



# Rocky Mountain Research Station

# New Publications

April–June 2015

## CONTENTS

### NEW SERIES PUBLICATIONS

Social vulnerability and adaptive capacity .....	3
Wildlife conservation connectivity modeling .....	3
Tenth World Wilderness Congress symposium .....	4
Living with wildfire in Delta County, Colorado .....	4

### JOURNALS AND OTHER PUBLICATIONS

Air, water, and aquatic environments .....	5
Fire, fuel, and smoke.....	5
Forest and woodland ecosystems .....	6
Grasslands, shrublands, and desert ecosystems .....	6
Science application and integration .....	7
Wildlife and terrestrial habitats .....	7

<b>AUTHOR INDEX</b> .....	9
---------------------------	---

<b>CONTACT US</b> .....	13
-------------------------	----

<b>ORDERING INFORMATION</b> .....	13
-----------------------------------	----

Publications are also available at <http://www.fs.fed.us/rm/publications>



# The Rocky Mountain Research Station

The Rocky Mountain Research Station is one of five regional units that make up the U.S. Forest Service Research and Development organization—the most extensive natural resources research organization in the world.



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.



The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual’s income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA’s TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, DC 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

## New RMRS Publication Series

---

### Key concepts and methods in social vulnerability and adaptive capacity

Online only

#### **Key concepts and methods in social vulnerability and adaptive capacity.**

Murphy, Daniel J.; Wyborn, Carina; Yung, Laurie; Williams, Daniel R. 2015. Gen. Tech. Rep. RMRS-GTR-328. Fort Collins, CO: Department of Agriculture, Forest Service, Rocky Mountain Research Station. 24 p.

National forests have been asked to assess how climate change will impact nearby human communities. To assist their thinking on this topic, we examine the concepts of social vulnerability and adaptive capacity with an emphasis on a range of theoretical and methodological approaches. This analysis is designed to help researchers and decision-makers select appropriate research approaches suited to particular planning and management needs. We first explore key conceptual frameworks and theoretical divisions, including different definitions of vulnerability and adaptive capacity. We then focus on the different methods that have been used to assess vulnerability and adaptive capacity and their respective pros and cons. Finally, we present and discuss three case examples and their respective research approaches.

[http://www.fs.fed.us/rm/pubs/rmrs\\_gtr328.html](http://www.fs.fed.us/rm/pubs/rmrs_gtr328.html).

### Wildlife conservation connectivity modeling

Online only

#### **Resistance-surface-based wildlife conservation connectivity modeling:**

**Summary of efforts in the United States and guide for practitioners.** Wade, Alisa A.; McKelvey, Kevin S.; Schwartz, Michael K. 2015. Gen. Tech. Rep. RMRS-GTR-333. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 93 p.

The current ease with which connectivity models can be created masks the numerous untested assumptions underlying both the rules that produce the resistance surface and the algorithms used to locate low-cost paths across the target landscape. Here we present a process to guide map creation, from conceptualization through validation, that seeks to better consider the complex biological issues inherent to connectivity modeling. Following this organized approach to connectivity modeling will help analysts prevent a plethora of issues common in recently created models, such as the failure to specify the temporal domain, purpose of the mapped connectivity, or the biological rationales for assigned pixel-level resistances. Following these steps will improve both the understanding and biological relevance of constructed connectivity maps.

[http://www.fs.fed.us/rm/pubs/rmrs\\_gtr333.html](http://www.fs.fed.us/rm/pubs/rmrs_gtr333.html).

## Science and stewardship to protect and sustain wilderness values: Tenth World Wilderness Congress symposium

RMRS-P-74

**Science and stewardship to protect and sustain wilderness values: Tenth World Wilderness Congress symposium; 2013, 4-10 October, Salamanca, Spain.** Watson, Alan; Carver, Stephen; Krenova, Zdenka; McBride, Brooke, comps. 2015. Proceedings RMRS-P-74. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 208 p.

