Rocky Mountain Research Station, Forest Inventory and Analysis
507 25th Street, Ogden, UT, 84401
Phone: 801.625.5795 (work)
Phone: 435.512.4990 (cell)
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EDUCATION

- Ph.D. Ecology, 2009, Utah State University, advised by Dr. James N. Long.
- M.S. Forestry, 2004, University of Maine, advised by Dr. Robert S. Seymour.
- Summer 2002, visiting student, Hochschule für Forstwirtschaft, Rottenburg, Germany
- B.S. Forestry, 2002, *Cum Laude*, Utah State University (SAF accredited)

EMPLOYMENT

Job title: Research Ecologist
Employer: USDA Forest Service, Forest Inventory and Analysis Rocky Mountain Research Station, 507 25th Street, Ogden, UT 84401.
Start/end dates: May 2011 – current.
Duties and responsibilities: Generally, duties include: identifying, monitoring, and explaining changes in regional forest resources; developing new analytical approaches, concepts, and techniques for evaluating or studying forest inventory data; and to conduct research regarding the relationships between forests and climate. Specific current research includes: combining regional-scale tree-ring data with traditional dendrochronological approaches to examine patterns of species- and site-specific response to climate change; building spatially explicit bark beetle risk models for prognosticative silvicultural applications; and developing forest management tools for the Interior West, USA and central Europe. Specific responsibilities for current projects encompass the full scope of research which include collaboration, problem identification, hypothesis development, study plan development, conducting field and laboratory procedures and analysis, and reporting research results through a variety scientific and technical outlets

Job title: Postdoctoral fellow
Employer: Department of Wildland Resources, 5230 Old Main Hill, Utah State University, Logan, UT, 84322.
Start/end dates: January 2010 – May 2011.
Duties and responsibilities: Research projects included: archiving and analysis of Forest Inventory and Analysis (FIA) tree-ring data; validation of the Forest Vegetation Simulator (FVS) growth and yield model; modeling carbon dynamics in forested systems; examining climate change implications on spruce beetle activity in the Interior West; and dendrochronological reconstructions of stream flow. Duties associated with these projects included: exploring spatial analysis possibilities of systematically collected tree-ring data; applying validation, and sensitivity analyses to the Utah and Western Sierra Variants of the FVS; using FVS to model carbon dynamics scenarios in the southern Appalachians, and validating model output against field data; using FIA data from the Interior West states to quantify the potential implications of increased spruce beetle activity due to changing climate on resource management and risk assessment; and enhancing the Region 4 tree-ring record in order to develop hydrologic predictions that are useful to water resource managers. Two senior-level undergraduate courses were co-taught during fall 2010: vegetation and habitat management (WILD 4850) and

Inventory, Monitoring, and Assessment of Natural Resources (WILD 4750). One senior-level undergraduate course was taught spring 2011, Forest Assessment and Management (WILD 5700).

Job title: Research assistant
Employer: Department of Wildland Resources, 5230 Old Main Hill, Utah State University, Logan, UT, 84322.
Start/end dates: January 2005 – December 2009.
Duties and responsibilities: Developed and implemented a large-scale study of natural disturbance dynamics in Engelmann spruce forests for my Ph.D. dissertation, "Disturbance ecology and vegetation dynamics at varying spatial- and temporal-scales in southern Rocky Mountain Engelmann spruce forests." A multi-scale (both space and time) sampling approach was employed to characterize a suite of disturbance related processes such as: 1) an analysis of the spatiotemporal development of a large spruce beetle outbreak; 2) dendrochronological analyses that reconstructed antecedent disturbances, historical tree-ring release, and the relationship of both of these to climate; 3) post-outbreak regeneration response and seedling bank dynamics; 4) combined field observations and fire behavior models to examine the potential interaction between spruce beetle outbreaks and severe fire behavior; and 5) designing a useful conceptual model of forest resistance and resilience to disturbance that resource managers can use to evaluate the adaptive capacity of forested systems.

