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Rocky Mountain Research Station

New Publications

July–September 2018

CONTENTS

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The Rocky Mountain Research Station

The Rocky Mountain Research Station is one of seven regional units that make up the U.S. Forest Service Research and Development organization.

We maintain 14 research locations throughout a 12-state territory encompassing the Great Basin, Southwest, Rocky Mountains, and parts of the Great Plains. The station employs more than 400 permanent full-time employees, including about 100 research scientists.

Scientists conduct research that spans an area containing 52% of the nation's National Forest System lands (54 national forests and grasslands). In the lower 48 states, our territory also includes 55% of the nation's Bureau of Land Management lands; 48% of the designated wildernesses; 37% of National Park Service lands; numerous other public and tribal lands; and 41% of the non-urban/rural private lands.

We administer and conduct ecological research on 14 experimental forests, ranges, and watersheds over the long term, even centuries, enabling us to learn how forests change as climate and other factors change over time.

We also oversee activities on several hundred research natural areas, a network of ecosystems set aside to conserve biological diversity. These areas represent a wide variety of habitats and ecosystems from alpine ecosystems to lowlands and from coniferous forests of the Northern Rockies to semiarid deserts of the Southwest and prairie ecosystems of the Great Plains.

New RMRS Publication Series

Riparian and wetland ecosystems of the Ashley National Forest

Online only

Riparian and wetland ecosystems of the Ashley National Forest: An assessment of current conditions in relation to natural range of variation. Smith, D. Max; Driscoll, Katelyn P.; Finch, Deborah M. 2018. Gen. Tech. Rep. RMRS-GTR-378. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 101 p.

We conducted this assessment to provide information on the current conditions of riparian and wetland ecosystems in reference to their natural range of variation on the Ashley National Forest during Forest Plan revision. We determined that riparian and wetland ecosystems have experienced numerous stressors that have influenced their current conditions, including reduced beaver activity, altered flow regimes, dams and diversions, livestock and wild ungulate grazing, and climate change. Some ecosystem characteristics, particularly channel and floodplain dynamics, appear to be more resistant to stressors with the majority of units classified as trending toward or within their natural range of variation. Changes to groundwater and surface water dynamics, as well as resistance to invasive and encroaching species, have been impacted the most by stressors, particularly in the Flaming Gorge National Recreation Area. Our results have been incorporated in the Forest Plan and will continue to be useful to resource managers and planners during efforts to restore and/or maintain riparian and wetland ecosystems on the Ashley National Forest.

https://www.fs.usda.gov/treesearch/pubs/56579

Soil disturbance recovery on the Kootenai National Forest, Montana

Online only

Soil disturbance recovery on the Kootenai National Forest, Montana. Gier, John M.; Kindel, Kenneth M.; Page-Dumroese, Deborah S.; Kuennen, Louis J. 2018. Gen. Tech. Rep. RMRS-GTR-380. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 31 p.

We document changes in detrimental soil disturbance (DSD) in harvest units located on the Kootenai National Forest that occurred over two decades. From 1992 through 2006, 251 harvest units on the Kootenai National Forest were monitored by using standard soil monitoring transects. Seventy-three percent of these units were resampled from 2012 to 2013 under the same monitoring protocol. The original sampling included 510 soil transects and 118,956 datapoints; resampling included 394 soil transects and 76,561 datapoints. Both the initial and subsequent sampling efforts evaluated the extent of DSD after forest management activities. Results indicate that about 86 percent of the resampled units had a reduction in DSD when compared to the original soil monitoring data. Soil recovery is logarithmic, with the greatest soil recovery rates occurring in the first 3 to 5 years after harvest activities, particularly on soils influenced by a volcanic ash-cap. Long-term DSD is usually associated with skid trails, temporary roads, and log landings.

https://www.fs.usda.gov/treesearch/pubs/56603

New RMRS Publication Series

Rangelands on the Edge: Quantifying the modification, fragmentation, and future residential development of U.S. rangelands

Online only

Rangelands on the Edge: Quantifying the modification, fragmentation, and future residential development of U.S. rangelands. Reeves, Matthew C.; Krebs, Michael; Leinwand, Ian; Theobald, David M.; Mitchell, John E. 2018. Gen. Tech. Rep. RMRS-GTR-382. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 31 p.