The papers contained in these proceedings were generated at this symposium, but not all authors submitted papers for consideration for inclusion in these proceedings. They have been organized into four major sections: (1) Europe: Intervention and Nonintervention to Meet Protection Goals, (2) Australia and Antarctica: Geography of Place and Spirit in The Big Wild, (3) Africa and North America: Linkages Across Boundaries to Protect Nature, and (4) Old World and New World: The Relationships Between Wilderness, Human Health and Culture. Included are papers that address wildland issues on all continents, but wilderness designation, protection and restoration processes and challenges vary tremendously from North America to Europe and from Antarctica to Africa, thus sections are defined by geography and topic.

**For paper copy, contact: [awatson@fs.fed.us](mailto:awatson@fs.fed.us), or Alan Watson, Leopold Institute, 790 E. Beckwith Ave., Missoula, MT 59801.**

**[http://www.fs.fed.us/rm/pubs/rmrs\\_p074.html](http://www.fs.fed.us/rm/pubs/rmrs_p074.html).**

## Living with wildfire in Delta County, Colorado: Cross-community comparisons

Online only

**Living with wildfire in Delta County, Colorado: Cross-community comparisons.** Meldrum, James R.; Barth, Christopher M.; Falk, Lilia Colter; Brenkert-Smith, Hannah; Warziniack, Travis; Champ, Patricia A. 2015. Res. Note. RMRS-RN-67. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 33 p.

This report summarizes two linked datasets and the study design for four WUI communities in Delta County, Colorado. It provides information about knowledge, concern, and activities related to wildfire and wildfire risk mitigation. The main finding of this study is that, despite the four communities being in close proximity of each other and all belonging to the same county in western Colorado, many measured variables vary significantly across communities. Our findings suggest the importance of specific, community-level context when researching or trying to influence perspectives on wildfire risk and wildfire risk mitigation actions. The information may be useful to practitioners tasked with understanding and influencing the relationship of WUI residents with wildfire risk and to policymakers who must make decisions about wildfire suppression and risk mitigation.

**[http://www.fs.fed.us/rm/pubs/rmrs\\_rn067.html](http://www.fs.fed.us/rm/pubs/rmrs_rn067.html).**

## Journals and Other Publications

### Air, water, and aquatic environments

#### **Can rapid assessment protocols be used to judge sediment impairment in gravel-bed streams? A commentary.**

Lisle, Thomas E.; Buffington, John M.; Wilcock, Peter R.; Bunte, Kristin. 2015. *Journal of the American Water Resources Association*. 51(2): 373–387. <http://www.treesearch.fs.fed.us/pubs/48474>.

#### **Climate-change adaptation on rangelands: Linking regional exposure with diverse adaptive capacity.**

Briske, David D.; Joyce, Linda A.; Polley, H. Wayne; Brown, Joel R.; Wolter, Klaus; Morgan, Jack A.; McCarl, Bruce A.; Bailey, Derek W. 2015. *Frontiers in Ecology and the Environment*. 13(5): 249–256. <http://www.treesearch.fs.fed.us/pubs/48484>.

#### **Impacts of upwind wildfire emissions on CO, CO<sub>2</sub>, and PM<sub>2.5</sub> concentrations in Salt Lake City, Utah.**

Mallia, D. V.; Lin, J. C.; Urbanski, S.; Ehleringer, J.; Nehrkorn, T. 2015. *Journal of Geophysical Research: Atmospheres*. 120: 147–166. <http://www.treesearch.fs.fed.us/pubs/48165>.

#### **Protocol for collecting eDNA samples from streams [Version 2.1].**

Carim, K. J.; Wilcox, T.; Young, M. K.; McKelvey, K. S.; Schwartz, M. K. 2015. Boise, ID: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Boise Aquatic Sciences Lab. 10 p. <http://www.treesearch.fs.fed.us/pubs/48132>.

#### **Terrestrial water fluxes dominated by transpiration:**

**Comment.** Schlaepfer, Daniel R.; Ewers, Brent E.; Shuman, Bryan N.; Williams, David G.; Frank, John M.; Massman, William J.; Lauenroth, William K. 2014. *Ecosphere*. 5(5): Article 61. <http://www.treesearch.fs.fed.us/pubs/48605>.

#### **Water quality in New Zealand's planted forests: A review.**

Baillie, Brenda R.; Neary, Daniel G. 2015. *New Zealand Journal of Forestry Science*. 45: 7. doi 10.1186/s40490-015-0040-0. <http://www.treesearch.fs.fed.us/pubs/48454>.

