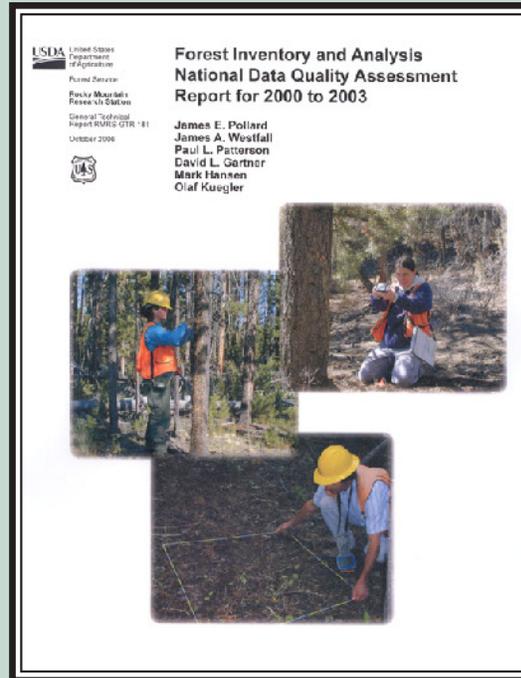


October –December 2006

Contents

FIA Report	2
Wildland fire annotated list	2
Wildfire analysis	3
Establishing circular plots	3
INT Research Station history	3
Journals and other publications	4
Wildland fire and fuels	4
Invasives	4
Recreation	4
Fish and wildlife	5
Water and air	7
Resource management and use	7
Resource data and analysis	8
Theses and dissertations	9
New RMRS Web site	10



RMRS GTR-181

New to the Web...

Check the Rocky Mountain Research Station's Web site for regular updates on new online publications:

[http://www.fs.fed.us/rm/publications/
online/new.html](http://www.fs.fed.us/rm/publications/online/new.html)

Contact us:

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

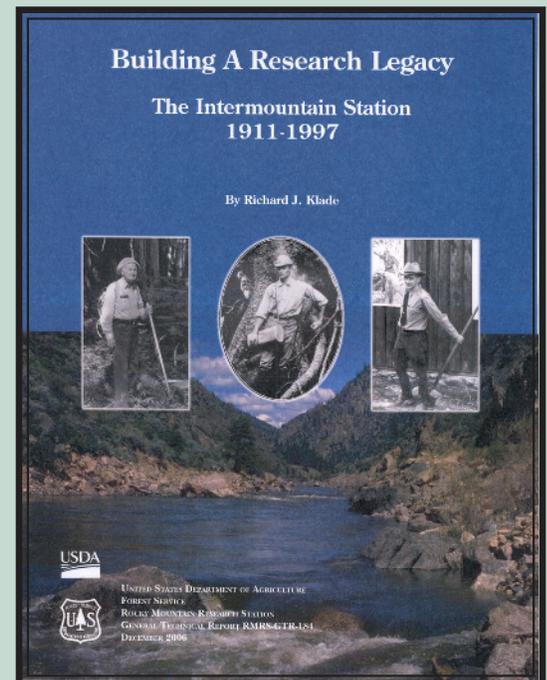
Phone: (970) 498-1392

Fax: (970) 498-1122

E-Mail: rschneider@fs.fed.us

Web site: www.fs.fed.us/rm/publications

Ordering information on page 2



RMRS GTR-184

New RMRS Series Publications

How to Order . . .

With imprinted name label on order card:

1. Circle desired current order number on order form located on the back page (e.g., #32: RMRS-GTR-181).
2. If ordering former INT or RM reports write report number in space provided (e.g., INT-GTR-373).
3. Cut off postcard and mail.

Without name label on order card:

1. Print your name and address on label.
2. Follow steps 1, 2, and 3 previous.

Without a card:

Use any of the contact media listed on the cover.

	Order No.	
FIA Report	32	<p>Forest inventory and analysis national data quality assessment report for 2000 to 2003. Pollard, James E.; Westfall, James A.; Patterson, Paul L.; Gartner, David L.; Hansen, Mark; Kuegler, Olaf. 2006. Gen. Tech. Rep. RMRS-GTR-181. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 43 p. Also available: http://www.fs.fed.us/rm/pubs/rmrs_gtr181.html</p> <p>The Forest Inventory and Analysis program (FIA) is the key USDA Forest Service (USFS) program that provides the information needed to assess the status and trends in the environmental quality of the Nation's forests. The goal of the FIA Quality Assurance (QA) program is to provide a framework to assure the production of complete, accurate and unbiased forest information of known quality. Specific Measurement Quality Objectives (MQO) for precision are designed to provide a window of performance that we are striving to achieve for every field measurement. The charge of this task team was to use the blind-check data to assess the FIA program's ability to meet data quality goals as stated by the MQO. Results for each regional analysis are presented in appendix tables.</p>
Wildland fire annotated reading list	33	<p>Collaborative capacity, problem framing, and mutual trust in addressing the wildland fire social problem: An annotated reading list. Brooks, Jeffrey J.; Bujak, Alexander N.; Champ, Joseph G.; Williams, Daniel R. 2006. Gen. Tech. Rep. RMRS-GTR-182. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 27 p. Also available: http://www.fs.fed.us/rm/pubs/rmrs_gtr182.html</p> <p>We reviewed, annotated, and organized recent social science research and developed a framework for addressing the wildland fire social problem. We annotated articles related to three topic areas or factors, which are critical for understanding collective action, particularly in the wildland-urban interface. These factors are collaborative capacity, problem framing, and mutual trust. The integration of these is a prerequisite of collective action to develop Community Wildfire Protection Plans, reduce vegetative fuels, enhance public safety and preparedness, and/or create defensible space. Collective action requires partnerships, common goals, and a common language. Understanding the inter-relationships between the factors that enable collective action is important to collaborative partnerships, forest managers, and social science researchers as they work together to address the wildland fire social problem.</p>

