshall
Year Published: 1995
Type: Document
Synthesis

Ecological implications of sagebrush manipulation: A literature review
www.nrfirescience.org/resource/15427
The Montana Department of Fish, Wildlife & Parks (FWP) has long recognized the importance of sagebrush/grassland vegetative communities as wildlife habitat. Efforts to manipulate these communities concern FWP because of the potential implications to wildlife. Some groups believe sagebrush control generally will have beneficial...
Author(s): Joel G. Peterson

Year Published: 1995
Type: Document
Management or Planning Document

Ribes montigenum (gooseberry currant)
www.nrfirescience.org/resource/10751
This FEIS species review synthesizes information on the relationship of Ribes montigenum (gooseberry currant) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Anna Marshall
Year Published: 1995
Type: Document
Synthesis

Antilocapra americana (pronghorn)
www.nrfirescience.org/resource/10731
This FEIS species review synthesizes information on the relationship of Antilocapra americana (pronghorn) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet L. Howard
Year Published: 1995
Type: Document
Synthesis

Agrostis exarata (spike bentgrass)
www.nrfirescience.org/resource/10641
This FEIS species review synthesizes information on the relationship of Agrostis exarata (spike bentgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Lora L. Esser
Year Published: 1994
Type: Document
Synthesis

Germination and establishment ecology of big sagebrush: Implications for community restoration
www.nrfirescience.org/resource/15421
Big sagebrush (Artemisia tridentata) seedling recruitment is limited by seed production and dispersal in space and time, by genetic constraints of specific ecotypes, and by environmental factors that include weather, microsite attributes, soil microbiota, herbivory, and inter- and intraspecific competition. Establishing this species...
Author(s): Susan E. Meyer
Year Published: 1994
Type: Document
Conference Proceedings

Fire conditions and pre- and postoccurrence of annual grasses on the Snake River Plain

www.nrfirescience.org/resource/12047
Fire has been an important factor in the development of the vegetation of the Snake River Plain. Prior to Euro-American influence, fire helped determine the physiognomy and species composition of many communities. The occurrence of fire varied widely depending on the vegetation present, topography, and other factors. This impact can...
Author(s): Erin F. Peters, Stephen C. Bunting
Year Published: 1994
Type: Document
Conference Proceedings, Synthesis, Technical Report or White Paper

Glycyrrhiza lepidota (wild licorice)
www.nrfirescience.org/resource/10631
This FEIS species review synthesizes information on the relationship of Glycyrrhiza lepidota (wild licorice) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Lora L. Esser
Year Published: 1994
Type: Document
Synthesis

Chimaphila menziesii (little prince's-pine)
www.nrfirescience.org/resource/10780
This FEIS species review synthesizes information on the relationship of Chimaphila menziesii (little prince's-pine) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Robin F. Matthews
Year Published: 1994
Type: Document
Synthesis

Hierochloe odorata (sweet grass)
www.nrfirescience.org/resource/10921
This FEIS species review synthesizes information on the relationship of Hierochloe odorata (sweet grass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Roberta A. Walsh
Year Published: 1994
Type: Document
Synthesis

VA mycorrhizal status of burned and unburned sagebrush habitat
www.nrfirescience.org/resource/12154
Sagebrush is considered to be an obligate vesicular-arbuscular mycorrhizal plant. Some studies have shown that burning lowers the mycorrhizal inoculum potential (MIP) of the soil (Klopatek and others 1988, 1990; Wicklow-Howard 1989). If this happens, then sagebrush may take longer to reestablish after fire. A study was performed to...
Author(s): Jan E. Gurr, Marcia Wicklow-Howard
Year Published: 1994

Type: Document
Conference Proceedings, Technical Report or White Paper

Postfire defoliation response of Agropyron spicatum and Sitanion hystrix
www.nrfirescience.org/resource/11446
Prescribed fire is an important management tool to increase herbaceous productivity and maintain seral communities of Intermountain sagebrush grasslands. Currently, pastures treated with prescribed fire are rested from livestock grazing before burning to allow fine fuel accumulation, and rested a full year following burning to...
Author(s): Steven J. Jirik, Stephen C. Bunting
Year Published: 1994
Type: Document
Book or Chapter or Journal Article

Impacts of the 1988 wildfires on the water quality of Yellowstone and Lewis lakes, Wyoming
www.nrfirescience.org/resource/18576
The objective of this paper is to examine whether the severity and great extent of the 1988 Yellowstone fires impacted the water quality of two of Yellowstone's major lakes. Analysis of water quality records for Yellowstone and Lewis Lakes collected over a fifteen year period (1976-1991) have shown only a minimal shift in lake...
Author(s): R. G. Lathrop
Year Published: 1994
Type: Document
Book or Chapter or Journal Article

Buteo regalis (ferruginous hawk)
www.nrfirescience.org/resource/10545
This FEIS species review synthesizes information on the relationship of Buteo regalis (ferruginous hawk) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1994
Type: Document
Synthesis

Onsite sediment production and nutrient losses from a low-severity burn in the interior northwest
www.nrfirescience.org/resource/11013
Postharvest residue burning is a common site preparation treatment used in the interior Northwest to reduce forest fuels and prepare sites for tree regeneration. A study was conducted to measure runoff, sediment production, and nutrient changes caused by broadcast burning of logging slash. The site was a northern Idaho mixed conifer...
Author(s): Peter R. Robichaud, Russell T. Graham, Roger D. Hungerford
Year Published: 1994
Type: Document
Conference Proceedings

Chimaphila umbellata (prince's-pine)
www.nrfirescience.org/resource/10772

This FEIS species review synthesizes information on the relationship of Chimaphila umbellata (prince's-pine) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews
Year Published: 1994
Type: Document
Synthesis

Buteo swainsoni (Swainson's hawk)
www.nrfirescience.org/resource/10546
This FEIS species review synthesizes information on the relationship of Buteo swainsoni (Swainson's hawk) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1994
Type: Document
Synthesis

Landscape-scale heterogeneity in lodgepole pine serotiny
www.nrfirescience.org/resource/13549
A 1992 study of serotiny in lodgepole pine (Pinuscontorta Dougl. ex Loud. var. latifolia Engelm.) in Yellowstone National Park asked four questions: (i) are there morphological characteristics that can be used to estimate pre-fire proportion of serotinous trees in forests that burned in 1988?; (ii) at what spatial scale does percent...
Author(s): Daniel B. Tinker, William H. Romme, William W. Hargrove, Robert H. Gardner, Monica G. Turner
Year Published: 1994
Type: Document
Book or Chapter or Journal Article

Alectoris chukar (chukar)
www.nrfirescience.org/resource/10860
This FEIS species review synthesizes information on the relationship of Alectoris chukar (chukar) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Janet Sullivan
Year Published: 1994
Type: Document
Synthesis

Impacts of the 1988 wildfires on the water-quality of Yellowstone and Lewis Lakes, Wyoming
www.nrfirescience.org/resource/8218
The objective of this paper is to examine whether the severity and great extent of the 1988 Yellowstone fires impacted the water quality of two of Yellowstone's major lakes. Analysis of water quality records for Yellowstone and Lewis Lakes collected over a fifteen year period (1976-1991) have shown only a minimal shift in lake...
Author(s): R. G. Lathrop
Year Published: 1994

Type: Document
Book or Chapter or Journal Article

Ratibida columnifera (upright prairie coneflower)
www.nrfirescience.org/resource/10911
This FEIS species review synthesizes information on the relationship of Ratibida columnifera (upright prairie coneflower) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Roberta A. Walsh
Year Published: 1994
Type: Document
Synthesis

Fish mortality resulting from delayed effects of fire in the greater Yellowstone ecosystem
www.nrfirescience.org/resource/8153
During the 1988 fires in the GYE, Minshall et al. (1989) observed fish kills in streams, but the extent and causes of mortality were not reported. While conducting other studies of watersheds in the GYE, we observed a fish kill in a burned watershed that occurred two years after the fires. In this paper we describe aspects of this...
Author(s): Michael K. Young, Michael A. Bozek
Year Published: 1994
Type: Document
Book or Chapter or Journal Article

Tympanuchus phasianellus (sharp-tailed grouse)
www.nrfirescience.org/resource/10532
This FEIS species review synthesizes information on the relationship of Tympanuchus phasianellus (sharp-tailed grouse) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Julie L. Tesky
Year Published: 1994
Type: Document
Synthesis

Elaeagnus commutata (silverberry)
www.nrfirescience.org/resource/10632
This FEIS species review synthesizes information on the relationship of Elaeagnus commutata (silverberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Lora L. Esser
Year Published: 1994
Type: Document
Synthesis

Asio flammeus (short-eared owl)
www.nrfirescience.org/resource/10725
This FEIS species review synthesizes information on the relationship of Asio flammeus (short-eared

owl) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Janet L. Howard
Year Published: 1994
Type: Document
Synthesis

Bromus ciliatus (fringed brome)
www.nrfirescience.org/resource/10640
This FEIS species review synthesizes information on the relationship of Bromus ciliatus (fringed brome) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Lora L. Esser
Year Published: 1994
Type: Document
Synthesis

Bromus vulgaris (Columbia brome)
www.nrfirescience.org/resource/10916
This FEIS species review synthesizes information on the relationship of Bromus vulgaris (Columbia brome) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Roberta A. Walsh
Year Published: 1994
Type: Document
Synthesis

Bromus pumpellianus (Pumpelly brome)
www.nrfirescience.org/resource/10915
This FEIS species review synthesizes information on the relationship of Bromus pumpellianus (Pumpelly brome) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Roberta A. Walsh
Year Published: 1994
Type: Document
Synthesis

Proceedings-ecology and management of annual rangelands; 1992 May 18-21; Boise, ID
www.nrfirescience.org/resource/12046
Annual weeds continue to expand throughout the West eliminating many desirable species and plant communities. Wildfires are now common on lands infested with annual weeds, causing a loss of wildlife habitat and other natural resources. Measures can be used to reduce burning and restore native plant communities, but restoration is...
Author(s): Stephen B. Monsen, Stanley G. Kitchen
Year Published: 1994
Type: Document
Conference Proceedings, Technical Report or White Paper

Carex concinna (low northern sedge)
www.nrfirescience.org/resource/10925
This FEIS species review synthesizes information on the relationship of Carex concinna (low northern sedge) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Roberta A. Walsh
Year Published: 1994
Type: Document
Synthesis

Dumetella carolinensis (gray catbird)
www.nrfirescience.org/resource/10516
This FEIS species review synthesizes information on the relationship of Dumetella carolinensis (gray catbird) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Janet Sullivan
Year Published: 1994
Type: Document
Synthesis

Comparisons of particulate-emissions and smoke impacts from presettlement, full suppression, and prescribed natural fire period in the Selway-Bitterroot Wilderness
www.nrfirescience.org/resource/8216
Total particulate matter (PM) emissions were estimated for recent fires (1979-1990) and the presettlement period (prior to 1935) in the Selway-Bitterroot Wilderness (SBW) in Idaho and Montana. Recent period emissions were calculated by 10-day periods for surface fire and crown fire based on estimates of percentage fuel consumption...
Author(s): James K. Brown, Larry S. Bradshaw
Year Published: 1994
Type: Document
Book or Chapter or Journal Article

Deschampsia elongata (slender hairgrass)
www.nrfirescience.org/resource/10645
This FEIS species review synthesizes information on the relationship of Deschampsia elongata (slender hairgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Lora L. Esser
Year Published: 1994
Type: Document
Synthesis

Rudbeckia hirta (black-eyed Susan)
www.nrfirescience.org/resource/10918
This FEIS species review synthesizes information on the relationship of Rudbeckia hirta (black-eyed Susan) to fire--how fire affects the species and its habitat, and fire management considerations.

Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Roberta A. Walsh
Year Published: 1994
Type: Document
Synthesis

Monitoring changes in Greater Yellowstone Lake water quality following the 1988 wildfires
www.nrfirescience.org/resource/18578
The fires that burned the Greater Yellowstone Area (GYA) during the summer of 1988 were the largest ever recorded for the region. Wildfire can have profound indirect effects on associated aquatic ecosystems by increased nutrient loading, sediment, erosion, and runoff. Satellite remote sensing and water quality sampling were used to...
Author(s): R. G. Lathrop, John D. Vande Castle, James A. Brass
Year Published: 1994
Type: Document
Book or Chapter or Journal Article

Factors influencing postfire sagebrush regeneration in south-central Idaho
www.nrfirescience.org/resource/12155
Sagebrush seedling establishment appeared to be strongly related to moisture availability as influenced by ecological site, soil surface texture, herbaceous competition, microtopography, seedling year precipitation, exposure, position on slope, etc. Many of the same factors influence seed source availability following wildfire and...
Author(s): Mike Boltz
Year Published: 1994
Type: Document
Conference Proceedings, Technical Report or White Paper

Sediment transport in a small stream following two successive forest fires
www.nrfirescience.org/resource/18483
The transport of stream bedload sediment was monitored continuously in a small stream from 1975 to 1982 following forest fires in 1974 and 1980. The stream is located in the east subcatchment (170 ha) of Lake 239 in the Experimental Lakes Area, northwestern Ontario. Precipitation, stream discharge, bedload transport, and...
Author(s): Kenneth G. Beaty
Year Published: 1994
Type: Document
Book or Chapter or Journal Article

Chamaebatiaria millefolium (desert sweet)
www.nrfirescience.org/resource/10765
This FEIS species review synthesizes information on the relationship of Chamaebatiaria millefolium (desert sweet) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Robin F. Matthews
Year Published: 1994
Type: Document
Synthesis

Brachylagus idahoensis (pygmy rabbit)
www.nrfirescience.org/resource/10550
This FEIS species review synthesizes information on the relationship of Brachylagus idahoensis (pygmy rabbit) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Julie L. Tesky
Year Published: 1994
Type: Document
Synthesis

Bufo boreas (western toad)
www.nrfirescience.org/resource/10859
This FEIS species review synthesizes information on the relationship of Bufo boreas (western toad) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Janet Sullivan
Year Published: 1994
Type: Document
Synthesis

Solidago missouriensis (prairie goldenrod)
www.nrfirescience.org/resource/10917
This FEIS species review synthesizes information on the relationship of Solidago missouriensis (prairie goldenrod) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Roberta A. Walsh
Year Published: 1994
Type: Document
Synthesis

Falco mexicanus (prairie falcon)
www.nrfirescience.org/resource/10541
This FEIS species review synthesizes information on the relationship of Falco mexicanus (prairie falcon) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1994
Type: Document
Synthesis

Simulating winter interactions among ungulates, vegetation, and fire in northern Yellowstone Park
www.nrfirescience.org/resource/8267
The interaction of large-scale fire, vegetation, and ungulates is an important management issue in Yellowstone National Park. A spatially explicit individual-based simulation model was developed to explore the effects of fire scale and pattern on the winter foraging dynamics and survival of free-ranging

elk (Cervus elaphus) and...
Author(s): Monica G. Turner, Yegang Wu, Linda L. Wallace, William H. Romme, Antoinette Brenkert
Year Published: 1994
Type: Document
Book or Chapter or Journal Article

Buteo jamaicensis (red-tailed hawk)
www.nrfirescience.org/resource/10551
This FEIS species review synthesizes information on the relationship of Buteo jamaicensis (red-tailed hawk) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1994
Type: Document
Synthesis

Carex garberi (Garber sedge)
www.nrfirescience.org/resource/10924
This FEIS species review synthesizes information on the relationship of Carex garberi (Garber sedge) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Roberta A. Walsh
Year Published: 1994
Type: Document
Synthesis

Agrostis stolonifera (creeping bentgrass)
www.nrfirescience.org/resource/10642
This FEIS species review synthesizes information on the relationship of Agrostis stolonifera (creeping bentgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Lora L. Esser
Year Published: 1994
Type: Document
Synthesis

Accipiter striatus (sharp-shinned hawk)
www.nrfirescience.org/resource/10519
This FEIS species review synthesizes information on the relationship of Accipiter striatus (sharp-shinned hawk) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Janet Sullivan
Year Published: 1994
Type: Document
Synthesis

Aquila chrysaetos (golden eagle)
www.nrfirescience.org/resource/10554
This FEIS species review synthesizes information on the relationship of Aquila chrysaetos (golden eagle) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1994
Type: Document
Synthesis

Carex capitata (capitate sedge)
www.nrfirescience.org/resource/10926
This FEIS species review synthesizes information on the relationship of Carex capitata (capitate sedge) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Roberta A. Walsh
Year Published: 1994
Type: Document
Synthesis

Diatom assemblages of streams influenced by wildfire
www.nrfirescience.org/resource/18646
The Greater Yellowstone Area ecosystem experienced major wildfires in 1988, resulting in a substantial number of catchments being burned. We studied diatom assemblage structure at 14 sites over 5 years in catchments ranging from 0 to over 90% burned. Coefficients of variation for selected physical measures provided a good assessment...
Author(s): Christopher T. Robinson, Samuel R. Rushforth, G. Wayne Minshall
Year Published: 1994
Type: Document
Book or Chapter or Journal Article

Festuca subulata (bearded fescue)
www.nrfirescience.org/resource/10644
This FEIS species review synthesizes information on the relationship of Festuca subulata (bearded fescue) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Lora L. Esser
Year Published: 1994
Type: Document
Synthesis

Geranium richardsonii (Richardson's geranium)
www.nrfirescience.org/resource/10636
This FEIS species review synthesizes information on the relationship of Geranium richardsonii (Richardson's geranium) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Lora L. Esser

Year Published: 1994
Type: Document
Synthesis

Falco sparverius (American kestrel)
www.nrfirescience.org/resource/10542
This FEIS species review synthesizes information on the relationship of Falco sparverius (American kestrel) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1994
Type: Document
Synthesis

Aythya valisineria (canvasback)
www.nrfirescience.org/resource/10552
This FEIS species review synthesizes information on the relationship of Aythya valisineria (canvasback) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Arnica cordifolia (heartleaf arnica)
www.nrfirescience.org/resource/10811
This FEIS species review synthesizes information on the relationship of Arnica cordifolia (heartleaf arnica) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): William R. Reed
Year Published: 1993
Type: Document
Synthesis

Zenaida macroura (mourning dove)
www.nrfirescience.org/resource/10531
This FEIS species review synthesizes information on the relationship of Zenaida macroura (mourning dove) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Anas platyrhynchos (mallard)
www.nrfirescience.org/resource/10848

This FEIS species review synthesizes information on the relationship of Anas platyrhynchos (mallard) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): S. A. Snyder
Year Published: 1993
Type: Document
Synthesis

Claytonia perfoliata (miner's-lettuce)
www.nrfirescience.org/resource/10763
This FEIS species review synthesizes information on the relationship of Claytonia perfoliata (miner's-lettuce) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Lewisia rediviva (bitterroot)
www.nrfirescience.org/resource/10736
This FEIS species review synthesizes information on the relationship of Lewisia rediviva (bitterroot) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Janet L. Howard
Year Published: 1993
Type: Document
Synthesis

Atriplex gardneri (Gardner's saltbush)
www.nrfirescience.org/resource/10810
This FEIS species review synthesizes information on the relationship of Atriplex gardneri (Gardner's saltbush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): William R. Reed
Year Published: 1993
Type: Document
Synthesis

Lycopodium annotinum (stiff clubmoss)
www.nrfirescience.org/resource/10759
This FEIS species review synthesizes information on the relationship of Lycopodium annotinum (stiff clubmoss) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document

Synthesis

Zigadenus paniculatus (foothill deathcamas)
www.nrfirescience.org/resource/10707
This FEIS species review synthesizes information on the relationship of Zigadenus paniculatus (foothill deathcamas) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Janet L. Howard
Year Published: 1993
Type: Document
Synthesis

Marchantia polymorpha (liverwort)
www.nrfirescience.org/resource/10757
This FEIS species review synthesizes information on the relationship of Marchantia polymorpha (liverwort) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Grindelia squarrosa (curlycup gumweed)
www.nrfirescience.org/resource/10922
This FEIS species review synthesizes information on the relationship of Grindelia squarrosa (curlycup gumweed) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Roberta A. Walsh
Year Published: 1993
Type: Document
Synthesis

Trifolium repens (white clover)
www.nrfirescience.org/resource/10617
This FEIS species review synthesizes information on the relationship of Trifolium repens (white clover) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Milo Coladonato
Year Published: 1993
Type: Document
Synthesis

Amaranthus retroflexus (rough pigweed)
www.nrfirescience.org/resource/10480
This FEIS species review synthesizes information on the relationship of Amaranthus retroflexus (rough pigweed) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire

management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Roberta A. Walsh
Year Published: 1993
Type: Document
Synthesis

Lupinus sericeus (silky lupine)
www.nrfirescience.org/resource/10774
This FEIS species review synthesizes information on the relationship of Lupinus sericeus (silky lupine) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Linnaea borealis (twinflower)
www.nrfirescience.org/resource/10737
This FEIS species review synthesizes information on the relationship of Linnaea borealis (twinflower) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Janet L. Howard
Year Published: 1993
Type: Document
Synthesis

Delphinium occidentale (duncecap larkspur)
www.nrfirescience.org/resource/10777
This FEIS species review synthesizes information on the relationship of Delphinium occidentale (duncecap larkspur) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Gymnocarpium dryopteris (oak fern)
www.nrfirescience.org/resource/10842
This FEIS species review synthesizes information on the relationship of Gymnocarpium dryopteris (oak fern) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): S. A. Snyder
Year Published: 1993
Type: Document
Synthesis

Equisetum arvense (field horsetail)
www.nrfirescience.org/resource/10858
This FEIS species review synthesizes information on the relationship of Equisetum arvense (field horsetail) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet Sullivan
Year Published: 1993
Type: Document
Synthesis

Picea pungens (blue spruce)
www.nrfirescience.org/resource/10805
This FEIS species review synthesizes information on the relationship of Picea pungens (blue spruce) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Diane S. Pavek
Year Published: 1993
Type: Document
Synthesis

Wyethia amplexicaulis (mules-ears)
www.nrfirescience.org/resource/10771
This FEIS species review synthesizes information on the relationship of Wyethia amplexicaulis (mules-ears) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Anas discors (blue-winged teal)
www.nrfirescience.org/resource/10557
This FEIS species review synthesizes information on the relationship of Anas discors (blue-winged teal) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Branta canadensis (Canada goose)
www.nrfirescience.org/resource/10847
This FEIS species review synthesizes information on the relationship of Branta canadensis (Canada goose) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...