Rangelands are increasingly urban, subdivided, and fragmented. About 62 percent of coterminous U.S. rangelands occur on private land and are at further risk for conversion. This Rangelands on the Edge (ROTE) project improves our understanding of the fate of rangelands from historical, present day, and future perspectives by describing human modification, fragmentation, and future residential growth projections for rangeland-dominated vegetation. Since pre-European settlement, some 340 million acres (over 34 percent) of rangelands, particularly in the Great Plains, have been converted to alternative land uses, especially intensive agriculture (croplands, pastureland). Approximately 11 percent of private rangelands are likely to experience significant increases in housing development over the next 15 years.

https://www.fs.usda.gov/treesearch/pubs/56565

Socioeconomic vulnerability to ecological changes to national forests and grasslands in the Southwest

Online only

Socioeconomic vulnerability to ecological changes to national forests and grasslands in the Southwest. Hand, Michael S.; Eichman, Henry; Triepke, F. Jack; Jaworski, Delilah. 2018. Gen. Tech. Rep. RMRS-GTR-383. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 100 p.

The flow of ecosystem services derived from forests and grasslands in the Southwestern United States may change in the future. People and communities may be vulnerable if they are exposed, are sensitive, and have limited ability to adapt to ecological changes. Geospatial descriptions of ecosystem services, projected climate-related ecological changes, and socioeconomic conditions are used to assess socioeconomic vulnerability to changes in the provision of ecosystem services by national forests and grasslands in the Southwest. Vulnerability is uneven in the Southwest due to varying projected effects of climate on forest ecosystem services, and different levels of exposure, sensitivity, and adaptive capacity of people in the region.

https://www.fs.usda.gov/treesearch/pubs/56851

New RMRS Publication Series

Logging utilization in Montana, 2011–2016

Limited paper copies are available from RMRS Distribution: rmrspubrequest@fs.fed.us

Logging utilization in Montana, 2011–2016. Berg, Erik C.; Simmons, Eric A.; Hayes, Steven W.; Morgan, Todd A.; Shaw, John D. 2018. Resour. Bull. RMRS-RB-26. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 16 p.

A study of commercial timber-harvesting activities in Montana was conducted during 2011 to 2016 to estimate growing-stock removals, characterize current tree utilization and logging operations, and assist with estimat¬ing the amount of woody biomass left onsite after harvesting. Sample logging sites were selected within major geographic regions proportional to 5-year timber harvest volumes. A two-stage sampling method was used to compute State-level logging utilization factors. Results of the study indicated that in Montana, for every 1,000 cubic feet (CF) delivered to the mill, harvesting removed 1,009 CF of timber volume from growing stock, created 30 CF of growing-stock logging residue, and sent 21 CF of non-growing-stock material to the mill. Logging site-level growing-stock logging residue production was predicted to decrease 65 percent when pulp products were harvested. Study results can inform land managers of residues available for biomass/bioenergy uses, provide data for life cycle analyses, and estimate removals from growing stock.

https://www.fs.usda.gov/treesearch/pubs/56470

Wyoming's forest products industry and timber harvest, 2014: Part I

Online only

Wyoming's forest products industry and timber harvest, 2014: Part I: Timber harvest, products, and flow. McIver, Chelsea P.; Sorenson, Colin B.; Morgan, Todd A.; Shaw, John D. 2018. Resour. Bull. RMRS-RB-27-1. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 8 p.

This Resource Bulletin contains findings from a census of Wyoming's primary forest products industry for calendar year 2014. Part I of the series presents information on the volume of timber harvested in the State by ownership, species, product, and resource area. It also describes timber flow within the State and across State lines. This effort is the fifth application of its kind in Wyoming and presents information from primary manufacturers in the State as well as facilities in surrounding States that receive timber harvested from Wyoming. Primary forest product manufacturers are firms that process timber into manufactured products such as lumber, and facilities like wood pellet plants that use the wood fiber residue directly from timber processors

https://www.fs.usda.gov/treesearch/pubs/56872

New RMRS Publication Series

Wyoming's forest products industry and timber harvest, 2014: Part II

Online only

Wyoming's forest products industry and timber harvest, 2014: Part II: Industry sectors, capacity, and outputs. McIver, Chelsea P.; Sorenson, Colin B.; Morgan, Todd A.; Shaw, John D. 2018. Resour. Bull. RMRS-RB-27-2. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 8 p.