	Order No.	
Wildfire analysis	34	<p>Guidance on spatial wildland fire analysis: models, tools, and techniques. Stratton, Richard D. 2006. Gen. Tech. Rep. RMRS-GTR-183. 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_gtr183.html</p> <p>There is an increasing need for spatial wildland fire analysis in support of incident management, fuel treatment planning, wildland-urban assessment, and land management plan development. However, little guidance has been provided to the field in the form of training, support, or research examples. This paper provides guidance to fire managers, planners, specialists, and analysts in the use of “models” (FARSITE, FlamMap, RERAP-Term), tools/programs (KCFast, RAWS, FireFamily Plus, WindWizard), and procedures for spatial fire analysis. The approach includes a brief discussion about models and their assumptions and limitations, historical fire and weather analysis, landscape file data acquisition and development, landscape file and model output critique, and model calibration.</p>
Establishing circular plots	35	<p>Comparison of combinations of sighting devices and target objects for establishing circular plots in the field. Mannel, Sylvio; Rumble, Mark A.; Price, Maribeth; Juntti, Thomas M.; and Hua, Dong. 2006. Res. Pap. RMRS-RP-60. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 5 p. Also available: http://www.fs.fed.us/rm/pubs/rmrs_rp060.html</p> <p>Many aspects of ecological research require measurement of characteristics within plots. Often, the time spent establishing plots is small relative to the time spent collecting and recording data. However, some studies require larger numbers of plots, where the time spent establishing the plot is consequential to the field effort. In open habitats, circular plots are easily established using a rope or tape. In tall or dense vegetation, however, considerable time can be spent ensuring that measures of plot radii are straight-line measurements. To rapidly establish fixed-radius plots in the field, common forest survey techniques can be used with a target object calibrated to the desired size of the plot. Although mentioned in past publications, the accuracy of establishing plots with these methods has not been evaluated. We tested the accuracy and precision in establishing fixed-radius plots using different sighting device/target object combinations. A laser rangefinder aimed at 10.2-cm PVC pipe was most accurate and precise, but expensive, and required careful handling. Wedge prisms used with a 10.2-cm PVC pipe or cylinder were accurate, precise, inexpensive, and easy to use.</p>
<h2>New Web-Only Publication</h2> <p>This publication has recently been made available electronically on our Web site: http://www.fs.fed.us/rm/publications/titles/new.html</p>		
Intermountain Research Station history		<p>Building a research legacy—The Intermountain Station 1911-1997. Klade, Richard J. 2006. Gen. Tech. Rep. RMRS-GTR-184. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 259 p. Available: http://www.fs.fed.us/rm/pubs/rmrs_gtr184.html</p> <p>Includes highlights of the history of organizations that preceded formation of the Intermountain Forest and Range Experiment Station in 1954. Provides detailed accounts of Intermountain Station research and administrative accomplishments, some of the people who led activities, and changes in the organization from 1954 through 1997 when the Intermountain and Rocky Mountain Stations merged to become the Rocky Mountain Research Station. Many significant Station publications are indicated by title in the text, and the references list includes other publications that provide additional historic background on research programs and results.</p>

Journals and Other Publications

Obtain the following publications through university libraries, the publisher, or other outlets. Forest Service employees may request these items from the National Forest Service Library at libdocs_fc@fs.fed.us or telephone: (970) 498-1205.

Wildland fire and fuels

Amphibians and wildfire in the U.S. Northwest. Hossack, Blake R. 2006. *International Journal of Wilderness*. 12(1): 26, 43. Available: <http://leopold.wilderness.net/pubs/584.pdf>

Broad-scale assessment of fuel treatment opportunities. Miles, Patrick D.; Skog, Kenneth E.; Shepperd, Wayne D.; Reinhardt, Elizabeth D.; Fight, Roger D. 2006. In: *Proceedings of the sixth annual forest inventory and analysis symposium; 2004 September 21–24; Denver, CO*. Gen. Tech. Rep. WO-70. Washington, DC: U.S. Department of Agriculture Forest Service: 29–34. Available: <http://www.treesearch.fs.fed.us/pubs/14241>

Carbon storage in coniferous landscapes with stand-replacing fires. Kashian, D. M.; Ryan, M. G.; Romme, W. H.; Tinker, D. B.; Turner, M. G. 2006. *BioScience*. 7: 598–606. Available: <http://landscape.zoology.wisc.edu/People/Turner/Kashian2006BioScience.pdf>

Cicada emergence in southwestern riparian forest: influences of wildfire and vegetation composition. Smith, D. Max; Kelly, Jeffrey F.; Finch, Deborah M. 2006. *Ecological Applications*. 16(4): 1608–1618. Available: <http://www.esajournals.org/esaonline/?request=get-document&issn=1051-0761&volume=016&issue=04&page=1608>

Comparison of the sensitivity of landscape-fire-succession models to variation in terrain, fuel pattern, climate and weather. Cary, Geoffrey J.; Keane, Robert E.; Gardner, Robert H.; Lavorel, Sandra; Flannigan, Mike D.; Davies, Ian D.; Li, Chao; Lenihan, James M.; Rupp, T. Scott; Mouillot, Florent. 2006. *Landscape Ecology*. 21: 121–137. Available: <http://treesearch.fs.fed.us/pubs/23714>

Effects of dormant- vs. growing-season fire in shortgrass steppe: Biological soil crust and perennial grass responses. Ford, P. L.; Johnson, G. V. 2006. *Journal of Arid Environments*. 67: 1–14. Available: <http://www.treesearch.fs.fed.us/pubs/24972>

Estimating forest canopy bulk density using six indirect methods. Keane, Robert E.; Reinhardt, Elizabeth D.; Scott, Joe; Gray, Kathy; Reardon, James. 2005. *Canadian Journal of Forest Research*. 35: 724–739. Available: http://www.firelab.org/media/keane_estimating_canopy_6.pdf

Land use and land cover effects on runoff processes: fire. Luce, Charles H. 2005. In: Anderson, M. G., ed. *Encyclopedia of Hydrological Sciences*. Indianapolis, IN: John Wiley & Sons, Inc.: 1831–1837.

Postfire logging in riparian areas. Reeves, Gordon H.; Bisson, Peter A.; Rieman, Bruce E.; Benda, Lee E. 2006. *Conservation Biology*. 20(4): 994–1004. Available: <http://www.blackwell-synergy.com/doi/pdf/10.1111/j.1523-1739.2006.00502.x>

Remote sensing techniques to assess active fire characteristics and post-fire effects. Lentile, Leigh B.; Holden, Zachary A.; Smith, Alistair M. S.; Falkowski, Michael J.; Hudak, Andrew T.; Morgan, Penelope; Lewis, Sarah A.; Gessler, Paul E.; Benson, Nate C. 2006. *International Journal of Wildland Fire*. 15: 319–345. Available: <http://treesearch.fs.fed.us/pubs/24613>

Response of two semiarid grasslands to a second fire application. White, Carleton S.; Pendleton, Rosemary L.; Pendleton, Burton K. 2006. *Rangeland Ecology and Management*. 59: 98–106. Available: http://www.fs.fed.us/rm/pubs_other/rmrs_2006_white_c001.pdf

