



# Rocky Mountain Research Station

# New Publications

July-September 2020

## CONTENTS

---

<b>ROCKY MOUNTAIN RESEARCH STATION .....</b>	<b>2</b>
<b>NEW SERIES PUBLICATIONS</b>	
RMRS-GTR-415: Development of a Severe Fire Potential map for the contiguous United States .....	3
RMRS-P-78: Proceedings of the Fire Continuum-Preparing for the future of wildland fire; 2018 May 21-24; Missoula, MT .....	3
RMRS-RN-86: A novel approach for estimating nonforest carbon stocks in support of forest plan revision .....	4
RMRS-RN-87: Living with wildfire in the Squilchuck Drainage-Chelan County, Washington: 2020 data report .....	4
<b>JOURNALS AND OTHER PUBLICATIONS.....</b>	<b>5</b>
Air, Water and Aquatic Environments .....	5
Fire, Fuel and Smoke .....	5
Forest and Woodland Ecosystems.....	7
Grasslands, Shrublands and Desert Ecosystems .....	9
Human Dimensions.....	11
Inventory, Monitoring and Analysis .....	11
Wilderness (Aldo Leopold Wilderness Research Institute) .....	12
Wildlife and Terrestrial Ecosystems.....	13
<b>PUBLICATION ORDERS AND CONTACT INFORMATION .....</b>	<b>14</b>



# 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 percent of the nation’s National Forest System lands (54 national forests and grasslands). In the lower 48 States, our territory also includes 55 percent of the nation’s Bureau of Land Management lands; 48 percent of the designated wildernesses; 37 percent of National Park Service lands; numerous other public and tribal lands; and 41 percent 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.

## Contact us

Phone: (970) 498-1100

Web: [www.fs.usda.gov/rmrs/](http://www.fs.usda.gov/rmrs/)

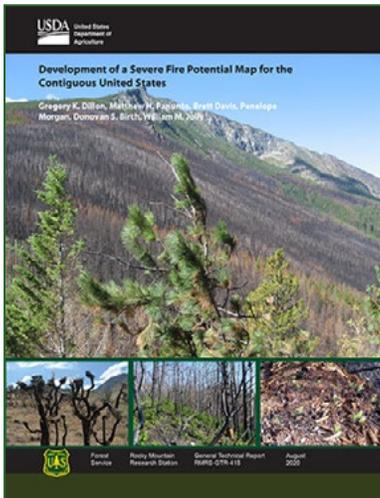
Twitter @usfs\_rmrs



USDA is an equal opportunity provider, employer, and lender.

For more information, please visit the [USDA Non-Discrimination Statement site](#).

## New RMRS Series Publications

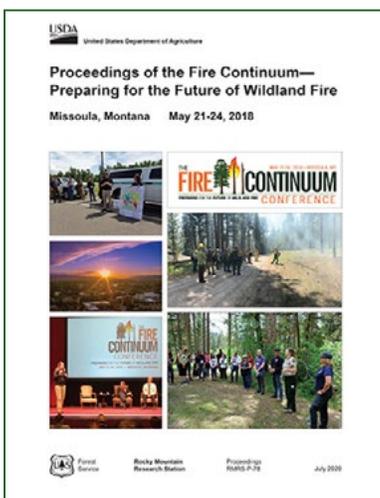


Dillon, Gregory K.; Panunto, Matthew H.; Davis, Brett; Morgan, Penelope; Birch, Donovan S.; Jolly, William M. 2020. [Development of a Severe Fire Potential map for the contiguous United States](#). Gen. Tech. Rep. RMRS-GTR-415. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 107 p.

Burn severity is the ecological change resulting from wildland fires. It is often mapped by using prefire and postfire satellite imagery and classified as low, moderate, or high. Areas burned with high severity are of particular concern to land managers and others because postfire vegetation, soil, and other important ecosystem components can be highly altered. In this study, we developed Random Forest statistical models describing the occurrence of high burn severity across the contiguous United States. We divided our work into 17 regions in the western United States and 8 regions in the eastern United States, and further subdivided them by forest and nonforest vegetation settings, resulting in 50 separate models. [MORE](#)

**Keywords:** burn severity, fire severity, fire ecology, landscape, remote sensing, RdNBR, dNBR, Composite Burn Index

Online: <https://www.fs.usda.gov/treearch/pubs/60733>



Hood, Sharon M.; Drury, Stacy; Steelman, Todd; Steffens, Ron, [eds.]. 2020. [Proceedings of the Fire Continuum—Preparing for the future of wildland fire; 2018 May 21-24; Missoula, MT](#). Proceedings RMRS-P-78. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 358 p.

The Fire Continuum Conference, co-sponsored by the Association for Fire Ecology and the International Association of Wildland Fire, was designed to cover both the biophysical and human dimensions aspects of fire along the fire continuum. This proceedings includes many of topics covered during the conference - including pre-fire planning and management, strategies during an incident, and post-fire effects and management options. It contains extended abstracts and full papers based on some of the presentations as well as field trips. [MORE](#)

**Keywords:** wildland fire, prescribed fire, planning, response, recovery, wildland urban interface, disturbance, ecology, behavior, diversity, fire effects, fuels and fuels management, air quality, smoke management

Online: <https://www.fs.usda.gov/treearch/pubs/60581>



Reeves, Matthew C.; Hanberry, Brice; Bruggink, Jeffrey L.; Krebs, Michael A.; Campbell, Steven B.; Baggett, L. Scott. 2020. [A novel approach for estimating nonforest carbon stocks in support of forest plan revision](#). Res. Note RMRS-RN-86. Fort Collins, CO: U.S. Department of Agriculture, Rocky Mountain Research Station. 20 p.

Globally, more carbon is stored in the soil than in any other terrestrial form (Brevik 2013; Woodall et al. 2015). Soil organic carbon (SOC) may contain more than three times the carbon found in the atmosphere and terrestrial vegetation combined (Qafoku 2014). Soil organic carbon is derived from soil organic matter (i.e., decomposition of living organisms) and is generally about 58 percent of soil organic matter by weight (Pribyl 2010). Storage of SOC is limited by soil physical and chemical composition as well as microbial and plant community types, all of which are determined by soil moisture and temperature (Emmet et al. 2004; Kardol et al. 2010). [MORE](#)

**Keywords:** nonforest carbon stocks, soil organic carbon (SOC), organic matter, forest plan

Online: <https://www.fs.usda.gov/treearch/pubs/60860>



Brenkert-Smith, Hannah; Champ, Patricia A.; Riley, Jonathan; Barth, Christopher M.; Donovan, Colleen; Meldrum, James R.; Wagner, Carolyn. 2020. [Living with wildfire in the Squilchuck Drainage-Chelan County, Washington: 2020 data report](#). Res. Note RMRS-RN-87. Fort Collins, CO: U.S. Department of Agriculture, Rocky Mountain Research Station. 125 p.