This Resource Bulletin contains findings from a census of Wyoming's primary forest products industry for calendar year 2014. Part II of the series presents information on the forest products sectors that processed timber and mill residue into finished products, including: sawmills, house log and log home manufacturers, log furniture producers, post and pole manufacturers, commercial firewood operations and wood pellets and animal bedding producers.

https://www.fs.usda.gov/treesearch/pubs/56873

Wyoming's forest products industry and timber harvest, 2014: Part III

Online only

Wyoming's forest products industry and timber harvest, 2014: Part III: Sales, employment, and economic contribution. McIver, Chelsea P.; Marcille, Kate C.; Morgan, Todd A.; Shaw, John D. 2018. Resour. Bull. RMRS-RB-27-3. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 8 p.

This Resource Bulletin presents findings from a census of Wyoming's primary forest products manufacturers for calendar year 2014. Part III of the series presents information on sales value and employment associated with primary wood products manufacturing, the economic impact of forest products manufacturing in the State, and an analysis of the broader forest industry and how it has changed over time.

https://www.fs.usda.gov/treesearch/pubs/56874

New RMRS Publication Series

Wyoming's forest products industry and timber harvest, 2014: Part IV

Online only

Wyoming's forest products industry and timber harvest, 2014: Part IV: Supplemental tables. McIver, Chelsea P.; Sorenson, Colin B.; Morgan, Todd A.; Shaw, John D. 2018. Resour. Bull. RMRS-RB-27-4. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 16 p.

The University of Montana's Bureau of Business and Economic Research, in conjunction with the Interior West Forest Inventory and Analysis Program of the U.S. Forest Service, conducted a census of Wyoming's timber processors that operated during calendar year 2014. Through a written questionnaire, phone or in person interview, timber-processing and residue-utilizing facilities provided information about their 2014 operations, including: * plant location, production, capacity, and employment; * volume of raw material received, by county and ownership; * species of timber received and live/dead proportions; * finished product volumes, types, sales value, and market locations; and * volume, utilization, and marketing of manufacturing residue. The facility-level information was then compiled and summarized. Summary data tables and figures are reviewed by wood products researchers, State and Federal agency personnel, and members of the State's forest products industry. However, firm-level data are confidential and will not be released.

https://www.fs.usda.gov/treesearch/pubs/56875

Design of a workshop process to support consideration of NRV and climate change for land management planning under the 2012 planning rule

Online only

Design of a workshop process to support consideration of natural range of variation and climate change for land management planning under the 2012 Planning Rule. Timberlake, Thomas; Joyce, Linda A.; Schultz, Courtney; Lampman, Georgina. 2018. Res. Note RMRS-RN-82. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 36 p.

Historical ecology, particularly the concept of natural range of variation, informs planning for ecological integrity and climate change. This report discusses a March 2016 workshop held for the Intermountain Region to address ecological integrity, NRV, and climate change, all high priority topics for land management planning. It describes presentations included in the workshop on the evolution of the concept of natural range of variation, the 2012 planning rule, and data considerations. As part of the workshop, we developed a worksheet that managers and planners may use to consider ecological integrity, climate change, and natural range of variation. This report summarizes the use of this worksheet for two ecosystems of interest to the region: spruce-fir and alpine vegetation. We also provide recommendations, including to consider natural range of variation as a tool for planning for ecological integrity.

https://www.fs.usda.gov/treesearch/pubs/56491

Journals and Other Publications

Online links are provided if available. For the general public, some links may hit a pay wall. Please accept our apologies for any inconvenience.

Air, water and aquatic environments

Capture enrichment of aquatic environmental DNA: A first proof of concept. Wilcox, T.M.; Young, M.K.; McKelvey, K.S.; Schwartz, M.K.; [et al.]. 2018. Molecular Ecology Resources. doi: 10.1111/1755-0998.12928. https://www.fs.usda.gov/treesearch/pubs/56614

Crowd-sourced databases as essential elements for Forest Service partnerships and aquatic resource conservation. Isaak, D.J.; Young, M.; Nagel, D.; Schwartz, M.; Chandler, G.; [et al.] . 2018. Fisheries doi: 10.1002/fsh.10083. https://www.fs.usda.gov/treesearch/pubs/56629