### Fire, fuel, and smoke

#### **Aerosol emissions from prescribed fires in the United States: A synthesis of laboratory and aircraft measurements.**

May, A. A.; McMeeking, G. R.; Lee, T.; Taylor, J. W.; Craven, J. S.; Burling, I.; Sullivan, A. P.; Akagi, S.; Collett, J. L., Jr.; Flynn, M.; Coe, H.; Urbanski, S. P.; Seinfeld, J. H.; Yokelson, R. J.; Kreidenweis, S. M. 2014. *Journal of Geophysical Research: Atmospheres*. 119: 11,826–11,849. <http://www.treesearch.fs.fed.us/pubs/48162>.

#### **Climate-induced variations in global wildfire danger from 1979 to 2013.**

Jolly, W. Matt; Cochrane, Mark A.; Freeborn, Patrick H.; Holden, Zachary A.; Brown, Timothy J.; Williamson, Grant J.; Bowman, David M. J. S. 2015. *Nature Communications*. 6: 7537. <http://www.treesearch.fs.fed.us/pubs/48648>.

#### **Developing an aviation exposure index to inform risk-based fire management decisions.**

Stonesifer, Crystal S.; Calkin, David E.; Thompson, Matthew P.; Kaiden, Jeffrey D. 2014. *Journal of Forestry*. 112(6): 581–590. <http://www.treesearch.fs.fed.us/pubs/48032>.

#### **Fire, Fuel, and Smoke Program: 2014 Research Accomplishments.**

Heinsch, Faith Ann; Innes, Robin J.; Hardy, Colin C.; Lee, Kristine M. 2015. Publication R1-15-10. Missoula, MT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 77 p. <http://www.treesearch.fs.fed.us/pubs/48042>.

#### **Modeling spatial and temporal dynamics of wind flow and potential fire behavior following a mountain pine beetle outbreak in a lodgepole pine forest.**

Hoffman, Chad M.; Linn, Rodman; Parsons, Russell; Sieg, Carolyn; Winterkamp, Judith. 2015. *Agricultural and Forest Meteorology*. 204: 79–93. <http://www.treesearch.fs.fed.us/pubs/48587>.

#### **Negative consequences of positive feedbacks in US wildfire management.**

Calkin, David E.; Thompson, Matthew P.

2015. *Forest Ecosystems*. 2:9. doi: 10.1186/s40663-015-0033-8. <http://www.treesearch.fs.fed.us/pubs/48164>.

**Opinion: The use of natural hazard modeling for decision making under uncertainty.** Calkin, David E.; Mentis, Mike. 2015. *Forest Ecosystems*. 2:11. doi: 10.1186/s40663-015-0034-7. <http://www.treesearch.fs.fed.us/pubs/48163>.

**Vegetation response after post-fire mulching and native grass seeding.** Morgan, Penelope; Moy, Marshall; Droske, Christine A.; Lentile, Leigh B.; Lewis, Sarah A.; Robichaud, Peter R.; Hudak, Andrew T. 2014. *Fire Ecology*. 10(3): 49–62. <http://www.treesearch.fs.fed.us/pubs/48604>.

## Forest and woodland ecosystems

**Bark Beetle outbreaks in ponderosa pine forests: Implications for fuels, fire, and management (Project INT-F-09-01).** Sieg, Carolyn; Allen, Kurt; McMillin, Joel; Hoffman, Chad. 2014. In: Potter, Kevin M.; Conkling, Barbara L. *Forest health monitoring: National status, trends, and analysis 2012*. General Technical Report SRS-198. Asheville, NC: USDA-Forest Service, Southern Research Station: Chapter 12. <http://www.treesearch.fs.fed.us/pubs/47212>.

**Dominant clonal *Eucalyptus grandis* x *urophylla* trees use water more efficiently.** Otto, Marina Shinkai Gentil; Hubbard, Robert M.; Binkley, Dan; Stape, Jose Luis. 2014. *Forest Ecology and Management*. 328: 117–121. <http://www.treesearch.fs.fed.us/pubs/48024>.

**Douglas-fir tussock moth- and Douglas-fir beetle-caused mortality in a ponderosa pine/Douglas-fir forest in the Colorado Front Range, USA.** Negron, Jose F.; Lynch, Ann M.; Schaupp, Willis C., Jr.; Bocharnikov, Vladimir. 2014. *Forests*. 5: 3131–3146. <http://www.treesearch.fs.fed.us/pubs/47918>.