The Wildfire Research Center (WiRe Center) works with wildfire practitioners seeking to create communities that are adapted to wildfire using an evidenced-based approach. Historically, immediate threats and wildfire suppression have garnered much attention and resources. While these efforts remain critical, getting in front of the problem by promoting pathways to fire adaptation is of paramount importance. Fire adaptation is about living with wildfire. It's about creating safe and resilient communities that reduce wildfire risk on properties before a fire and supporting effective response when fires threaten a community. It is also about allowing fire on the landscape when it is safe to do so. [MORE](#)

**Keywords:** wildfire, Wildfire Research Center (WiRe Center), social connection, emergency preparedness, engagement, risk, mitigation

Online: <https://www.fs.usda.gov/treearch/pubs/60840>

## Journals and Other Publications

External publications written by our scientists and cooperators and grouped by our Science Program Areas. For more information on our Science Program Areas, please visit our web site: [www.fs.usda.gov/rmrs/science-program-areas/](http://www.fs.usda.gov/rmrs/science-program-areas/).

### Air, Water and Aquatic Environments

Benjankar, Rohan; Tonina, Daniele; McKean, James A.; Sohrabi, Mohammad M.; Chen, Qiuwen; Videgar, Dmitri. 2019. [An ecohydraulics virtual watershed: Integrating physical and biological variables to quantify aquatic habitat quality](#). *Ecohydrology*. 12(2): Article e2062.

Fegel, Timothy; Boot, Claudia M.; Broeckling, Corey D.; Baron, Jill S.; Hall, Ed K. 2019. [Assessing the chemistry and bioavailability of dissolved organic matter from glaciers and rock glaciers](#). *Journal of Geophysical Research: Biogeosciences*. 124: 1988-2004.

Isaak, Daniel J.; Luce, Charles H.; Horan, Dona L.; Chandler, Gwynne L.; Wollrab, Sherry P.; Dubois, William B.; Nagel, David E. 2020. [Thermal regimes of perennial rivers and streams in the western United States](#). *Journal of the American Water Resources Association*. doi: 10.1111/1752-1688.12864.

Lynch, Laurel M.; Sutfin, Nicholas A.; Fegel, Timothy S.; Boot, Claudia M.; Covino, Timothy P.; Wallenstein, Matthew D. 2019. [River channel connectivity shifts metabolite composition and dissolved organic matter chemistry](#). *Nature Communications*. 10(1): Article 459.

Sohrabi, Mohammad M.; Tonina, Daniele; Benjankar, Rohan; Kumar, Mukesh; Kormos, Patrick; Marks, Danny; Luce, Charlie. 2019. [On the role of spatial resolution on snow estimates using a process-based snow model across a range of climatology and elevation](#). *Hydrological Processes*. 33(8): 1260-1275.

Thurow, Russ. 2020. [Rethinking the possible: Applying long-term datasets to estimate historic salmon abundance in the Middle Fork Salmon River](#). *Science You Can Use (in 5 Minutes)*, June 2020. Fort Collins, CO: Rocky Mountain Research Station. 2 p.

Tonina, Daniele; McKean, James A.; Benjankar, Rohan M.; Wright, C. Wayne; Goode, Jaime R.;

Chen, Qiuwen; Reeder, William J.; Carmichael, Richard A.; Edmondson, Michael R. 2019. [Mapping river bathymetries: Evaluating topobathymetric LiDAR survey](#). *Earth Surface Processes and Landforms*. 44(2): 507-520.

Wilcox, Taylor M.; McKelvey, Kevin S.; Young, Michael K.; Engkjer, Cory; Lance, Richard F.; Lahr, Andrew; Eby, Lisa A.; Schwartz, Michael K. 2020. [Parallel, targeted analysis of environmental samples via high-throughput quantitative PCR](#). *Environmental DNA*. doi: 10.1002/edn3.80.

### Fire, Fuel and Smoke

Alongi, Franklin; Hansen, Andrew J.; Laufenberg, David; Keane, Robert E.; Legg, Kristin; Lavin, Matt. 2019. [An economical approach to distinguish genetically needles of limber from whitebark pine](#). *Forests*. 10: 1060.

Barros, Ana M. G.; Ager, Alan A.; Day, Michelle A.; Krawchuk, Meg A.; Spies, Thomas A. 2018. [Wildfires managed for restoration enhance ecological resilience](#). *Ecosphere*. 9(3): e02161.

Black, A. E.; Hayes, P.; Strickland, R. 2020. [Organizational learning from prescribed fire escapes: A review of developments over the last 10 years in the USA and Australia](#). *Current Forestry Reports*: 6: 41-59.

Briones-Herrera, Carlos Ivan; Vega-Nieva, Daniel Jose; Monjaras-Vega, Norma Angelica; Briseno-Reyes, Jaime; Lopez-Serrano, Pablito Marcelo; Corral-Rivas, Jose Javier; Alvarado-Celestino, Ernesto; Arellano-Perez, Stefano; Alvarez-Gonzalez, Juan Gabriel; Ruiz-Gonzalez, Ana Daría; Jolly, William Mathew; Parks, Sean A. 2020. [Near real-time automated early mapping of the perimeter of large forest fires from the aggregation of VIIRS and MODIS active fires in Mexico](#). *Remote Sensing*. 12: 2061.