Santa Fe watershed fuels reduction project: wildlife monitoring progress report. Bagne, Karen. 2006. In: *Forest Plan Monitoring and Evaluation Report: Santa Fe National Forest Fiscal Year 2005: 35–56*. Available: <http://www.fs.fed.us/r3/sfe/projects/plansReports/monitoringReports/FY2005MonitoringReport.pdf>

Trends in public attitudes towards the use of wildland fire. Knotek, Katie. 2006. In: *3rd International Fire Ecology and Management Congress; 2006 November 13–17; San Diego, CA*. Davis, CA: Association for Fire Ecology. CD. Available: <http://leopold.wilderness.net/pubs/591.pdf>

Invasives

Evaluation of establishment of *Cyphocleonus achates* and its potential impact on spotted knapweed. Sturdevant, Nancy; Kegley, Sandy; Ortega, Yvette; Pearson, Dean. 2006. *Forest Health Protection Numbered Rep.* 06-08. Missoula, MT: U.S. Department of Agriculture, Forest Service, Northern Region. 9 p.

Invasion of an exotic forb impacts reproductive success and site fidelity of a migratory songbird. Ortega, Yvette Katina; McKelvey, Kevin Scott; Six, Diana Lee. 2006. *Oecologia*. 149: 340–351. Available: <http://www.springerlink.com/content/0124v442h0796373/>

Modelling dwarf mistletoe at three scales: life history, ballistics and contagion. Robinson, Donald C. E.; Geils, Brian W. 2006. *Ecological Modelling*. 199: 23–38. Available: <http://www.treesearch.fs.fed.us/pubs/24774>

Species richness and patterns of invasion in plants, birds, and fishes in the United States. Stohlgren, T. J.; Barnett, D.; Flather, C.; Fuller, P.; Peterjohn, B.; Kartesz, J.; Master, L. 2006. *Biological Invasions*. 8: 427–447. Available: <http://treesearch.fs.fed.us/pubs/23717>

Recreation

Benefits and challenges of computer simulation modeling of backcountry recreation use in the Desolation Lake Area of the John Muir Wilderness. Lawson, Steven R.; Itami, Robert M.; Gimblett, H. Randy; Manning,

Robert E. 2006. *Journal of Leisure Research*. 38(2): 187–207. Available: http://www.accessmylibrary.com/coms2/summary_0286-15548653_ITM

Understanding place meanings for wilderness: personal and community values at risk. Gunderson, Kari. 2006. *International Journal of Wilderness*. 12(1): 27–31.

Understanding the wicked nature of “unmanaged recreation” in Colorado’s Front Range. Brooks, Jeffrey J.; Champ, Patricia A. 2006. *Environmental Management*. 38: 784–798. Available: <http://www.springerlink.com/content/ek62272u626u6074/>

Visitor and recreation impact monitoring: Is it lost in the gulf between science and management? Cole, David N. 2006. *The George Wright Society Forum*. 23(2): 11–16. Available: <http://www.georgewright.org/232cole.pdf>

Fish and wildlife

Abundance of non-breeding horned larks and chestnut-collared longspurs on grazed and rested semiarid grassland. Kelly, Jeffrey F.; Hawksworth, David L.; Meyer, Raymond A. 2006. *The Southwestern Naturalist* 51(2): 172–180. Available: <http://www.bioone.org/archive/0038-4909/51/2/pdf/i0038-4909-51-2-172.pdf>

Biological control agents elevate hantavirus by subsidizing deer mouse populations. Pearson, Dean E.; Callaway, Ragan M. 2006. *Ecology Letters*. 9: 443–450. Available: <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1461-0248.2006.00896.x>

Community level analysis of opportunistically-breeding anurans in western Mexico. Ford, Paulette L.; Scott, Norman J., Jr. 2006. *Herpetological Natural History*. 9(2): 177–182. Available: <http://www.treesearch.fs.fed.us/pubs/22221>.

Consequences of ignoring geologic variation in evaluating grazing impacts. Long, Jonathan W.; Medina, Alvin L. 2006. *Rangeland Ecological Management*. 59: 373–382. Available: <http://www.bioone.org/archive/1551-5028/59/4/pdf/i1551-5028-59-4-373.pdf>

Demography of northern goshawks in northern Arizona, 1991–1996. Reynolds, Richard T.; Joy, Suzanne, M. 2006. *Studies in Avian Biology*. 31: 63–74.

Development of protocols to inventory or monitor wildlife, fish, or rare plants. Vesely, D.; McComb, B. C.; Vojta, C. D.; Suring, L. H.; Halaj, J.; Holthausen, R. S.; Zuckerberg, B.; Manley, P. M. 2006. *Gen. Tech. Rep. WO-72*. Washington, DC: U.S. Department of Agriculture, Forest Service. 100 p. Available: <http://www.fs.fed.us/biology/wildecology/SpProtocolTechGuide.pdf>

Distribution and status of Rio Grande cutthroat trout and native montane Rio Grande fishes in New Mexico. DuBey, Robert; Caldwell, Colleen A.; Calamusso, Bob. 2005. In: *Annual Report, 1 October 2004–30 September 2005*, New Mexico Cooperative Fish and Wildlife Research Unit. Las Cruces, NM: U.S. Geological Survey:14. Available: <http://fws-nmcfwru.nmsu.edu/fwscoop/pub/aquatic.pdf>

An ecosystem-based conservation strategy for the northern goshawk. Reynolds, Richard T.; Graham, Russell T.; Boyce, Douglas A., Jr. 2006. *Studies in Avian Biology*. 31: 299–311.

The effect of environmental factors on the growth rate of *Karenia brevis* (Davis) G. Hansen and Moestrup Magana. Hugo A.; Villareal, Tracy A. *Harmful Algae*. 5: 192–198. Available: www.sciencedirect.com

Effects of radiotransmitters on northern goshawks: Do tailmounts lower survival of breeding males? Reynolds, Richard T.; White, Gary C.; Joy, Suzanne, M.; Mannan, R. William. 2004. *Journal of Wildlife Management*. 68(1): 25–32. Available: <http://www.bioone.org/archive/0022-541X/68/1/pdf/i0022-541X-68-1-25.pdf>

Elk responses to humans in a densely roaded area. Rumble, Mark A.; Benkobi, Lakhdar; Gamo, R. Scott. 2005. *Intermountain Journal of Sciences*. 11(1-2): 10–24.

Factors associated with grassland bird richness: the role of landscape structure and prey. Hamer, T. L.; Flather, C. H.; Noon, B. R. 2006. *Landscape Ecology*. 21: 569–583.