Job title: Research/teaching assistant
Employer: Department of Forest Ecosystem Science, 211 Nutting Hall, University of Maine, Orono, ME, 04669.
Start/end dates: August 2002 – December 2004.
Duties and responsibilities: Developed and implemented a state-wide study examining stand dynamics of two commercially and ecologically important conifer species, red spruce and balsam fir for my M.S. thesis, "Leaf area index – relative density relationships in even-aged *Abies balsamea – Picea rubens* stands in Maine." Contributed to research that examined the production ecology (leaf area – sapwood area relationships) of red spruce and balsam fir. Contributed to research that examined height development of Acadian conifer species in low light conditions.

Job title: Forestry technician
Employer: Ochoco National Forest, Paulina Ranger District, central Oregon.
Start/end dates: May 2001 – August 2001.
Duties and responsibilities: Mapping, using GPS, marking, measuring forest stands, and joining fire-fighting efforts (Red Carded).

Job title: Student research assistant
Employer: John D. Shaw, Department of Forest Resources, Utah State University, Logan, UT.
Start/end dates: August 2000 – September 2000.
Duties and responsibilities: Extensive hiking to locate and quantifying the habitat near northern goshawk nests in the Uinta Mountains of northeastern Utah.

TEACHING EXPERIENCE

Instructor/co-instructor for the following courses:

WILD 5700 - Forest Assessment and Management, Utah State University, 3 credits (4 students, spring 2011).
WILD 4850 - Vegetation and Habitat Management, Utah State University, 3 credits (20-30 students, fall 2010).
WILD 4750 - Natural Resource Assessment, Utah State University, 3 credits (20-30 students, fall 2010).

Guest lectures have been given in the following courses:

Conservation Education Proposal 2010 (partner with John D. Shaw). Teach forest ecology to elementary school children.
WILD 4850 - Vegetation and Habitat Management , Introductory Forest Stand Dynamics on the T.W. Daniel Experimental Forest and Natural Resource Assessment – **WILD 4750**, Utah State University, annually in the fall 2006-2009.
WILD 5700 – Forest Assessment and Management, Utah State University, 2006-2008.
WATS/CLIM 3820 - Climate Change, Utah State University, March 25, 2008 and March 27, 2007, invited guest lecture on dendrochronology.
WILD 6990 - Historical Ecology, Utah State University, March 6, 2007, invited guest lecture on dendrochronology.
Project Learning Tree workshop, K-12 instructor, Orono, ME, spring, 2004.
FES 408/409 –Teaching Assistant for silviculture and silviculture lab, University of Maine, fall, 2002 and 2003.

SKILLS

General Computer Skills: Access, Excel, Illustrator, Photoshop, Powerpoint, Word
GIS / Image Processing: ArcGIS, IMAGINE
Statistical / Visualization: PC-ORD, R, SAS, SigmaPlot, SimLab, SYSTAT,
Course Management: Blackboard
Specialty Software: Fire behavior software, Forest Vegetation Simulator, MeasureJ2X, Dendrochronology Program Library

SPECIALIZED TRAINING

- 2010, Forest health evaluation for a large private land owner, private consulting.
- 2008, Vegetation and soil stability assessment for a large private land owner, private consulting.
- 2003, Sustainable Forest Management Systems, Forest Certification Auditing Workshop, Society of American Foresters National Convention.

PROFESSIONAL MEMBERSHIPS

- Society of American Foresters
- Xi Sigma Pi
- Ecological Society of America

- Tree-Ring Society
- American Geophysical Union
- Association of American Geographers

PROFESSIONAL RECOGNITION

- 2007 – current, Candidate Certified Forester
- 2005 – 2009, First T. W. Daniel Graduate Fellow, Utah State University.
- 2004, Ralph H. Griffin scholarship for outstanding work in silviculture, University of Maine.
- 2001, T. W. Daniel Undergraduate Forestry Scholarship, Utah State University.

GRANTS AND CONTRACTS (Career total = $299,166)

DeRose, R.J., and J.N. Long. 2011-2013. Developing a decision matrix to guide successful aspen regeneration on Cedar Mountain, Utah. Cedar Mountain Initiative. $98,000.

Birch, D. **DeRose, R.J.**, Long, J.N., and J.D. Shaw. 2011. Undergraduate Research & Creative Opportunities. Dendroclimatic study of Utah pinyon pine (*Pinus edulis*): possible climatic control on population growth. $400.