- Cansler, C. Alina; Hood, Sharon M.; van Mantgem, Phillip J.; Varner, J. Morgan, et. al. 2020. [The Fire and Tree Mortality Database, for empirical modeling of individual tree mortality after fire](#). Scientific Data. 7: 194.
- Flanary, Sarah J.; Keane, Robert E. 2019. [Whitebark pine encroachment into lower-elevation sagebrush grasslands in southwest Montana, USA](#). Fire Ecology. 15: 42.
- Guney, Coskun Okan; Ryan, Kevin C.; Guney, Aylin; Hood, Sharon M. 2019. [Wildfire in Turkey: Fire management challenges at an ancient crossroads of nature and culture](#). Wildfire. 28.3: 21-28.
- Haynes, Katharine; Short, Karen; Xanthopoulos, Gavriil; Viegas, Domingos; Ribeiro, Luis Mario; Bianchi, Raphaela. 2020. [Wildfires and WUI fire fatalities](#). In: Manzello, Samuel L., ed. Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires. Cham, Switzerland: Springer. 16 p.
- Hiers, J. Kevin; O'Brien, Joseph J.; Varner, J. Morgan; Butler, Bret W.; Dickinson, Matthew; Furman, James; Gallagher, Michael; Godwin, David; Goodrick, Scott L.; Hood, Sharon M.; Hudak, Andrew; Kobziar, Leda N.; Linn, Rodman; Loudermilk, E. Louise; McCaffrey, Sarah; Robertson, Kevin; Rowell, Eric M.; Skowronski, Nicholas; Watts, Adam C.; Yedinak, Kara M. 2020. [Prescribed fire science: The case for a refined research agenda](#). Fire Ecology. 16: 11.
- Hood, Sharon M. 2020. Fire and bark beetle interactions. In: Manzello, Samuel L., ed. [Encyclopedia of Wildfires and Wildland-Urban Interface \(WUI\) Fires](#). Cham, Switzerland: Springer. 6 p.
- Hood, Sharon M.; Keyes, Christopher R.; Bowen, Katelynn J.; Lutes, Duncan C.; Seielstad, Carl. 2020. [Fuel treatment longevity in ponderosa pine-dominated forest 24 years after cutting and prescribed burning](#). Frontiers in Forests and Global Change. 3: Article 78.
- Hood, Sharon M.; Reed, Charlotte C.; Kane, Jeffrey M. 2020. [Axial resin duct quantification in tree rings: A functional defense trait](#). MethodsX. 7: 101035.
- Hood, Sharon M.; Varner, J. Morgan. 2019. [Post-fire tree mortality](#). In: Manzello, Samuel L., ed. Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires. Cham, Switzerland: Springer. 10 p.
- Keane, Robert E. 2019. [Fire ecology](#). In: Manzello, Samuel L., ed. Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires. Cham, Switzerland: Springer. 12 p.
- Keane, Robert E.; Holsinger, Lisa M.; Loehman, Rachel. 2020. [Bioclimatic modeling of potential vegetation types as an alternative to species distribution models for projecting plant species shifts under changing climates](#). Forest Ecology and Management. 477: 118498.
- Keane, Robert E.; Loehman, Rachel. 2019. [Historical range and variation \(HRV\)](#). In: Manzello, Samuel L., ed. Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires. Cham, Switzerland: Springer. 12 p.
- Keane, Robert E. 2019. [Natural fuels](#). In: Manzello, Samuel L., ed. Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires. Cham, Switzerland: Springer. 6 p.
- Keane, Robert E.; Holsinger, Lisa M.; Smith, Helen Y.; Sikkink, Pamela G. 2020. [Drying rates of saturated masticated fuelbeds from Rocky Mountain mixed-conifer stands](#). International Journal of Wildland Fire. 29: 57-69.
- Kerns, Becky K.; Day, Michelle A.; Ikeda, Dana. 2020. [Long-term seeding outcomes in slash piles and skid trails after conifer removal](#). Forests. 11: 839.
- Loehman, Rachel A.; Keane, Robert E.; Holsinger, Lisa M. 2020. [Simulation modeling of complex climate, wildfire, and vegetation dynamics to address wicked problems in land management](#). Frontiers in Forests and Global Change. 3: Article 3.
- Morgan, Penelope; Heyerdahl, Emily K.; Strand, Eva K.; Bunting, Stephen C.; Riser, James P., II; Abatzoglou, John T.; Nielsen-Pincus, Max; Johnson, Mara. 2020. [Fire and land cover change in the Palouse Prairie-forest ecotone, Washington and Idaho, USA](#). Fire Ecology. 16: 2.
- Page, Wesley G.; Butler, Bret W. 2019 [Assessing wildland firefighter entrapment](#). Fire Management Today. 77(3): 16-19.
- Page, Wesley G.; Freeborn, Patrick H.; Butler, Bret W.; Jolly, W. Matt. 2019. [A classification of US wildland firefighter entrapments based on coincident fuels, weather, and topography](#). Fire. 2: 52.

- Palaiologou, Palaiologos; Kalabokidis, Kostas; Ager, Alan A.; Day, Michelle A. 2020. [Development of comprehensive fuel management strategies for reducing wildfire risk in Greece](#). *Forests*. 11: 789.
- Parisien, Marc-Andre; Ager, Alan A.; Barros, Ana M.; Dawe, Denyse; Erni, Sandy; Finney, Mark A.; McHugh, Charles W.; Miller, Carol; Parks, Sean A.; Riley, Karin L.; Short, Karen C.; Stockdale, Christopher A.; Wang, Xianli; Whitman, Ellen. 2020. [Commentary on the article "Burn probability simulation and subsequent wildland fire activity in Alberta, Canada - Implications for risk assessment and strategic planning" by J. L. Beverly and N. McLoughlin](#). *Forest Ecology and Management*. 460: 117698.
- Reed, Charlotte C.; Hood, Sharon M. 2021. [Few generalizable patterns of tree-level mortality during extreme drought and concurrent bark beetle outbreaks](#). *Science of the Total Environment*. 750: 141306.
- Shearman, Timothy M.; Varner, J. Morgan; Hood, Sharon M.; Canslera, C. Alina; Hiers, J. Kevin. 2019. [Modelling post-fire tree mortality: Can random forest improve discrimination of imbalanced data?](#) *Ecological Modelling*. 414: 108855.
- Short, Karen; Ahrens, Marty; Harris, Sarah; San-Miguel-Ayanz, Jesus. 2020. [Fire data](#). In: Manzello, Samuel L., ed. *Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires*. Cham, Switzerland: Springer. 23 p.
- St. Denis, Lise A.; Mietkiewicz, Nathan P.; Short, Karen C.; Buckland, Mollie; Balch, Jennifer K. 2020. [All-hazards dataset mined from the US National Incident Management System 1999-2014](#). *Scientific Data*. 7: 64.
- Sullivan, Patrick R.; Campbell, Michael J.; Dennison, Philip E.; Brewer, Simon C.; Butler, Bret W. 2020. [Modeling wildland firefighter travel rates by terrain slope: Results from GPS-tracking of Type 1 crew movement](#). *Fire*. 3: 52.
- Tepley, Alan J.; Hood, Sharon M.; Keyes, Christopher R.; Sala, Anna. 2020. [Forest restoration treatments in a ponderosa pine forest enhance physiological activity and growth under climatic stress](#). *Ecological Applications*. doi: 10.1002/EAP.2188.
- Watts, Andrea; Hood, Sharon; Smith, Sheri; Bush, Renate; Huynh, Maurice. 2019. [Is that tree dead?](#) [Quantifying fire-killed trees to inform salvage and forest management](#). *Science You Can Use Bulletin*, Issue 36. Fort Collins, CO: Rocky Mountain Research Station. 11 p.