Forest habitat associations of the golden-mantled ground squirrel: implications for fuels management. Pearson, Dean E.; Ruggiero, Leonard F. 2006. *Northwest Science*. 80(2): 133–139.

Further advances in predicting species distributions. Moisen, Gretchen G.; Edwards, Thomas C., Jr.; Osborne, Patrick E. 2006. *Ecological Modelling*. 199: 129–131.

Geography of spring landbird migration through riparian habitats in southwestern North America. Skagen, Susan K.; Kelly, Jeffrey F.; Van Ripper, Charles, III; Hutto, Richard L.; Finch, Deborah M.; Krueper, David J.; Melcher, Cynthia P. 2005. *The Condor*. 107: 212–227. Available: <http://www.bioone.org/archive/0010-5422/107/2/pdf/i0010-5422-107-2-212.pdf>

Grazing effects on habitat, macroinvertebrates, and fishes in streams on the Valles Caldera National Preserve. DuBrey, Robert; Caldwell, Colleen. 2005. In: *Annual Report, 1 October 2004–30 September 2005*, New Mexico Cooperative Fish and Wildlife Research Unit. Las Cruces, NM: U.S. Geological Survey: 20. Available: <http://fws-nmcfwru.nmsu.edu/fwscoop/pub/Annual%20Report%202004-2005.pdf>

Habitat associations of sympatric red-tailed hawks and northern goshawks on the Kaibab Plateau. La Sorte, Frank A.; Mannan, R. William; Reynolds, Richard T.; Grubb, Teryl G. 2004. *Journal of Wildlife Management*. 68(2): 307–317. Available: <http://treesearch.fs.fed.us/pubs/24004>

Have brook trout (*Salvelinus fontinalis*) displaced bull trout (*Salvelinus confluentus*) along longitudinal gradients in central Idaho streams? Rieman, Bruce E.; Peterson, James T.; Myers, Deborah L. 2006. *Canadian Journal of Fisheries Aquatics Science*. 63: 63–78. Available: <http://www.treesearch.fs.fed.us/pubs/23861>

Is fledging success a reliable index of fitness in northern goshawks? Wiens, J. David; Reynolds, Richard T. 2005. *Journal of Raptor Research*. 39(3): 210–221. Available: <http://www.treesearch.fs.fed.us/pubs/23993>

Juvenile movement and natal dispersal of northern goshawks in Arizona. Wiens, J. David; Reynolds, Richard T.; Noon, Barry R. 2006. *The Condor*. 108: 253–269. Available: <http://www.bioone.org/archive/0010-5422/108/2/pdf/i0010-5422-108-2-253.pdf>

Landscape attributes and life history variability shape genetic structure of trout populations in a stream

- network.** Neville, Helen M.; Dunham, Jason B.; Peacock, Mary M. 2006. *Landscape Ecology*. 21: 901–916. Available: <http://www.springerlink.com/content/j244r89072986061/>
- Landscape-scale attributes of elk centers of activity in the central Black Hills of South Dakota.** Stubblefield, Cynthia H.; Vierling, Kerri T.; Rumble, Mark A. 2006. *The Journal of Wildlife Management*. 70(4): 1060–1069. Available: <http://www.treesearch.fs.fed.us/pubs/24622>
- Lifetime reproduction of flammulated owls in Colorado.** Linkhart, Brian D.; Reynolds, Richard T. 2006. *Journal of Raptor Research*. 40(1): 29–37.
- Linking parasitic plant-induced host morphology to tri-trophic interactions.** Mooney, Kailen A.; Geils, Brian W.; Linhart, Yan B. 2006. *Annals of the Entomological Society of America*. 99(6): 1133–1138. Available: <http://www.bioone.org/archive/0013-8746/99/6/pdf/i0013-8746-99-6-1133.pdf>
- Microsatellite variation reveals weak genetic structure and retention of genetic variability in threatened Chioook salmon (*Oncorhynchus tshawytscha*) within a Snake River watershed.** Neville, Helen; Isaak, Daniel; Thurow, Russell; Dunahm, Jason; Rieman, Bruce. 2006. *Conservation Genetics*. DOI 10.1007/s10592-006-9155-4. Available: http://www.fs.fed.us/rm/boise/publications/fisheries/rmrs_2006_isaakd003.pdf
- Multiple species inventory and monitoring technical guide.** Manley, P.N.; Van Horne, B.; Roth, J.K.; Zielinski, W.J.; McKenzie, M.M.; Weller, T.J.; Weckerly, F.W.; Vojta, C. 2006. Gen. Tech. Rep. WO-73. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. 204 p. Available: http://www.fs.fed.us/rm/pubs_other/wo_gtr073.html
- Multivariate landscape trajectory analysis: an example using simulation modeling of American marten habitat change under four timber harvest scenarios.** Cushman, Samuel A.; McGarigal, Kevin. 2006. In: Bissonette, J.A.; Storch, I., eds. *Temporal explicitness in landscape ecology. Wildlife responses to changes in time.* New York: Springer-Verlag: 119–140.
- Native southwestern trouts: conservation with reference to physiography, hydrology, distribution, and threats.** Rinne, John N.; Calamusso, Bob. 2006. *American Fisheries Society Symposium*. 53: 63–77.
- Network-scale spatial and temporal variation in Chinook salmon (*Oncorhynchus tshawytscha*) redd distributions: patterns inferred from spatially continuous replicate surveys.** Isaak, Daniel J.; Thurow, Russell F. 2006. *Canadian Journal of Fisheries and Aquatic Science*. 63: 285–296. Available: <http://www.treesearch.fs.fed.us/pubs/23715>
- Northern goshawk inventory and monitoring technical guide.** Woodbridge, B.; Hargis, C.D. 2006. Gen. Tech. Rep. WO-71. Washington, DC: U.S. Department of Agriculture, Forest Service. 80 p. Available: http://www.fs.fed.us/rm/pubs_other/wo_gtr071.html
- Patterns of temporal variation in goshawk reproduction and prey resources.** Salafsky, Susan R.; Reynolds, Richard T.; Noon, Barry R. 2005. *Journal of Raptor Research*. 39(3): 237–246. Available: <http://treesearch.fs.fed.us/pubs/23994>
- Population genetics and genotyping for mark-recapture studies of northern goshawks (*Accipiter gentiles*) on the Kaibab Plateau.** de Volo, Shelley Bayard; Reynolds, Richard T.; Topinka, J. Rick; May, Bernie; Antolin, Michael F. 2005. *Arizona Journal of Raptor Research*. 39(3): 286–295. Available: <http://treesearch.fs.fed.us/pubs/23998>
- Post-fledging survival of northern goshawks: the importance of prey abundance, weather, and dispersal.** Wiens, J. David; Noon, Barry R.; Reynolds, Richard T. 2006. *Ecological Applications*. 16(1): 406–418. Available: <http://www.treesearch.fs.fed.us/pubs/23710>
- Pre-incubation movements of female wild turkeys relative to nest initiation in South Dakota.** Lehman, Chad P.; Flake, Lester D.; Rumble, Mark A.; Shields, Roger D.; Thompson, Dan J. 2005. *Wildlife Society Bulletin*. 33(3): 1062–1070. Available: <http://www.bioone.org/archive/0091-7648/33/3/pdf/i0091-7648-33-3-1062.pdf>
- Putting the ‘landscape’ in landscape genetics.** Storfer, A.; Murphy, M. S.; Evans, J. S.; Goldberg, C. S.; Robinson, S.; Spear, S. F.; Dezzani, R.; Delmelle, E.; Vierling, L.; Waits, L. P. 2006. *Heredity*. doi: 10.1038/sj.hdy.6800917. Available: <http://www.nature.com/hdy/journal/vaop/ncurrent/pdf/6800917a.pdf>
- A review and evaluation of factors limiting northern goshawk populations.** Reynolds, Richard T.; Wiens, J. David; Salafsky, Susan, R. 2006. *Studies in Avian Biology*. 31: 260–273.
- Sampling considerations for demographic and habitat studies of northern goshawks.** Reynolds, Richard T.; Wiens, J. David; Joy, Suzanne M.; Salafsky, Susan R. 2005. *Journal of Raptor Research*. 39(3): 274–285. Available: <http://treesearch.fs.fed.us/pubs/23995>
- Seasonal migration and home ranges of female elk in the Black Hills of South Dakota and Wyoming.** Benkobi, Lakhdar; Rumble, Mark A.; Stubblefield, Cynthia H.; Gamo, R. Scott; Millsbaugh, Joshua J. 2005. *The Prairie Naturalist*. 37(3): 151–166. Available: <http://www.fs.fed.us/rm/rapidcity/PDF/Seasonal%20Migration%20of%20Elk.pdf>
- Southwestern golf courses provide riparian habitat for birds.** Merola-Zwartjes, Michele; DeLong, John P. 2006. *Golf Course Management*. 74(8): 65–71.
- Spawning demographics and juvenile dispersal of an adfluvial bull trout population in Trestle Creek, Idaho.** Downs, Christopher C.; Horan, Dona; Morgan-Harris, Erin; Jakubowski, Robert. 2006. *North American Journal of Fisheries Management*. 26: 190–200. Available: <http://www.treesearch.fs.fed.us/pubs/23863>
- Stable isotope evidence links breeding geography and migration timing in wood warblers (*Parulidae*).** Kelly, Jeffrey F. 2006. *The Auk*. 123(2): 431–437. Available: <http://www.bioone.org/archive/0004-8038/123/2/pdf/i0004-8038-123-2-431.pdf>
- Susceptibility of Rio Grande cutthroat trout to experimentally induced infection with *Myxobolus cerebralis*.** DuBrey, Robert; Caldwell, Colleen A. 2005. In: *Annual Report, 1 October 2004–30 September 2005*, New Mexico Cooperative Fish and Wildlife Research Unit. Las Cruces, NM: U.S. Geological Survey: 19. Available: <http://fws-nmcfwru.nmsu.edu/fwscoop/pub/Annual%20Report%202004-2005.pdf>