DeRose, R.J., Long, J.N., and J.D. Shaw. 2010. USDA Forest Service Management Center. Forest Vegetation Simulator evaluation of Utah and western Sierra variants. $16,000.

DeRose, R.J., Long, J.N., and J.D. Shaw. 2009-2011. Forest Inventory and Analysis Program, USDA Forest Service. Preliminary data analysis research proposal. $30,000.

DeRose, R.J., Long, J.N., and J.D. Shaw. 2009-2011. Forest Inventory and Analysis Program, USDA Forest Service. Increment core archival and data analysis pilot proposal. $50,000.

DeRose, R.J., Long, J.N., and H. Van Miegroet. 2010. Utah Agricultural Experiment Station Grants Program. Use of the Forest Vegetation Simulator as a tool to quantify biomass accumulation potential of US forests. $20,000.

DeRose, R.J., Long, J.N., and J.D. Shaw. 2009. Forest Health Protection, Analysis and Reporting, USDA Forest Service. Occurrence of spruce beetle activity in the Intermountain West: implications for climate change. $18,080.

Rittenour, T., L. Hipps, J.N. Long, R. Gillies, **R.J. DeRose**. 2009. Utah State University Water Initiative Research Initiation Award. Extending the record of drought and discharge variations in the Bear River drainage through tree-ring reconstructions: collection of initial data from the Logan River basin. $19,930.

Ex, Seth, **R.J. DeRose**, and J.N. Long. 2008. Undergraduate Research & Creative Opportunities. Succession and stand development of *Cercocarpus ledifolius* woodlands in the Bear River Mountains, UT. $500.

Ex, Seth, **R.J. DeRose**, and J.N. Long. 2008. College of Natural Resources, Utah State University. Succession and stand development of *Cercocarpus ledifolius* woodlands in the Bear River Mountains, UT. $400.

DeRose, R.J., Long, J.N., and J.D. Shaw. 2008-2010. Forest Health Protection, Analysis and Reporting, USDA Forest Service. Potential consequences of spruce beetle outbreaks on National Forests in Utah. $15,000.

DeRose, R.J. and J.N. Long. Ecology Center Research Support Awards (3). Disturbance ecology of Englemann spruce forests: 2008 ($4,000), 2007 ($4,000), 2006 ($2,200).

DeRose, R.J. and J.N. Long. 2006. Intermountain Region Digital Image Archive Center Graduate Student Competitive Research Support Grant. Using Landsat Thematic Mapper to assess the spatiotemporal dynamics of a large-scale spruce beetle epidemic: quantifying forest structural attributes for outbreak forecasting. $20,000.

DeRose, R.J. Association of Graduate Students, University of Maine, Travel Grants (3). Fall 2002 ($112.50), Fall 2003 ($300), Spring 2004 ($243).

UNDERGRADUATE RESEARCH MENTOR

- 2008-2009, Seth Ex. Succession and stand development of *Cercocarpus ledifolius* woodlands in the Bear River Mountains, UT.
- 2009-2010, Richard S. Gardner. Ecological tradeoffs in western aspen: differences in resistance and tolerance between and within genotypes.
- 2010-2011, Donovan Birch. Two-needle pinyon pine population response to climate in Utah.

REFEREE

- Forest Ecology and Management
- Journal of Forest Research
- Ecological Modelling
- Journal of Forestry
- Southern Journal of Applied Forestry
- Canadian Journal of Forest Research
- Agricultural Science Research Journals

PUBLICATIONS (available online: https://cnr.usu.edu/htm/facstaff/derose/pub)

Refereed:

Ex, S., **R.J. DeRose,** and J.N. Long. 2011. Succession and stand development of *Cercocarpus ledifolius* woodlands in the Bear River Mountains, UT. *In press*. Western Journal of Applied Forestry.

DeRose, R.J. and J.N. Long. 2011. Factors influencing the spatial and temporal dynamics of Engelman spruce mortality during a spruce beetle outbreak on the Markagunt Plateau, Utah. *In press*. Forest Science.

DeRose, R.J. and J.N. Long., and Ramsey, R.D. 2011. Using the disturbance index to detect spatiotemporal patterns of Engelmann spruce mortality caused by a spruce beetle outbreak. Remote Sensing of Environment **115**:2342-2349.