## Forest and Woodland Ecosystems

- Cushman, Samuel A.; McGarigal, Kevin. 2019. [Metrics and models for quantifying ecological resilience at landscape scales](#). *Frontiers in Ecology and Evolution*. 7: 440.
- Haessig, Polly; Overby, Steven. 2018. [Fossil Creek Wild and Scenic River Comprehensive River Management Plan: Geology report](#). U.S. Department of Agriculture, Forest Service, Coconino National Forest, Red Rock Ranger District; Tonto National Forest, Payson Ranger District. 33 p.
- Haessig, Polly; Overby, Steven. 2018. [Fossil Creek Wild and Scenic River Comprehensive River Management Plan: Geology report](#). U.S. Department of Agriculture, Forest Service, Coconino National Forest, Red Rock Ranger District; Tonto National Forest, Payson Ranger District. 33 p.
- Hudak, Andrew T.; Fekety, Patrick A.; Kane, Van R.; Kennedy, Robert E.; Filippelli, Steven K.; Falkowski, Michael J.; Tinkham, Wade T.; Smith, Alistair M. S.; Crookston, Nicholas L.; Domke, Grant M.; Corrao, Mark V.; Bright, Benjamin C.; Churchill, Derek J.; Gould, Peter J.; McGaughey, Robert J.; Kane, Jonathan T.; Dong, Jinwei. 2020. [A carbon monitoring system for mapping regional, annual aboveground biomass across the northwestern USA](#). *Environmental Research Letters*. 15: 095003.
- Jurgensen, Martin F.; Miller, Chris A.; Page-Dumroese, Deborah S. 2020. [Wood decomposition after an aerial application of hydromulch following wildfire in a Southern California chaparral shrubland](#). *Frontiers in Forests and Global Change*. 3: 93.
- Kyre, Bethany R.; Bentz, Barbara J.; Rieskea, Lynne K. 2020. [Susceptibility of mountain pine beetle \(\*Dendroctonus ponderosae\* Hopkins\) to gene silencing through RNAi provides potential as a novel management tool](#). *Forest Ecology and Management*. 473: 118322.

- Lynch, Ann M. 2019. [Socioecological impacts of multiple forest insect outbreaks in the Pinaleño spruce-fir forest, Arizona](#). *Journal of Forestry*. 117(2): 164-170.
- Lynch, Ann M.; Mukhamadiev, Nurjan S.; O'Connor, Christopher D.; Panyushkina, Irina P.; Ashikbaev, Nursagim A.; Sagitov, Abay O. 2019. [Tree-ring reconstruction of bark beetle disturbances in the \*Picea schrenkiana\* Fisch. et Mey. Forests of Southeast Kazakhstan](#). *Forests*. 10: 912.
- McDaniel, Josh; Jain, Theresa; Graham, Russell. 2020. ["It's all up from here": Forest openings and seedling growth in western white pine restoration](#). *Science You Can Use Bulletin*, Issue 41. Fort Collins, CO: Rocky Mountain Research Station. 11 p.
- Mercado, Javier E. 2020. [Improved identification and new records of \*Dendroctonus\* bark beetles attacking \*Pinus contorta\* in the subalpine forest of the southern Rocky Mountains](#). *Forests*. 11: 656.
- Mousavi, Fatemeh; Abdi, Ehsan; Ghalandarayeshi, Shaaban; Page-Dumroese, Deborah S. 2021. [Modeling unconfined compressive strength of fine-grained soils: Application of pocket penetrometer for predicting soil strength](#). *Catena*. 196: 104890.
- Negron, Jose F.; Huckaby, Laurie. 2020. [Reconstructing historical outbreaks of mountain pine beetle in lodgepole pine forests in the Colorado Front Range](#). *Forest Ecology and Management*. 473: 118270.
- Papers from Proceeding of the 66th Western International Forest Disease Work Conference:**
- In: Haruthaithanasan, M.; Pinyopusarerk, K.; Nicodermus, A; Bush, D.; Thomson, L. eds. *Proceedings of the Sixth International Casuarina Workshop: Casuarinas for green economy and environmental sustainability*; Krabi, Thailand; 21-25 October 2019. IUFRO Working Party 2.08.02; IUFRO Task Force Forest Biomass Network. Bangkok, Thailand: Kasetsart Agriculture And Agro-Industrial Product Improvement Institute.
- [Ecology of Guam's \*Casuarina equisetifolia\* and research into its decline](#).
  - [Testing resistance of rootstock materials for managing \*Armillaria\* root disease in peach orchards of Mexico](#).
  - [Identification of genetic groups within the invasive brown root rot pathogen, \*Pyrrhoderma noxium\* \(formerly \*Phellinus noxius\*\)](#).
  - [Toward DNA-based and bioclimatic modeling tools to identify \*Armillaria\* pathogens, predict host/pathogen distributions, and manage \*Armillaria\* root disease in the Intermountain Region under changing environments](#).
  - [Bioclimatic modeling of \*Armillaria\* species in southeastern Alaska, including potentially invasive \*Armillaria\* species under changing climate](#).
  - [Maximum entropy-based bioclimatic models predict areas of current and future suitable habitat for \*Armillaria\* species in western Oregon and western Washington](#).
  - [Development of tools for detecting, monitoring, and managing brown root rot \(caused by \*Phellinus noxius\*\) in the Pacific Islands](#).
  - [Assessing soil microbial communities associated with tree health in a western white pine \(\*Pinus monticola\*\) stand](#).
  - [Phylogenetics and host distribution of \*Armillaria\* in riparian ecosystems of the northern Great Plains](#).
  - [The need for rapid molecular diagnostics to distinguish biotypes of the myrtle rust pathogen \(\*Austropuccinia psidii\*\)](#).
  - [Molecular identification and characterization of root diseases in the western USA](#).
  - [Discovering key relationships between forest disease/health and microbial communities](#).
  - [Molecular characterization of \*Fusarium\* species associated with damping-off of conifer seedlings in tree nurseries](#).
  - [\*Armillaria altimontana\*, a potential natural biological control against \*Armillaria\* root disease](#).