Validation of abundance estimates from mark-recapture and removal techniques for rainbow trout captured by electrofishing in small streams. Rosenberger, Amanda E.; Dunham, Jason B. 2005. *North American Journal of Fisheries Management*. 25: 1395–1410.

Water and air

Advective transport of CO₂ in permeable media induced by atmospheric pressure fluctuations: 1. An analytical model. Massman, W. J. 2006. *Journal of Geophysical Research*. 111: G03004, doi:10.1029/2006JG000163.

Advective transport of CO₂ in permeable media induced by atmospheric pressure fluctuations: 2. Observational evidence under snowpacks. Massman, W. J. 2006. *Journal of Geophysical Research*. 111: G03005, doi:10.1029/2006JG000164.

BORAMEP application to the low flow conveyance channel on the Middle Rio Grande, New Mexico. Jay, Forrest; Julien, Pierre. 2005. In: AGU Hydrology Days; conference proceedings; 2005 March 7–9; Fort Collins, CO. Fort Collins: Colorado State University: 97–102. Available: http://hydrologydays.colostate.edu/Proceedings_2005.htm.

Case study: Modeling the lateral mobility of the Rio Grande below Cochiti Dam, New Mexico. Richard, Gigi A.; Julien, Pierre Y.; Baird, Drew C. 2005. *Journal of Hydraulic Engineering*. 131(11): 931–941. Available: http://www.engr.colostate.edu/~pierre/ce_old/resume/Paperspdf/Richard-Julien-BairdASCE05.pdf

Challenges to watershed modeling in forested mountainous environments. Hyde, Kevin; Woods, Scott; Potyondy, John. 2006. In: Adaptive management of water resources, AWRA summer specialty conference; 2006 June 26–28; Missoula, MT. Middleburg, VA: American Water Resources Association.

Constrained range expansion and climate change assessments. Carmel, Y.; Flather, C. H. 2006. *Frontiers in Ecology and the Environment*. 4: 178–179.

Emerging concepts for management of river ecosystems and challenges to applied integration of physical and biological sciences in the Pacific Northwest, USA. Rieman, Bruce; Dunham, Jason; Clayton, James. 2006. *International Journal of River Basin Management*. 4(2): 85–97.

Habitone analysis of quaking aspen in the Utah Book Cliffs: effects of site water demand and conifer cover. Sexton, Joseph O.; Ramsey, R. Douglas; Bartos, Dale L. 2006. *Ecological Modelling*. 198: 301–311.

Indexing variability: A case study with climate change impacts on ecosystems, Coulson, David; Joyce, Linda. 2006. *Ecological Indicators*. 6: 749–769.

Interpreting, measuring, and modeling soil respiration. Ryan, M. G.; Law, B. E. 2005. *Biogeochemistry*. 73: 3–27.

Natural resource managers respond to climate change: A look at actions, challenges, and trends in the western USA. Joyce, Linda; Laskowski, Michele. 2006. In: Price, Martin F., ed. *Global change in mountain regions*. Duncow, Kirkmahoe, Dumfriesshire, UK: 264–266.