Evaluating controls on nutrient retention and export in wide and narrow valley segments of a mountain river corridor. Wegener, Pam; Covino, Tim; Rhoades, Charles. 2018. Journal of Geophysical Research: Biogeosciences. 123: 1817–1826. https://doi.org/10.1029/2017JG004109. https://www.fs.usda.gov/treesearch/pubs/57165

The generation and redistribution of soil cations in high elevation catenas in the Fraser Experimental Forest, Colorado, U.S. Bergstrom, Robert M.; Borch, Thomas; Rhoades, Charles C.; [et al.]. 2018. Geoderma. 333: 135–144. https://www.fs.usda.gov/treesearch/pubs/57168

Impacts of bio-based energy generation fuels on water and soil resources. Chapter 7. Neary, Daniel G. 2018. In: Tsvetkov, Pavel, ed. Energy systems and environment. London, UK: IntechOpen Limited: 113–125. doi: 10.5772/intechopen.74343. https://www.fs.usda.gov/treesearch/pubs/57176

The legacy of a severe wildfire on stream nitrogen and carbon in headwater catchments. Rhoades, Charles C.; Fegel, Timothy S.; Pierson, Derek N.; [et al.]. 2018. Ecosystems. https://doi.org/10.1007/s10021-018-0293-6. https://www.fs.usda.gov/treesearch/pubs/56996

A non-invasive sampling method for detecting non-native smallmouth bass (*Micropterus dolomieu*). Franklin, Thomas W.; McKelvey, Kevin S.; Young, Michael K.; Schwartz, Michael K. [et al.]. 2018. Northwest Science. 92(2): 149–157. https://www.fs.usda.gov/treesearch/pubs/56492

Promoting revegetation and soil carbon sequestration on decommissioned forest roads in Colorado, USA: A comparative assessment of organic soil amendments. Ramlowa, M.; Rhoades, C.C.; Cotrufo, M.F. 2018. Forest Ecology and Management. 427: 230–241. https://www.fs.usda.gov/treesearch/pubs/57164

Valley segments, stream reaches, and channel units. Chapter 2. Bisson, Peter A.; Montgomery, David R.; Buffington, John M. 2017. In: Hauer, F.R., Lamberti, G.A. eds. Methods in stream ecology: Volume 1: Ecosystem structure, 3rd ed. Cambridge, MA: Elsevier, Academic Press: 21–47.https://www.fs.usda.gov/treesearch/pubs/25502

Warming and warnings: Assessing climate change vulnerability in the Rocky Mountain Region. Cooke, Brian; Dwire, Kathleen; Isaak, Dan; Joyce, Linda; Merritt, David; [et al.]. 2018. Science You Can Use Bulletin, Special General Technical Report Companion. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 15 p. https://www.fs.usda.gov/treesearch/pubs/56631

Fire, fuel and smoke

Advancing the science of wildland fire dynamics using process-based models. Hoffman, Chad M.; Sieg, Carolyn H.; Mell, William; Parsons, Russell A.; [et al.]. 2018. Fire. 1(2): 32. https://www.fs.usda.gov/treesearch/pubs/57018

Analog-based fire regime and vegetation shifts in mountainous regions of the western US. Parks, Sean A.; Holsinger, Lisa M.; Miller, Carol; [et al.]. 2018. Ecography. 41: 910–921. https://www.fs.usda.gov/treesearch/pubs/55029

Assessing high-cost wildfires in relation to the natural distribution of ponderosa pine in the 11 Western states (2000-2017). Williams, Jerry T.; Panunto, Matthew H. 2018. Wildfire. 27.3: 22-31. https://www.fs.usda.gov/treesearch/pubs/57171

Assessing transboundary wildfire exposure in the southwestern United States. Ager, Alan A.; Palaiologou, Palaiologos; Day, Michelle A.; [et al.]. 2018. Risk Analysis. doi: 10.1111/risa.12999. https://www.fs.usda.gov/treesearch/pubs/57190

Best friends forever: The whitebark pine and Clark's nutcracker. Keane, Robert E.; Cushman, Samuel A. 2018. The Wildlife Professional.

Journals and Other Publications

Online links are provided if available. For the general public, some links may hit a pay wall. Please accept our apologies for any inconvenience.

