



ROCKY MOUNTAIN
Research Station

January– March 2004



New Publications

First Quarter 2004

What's Inside . . .

- *Monitoring riparian resources*
 - *Southern pine*
 - *Fourwing saltbush*
 - *Shrubland ecosystems proceedings*
 - *Diseases of trees in the Great Plains*
 - *RMRScience newsletter*
- . . . and much more

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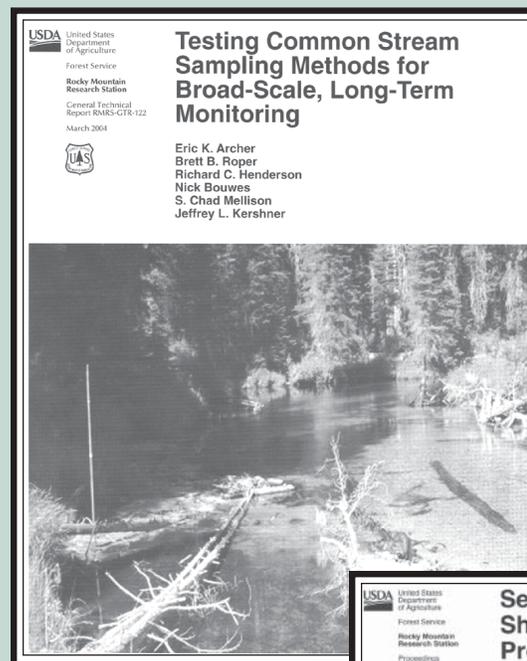
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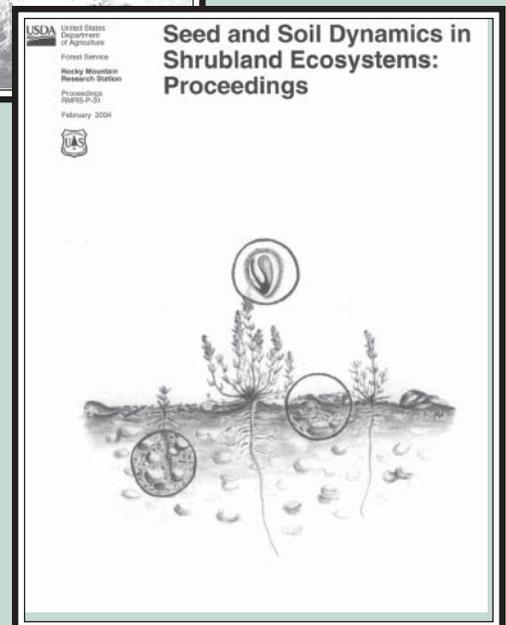
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	Order No.	
Riparian monitoring	1	<p>Guide to effective monitoring of aquatic and riparian resources. Kershner, Jeffrey L.; Archer, Eric K.; Coles-Ritchie, Marc; Cowley, Ervin R.; Henderson, Richard C.; Kratz, Kim; Quimby, Charles M.; Turner, David L.; Ulmer, Linda C.; Vinson, Mark R. 2004. Gen. Tech. Rep. RMRS-GTR-121. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 57 p. Also available: http://www.fs.fed.us/rm/pubs/rmrs_gtr121.html</p> <p>This monitoring plan for aquatic and riparian resources was developed in response to monitoring needs addressed in the Biological Opinions for bull trout (U.S. Department of the Interior, Fish and Wildlife Service 1998) and steelhead (U.S. Department of Commerce, National Marine Fisheries Service). It provides a consistent framework for implementing the effectiveness monitoring of aquatic and riparian resources within the range of the Pacific Anadromous Fish Strategy (PACFISH) and the Inland Fish Strategy (INFISH). The primary objective is to evaluate the effect of the land management activities on aquatic and riparian communities at multiple scales and to determine whether PACFISH/INFISH management practices are effective in maintaining or improving the structure and function of riparian and aquatic conditions at both the landscape and watershed scales on Federal lands throughout the upper Columbia River Basin.</p>
Stream sampling methods	2	<p>Testing common stream sampling methods for broad-scale, long-term monitoring. Archer, Eric K.; Roper, Brett B.; Henderson, Richard C.; Bouwes, Nick; Mellison, S. Chad; Kershner, Jeffrey L. 2004. Gen. Tech. Rep. RMRS-GTR-122. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 15 p. Also available: http://www.fs.fed.us/rm/pubs/rmrs_gtr122.html</p> <p>We evaluated sampling variability of stream habitat sampling methods used by the USDA Forest Service and the USDI Bureau of Land Management monitoring program for the upper Columbia River Basin. Three separate studies were conducted to describe the variability of individual measurement techniques, variability between crews, and temporal variation throughout the summer sampling season. We quantified the variability between crews and through time, and described the percent of the total variability attributed between crew and seasonal variability. We then estimated the number of samples needed to detect change between managed and reference sites. We believe that these estimates represent an unambiguous and powerful way to display the consequences of variability to scientists and managers.</p>