Author(s): S. A. Snyder
Year Published: 1993
Type: Document
Synthesis

Vicia americana (American vetch)
www.nrfirescience.org/resource/10616
This FEIS species review synthesizes information on the relationship of Vicia americana (American vetch) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Milo Coladonato
Year Published: 1993
Type: Document
Synthesis

Tortula ruralis (twisted moss)
www.nrfirescience.org/resource/10756
This FEIS species review synthesizes information on the relationship of Tortula ruralis (twisted moss) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Liatris punctata (blazing star)
www.nrfirescience.org/resource/10920
This FEIS species review synthesizes information on the relationship of Liatris punctata (blazing star) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Roberta A. Walsh
Year Published: 1993
Type: Document
Synthesis

Rapid decline of whitebark pine in western Montana: evidence from 20-year re-measurements
www.nrfirescience.org/resource/12916
Whitebark pine (Pinus albicaulis), an important producer of food for wildlife, is decreasing in abundance in western Montana due to attacks by the white pine blister rust fungus (Cronartium ribicola), epidemics of mountain pine beetle (Dendroctonus ponderosae) and successional replacement mainly by subalpine fir (Abies lasiocarpa)....
Author(s): Robert E. Keane, Stephen F. Arno
Year Published: 1993
Type: Document
Book or Chapter or Journal Article

Anas crecca (green-winged teal)

www.nrfirescience.org/resource/10556
This FEIS species review synthesizes information on the relationship of Anas crecca (green-winged teal) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Cygnus buccinator (trumpeter swan)
www.nrfirescience.org/resource/10543
This FEIS species review synthesizes information on the relationship of Cygnus buccinator (trumpeter swan) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Collema tenax (black lichen)
www.nrfirescience.org/resource/10764
This FEIS species review synthesizes information on the relationship of Collema tenax (black lichen) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Antennaria racemosa (raceme pussytoes)
www.nrfirescience.org/resource/10770
This FEIS species review synthesizes information on the relationship of Antennaria racemosa (raceme pussytoes) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Ovis canadensis (bighorn sheep)
www.nrfirescience.org/resource/10536
This FEIS species review synthesizes information on the relationship of Ovis canadensis (bighorn sheep) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Julie L. Tesky
Year Published: 1993

Type: Document
Synthesis

Phleum pratense (timothy)
www.nrfirescience.org/resource/10449
This FEIS species review synthesizes information on the relationship of Phleum pratense (timothy) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This...
Author(s): Lora L. Esser
Year Published: 1993
Type: Document
Synthesis

Pediomelum hypogaeum (subterranean Indian breadroot)
www.nrfirescience.org/resource/10714
This FEIS species review synthesizes information on the relationship of Pediomelum hypogaeum (subterranean Indian breadroot) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This...
Author(s): Janet L. Howard
Year Published: 1993
Type: Document
Synthesis

Salix brachycarpa (barren-ground willow)
www.nrfirescience.org/resource/10619
This FEIS species review synthesizes information on the relationship of Salix brachycarpa (barren-ground willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Milo Coladonato
Year Published: 1993
Type: Document
Synthesis

Panicum virgatum (switchgrass)
www.nrfirescience.org/resource/10580
This FEIS species review synthesizes information on the relationship of Panicum virgatum (switchgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Ronald Uchytil
Year Published: 1993
Type: Document
Synthesis

Haliaeetus leucocephalus (bald eagle)
www.nrfirescience.org/resource/10843
This FEIS species review synthesizes information on the relationship of Haliaeetus leucocephalus (bald

eagle) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): S. A. Snyder
Year Published: 1993
Type: Document
Synthesis

Blechnum spicant (deer fern)
www.nrfirescience.org/resource/10767
This FEIS species review synthesizes information on the relationship of Blechnum spicant (deer fern) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Taraxacum officinale (common dandelion)
www.nrfirescience.org/resource/10448
This FEIS species review synthesizes information on the relationship of Taraxacum officinale (common dandelion) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Lora L. Esser
Year Published: 1993
Type: Document
Synthesis

Anser albifrons (greater white-fronted goose)
www.nrfirescience.org/resource/10555
This FEIS species review synthesizes information on the relationship of Anser albifrons (greater white-fronted goose) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Eurybia conspicua (showy aster)
www.nrfirescience.org/resource/10812
This FEIS species review synthesizes information on the relationship of Eurybia conspicua (showy aster) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): William R. Reed
Year Published: 1993
Type: Document
Synthesis

Iliamna rivularis (wild hollyhock)
www.nrfirescience.org/resource/10760
This FEIS species review synthesizes information on the relationship of Iliamna rivularis (wild hollyhock) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Dracocephalum parviflorum (American dragonhead)
www.nrfirescience.org/resource/10761
This FEIS species review synthesizes information on the relationship of Dracocephalum parviflorum (American dragonhead) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Castor canadensis (American beaver)
www.nrfirescience.org/resource/10547
This FEIS species review synthesizes information on the relationship of Castor canadensis (American beaver) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Solidago canadensis (Canada goldenrod)
www.nrfirescience.org/resource/10618
This FEIS species review synthesizes information on the relationship of Solidago canadensis (Canada goldenrod) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Milo Coladonato
Year Published: 1993
Type: Document
Synthesis

Sorbus sitchensis (Sitka mountain-ash)
www.nrfirescience.org/resource/10781
This FEIS species review synthesizes information on the relationship of Sorbus sitchensis (Sitka mountain-ash) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general

management. This species review can...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Lupinus caudatus (tailcup lupine)
www.nrfirescience.org/resource/10775
This FEIS species review synthesizes information on the relationship of Lupinus caudatus (tailcup lupine) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Oxytropis sericea (whitepoint locoweed)
www.nrfirescience.org/resource/10643
This FEIS species review synthesizes information on the relationship of Oxytropis sericea (whitepoint locoweed) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Lora L. Esser
Year Published: 1993
Type: Document
Synthesis

Cetraria islandica (Iceland moss)
www.nrfirescience.org/resource/10779
This FEIS species review synthesizes information on the relationship of Cetraria islandica (Iceland moss) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Cygnus columbianus (tundra swan)
www.nrfirescience.org/resource/10544
This FEIS species review synthesizes information on the relationship of Cygnus columbianus (tundra swan) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Lonicera utahensis (Utah honeysuckle)
www.nrfirescience.org/resource/10806
This FEIS species review synthesizes information on the relationship of Lonicera utahensis (Utah honeysuckle) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Diane S. Pavek
Year Published: 1993
Type: Document
Synthesis

Peltigera aphthosa (green dog lichen)
www.nrfirescience.org/resource/10773
This FEIS species review synthesizes information on the relationship of Peltigera aphthosa (green dog lichen) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Camassia quamash (common camas)
www.nrfirescience.org/resource/10724
This FEIS species review synthesizes information on the relationship of Camassia quamash (common camas) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Janet L. Howard
Year Published: 1993
Type: Document
Synthesis

Schoenoplectus tabernaemontani (soft-stem bulrush)
www.nrfirescience.org/resource/10839
This FEIS species review synthesizes information on the relationship of Schoenoplectus tabernaemontani (soft-stem bulrush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): S. A. Snyder
Year Published: 1993
Type: Document
Synthesis

Delphinium bicolor (low larkspur)
www.nrfirescience.org/resource/10778
This FEIS species review synthesizes information on the relationship of Delphinium bicolor (low larkspur) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews

Year Published: 1993
Type: Document
Synthesis

Rosa gymnocarpa (baldhip rose)
www.nrfirescience.org/resource/10814
This FEIS species review synthesizes information on the relationship of Rosa gymnocarpa (baldhip rose) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): William R. Reed
Year Published: 1993
Type: Document
Synthesis

Lutra canadensis (northern river otter)
www.nrfirescience.org/resource/10538
This FEIS species review synthesizes information on the relationship of Lutra canadensis (northern river otter) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Circus cyaneus (northern harrier)
www.nrfirescience.org/resource/10845
This FEIS species review synthesizes information on the relationship of Circus cyaneus (northern harrier) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): S. A. Snyder
Year Published: 1993
Type: Document
Synthesis

Effects of fire on water and salinity relations of riparian woody taxa
www.nrfirescience.org/resource/18512
Water and salinity relations were evaluated in recovering burned individuals of the dominant woody taxa from low-elevation riparian plant communities of the southwestern U.S. Soil elemental analyses indicated that concentrations of most nutrients increased following fire, contributing to a potential nutrient abundance but also...
Author(s): David E. Busch, Stanley D. Smith
Year Published: 1993
Type: Document
Book or Chapter or Journal Article

Antennaria microphylla (rosy pussytoes)
www.nrfirescience.org/resource/10768

This FEIS species review synthesizes information on the relationship of Antennaria microphylla (rosy pussytoes) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Helianthus maximiliani (Maximilian sunflower)
www.nrfirescience.org/resource/10912
This FEIS species review synthesizes information on the relationship of Helianthus maximiliani (Maximilian sunflower) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Roberta A. Walsh
Year Published: 1993
Type: Document
Synthesis

Aralia nudicaulis (wild sarsaparilla)
www.nrfirescience.org/resource/10808
This FEIS species review synthesizes information on the relationship of Aralia nudicaulis (wild sarsaparilla) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Diane S. Pavek
Year Published: 1993
Type: Document
Synthesis

Pandion haliaetus (osprey)
www.nrfirescience.org/resource/10537
This FEIS species review synthesizes information on the relationship of Pandion haliaetus (osprey) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Poa compressa (Canada bluegrass)
www.nrfirescience.org/resource/10578
This FEIS species review synthesizes information on the relationship of Poa compressa (Canada bluegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Ronald Uchytil
Year Published: 1993
Type: Document

Synthesis

Aix sponsa (wood duck)
www.nrfirescience.org/resource/10849
This FEIS species review synthesizes information on the relationship of Aix sponsa (wood duck) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for fire...
Author(s): S. A. Snyder
Year Published: 1993
Type: Document
Synthesis

Equisetum sylvaticum (wood horsetail)
www.nrfirescience.org/resource/10776
This FEIS species review synthesizes information on the relationship of Equisetum sylvaticum (wood horsetail) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Anas strepera (gadwall)
www.nrfirescience.org/resource/10553
This FEIS species review synthesizes information on the relationship of Anas strepera (gadwall) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Chen caerulescens (snow goose)
www.nrfirescience.org/resource/10844
This FEIS species review synthesizes information on the relationship of Chen caerulescens (snow goose) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): S. A. Snyder
Year Published: 1993
Type: Document
Synthesis

Corydalis aurea (golden corydalis)
www.nrfirescience.org/resource/10762
This FEIS species review synthesizes information on the relationship of Corydalis aurea (golden corydalis) to fire--how fire affects the species and its habitat, and fire management considerations.

Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews
Year Published: 1993
Type: Document
Synthesis

Rosa nutkana (Nootka rose)
www.nrfirescience.org/resource/10813
This FEIS species review synthesizes information on the relationship of Rosa nutkana (Nootka rose) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): William R. Reed
Year Published: 1993
Type: Document
Synthesis

Anas acuta (northern pintail)
www.nrfirescience.org/resource/10527
This FEIS species review synthesizes information on the relationship of Anas acuta (northern pintail) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Poa pratensis (Kentucky bluegrass)
www.nrfirescience.org/resource/10446
This FEIS species review synthesizes information on the relationship of Poa pratensis (Kentucky bluegrass) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management...
Author(s): Ronald Uchytil
Year Published: 1993
Type: Document
Synthesis

Oplopanax horridus (devil's club)
www.nrfirescience.org/resource/10720
This FEIS species review synthesizes information on the relationship of Oplopanax horridus (devil's club) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Janet L. Howard
Year Published: 1993
Type: Document
Synthesis

Grus americana (whooping crane)
www.nrfirescience.org/resource/10540
This FEIS species review synthesizes information on the relationship of Grus americana (whooping crane) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Julie L. Tesky
Year Published: 1993
Type: Document
Synthesis

Rhamnus purshiana (cascara)
www.nrfirescience.org/resource/10691
This FEIS species review synthesizes information on the relationship of Rhamnus purshiana (cascara) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): James R. Habeck
Year Published: 1992
Type: Document
Synthesis

Carex bigelowii (Bigelow sedge)
www.nrfirescience.org/resource/10766
This FEIS species review synthesizes information on the relationship of Carex bigelowii (Bigelow sedge) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Robin F. Matthews
Year Published: 1992
Type: Document
Synthesis

Recovery of temperate-stream fish communities from disturbance: a review of case studies and synthesis of theory
www.nrfirescience.org/resource/18536
To evaluate the relative effect of autecologic factors, site-specific factors, disturbance characteristics, and community structure on the recovery of temperate-stream fish communities, we reviewed case histories for 49 sites and recorded data on 411 recovery end points. Most data were derived from studies of low-gradient third- or...
Author(s): Naomi E. Detenbeck, Philip W. DeVore, Gerald J. Niemi, Ann Lima
Year Published: 1992
Type: Document
Book or Chapter or Journal Article

Salix bebbiana (Bebb willow)
www.nrfirescience.org/resource/10563
This FEIS species review synthesizes information on the relationship of Salix bebbiana (Bebb willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This

species review can be used...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Spatial and temporal trends in stream macroinvertebrate communities: the influence of catchment disturbance
www.nrfirescience.org/resource/18632
Macroinvertebrate communities of five headwater streams in catchments disturbed by wildfire were compared with five similar streams with no catchment disturbance. Over the five years of observation, communities in disturbed streams were more similar to one another than they were to reference streams. Communities in disturbed streams...
Author(s): Carl Richards, G. Wayne Minshall
Year Published: 1992
Type: Document
Book or Chapter or Journal Article

Xanthium strumarium (common cocklebur)
www.nrfirescience.org/resource/10445
This FEIS species review synthesizes information on the relationship of Xanthium strumarium (common cocklebur) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Ronald Uchytil
Year Published: 1992
Type: Document
Synthesis

Tsuga heterophylla (western hemlock)
www.nrfirescience.org/resource/10560
This FEIS species review synthesizes information on the relationship of Tsuga heterophylla (western hemlock) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Maianthemum stellatum (starry Solomon's-seal)
www.nrfirescience.org/resource/10686
This FEIS species review synthesizes information on the relationship of Maianthemum stellatum (starry Solomon's-seal) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): James R. Habeck
Year Published: 1992
Type: Document
Synthesis

Pleurozium schreberi (Schreber's moss)
www.nrfirescience.org/resource/10528
This FEIS species review synthesizes information on the relationship of Pleurozium schreberi (Schreber's moss) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Fire ecology of the forest habitat types of eastern Idaho and western Wyoming
www.nrfirescience.org/resource/12116
This report summarizes the available fire ecology and management information relating to the forest habitat types of eastern Idaho and western Wyoming, west of the crest of the Wind River Mountain.
Author(s): Anne F. Bradley, William C. Fischer, Nonan V. Noste
Year Published: 1992
Type: Document
Technical Report or White Paper

Achnatherum richardsonii (Richardson needlegrass)
www.nrfirescience.org/resource/10638
This FEIS species review synthesizes information on the relationship of Achnatherum richardsonii (Richardson needlegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Lora L. Esser
Year Published: 1992
Type: Document
Synthesis

Viburnum edule (highbush cranberry)
www.nrfirescience.org/resource/10758
This FEIS species review synthesizes information on the relationship of Viburnum edule (highbush cranberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Robin F. Matthews
Year Published: 1992
Type: Document
Synthesis

Effects of multiple fires on nutrient yields from streams draining boreal forest and fen watersheds: nitrogen and phosphorus
www.nrfirescience.org/resource/18482
Wildfire in the boreal forests at the Experimental Lakes Area in Ontario caused significant losses of nitrogen and phosphorus in streams. Both watershed type and fire intensity appear to determine the extent of losses. The Northeast wetland basin lost more N and P, especially TDN, TDP, TN, and TP, than did terrestrial basins,...
Author(s): Suzanne E. Bayley, D. W. Schindler, Kenneth G. Beaty, B. R. Parker, M. P. Stainton

Year Published: 1992
Type: Document
Book or Chapter or Journal Article

Physocarpus malvaceus (ninebark)
www.nrfirescience.org/resource/10688
This FEIS species review synthesizes information on the relationship of Physocarpus malvaceus (ninebark) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): James R. Habeck
Year Published: 1992
Type: Document
Synthesis

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

Salix boothii (Booth willow)
www.nrfirescience.org/resource/10637
This FEIS species review synthesizes information on the relationship of Salix boothii (Booth willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Lora L. Esser
Year Published: 1992
Type: Document
Synthesis

Chamerion angustifolium (fireweed)
www.nrfirescience.org/resource/10809
This FEIS species review synthesizes information on the relationship of Chamerion angustifolium (fireweed) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Diane S. Pavek
Year Published: 1992
Type: Document
Synthesis

Agrostis scabra (ticklegrass)
www.nrfirescience.org/resource/10769

This FEIS species review synthesizes information on the relationship of Agrostis scabra (ticklegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Robin F. Matthews
Year Published: 1992
Type: Document
Synthesis

Salix glauca (grayleaf willow)
www.nrfirescience.org/resource/10581
This FEIS species review synthesizes information on the relationship of Salix glauca (grayleaf willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Ronald Uchytil
Year Published: 1992
Type: Document
Synthesis

Ambrosia psilostachya (western ragweed)
www.nrfirescience.org/resource/10807
This FEIS species review synthesizes information on the relationship of Ambrosia psilostachya (western ragweed) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Diane S. Pavek
Year Published: 1992
Type: Document
Synthesis

Erodium cicutarium (cutleaf filaree)
www.nrfirescience.org/resource/10462
This FEIS species review synthesizes information on the relationship of Erodium cicutarium (cutleaf filaree) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): Janet L. Howard
Year Published: 1992
Type: Document
Synthesis