**First report of the *Armillaria* root-disease pathogen, *Armillaria gallica*, associated with several woody hosts in three states of Mexico.** Klopfenstein, N. B.; Hanna, J. W.; Cannon, P. G.; Medel-Ortiz, R.; Alvarado-Rosales, D.; Lorea-Hernandez, F.; Elias-Roman, R. D.; Kim, M. -S. 2014. *Plant Disease*. 98(9): 1280. <http://www.treesearch.fs.fed.us/pubs/48603>.

**Managing burned landscapes: Evaluating future management strategies for resilient forests under a warming climate.** Shive, K. L.; Fule, P. Z.; Sieg, C. H.; Strom, B. A.;

Hunter, M. E. 2014. *International Journal of Wildland Fire*. 23: 915–928. <http://www.treesearch.fs.fed.us/pubs/48606>.

**Mountain pine beetle-caused mortality over eight years in two pine hosts in mixed-conifer stands of the southern Rocky Mountains.** West, Daniel R.; Briggs, Jennifer S.; Jacobi, William R.; Negron, Jose F. 2014. *Forest Ecology and Management*. 334: 321–330. <http://www.treesearch.fs.fed.us/pubs/47919>.

**Response: Forest restoration is forward thinking.** Dumroese, R. Kasten; Palik, Brian J.; Stanturf, John A. 2015. *Journal of Forestry*. 113(4): 430–432. <http://www.treesearch.fs.fed.us/pubs/48643>.

**Selection for resistance to white pine blister rust affects the abiotic stress tolerances of limber pine.** Vogan, Patrick J.; Schoettle, Anna W. 2015. *Forest Ecology and Management*. 344: 110–119. <http://www.treesearch.fs.fed.us/pubs/48588>.

**Spruce aphid (*Elatobium abietinum* Walker) (Hemiptera: Aphididae) [Chapter XXIV].** Lynch, Ann M. 2014. FHTET-2013-2. Morgantown, WV: U.S. Department of Agriculture, Forest Service, Forest Health Technology Enterprise Team: 259–270. <http://www.treesearch.fs.fed.us/pubs/48048>.

**Using among-year variation to assess maternal effects in *Pinus aristata* and *Pinus flexilis*.** Borgman, Erin M.; Schoettle, Anna W.; Angert, Amy L. 2014. *Botany*. 92: 805–814. <http://www.treesearch.fs.fed.us/pubs/48600>.

## Grasslands, shrublands, and desert ecosystems

**Challenge of using native plant materials for sagebrush steppe restoration in the Great Basin, USA [Chapter 4.2].** Shaw, Nancy; Jensen, Scott. 2014. In: Kiehl, Kathrin; Kirmer, Anita; Shaw, Nancy; Tischew, Sabine, eds. *Guidelines for Native Seed Production and Grassland Restoration*. Newcastle Upon Tyne, UK: Cambridge Scholars Publishing: 141–159.

**Effect of repeated burning on plant and soil carbon and nitrogen in cheatgrass (*Bromus tectorum*) dominated ecosystems.** Jones, Rachel; Chambers, Jeanne C.; Johnson, Dale W.; Blank, Robert R.; Board, David I. 2015. *Plant Soil*. 386: 47–64. <http://www.treesearch.fs.fed.us/pubs/48654>.

**Native seed production and grassland restoration [Chapter 1]: Introduction.** Kiehl, Kathrin; Kirmer, Anita; Tischew, Sabine; Shaw, Nancy. 2014. In: Kiehl, Kathrin; Kirmer, Anita; Shaw, Nancy; Tischew, Sabine, eds. *Guidelines for Native Seed Production and Grassland Restoration*. Newcastle upon Tyne, UK: Cambridge Scholars Publishing: 2–13.

**Planning and implementation of restoration projects using native seed and plant material [Chapter 5.1].** Tischew, Sabine; Kirmer, Anita; Kiehl, Kathrin; Shaw, Nancy. 2014. In: Kiehl, Kathrin; Kirmer, Anita; Shaw, Nancy; Tischew, Sabine, eds. *Guidelines for Native Seed Production and Grassland Restoration*. Newcastle upon Tyne, UK: Cambridge Scholars Publishing: 286–300.