Performance of bed load transport equations in mountain gravel-bed rivers: a reanalysis. Barry, Jeffrey J.;

Buffington, John M.; King, John G.; Goodwin, Peter. 2006. In: Proceedings of the 8th Federal Interagency Sedimentation conference; 2006 April 2–6; Reno, NV. [Place of publication unknown]: [U.S. Subcommittee on Sedimentation]. 8 p. Available: <http://www.treesearch.fs.fed.us/pubs/23865>

Seasonal patterns in soil surface CO₂ flux under snow cover in 50 and 300 year old subalpine forests. Hubbard, Robert M.; Ryan, Michael G.; Elder, Kelly; Rhoades, Charles C. 2005. *Biogeochemistry*. 73(1): 93–107. Available: <http://www.treesearch.fs.fed.us/pubs/23725>

Snow accumulation in thinned lodgepole pine stands, Montana, USA. Woods, Scott W.; Ahl, Robert; Sappington, Jason; McCaughey, Ward. 2006. *Forest Ecology and Management*. 235: 202–211.

Spatial distribution of impacts to channel bed mobility due to flow regulation, Kootenai River, USA. Burke, Michael; Jorde, Klaus; Buffington, John M.; Braatne, Jeffrey H.; Benjankar, Rohan. 2006. In: Proceedings of the Eighth Federal Interagency Sedimentation Conference; 2006 April 2–6; Reno, NV. [Place of publication unknown]: [U.S. Subcommittee on Sedimentation]. Available: <http://www.treesearch.fs.fed.us/pubs/23864>

Statistical analysis of lateral migration of the Rio Grande, New Mexico. Richard, Gigi A.; Julien, Pierre Y.; Baird, Drew C. *Geomorphology*. 71: 139–155. Available: www.sciencedirect.com

Trends in water market activity and price in the western United States. Brown, Thomas C. 2006. *Water Resources Research*. 42: W09402, doi:10.1029/2005WR004180

Valley segments, stream reaches, and channel units. Bisson, Peter A.; Buffington, John M.; Montgomery, David R. 2006. In: Hauer, Richard; Lamberti, Gary, eds. *Methods in Stream Ecology*. Amsterdam, The Netherlands: Elsevier: 23–49. Available: http://www.fs.fed.us/rm/boise/publications/watershed/rmrs_2006_bissonp001.pdf

Wood CO₂ efflux in a primary tropical rain forest. Cavaleri, Molly A.; Oberbauer, Steven F.; Ryan, Michael G. 2006. *Global Change Biology*. 12: 1–17. Available: <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-2486.2006.01269.x>

Resource management and use

Augmenting the existing survey hierarchy for mountain pine beetle red-attack damage with satellite remotely sensed data. Wulder, M. A.; White, J. C.; Bentz, B. J.; Ebata, T. 2006. *The Forestry Chronicle*. 82(2): 187–202.

Comparison of naturally and synthetically baited spruce beetle trapping systems in the central Rocky Mountains. Hansen, E. Matthew; Vandygriff, Jim C.; Cain, Robert J.; Wakarchuk, David. 2006. *Journal of Economic Entomology*. 99(2): 373–382. Available: <http://www.treesearch.fs.fed.us/pubs/23716>

Complex interactions shaping aspen dynamics in the Greater Yellowstone Ecosystem. Brown, Kathryn; Hansen, Andrew J.; Keane, Robert E.; Graumlich, Lisa J. 2006. *Landscape Ecology*. 21: 933–951. Available: <http://www.springerlink.com/content/v0lt017516716747/fulltext.pdf>

The complexity of managing fire-dependent ecosystems in wilderness: relict ponderosa pine in the Bob Marshall Wilderness. Keane, Robert E.; Arno, Stephen;