When it's hot, it's hot... or maybe it's not! (Surface flaming may not portend extensive soil heating)
www.nrfirescience.org/resource/7939
Fire effects on a plant community, soil, and air are not apparent when judged only by surface fire intensity. The fire severity or fire impact can be described by the temperatures reached within the forest floor and the duration of heating experienced in the vegetation, forest floor, and underlying mineral soil. Temporal...
Author(s): Roberta A. Hartford, William H. Frandsen
Year Published: 1992

Type: Document
Book or Chapter or Journal Article

Ceratodon purpureus (fire moss)
www.nrfirescience.org/resource/10529
This FEIS species review synthesizes information on the relationship of Ceratodon purpureus (fire moss) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Pinus monticola (western white pine)
www.nrfirescience.org/resource/10663
This FEIS species review synthesizes information on the relationship of Pinus monticola (western white pine) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Randy Scott Griffith
Year Published: 1992
Type: Document
Synthesis

Hordeum jubatum (foxtail barley)
www.nrfirescience.org/resource/10539
This FEIS species review synthesizes information on the relationship of Hordeum jubatum (foxtail barley) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Elymus trachycaulus (slender wheatgrass)
www.nrfirescience.org/resource/10722
This FEIS species review synthesizes information on the relationship of Elymus trachycaulus (slender wheatgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Janet L. Howard
Year Published: 1992
Type: Document
Synthesis

Thuja plicata (western redcedar)
www.nrfirescience.org/resource/10561
This FEIS species review synthesizes information on the relationship of Thuja plicata (western

redcedar) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Salix monticola (mountain willow)
www.nrfirescience.org/resource/10639
This FEIS species review synthesizes information on the relationship of Salix monticola (mountain willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Lora L. Esser
Year Published: 1992
Type: Document
Synthesis

Meleagris gallopavo (wild turkey)
www.nrfirescience.org/resource/10841
This FEIS species review synthesizes information on the relationship of Meleagris gallopavo (wild turkey) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): S. A. Snyder
Year Published: 1992
Type: Document
Synthesis

Pinus ponderosa var. ponderosa (Pacific ponderosa pine)
www.nrfirescience.org/resource/10687
This FEIS species review synthesizes information on the relationship of Pinus ponderosa var. ponderosa (Pacific ponderosa pine) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This...
Author(s): James R. Habeck
Year Published: 1992
Type: Document
Synthesis

Halogeton glomeratus (halogeton)
www.nrfirescience.org/resource/10468
This FEIS species review synthesizes information on the relationship of Halogeton glomeratus (halogeton) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management....
Author(s): Diane S. Pavek
Year Published: 1992
Type: Document
Synthesis

Hylocomium splendens (splendid feather moss)
www.nrfirescience.org/resource/10530
This FEIS species review synthesizes information on the relationship of Hylocomium splendens (splendid feather moss) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Elymus repens (quackgrass)
www.nrfirescience.org/resource/10470
This FEIS species review synthesizes information on the relationship of Elymus repens (quackgrass) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This...
Author(s): S. A. Snyder
Year Published: 1992
Type: Document
Synthesis

Calamagrostis canadensis (bluejoint reedgrass)
www.nrfirescience.org/resource/10558
This FEIS species review synthesizes information on the relationship of Calamagrostis canadensis (bluejoint reedgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Luzula hitchcockii (smooth woodrush)
www.nrfirescience.org/resource/10685
This FEIS species review synthesizes information on the relationship of Luzula hitchcockii (smooth woodrush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): James R. Habeck
Year Published: 1992
Type: Document
Synthesis

Tsuga mertensiana (mountain hemlock)
www.nrfirescience.org/resource/10559
This FEIS species review synthesizes information on the relationship of Tsuga mertensiana (mountain hemlock) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general

management. This species review can be...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Menziesia ferruginea (menziesia)
www.nrfirescience.org/resource/10684
This FEIS species review synthesizes information on the relationship of Menziesia ferruginea (menziesia) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): James R. Habeck
Year Published: 1992
Type: Document
Synthesis

Symphiotrichum leave (smooth blue American-aster)
www.nrfirescience.org/resource/10861
This FEIS species review synthesizes information on the relationship of Symphiotrichum leave (smooth blue American-aster) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Janet Sullivan
Year Published: 1992
Type: Document
Synthesis

Calamagrostis purpurascens (purple pinegrass)
www.nrfirescience.org/resource/10562
This FEIS species review synthesizes information on the relationship of Calamagrostis purpurascens (purple pinegrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Julie L. Tesky
Year Published: 1992
Type: Document
Synthesis

Medicago sativa (alfalfa)
www.nrfirescience.org/resource/10475
This FEIS species review synthesizes information on the relationship of Medicago sativa (alfalfa) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This...
Author(s): Janet Sullivan
Year Published: 1992
Type: Document
Synthesis

Schoenoplectus americanus (Olney's threesquare bulrush)
www.nrfirescience.org/resource/10565
This FEIS species review synthesizes information on the relationship of Schoenoplectus americanus (Olney's threesquare bulrush) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This...
Author(s): Ronald Uchytil
Year Published: 1992
Type: Document
Synthesis

Basal injury from smoldering fires in mature Pinus ponderosa Laws
www.nrfirescience.org/resource/8250
Fuel accumulations were measured in duff mounds around the bases of 19 mature Pinus ponderosa Laws. (ponderosa pine) in a 200-year-old stand in Glacier National Park, Montana. Tree diameter at breast height ranged from 50 to 114 cm (mean = 80 cm). The stand burned at intervals between 13 to 58 years prior to European settlement....
Author(s): Kevin C. Ryan, William H. Frandsen
Year Published: 1991
Type: Document
Book or Chapter or Journal Article

Spiraea betulifolia (white spirea)
www.nrfirescience.org/resource/10683
This FEIS species review synthesizes information on the relationship of Spiraea betulifolia (white spirea) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): James R. Habeck
Year Published: 1991
Type: Document
Synthesis

Athyrium filix-femina (lady fern)
www.nrfirescience.org/resource/10908
This FEIS species review synthesizes information on the relationship of Athyrium filix-femina (lady fern) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Crystal J. Walkup
Year Published: 1991
Type: Document
Synthesis

Postfire growth of Pseudotsuga menziesii and Pinus contorta in the Northern Rocky Mountains, USA
www.nrfirescience.org/resource/8253
Dendroecological methods were used to study the effects of wildfire on radial growth of Pseudotsuga mniiesii (Douglas-fir) and Pinus contorta (lodgepole pine) in the northern Rocky Mountains. Mean basal area increment during a 4-year postfire period declined relative to prefire growth in 75% of burned P. menziesii trees and 70% of P...

Author(s): David L. Peterson, Michael J. Arbaugh, George H. Pollock, Lindsay J. Robinson
Year Published: 1991
Type: Document
Book or Chapter or Journal Article

Odocoileus virginianus (white-tailed deer)
www.nrfirescience.org/resource/10840
This FEIS species review synthesizes information on the relationship of Odocoileus virginianus (white-tailed deer) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): S. A. Snyder
Year Published: 1991
Type: Document
Synthesis

Natural revegetation of burned and unburned clearcuts in western larch forests of northwest Montana
www.nrfirescience.org/resource/13293
In 1967 and 1968, seven south- and east-facing units, averaging 4-ha each, in a western larch forest of northwest Montana were (1) clearcut and burned by prescribed fire or wildfire, (2) clearcut and unburned, or (3) uncut and burned by wildfire. More than 20 years of forest succession data from permanent transects show that fire...
Author(s): Raymond C. Shearer, Peter F. Stickney
Year Published: 1991
Type: Document
Conference Proceedings

The effect of fire on soil properties
www.nrfirescience.org/resource/12001
Fire affects nutrient cycling and the physical, chemical, and biological properties of soils occupied by western montane forests. Combustion of litter and soil organic matter (OM) increases the availability of some nutrients, although others are volatilized (for example, N, P, S). Soil OM loss also affects cation exchange capacity,...
Author(s): Leonard F. DeBano
Year Published: 1991
Type: Document
Conference Proceedings

Canis lupus (gray wolf)
www.nrfirescience.org/resource/10846
This FEIS species review synthesizes information on the relationship of Canis lupus (gray wolf) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): S. A. Snyder
Year Published: 1991
Type: Document
Synthesis

Lodgepole pine arthropod litter community structure one year after the 1988 Yellowstone fires
www.nrfirescience.org/resource/12034
Litter arthropod data was collected every 10 days from nine intensively burned forest stands, five lightly burned stands, and nine unburned forest stands. For burned forest stands (n=540 samples, there were decreases in insect density (87 percent), noninsect density (67 Percent), noninsect taxa (63 percent), and noninsect diversity...
Author(s): Tim A. Christiansen, Robert J. Lavigne, Jeffrey A. Lockwood
Year Published: 1991
Type: Document
Technical Report or White Paper

Picea engelmannii (Engelmann spruce)
www.nrfirescience.org/resource/10569
This FEIS species review synthesizes information on the relationship of Picea engelmannii (Engelmann spruce) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Ronald Uchytil
Year Published: 1991
Type: Document
Synthesis

Salix drummondiana (Drummond willow)
www.nrfirescience.org/resource/10566
This FEIS species review synthesizes information on the relationship of Salix drummondiana (Drummond willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Ronald Uchytil
Year Published: 1991
Type: Document
Synthesis

Betula papyrifera (paper birch)
www.nrfirescience.org/resource/10570
This FEIS species review synthesizes information on the relationship of Betula papyrifera (paper birch) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Ronald Uchytil
Year Published: 1991
Type: Document
Synthesis

Woody fuel and duff consumption by prescribed fire in northern Idaho mixed conifer logging slash
www.nrfirescience.org/resource/11966
Describes results of prescribed burning 36 plots in northern Idaho mixed conifer logging slash. Fuel characteristics and methods for predicting duff and woody fuel consumption are reported. Guidelines are included for developing fire prescriptions.
Author(s): Elizabeth D. Reinhardt

Year Published: 1991
Type: Document
Technical Report or White Paper

Bark beetle-fire associations in the greater Yellowstone area
www.nrfirescience.org/resource/12033
The large forest fires in and around Yellowstone National Park in 1988 bring up many ecological questions, including the role of bark beetles. Bark beetles may contribute to fuel buildup over the years preceding a fire, resulting in stand replacement fires. Fire is important to the survival of seral tree species and bark beetles...
Author(s): Gene D. Amman
Year Published: 1991
Type: Document
Synthesis, Technical Report or White Paper

Twenty-year natural regeneration following five silvicultural prescriptions in spruce-fir forests of the intermountain west
www.nrfirescience.org/resource/11965
No single combination of five cutting-site preparation treatments resulted in superior natural regeneration in spruce-fir stands in Wyoming, Utah, and Idaho. Best results were generally obtained by partial cutting, with minimal disturbance of litter and organic matter, especially on harsh, high-elevation sites. Most sites remained...
Author(s): Ward W. McCaughey, Carl E. Fiedler, Wyman C. Schmidt
Year Published: 1991
Type: Document
Technical Report or White Paper

Management and productivity of western-montane forest soils, proceedings
www.nrfirescience.org/resource/12000
Includes 35 papers and six poster synopses presenting state-of-the-art knowledge on the nature and problems of integrating soils information and expertise into management of inland western forest resources. Papers emphasize regional information, but include data from world literature and previously unpublished material from regional...
Author(s): Alan E. Harvey, Leon F. Neuenschwander
Year Published: 1991
Type: Document
Conference Proceedings, Technical Report or White Paper

Sorghastrum nutans (Indiangrass)
www.nrfirescience.org/resource/10907
This FEIS species review synthesizes information on the relationship of Sorghastrum nutans (Indiangrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Crystal J. Walkup
Year Published: 1991
Type: Document
Synthesis

Hesperostipa spartea (porcupine grass)

www.nrfirescience.org/resource/10910
This FEIS species review synthesizes information on the relationship of Hesperostipa spartea (porcupine grass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Crystal J. Walkup
Year Published: 1991
Type: Document
Synthesis

Crataegus douglasii (Douglas hawthorn)
www.nrfirescience.org/resource/10690
This FEIS species review synthesizes information on the relationship of Crataegus douglasii (Douglas hawthorn) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): James R. Habeck
Year Published: 1991
Type: Document
Synthesis

Natural revegetation of burned and unburned clearcuts in western larch forests of northwest Montana
www.nrfirescience.org/resource/12028
In 1967 and 1968, seven south- and east-facing units, averaging 4-ha each, in a western larch forest of northwest Montana were (1) clearcut and burned by prescribed fire or wildfire, (2) clearcut and unburned, or (3) uncut and burned by wildfire. More than 20 years of forest succession data from permanent transects show that fire...
Author(s): Raymond C. Shearer, Peter F. Stickney
Year Published: 1991
Type: Document
Technical Report or White Paper

FTIR remote sensing of biomass burning emissions of CO2, CO, CH4, CH2O, NO, NO2, NH3, and N2O
www.nrfirescience.org/resource/8301
This work introduces remote sensing of biomass burning emissions using high-resolution Fourier transform infrared (FTIR) absorption spectroscopy over open paths in smoke plumes from biomass fires. There are several advantages to this type of smoke composition measurement, which address some of the disadvantages of previous...
Author(s): David W. T. Griffith, William G. Mankin, Michael T. Coffey, Darold E. Ward, Allen R. Riebau
Year Published: 1991
Type: Document
Book or Chapter or Journal Article

Ursus arctos horribilis (grizzly bear)
www.nrfirescience.org/resource/10837
This FEIS species review synthesizes information on the relationship of Ursus arctos horribilis (grizzly bear) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...

Author(s): S. A. Snyder
Year Published: 1991
Type: Document
Synthesis

Picea glauca (white spruce)
www.nrfirescience.org/resource/10579
This FEIS species review synthesizes information on the relationship of Picea glauca (white spruce) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Ronald Uchytil
Year Published: 1991
Type: Document
Synthesis

Initial floristics in lodgepole pine (Pinus contorta) forests following the 1988 Yellowstone fires
www.nrfirescience.org/resource/8251
The Yellowstone fires of 1988 produced a mosaic of Pinus contorta stands subjected to fire of varying severities. In August, 1989, we inventoried density of vascular plants in paired plots at seven burned stands. One plot was in a severe canopy bum; the paired plot was in an adjacent area that burned at moderate severity. Density of...
Author(s): Jay E. Anderson, William H. Romme
Year Published: 1991
Type: Document
Book or Chapter or Journal Article

GIS applications to the indirect effects of forest fires in mountainous terrain
www.nrfirescience.org/resource/12032
Snow-avalanche paths and landslides are common geomorphic features in Glacier National Park (GNP), Montana, and represent hazards to human occupancy and utilization of the park. Forest fires have been spatially extensive there, and it is well documented that areas subjected to forest fires become increasingly susceptible to...
Author(s): David R. Butler, Stephen J. Walsh, George P. Malanson
Year Published: 1991
Type: Document
Technical Report or White Paper

Arctostaphylos uva-ursi (kinnikinnick)
www.nrfirescience.org/resource/10626
This FEIS species review synthesizes information on the relationship of Arctostaphylos uva-ursi (kinnikinnick) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Marilyn F. Crane
Year Published: 1991
Type: Document
Synthesis

Paxistima myrsinites (Oregon boxwood)

www.nrfirescience.org/resource/10850
This FEIS species review synthesizes information on the relationship of Paxistima myrsinites (Oregon boxwood) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): S. A. Snyder
Year Published: 1991
Type: Document
Synthesis

Carex lenticularis var. dolia (Kellog's sedge)
www.nrfirescience.org/resource/10934
This FEIS species review synthesizes information on the relationship of Carex lenticularis var. dolia (Kellog's sedge) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Tara Y. Williams, William C. Fischer
Year Published: 1991
Type: Document
Synthesis

Salix planifolia (planeleaf willow)
www.nrfirescience.org/resource/10568
This FEIS species review synthesizes information on the relationship of Salix planifolia (planeleaf willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Ronald Uchytil
Year Published: 1991
Type: Document
Synthesis

Phosphorus and nitrogen dynamics in streams during a wildfire
www.nrfirescience.org/resource/18662
Various studies report changes in phosphorus and nitrogen concentrations in surface waters after wildfires; however, we have found no reports which include nutrient data collected during actual wildfire activity. We had an opportunity to collect water chemistry data from several streams as a large (15,500 ha) intense firestorm...
Author(s): Craig N. Spencer, F. Richard Hauer
Year Published: 1991
Type: Document
Book or Chapter or Journal Article

Influence of fire on factors that affect site productivity
www.nrfirescience.org/resource/12002
Presettlement fire played an important role in nutrient conversion, plant succession, diversity, and stand dynamics in coniferous forests of western North America. Prescribed fire can maintain site quality and contribute to control of insect and disease problems while reducing wildfire hazard. Fire effects on soils are largely...
Author(s): Roger D. Hungerford, Michael G. Harrington, William H. Frandsen, Kevin C. Ryan, Gerald J. Niehoff

Year Published: 1991
Type: Document
Conference Proceedings, Technical Report or White Paper

Salix geyeriana (Geyer willow)
www.nrfirescience.org/resource/10564
This FEIS species review synthesizes information on the relationship of Salix geyeriana (Geyer willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Ronald Uchytil
Year Published: 1991
Type: Document
Synthesis

Symphoricarpos mollis (creeping snowberry)
www.nrfirescience.org/resource/10838
This FEIS species review synthesizes information on the relationship of Symphoricarpos mollis (creeping snowberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): S. A. Snyder
Year Published: 1991
Type: Document
Synthesis

Larix lyallii (alpine larch)
www.nrfirescience.org/resource/10689
This FEIS species review synthesizes information on the relationship of Larix lyallii (alpine larch) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): James R. Habeck
Year Published: 1991
Type: Document
Synthesis

Abies lasiocarpa, Abies lasiocarpa var. arizonica, Abies lasiocarpa var. lasiocarpa (subalpine fir, corkbark fir, subalpine fir)
www.nrfirescience.org/resource/10574
This FEIS species review synthesizes information on the relationship of Abies lasiocarpa, Abies lasiocarpa var. arizonica, Abies lasiocarpa var. lasiocarpa (subalpine fir, corkbark fir, subalpine fir) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the...
Author(s): Ronald Uchytil
Year Published: 1991
Type: Document
Synthesis

Predicting duff and woody fuel consumption in northern Idaho prescribed fires

www.nrfirescience.org/resource/7914
Experimental burns were conducted on 36 plots in mixed conifer logging slash in northern Idaho to investigate consumption of duff and woody fuel. Fires were conducted in spring and fall, in YUM (yarded unmerchantable material) and non-YUM dearcuts and seed-tree cuts. Preburn duff depth averaged 3.8 cm and consisted of a shallow...
Author(s): James K. Brown, Elizabeth D. Reinhardt, William C. Fischer
Year Published: 1991
Type: Document
Book or Chapter or Journal Article

Fire damage on extensively vs. intensively managed forest stands within the North Fork Fire, 1988
www.nrfirescience.org/resource/8342
The Greater Yellowstone fires of 1988 provide an opportunity to study important distinctions between lands managed for preservation versus multiple uses. We surveyed fuel loadings, fire severity, and fire damage to extensively managed, mature forest and to intensively managed, clearcut reproduction areas. Unburned, mature forests...
Author(s): Philip N. Omi, Kostas D. Kalabokidis
Year Published: 1991
Type: Document
Book or Chapter or Journal Article

Spartina pectinata (prairie cordgrass)
www.nrfirescience.org/resource/10906
This FEIS species review synthesizes information on the relationship of Spartina pectinata (prairie cordgrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Crystal J. Walkup
Year Published: 1991
Type: Document
Synthesis

Shepherdia canadensis (russet buffaloberry)
www.nrfirescience.org/resource/10909
This FEIS species review synthesizes information on the relationship of Shepherdia canadensis (russet buffaloberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Crystal J. Walkup
Year Published: 1991
Type: Document
Synthesis

Hydrocarbon and biomass fuel fire field tests
www.nrfirescience.org/resource/11021
Biomass and hydrocarbon fuel fires are two common sources of obscuring smoke which present significant operational challenges over a broad range of possible viewing wavelengths. This is especially true of very large fires where the primary smoke particles (approx. 0.1-0.3 um diameter) obscure vision by both scattering and absorption...
Author(s): Lawrence F. Radke, Dean A. Hegg, J. David Nance, Jaime H. Lyons, Krista K. Laursen, R. J.