DeRose, R.J., and R.S. Seymour. 2010. Patterns of leaf area index during stand development in even-aged balsam fir - red spruce stands. Canadian Journal of Forest Research **40**:629-637.

Sharik, T.L., W. Adair, M. Battaglia, F.A. Baker, E.J. Comfort, A. D'Amato, C. Delong, **R.J. DeRose,** M.J. Ducey, M. Harmon, L. Levy, J.A. Logan, J. O'Brien, B.J. Palik, S.D. Roberts, P.C. Rogers, D.J. Shinneman, T. Spies, S.L. Taylor, C. Woodall, and A. Youngblood. 2010. Emerging issues in North American forest ecology and management. International Journal of Forestry Research **2010**:964260.

DeRose, R.J. and J.N. Long. 2010. Regeneration response and seedling bank dynamics on a *Dendroctonus rufipennis*-killed *Picea engelmannii* landscape. Journal of Vegetation Science **21**:377-387.

DeRose, R.J. and R. Gardner. 2010. A technique to improve measurement of elusive tree ring boundaries in aspen (*Populus tremuloides* Michx.). Tree-Ring Research **66**:75-78.

DeRose, R.J., and R.S. Seymour. 2009. The effect of site quality on growth efficiency of upper crown class *Picea rubens* and *Abies balsamea* in Maine, USA. Canadian Journal of Forest Research **39**: 1-8.

DeRose, R.J., and J.N. Long. 2009. Wildfire and spruce beetle outbreak: simulation of interacting disturbances in the central Rocky Mountains. Ecoscience **16**: 28-38.

DeRose, R.J., J.D. Shaw, G. Vacchiano, and J.N. Long. 2008. Improving longleaf pine mortality predictions in the Southern Variant of the Forest Vegetation Simulator. Third Forest Vegetation Simulator Conference, Ft. Collins, CO. Feb. 13-15, 2007. RMRS-P-54 pp 160-166.

Vacchiano, G., J.D. Shaw, **R.J. DeRose**, and J.N. Long. 2008. Inventory-based sensitivity analysis guides calibration of the large tree diameter growth submodel of the Southern Variant of FVS. Third Forest Vegetation Simulator Conference, Ft. Collins, CO. Feb. 13-15, 2007. RMRS-P-54 pp 149-159.

DeRose, R.J., and J.N. Long. 2007. Disturbance, structure, and composition: spruce beetle and Engelmann spruce forests on the Markagunt Plateau, Utah. Forest Ecology and Management **244**: 16-23.

Submitted manuscripts:

DeRose, R.J., and R.S. Seymour. Do traditional commercial thinning treatments predictably reallocate leaf area? Submitted to Northern Journal of Applied Forestry.

Manuscripts in preparation:

DeRose, R.J. and J.N. Long. Resistance and resilience: a silviculturally relevant conceptualization. In preparation for Western Journal of Applied Forestry.

DeRose, R.J. and J.N. Long. Drought driven disturbance history characterizes a southern Rocky Mountain subalpine forest. In preparation for submission to Journal of Ecology.

DeRose, R.J. and A.J. Leffler. Potential fire behavior across a gradient of aspen composition in the Intermountain West. In preparation for submission to International Journal of Wildland Fire.

Vacchiano, G., **DeRose R.J.**, and M. Svoboda. A density management diagram for Norway spruce in central Europe. In preparation for submission to European Journal of Forest Research.

Other publications:

Allen, E.B. Rittenour, T.M., and **R.J. DeRose**. 2011. Application of tree-ring series within the Bear River Range, northern Utah to reconstruct drought variability. Geological Society of America Abstracts 43(4). *Abstract*.

Shaw, J.D., J.N. Long, M.T. Thompson, **R.J. DeRose.** 2010. Population-wide mortality in multiple forest types in western North America: onset, extent, and severity of impacts as indicators of climatic influence. The International Forestry Review 12(5):45. *Abstract*

DeBlander, L.T., Shaw, J.D., Witt, C., Menlove, J., Thompson, M.T., Morgan, T.A., **R.J. DeRose, and** M. C. Amacher. 2010. Utah's forest resources, 2000-2005. USDA, Forest Service, Rocky Mountain Research Station, Resource Bulletin, RMRS-RB-10.