**The role of resource limitation in restoration of sagebrush ecosystems dominated by cheatgrass (*Bromus tectorum*).** Jones, Rachel O.; Chambers, Jeanne C.; Board, David I.; Johnson, Dale W.; Blank, Robert R. 2015. *Ecosphere*. 6(7): Article 107.

**Soil microbial community resilience with tree thinning in a 40-year-old experimental ponderosa pine forest.** Overby, Steven T.; Owen, Suzanne M.; Hart, Stephen C.; Neary, Daniel G.; Johnson, Nancy C. 2015. *Applied Soil Ecology*. 93: 1–10. <http://www.treearch.fs.fed.us/pubs/48043>.

## Science application and integration

**Adapting forest management to climate change using bioclimate models with topographic drivers.** Rehfeldt, Gerald E.; Worrall, James J.; Marchetti, Suzanne B.; Crookston, Nicholas L. 2015. *Forestry*. doi:10.1093/forestry/cpv019. <http://www.treearch.fs.fed.us/pubs/48505>.

**Discriminating disturbance from natural variation with LiDAR in semi-arid forests in the southwestern USA.** Swetnam, T. L.; Lynch, A. M.; Falk, D. A.; Yool, S. R.; Guertin, D. P. 2015. *Ecosphere*. 6(6): 97. <http://www.treearch.fs.fed.us/pubs/48646>.

**Imputing forest structure attributes from stand inventory and remotely sensed data in western Oregon, USA.** Hudak, Andrew T.; Haren, A. Tod; Crookston, Nicholas L.; Liebermann, Robert J.; Ohmann, Janet L. 2014. *Forest Science*. 60(2): 253–269. <http://www.treearch.fs.fed.us/pubs/47746>.

**Mapping aboveground carbon stocks using LiDAR data in *Eucalyptus* spp. plantations in the state of Sao Paulo, Brazil.** Silva, Carlos Alberto; Klauberg, Carine; Carvalho, Samuel de Padua Chaves e; Hudak, Andrew T.; Rodriguez, e Luiz Carlos Estraviz. 2014. *Scientia Forestalis*. 42(104): 591–604. <http://www.treearch.fs.fed.us/pubs/48607>.

**Native plant development and deployment [Section VII].** Wright, Jessica; Dumroese, Kas; Symstad, Amy; Pitts-Singer, Theresa; Cane, Jim; Krupnick, Gary; Olwell, Peggy; Love, Byron; Sellers, Elizabeth; Englert, John; Wood, Troy. 2015. In: *Pollinator Research Action Plan: Report of the Pollinator Health Task Force*. Washington, DC: White House, Office of Science and Technology Policy: 35–40. Online: <https://www.whitehouse.gov/blog/2015/05/18/announcing-new-steps-promote-pollinator-health>. <http://www.treearch.fs.fed.us/pubs/48453>.

**Simulating post-wildfire forest trajectories under alternative climate and management scenarios.** Tarancon, Alicia Azpeleta; Fule, Peter Z.; Shive, Kristen L.; Sieg, Carolyn H.; Meador, Andrew Sanchez; Strom, Barbara. 2014. *Ecological Applications*. 24(7): 1626–1637. <http://www.treearch.fs.fed.us/pubs/48608>.

**Using container weights to determine irrigation needs: A simple method.** Dumroese, R. Kasten; Montville, Mark E.; Pinto, Jeremiah R. 2015. *Native Plants Journal*. 16: 67–71. <http://www.treearch.fs.fed.us/pubs/48087>.

## Wildlife and terrestrial habitats

**Apparent foraging success reflects habitat quality in an irruptive species, the Black-backed Woodpecker.** Rota, Christopher T.; Rumble, Mark A.; Lehman, Chad P.; Kesler, Dylan C.; Millsbaugh, Joshua J. 2015. *The Condor: Ornithological Applications*. 117: 178–191. <http://www.treearch.fs.fed.us/pubs/48089>.