Ferek, Peter V. Hobbs, Raymond E. Weiss
Year Published: 1990
Type: Document
Conference Proceedings

Erythronium grandiflorum (glacier lily)
www.nrfirescience.org/resource/10932
This FEIS species review synthesizes information on the relationship of Erythronium grandiflorum (glacier lily) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Tara Y. Williams
Year Published: 1990
Type: Document
Synthesis

Taxus brevifolia (Pacific yew)
www.nrfirescience.org/resource/10890
This FEIS species review synthesizes information on the relationship of Taxus brevifolia (Pacific yew) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): D. A. Tirmenstein
Year Published: 1990
Type: Document
Synthesis

Disturbance regimes, resilience, and recovery of animal communities and habitats in lotic ecosystems
www.nrfirescience.org/resource/18623
Disturbance regime is a critical organizing feature of stream communities and ecosystems. The position of a given reach in the river basin and the sediment type within that reach are two key determinants of the frequency and intensity of flow-induced disturbances. We distinguish between predictable and unpredictable events and...
Author(s): Seth R. Reice, Robert C. Wissmar, Robert J. Naiman
Year Published: 1990
Type: Document
Book or Chapter or Journal Article

Vaccinium myrtilloides (velvetleaf blueberry)
www.nrfirescience.org/resource/10873
This FEIS species review synthesizes information on the relationship of Vaccinium myrtilloides (velvetleaf blueberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): D. A. Tirmenstein
Year Published: 1990
Type: Document
Synthesis

Whitebark pine - an important but endangered wildlife resource
www.nrfirescience.org/resource/19320
Whitebark pine (Pinus albicaulis) is a valuable wildlife resource in the western United States and southwestern Canada. Its large seeds are a preferred food for a variety of birds and mammals, especially Clark's nutcrackers (Nucifraga columbiana), red squirrels (Tamiasciurus hudsonicus), and bears (Ursus spp.). Whitebark pine...
Author(s): Katherine Kendall, Stephen F. Arno
Year Published: 1990
Type: Document
Conference Proceedings

Vaccinium caespitosum (dwarf bilberry)
www.nrfirescience.org/resource/10871
This FEIS species review synthesizes information on the relationship of Vaccinium caespitosum (dwarf bilberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): D. A. Tirmenstein
Year Published: 1990
Type: Document
Synthesis

Berberis nervosa (dwarf Oregon-grape)
www.nrfirescience.org/resource/10885
This FEIS species review synthesizes information on the relationship of Berberis nervosa (dwarf Oregon-grape) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): D. A. Tirmenstein
Year Published: 1990
Type: Document
Synthesis

Actaea rubra (red baneberry)
www.nrfirescience.org/resource/10625
This FEIS species review synthesizes information on the relationship of Actaea rubra (red baneberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Marilyn F. Crane
Year Published: 1990
Type: Document
Synthesis

Simulating cumulative fire effects in ponderosa pine/Douglas-fir forests
www.nrfirescience.org/resource/8262
A successional process model has been adapted for use with species from ponderosa pine/Douglas-fir (Pinus ponderosa var. ponderosa)/(Pseudotsuga menziesii var. glauca) forests of the inland Northwest. Its design allows modification for application to other forest types. This model, FIRESUM, simulates tree establishment, growth, and...
Author(s): Robert E. Keane, Stephen F. Arno, James K. Brown

Year Published: 1990
Type: Document
Book or Chapter or Journal Article

Botrychium montanum (mountain moonwort)
www.nrfirescience.org/resource/10929
This FEIS species review synthesizes information on the relationship of Botrychium montanum (mountain moonwort) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Tara Y. Williams
Year Published: 1990
Type: Document
Synthesis

Role of refugia in recovery from disturbances: modern fragmented and disconnected river systems
www.nrfirescience.org/resource/18661
Habitats or environmental factors that convey spatial and temporal resistance and/or resilience to biotic communities that have been impacted by biophysical disturbances may be called refugia. Most refugia in rivers are characterized by extensive coupling of the main channel with adjacent streamside forests, floodplain features, and...
Author(s): James R. Sedell, Gordon H. Reeves, F. Richard Hauer, Jack A. Stanford
Year Published: 1990
Type: Document
Book or Chapter or Journal Article

Populus balsamifera subsp. balsamifera (balsam poplar)
www.nrfirescience.org/resource/10692
This FEIS species review synthesizes information on the relationship of Populus balsamifera subsp. balsamifera (balsam poplar) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This...
Author(s): Holly T. Harris
Year Published: 1990
Type: Document
Synthesis

Lathyrus bijugatus (pinewoods sweetpea)
www.nrfirescience.org/resource/10931
This FEIS species review synthesizes information on the relationship of Lathyrus bijugatus (pinewoods sweetpea) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): Tara Y. Williams
Year Published: 1990
Type: Document
Synthesis

Celtis reticulata (netleaf hackberry)

www.nrfirescience.org/resource/10891
This FEIS species review synthesizes information on the relationship of Celtis reticulata (netleaf hackberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): D. A. Tirmenstein
Year Published: 1990
Type: Document
Synthesis

Rosa acicularis (prickly rose)
www.nrfirescience.org/resource/10623
This FEIS species review synthesizes information on the relationship of Rosa acicularis (prickly rose) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Marilyn F. Crane
Year Published: 1990
Type: Document
Synthesis

Oxytropis campestris var. columbiana (Columbia River crazyweed)
www.nrfirescience.org/resource/10927
This FEIS species review synthesizes information on the relationship of Oxytropis campestris var. columbiana (Columbia River crazyweed) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management...
Author(s): Tara Y. Williams
Year Published: 1990
Type: Document
Synthesis

Botrychium paradoxum (peculiar moonwort)
www.nrfirescience.org/resource/10930
This FEIS species review synthesizes information on the relationship of Botrychium paradoxum (peculiar moonwort) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Tara Y. Williams
Year Published: 1990
Type: Document
Synthesis

Whitebark pine on the Mount Washburn Massif, Yellowstone National Park
www.nrfirescience.org/resource/19325
Habitat distribution and stand dynamics of whitebark pine (Pinus albicaulis) within the whitebark pine zone of the Mount Washburn massif, Yellowstone National Park were investigated as part of a study of relationships among grizzly bears, red squirrels, and whitebark pine. Distribution of whitebark pine and whitebark pine habitat...
Author(s): David J. Mattson, Daniel P. Reinhart
Year Published: 1990

Type: Document
Conference Proceedings

Runoff and soil loss following the 1988 Yellowstone fires
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

Vaccinium ovalifolium (ovalleaf huckleberry)
www.nrfirescience.org/resource/10874
This FEIS species review synthesizes information on the relationship of Vaccinium ovalifolium (ovalleaf huckleberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): D. A. Tirmenstein
Year Published: 1990
Type: Document
Synthesis

Vaccinium myrtillus (dwarf bilberry)
www.nrfirescience.org/resource/10872
This FEIS species review synthesizes information on the relationship of Vaccinium myrtillus (dwarf bilberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): D. A. Tirmenstein
Year Published: 1990
Type: Document
Synthesis

Pteridium aquilinum (western bracken fern)
www.nrfirescience.org/resource/10624
This FEIS species review synthesizes information on the relationship of Pteridium aquilinum (western bracken fern) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Marilyn F. Crane
Year Published: 1990
Type: Document
Synthesis

Impact of fire and flood on the trout population of Beaver Creek, upper Missouri Basin, Montana
www.nrfirescience.org/resource/18618
A forest fire followed by an intense convectional rainstorm caused a 100-year flood in the Beaver Creek drainage. This study documented changes in resident trout populations and use of the stream by adfluvial spawning fish. Two months after the event trout populations in the impacted portion of the stream were nearly eliminated....

Author(s): Mark A. Novak, Robert G. White
Year Published: 1990
Type: Document
Conference Proceedings

Vaccinium parvifolium (red huckleberry)
www.nrfirescience.org/resource/10888
This FEIS species review synthesizes information on the relationship of Vaccinium parvifolium (red huckleberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can...
Author(s): D. A. Tirmenstein
Year Published: 1990
Type: Document
Synthesis

Selaginella densa (little spikemoss)
www.nrfirescience.org/resource/10622
This FEIS species review synthesizes information on the relationship of Selaginella densa (little spikemoss) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Marilyn F. Crane
Year Published: 1990
Type: Document
Synthesis

Rubus idaeus (red raspberry)
www.nrfirescience.org/resource/10875
This FEIS species review synthesizes information on the relationship of Rubus idaeus (red raspberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): D. A. Tirmenstein
Year Published: 1990
Type: Document
Synthesis

Recovery of lotic communities and ecosystems from disturbance - a narrative review of case studies
www.nrfirescience.org/resource/18696
We present a narrative account of case studies of the recovery of flowing water systems from disturbance, focusing on the investigators' conclusions about recovery time and the factors contributing to recovery. We restrict our attention to case studies in which the recovery of some biological property of the system has been examined...
Author(s): J. David Yount, Gerald J. Niemi
Year Published: 1990
Type: Document
Book or Chapter or Journal Article

Streamflow and water quality responses to preharvest prescribed burning in an undisturbed ponderosa pine watershed
www.nrfirescience.org/resource/18551
[from the text] Forest history studies (Arno 1980, Dieterich 1983) indicate that before fire suppression was initiated at the start of this century, most forest fires were surface fires. These fires reduced fire hazards and improved stand conditions by preparing seedbeds, thinning advance regeneration, and retarding the invasion of...
Author(s): Gerald J. Gottfried, Leonard F. DeBano
Year Published: 1990
Type: Document
Conference Proceedings

Xerophyllum tenax (beargrass)
www.nrfirescience.org/resource/10621
This FEIS species review synthesizes information on the relationship of Xerophyllum tenax (beargrass) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Marilyn F. Crane
Year Published: 1990
Type: Document
Synthesis

Effects of fire on streams
www.nrfirescience.org/resource/18502
Fire affects spawning areas and food habitat in streams by indirectly influencing waterflow, nutrients, erosion, sedimentation, debris, and water temperature. The response of vegetation following fire is the most important factor affecting aquatic areas. Effects of fire on aquatic systems vary over time tending to be detrimental at...
Author(s): James K. Brown
Year Published: 1990
Type: Document
Conference Proceedings

Recovery of lotic macroinvertebrate communities from disturbance
www.nrfirescience.org/resource/18684
Ecosystem disturbances produce changes in macrobenthic community structure (abundances, biomass, and production) that persist for a few weeks to many decades. Examples of disturbances with extremely long-term effects on benthic communities include contamination by persistent toxic agents, physical changes in habitats, and altered...
Author(s): J. Bruce Wallace
Year Published: 1990
Type: Document
Book or Chapter or Journal Article

Sambucus nigra subsp. cerulea (blue elderberry)
www.nrfirescience.org/resource/10628
This FEIS species review synthesizes information on the relationship of Sambucus nigra subsp. cerulea (blue elderberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...

Author(s): Marilyn F. Crane
Year Published: 1989
Type: Document
Synthesis

Alnus rubra (red alder)
www.nrfirescience.org/resource/10571
This FEIS species review synthesizes information on the relationship of Alnus rubra (red alder) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Ronald Uchytil
Year Published: 1989
Type: Document
Synthesis

Salix lutea (yellow willow)
www.nrfirescience.org/resource/10567
This FEIS species review synthesizes information on the relationship of Salix lutea (yellow willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Ronald Uchytil
Year Published: 1989
Type: Document
Synthesis

Effects of fire on aquatic systems
www.nrfirescience.org/resource/8429
Fire affects spawning areas and food habitat in streams by indirectly influencing waterflow, nutrients, erosion, sedimentation, debris, and water temperature. The response of vegetation following fire is the most important factor affecting aquatic areas. Effects of fire on aquatic systems vary over time tending to be detrimental...
Author(s): James K. Brown
Year Published: 1989
Type: Document
Conference Proceedings, Synthesis

Wildfires and Yellowstone's stream ecosystems
www.nrfirescience.org/resource/18211
Few studies have examined the effect of fire on the aquatic biota, and none has adequately addressed major aspects of aquatic ecosystem function. Most of the research has examined the effects of fire on water chemistry (Schindler et al. 1980, Tiedemann et al. 1979). Nevertheless, it is possible to develop a set of predictions...
Author(s): G. Wayne Minshall, James T. Brock, John D. Varley
Year Published: 1989
Type: Document
Book or Chapter or Journal Article

Rubus discolor (Himalayan blackberry)

www.nrfirescience.org/resource/10477
This FEIS species review synthesizes information on the relationship of Rubus discolor (Himalayan blackberry) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): D. A. Tirmenstein
Year Published: 1989
Type: Document
Synthesis

Rubus ursinus (trailing blackberry)
www.nrfirescience.org/resource/10876
This FEIS species review synthesizes information on the relationship of Rubus ursinus (trailing blackberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): D. A. Tirmenstein
Year Published: 1989
Type: Document
Synthesis

Alnus viridis subsp. sinuata (Sitka alder)
www.nrfirescience.org/resource/10572
This FEIS species review synthesizes information on the relationship of Alnus viridis subsp. sinuata (Sitka alder) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Ronald Uchytil
Year Published: 1989
Type: Document
Synthesis

The effects of fire on watersheds: a summary
www.nrfirescience.org/resource/11049
Over the past three days we have been presented with the results of a most impressive quantity and quality of research on the effects of fire on watersheds. My attempt to summarize these papers will hardly do them justice, but hopefully will recapitulate some of their more important and generalizable findings. My comments are...
Author(s): Nicholas Dennis
Year Published: 1989
Type: Document
Conference Proceedings

Salix lucida subsp. lasiandra (Pacific willow)
www.nrfirescience.org/resource/10577
This FEIS species review synthesizes information on the relationship of Salix lucida subsp. lasiandra (Pacific willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species...
Author(s): Ronald Uchytil
Year Published: 1989

Type: Document
Synthesis

Alnus rhombifolia (white alder)
www.nrfirescience.org/resource/10576
This FEIS species review synthesizes information on the relationship of Alnus rhombifolia (white alder) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Ronald Uchytil
Year Published: 1989
Type: Document
Synthesis

Effects of fire in the northern Great Plains
www.nrfirescience.org/resource/11184
Fire has been used inconsistently to manage native and tame grasslands in the Northern Great Plains (NGP) of the north-central U.S. and south-central Canada, particularly the grasslands found in prairies, plains, agricultural land retirement programs, and moist soil sites. This has happened for three primary reasons: (1) the...
Author(s): Kenneth F. Higgins, Arnold D. Kruse, James L. Piehl
Year Published: 1989
Type: Document
Synthesis, Technical Report or White Paper

Polystichum munitum (western sword fern)
www.nrfirescience.org/resource/10627
This FEIS species review synthesizes information on the relationship of Polystichum munitum (western sword fern) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review...
Author(s): Marilyn F. Crane
Year Published: 1989
Type: Document
Synthesis

Rubus spectabilis (salmonberry)
www.nrfirescience.org/resource/10889
This FEIS species review synthesizes information on the relationship of Rubus spectabilis (salmonberry) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): D. A. Tirmenstein
Year Published: 1989
Type: Document
Synthesis

Rubus laciniatus (evergreen blackberry)
www.nrfirescience.org/resource/10478
This FEIS species review synthesizes information on the relationship of Rubus laciniatus (evergreen

blackberry) to fire--how fire affects the species and its habitat, invasiveness of the species, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general...
Author(s): D. A. Tirmenstein
Year Published: 1989
Type: Document
Synthesis

Forage quality in burned and unburned aspen communities
www.nrfirescience.org/resource/11483
Selected forage species were sampled during the first and second summers after autumn prescribed burning of three sites in southeastern Idaho. They were analyzed for in vitro dry matter digestibility, protein, calcium, and phosphorus. This aspen type has a highly nutritious understory. Burning further improved the quality of the...
Author(s): Norbert V. DeByle, Philip J. Urness, Deborah L. Blank
Year Published: 1989
Type: Document
Technical Report or White Paper

Effects of fire retardant on water quality
www.nrfirescience.org/resource/11139
Ammonium-based fire retardants are important in managing wildfires, but their use can adversely affect water quality. Their entry, fate, and impact were studied in five forest streams. Initial retardant concentrations in water approached levels which could damage fish, but no distressed fish were found. Concentrations decreased...
Author(s): Logan A. Norris, Warren L. Webb
Year Published: 1989
Type: Document
Technical Report or White Paper

Salix lemmonii (Lemmons willow)
www.nrfirescience.org/resource/10575
This FEIS species review synthesizes information on the relationship of Salix lemmonii (Lemmons willow) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used...
Author(s): Ronald Uchytil
Year Published: 1989
Type: Document
Synthesis

Vegetation response to helicopter logging and broadcast burning in Douglas-fir habitat types at Silver Creek, central Idaho
www.nrfirescience.org/resource/11963
Shrub frequency, cover, and height, and herb frequency and cover were measured on plots from two Douglas-fir habitat types in three cutting units. The plots were measured prior to helicopter yarding and broadcast burning and then 1, 2, 5, and 10 years later. The broadcast burning was more severe on one cutting unit than the other...
Author(s): Kathy Geier-Hayes
Year Published: 1989
Type: Document

Technical Report or White Paper

FIRESUM-an ecological process model for fire succession in western conifer forests
www.nrfirescience.org/resource/11917
Describes an ecological process model of succession that simulates long-term stand dynamics in forests of the Northern Rocky Mountains. This model is used to evaluate the effects of various fire regimes, including prescribed burning and fire suppression, on the vegetation and fuel complex of a simulation stand. This report documents...
Author(s): Robert E. Keane, Stephen F. Arno, James K. Brown
Year Published: 1989
Type: Document
Technical Report or White Paper

Airborne measurements on smokes from biomass burning
www.nrfirescience.org/resource/8384
Airborne measurements have been made in the smokes from large fires of standing coniferous trees and logging debris, standing chaparral, fallen jack pine, and wheat stubble. Panicle emission factors, particle size distributions, optical properties of the smokes, and trace gas concentrations in the emissions are derived from the...
Author(s): Lawrence F. Radke, Dean A. Hegg, Jaime H. Lyons, Charles A. Brock, Peter V. Hobbs, Raymond E. Weiss, Rei A. Rasmussen
Year Published: 1988
Type: Document
Book or Chapter or Journal Article

Andropogon gerardii (big bluestem)
www.nrfirescience.org/resource/10573
This FEIS species review synthesizes information on the relationship of Andropogon gerardii (big bluestem) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be...
Author(s): Ronald Uchytil
Year Published: 1988
Type: Document
Synthesis

Riparian vegetation dynamics in relation to channel shifting and fire
www.nrfirescience.org/resource/18466
The riparian vegetation along the Bighorn River in Wyoming forms a complex mosaic comprised of cottonwood (Populus deltoides) groves, meadows, marshes, and several kinds of shrubland. Changes in the riparian mosaic during the last 50 years were reconstructed using tree ring analysis and aerial photos taken over the river in 1938,...
Author(s): Y. Akashi, Dennis H. Knight
Year Published: 1988
Type: Document
Conference Proceedings

Ammonia emissions from biomass burning
www.nrfirescience.org/resource/8302
Measurements in the plumes from seven forest fires show that the concentrations of NH3 were

considerably in excess of ambient values. Calculation of NH3 emissions from the fires, based on the ratio of NH3/CO in the plumes and emissions of CO from biomass burning, suggest that biomass burning may be a significant source of...
Author(s): Dean A. Hegg, Lawrence F. Radke, Peter V. Hobbs, Philip J. Riggan
Year Published: 1988
Type: Document
Book or Chapter or Journal Article

The role of disturbance in stream ecology
www.nrfirescience.org/resource/18630
We define disturbance in stream ecosystems to be: any relatively discrete event in time that is characterized by a frequency, intensity, and severity outside a predictable range, and that disrupts ecosystem, community, or population structure and changes resources or the physical environment. Of the three major hypotheses relating...
Author(s): Vincent H. Resh, Arthur V. Brown, Alan P. Covich, Martin E. Gurtz, Hiram Li, G. Wayne Minshall, Seth R. Reice, Andrew L. Sheldon, J. Bruce Wallace, Robert C. Wissmar
Year Published: 1988
Type: Document
Book or Chapter or Journal Article