- Roybal, Marcos; Munding, Elizabeth; Runyon, Tom; Agyagos, Janie; O'Neill, Matt; Neff, Ted; Barnett, Adam; Overby, Steve, et. al. 2018. [Fossil Creek Wild and Scenic River: Draft Comprehensive River Management Plan](#). Flagstaff, AZ: U.S. Department of Agriculture, Forest Service, Coconino National Forest. 157 p.
- Roybal, Marcos; Munding, Elizabeth; Runyon, Tom; Agyagos, Janie; O'Neill, Matt; Neff, Ted; Barnett, Adam; Overby, Steve, et. al. 2018. [Fossil Creek Wild and Scenic River: Draft environmental impact statement for the Comprehensive River Management Plan](#). Flagstaff, AZ: U.S. Department of Agriculture, Forest Service, Coconino National Forest. 433 p.
- Stewart, J. E.; Kim, M. S.; Ota, Y.; Sahashi, N.; Hanna, J. W.; Akiba, M.; Ata, J. P.; Atibalentia, N.; Brooks, F.; Chung, C.-L.; Dann, E. K.; Mohd Farid, A.; Hattori, T.; Lee, S. S.; Otto, K.; Pegg, G. S.; Schlub, R. L.; Shuey, L. S.; Tang, A. M. C.; Tsai, J.-N.; Cannon, P. G.; Klopfenstein, N. B. 2020. [Phylogenetic and population genetic analyses reveal three distinct lineages of the invasive brown root-rot pathogen, \*Phellinus noxius\*, and bioclimatic modeling predicts differences in associated climate niches](#). *European Journal of Plant Pathology*. 156: 751-756.
- Thorn, Simon; Chao, Anne; Georgiev, Kostadin B.; Muller, Jorg; Bassler, Claus; Campbell, John L.; Castro, Jorge; Chen, Yan-Han; Choi, Chang-Yong; Cobb, Tyler P.; Donato, Daniel C.; Durska, Ewa; Macdonald, Ellen; Feldhaar, Heike; Fontaine, Joseph B.; Fornwalt, Paula J.; et. al. 2020. [Estimating retention benchmarks for salvage logging to protect biodiversity](#). *Nature Communications*. 11: 4762.
- Wang, Weiwei; Lindner, Daniel L.; Jusino, Michelle A.; Page-Dumroese, Deborah; Palmer, Jonathan M.; Banik, Mark T.; Jurgensen, Martin; Draeger, Kymberly; Liu, Yong. 2020. [Wood-colonizing fungal community response to forest restoration thinnings in a \*Pinus tabuliformis\* plantation in northern China](#). *Forest Ecology and Management*. 476: 118459.
- ## Grasslands, Shrublands and Desert Ecosystems
- 
- Bragg, Don C.; Hanberry, Brice B.; Hutchinson, Todd F.; Jack, Steven B.; Kabrick, John M. 2020. [Silvicultural options for open forest management in eastern North America](#). *Forest Ecology and Management*. 474: 118383.
- Burchfield, David R.; Petersen, Steven L.; Kitchen, Stanley G.; Jensen, Ryan R. 2020. [sUAS-based remote sensing in mountainous areas: Benefits, challenges, and best practices](#). *Papers in Applied Geography*. 6(1): 72-83.
- Burkle, Laura A.; Glenny, William R.; Runyon, Justin B. 2020. [Intraspecific and interspecific variation in floral volatiles over time](#). *Plant Ecology*. 221: 529-544.
- Chambers, Jeanne C.; Allen, Craig R.; Cushman, Samuel A., eds. 2020. [Operationalizing the concepts of resilience and resistance for managing ecosystems and species at risk](#). Lausanne, Switzerland: Frontiers Media SA. 223 p.
- Chambers, Jeanne C.; Allen, Craig R.; Cushman, Samuel A. 2020. [Editorial: Operationalizing the concepts of resilience and resistance for managing ecosystems and species at risk](#). In: Chambers, Jeanne C.; Allen, Craig R.; Cushman, Samuel A., eds. *Operationalizing the concepts of resilience and resistance for managing ecosystems and species at risk*. *Frontiers in Ecology and Evolution*. 8: 168.
- Chambers, Jeanne C.; Crist, Michele R.; Maestas, Jeremy D.; Prentice, Karen L.; Pyke, David A. 2020. [A framework for sagebrush](#). *The Wildlife Professional*. July/August 2020: 28-32.
- Coleman, C. E.; Meyer, S. E.; Ricks, N. 2019. [Mating system complexity and cryptic speciation in the seed bank pathogen \*Pyrenophora semeniperda\*](#). *Plant Pathology*. 68(2): 369-382.
- Delphia, Casey M.; Runyon, Justin B.; O'Neill, Kevin M. 2019. [Clear plastic bags of bark mulch trap and kill female \*Megachile\* \(Hymenoptera: Megachilidae\) searching for nesting sites](#). *Journal of the Kansas Entomological Society*. 92(4): 649-654.