September/October: 48–52. https://www.fs.usda.gov/treesearch/pubs/57198

Black carbon emissions in Russia: A critical review. Evans, Meredydd; Kholod, Nazar; Hao, Wei Min; [et al.]. 2017. Atmospheric Environment. 163: 9–21. https://www.fs.usda.gov/treesearch/pubs/57174

Boundary layer instabilities in mixed convection and diffusion flames with an unheated starting length. Miller, Colin H.; Finney, Mark A.; McAllister, Sara S.; Forthofer, Jason M.; [et al.]. 2018. International Journal of Heat and Mass Transfer. 118: 1243–1256. https://www.fs.usda.gov/treesearch/pubs/57202

Can air quality management drive sustainable fuels management at the temperate wildland-urban interface? Bowman, David M.J.S.; Daniels, Lori D.; Jolly, W. Matt; [et al.]. 2018. Fire. 1: 27. https://www.fs.usda.gov/treesearch/pubs/57192

Composition and structure of forest fire refugia: What are the ecosystem legacies across burned landscapes? Meigs, Garrett W.; Krawchuk, Meg A. 2018. Forests. 9: 243. https://www.fs.usda.gov/treesearch/pubs/56616

Condition of live fire-scarred ponderosa pine twenty-one years after removing partial cross-sections. Heyerdahl, Emily K.; McKay, Steven J. 2017. Tree-Ring Research. 73(2): 149-153. https://www.fs.usda.gov/treesearch/pubs/57188

Conventional fire behavior modeling systems are inadequate for predicting fire behavior in bark beetle-impacted forests (Project INT-EM-F-11-03) [Chapter 13]. Hood, Sharon M.; Keane, Robert E.; Smith, Helen Y.; Holsinger, Lisa; [et al.]. 2018. In: Potter, Kevin M.; Conkling, Barbara L., eds. Forest health monitoring: National status, trends, and analysis 2017. Gen. Tech. Rep. SRS-233. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station: 167–176. https://www.fs.usda.gov/treesearch/pubs/56305

The Cooney Ridge Fire experiment: An early operation to relate pre-, active, and post-fire field and remotely sensed measurements. Hudak, Andrew T.; Freeborn, Patrick H.; Lewis, Sarah A.; Hood, Sharon M.; Smith, Helen Y.; Hardy, Colin C.; Butler, Bret W.; Nordgren, Bryce L.; Bright, Benjamin C.; [et al.]. 2018. Fire. 1(1): 10. https://www.fs.usda.gov/treesearch/pubs/56163

Daily black carbon emissions from fires in northern Eurasia for 2002–2015. Hao, Wei Min; Petkov, Alexander; Nordgren, Bryce L.; Corley, Rachel E.; Silverstein, Robin P.; Urbanski, Shawn P.; [et al.]. 2016. Geoscientific Model Development. 9: 4461–4474. https://www.fs.usda.gov/treesearch/pubs/57173

Decreasing fire season precipitation increased recent western US forest wildfire activity. Holden, Zachary A.; Luce, Charles H.; Jolly, W. Matt; Parsons, Russell; [et al.]. 2018. PNAS. doi: 10.1073/pnas.1802316115. https://www.fs.usda.gov/treesearch/pubs/56854

Drought, tree mortality, and wildfire in forests adapted to frequent fire. Stephens, Scott L; Collins, Brandon M; Finney, Mark A; [et al.]. 2018. BioScience. 68(2): 77–88. https://doi.org/10.1093/biosci/bix146. https://www.fs.usda.gov/treesearch/pubs/55621

Effects of accelerated wildfire on future fire regimes and implications for the United States federal fire policy. Ager, Alan A.; Barros, Ana M.G.; Preisler, Haiganoush K.; [et al.]. 2017. Ecology and Society. 22(4): 12. https://www.fs.usda.gov/treesearch/pubs/57187

An empirically based approach to defining wildland firefighter safety and survival zone separation distances. Page, Wesley G.; Butler, Bret W. 2017. International. Journal of Wildland Fire. 26: 655–667. https://www.fs.usda.gov/treesearch/pubs/57189

An evaluation of NDFD weather forecasts for wildland fire behavior prediction. Page, Wesley G.; Wagenbrenner, Natalie S.; Butler, Bret W.; Forthofer, Jason M.; [et al.]. 2018. Weather and Forecasting. 33: 301–315. https://www.fs.usda.gov/treesearch/pubs/57204.