	Order No.	
Fleas and lice	3	<p>Fleas and lice of mammals in New Mexico. Ford, Paulette L.; Fagerlund, Richard A.; Duszynski, Donald W.; Polechla, Paul J. 2004. Gen. Tech. Rep. RMRS-GTR-123. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 57 p. Also available: http://www.fs.fed.us/rm/pubs/rmrs_gtr123.html</p> <p>The purpose of this work is to provide baseline data of what is known and can be documented about the fleas and lice of New Mexico mammals. Within that context, we summarize the publications on this topic, document the fleas and lice that are accessioned into the Arthropod Division of the University of New Mexico's Museum of Southwestern Biology (UNM-MSB), and provide some general information about the biology of fleas and lice and the potential disease agents they may transmit to other mammals, including humans, in New Mexico. Since infestations of fleas, sucking lice, and chewing lice in humans, domesticated animals, and wildlife may lead to discomfort, debilitating disease, and/or death, this information has implications for, but not limited to, Federal, State, and private land managers, scientists, public health officials, and the general public.</p>
Southern pine	4	<p>Revisiting the southern pine growth decline: where are we 10 years later? Gadbury, Gary L.; Williams, Michael S.; Schreuder, Hans T. 2004. Gen. Tech. Rep. RMRS-GTR-124. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 10 p. Also available: http://www.fs.fed.us/rm/pubs/rmrs_gtr124.html</p> <p>This paper evaluates changes in growth of pine stands in the State of Georgia, U.S.A., using USDA Forest Service Forest Inventory and Analysis (FIA) data. In particular, data representing an additional 10-year growth cycle has been added to previously published results from two earlier growth cycles. A robust regression procedure is combined with a bootstrap technique to produce estimates of mean growth with confidence intervals for the fourth, fifth, and sixth inventories of natural pine stands sampled between 1961 and 1990. We highlight some specifics on what can and cannot be inferred from FIA data and recommend future actions to increase the chance of detecting changes and revealing factors that might be associated with the changes. The recent switch in FIA to annualized inventories will make it more likely that changes such as these will be easier to detect and interpret in the future.</p>
Fourwing saltbush	5	<p>Fourwing saltbush (<i>Atriplex canescens</i>) seed transfer zones. Sanderson, Stewart C.; McArthur, E. Durant. 2004. Gen. Tech. Rep. RMRS-GTR-125. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 10 p. Also available: http://www.fs.fed.us/rm/pubs/rmrs_gtr125.html</p> <p>Fourwing saltbush is widely used for reclamation plantings. Proper identification is important to the utilization of fourwing saltbush in such plantings. While many of the races have been formally named as varieties, others have not. Rather than combining unnamed races under those that do have a taxonomic name, it seems better at present not to use the formal infraspecific categories in treating the fourwing saltbushes, but to consider them all as races. Seed transfer should be within the geographical distribution limits of each race. The most common race, by far, is <i>Occidentalis</i>. We recommend four overlapping seed transfer zones for race <i>Occidentalis</i> in the United States: (1) Northern Intermountain, (2) Western Great Plains, (3) Colorado Plateau/Great Basin/Columbia Basin, and (4) Southwestern. Source seed populations from near the planting sites generally do well; and populations generally perform better when moved south and/or to lower elevations than when moved north and/or up in elevation.</p>

	Order No.	
Shrubland ecosystems	6	<p>Seed and soil dynamics in shrubland ecosystems: proceedings; 2002 August 12–16; Laramie, WY. Hild, Ann L.; Shaw, Nancy L.; Meyer, Susan E.; Booth, D. Terrance; McArthur, E. Durant, comps. 2004. Proc. RMRS-P-31. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 216 p. Also available: http://www.fs.fed.us/rm/pubs/rmrs_p031.html</p> <p>The 38 papers in this proceedings are divided into six sections: the first includes an overview paper and documentation of the first Shrub Research Consortium Distinguished Service Award. The next four sections cluster papers on restoration and revegetation, soil and microsite requirements, germination and establishment of desired species, and community ecology of shrubland systems. The final section contains descriptions of the field trips to the High Plains Grassland Research Station and to the Snowy Range and Medicine Bow Peak. The proceedings unites many papers on germination of native seed with vegetation ecology, soil physiochemical properties, and soil biology to create a volume describing the interactions of seeds and soils in arid and semiarid shrubland ecosystems.</p>