- Evans, Lance S.; Kharran, Tiffany A.; Pena, Ismael; Kitchen, Stanley G. 2019. [Quantification of eccentricity in stems of \*Artemisia tridentata\* Nutt.](#) *Western North American Naturalist*. 79(3): 441-453.
- Gaffke, Alexander M.; Sing, Sharlene E.; Millar, Jocelyn G.; Dudley, Tom L.; Bean, Daniel W.; Peterson, Robert K. D.; Weaver, David K. 2020. [An herbivore-induced plant volatile from saltcedar \(\*Tamarix\* spp.\) is repellent to \*Diorhabda carinulata\* \(Coleoptera: Chrysomelidae\).](#) *Environmental Entomology*. doi: 10.1093/ee/nvaa079.
- Hanberry, Brice B. 2020. [Baseline and novel ecosystems in Michigan, USA, with a quantitative and qualitative assessment.](#) *Écoscience*, doi: 10.1080/11956860.2020.1791686.
- Hanberry, Brice B. 2020. [Classifying large wildfires in the United States by land cover.](#) *Remote Sensing*. 12: 2966.
- Hanberry, Brice B. 2020. [Reclassifying the wildland-urban interface using fire occurrences for the United States.](#) *Land*. 9: 225.
- Hanberry, Brice B.; DeBano, Sandra J.; Kaye, Thomas N.; Rowland, Mary M.; Hartway, Cynthia R.; Shorrock, Donna. 2020. [Pollinators of the Great Plains: Disturbances, stressors, management, and research needs.](#) *Rangeland Ecology and Management*. doi: 10.1016/j.rama.2020.08.006.
- Houghton, Sydney; Stevens, Michael T.; Meyer, Susan E. 2020. [Pods as sails but not as boats: Dispersal ecology of a habitat-restricted desert milkvetch.](#) *American Journal of Botany*. 107(6): 864-875.
- Leger, Elizabeth A.; Barga, Sarah; Agneray, Alison C.; Baughman, Owen; Burton, Robert; Williams, Mark. 2020. [Selecting native plants for restoration using rapid screening for adaptive traits: Methods and outcomes in a Great Basin case study.](#) *Restoration Ecology*. doi: 10.1111/rec.13260.
- Masi, Marco; Freda, Fabrizio; Clement, Suzette; Cimmino, Alessio; Cristofaro, Massimo; Meyer, Susan; Evidente, Antonio. 2019. [Phytotoxic activity and structure-activity relationships of radicinin derivatives against the invasive weed buffelgrass \(\*Cenchrus ciliaris\*\).](#) *Molecules*. 24: 2793.
- Masi, Marco; Freda, Fabrizio; Sangermano, Felicia; Calabro, Viola; Cimmino, Alessio; Cristofaro, Massimo; Meyer, Susan; Evidente, Antonio. 2019. [Radicinin, a fungal phytotoxin as a target-specific bioherbicide for invasive buffelgrass \(\*Cenchrus ciliaris\*\) control.](#) *Molecules*. 24: 1086.
- Masi, Marco; Meyer, Susan; Clement, Suzette; Cimmino, Alessio; Evidente, Antonio. 2019. [Effect of cultural conditions on the production of radicinin, a specific fungal phytotoxin for buffelgrass \(\*Cenchrus ciliaris\*\) biocontrol, by different \*Cochliobolus australiensis\* strains.](#) *Natural Product Research*. doi: 10.1080/14786419.2019.1614583.
- Masi, Marco; Santoro, Ernesto; Clement, Suzette; Meyer, Susan; Scafato, Patrizia; Superchi, Stefano; Evidente, Antonio. 2020. [Further secondary metabolites produced by the fungus \*Pyricularia grisea\* isolated from buffelgrass \(\*Cenchrus ciliaris\*\).](#) *Chirality*. 2020: 1-9.
- Molinari, Rebecca Lee; Bishop, Tara B. B.; Bekker, Matthew F.; Kitchen, Stanley G.; Allphin, Loreen; St. Clair, Samuel B. 2019. [Creosote growth rate and reproduction increase in postfire environments.](#) *Ecology and Evolution*. 9: 12897-12905.
- Ott, Jacqueline P.; Hanberry, Brice B.; Khalil, Mona; Paschke, Mark W.; van der Burg, Max Post; Prenni, Anthony J. 2020. [Energy development in the Great Plains: Implications and mitigation opportunities.](#) *Rangeland Ecology and Management*. doi: 10.1016/j.rama.2020.05.003.
- Pouyat, Richard V.; Page-Dumroese, Deborah S.; Patel-Weynand, Toral; Geiser, Linda H., editors. 2020. [Forest and rangeland soils of the United States under changing conditions: A comprehensive science synthesis.](#) Springer, Cham. 289 p.

*Chapters by Station authors:*

- [Soil carbon \[Chapter 2\].](#)
- [Soils and water \[Chapter 3\].](#)
- [Forest and rangeland soil biodiversity \[Chapter 5\].](#)
- [Soil management and restoration \[Chapter 8\].](#)
- [Soil mapping, monitoring, and assessment \[Chapter 9\].](#)

- Reeves, Matt C.; Hanberry, Brice B.; Burden, Iric. 2020. [Rapidly quantifying drought impacts to aid reseeding strategies](#). *Rangelands*. doi 10.1016/j.rala.2020.07.001.
- Rominger, Kody R.; Meyer, Susan E.; Van Buren, Renee; Searle, Allyson B. 2019. [Phenological patterns in the desert spring ephemeral \*Astragalus holmgreniorum\* Barneby \(Fabaceae\)](#). *Western North American Naturalist*. 79(3): 308-322.
- Roundy, Bruce A.; Miller, R. F.; Tausch, R. J.; Chambers, J. C.; Rau, B. M. 2020. [Long-term effects of tree expansion and reduction on soil climate in a semiarid ecosystem](#). *Ecosphere*. 11(9): e03241.
- Runyon, Justin B. 2020. [The Dolichopodidae \(Diptera\) of Montserrat, West Indies](#). *ZooKeys*. 966: 57-151.
- Searle, Allyson B.; Meyer, Susan E. 2020. [Cattle trampling increases dormant season mortality of a globally endangered desert milkvetch](#). *Journal for Nature Conservation*. 56: 125868.
- Sun, Qiaoyu; Liu, Yong; Liu, Hongbin; Dumroese, R. Kasten. 2020. [Interaction of biochar type and rhizobia inoculation increases the growth and biological nitrogen fixation of \*Robinia pseudoacacia\* seedlings](#). *Forests*. 11: 711.
- Urza, Alexandra K.; Weisberg, Peter J.; Dilts, Thomas. 2020. [Evidence of widespread topoclimatic limitation for lower treelines of the Intermountain West, United States](#). *Ecological Applications*. doi: 10.1002/eap.2158.
- disasters: Root causes and new management strategies. Cambridge, MA: Elsevier. p. 155-174.
- McGee, Tara K.; McCaffrey, Sarah; Tedim, Fantina. 2020. [Resident and community recovery after wildfires \[Chapter 9\]](#). In: Tedim, Fantina; Leone, Vittorio; McGee, Tara K., eds. *Extreme wildfire events and disasters: Root causes and new management strategies*. Cambridge, MA: Elsevier. p. 175-184.
- Tedim, Fantina; McCaffrey, Sarah; Leone, Vittorio; Delogu, Giuseppe Mariano; Castelnuovo, Marc ; McGee, Tara K.; Aranha, Jose. 2020. [What can we do differently about the extreme wildfire problem: An overview \[Chapter 13\]](#). In: Tedim, Fantina; Leone, Vittorio; McGee, Tara K., eds. *Extreme wildfire events and disasters: Root causes and new management strategies*. Cambridge, MA: Elsevier. p. 233-264.
- Thompson, Matthew P.; Bayham, Jude; Belval, Erin. 2020. [Potential COVID-19 outbreak in fire camp: Modeling scenarios and interventions](#). *Fire*. 3: 38.