Fire enhances the complexity of forest structure in alpine treeline ecotones. Cansler, C. Alina; McKenzie, Donald; Halpern, Charles B. 2018. Ecosphere. 9(2): e02091. https://www.fs.usda.gov/treesearch/pubs/57193

First-Order Fire Effects Model (FOFEM). Keane, R. E.; Lutes, D. 2018. In: Manzello, S. L., editor. Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires. Springer International Publishing, Cham: 1–5. https://link.springer.com/referenceworkentry/10.1007%2F978-3-319-51727-8_74-1

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Online links are provided if available. For the general public, some links may hit a pay wall. Please accept our apologies for any inconvenience.

Forward. Hardy, Colin C.; Peterson, Janice L. 2018. In: Peterson, Janice; Lahm, Pete; Fitch, Mark; [et al.], eds. NWCG smoke management guide for prescribed fire. PMS 420-2. NFES 001279. Boise, ID: National Wildfire Coordinating Group: 1–3. https://www.fs.usda.gov/treesearch/pubs/57195

Fuel and topographic influences on wildland firefighter burnover fatalities in Southern California. Page, Wesley G.; Butler, Bret W. 2018. International. Journal of Wildland Fire. doi: 10.1071/WF17147. https://www.fs.usda.gov/treesearch/pubs/57205

Integrating large wildfire simulation and forest growth modeling for restoration planning. Ager, Alan A.; Houtman, Rachel M.; Seli, Robert; [et al.]. 2017. In: Keyser, Chad E.; Keyser, Tara L. eds. Proceeding of the 2017 Forest Vegetation Simulator (FVS) e-Conference. e-Gen. Tech. Rep. SRS-224. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station: 129–137. https://www.fs.usda.gov/treesearch/pubs/57186

Large outdoor fires and the built environment: Objectives and goals of permanent IAFSS working group. Manzello, Samuel L.; McAllister, Sara; Suzuki, Sayaka. 2018. Fire Safety Journal. 98: 1–2. https://www.fs.usda.gov/treesearch/pubs/57201

Light absorption by biomass burning source emissions. Cheng, Yuan; Wold, Cyle E.; Hao, Wei Min; [et al.]. 2016. Atmospheric Environment. 127: 347–354. https://www.fs.usda.gov/treesearch/pubs/57172

Living with wildland fire in America: Building new bridges between policy, science and management. Hall, John A.; Steblein, Paul F.; Hardy, Colin C. 2018. Wildfire. 27.3: 16-19. https://www.fs.usda.gov/treesearch/pubs/57169

#MeToo for the wildfire community. Steelman, Toddi; Riley, Karin. 2018. Wildfire. 27.3: 4-5. https://www.fs.usda.gov/treesearch/pubs/57170

Modeling thinning effects on fire behavior with STANDFIRE. Parsons, Russell A.; Cohn, Greg; Jolly, W. Matt; [et al.]. 2018. Annals of Forest Science. doi: 10.1007/s13595-017-0686-2. https://www.fs.usda.gov/treesearch/pubs/57206

Observations and predictability of gap winds in the Salmon River Canyon of Central Idaho, USA. Wagenbrenner, Natalie S.; Forthofer, Jason M.; Butler, Bret W; [et al.]. 2018. Atmosphere. 9: 45. https://www.fs.usda.gov/treesearch/pubs/57207

Optimizing prescribed fire allocation for managing fire risk in central Catalonia. Alcasena, Fermin J.; Ager, Alan A.; Salis, Michele; [et al.]. 2018. Science of The Total Environment. 621: 872–885. https://www.fs.usda.gov/treesearch/pubs/57191

Optimizing smoke and plume rise modeling approaches at local scales. Mallia, Derek V.; Kochanski, Adam K.; Urbanski, Shawn P.; [et al.]. 2018. Atmosphere. 9: 166. https://www.fs.usda.gov/treesearch/pubs/56156

Pyro-ecophysiology: Shifting the paradigm of live wildland fuel research. Jolly, W. Matt; Johnson, Daniel M. 2018. Fire. 1: 8. https://www.fs.usda.gov/treesearch/pubs/57197