RMRSscience newsletter is now available

The **RMRSscience** newsletter is published three to five times a year. Each issue highlights ongoing or recently completed research, and features findings useful to land managers and other natural resource specialists. RMRSscience is available on line: http://www.fs.fed.us/rm/main/rmrs_reports/index.html, or you can receive it hardcopy, free of charge, by writing to: RMRSscience, Rocky Mountain Research Station, 2150 Centre Avenue, Bldg. A, Fort Collins, CO 80526, or e-mail: rfletcher@fs.fed.us, or fax: (970) 295-5927.

The following are highlighted in recent issues of RMRSscience:

- ® LANDFIRE: New tools for fire managers
- ® Roads field guide for riparian restoration
- ® Effects of fire exclusion in Rocky Mountain ecosystems
- ® The role of GIS in wilderness management
- ® Amphibian population decline in the Interior West
- ® Reestablishing whitebark pine ecosystems
- ® Restoring wilderness campsites

Publications Available From Other Sources

Obtain the following publications through university libraries, the publisher, or other outlets. Forest Service employees in RMRS, R-2, R-3, and R-4, and some selected WO-Detached units may request these items from the RMRS Library at cclay@fs.fed.us or telephone: (970) 498-1205.

Atmosphere/climate

Biodiversity and linkages to climate change. Dias, Braulio; Diaz, Sandra; McGlone, Matthew. 2003. In: Interlinkages between biological diversity and climate change. CBD Tech. Series No. 10. Montreal, Quebec: Secretariat of the Convention on Biological Diversity: 19–29.

Climate change mitigation and adaptation options: links to, and impacts on, biodiversity. Korn, Horst; Ntayomya, Phocus; Berghall, Outi; Cotter, Janet; Lamb, Robert; Ruark, Gregory; Thompson, Ian. 2003. In: Interlinkages between biological diversity and climate change. CBD Tech. Series No. 10. Montreal, Quebec: Secretariat of the Convention on Biological Diversity: 48–87.

Effects of tree density and stand age on carbon allocation patterns in postfire lodgepole pine. Litton, Creighton M.; Ryan, Michael G.; Knight, Dennis H. 2004. *Ecological Applications*. 14(2): 460–475.

Stand restoration burning in oak-pine forests in the southern Appalachians: effects on above-ground biomass and carbon and nitrogen cycling. Hubbard, Robert M.; Vose, James M.; Clinton, Barton D.; Elliott, Katherine J.; Knoepp, Jennifer D. 2004. *Forest Ecology and Management*. 190: 311–321.

Fire

The spatial context of fire: a new approach for predicting fire occurrence. Miller, Carol. 2003. In: Galley, K. E. M.; Klinger, R. C.; Sugihara, N. G., eds. Proceedings of fire conference 2000: the first National Congress on fire ecology, prevention, and management. Misc. Publ. No. 13. Tallahassee, FL: Tall Timbers Research Station: 27–34.

Whitebark pine as part of education in fire ecology. Smith, Jane Kapler. 2003. *Nutcracker Notes*. 4: 5,10.

Wildland fire use: the dilemma of managing and restoring natural fire and fuels in United States wilderness. Parsons, David J.; Landres, Peter B.; Miller, Carol. 2003. In: Galley, K. E. M.; Klinger, R. C.;

Sugihara, N. G., eds. Proceedings of fire conference 2000: the first National Congress on fire ecology, prevention, and management. Misc. Publ. No. 13. Tallahassee, FL: Tall Timbers Research Station: 19–26.

Water/soils

Acoustic gravel-transport sensor: description and field tests in Little Granite Creek, Wyoming, USA. Downing, John; Farley, Paul J.; Bunte, Kristin; Swingle, Kurt; Ryan, Sandra E.; Dixon, Mark. 2003. In: Erosion and sediment transport measurement in rivers: technological and methodological advances; proceedings of the Oslo workshop; 2002 June. IAHS Publ. 283: 193–200.