## Inventory, Monitoring and Analysis

---

## Human Dimensions

---

- Gannon, Benjamin M.; Thompson, Matthew P.; Deming, Kira Z.; Bayham, Jude; Wei, Yu; O'Connor, Christopher D. 2020. [A geospatial framework to assess fireline effectiveness for large wildfires in the western USA](#). *Fire*. 3(3): 43.
- McCaffrey, Sarah; McGee, Tara K. ; Coughlan, Michael; Tedim, Fantina. 2020. [Understanding wildfire mitigation and preparedness in the context of extreme wildfires and disasters \[Chapter 8\]](#). In: Tedim, Fantina; Leone, Vittorio; McGee, Tara K., eds. *Extreme wildfire events and*
- Arellano-Perez, Stefano; Castedo-Dorado, Fernando; Lopez-Sanchez, Carlos Antonio; Gonzalez-Ferreiro, Eduardo; Yang, Zhiqiang; Díaz-Varela, Ramon Alberto; Alvarez-Gonzalez, Juan Gabriel; Vega, Jose Antonio; Ruiz-Gonzalez, Ana Daria. 2018. [Potential of Sentinel-2A data to model surface and canopy fuel characteristics in relation to crown fire hazard](#). *Remote Sensing*. 10: 1645.
- Betts, Matthew G.; Illan, Javier Gutierrez; Yang, Zhiqiang; Shirley, Susan M.; Thomas, Chris D. 2019. [Synergistic effects of climate and land-cover change on long-term bird population trends of the western USA: A test of modeled predictions](#). *Frontiers in Ecology and Evolution*. 7: 186.
- Bost, Drew S.; Reilly, Matthew J.; Jules, Erik S.; DeSiervo, Melissa H.; Yang, Zhiqiang; Butz, Ramona J. 2019. [Assessing spatial and temporal patterns of canopy decline across a diverse montane landscape in the Klamath Mountains, CA, USA using a 30-year Landsat time series](#). *Landscape Ecology*. 34: 2599-2614.

- Cohen, Warren B.; Healey, Sean P.; Yang, Zhiqiang; Zhu, Zhe; Gorelick, Noel. 2020. [Diversity of algorithm and spectral band inputs improves Landsat monitoring of forest disturbance](#). *Remote Sensing*. 12(10): 1673.
- Dubayah, Ralph; Blair, James Bryan; Goetz, Scott; Fatoyinbo, Lola; Hansen, Matthew; Healey, Sean; Hofton, Michelle; Hurtt, George; Kellner, James; Luthcke, Scot; Armston, John; Tang, Hao; Duncanson, Laura; Hancock, Steven; Jantz, Patrick; Marselis, Suzanne; Patterson, Paul L.; Qi, Wenlu; Silva, Carlos. 2020. [The Global Ecosystem Dynamics Investigation: High-resolution laser ranging of the Earth's forests and topography](#). *Science of Remote Sensing*. 1: 100002.
- Halstead, Katherine E.; Alexander, John D.; Hadley, Adam S.; Stephens, Jaime L.; Yang, Zhiqiang; Betts, Matthew G. 2019. [Using a species-centered approach to predict bird community responses to habitat fragmentation](#). *Landscape Ecology*. 34(8): 1919-1935.
- Healey, Sean P. 2020 [Long-term forest health implications of roadlessness](#). *Environmental Research Letters*. 15: 104023.
- Healey, Sean P.; Yang, Zhiqiang; Gorelick, Noel; Ilyushchenko, Simon. 2020. [Highly local model calibration with a new GEDI LiDAR asset on Google Earth engine reduces Landsat forest height signal saturation](#). *Remote Sensing*. 12(17): 2840.
- Klesse, Stefan; DeRose, Robert Justin; Babst, Flurin; Black, Bryan A.; Anderegg, Leander D. L.; Axelson, Jodi; Ettinger, Ailene; Griesbauer, Hardy; Guiterman, Christopher H.; Harley, Grant; Harvey, Jill E.; Lo, Yueh-Hsin; Lynch, Ann M.; O'Connor, Christopher; Restaino, Christina; Sauchyn, Dave; Shaw, John D.; Smith, Dan J.; Wood, Lisa; Villanueva-Díaz, Jose; Evans, Margaret E. K. 2020. [Continental-scale tree-ring-based projection of Douglas-fir growth: Testing the limits of space-for-time substitution](#). *Global Change Biology*. doi: 10.1111/gcb.15170.
- Moisen, Gretchen G.; McConville, Kelly S.; Schroeder, Todd A.; Healey, Sean P.; Finco, Mark V.; Frescino, Tracey S. 2020. [Estimating land use and land cover change in north central Georgia: Can remote sensing observations augment traditional forest inventory data?](#) *Forests*. 11(8): 856.
- Northrup, Joseph M.; Rivers, James W.; Yang, Zhiqiang; Betts, Matthew G. 2019. [Synergistic effects of climate and land-use change influence broad-scale avian population declines](#). *Global Change Biology*. 25: 1561-1575.
- Patriarca, Chiara; Bako, Mamane; Branthomme, Anne; Frescino, Tracey S.; Haddad, Fidaa F.; Hamid, Abdel Hamied; Martucci, Antonio; Chour, Hivy Ortiz; Patterson, Paul L.; Picard, Nicolas; Reeves, Matt C.; Reynolds, Richard T.; Sacande, Moctar; Shono, Kenichi; Sparrow, Ben; Stolle, Fred; Winkler-Rathonyi, Norbert; Zhang, Daowei; Ziadat, Feras. 2019. [Trees, forests and land use in drylands: The first global assessment](#). FAO Forestry Paper No. 184. Rome, Italy: Food and Agriculture Organization of the United Nations. 184 p.
- Phalan, Benjamin T.; Northrup, Joseph M.; Yang, Zhiqiang; Deal, Robert L.; Rousseau, Josee S.; Thomas A. Spies; Betts, Matthew G. 2019. [Impacts of the Northwest Forest Plan on forest composition and bird populations](#). *PNAS*. 116(8): 3322-3327.
- Tao, Xin; Huang, Chengquan; Zhao, Feng; Schleeweis, Karen; Masek, Jeffrey; Liang, Shunlin. 2019. [Mapping forest disturbance intensity in North and South Carolina using annual Landsat observations and field inventory data](#). *Remote Sensing of Environment*. 221: 351-362.
- Zhu, Zhe; Zhang, Junxue; Yang, Zhiqiang; Aljaddani, Amal H.; Cohen, Warren B.; Qiu, Shi; Zhou, Congliang. 2020. [Continuous monitoring of land disturbance based on Landsat time series](#). *Remote Sensing of Environment*. 238: 111116.