Recommendations for Chelan County, WA. Mowrey, Molly; Johnston, Kelly; Yellin, Ben; Karau, Eva. 2018. Bozeman, MT: Community Planning Assistance for Wildfire. https://www.frames.gov/catalog/56691

Rethinking the wildland fire management system. Thompson, Matthew P.; Calkin, David E.; Phipps, John; [et al.]. 2018. Journal of Forestry. 116 (4): 382–390. https://doi.org/10.1093/jofore/fvy020. https://www.fs.usda.gov/treesearch/pubs/56494

Scaling nonreactive cross flow over a heated plate to simulate forest fires. Gustenyov, Nikolay; Finney, Mark; McAllister, Sara; [et al.]. 2018. Combustion and Flame. 197: 340–354. https://www.fs.usda.gov/treesearch/pubs/57194

Summary of workshop large outdoor fires and the built environment. Manzello, Samuel L.; Blanchi, Raphaele; McAllister, Sara; [et al.]. 2018. Fire Safety Journal. 100: 76–92. https://www.fs.usda.gov/treesearch/pubs/57200.

Use of landscape simulation modeling to quantify resilience for ecological applications. Keane, Robert E.; Loehman, Rachel A.; Holsinger, Philip; Hood, Sharon M.; [et al.] 2018. Ecosphere. 9(9): e02414. https://www.fs.usda.gov/treesearch/pubs/57132

Journals and Other Publications

Online links are provided if available. For the general public, some links may hit a pay wall. Please accept our apologies for any inconvenience.

Use of ordinary kriging and Gaussian conditional simulation to interpolate airborne fire radiative energy density estimates [Corrigendum]. Klauberg, C.; Hudak, A.T.; Bright, B.C.; [et al.]. 2018. International Journal of Wildland Fire. 27: 228–240. https://www.fs.usda.gov/treesearch/pubs/56164

Wildfire contribution to desertification at local, regional, and global scales. Neary, D.G. 2018. Chapter 8. In: Squires, V.R.; Ariapour, A., eds. Desertification: Past, current, and future trends. Hauppauge, NY: Nova Science Publishers. ISBN-978-1-53614-212-9: 199–222.

Wildfire response performance measurement: Current and future directions. Thompson, Matthew P.; Calkin, David E.; Hand, Michael S.; [et al.]. 2018. Fire .1(2): Article 21; doi:10.3390/fire1020021. https://www.fs.usda.gov/treesearch/pubs/56495

Wildland fires [Chapter 9]. Ager, Alan A; Finney, Mark; Kalabokidis, Kostas; Moore, Peter. 2017. In: Dalezios, Nicolas R., ed. Environmental hazards methodologies for risk assessment and management. IWA Publishing: 307–329

Wildland fuel treatments. Hoffman, Chad M.; Collins, Brandon; Battaglia, Mike. 2018. In: Manzello, S.L., ed. New York: Encyclopedia of wildfires and wildland-urban interface (WUI) fires. Springer International Publishing. https://doi.org/10.1007/978-3-319-51727-8_83-1. https://www.fs.usda.gov/treesearch/pubs/57128

Wind speed and relative humidity influence spatial patterns of burn severity in boreal forests of northeastern China. Wu, Zhiwei; He, Hong S.; Parsons, Russell A.; [et al.]. 2018. Annals of Forest Science. 75(3): 66. https://www.fs.usda.gov/treesearch/pubs/57208

Forest and woodland ecosystems

Container volume and subirrigation schedule influence *Quercus variabilis* seedling growth and nutrient status in the nursery and field. Sun, Qiaoyu; Dumroese, R. Kasten; Liu, Yong. 2018. Scandinavian Journal of Forest Research. 33: 560–567. https://www.fs.usda.gov/treesearch/pubs/56065

Density-dependent woody detritus accumulation in an even-aged, single-species forest. Schaedel, Michael S.; Larson, Andrew J.; Weisbrod, Cullen J.; Keane, Robert E. 2017. Canadian Journal of Forest Research 47(9): 1215–1221. https://www.fs.usda.gov/treesearch/pubs/56618

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Air, Water and Aquatic Environments

Air quality, water availability, water quality, and aquatic habitats are critical issues within the rapidly changing Western United States. The Air, Water and Aquatic Environments program is committed to the development of knowledge and science applications related to air and water quality, as well as the habitat quality, distribution, diversity, and persistence of fish and other aquatic species. Webpage: https://www.fs.fed.us/rmrs/science-program-areas/air-water-and-aquatic-environmentss. Contact Frank McCormick, Program Manager, for more information: 970-498-1175.