- Dickinson, Laura J. 2006. *Ecological Restoration*. 24(2): 71–78.
- Decision support models for economically efficient integrated forest management.** Zuuring, Hans R.; Troutwine, Judy M.; Jones, Greg; Sullivan, Janet. 2005. In: ESRI user conference proceedings; 2005 June 6–10; San Diego, CA. Available: <http://gis.esri.com/library/userconf/proc05/papers/pap2137.pdf>
- A density management diagram for even-aged ponderosa pine stands.** Long, James N.; Shaw, John D. 2005. *Western Journal of Applied Forestry*. 20(4): 205–215. Available: <http://treesearch.fs.fed.us/pubs/25005>
- Ecological significance of microsatellite variation in western North American populations of *Bromus tectorum*.** Ramakrishnan, Alisa P.; Meyer, Susan E.; Fairbanks, Daniel J.; Coleman, Craig E. 2006. *Plant Species Biology*. 21: 61–73. Available: <http://www.blackwell-synergy.com/doi/pdf/10.1111/j.1442-1984.2006.00152.x>
- EcoReport: A progress report from a partnership in landscape level ecosystem management.** Fall 2005. Missoula, MT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Bitterroot Ecosystem Management Research Project. 20 p. Available: <http://www.fs.fed.us/rm/ecopartner/ecorpt/ECO2005.pdf>
- Estimating the probability of mountain pine beetle red-attack damage.** Wulder, M. A.; White, J. C.; Bentz, B.; Alvarez, M. F.; Coops, N. C. 2006. *Remote Sensing of Environment*. 101: 150–166.
- Evaluation of funnel traps for estimating tree mortality and associated population phase of spruce beetle in Utah.** Hansen, E. Matthew; Bentz, Barbara J.; Munson, A. Steven; Vandygriff, James C.; Turner, David L. 2006. *Canadian Journal of Forest Research*. 36: 2574–2584.
- Height growth determinants and adaptation to temperature in pines: a case study of *Pinus contorta* and *Pinus monticola*.** Chuine, Isabelle; Rehfeldt, Gerald E.; Aitken, Sally N. 2006. *Canadian Journal of Forest Research*. 36: 1059–1066. Available: http://www.cefe.cnrs.fr/fe/pdf/2006_Chuine_et_al_CanJForRes.pdf
- Hydraulic limitation hypothesis revisited.** Ryan, Michael G.; Phillips, Nathan; Bond, Barbara J. 2006. *Plant, Cell and Environment*. 29: 367–381. Available: <http://www.fsl.orst.edu/~bond/PDF%20files%20of%20papers/ryan-phillips-bond-2006.pdf>
- A methodology for assessing departure of current plant communities from historical conditions over large landscapes.** Steele, Brian M.; Reddy, Swarna K.; Keane, Robert E. 2006. *Ecological Modelling*. 199: 53–63. Available: http://www.firelab.org/media/steele_method.pdf
- Modeling trade-offs between fire threat reduction and late-seral forest structure.** Calkin, David E.; Hummel, Susan Stevens; Agee, James K. 2005. *Canadian Journal of Forest Research*. 35: 2562–2574.
- Mountain pine beetle population sampling; Inferences from Lindgren pheromone traps and tree emergence cages.** Bentz, Barbara J.; 2006. *Canadian Journal of Forest Research*. 36: 351–360. Available: <http://www.treesearch.fs.fed.us/pubs/23722>
- Patterns of growth dominance in forests of the Rocky Mountains, USA.** Binkley, Dan; Kashian, Daniel M.; Boyden, Suzanne; Kaye, Margot, W.; Bradford, John B.; Arthur, Mary A.; Fornwalt, Paula J.; Ryan, Michael G. 2006. *Forest Ecology and Management*. 236: 193–201.
- Population-wide changes in pinyon-juniper woodlands caused by drought in the American Southwest: Effects on structure, composition, and distribution.** Shaw, John D. 2006. In: Laforteza, R.; Sanesi, G., eds. Patterns and processes in forest landscapes. Consequences of Human Management. Proceedings of the 4th Meeting of IUFRO Working Party 8.01.03, September 26–29, 2006, Locrorotondo, Bari, Italy: 117–124. Available: <http://treesearch.fs.fed.us/pubs/25001>
- Recent history of natural resource use and population growth in northern Mexico.** Stoleson, Scott H.; Felger, Richard S.; Ceballos, Gerardo; Raish, Carol; Wilson, Michael F.; Búrquez, Alberto. 2005. In: Cartron, J. L. E.; Ceballos, G.; Felger, R.S., eds. Biodiversity, ecosystems, and conservation in northern Mexico. New York: Oxford University Press: 52–86.
- Social complexity and sustainability.** Tainter, Joseph A. 2006. *Ecological Complexity*. 3: 91–103.
- Soil carbon and nitrogen pools in mid- to late-successional forest stands of the northwestern United States: potential impact of fire.** Page-Dumroese, Deborah S.; Jurgensen, Martin F. 2006. *Canadian Journal of Forest Research*. 36: 2270–2284.
- Tree-girdling to separate root and heterotrophic respiration in two Eucalyptus stands in Brazil.** Binkley, D.; Stape, J. L.; Takahashi, E. N.; Ryan, M. G. 2006. *Oecologia*. 148(3): 447–454.
- Vascular flora of the Tenderfoot Creek Experimental Forest, Little Belt Mountains, Montana.** Mincemoyer, Scott A.; Birdsall, Jennifer L.; 2006. *Madroño*. 53(3): 211–222.
- Wood strength loss as a measure of decomposition in northern forest mineral soil.** Jurgensen, Martin; Reed, David; Page-Dumroese, Deborah; Laks, Peter; Collins, Anne; Mroz, Glen; Degórski, Marek. 2006. *European Journal of Soil Biology*. 42(1): 23–31. Available: <http://elsevier.lib.tsinghua.edu.cn/cgi-bin/sciserv.pl?collection=journals&journal=11645563&issue=v42i0001>

Resource data and analysis

- Accuracy assessment of the vegetation continuous field tree cover product using 3954 ground plots in the southwestern USA.** White, M. A.; Shaw, J. D.; Ramsey, R. D. 2005. *International Journal of Remote Sensing*. 26(12): 2699–2704. Available: <http://treesearch.fs.fed.us/pubs/25000>
- Benefits of a strategic national forest inventory to science and society: the USDA Forest Service Forest Inventory and Analysis program.** Shaw, J. D. 2006. *Forest@ 3*(1): 46–53. Available: <http://treesearch.fs.fed.us/pubs/25002>
- Comparison of regression and geostatistical methods for mapping Leaf Area Index (LAI) with Landsat ETM+ data over a boreal forest.** Berterretche, Mercedes; Hudak, Andrew t.; Cohen, Warren B.; maierperger, Thomas K.;

Gower, Stith T.; Dungan, Jennifer. 2005. Remote Sensing of Environment. 96: 49–61.

Effects of sample survey design on the accuracy of classification tree models in species distribution models. Edwards, Thomas C., Jr.; Cutler, D. Richard; Zimmermann, Niklaus E.; Geiser, Linda; Moisen, Gretchen G. 2006. *Ecological Modelling*. 199: 132–141. Available: http://www.wsl.ch/staff/niklaus.zimmermann/papers/Ecol-Model_Edwards_2006.pdf

Estimating volumes and costs of forest biomass in western Montana using forest inventory and geospatial data. Loeffler, Dan; Calkin, David E.; Silverstein, Robin P. 2006. *Forest Products Journal*. 56(6): 31–37.

Forest Inventory and Analysis (FIA) annual inventory answers the question: What is happening to pinyon-juniper woodlands? Shaw, John D.; Steed, Brytten E.; DeBlander, Larry T. 2005. *Journal of Forestry*. 103(6): 280–285. Available: <http://treesearch.fs.fed.us/pubs/25004>

Geographic variability in lidar predictions of forest stand structure in the Pacific Northwest. Lefsky, Michael A.; Hudak, Andrew T.; Cohen, Warren B.; Acker, S. A. 2005. *Remote Sensing of Environment*. 94: 532–548.

Local calibration of the Forest Vegetation Simulator (FVS) using custom inventory data. Shaw, John D.; Vacciano, Giorgio; DeRose, R. Justin; Brough, April; Kusbach, Antonin; Long, James N. 2006. In: *Proceedings: Society of American Foresters 2006 National Convention; 2006 October 25–29; Pittsburgh, PA.* Bethesda, MD: Society of

American Foresters. CD-ROM. Available: <http://treesearch.fs.fed.us/pubs/24973>

A methodology for translating position error into measures of attribute error, and combining the two error sources. Carmel, Y.; Flather, C.; Dean, D. 1006. In: Caetano, M.; Painho, M., eds. *Proceedings of accuracy 2006; 7th international symposium on spatial accuracy assessment in natural resources and environmental sciences.* Lisbon Portugal: Instituto Geográfico Português: 3–17.