Soil temperatures and suckering in burned and unburned aspen stands in Idaho
www.nrfirescience.org/resource/12121
Monthly average soil temperatures in a burned aspen stand ranged from 0 to 8 °F higher than in the unburned stand at depths to 12 inches for a site in southeastern Idaho. From June through August the first year after burning, soil temperatures were significantly different at all depths in burned and unburned stands. By the second...
Author(s): Roger D. Hungerford
Year Published: 1988
Type: Document
Research Brief or Fact Sheet

Acer negundo (boxelder)
www.nrfirescience.org/resource/10823
This FEIS species review synthesizes information on the relationship of Acer negundo (boxelder) to fire--how fire affects the species and its habitat, and fire management considerations. Information is also provided on the species' taxonomy, distribution, basic biology, and general management. This species review can be used for...
Author(s): Lynn Rosario
Year Published: 1988
Type: Document
Synthesis

Plant response to fire in the pinyon-juniper zone
www.nrfirescience.org/resource/12119
The understory base in pinyon-juniper woodlands has been depleted by past abuse and suppression by the tree overstory. Wise use of fire provides a means of reestablishing understory species in the successional cycle. Postfire survival of understory plants depends upon physical placement of the plant in the community as well as the...
Author(s): Richard L. Everett
Year Published: 1987
Type: Document

Conference Proceedings, Synthesis, Technical Report or White Paper

Fire ecology of western Montana forest habitat types
www.nrfirescience.org/resource/11257
Provides information on fire as an ecological factor for forest habitat types in western Montana. Identifies Fire Groups of habitat types based on fire's role in forest succession. Describes forest fuels and suggests considerations for fire management.
Author(s): William C. Fischer, Anne F. Bradley
Year Published: 1987
Type: Document
Technical Report or White Paper

Fire-related debris flows in the Beaver Creek drainage, Lewis and Clark County, Montana
www.nrfirescience.org/resource/18619
A moderate August 1984 rainstorm produced substantial debris flows from tributaries of Beaver Creek, a small Missouri River tributary located near Helena, Montana. The debris flows occurred only in the parts of the drainage that had been burned by an extensive forest fire just prior to the rainstorm. Peak debris discharges were...
Author(s): C. Parrett
Year Published: 1987
Type: Document
Technical Report or White Paper

Proceedings: Pinyon-Juniper Conference, Reno, NV, January 13-16, 1986
www.nrfirescience.org/resource/12117
Includes more than 90 papers bringing together research accomplishments of the last 10 years including ongoing research on the ecology and management of pinyon-juniper ecosystems. Scientist and management points of view are presented.
Author(s): Richard L. Everett
Year Published: 1987
Type: Document
Conference Proceedings, Technical Report or White Paper

Fire response of shrubs of dry forest habitat types in Montana and Idaho
www.nrfirescience.org/resource/11916
This paper contains information from diverse sources on the regeneration capabilities, response to fire, and utilization of shrub species important or common to dry forest habitat types in Montana and Idaho. Response to fire is classified by reproductive strategies and how the species persists in the stand. Utility of the species...
Author(s): Nonan V. Noste, Charles L. Bushey
Year Published: 1987
Type: Document
Technical Report or White Paper

Sediment routing by debris flow
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

Comparative vegetational recovery on firelines cleared with explosives and with handtools
www.nrfirescience.org/resource/11932
Vegetational recovery was compared on firelines constructed in three ground fuel cover types, using conventional hand tools and two types of fireline explosives. Measurement of ground coverage of shrub and herb species before and after disturbance indicated similar vegetational recover on blasted and hand-dug fireline.
Author(s): Timothy E. Paysen, Richard J. Barney
Year Published: 1987
Type: Document
Research Brief or Fact Sheet

Fire ecology of the forest habitat types of central Idaho
www.nrfirescience.org/resource/11258
Discusses fire as an ecological factor for forest habitat types occurring in central Idaho. Identifies "Fire Groups" of habitat types based on fire's role in forest succession. Considerations for fire management are suggested.
Author(s): Marilyn F. Crane, William C. Fischer
Year Published: 1986
Type: Document
Technical Report or White Paper

Site treatments influence development of a young mixed-species western larch stand
www.nrfirescience.org/resource/13136
More intensive management could be applied to many young stands in conifer forests of the Northern Rockies. Vast areas are stocked with stands that contain a mixture of conifer species. An important mixed species cover type in this region is the western larch type (formerly called the larch-Douglas-fir type...
Author(s): Dennis M. Cole, Wyman C. Schmidt
Year Published: 1986
Type: Document
Technical Report or White Paper

First decade plant succession following the Sundance forest fire, northern Idaho
www.nrfirescience.org/resource/11915
Describes the first 10 years of vegetation development following disturbance by a holocaustic forest fire in a western redcedar-western hemlock type in the Selkirk Range. Postfire development of vegetation is represented as life-form stages and predominant cover species. Differential development of plant species established in the...
Author(s): Peter F. Stickney
Year Published: 1986
Type: Document
Technical Report or White Paper

Crown scorch volume and scorch height: estimates of postfire tree condition
www.nrfirescience.org/resource/8385

In salvage operations after wildfire, timber managers need to identify those trees most likely to die. Crown scorch volume and scorch height are commonly used to estimate damage to conifers after fire. Calculated crown scorch volume based on scorch height and tree dimensions was compared with observed crown scorch volume for four...
Author(s): David L. Peterson
Year Published: 1985
Type: Document
Book or Chapter or Journal Article

Fire ecology of antelope bitterbrush in the Northern Rocky Mountains
www.nrfirescience.org/resource/11058
Frequency of resprouting and number of newly established seedlings of antelope bitterbrush were sampled on sites burned by prescribed burns and wildfires 3 to 10 years previously to determine the effect of habitat type, growth form, and season of the burn on bitterbrush. Significant differences in resprouting response occurred among...
Author(s): Stephen C. Bunting, Leon F. Neuenschwander, George E. Gruell
Year Published: 1985
Type: Document
Conference Proceedings, Technical Report or White Paper

Managing wildlife habitat with fire in the Aspen ecosystem
www.nrfirescience.org/resource/11482
Much of the nearly 7 million acres (2.86 million ha) of aspen in the western United States is seral to conifers. Also, most aspen stands are old, in excess of 60 years. Proper treatment of these aspen forests will retain the aspen and can produce optimum wildlife habitat. Optimally, all age and size classes of aspen should be...
Author(s): Norbert V. DeByle
Year Published: 1985
Type: Document
Conference Proceedings

Influence of fire on curlleaf mountain-mahogany in the Intermountain West
www.nrfirescience.org/resource/11059
Comprehensive sampling of curlleaf mountain-mahogany (Cercocarpus ledifolius) on 41 sites in five States allowed an assessment of postfire population dynamics, differences in regeneration patterns, and critical events in stand regeneration. Historical accounts of fire, fire history studies, and early photographs provided historical...
Author(s): George E. Gruell, Stephen C. Bunting, Leon F. Neuenschwander
Year Published: 1985
Type: Document
Conference Proceedings, Technical Report or White Paper

Rangeland fire effects
www.nrfirescience.org/resource/11003
Description not entered
Author(s): Ken Sanders, Jack Durham
Year Published: 1985
Type: Document
Conference Proceedings

Fire's effects on a small bird population
www.nrfirescience.org/resource/11188
Changes in bird populations as a result of a 122 ha forest fire are evaluated. There is little evidence of any drastic effect on numbers of birds, species, or species diversity in the year of the fire or 2 years later.
Author(s): L. Jack Lyon, John M. Marzluff
Year Published: 1985
Type: Document
Technical Report or White Paper

Influence of fire severity on response of evergreen ceanothus
www.nrfirescience.org/resource/11061
Fire plays an important role in Ceanothus velutinus habitat. Its impact varies with season and severity of fire. Knowledge of the interaction between fire severity and evergreen ceanothus habitat can assist managers in estimating the effect of fire on evergreen ceanothus and in developing burning prescriptions.
Author(s): Nonan V. Noste
Year Published: 1985
Type: Document
Conference Proceedings, Technical Report or White Paper

Watershed modeling for fire management planning in the Northern Rocky Mountains
www.nrfirescience.org/resource/11220
Water yield and sediment production almost always increase after wildfire has destroyed vegetative cover. The value of water generally is not as much appreciated in the water-rich northern Rocky Mountains as it is elsewhere. Increased water yield becomes economically beneficial, however, when its potential for consumptive and...
Author(s): Donald F. Potts, David L. Peterson, Hans R. Zuuring
Year Published: 1985
Type: Document
Technical Report or White Paper

Bighorn sheep and fire: seven case histories
www.nrfirescience.org/resource/11057
Responses of seven bighorn sheep populations and habitats to prescribed fire and wildfire in southern British Columbia, Idaho, and Glacier National Park ranged from no influence to increase; interacting factors such as lungworm infection, livestock grazing, and reduction in forage overrode potential benefits of subsequent increases...
Author(s): James M. Peek, Raymond A. Demarchi, Dennis A. Demarchi
Year Published: 1985
Type: Document
Conference Proceedings, Technical Report or White Paper

Data base for early postfire succession on the Sundance Burn, northern Idaho
www.nrfirescience.org/resource/11914
Provides baseline data on secondary plant succession and the development of plant species and life forms for the initial 6 to 15 years following a stand-replacing forest fire in the western redcedar-western hemlock type in northern Idaho. Information pertaining to plant cover (m2/0.01 ha) and volume of space occupied (m3/0.01 ha) is...
Author(s): Peter F. Stickney
Year Published: 1985

Type: Document
Technical Report or White Paper

Modeling shrub succession following clearcutting and broadcast burning
www.nrfirescience.org/resource/11060
This conceptual model of early seral shrub succession following clearcutting and broadcast burning synthesizes ideas from previous research and modeling approaches into a simple diagrammatic model of the critical successional influences and processes. Illustrative examples are drawn from observations...
Author(s): Penelope Morgan, Leon F. Neuenschwander
Year Published: 1985
Type: Document
Conference Proceedings, Technical Report or White Paper

Fire, logging, and white-tailed deer interrelationships in the Swan Valley, northwestern Montana
www.nrfirescience.org/resource/11056
The historical importance of fire was investigated on the upper Swan Valley winter white-tailed deer range in northwestern Montana. The relatively recent impacts of logging on winter range quality were also included in these studies. Fire exclusion has led to successional development of once open-canopied mature seral forests, and...
Author(s): June D. Freedman, James R. Habeck
Year Published: 1985
Type: Document
Conference Proceedings, Technical Report or White Paper

The Sleeping Child Burn - 21 years of postfire change
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

Livestock grazing influences on community structure, fire intensity, and fire frequency within the Douglas-fir/ninebark habitat type
www.nrfirescience.org/resource/13126
Influences of livestock grazing on community structure, fire intensity, and normal fire frequency in the Douglas-flr/ninebark (Pseudotsuga menziesii/Physocarpus malvaceus) habitat type were studied at the University of Idaho's experimental forest in northern Idaho. Livestock grazing caused increased tree numbers...
Author(s): G. Thomas Zimmerman, Leon F. Neuenschwander
Year Published: 1984
Type: Document
Book or Chapter or Journal Article

Estimating postfire changes in production and value of northern rocky mountain-intermountain rangelands

www.nrfirescience.org/resource/11222
A simulation model was developed to estimate postfire changes in the production and value of grazing lands in the Northern Rocky Mountain-Intermountain region. Ecological information and management decisions were used to simulate expected changes in production and value after wildfire in six major rangeland types: permanent forested...
Author(s): David L. Peterson, Patrick J. Flowers
Year Published: 1984
Type: Document
Technical Report or White Paper

Early postfire revegetation in a western Montana Douglas-fir forest
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

Influencing globe huckleberry fruit production in northwestern Montana
www.nrfirescience.org/resource/18223
Globe huckleberry (Vaccinium globulare) fruit is a major food source for the grizzly bear (Ursus arctos horribilis) in northwestern Montana. A ranked-set sampling pattern was used to determine the effects of wildfires, timber harvest practices, and physical and vegetative site characteristics on globe huckleberry fruit production....
Author(s): P. Martin
Year Published: 1983
Type: Document
Conference Proceedings

Fire ecology of Montana forest habitat types east of the Continental Divide
www.nrfirescience.org/resource/11261
Provides information on fire as an ecological factor for forest habitat types occurring east of the Continental Divide in Montana. Identifies "Fire Groups" of habitat types based on fire's role in forest succession. Describes forest fuels and suggests considerations for fire management.
Author(s): William C. Fischer, Bruce D. Clayton
Year Published: 1983
Type: Document
Synthesis, Technical Report or White Paper

Logging and wildfire influence on grizzly bear habitat in northwestern Montana
www.nrfirescience.org/resource/18233
Vegetation was sampled on 330 sites known to be used by grizzly bears (Ursus arctos). The response to disturbance of 6 shrub species important as grizzly bear foods was determined by comparing their percent canopy cover on disturbed sites with that on undisturbed, old-growth sites. Overall, the canopy cover of these species was...
Author(s): Peter Zager, Charles Jonkel, James R. Habeck
Year Published: 1983
Type: Document
Conference Proceedings

Trichopteran communities of streams associated with aspen and conifer forests: long-term structural change
www.nrfirescience.org/resource/18611
A comparison of the trichopteran communities of streams associated with aspen, spruce—fir, and mixed—conifer forests demonstrated significant differences in structure. Though tricophteran species composition in aspen—associated and spruce—fir associated streams was virtually identical, relative abundances of shredder and...
Author(s): Manuel C. Molles Jr.
Year Published: 1982
Type: Document
Book or Chapter or Journal Article

Fire and geomorphic processes
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

Clearcutting and fire in the larch/Douglas-fir forests of western Montana: a multifaceted research summary
www.nrfirescience.org/resource/11180
Logging slash on 73 clearcuts was broadcast burned over a wide range of conditions, achieving a broad array of fire intensities and effects. An intense wildfire was also evaluated. Fire effectiveness was measured and related to preburn conditions and fire intensity. Treatment effects on air quality, forest regeneration, vegetation...
Author(s): Norbert V. DeByle
Year Published: 1981
Type: Document
Technical Report or White Paper

Effects of prescribed fire on soil nitrogen levels in a cutover Douglas-fir/western larch forest
www.nrfirescience.org/resource/11956
The effects of a prescribed broadcast fire on soil nitrogen (N) levels and related soil properties were determined following the clearcutting of a 250-year-old Douglas-fir/western larch stand in northwestern Montana. Soil N losses from burning amounted to slightly over 90 lb/acre (100 kg/ha), all from the surface organic layers....
Author(s): Martin F. Jurgensen, Alan E. Harvey, Michael J. Larsen
Year Published: 1981
Type: Document
Technical Report or White Paper

The sagebrush-grass region: A review of the ecological literature
www.nrfirescience.org/resource/15435
The objective of this paper is to provide a comprehensive review of literature on the vegetation of the

sage brush region of North America. Despite its prime importance as a grazing resource, and the problems produced by its use and misuse, research on this large and va ried ecosystem was quite limited during the first half of this...
Author(s): E.W. Tisdale, M. Hironaka
Year Published: 1981
Type: Document
Synthesis

Fire ecology and prescribed burning in the Great Plains: a research review
www.nrfirescience.org/resource/11912
Historical evidence indicates that fires were prevalent in grasslands. In the past, big prairie fires usually occurred during drought years that followed l to 3 years of above-average precipitation, which provided abundant and continuous fuel. Fire frequency probably varied from 5 to l0 years in level-to-rolling topography and from...
Author(s): Henry A. Wright, Arthur W. Bailey
Year Published: 1980
Type: Document
Technical Report or White Paper

Effects of fire on nitrogen in forest floor horizons
www.nrfirescience.org/resource/13142
The effects of burning no nitrogen (N) losses and transformations in red pine (Pinus resinosa Ait.), eastern hemlock [Tsuga canadensis (L.) Carr.], and Douglas-fir (Pseulotsuga menziesii)/western larch (Larix occidentalis Nutt.) forest floor were investigated. Organic horizon samples were burned at 400°C for 30 min in a top-heating...
Author(s): G. D. Mroz, Martin F. Jurgensen, Alan E. Harvey, Michael J. Larsen
Year Published: 1980
Type: Document
Book or Chapter or Journal Article

Damage from logging and prescribed burning in partially cut Douglas-fir stands
www.nrfirescience.org/resource/11928
Damage from tractor logging and slash burning in a Douglas-fir stand on gentle terrain was measured for three different types of timber harvesting. Logging damage was light in the selection-cut and understory-removal cutting units. In the overstory-removal unit, about 11 percent of the leave trees were killed by logging. Little...
Author(s): Robert E. Benson
Year Published: 1980
Type: Document
Research Brief or Fact Sheet

Light burning and the nutrient value of forage
www.nrfirescience.org/resource/11112
Slash burning in a clearcut under conditions producing very light to light burn intensities (
Author(s): Nellie M. Stark
Year Published: 1980
Type: Document
Research Brief or Fact Sheet

Database for post-fire succession, first 6 to 9 years, in Montana larch-fir forests

www.nrfirescience.org/resource/11909
Base line data on species cover (m /0.01 ha) and volume of space occupied (m /0.01 ha) for the initial 6 to 9 years of secondary forest succession for western larch-Douglas-fir forests is presented in tabular form for 20 study areas in western Montana. Disturbance treatments include wildfire and clearcutting followed by broadcast...
Author(s): Peter F. Stickney
Year Published: 1980
Type: Document
Technical Report or White Paper

Fire's influence on wildlife habitat on the Bridger-Teton National Forest, Wyoming - Volume I: photographic record and analysis
www.nrfirescience.org/resource/12151
The Bridger-Teton National Forest in the Jackson Hole Region of Wyoming has long been recognized for its wildlife resource. Management efforts have emphasized the measurement of forage utilization by elk (Cervus canadensis nelsoni) and their effect on summer and winter ranges. Less consideration has been given to other biotic and...
Author(s): George E. Gruell
Year Published: 1980
Type: Document
Technical Report or White Paper

Hydrologic effects of a severe forest fire
www.nrfirescience.org/resource/18524
On September 11 and 12, 1973 a severe forest fire burned over a number of watersheds in the area west of Salmon Arm, B. C. The hydrologic effects of this forest fire were assessed using streamflow data for one stream draining a small watershed with more than 60% of its area burned by the fire, and a nearby control stream draining a...
Author(s): J. D. Cheng
Year Published: 1980
Type: Document
Conference Proceedings

Fire's influence on wildlife habitat on the Bridger-Teton National Forest, Wyoming - Volume II: changes and causes, management implications
www.nrfirescience.org/resource/12126
Provides information on wildlife habitat condition and trend on the Bridger-Teton National Forest in the Jackson Hole Region of Wyoming by analysis of broad plant communities. Visual evidence of condition and trend are provided in Volume I, The Photo Record. Management implications are included.
Author(s): George E. Gruell
Year Published: 1980
Type: Document
Technical Report or White Paper

Fire ecology of Lolo National Forest habitat types
www.nrfirescience.org/resource/11913
This report summarizes available information on fire as an ecological factor for forest habitat types occurring on the Lolo National Forest. The Lolo National Forest habitat types are grouped into 10 Fire Groups based primarily on fire's role in forest succession. For each Fire Group, information is presented on (1) the relationship...
Author(s): Kathleen M. Davis, Bruce D. Clayton, William C. Fischer

Year Published: 1980
Type: Document
Technical Report or White Paper

Effects of a windstorm and forest fire on chemical losses from forested watersheds and on the quality of receiving streams
www.nrfirescience.org/resource/18658
A severe natural windstorm followed by a high intensity forest fire caused significant increases in runoff and in losses of nitrogen, phosphorus, and potassium from two small Precambrian watersheds. Both the windstorm and the fire had significant effects on water and chemical yields. Water yields in the two basins were 1.6 and 1.8...
Author(s): D. W. Schindler, R. W. Newbury, Kenneth G. Beaty, J. Prokopowich, T. Ruszczynski, J. A. Dalton
Year Published: 1980
Type: Document
Book or Chapter or Journal Article