Comparison of spatial interpolation methods for estimating snow distribution in the Colorado Rocky Mountains. Erxleben, J.; Elder, K.; Davis, R. E. 2002. In: Scale, space and time; proceedings; 70th annual meeting of the Western Snow Conference; 2002 May 20–23; Granby, CO: 157–167.

Diurnal and seasonal soil moisture variation along a forested and regenerating clearcut hillslope in Colorado. Goodbody, Angus; Elder, Kelly; Davis, Robert. 2002. In: Scale, space and time; proceedings; 70th annual meeting of the Western Snow Conference; 2002 May 20–23; Granby, CO: 138–143.

The effect of fertilization on sap flux and canopy conductance in a *Eucalyptus saligna* experimental forest. Hubbard, Robert M.; Ryan, Michael G.; Giardina, Christian P.; Barnard, Holly. 2004. *Global Change Biology*. 10: 427–436.

Ecology

Balancing sustainable development and ecological values. Parsons, David J. 2003. *The George Wright FORUM*. 20(4): 19–21.

Fish and wildlife

Electrofishing and salmonid movement: reciprocal effects in two small montane streams. Young, M. K.; Schmetterling, D. A. 2004. *Journal of Fish Biology*. 64: 750–761.

Population characteristics of greenback cutthroat trout in streams: their relation to model predictions and recovery criteria. Young, Michael K.; Guenther-Gloss, Paula M. 2004. *North American Journal of Fisheries Management*. 24: 184–197.

Technology and development

Using digital terrain modeling and satellite imagery to map interactions among fire and forest microbes. McDonald, G. I.; Evans, J. S.; Moeur, M.; Rice, T. M.; Strand, E. K. 2003. . In: Galley, K. E. M.; Klinger, R. C.; Sugihara, N. G., eds. *Proceedings of fire conference 2000: the first National Congress on fire ecology, prevention, and management*. Misc. Publ. No. 13. Tallahassee, FL: Tall Timbers Research Station: 100–110.

Recreation/wilderness

Agency policy and the resolution of wilderness stewardship dilemmas. Cole, David N. 2003. *The George Wright FORUM*. 20(3): 26–33.

The challenge of doing science in wilderness: historical, legal, and policy context. Landres, Peter; Alderson, Judy; Parsons, David J. 2003. *The George Wright FORUM*. 20(3): 42–49.

The challenge of wilderness stewardship. Parsons, David J.; Cole, David N. 2003. *The George Wright FORUM*. 20(3): 22–25.

Selecting indicators and understanding their role in wilderness experience stewardship at Gates of the Arctic National Park and Preserve. Glaspell, Brian; Watson, Alan; Kneeshaw, Katie; Pendergrast, Don. 2003. *The George Wright FORUM*. 20(3): 59–71.

Spatial patterns of recreation impact on experimental campsites. Cole, David N.; Monz, Christopher A. 2004. *Journal of Environmental Management*. 70: 73–84.

Supporting basic ecological research in U.S. National Parks: challenges and opportunities. Parsons, David J. 2004. *Ecological Applications*. 14(1): 5–13.

Diseases of Trees in the Great Plains

The USDA Forest Service/Natural Resources Conservation Service National Agroforestry Center (NAC) of the Rocky Mountain Research Station, in partnership with the Great Plains Tree Pest Council (GPTPC) is pleased to make the third reprinting of the *Diseases of Trees in the Great Plains* available to you online: <http://www.unl.edu/nac/diseasetrees.html>. Additional hard copies of this publication are available, while supplies last, from Publishing Services through one of the media listed on the front cover of this New Publications list.

New to Our Web Site

These publications have recently been made available electronically on our Web site:
<http://www.fs.fed.us/rm/main/pubs/electronic.html>

Assessing soil compaction on Forest Inventory 7 Analysis phase 3 field plots using a pocket penetrometer. Amacher, Michael C.; O'Neill, Katherine P. 2004. Res. Pap. RMRS-RP-46WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 7 p.

Science basis for changing forest structure to modify wildfire behavior and severity. Graham, Russel T.; McCaffrey, Sarah; Jain, Theresa B. 2004.

Gen. Tech. Rep. RMRS-GTR-120. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 43 p.

Statistical techniques for sampling and monitoring natural resources. Schreuder, Hans T.; Ernst, Richard; Ramirez-Maldonado, Hugo. 2004. Gen. Tech. Rep. RMRS-GTR-126. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 111 p.



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