Predicting tree species presence and basal area in Utah: a comparison of stochastic gradient boosting, generalized additive models, and tree-based methods. Moisen, Gretchen G.; Freeman, Elizabeth A.; Blackard, Jock A.; Frescino, Tracey S.; Zimmermann, Niklaus E.; Edwards, Thomas C., Jr. 2006. *Ecological Modelling*. 199: 176–187. Available: http://www.wsl.ch/staff/niklaus.zimmermann/papers/EcolModel_Moisen_2006.pdf

RCLUS, a new program for clustering associated species: a demonstration using a Mojave Desert plant community dataset. Sanderson, S. C.; Ott, J. E.; McArthur, E. D.; Harper, K. T. 2006. *Western North American Naturalist*. 66: 285–297.

Reineke's Stand Density Index: Where are we and where do we go from here? Shaw, John D. 2005. *Proceedings: Society of American Foresters 2005 National Convention. 2005 October 19–23; Fort Worth, TX.* Society of American Foresters, Bethesda, MD. CD-ROM. Available: <http://treesearch.fs.fed.us/pubs/25003>

Theses and Dissertations

These may be difficult to obtain, but are listed for your information. Please contact the named university if you are interested in obtaining a copy.

Hydraulic analysis and double mass curves of the Middle Rio Grande from Cochiti to San Marcial, New Mexico. Albert, Jason M. 2004. 207 p. Fort Collins: Colorado State University. Thesis. (970) 491-1842

Hydraulic modeling analysis of the Middle Rio Grande River from Cochiti Dam to Galisteo Creek, New Mexico. Novak, Susan J. 2006. 158 p. Fort Collins: Colorado State University. Thesis. (970) 491-1842

Hydraulic modeling and meander migration of the Middle Rio Grande, New Mexico. Sixta, Michael J. 2004. 260 p. Fort Collins: Colorado State University. Thesis. (970) 491-1842

Invasion by nonnative brook trout in Panther Creek, Idaho: roles of habitat quality, connectivity, and biotic resistance. Benjamin, Joseph R. 2006. 62 p. Boise, ID: Boise State University. Thesis. (208) 426-3301

Modeling forest planning trade-offs on the Colorado Front Range, using MAGIS, an optimization, spatial decision support tool. Butler, Edward B., Jr. 2005. Missoula: University of Montana. 126 p. Thesis. (406) 243-6860

Vitally important: The role of demography in assessing the current and future status of black-tailed prairie dogs. Facka, Aaron Neil. 84 p. Las Cruces: New Mexico State University. Thesis. (505) 646-2932

We Have a New Look!

Check us out. Our publications Web page has a new look and new features. Now it is easier to find **All RMRS publications**, the **Newest publications**, and the **Classics**. You can **Order a printed copy** of our publications, and ask to be added to our **Electronic Mailing List**.

Forest managers, scientists and others will find links to **Tools** such as Web links to software, and databases with valuable information to help them manage our natural resources;

Authors, check out the box on the right. You will find everything that you need to prepare and submit a new manuscript, track an existing manuscript from start to finish, and contact us for assistance.

Can't find the publication you are looking for on our Web site? Check out TreeSearch, your one stop site for Research and Development publications online.

We are new and improved, so try us out, and let us know how we are doing.

Suzy Stephens
 USDA Forest Service
 Rocky Mountain Research Station
 324 25th Street #2026
 Ogden, UT 84401
 Telephone: 801-625-5291
 Fax: 801-625-5129
 E-mail: sstephens [at] fs.fed.us



The U. S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

Federal Recycling Program  Printed on Recycled Paper

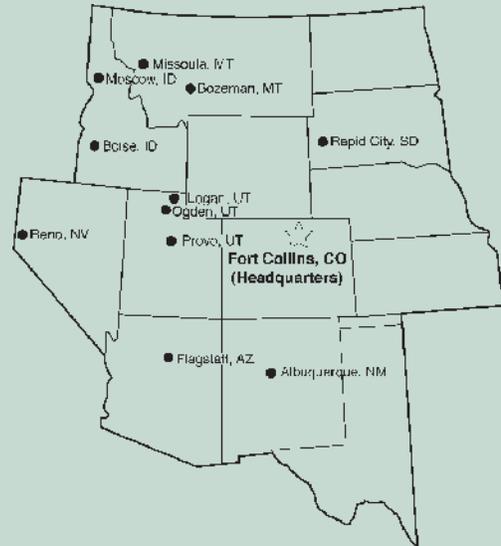
NAME _____
ADDRESS _____
CITY/STATE/ZIP _____

Affix
first-class
postage
stamp

Publications Distribution
Rocky Mountain Research Station
USDA Forest Service
240 W. Prospect Road
Fort Collins, CO 80526-2098 U.S.A.

U.S. DEPARTMENT OF AGRICULTURE
 FOREST SERVICE
 ROCKY MOUNTAIN RESEARCH STATION
 240 W. PROSPECT ROAD
 FORT COLLINS, COLORADO 80526-2098 U.S.A.
 And
 324 25th STREET, OGDEN, UT 84401 U.S.A.

OFFICIAL BUSINESS
 PENALTY FOR PRIVATE USE, \$300



The Rocky Mountain Research Station

develops scientific information and technology to improve management, protection, and use of forests and rangelands. Research is designed to meet the needs of National Forest managers, federal and state agencies, public and private organizations, academic institutions, industry, and individuals.

Studies accelerate solutions to problems involving ecosystems, range, forests, water, recreation, fire, resource inventory, land reclamation, community sustainability, forest engineering technology, multiple use economics, wildlife and fish habitat, and forest insects and diseases. Studies are conducted cooperatively, and applications can be found worldwide.

Your name will remain on the mailing list unless you ask that we remove it.
 Please make address corrections below.

Cut along this line.

October–December 2006 Please take my name off the mailing list.

I would like to receive this publication as an e-mail (no paper copy will be sent). My e-mail is: _____

If you wish a free copy of any available publications on the enclosed list:

- Circle the appropriate number(s) on this card,
- Affix the correct postage, and
- Mail card

1	20	39	58	77	Former INT report #
2	21	40	59	78	
3	22	41	60	79	INT-GTR-_____
4	23	42	61	80	INT-RP-_____
5	24	43	62	81	INT-__-_____
6	25	44	63	82	INT-__-_____
7	26	45	64	83	INT-__-_____
8	27	46	65	84	INT-__-_____
9	28	47	66	85	
10	29	48	67	86	Former RM report #
11	30	49	68	87	
12	31	50	69	88	RM-GTR-_____
13	32	51	70	89	RM-RP-_____
14	33	52	71	90	RM-__-_____
15	34	53	72	91	RM-__-_____
16	35	54	73	92	RM-__-_____
17	36	55	74	93	RM-__-_____
18	37	56	75	94	RM-__-_____
19	38	57	76	95	RM-__-_____