The role and use of fire in sagebrush-grass and pinyon-juniper plant communities: a state-of-the-art review
www.nrfirescience.org/resource/11908
Fire frequencies averaged 32 to 70 years in sagebrush-grass communities. Early spring and late fall fires are the least harmful to perennial grasses, although small plants and those with coarse stems are more tolerant of fire than large plants and those with leafy stems. Cheatgrass can be suppressed by burning in early summer, but...
Author(s): Henry A. Wright, Leon F. Neuenschwander, Carlton M. Britton
Year Published: 1979
Type: Document
Synthesis, Technical Report or White Paper

Role of forest fuels in the biology and management of soil
www.nrfirescience.org/resource/11911
The quality of a forest site is governed by its physical conditions (temperature, moisture, soil parent materials) as they affect plant and soil. Microbes greatly affect soil development. Their activities mediate nutrient status through release, acquisition, retention, and recycling. Microbes, in part, are responsible for soil...
Author(s): Alan E. Harvey, Martin F. Jurgensen, Michael J. Larsen
Year Published: 1979
Type: Document
Technical Report or White Paper

Elk-aspen relationships on a prescribed burn
www.nrfirescience.org/resource/11924
Elk use of aspen alones was deterred only one winter following prescribed fire. Numbers of aspen suckers on the nine burned clones increased 178 percent in 3 years, but the response varied greatly among clones. Elk browsing the third winter after burning averaged 44 percent of current annual growth, and eliminated incremental height...
Author(s): Joseph V. Basile
Year Published: 1979
Type: Document
Research Brief or Fact Sheet

Effects of fire on water: a state-of-knowledge review
www.nrfirescience.org/resource/18676
The main effect burning on water quality is the potential for increased runoff of rainfall. Runoff may carry suspended soil particles, dissolved inorganic nutrients, and other materials into adjacent streams and lakes, reducing water quality and degrading fish habitat (Wade and Lundsford 1988). However, most studies in the South...
Author(s): A. R. Tiedemann, Carol E. Conrad, John H. Dieterich, James W. Hornbeck, Walter F. Megahan, Leslie A. Viereck, Dale D. Wade
Year Published: 1979
Type: Document
Conference Proceedings

Steam chemistry and watershed nutrient economy following wildfire and fertilization in Eastern Washington
www.nrfirescience.org/resource/18678
During the first 3 years after a severe wildfire in 1970, maximum concentrations of nitrate-N (NO3-N) in stream water increased from prefire levels of <0.016 to 0.$6 mg/liter on a burned, unfertilized watershed and to 0.54 and 1.47 mg/liter on two watersheds that were burned and fertilized. Maximum NO3-N concentration in the...
Author(s): A. R. Tiedemann, J. D. Helvey, T. D. Anderson
Year Published: 1978
Type: Document
Book or Chapter or Journal Article

Effects of fire on fauna: a state-of-knowledge review
www.nrfirescience.org/resource/18585
In preparing a state-of-knowledge review for fire and fauna, our basic reference source was the chapter "Effects of Fire on Birds and Mammals," by J. F. Bendell (1974) in the book "Fire and Ecosystems". In addition to summarizing this 52-page paper, we added material covering invertebrates and stream fauna and attempted to recognize...
Author(s): L. Jack Lyon, Hewlette S. Crawford, Eugene Czuhai, Richard L. Fredriksen, R. F. Harlow, Louis J. Metz, Henry A. Pearson
Year Published: 1978
Type: Document
Conference Proceedings

Effects of burning moist fuels on seedbed preparation in cutover western larch forests
www.nrfirescience.org/resource/11955
In early September 1975, two clearcuts (14 and 17 acres; 5.7 and 6.9 ha), two sets of 4 small clearcuts (1.5 acres; 0.6 ha each), and one shelterwood cutting (22 acres; 8.9 ha) were broadcast burned principally for seedbed preparation and fuel reduction on the Coram Experimental Forest. The objective was to develop a model for...
Author(s): Donald K. Artley, Raymond C. Shearer, Robert W. Steele
Year Published: 1978
Type: Document
Technical Report or White Paper

Effects of a forest fire upon the benthic community of a mountain stream in northeast Idaho
www.nrfirescience.org/resource/18664
The purpose of this study which was conducted in 1974 and 1975 was to investigate the effects of the

Fitz Creek fire of August, 1973 upon the benthic community of White Cap Creek which was partially surrounded by the bum. Study sections of White Cap Creek within the burn, below the burn, and above the burn were examined. Taxonomic...
Author(s): Deborah Cynthia Stefan
Year Published: 1977
Type: Document
Dissertation or Thesis

Response of blue huckleberry to prescribed fires in a western Montana larch-fir forest
www.nrfirescience.org/resource/11952
In a western larch/Douglas-fir forest type in western Montana, 9 spring and 11 fall under story burns were conducted. Multiple regression equations related the number of Vaccinium globulare (blue huckleberry) stems present 1 and 2 years after fire to the number present before fire, prefire fuel loadings, moisture content of fuel,...
Author(s): Melanie Miller
Year Published: 1977
Type: Document
Technical Report or White Paper

Nutrient content of forest shrubs following burning
www.nrfirescience.org/resource/8151
Prescribed burning under mature Larch/Douglas-fir forests produced changes in elemental uptake. Elemental analyses of individual species and existing biomass three years post-burn from hot, medium, and lightly burned sites and unburned controls showed a significant shift in species composition with burn intensity. Few species from...
Author(s): Nellie M. Stark, R. Steel
Year Published: 1977
Type: Document
Book or Chapter or Journal Article

Fire and nutrient cycling in a Douglas-fir/larch forest
www.nrfirescience.org/resource/8136
Twenty control burns performed with a wide range of fuel loadings and moisture conditions were used to study the effectiveness of old fuel reduction under standing Douglas-fir/larch forest. This paper reports the influence of burning on nutrient retention and loss from the soil. Sixty % of the fires were successful in reducing...
Author(s): Nellie M. Stark
Year Published: 1977
Type: Document
Book or Chapter or Journal Article

Fire effects on marten habitat in the Selway-Bitterroot Wilderness
www.nrfirescience.org/resource/7955
In an area of 21 km2 where fires have produced a mosaic of forest communities, including subalpine fir (Abies lasiocarpa), Engelman spruce (Picea engelmannii) and lodgepole pine, results from 255 track observations, 80 captures of 13 live-trapped martens, and scat analysis, over a 13 month period in 1973-1974, suggest that the...
Author(s): Gary M. Koehler, Maurice G. Hornocker
Year Published: 1977
Type: Document
Book or Chapter or Journal Article

Intensive fiber utilization and prescribed fire: effects on the microbial ecology of forests
www.nrfirescience.org/resource/12150
Reviews current knowledge of the effects of intensive wood utilization, prescribed burning, or a combination of both treatments, on the microbial ecology of forest soils. Identifies additional research that must be done to fill voids in knowledge.
Author(s): Alan E. Harvey, Martin F. Jurgensen, Michael J. Larsen
Year Published: 1976
Type: Document
Synthesis, Technical Report or White Paper

Nutrient gains to adjacent ecosystems during a forest fire: an evaluation
www.nrfirescience.org/resource/18526
Concentration of Na, K, Ca, Mg, and N in precipitation falling through smoke during a forest fire was 20 to 70 times greater than in normal precipitation. Climatic conditions during the Pine Creek fire in central Idaho were optimal for collecting nutrients by wet depositional processes. Hypothetically calculated nutrient inputs by...
Author(s): James L. Clayton
Year Published: 1976
Type: Document
Book or Chapter or Journal Article

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

Soil-water trends following wildfire on the Entiat Experimental Forest
www.nrfirescience.org/resource/18575
From the text ... 'The quantitative effects of the reduction in soil-water loss by evapotranspiration vary under different physiographic conditions, intensities or vegetation removal or deadening, and the kind of vegetation removed. Intense wildfire can destroy all foliar vegetation and would be expected to have the greatest impact...
Author(s): G. O. Klock, J. D. Helvey
Year Published: 1976
Type: Document
Conference Proceedings

Spring burning in an aspen-conifer stand for maintenance of moose habitat, West Boulder River, Montana
www.nrfirescience.org/resource/8441
Description not entered
Author(s): Floyd A. Gordon
Year Published: 1976

Type: Document
Conference Proceedings

Fire effects on water supply, floods, and sedimentation
www.nrfirescience.org/resource/18472
From the text ... 'Many forest types owe their origin, perpetuation, and distinctive characteristics to fire. What may be called the normal hydrologic behavior of many forested watersheds already incorporates some effect of fire -- both natural and man-induced. Fire may have a greater effect than harvesting on peak flows, erosion,...
Author(s): H. W. Anderson
Year Published: 1976
Type: Document
Conference Proceedings

Predicting effects on fish of fire retardants in streams
www.nrfirescience.org/resource/11947
Reports a first attempt to provide a computation system that will permit a rapid estimate of the amount of hazard to game fish caused by release of fire retardant chemical into streams. Field measurements necessary for application of the system are (1) the amount of retardant (pounds, nitrogen, calculated as NH3) that enters a...
Author(s): Wayne P. Van Meter, Charles E. Hardy
Year Published: 1975
Type: Document
Technical Report or White Paper

Presettlement vegetation in the sagebrush-grass area of the Intermountain West
www.nrfirescience.org/resource/15437
Twenty-nine journals and diaries were reviewed for their vegetation descriptions of the sagebrush-grass area in an attempt to assess the relative importance of herbaceous plants and woody brush in the northern Intermountain West. The early writings suggest a pristine vegetation visual& dominated by shrubs. Stands of grass...
Author(s): Thomas R. Vale
Year Published: 1975
Type: Document
Book or Chapter or Journal Article

Fire ecology questions survey: candid expressions of research needs by land managers and scientists in western North America
www.nrfirescience.org/resource/11907
Contains 910 sets of forest fire ecology questions mailed to the authors by 302 land managers and scientists throughout the western United States and Canada. Questions were submitted in response to a survey of important research needs for understanding the effects of fire and fire exclusion in western coniferous forest ecosystems....
Author(s): Alan R. Taylor, Ronald N. Kickert, David H. Firmage, Mark J. Behan
Year Published: 1975
Type: Document
Technical Report or White Paper

Clearcutting and burning slash alter quality of stream water in northern Idaho
www.nrfirescience.org/resource/11949

Three cutting units of varying size, soil, and aspect located along streams in the Priest River Experimental Forest in northern Idaho were chosen for evaluation of changes in water quality caused by clearcutting and subsequent burning of slash. Water sampling stations were established on each creek-upstream, downstream, and on the...
Author(s): Gordon G. Snyder, Harold F. Haupt, George H. Belt
Year Published: 1975
Type: Document
Technical Report or White Paper

Seedbed characteristics in western larch forests after prescribed burning
www.nrfirescience.org/resource/11948
Establishment of western larch (Larix occidentalis Nutt.) seedlings is favored by site preparation that reduces both the duff layer and the sprouting potential of competing vegetation. A cooperative study of the use of fire in silviculture in northwestern Montana provided conditions to research the effectiveness of prescribed...
Author(s): Raymond C. Shearer
Year Published: 1975
Type: Document
Technical Report or White Paper

Wildfire effects of nutrient distribution and leaching in a coniferous ecosystem
www.nrfirescience.org/resource/18557
Distribution of nutrients after the Entiat fire in north central Washington was examined. This intense fire produced an average ash weight on the soil surface of 2900 kg/ha. The ash layer contained 23 kg/ha N, 314 kg/ha Ca, 54 kg/ha Mg, 70 kg/ha K, and 22 kg/ha Na. Nutrient losses during the fire as a result of combined...
Author(s): Charles C. Grier
Year Published: 1975
Type: Document
Book or Chapter or Journal Article

Smoke column height related to fire intensity
www.nrfirescience.org/resource/11946
Height of slash fire smoke columns, commonly thought to be a function of atmospheric conditions alone, through a series of 10-acre experimental fires is shown to be strongly related to fire intensity. By conducting intense fires, land managers can possibly burn forest debris and still maintain air quality when atmospheric conditions...
Author(s): Rodney A. Norum
Year Published: 1974
Type: Document
Technical Report or White Paper

30 years of vegetation change following burning of sagebrush-grass range
www.nrfirescience.org/resource/15395
A sagebrush-grass range was burned according to plan in 1936. Long-term results show that sagebrush yields have increased while most other important shrub, grass, and forb yields have decreased. Evaluation by subspecies of sage-brush was helpful in interpreting sagebrush behavior. The return of sagebrush shows the need for planning...
Author(s): Roy O. Harniss, Robert B. Murray
Year Published: 1973
Type: Document

Book or Chapter or Journal Article

Plant nutrients and soil losses in overland flow from burned forest clearcuts
www.nrfirescience.org/resource/18531
No description found
Author(s): Norbert V. DeByle, P.E. Packer
Year Published: 1972
Type: Document
Conference Proceedings

Early effects of forest fire on streamflow characteristics
www.nrfirescience.org/resource/18493
A comparison of streamflow records from three small mountain streams in north-central Washington before, during, and after a severe forest fire showed three immediate effects of destructive burning. These were: Flow rate was greatly reduced while the fire was actively burning. Destruction of vegetation in the riparian zone reduced...
Author(s): H. W. Berndt
Year Published: 1971
Type: Document
Technical Report or White Paper

Sprouting of northern Idaho shrubs after prescribed burning
www.nrfirescience.org/resource/7959
Description not entered
Author(s): Thomas A. Leege, W. O. Hickey
Year Published: 1971
Type: Document
Book or Chapter or Journal Article

Vegetal development following prescribed burning of Douglas-fir in south-central Idaho
www.nrfirescience.org/resource/12124
In 1966, preliminary results of this study were reported by Lyon in Research Paper INT-29, Initial Vegetal Development Following Prescribed Burning of Douglas-fir in South-Central Idaho. Because of a misplaced decimal point in that report, data for density and volume of shrubs 2 years after the fire are incorrect. Although the...
Author(s): L. Jack Lyon
Year Published: 1971
Type: Document
Technical Report or White Paper

Tree-bole ignition in superimposed lightning scars
www.nrfirescience.org/resource/11921
This Note presents observations on a little-known mode of tree-bole ignition by lightning in which a fire-setting discharge partially superimposes its furrow upon an older lightning soar and causes ignition in the older injury.
Author(s): Alan R. Taylor
Year Published: 1969
Type: Document
Research Brief or Fact Sheet

Seedbed treatments influence seedling development in western larch forests
www.nrfirescience.org/resource/13145
Studies in 12- to 15- year- old western larch stands at Coram Experimental Forest in northwestern Montana show that condition of the seedbed at the time of seedling establishment strongly influences seedling development. Larch regenerates abundantly, grows rapidly, and becomes dominant where prescribed burning or mechanical...
Author(s): Wyman C. Schmidt
Year Published: 1969
Type: Document
Technical Report or White Paper

Temperatures in a large natural-fuel fire
www.nrfirescience.org/resource/11475
Temperatures in a large natural fuel test fire were measured with bare, shielded aspirated, and shielded unaspirated chromel-alumel thermocouples. With the bare thermocouples, values of 2650 F. were recorded--much higher than most previously published data from field and laboratory wood fires. Soil temperatures were consistent with...
Author(s): Charles W. Philpot
Year Published: 1966
Type: Document
Research Brief or Fact Sheet

Tocicity of ferro- and ferricyanide solutions to fish and determination of the cause of mortality
www.nrfirescience.org/resource/18509
The investigation of the causes of a fish kill in waters containing ferro? and ferricyanide at concentrations far under those generally accepted as non?lethal have shown these low concentrations to be lethal due to photo?decomposition and release of the cyanide ion. Experimental data place the toxic level of these compounds,...
Author(s): George Edgar Burdick, Morris Lipschuetz
Year Published: 1950
Type: Document
Book or Chapter or Journal Article

Resilience and regeneration after wildfire in dry mixed-conifer forests of the US Northern Rockies
www.nrfirescience.org/resource/12801
Over the past several decades, increases in area burned in the western U.S. have caused considerable concern about forest resilience following large wildfires. This concern is especially pronounced in dry mixed-conifer forests, where the combined effects of 20th century land management and land use have altered species composition,...
Type: Media

Webinar

The smoke management challenge and the need for leadership
www.nrfirescience.org/resource/14096
A 50-minute presentation recorded in February 2009 as part of Effective Communication for Smoke Management in a Changing Air Quality Environment. It briefly outlines the rules, policies, and guidance dictating smoke management. This presentation is still applicable, though some of the maps may no longer be current.
Type: Media

Video

Climate, wildfire, and erosion ensemble foretells more sediment in western USA watersheds
www.nrfirescience.org/resource/14573
The area burned by wildfires has increased in recent decades and is expected to increase in the future for many watersheds worldwide due to climate change. Burned areas within watersheds increase soil erosion rates, which can increase the downstream accumulation of sediment in rivers and reservoirs. Using an ensemble of climate,...
Type: Media

Webinar

Fire effects in a dry mixed-conifer forest one year after a severe fire
www.nrfirescience.org/resource/13321
This video with Dr. Dick Hutto, retired ecology professor with the University of Montana, was filmed on a one-year-old burned site near Lolo, MT. This was the first stop during the Blue Mountain Fire Effects field trip held during the 2014 Large Wildland Fires Conference. The video highlights plant and animal responses to...
Type: Media

Video

Herbivory in aspen forests: ecological context and mechanisms of defense
www.nrfirescience.org/resource/13719
The pressures facing quaking aspen (Populus tremuloides) forests in the Intermountain West are multifaceted. Fire suppression, climate change and browsing pressure by ungulates are just several of the factors that threaten the health of this foundation species. Here we present two leading scientists in North America who study aspen...
Type: Media

Webinar

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

A Three-Step Decision Support Framework for Taking Climate Adaptation Actions
www.nrfirescience.org/resource/15933
We will present a framework for using available climate science to set forward-looking conservation goals and select among a menu of climate adaptation strategies. This decision support framework is designed to catalyze adaptation actions by bridging recent advances in climate science and adaptation planning, while also helping...
Type: Media

Webinar

Effects of burning piles
www.nrfirescience.org/resource/19245

Millions of acres of fuels reduction treatments are being implemented each year in the fire adapted forests of the US. Typical these fuel reduction treatments target small diameter trees for removal producing large amounts of unmerchantable woody material and elevating surface fuel loadings. Often this material has no market value...
Type: Media

Webinar

Introduction to WFDSS - air quality tools
www.nrfirescience.org/resource/12865
Introduction to WFDSS - Air Quality ToolsSmoke management is an important aspect of managing wildland fire. While mitigating smoke impacts from prescribed burns is important, smoke from large wildfire complexes (such as the AZ/NM fires in 2011) can expose millions of people to significant smoke, with hundreds of thousands living in...
Type: Media

Webinar

Wildland fire in ecosystems: effects of fire on cultural resources and archaeology
www.nrfirescience.org/resource/14288
This webinar provides an introduction to the new edition of the Rainbow series that provides fire and land management professionals and policy makers with a greater understanding of the value of cultural resource protection and the methods available to evaluate and mitigate risks to cultural resources. The purpose of the synthesis...
Type: Media

Webinar

Smoke Management and Air Quality for Land Managers: An Online Training Resource
www.nrfirescience.org/resource/57
Smoke Management and Air Quality for Land Managers is meant for those who are looking for a tutorial on smoke management and air quality. The refresher is comprised of four lessons, each of which can be completed in about half an hour; however, links and interactions allow further investigation of several topics.
Type: Website

Online Course

Global fire induced tree loss and its biophysical effects on surface temperature
www.nrfirescience.org/resource/17603
Although fire is ubiquitous in forest ecosystems, its role in driving forest cover change and climate feedbacks remains unclear at the global scale. Here we present an observation-driven assessment of fire-induced forest cover loss and its biophysical climate feedback. Our results show that fire-induced forest cover accounts for 14....
Type: Media

Seminar

A topographically resolved wildfire danger and drought monitoring system for the conterminous United States
www.nrfirescience.org/resource/15242
Patterns of energy and available moisture vary over small distances in mountainous regions and available climate data are too coarse to resolve these terrain-mediated effects. This seminar focused on efforts to improve the physical template we use to analyze vegetation patterns and post-fire ecological effects, including what has...