**The effects of disturbance and succession on wildlife habitat and animal communities [Chapter 11].** McKelvey, Kevin S. 2015. In: Morrison, M. L.; Mathewson, H. A., editors. *Wildlife Habitat Conservation: Concepts, Challenges, and Solutions*. Baltimore, MD: Johns Hopkins University Press: 143–156. <http://www.treearch.fs.fed.us/pubs/48033>.

**Manage habitat, monitor species** [Chapter 10]. Schwartz, Michael K.; Sanderlin, Jamie S.; Block, William M. 2015. In: Morrison, M. L.; Mathewson, H. A., editors. Wildlife habitat conservation: Concepts, challenges, and solutions. Baltimore, MD: Johns Hopkins University Press: 128–142. <http://www.treesearch.fs.fed.us/pubs/48034>.

**Mt. Graham red squirrel use of forest habitat: Historical, present, and future perspectives.** O'Connor, Christopher D.; Koprowski, John L.; Lynch, Ann M.; Falk, Donald A. 2014. RJVA 08-253 Final Report. Tucson, AZ: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station; Tucson AZ: University of Arizona, School of Natural

Resources and the Environment. 33 p. <http://www.treesearch.fs.fed.us/pubs/48049>.

**Sage handling tactics: Grouse conservation caught up in land development, politics.** Learn, Joshua Rapp. 2015. Wildlife Professional. 9(2): 18–25.

**USDA Forest Service Sage-Grouse Conservation Science Strategy.** Finch, Deborah; Boyce, Douglas; Chambers, Jeanne; Colt, Chris; McCarthy, Clint; Kitchen, Stanley; Richardson, Bryce; Rowland, Mary; Rumble, Mark; Schwartz, Michael; Tomosy, Monica; Wisdom, Michael. 2015. Washington, DC: U.S. Department of Agriculture, Forest Service. 39 p. <http://www.treesearch.fs.fed.us/pubs/48644>.

## Author Index

### A

Akagi, S. 5  
 Allen, Kurt 6  
 Alvarado-Rosales, D. 6  
 Angert, Amy L. 6

### B

Bailey, Derek W. 5  
 Baillie, Brenda R. 5  
 Barth, Christopher M. 4  
 Binkley, Dan 6  
 Blank, Robert R. 6, 7  
 Block, William M. 8  
 Board, David I. 6, 7  
 Bocharnikov, Vladimir 6  
 Borgman, Erin M. 6  
 Bowman, David M. J. S. 5  
 Boyce, Douglas 8  
 Brenkert-Smith, Hannah 4  
 Briggs, Jennifer S. 6  
 Briske, David D. 5  
 Brown, Joel R. 5  
 Brown, Timothy J. 5  
 Buffington, John M. 5  
 Bunte, Kristin 5  
 Burling, I. 5

### C

Calkin, David E. 5, 6  
 Cane, Jim 7  
 Cannon, P. G. 6  
 Carim, K. J. 5  
 Carvalho, Samuel de Padua  
 Chaves e 7  
 Chambers, Jeanne 6, 7, 8  
 Champ, Patricia A. 4  
 Cochrane, Mark A. 5  
 Coe, H. 5  
 Collett, J. L., Jr. 5  
 Colt, Chris 8

Craven, J. S. 5  
 Crookston, Nicholas L. 7

### D

Droske, Christine A. 6  
 Dumroese, R. Kasten 6, 7

### E

Ehleringer, J. 5  
 Elias-Roman, R. D. 6  
 Englert, John 7  
 Ewers, Brent E. 5

### F

Falk, D. A. 7, 8  
 Falk, Lilia Colter 4  
 Finch, Deborah 8  
 Flynn, M. 5  
 Frank, John M. 5  
 Freeborn, Patrick H. 5  
 Fule, P. Z. 6, 7

### G

Guertin, D. P. 7

### H

Hanna, J. W. 6  
 Hardy, Colin C. 5  
 Haren, A. Tod 7  
 Hart, Stephen C. 7  
 Heinsch, Faith Ann 5  
 Hoffman, Chad 5, 6  
 Holden, Zachary A. 5  
 Hubbard, Robert M. 6  
 Hudak, Andrew T. 6, 7  
 Hunter, M. E. 6