DeRose, R.J. 2009. Disturbance ecology and vegetation dynamics at varying spatial- and temporal-scales in southern Rocky Mountain Engelmann spruce forests. Doctoral Dissertation.

DeRose, R.J., J.N. Long, and J.D. Shaw. 2009. Potential consequences of spruce beetle outbreaks on Engelmann spruce forests in Utah. Forest Health Monitoring Analysis and Reporting Program. *Final Report*

DeRose, R.J., J.N. Long, and J.D. Shaw. 2009. Relationships between forest structure, composition, site, and spruce beetle occurrence in the Intermountain West. In: McWilliams, Will; Moisen, Gretchen; Czaplewski, Ray, comps. 2008. Forest Inventory and Analysis (FIA) Symposium 2008; October 21-23, 2008; Park City, UT. Proc. RMRS-P-56CD (39). Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 1CD. *Report*

Shaw, J.D., G. Vacchiano, **R.J. DeRose**, A. Brough, A. Kusbach, and J.N. Long. 2006. Local Calibration of the Forest Vegetation Simulator (FVS) Using Custom Inventory Data. Society of American Foresters 2006 National Convention. *Poster and full-length proceeding*.

DeRose, R.J. 2004. Leaf area index – relative density relationships in even-aged *Abies balsamea – Picea rubens* stands in Maine. Masters Thesis.

DeRose, R.J. and R.S. Seymour. Leaf area index, relative density and growth efficiency relationships of even-aged balsam fir and red spruce stands. In: Cooperative Forestry Research Institute, 2004 Annual Report. Maine Agricultural and Forest Experiment Station Misc. Report 435. pp 38-39. *Report*

PRESENTATIONS

Invited:

DeRose, R.J. Spruce beetle outbreaks in the southern Rocky Mountains. How to incorporate climate change into forest management. Intermountain Chapter Society of American Foresters spring meeting, April 29-30, 2011.

DeRose, R.J., and J.N. Long. Effect of antecedent disturbances and drought on a landscape wide spruce beetle outbreak in the southern Rocky Mountains. Association of American Geographers Annual Meeting, April 12-16, 2011.

DeRose, R.J., and J.N. Long. Resistance and resilience: a silviculturally relevant conceptualization. Society of American Foresters National Convention, October 30, 2010.

DeRose, R.J. Disturbance dynamics on the Markagunt Plateau. Intermountain Chapter Society of American Foresters spring meeting, April 23, 2010.

DeRose, R.J. Disturbance ecology of the Markagunt Plateau. University of Utah, Department of Geography Colloquium Series, December 5, 2008.

Volunteered:

Allen, E.B., Rittenour, T.M. and **R.J. DeRose**. 2011. Applications of tree-ring series within the Bear River Range, northern Utah to reconstruct drought variability. The Geological Society of America, Joint Rocky Mountain/Cordilleran Section Meeting, Logan, UT, May 18-20. *Poster presentation*

Allen, E., Rittenour, T. and **R.J. DeRose**. 2011. Application of tree-ring data from the Bear River Range, northern Utah to reconstruct drought variability. Utah State University, Spring Run-Off Conference, March 29-30. *Poster presentation*

Baker, F., **R.J. DeRose,** S. Zeglen, and M. Cleary. 2010. Lodgepole pine dwarf mistletoe spread model. Western International Forest Disease Conference, October 4-8. *Poster presentation*

DeRose, R.J., J.D. Shaw, J.N. Long. 2010. Forest Inventory and Analysis tree-ring data: a wealth of information. Society of American Foresters 2010 National Convention, Albuquerque, NM, Oct. 26-30. *Poster presentation.*

DeRose, R.J., and J.N. Long. 2009. Silvicultural considerations for resistance and resilience of Engelmann spruce to spruce beetle outbreaks in the Intermountain West. Society of American Foresters 2009 National Convention. Orlando, FL. *Poster presentation*.

Ex, S. and **R.J. DeRose.** 2009. Succession and stand development of *Cercocarpus ledifolius* woodlands in the Bear River Mountains, UT. USU Research Symposium. *Poster presentation*.