Type: Media

Seminar

Introduction to smoke management
www.nrfirescience.org/resource/14089
A 36-minute video recorded in February 2009 as part of the Effective Communication for Smoke Management in a Changing Air Quality Environment workshops. A presentation describing a progressive approach and overreaching principles of smoke management. Also covers the development of basic and enhanced smoke management programs, and...
Type: Media

Video

Fire effects on native and nonnative fish
www.nrfirescience.org/resource/13313
In this video, Bitterroot National Forest fish biologist, Mike Jakober, discussed postfire studies on native and nonnative fish recovery in several Bitterroot Valley streams. This was filmed along North Rye Creek, which was one of the stops during the Fires of 2000 field trip that was part of the Large Wildland Fires Conference in...
Type: Media

Video

A science framework for assessing threats to sagebrush ecosystems and greater sage-grouse and prioritizing conservation and restoration actions
www.nrfirescience.org/resource/14880
On September 26, Jeanne Chambers, U.S. Forest Service Rocky Mountain Research Station, and Steve Hanser, U.S. Geological Survey, discussed the tools and methods developed as part of the Science Framework for the Conservation and Restoration Strategy of Sec. Order 3336. Department of the Interior Secretary Order 3336 called...
Type: Media

Webinar

Vulnerability of spring Chinook and bull trout to broad-scale disturbance processes: wildfire and climate change
www.nrfirescience.org/resource/13023
Rebecca Flitcroft, Research Fish Biologist with the USFS PNW Research Station, presents Vulnerability of spring Chinook and bull trout to broad-scale disturbance processes: wildfire and climate change
Type: Media

Webinar

Evaluation of burn mosaics on subsequent wildfire behavior, severity and fire management strategies
www.nrfirescience.org/resource/18766
The Reburn Project was motivated by a need to better understand wildfires as a type of fuel reduction treatment and to assess the impacts of fire suppression on forested landscapes. The original JFSP task statement (Influence of past wildfires on wildfire behavior, effects, and management) was created to inform the National Cohesive...
Type: Media

Webinar

Smoke management: preparing and informing the public
www.nrfirescience.org/resource/12859
For several months during 2011, wildfires throughout the Southwest Area and Mexico caused air quality impacts on public health across the region, with significant impacts measured hundreds of miles away from individual wildfires. In order to address the emerging issue, a concerted multi-state interagency air quality coordination...
Type: Media

Webinar

Seedlings and suckers, stands and clones: so you think you know aspen?
www.nrfirescience.org/resource/14066
Seedlings and suckers, stands and clones: So you think you know aspen? James Long, Professor, Utah State University. Recorded talk from 2013 Restoring the West Conference at Utah State University. The conference focused on forest resilience and change agents in the West. By Utah State University Extension Forestry. www....
Type: Media

Video

Fire Effects Monitoring and Inventory Database System (FIREMON)
www.nrfirescience.org/resource/18928
The Fire Effects Monitoring and Inventory System, called FIREMON (v2.1.1), integrates new and current ecological field sampling methods with remote sensing of satellite imagery to assess the effects of fire on important ecosystem components. The primary objective of FIREMON is to measure the immediate and long-term effects of a...
Type: Tool
Technological Tool

Vegetation recovery since the 2003 wildfires in western Montana
www.nrfirescience.org/resource/14878
Various metrics of vegetation recovery following wildfire are useful measures of ecosystem resilience, yet few studies have quantified vegetation recovery ten or more years post-fire. Conventional wisdom is that recovery time to pre-fire condition will be slower as a function of burn severity but will also vary...
Type: Media

Webinar

Vegetative and Geomorphic Complexity on the Colorado and Dolores Rivers: A Blueprint for Riparian Restoration
www.nrfirescience.org/resource/15930
Habitat complexity in rivers is linked to physical processes that act at various spatial scales and requires dynamic hydrologic and geomorphic conditions. On regulated rivers in the western United States, tributaries may provide important resource inputs and serve as sources of dynamism on regulated systems, offering blueprints to...
Type: Media

Webinar

Monitoring trends in burn severity: project overview and data access
www.nrfirescience.org/resource/12852
Monitoring Trends in Burn Severity (MTBS) is a multi-year, interagency project designed to consistently map the location, extent and associated burn severity of large fires occurring on all lands of the United States from 1984 to present. The suite of mapping, data and analysis products facilitated by the project

are derived from...
Type: Media

Webinar

Hydrology and water quality response to wildfire and post-fire land management
www.nrfirescience.org/resource/14219
This presentation was recorded during the 2016 State of the State and Forest Health Conference in Corvallis, OR.
Type: Media

Video

Diggin' dirt: fuel reduction practices and their effects on soil health
www.nrfirescience.org/resource/12939
In this webinar presented by Matt Busse on March 31, 2015 he covers: (1) ecological consequences of prescribed fire on soil heating, water repellency, and soil nutrient release, (2) pile burning, (3) whole tree harvesting and nutrient removal, and (4) the evils of soil compaction. He argues that with thoughtful planning and...
Type: Media

Webinar

Sagebrush Ecosystems in a Changing Climate: Key Opportunities for Adaptive Management
www.nrfirescience.org/resource/15514
Sagebrush steppe rangelands comprise a large fraction of North America, but they are in decline due to increases in wildfire and invasive plants, factors that relate strongly to climate and weather variability. When intact, plant communities in sagebrush steppe appear well adapted to cold wet winters and hot dry summers along with...
Type: Media

Webinar

Burn Severity: Where, Why and So What?
www.nrfirescience.org/resource/15805
Do large fire “runs” consistently result in high severity fires? What are the trends in proportion burned severely? Do climate, vegetation and topography influence burn severity in the same way that they affect area burned? How do severe fire disturbances influence vegetation response? I draw on recent and ongoing work to...
Type: Media

Seminar

Consequences of climatic thresholds to fire activity and post-fire vegetation change
www.nrfirescience.org/resource/18988
Ecological properties governed by threshold relationships can exhibit heightened sensitivity to climate change. This talk focuses on understanding the consequences of climate change for fire activity in select western North American ecosystems, and how changing fire activity can catalyze vegetation changes across broad regions....
Type: Media

Seminar

Investigating trends in elk habitat selection across time and burn severity
www.nrfirescience.org/resource/15160

This presentation was part of the 13th Biennial Scientific Conference on the Greater Yellowstone Ecosystem held at Jackson Lake Lodge in Grand Teton National Park, October 4-6, 2016. The conference theme was Building on the Past, Leading into the Future: Sustaining the Greater Yellowstone Ecosystem in the Coming Century.
Type: Media

Webinar

Burned Area Emergency Response - BAER
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

Evaluation and improvement of smoke plume rise models
www.nrfirescience.org/resource/12842
Plume height is one of the smoke properties that fire and air quality managers need to estimate in order to determine how much pollutants emitted from a prescribed burn are transported to remote populated areas from the burn site.
Type: Media

Webinar

Meet Dr. Victoria Saab, Research Wildlife Biologist
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

Got veggies? LANDFIRE Biophysical Setting (BpS) review
www.nrfirescience.org/resource/13249
LANDFIRE is updating about 1500 Biophysical Settings vegetation models and descriptions. Randy Swaty, ecologist on The Nature Conservancy's LANDFIRE team, talks about how LF developed Biophysical Settings vegetation - BpS - descriptions and models, and he sets the stage for the upcoming BpS review. While this overview of features...
Type: Media

Webinar

Successful vegetation management practices in the sagebrush-steppe
www.nrfirescience.org/resource/15502
This webinar will walk the audience through the Vegetation Management Practices learning series, produced by the Bureau of Land Management and The Nature Conservancy. This learning series responds to action item #5 within the fuels section of the Integrated Rangeland Fire Management Strategy to implement a comprehensive knowledge...
Type: Media

Webinar

How do historical fire regimes influence avian distributions in dry coniferous forests?
www.nrfirescience.org/resource/14340
Historical fire regimes have influenced vegetation structure, landscape patchiness, and animal distributions in dry coniferous forests of the Interior West. An Understanding how avian species and community responses vary with historical fire regimes is needed to effectively manage dry forests for maintaining...
Type: Media

Webinar

Insects, Disease, Drought, and Fire
www.nrfirescience.org/resource/18970
Forests in the western United States are seeing increases in insects and disease. The resulting increase in tree mortality is creating more fuel for potential wildfires. Randy Moore, regional forester of the U.S. Forest Service Pacific Southwest Region, talks about drought and the impacts it has on our landscapes. (video 2 minutes...
Type: Media

Video

FireStem
www.nrfirescience.org/resource/18003
FireStem is a computer model designed to aid fire managers in predicting tree mortality based on fire behavior and intensity. The eventual goal is to produce mortality predictions based on fuel information, moisture, and fire behavior for a specified region and a range of tree species. FireStem is based on fundamental thermodynamics...
Type: Website

Website

Understory recovery following the 1988 Yellowstone fires: nearly three decades of succession
www.nrfirescience.org/resource/15156
This presentation was part of the 13th Biennial Scientific Conference on the Greater Yellowstone Ecosystem held at Jackson Lake Lodge in Grand Teton National Park, October 4-6, 2016. The conference theme was Building on the Past, Leading into the Future: Sustaining the Greater Yellowstone Ecosystem in the Coming Century.
Type: Media

Webinar

Smoke consequences of new wildfire regimes driven by climate change
www.nrfirescience.org/resource/12838
Smoke from wildfires has adverse biological and social consequences, and various lines of evidence suggest that smoke from wildfires in the future may be more intense and widespread, demanding that methods be developed to address its effects on people, ecosystems, and the atmosphere. Don McKenzie presented webinar on March 19, 2014...
Type: Media

Webinar

Projecting Climate Change Impacts on Wetland-Dependent Birds in the Prairie Pothole Region
www.nrfirescience.org/resource/17217
Projections of climate and land use change can help inform the allocation of resources across space and among species. North Central CSC supported work in the Prairie Pothole Region highlighted a

framework for projecting climate change impacts, and developed methods for assessing surrogate species relationships. Join this webinar to...
Type: Media

Webinar

Past, present, and future in the forests of California's Sierra Nevada: variability in forest response to environmental change, and the role of management in promoting ecosystem resilience
www.nrfirescience.org/resource/13224
During this Webinar, Dr. Safford contrasted the ecology and temporal trends (historical to current to projected future) of lower montane (oak woodland, yellow pine, mixed conifer) vs. upper montane (red fir) and subalpine forests in the Sierra Nevada, focusing on impacts of three classes of environmental stressors: climate change,...
Type: Media

Webinar

Multi-scale analysis of fire effects in alpine treeline ecotones
www.nrfirescience.org/resource/14333
Although direct effects of climate change have been studied though observational and experimental methods in alpine treeline ecotones (ATEs), indirect effects due to shifts in disturbance regimes have received less attention, despite evidence that the frequency and extent of large disturbances are increasing in...
Type: Media

Webinar

Post-fire conifer regeneration in ponderosa pine forests of the southern Rocky Mountains, USA
www.nrfirescience.org/resource/18172
Wildfires in the southern Rocky Mountain region have increased in size, frequency, and severity over the past three decades, but forest recovery following high severity wildfire events is uncertain in this region. We studied conifer regeneration in 11 fires in Colorado, South Dakota, and Wyoming in unburned, low-to-moderately burned...
Type: Media

Webinar

Breaking the synchrony: spatial variability in tree regeneration after wildfire delays and dampens future bark beetle outbreaks
www.nrfirescience.org/resource/15152
This presentation was part of the 13th Biennial Scientific Conference on the Greater Yellowstone Ecosystem held at Jackson Lake Lodge in Grand Teton National Park, October 4-6, 2016. The conference theme was Building on the Past, Leading into the Future: Sustaining the Greater Yellowstone Ecosystem in the Coming Century.
Type: Media

Webinar

Predicting local smoke dispersion during low-intensity wildland fires in forested environments
www.nrfirescience.org/resource/12835
Smoke generated from low-intensity prescribed fires used for fuels management can have an adverse impact on local air quality, raising human health and safety concerns especially in wildland-urban-interface areas. Local smoke behavior is a complex process and is highly dependent on local ambient atmospheric conditions (e.g....

Type: Media

Webinar

The Berry Fire
www.nrfirescience.org/resource/17212
The 2016 lightning-caused Berry Fire was the largest fire on record for Grand Teton National Park. This video, by videographer Peri Sasnett, highlights the challenges managers face in balancing ecological benefits of fire with the human inconvenience fire can cause on public lands and in nearby communities. Dramatic footage of the...
Type: Media

Video

Prescribed Fire: Smoke Management and Regulatory Challenges - Part 2
www.nrfirescience.org/resource/16759
This webinar addresses additional issues and questions that arose during the original webinar, “Prescribed Fire: Smoke Management and Regulatory Challenges." Moderator: Mike Zupko, Executive Director, Wildland Fire Leadership Council. Panelists: Pete Lahm, Smoke Manager, U.S. Forest Service; Mark Melvin, Chair, Coalition of...
Type: Media

Webinar

Basic smoke management practices
www.nrfirescience.org/resource/13061
A Southern Fire Exchange webinar presented by USDA Forest Service Air Resource Specialist Pete Lahm. This webinar presented an introduction to the six components of the USFS-NRCS Basic Smoke Management Practices.
Type: Media

Webinar

Species Status Assessment (SSA) for whitebark pine
www.nrfirescience.org/resource/14777
This presentation by Amy C Nicholas, Biologist, U.S. Fish and Wildlife Service, was part of the 2016 Whitebark Pine Ecosystem Foundation Annual Science and Management Workshop - Successes and Challenges in Managing the Jewel in the Crown of the Continent on September 16, 2016 in Whitefish, MT.
Type: Media

Webinar

National forest and rangeland management initiative webinar: rangeland management strategies and tools
www.nrfirescience.org/resource/15116
The Western Governors' Association webinar "Rangeland Management Strategies and Tools: Promoting Resiliency and Addressing Invasive Species" examined new developments for increased resilience to the threats posed to western rangelands by invasive species, drought, wildfire and other stressors. Panelists discussed techniques that...
Type: Media

Webinar

Uncertainty associated with estimating a short term 1-3 hr particulate matter concentration from

a human-sited visual range
www.nrfirescience.org/resource/12827
Several U.S. state and tribal agencies and other countries implement a methodology developed in the arid intermountain western United States, where short-term (1-3 hr) particulate matter (PM) concentrations are estimated from human-observed visual range (Vr) sightings. These PM2.5 concentration estimates are then linked to a public...
Type: Media

Webinar

An overview of the Monitoring Trends in Burn Severity (MTBS) Project and field-based burn severity assessment (2011)
www.nrfirescience.org/resource/14139
Monitoring Trends in Burn Severity (MTBS) is a multi-year, interagency project designed to consistently map the location, extent and associated burn severity of large fires occurring on all lands of the United States from 1984 to present. The suite of mapping, data and analysis products facilitated by the project are derived from...
Type: Media

Webinar

Rainfall Thresholds for Post-Fire Runoff and Erosion from Plot to Watershed Scale
www.nrfirescience.org/resource/16366
Colorado's Front Range watersheds provide municipal water supplies for downstream communities. Many of these watersheds have been affected by erosion and sedimentation after wildfire, and managers need information on the frequency and duration of post-fire runoff and erosion problems. This webinar presents the results of research...
Type: Media

Webinar

The potential influence of changing climate on the persistence of inland native trout
www.nrfirescience.org/resource/13736
Bioclimatic models predict large reductions in native trout across the Rocky Mountains this century but lack specific details regarding how this change will occur. This project addresses the need for more complete evidence and more accurate vulnerability assessments to show how salmonid populations are adjusting to climate change....
Type: Media

Webinar

Relations among cheatgrass driven fire, climate and sensitive status birds
www.nrfirescience.org/resource/16094
As the distribution and abundance of non-native cheatgrass (Bromus tectorum) in the Great Basin has increased, the extent and frequency of fire in the region has increased by as much as 200%. These changes in fire regimes are associated with loss of the sagebrush (Artemisia tridentata) and native grasses and forbs in which many...
Type: Media

Webinar

Hydrologic impacts of high severity wildfire
www.nrfirescience.org/resource/14299
Fires are increasing in size, frequency, and severity. Simultaneously, development continues in the wildland-urban interface and the number of people living in or visiting forest areas is growing.

Understanding the post-fire hydrologic response of watersheds as observed on the Schultz Fire of 2010, is paramount for effective risk...
Type: Media

Webinar

Why fire scar formation differs among tree species and why it matters
www.nrfirescience.org/resource/15101
This webinar was presented as part of the 2016-2017 RMRS Fire Sciences Laboratory's weekly seminar series.
Type: Media

Seminar

Finding the best available science on fire effects and fire regimes in northwestern and Northern Rockies ecosystems
www.nrfirescience.org/resource/13953
The Northern Rockies Fire Science Network and Northwest Fire Science Consortium teamed up with Fire Effects Information System (FEIS) staff to introduce new fire regime products and demonstrate new search functions to inform fire management planning and decision-making in the Northwest and Northern Rocky Mountain regions. ...
Type: Media

Webinar

Demystifying LANDFIRE's biophysical settings descriptions and models and tentative data
www.nrfirescience.org/resource/14489
The LANDFIRE Program collaborated with experts across the country for more than a decade to create a unique product describing the characteristics and basic ecology of hundreds of ecosystems. This product, known as the Biophysical Settings (BpS) Descriptions and Models, consists of two components: 1) a quantitative state-and-...
Type: Media

Webinar

The ability of wildfire to act as a fuel treatment
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

Fire effects in the interior of an eleven-year-old burn
www.nrfirescience.org/resource/13322
This video with Dr. Dick Hutto, retired ecology professor with the University of Montana, was filmed on an eleven-year-old burned site. This was the third stop during the Blue Mountain Fire Effects field trip held during the 2014 Large Wildland Fires Conference. The video highlights plant and animal responses to fire.
Type: Media

Video

Understanding fire refugia and their importance to conservation in the Rocky Mountains of the U.S. and Canada
www.nrfirescience.org/resource/13045
Understanding fire refugia and its interactions with other stressors, poses extreme challenges to biodiversity conservation. An important and potentially efficient adaptation strategy will be the identification and protection of natural refugia that buffer biodiversity from the rate and magnitude of regional change. The most...
Type: Media

Webinar

Using Fire and Grazing to Maintain Productive and Ecologically Resilient Grasslands
www.nrfirescience.org/resource/15936
Fire, grazing, and climate are the major forces that maintain ecological health in grasslands. Today's grasslands are increasingly threatened by climate change, habitat loss and fragmentation, and degradation of ecological processes and communities. The effective use of fire and grazing management to conserve remaining grassland...
Type: Media

Webinar

Wildland Fire Assessment Tool
www.nrfirescience.org/resource/14297
WFAT provides an interface between ArcMap, FlamMap 5, and the First Order Fire Effects Model (FOFEM), combining their strengths into a spatial fire behavior and fire effects analysis tool in GIS. In the webinar, you will learn how to use WFAT to locate potential fuel treatment units, develop a prescription for those units, and...
Type: Media

Webinar

Fire Modeling in the Wildland Fire Decision Support System - WFDSS
www.nrfirescience.org/resource/59
Mediasite video presentation given by Sam Amato, (National Fire Decision Support Center) at the 2011 Southwest Interagency Fuels Workshop, Flagstaff, AZ on March 10, 2011. The Wildland Fire Decision Support System (WFDSS) model uses different fire models to provide landscape scale fire modeling. This presentation defines the model...
Type: Media

Video

Fire and Archaeology: working together to protect cultural resources during wildfire and prescribed fire
www.nrfirescience.org/resource/18375
Land managers are challenged to protect cultural resources within the context of reintroducing fire on the landscape. Positive relationships and partnerships are essential to effective management.
Type: Media

Video

Fire activity and emissions inventories: their use in smoke management decision making and state implementation plans
www.nrfirescience.org/resource/14091
A 47-minute presentation recorded in February 2009 as part of Effective Communication for Smoke Management in a Changing Air Quality Environment workshops. This presentation describes fire

activity and emission inventories, common sources of error in modeling and examples of current models in use.
Type: Media