### I

Innes, Robin J. 5

### J

Jacobi, William R. 6  
 Jensen, Scott 6

Johnson, Dale W. 6, 7  
 Johnson, Nancy C. 7  
 Jolly, W. Matt 5  
 Jones, Rachel 6, 7  
 Joyce, Linda A. 5

### K

Kaiden, Jeffrey D. 5  
 Kesler, Dylan C. 7  
 Kiehl, Kathrin 7  
 Kim, M. -S. 6  
 Kirmer, Anita 7  
 Kitchen, Stanley 8  
 Klauberg, Carine 7  
 Klopfenstein, N. B. 6  
 Koprowski, John L. 8  
 Kreidenweis, S. M. 5  
 Krupnick, Gary 7

### L

Lauenroth, William K. 5  
 Learn, Joshua Rapp 8  
 Lee, Kristine M. 5  
 Lee, T. 5  
 Lehman, Chad P. 7  
 Lentile, Leigh B. 6  
 Lewis, Sarah A. 6  
 Liebermann, Robert J. 7  
 Lin, J. C. 5  
 Linn, Rodman 5  
 Lisle, Thomas E. 5  
 Lorea-Hernandez, F. 6  
 Love, Byron 7  
 Lynch, A. M. 6, 7, 8

### M

Mallia, D. V. 5  
 Marchetti, Suzanne B. 7  
 Massman,  
 William J. 5  
 May, A. A. 5  
 McCarl, Bruce A. 5

McCarthy, Clint 8  
 McKelvey, Kevin S. 3, 5, 7  
 McMeeking, G. R. 5  
 McMillin, Joel 6  
 Meador, Andrew Sanchez 7  
 Medel-Ortiz, R. 6  
 Meldrum, James R. 4  
 Mentis, Mike 6  
 Millspaugh, Joshua J. 7  
 Montville, Mark E. 7  
 Morgan, Jack A. 5  
 Morgan, Penelope 6  
 Moy, Marshall 6  
 Murphy, Daniel J. 3

### N

Neary, Daniel G. 5, 7  
 Negron, Jose F. 6  
 Nehr Korn, T. 5

### O

O'Connor, Christopher D. 8  
 Ohmann, Janet L. 7  
 Olwell, Peggy 7  
 Otto, Marina Shinkai Gentil  
 6  
 Overby, Steven T. 7  
 Owen, Suzanne M. 7

### P

Palik, Brian J. 6  
 Parsons, Russell 5  
 Pinto, Jeremiah R. 7  
 Pitts-Singer, Theresa 7  
 Polley, H. Wayne 5

### R

Rehfeldt, Gerald E. 7  
 Richardson, Bryce 8  
 Robichaud, Peter R. 6  
 Rodriguez, e Luiz Carlos  
 Estraviz 7

Rota, Christopher T. 7  
Rowland, Mary 8  
Rumble, Mark 7, 8

**S**

Sanderlin, Jamie S. 8  
Schaupp, Willis C., Jr. 6  
Schlaepfer, Daniel R. 5  
Schoettle, Anna W. 6  
Schwartz, Michael 8  
Schwartz, M. K. 3, 5, 8  
Seinfeld, J. H. 5  
Sellers, Elizabeth 7  
Shaw, Nancy 6, 7  
Shive, K. L. 6, 7  
Shuman, Bryan N. 5  
Sieg, Carolyn 5, 6, 7  
Silva, Carlos Alberto 7  
Stanturf, John A. 6  
Stape, Jose Luis 6  
Stonesifer, Crystal S. 5

Strom, B. A. 6  
Strom, Barbara 7  
Sullivan, A. P. 5  
Swetnam, T. L. 7  
Symstad, Amy 7

**T**

Tarancon, Alicia Azpeleta 7  
Taylor, J. W. 5  
Thompson, Matthew P. 5  
Tischew, Sabine 7  
Tomosy, Monica 8

**U**

Urbanski, S. 5

**V**

Vogan, Patrick J. 6

**W**

Wade, Alisa A. 3  
Warziniack, Travis 4  
West, Daniel R. 6

Wilcock, Peter R. 5  
Wilcox, T. 5  
Williams, Daniel R. 3  
Williams, David G. 5  
Williamson, Grant J. 5  
Winterkamp, Judith 5  
Wisdom, Michael. 8  
Wolter, Klaus 5  
Wood, Troy 7  
Worrall, James J. 7  
Wright, Jessica 7  
Wyborn, Carina 3