Aldo Leopold Wilderness Research Institute

The Aldo Leopold Wilderness Research Institute aims to provide scientific leadership by bringing diverse groups of scientists and managers together to develop and use the knowledge needed to assure wilderness ecosystems and values endure for generations to come. Webpage: https://www.fs.fed.us/rmrs/science-program-areas/aldo-leopold-wilderness-research-institute. Contact Susan Fox, Program Director, for more information: 406-542-4193.

Fire, Fuel and Smoke

The Fire, Fuel and Smoke program works to improve the safety and effectiveness of fire management through the creation and dissemination of basic fire science knowledge. The program investigates the impacts of fires on the environment by means of fundamental and applied research for understanding and predicting fire behavior, its effects on ecosystems, and its emissions into the atmosphere. Webpage: https://www.fs.fed.us/rmrs/science-program-areas/fire-fuel-and-smoke. Contact Colin Hardy, Program Manager, for more information: 406-329-4978.

Forest and Woodland Ecosystems

Forests and woodlands are increasingly being impacted by large scale urbanization and human developments, uncharacteristically large and severe wildfires, insect and disease outbreaks, exotic species invasions, and drought, and interactions of multiple stressors at local, landscape, and regional scales. The Forest and Woodland Ecosystems program acquires, develops, and delivers the scientific knowledge for sustaining and restoring forests and woodlands landscape health, biodiversity, productivity, and ecosystem processes. Webpage: https://www.fs.fed.us/rmrs/science-program-areas/forest-and-woodland-ecosystems. Contact Alison Hill, Program Manager, for more information: 928-556-2105.

Grassland, Shrubland and Desert Ecosystems

Disruptions by large-scale clearing for agriculture, water diversions, extensive grazing, changes in the native fauna, the advent of alien weeds, altered fire regimes, and increases in human-caused insect and disease epidemics have contributed to produce areas that are in unsuitable condition. The Grassland, Shrubland and Desert Ecosystems program addresses the biology, use, management, and restoration of these grass and shrublands. Webpage: hhttps://www.fs.fed.us/rmrs/science-program-areas/grassland-shrubland-and-desert-ecosystems. Contact Debbie Finch, Program Manager, for more information: 505-724-3671.

Human Dimensions

The Human Dimensions program provides social and economic science based innovation to human societies as they develop a sustainable relationship with their environment. Major issues confronting societies across the globe such as global climate change, energy, fire, water, and ecosystem services all have important social-economic dimensions that will be explored and addressed by this program. Webpage: https://www.fs.fed.us/rmrs/science-program-areas/human-dimensions Contact David Chapman, Program Manager, for more information: 970-498-1378.

Inventory, Monitoring and Analysis

The Inventory, Monitoring and Analysis program provides the resource data, analysis, and tools needed to effectively identify current status and trends, management options and impacts, and threats and impacts of fire, insects, disease, and other natural processes. Webpage: https://www.fs.fed.us/rmrs/science-program-areas/inventory-and-monitoring. Contact Michael Wilson, Program Manager, for more information: 801-625-5407.

Science Application and Communication

The Science Application and Integration program is a knowledge transfer unit that provides leadership for the integration and use of scientific information in natural resource planning and management across the Interior West. Webpage: https://www.fs.fed.us/rmrs/science-program-areas/science-application-and-communication. Contact Jennifer Hayes, Assistant Station Director (acting) 970-498-1365.

Wildlife and Terrestrial Ecosystems

The Wildlife and Terrestrial Ecosystems program is engaged in sustaining species and ecosystems of concern through studies of ecological interactions within and between plant, aquatic, and terrestrial animal communities; understanding public use effects through studies elucidating social and economic values associated with consumptive and non-consumptive uses of fish and wildlife; managing terrestrial and aquatic habitats; and evaluating outcomes of land and water uses and natural disturbances. Webpage: https://www.fs.fed.us/rmrs/science-program-areas/wildlife-and-terrestrial-ecosystems. Contact Michael Schwartz, Program Manager, for more information: 406-542-4161.

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