Video

Effects of severe fire on watersheds
www.nrfirescience.org/resource/13315
In this video, Ed Snook, BNF hydrologist, and Karin Riley, geoscientist with the University of Montana and the Missoula Fire Sciences Lab, discuss the effects of severe fire on soils including increasing their susceptibility to debris flows after the fires of 2000. This was filmed along North Rye Creek, which was one of...
Type: Media

Video

Fire severity and post-fire vegetation recovery in riparian areas of two Oregon fires
www.nrfirescience.org/resource/13024
Jessica Halofsky, Research Ecologist at the University of Washington, presents 'Fire severity & post-fire vegetation recovery in riparian areas of the Biscuit and B&B Complex fires, Oregon'
Type: Media

Webinar

Longleaf and Ponderosa Pine Fire Ecology
www.nrfirescience.org/resource/19241
Longleaf pine and ponderosa pine in the same talk? Both of these forests were often described as open and park-like. This presentation will provide a historical overview of these forests and a discussion of each species ecology and the relationship with fire. It is important to use history as a guide and an overview of the early...
Type: Media

Webinar

Effects of fuel treatments on the spatial probabilities of burning and final size of recent widlfire across the United States
www.nrfirescience.org/resource/12860
Large wildfire frequency has increased several-fold in recent decades throughout the western United States. These changes have resulted from a combination of human land use practices, altered climates and shifting forest and fire management policies. These fires have had increasingly severe consequences for ecosystems, human health...
Type: Media

Webinar

Vegetation, fuel, and potential fire dynamics years after Montana’s Fire and Fire Surrogate Study
www.nrfirescience.org/resource/17602
This seminar is part of the Missoula Fire Sciences Laboratory 2018 Seminar Series.
Type: Media

Seminar

For whom the bell tolls: patterns, processes, and consequences of fire-caused tree mortality
www.nrfirescience.org/resource/14081

Tree mortality is one of the most important effects of forest fires, influencing important ecosystem services such as forest productivity, wildlife habitat and carbon sequestration. In this webinar participants will learn about the latest research on the mechanisms of fire-caused tree mortality, and how it varies across tree species...
Type: Media

Webinar

Quaking aspen management: a presentation by the Western Aspen Alliance
www.nrfirescience.org/resource/14879
On October 27, Paul Rogers of the Western Aspen Alliance discussed the impact of climate change on aspen ecosystems, with an emphasis on aspen fire types. The presentation covered the variability of aspen responses to fire and emphasized unique fire-related systems to wean practitioners from one-size-fits-all prescriptions for aspen...
Type: Media

Webinar

Insights into fire severity and post-fire recovery from an integrated analysis of forest inventory data and long-term fire mapping datasets
www.nrfirescience.org/resource/13672
Speaker: Sara Goeking, Biological Scientist, Forest Service, Rocky Mountain Research Station, Inventory and Monitoring Program. Event: Restoring the West Conference 2015 - Restoration and Fire in the Interior West.
Type: Media

Video

Rangeland Management Strategies and Tools: Promoting Resiliency and Addressing Invasive Species
www.nrfirescience.org/resource/15931
The Western Governors' Association webinar "Rangeland Management Strategies and Tools: Promoting Resiliency and Addressing Invasive Species" examined new developments for increased resilience to the threats posed to western rangelands by invasive species, drought, wildfire and other stressors. Panelists discussed techniques that...
Type: Media

Webinar

High survival of small whitebarkpine at alpine treelineedges –and in forest interiors –after widespread mountain pine beetle outbreaks in the US Northern Rockies
www.nrfirescience.org/resource/18763
Mountain pine beetles (Dendroctonusponderosae; MPB) are causing extensive mortality of whitebarkpine (Pinusalbicaulis) throughout the species'srange. In the highest mountains where these trees grow, they reach alpine treeline–the climatic boundary where growth forms transition from trees to shrub-like krummholz. Although...
Type: Media

Webinar

On the causes and movements of smoke-induced fog
www.nrfirescience.org/resource/12856
Smoke from residual combustion in the aftermath of prescribed burns or wildfires can combine with certain atmospheric conditions usually late at night to produce superfog -- a fog reducing visibility to less than 10 feet, and frequently to less than 3 feet. When this smoke/fog is transported across a major

roadway, the results are...
Type: Media

Webinar

Disturbances across boundaries: forest structure, wildfire severity, and post-fire resilience following recent bark beetle outbreaks in forests of Greater Yellowstone
www.nrfirescience.org/resource/13283
This is a recording from the 12th Biennial Scientific Conference on the Greater Yellowstone Ecosystem. The talk focused on research designed to: understand the effects of pine beetle outbreaks on the structure, fire severity, and post-fire recovery in lodgepole pine and Douglas-fir forests in the GYE.
Type: Media

Video

Fire Management Lessons Learned when Burning Duff
www.nrfirescience.org/resource/17363
Presentation by Kevin Hiers of the Tall Timbers Research Station. Presents a review from an experienced manager turned wildland fire scientist, of concerns, strategies and opportunities for burning in sites with duff accumulations. From the October 2017 Southern Fire Exchange Duff Fire Science Workshop at the FSU Coastal and Marine...
Type: Media

Video

Representing landscape-scale heterogeneity in plant traits and feedbacks with fire impacts
www.nrfirescience.org/resource/14877
Effectively modeling landscape-scale heterogeneity and its feedbacks on vegetation and fire dynamics is a persistent and timely challenge in a rapidly changing climate. Towards addressing this challenge, my doctoral research focuses on predicting climate-fire-vegetation interactions under projected climate...
Type: Media

Webinar

These Once (and Future) Conflagrated Prairies
www.nrfirescience.org/resource/15848
A brief reconnaissance of the Great Plains and fire that will place its fire scene within the national narrative. From the onset of European contact, the grasslands were famous for their fires. They stimulated a debate about the relative roles of climate and humans. They prompted one of America's two national traditions of fire...
Type: Media

Webinar

Automated Geospatial Watershed Assessment Tool
www.nrfirescience.org/resource/18729
The Automated Geospatial Watershed Assessment (AGWA) tool is a GIS-based hydrologic modeling tool that uses commonly available GIS data layers to fully parameterize, execute, and spatially visualize results for the RHEM, KINEROS2, KINEROS-OPUS, SWAT2000, and SWAT2005 watershed runoff and erosion models. Accommodating novice to...
Type: Website

Website

A dataset for the evaluation of smoke models-emissions, plume rise, and dispersion
www.nrfirescience.org/resource/12843
An overview of the dataset "Airborne and Lidar measurements of smoke plume rise, emissions, and dispersion." The dataset consists of measurements of smoke emissions, plume rise, and dispersion for eight wildfires in the western United States and prescribed fires in California, Idaho, and North Carolina.
Type: Media

Webinar

Post-fire tree mortality and management
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

Fire and trout: lessons from wildfires over the last two decades
www.nrfirescience.org/resource/13252
Wildfire often results in striking changes to the landscape and consequently we historically considered that it would have negative effects on and pose serious risk to trout populations in the West. But to date, empirical evidence of negative effects on fish populations from wildfire has been equivocal. The immediate effects of fire...
Type: Media

Webinar

Automated Geospatial Watershed Assessment Tool: A GIS-based Hydrologic Modeling Tool
www.nrfirescience.org/resource/18861
The Automated Geospatial Watershed Assessment (AGWA) tool is a GIS-based hydrologic modeling tool that uses commonly available GIS data layers to fully parameterize, execute, and spatially visualize results for the RHEM, KINEROS2, KINEROS-OPUS, SWAT2000, and SWAT2005 watershed runoff and erosion models. Accommodating novice to...
Type: Tool
Technological Tool

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

Proposed smoke management framework allows larger prescribed fires with fewer health risks
www.nrfirescience.org/resource/15511
Before a single drip torch is lit or blade of grass ignited, fire management staff must consult with state or local air quality control officials to negotiate a fine balance between using fire as a restorative tool on the landscape with concerns about smoke and its impacts on public health. For years, these determinations have been...
Type: Media

Webinar

Sagebrush responses to shifting climate and fire disturbances
www.nrfirescience.org/resource/14380
This presentation addresses issues confronting preservation and restoration of big sagebrush, focusing on climate, wildfire, and invasives. Preliminary and published insights on climate responses of sagebrush and implications for vulnerability assessments and post-fire restoration will be described. Responses of big sagebrush and...
Type: Media

Webinar

Fire and Fuels Extension to the Forest Vegetation Simulator
www.nrfirescience.org/resource/18005
The Fire and Fuels Extension (FFE) to the Forest Vegetation Simulator (FVS) simulates fuel dynamics and potential fire behaviour over time, in the context of stand development and management. The Fire Effects Model Extension is a new extension to FVS and the PPE that allows users to simulate the effects of fire on a number of...
Type: Website

Website

Long-term effects of the 1988 fires on small mammal communities in the GYE
www.nrfirescience.org/resource/15158
This presentation was part of the 13th Biennial Scientific Conference on the Greater Yellowstone Ecosystem held at Jackson Lake Lodge in Grand Teton National Park, October 4-6, 2016. The conference theme was Building on the Past, Leading into the Future: Sustaining the Greater Yellowstone Ecosystem in the Coming Century.
Type: Media

Webinar

Why can't we just put all the fires out?
www.nrfirescience.org/resource/19122
This collection of 33 slides was presented at a 2017_Conference on Fire_Planning. It presents reasons why fire should not be eliminated from a landscape when looking at management activities.
Type: Media

Webinar

Predicting smoke impacts with uncertain emissions and meteorology
www.nrfirescience.org/resource/12840
Smoke from wildland fires can have adverse impacts on visibility and also on public health. Models are available for simulating the dispersion, long-range transport, and chemical evolution of fire plumes and predicting their impacts on air quality. However, these models are not perfect tools for decision making purposes. There are...
Type: Media

Webinar

Forests born of fire
www.nrfirescience.org/resource/14512
Western US forests burned by high-intensity fire are important and rare wildlife habitat and must be protected. Widespread policies of salvage logging and logging purported to prevent the likelihood of fire harms this rare habitat in private and National Forests. This video demonstrates the beauty and life found where burned forests...

Type: Media

Video

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

Bark Beetle Outbreaks in Western North America: Causes, Control and Consequences
www.nrfirescience.org/resource/15501
With climate warming and more frequent and severe droughts western North America has experienced increases in disturbances arising from native bark beetle outbreaks. The focus of the talk will be on common bark beetle species and their hosts, environmental triggers for beetle outbreaks, management options for bark beetles and the...
Type: Media

Webinar

The effects of seed source health on whitebark pine (Pinus albicaulis) regeneration density after wildfire
www.nrfirescience.org/resource/14339
Whitebark pine (Pinus albicaulis Engelm.) populations are decliningnearly rangewide from a combination of factors,including mountain pine beetle (Dendroctonus ponderosae Hopkins,1902) outbreaks, the exotic pathogen Cronartium ribicola J.C. Fisch.1872, which causes the disease white pine blister rust, andsuccessional replacement due...
Type: Media

Webinar

Misconceptions and Benefits of Fire
www.nrfirescience.org/resource/18964
This 2.5 minute video discusses the most common misconception of wildfire - that is, that all fire is bad. But there are important benefits that smaller and more frequent fires offer to the environment. Matt Jolly, an ecologist at the U.S. Forest Service Rocky Mountain Research Station, talks about the natural and important role of...
Type: Media

Video

Fire history and regeneration dynamics of low-elevation Douglas-fir forests in the Grand Teton area
www.nrfirescience.org/resource/15153
This presentation was part of the 13th Biennial Scientific Conference on the Greater Yellowstone Ecosystem held at Jackson Lake Lodge in Grand Teton National Park, October 4-6, 2016. The conference theme was Building on the Past, Leading into the Future: Sustaining the Greater Yellowstone Ecosystem in the Coming Century.
Type: Media

Webinar

Sub-canopy transport and dispersion of smoke: a unique observation dataset plus model evaluation of the BlueSky Framework
www.nrfirescience.org/resource/12837
Low intensity prescription burning is used to reduce fuels, improve ecosystem health, and to mimic a natural fire pattern that is otherwise suppressed during the more intense wildfire season. There are many constraints that limit the ability to conduct prescribed burn operations, including (but not limited to) visibility reduction...
Type: Media

Webinar

Quantifying Post-fire Recovery of Rangeland Productivity
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

Ecology and restoration in mixed severity fire regimes: climate thresholds, beta diversity, and collaboration in Montana forests
www.nrfirescience.org/resource/13775
Mixed severity fire regimes historically maintained landscape heterogeneity in fuels and ecological conditions, which limited fire spread and supported diverse species assemblages. Setting goals for ecosystem management and restoration targets in in these forests, where the frequency, severity, and effects of...
Type: Media

Webinar

Water Quality Concerns in Western Forests and Rangelands
www.nrfirescience.org/resource/16763
The WGA webinar "Water Quality Concerns in Western Forests and Rangelands" examined wildfire's dramatic effect on water quality in western landscapes including pre- and post-wildfire practices that can reduce impacts on water quality and ecosystem health, and drivers for public-private investment in mitigation and restoration...
Type: Media

Webinar

Aspen, elk, and trophic cascades in multiple-use landscapes of the Yellowstone region
www.nrfirescience.org/resource/15146
This presentation was part of the 13th Biennial Scientific Conference on the Greater Yellowstone Ecosystem held at Jackson Lake Lodge in Grand Teton National Park, October 4-6, 2016. The conference theme was Building on the Past, Leading into the Future: Sustaining the Greater Yellowstone Ecosystem in the Coming Century.
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
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

Advancement of smoke emissions models utilizing geospatial and remote sensing data for wildland fire management and risk reduction
www.nrfirescience.org/resource/13058
A Southern Fire Exchange webinar presented by Joe Roise of the North Carolina State University, Siamak Khorram of the University of California, Berkeley, and Duncan Lutes with the USDA Forest Service. This webinar presented an introduction to some recent interdisciplinary research attempting to improve wildland fire smoke emission...
Type: Media

Webinar

Tending the Wild
www.nrfirescience.org/resource/16099
Tending the Wild shines light on the environmental knowledge of indigenous peoples across California by exploring how they have actively shaped and tended the land for millennia, in the process developing a deep understanding of plant and animal life. This documentary examines how humans are necessary to live in balance with nature...
Type: Media

Video

How effective were fuel treatments in the 2011 Wallow fire?
www.nrfirescience.org/resource/14301
This webinar presents results of an opportunistic study to quantify the performance of thinning and surface fuel treatment in migrating wildfire behavior and severity, as represented by bole char, crown scorch proportion, tree burn severity index, on the largest wildfire in southwest USA history: 2011 Wallow fire. The results...
Type: Media

Webinar

Effects of fire in whitebark pine communities of the alpine-treeline ecotone
www.nrfirescience.org/resource/14775
In this presentation by C. Alina Cansler, Research Ecologist, University of Washington, was part of the 2016 Whitebark Pine Ecosystem Foundation Annual Science and Management Workshop - Successes and Challenges in Managing the Jewel in the Crown of the Continent that occurred September 16, 2016 in Whitefish, MT.
Type: Media

Webinar

Hierarchical population structure in greater sage-grouse provides insight into management boundary delineation
www.nrfirescience.org/resource/15108
We genotyped 1499 greater sage- grouse from 297 leks across Montana, North Dakota and South Dakota using a 15-locus microsatellite panel, then examined spatial autocorrelation, spatial principal components analysis, and hierarchical Bayesian clustering to identify population structure. Our results show that at distances of up to...

Type: Media

Webinar

Inter-LCC greater sage-grouse research projects: results and applications to inform landscape-scale management
www.nrfirescience.org/resource/14493
n 2012, Region 6 of the US Fish and Wildlife Service (USFWS) obtained Inter-LCC Science Funding to support original research and development of decision support tools to further landscape-scale conservation of Greater sage-grouse within and across the four Landscape Conservation Cooperatives (LCC) comprising the birds' range....
Type: Media

Webinar

Monitoring fire effects with FFI
www.nrfirescience.org/resource/14128
FFI (FEAT/FIREMON Integrated) is an ecological monitoring system designed to assist managers with collection, storage and analysis of plot level ecological information. It includes a large selection of standard sampling protocols and supports user defined methods. It supports scalable (project to landscape scale) monitoring at the...
Type: Media

Webinar

Positive effects of fire on birds may appear only under narrow combinations of fire severity and time-since-fire
www.nrfirescience.org/resource/14589
We conducted bird surveys in 10 of the first 11 years following a mixed-severity fire in a dry, low-elevation mixed-conifer forest in western Montana, United States. By defining fire in terms of fire severity and time-since-fire, and then comparing detection rates for species inside 15 combinations of fire severity and time-since-...
Author(s): Richard L. Hutto, David A. Patterson
Type: Document
Book or Chapter or Journal Article

Fire effects at the edge of an eleven-year-old burn
www.nrfirescience.org/resource/13324
This video with Dr. Dick Hutto, retired ecology professor with the University of Montana, was filmed on an eleven-year-old burned site. This was the second stop during the Blue Mountain Fire Effects field trip held during the 2014 Large Wildland Fires Conference. The video highlights plant and animal responses to fire.
Type: Media

Video

Culturally peeled trees handbook
www.nrfirescience.org/resource/12391
This guide was developed to help identify Culturally Peeled Trees. Culturally Peeled Trees are a specific type of Culturally Modified Tree. The term is used to describe the mostly pre-reservation practice by aboriginal or native people of 'peeling,' or removing, the bark/cambium layer of a tree for a variety of procurement and...
Author(s): Marcy Reiser, Laurie S. Huckaby
Type: Document

Technical Report or White Paper

Waste to wisdom: improving soil productivity while reducing fire risk
www.nrfirescience.org/resource/13049
Bioenergy production from forest biomass offers a solution to reduce wildfire hazard fuel levels, decrease insect and disease outbreaks, and reduce the incidence of invasive species while producing a useful source of renewable energy. However, on-site bioenergy production and the subsequent application of biochar to forest sites...
Type: Media

Webinar

Bridging the Divide - Video 1: The West Fork Fire Complex
www.nrfirescience.org/resource/15941
During the summer of 2013 over 1000 wildfires burned throughout Colorado totaling almost 200,000 acres. One of these, the West Fork Fire Complex, burned through the beetle-killed forests of the Upper Rio Grande and San Juan National Forests in southern Colorado. While other fires in the state drew national attention due to proximity...
Type: Media

Webinar

First Order Fire Effects Model (FOFEM)
www.nrfirescience.org/resource/14298
FOFEM is a computer program for predicting first order fire effects including tree mortality, fuel consumption, smoke production, and soil heating caused by prescribed fire or wildfire. In this webinar you will learn about the FOFEM algorithms, how to prepare the input data, run the tool and interpret outputs. This webinar was...
Type: Media

Webinar

Webinar: Techniques for Wildfire Detection and Monitoring Part 2
www.nrfirescience.org/resource/18088
This session will provide an overview of the Global Wildfire Information System (GWIS) and a hands-on demonstration on the use of the GWIS viewer. GWIS is an online web application that uses remotely sensed wildfire data. This data includes fire danger, wildfire locations, burned area extent, and burn severity. GWIS also focuses on...
Type: Media

Webinar

Fire.org
www.nrfirescience.org/resource/114
Fire.org is the home page of Systems for Environmental Management, a Montana nonprofit research and educational corporation. For over 29 years we've specialized in issues concerning wildland fire planning, behavior, fuel, weather, and effects. Here we post many of the publications and software packages we've developed in cooperation...
Type: Website

Website

Burn severity: Where, why, and so what?
www.nrfirescience.org/resource/15098

Do large fire “runs” consistently result in high severity fires? What are the trends in proportion burned severely? Do climate, vegetation and topography influence burn severity in the same way that they affect area burned? How do severe fire disturbances influence vegetation response? I draw on recent and ongoing work to...
Type: Media

Webinar

Modeling and Mapping the Potential for High Severity Fire in the Western U.S.
www.nrfirescience.org/resource/18377
The ecological effects of wildland fire – also termed the fire severity – are often highly heterogeneous in space and time. This heterogeneity is a result of spatial variability in factors such as fuel, topography, and climate (e.g. a map of mean annual temperature). However, temporally variable factors such as daily weather and...
Type: Media

Webinar