**Y**

Yokelson, R. J. 5  
Yool, S. R. 7  
Young, M. K. 5  
Yung, Laurie 3

# Check out our website: <http://www.fs.fed.us/rm/publications>

- New RMRS publications online
- Older RMRS, INT, and RM publications online
- Journal articles and other publications online
- Order a publicaiton if it is available in print
- DVD-ROMs and videos online
- Publication lists
- Join our e-mail list
- Great resources for authors

The screenshot shows the website interface for Rocky Mountain Research Station Publications. At the top, the browser title is "Rocky Mountain Research Station Publications - Microsoft Internet Explorer provided by USDA Forest Service". The address bar shows the URL "http://www.fs.fed.us/rm/publications/".

The main content area is titled "Publications" and includes the following sections:

- Publications:** Peer-reviewed serial publications and journal articles from the Rocky Mountain Research Station. Check back often for new ones.
  - All RMRS publications:** Peer-reviewed serial publications and journal articles from the Rocky Mountain Research Station. Check back often for new ones.
  - Order a printed copy:** of any available publication free of charge.
  - Electronic Mailing List:** Keep informed by subscribing to our quarterly announcement of new publications.
  - Tools:** Contains links to products that can help forest managers, scientists, and others.
  - Newest publications:** The most recent additions into the Forest Service's master publication database, TreeSearch; plus our quarterly New Publications lists.
  - Classics:** Lists RMRS's most popular publications over the years.
- Search:** Access a collection of over 20,000 publications online. Includes input fields for Keywords, Author, and Title, and radio buttons for "Rocky Mountain Research Station" (selected) and "All records in TreeSearch".
- Author's Corner:** Includes links for Home, Manuscript Preparation, Manuscript Tracking, Forms, Links, and Services & Staff. A note says "Questions? Contact Lane Eskew at leskew[at]fs.fed.us or 970-498-1388." and lists links for FSWeb Publishing Services, 2006 Research Accomplishments Report, National Forest Service Library, and Statistics Unit.
- TreeSearch:** Search Online Publications with a search bar and "Search" button.
- Navigation:** A sidebar menu includes links for RMRS Home, Publications Home (selected), Author's Corner, All RMRS Publications, Advanced Search, and Site Map.
- Footer:** The Windows taskbar shows the Start button, several application icons, and the system tray with the time "6:36 AM".

## Science Program Areas

---

### 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. Website: [http://www.fs.fed.us/rm/boise/awae\\_home.shtml](http://www.fs.fed.us/rm/boise/awae_home.shtml). Contact Frank McCormick, Program Manager, for more information: 208-373-4351.

### 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. Website: <http://leopold.wilderness.net>. 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. Website: <http://www.firelab.org>. Contact Bret Butler, Acting Program Manager, for more information: 406-329-4801.

### 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. Website: <http://www.fs.fed.us/rmrs/research/programs/forest-woodlands-ecosystem/>. 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. Website: <http://www.fs.fed.us/rmrs/research/programs/grassland-shrubland-desert/>. 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. Website: <http://www.fs.fed.us/rmrs/research/programs/social-economics-decision/>. Contact Dan Williams, Acting Program Manager, for more information: 970-498-2561.

### 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. Website: <http://www.fs.fed.us/rm/ogden/>. Contact Michael Wilson, Program Manager, for more information: 801-625-5407.

### Science Application and Integration

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. Website: <http://www.fs.fed.us/rm/science-application-integration/>. Contact Jan Engert, Assistant Station Director, for more information: 970-498-1377.

### 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. Website: <http://www.rmrs.nau.edu/wildlife/>. Contact William Block, Program Manager, for more information: 928-556-2161.

## RMRS Is Going Green

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 our website. If you are unable to download a copy of one of our research publications, please let us know so that we can help you obtain a copy.

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

*Download a copy from our website* at <http://www.fs.fed.us/rm/publications>

OR

### *Contact our distribution center:*

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

**PHONE** (970) 498-1393

**FAX** (970) 498-1122

**EMAIL** [rmrspubrequest@fs.fed.us](mailto:rmrspubrequest@fs.fed.us)

**NOTE:** You have 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 our distribution center.