Gardner, R., K. Mock, C. Rowe, and **R.J. DeRose.** 2008. Ecological tradeoffs in western aspen: differences in resistance and tolerance between and within genotypes. Center for Integrated BioSystems, USU. *Poster presentation*.

DeRose, R.J., J.N. Long, and J.D. Shaw. 2008. Multi-scale effects of spruce beetle outbreaks on Engelmann spruce forests in Utah. Society of American Foresters National Convention, Reno, NV, Nov. 5-8, 2008. *Oral presentation.*

DeRose, R.J., J.N. Long, and J.D. Shaw. 2008. Relationships between forest structure, composition, site and spruce beetle occurrence in the Intermountain West. FIA Biennial Conference, Park City, UT, Oct. 21-23, 2008. *Oral presentation*.

DeRose, R.J., and J.N. Long. 2008. Biological legacies and seedling bank dynamics of a spruce beetle-killed Engelmann spruce landscape. ESA Annual Conference, Milwaukee, WI, Aug. 3-8, 2008. *Oral presentation*.

DeRose, R.J., and J.N. Long. 2007. Wildfires and spruce beetle outbreaks: interacting disturbances in the central Rocky Mountains. IUFRO Natural Hazards and Natural Disturbances in Mountain Forests, Trento, Italy, Sept. 18-21, 2007. *Oral presentation*.

DeRose, R.J., J.D. Shaw, G. Vacchiano, and J.N. Long. 2007. Improving longleaf pine mortality predictions in the Southern Variant of the Forest Vegetation Simulator. Third Forest Vegetation Simulator Conference, Ft. Collins, CO. Feb. 13-15, 2007. *Oral presentation*.

DeRose, R. J. 2006. Effect of the spruce beetle (*Dendroctonus rufipennis*) on Engelmann spruce (*Picea engelmannii*) forests near Midway Face on the Markagunt Plateau, southern Utah. April 5th, Utah State University Graduate Student Exposition. *Poster presentation*.

DeRose, R.J., and R.S. Seymour. 2004. Leaf area index-relative density relationships in even-aged *Abies balsamea-Picea rubens* stands in Maine. Abstract In: Proc. Eastern CANUSA Forest Science Conference, October 15-16, 2004. University of New Brunswick, Fredericton, New Brunswick. 106p. *Oral presentation.*

DeRose, R.J., and R.S. Seymour. 2004. Leaf area index-relative density relationships in even-aged *Abies balsamea-Picea rubens* stands in Maine. Abstract In: Proc. Association of Graduate Student Research Exposition, April 9-18, 2004. University of Maine, Orono, Maine. *Poster presentation.*

DeRose, R.J., and R.S. Seymour. 2004. Leaf area index-relative density relationships in even-aged *Abies balsamea-Picea rubens* stands in Maine. New England Society of American Foresters, 84th Annual Winter Meeting, Burlington, VT, March 23-26, 2004. *Poster presentation.*

DeRose, R.J., and R.S. Seymour. 2004. Leaf area index-relative density relationships in even-aged *Abies balsamea-Picea rubens* stands in Maine. Abstract In: Proc. Northeast Biological Graduate Student Conference, February 27-29, 2004. University of Maine, Orono, Maine. *Poster presentation.*

DeRose, R.J., and R.S. Seymour. 2004. Relationships between structure, leaf area, and relative density in even-aged spruce-fir stands in Maine. Cooperative Forestry Research Unit, annual meeting, University of Maine, January 2004. *Oral presentation.*

UNIVERSITY SERVICE

- How do we interpret past insect disturbances from tree rings? Poster for Utah State University Science Unwrapped Presentation Series, spring, 2011.
- International grant proposal referee, Czech Science Foundation, 2009, 2010.
- Department of Wildland Resources representative to the Graduate Student Senate, Utah State University, 2007-2008.
- College of Natural Resources Senator for the Graduate Student Senate, Utah State University, 2005-2007.
- Forest Ecosystem Science Departmental Representative to the Association of Graduate Students, University of Maine, 2003-2004.
- Forestry Club President, Utah State University, 2001-2002.