## Wilderness (Aldo Leopold Wilderness Research Institute)

---

- Carroll, Carlos; Parks, Sean A.; Dobrowski, Solomon Z.; Roberts, David R. 2018. [Climatic, topographic, and anthropogenic factors determine connectivity between current and future climate analogs in North America](#). *Global Change Biology*. 24: 5318-5331.

- Coop, Jonathan D.; Parks, Sean A.; Stevens-Rumann, Camille S.; Crausbay, Shelley D.; Higuera, Philip E.; Hurteau, Matthew D.; Tepley, Alan; Whitman, Ellen; Assal, Timothy; Collins, Brandon M.; Davis, Kimberley T.; Dobrowski, Solomon; Falk, Donald A.; Fornwalt, Paula J.; Fule, Peter Z.; Harvey, Brian J.; Kane, Van R.; Littlefield, Caitlin E.; Margolis, Ellis Q.; North, Malcolm; Parisien, Marc-Andre; Prichard, Susan; Rodman, Kyle C. 2020. [Wildfire-driven forest conversion in western North American landscapes](#). *BioScience*. doi: 10.1093/biosci/biaa061.
- Meigs, Garrett W.; Dunn, Christopher J.; Parks, Sean A.; Krawchuk, Meg A. 2020. [Influence of topography and fuels on fire refugia probability under varying fire weather conditions in forests of the Pacific Northwest, USA](#). *Canadian Journal of Forest Research*. 50: 636-647.
- Parisien, Marc-Andre; Dawe, Denyse A.; Miller, Carol; Stockdale, Christopher A.; Armitage, O. Bradley. 2019. [Applications of simulation-based burn probability modelling: A review](#). *International Journal of Wildland Fire*. 28: 913-926.
- Wildlife and Terrestrial Ecosystems**
- Latif, Quresh S.; Saab, Victoria A.; Dudley, Jonathan G.; Markus, Amy; Mellen-McLean, Kim. 2020. [Development and evaluation of habitat suitability models for nesting white-headed woodpecker \(\*Dryobates albolarvatus\*\) in burned forest](#). *PLoS ONE*. 15(5): e0233043.
- Maron, John L.; Hajek, Karyn L.; Hahn, Philip G.; Pearson, Dean E. 2019. [Seedling recruitment correlates with seed input across seed sizes: implications for coexistence](#). *Ecology*. 100(12): e02848.
- Miller, Sue; Carim, Kellie; Schwartz, Mike; Spaulding, Scott; Wilcox, Taylor. 2020. [Black and white and shed all over: How eDNA analysis can help to answer your species questions](#). *Science You Can Use Bulletin*, Issue 40. Fort Collins, CO: Rocky Mountain Research Station. 11 p.
- Savage, Shannon L.; Lawrence, Rick L.; Squires, John R. 2017. [Mapping post-disturbance forest landscape composition with Landsat satellite imagery](#). *Forest Ecology and Management*. 399: 9-23.
- Slate, Mandy L.; Callaway, Ragan M.; Pearson, Dean E. 2019. [Life in interstitial space: Biocrusts inhibit exotic but not native plant establishment in semi-arid grasslands](#). *Journal of Ecology*. 107: 1317-1327.
- Squires, John R.; Holbrook, Joseph D.; Olson, Lucretia E.; Ivan, Jacob S.; Ghormley, Randal W.; Lawrence, Rick L. 2020. [A specialized forest carnivore navigates landscape-level disturbance: Canada lynx in spruce-beetle impacted forests](#). *Forest Ecology and Management*. 475: 118400.
- Stephens, Scott L.; Kobziar, Leda N.; Collins, Brandon M.; Davis, Raymond; Fulé, Peter Z.; Gaines, William; Ganey, Joseph; Guldin, James M.; Hessburg, Paul F.; Hiers, Kevin; Hoagland, Serra; Keane, John J.; Masters, Ronald E.; McKellar, Ann E.; Montague, Warren; North, Malcolm; Spies, Thomas A. 2019. [Is fire "for the birds"? How two rare species influence fire management across the US](#). *Frontiers in Ecology and the Environment*. 17(7): 391-399.
- Zeller, Katherine A.; Wattles, David W.; Destefano, Stephen. 2020. [Evaluating methods for identifying large mammal road crossing locations: Black bears as a case study](#). *Landscape Ecology*. 35: 1799-1808.
- Zeller, Katherine A.; Wattles, David W.; Bauder, Javan M.; DeStefano, Stephen. 2020. [Forecasting seasonal habitat connectivity in a developing landscape](#). *Land*. 9: 233.

## Publication Orders and Contact Information

---

To minimize our environmental footprint as well as eliminate unnecessary printing, most of our research publications are now being published online only. If paper copies are available, they will be available in a limited supply. All of our publications, old and new, can be downloaded from Treesearch (link below). If you are unable to download a copy of one of our research publications, please let us know and we will help you obtain a copy.

**To obtain a copy of RMRS series publications:**

**Due to COVID-19, distribution of printed copies has temporarily ceased. Please use the Treesearch database to find and download publications.**

***Download an online copy from Treesearch***

Treesearch is an online system for sharing free, full text publications by Research and Development scientists in the U.S. Forest Service. Included in Treesearch are scholarly works published by the agency as well as papers appearing in journals, conference proceedings, or books. All publications in Treesearch are based on peer reviewed research.

<https://www.fs.usda.gov/treesearch/>

***Request a paper copy from Publications Distribution:***

**MAIL:** Publications Distribution  
Rocky Mountain Research Station  
240 W. Prospect Road  
Fort Collins, CO 80526 U.S.A.

**PHONE:** (970) 498-1393

**EMAIL:** [SM.FS.rmrspubsreq@usda.gov](mailto:SM.FS.rmrspubsreq@usda.gov)

**NOTE:** You received this RMRS New Publications List because your name is on our mailing list. We will continue to notify you of new RMRS publications unless you ask us to remove your name by contacting us using the options above.