Climate, fire regime, geomorphology, and conspecifics influence the spatial distribution of chinook salmon redds
www.nrfirescience.org/resource/22494
Pacific salmon spawning and rearing habitats result from dynamic interactions among geomorphic processes, natural disturbances, and hydro?climatological factors acting across a range of spatial and temporal scales. We used a 21?year record of redd locations in a wilderness river network in central Idaho, USA, to examine which...
Author(s): Gregory R. Jacobs, Russell F. Thurow, John M. Buffington, Daniel J. Isaak, Seth J. Wenger
Year Published: 2020
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

Predicting spatial distribution of postfire debris flows and potential consequences for native trout in headwater streams
www.nrfirescience.org/resource/20530
Habitat fragmentation and degradation and invasion of nonnative species have restricted the distribution of native trout. Many trout populations are limited to headwater streams where negative effects of predicted climate change, including reduced stream flow and increased risk of catastrophic fires, may further jeopardize their...
Author(s): Edwin R. Sedell, Robert E. Gresswell, Thomas E. McMahon
Year Published: 2015
Type: Document
Book or Chapter or Journal Article

Fire effects on aquatic ecosystems: an assessment of the current state of the science
www.nrfirescience.org/resource/20528
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: 2015
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

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

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

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

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

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

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

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

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

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

Toward an integrated classification of ecosystems: defining opportunities for managing fish and forest health
www.nrfirescience.org/resource/18639
Many of the aquatic and terrestrial ecosystems of the Pacific Northwest United States have been simplified and degraded in part through past land-management activities. Recent listings of fishes under the Endangered Species Act and major new initiatives for the restoration of forest health have precipitated contentious debate among...
Author(s): Bruce E. Rieman, Paul F. Hessburg, Danny C. Lee, Russell F. Thurow, James R. Sedell
Year Published: 2000
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

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

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

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

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

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

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

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

Changes in wild trout habitat following forest fire
www.nrfirescience.org/resource/18605
The responses of streams to the 1979 Mortar Creek fire in central Idaho provide valuable insights into the extended impact of wildfire on trout habitat. The fire dramatically increased runoff and fine sediment levels and reduced shading and cover from undercut banks and woody vegetation. Although habitat conditions for all life...
Author(s): G. Wayne Minshall, Douglas A. Andrews, James T. Brock, Christopher T. Robinson, Deron E. Lawrence
Year Published: 1990
Type: Document
Conference Proceedings

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

Effects of disturbance frequency on stream benthic community structure in relation to canopy cover and season
www.nrfirescience.org/resource/18645
Field experiments were conducted to examine the effects of disturbance frequency on invertebrates and periphyton colonizing bricks in a third order Rocky Mountain (USA) stream. After an initial colonization period (30 days), sets of bricks were turned over at intervals of 0, 3, 9, 27, or 54 days. Invertebrate species richness and...
Author(s): Christopher T. Robinson, G. Wayne Minshall
Year Published: 1986
Type: Document

Book or Chapter or Journal Article

Chemical forest fire retardants: acute toxicity to five freshwater fishes and a scud
www.nrfirescience.org/resource/18569
Toxicities of four chemical forest fire retardants, Fire-Trol 100 and 931 (ammonium sulfate or polyphosphate with an attapulgite clay thickener) and Phos-Chek 202 A and 259 (diammonium phosphate with a guar gum derivative thickener) were determined by static and flow-through toxicity tests for fry and fingerling coho salmon (...
Author(s): W. W. Johnson, H. O. Sanders
Year Published: 1977
Type: Document
Technical Report or White Paper

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