

CURRICULUM VITAE for MATTHEW J. GERMINO

Department of Biological Sciences
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(Shortened version, Jan 2010)

OVERVIEW

Age: 39, Citizenship: USA, Birthplace: Springfield MA, Family: wife (Cordelia Germino), two children.

- Ecology of plant communities; emphasis on basin and range in Western N. America
- Approaches used from physiological, population, community, biophysical, and ecosystem ecology.
- Projects address basic problems in upland habitats, in the context of broader and applied problems in exotic species, land use, fire, climate change, and desertification.

EDUCATION

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|--------------------------------|--------------------------------------|
| PhD Botany, 2000 | University of Wyoming, Laramie |
| MS Botany, 1996 | University of Wyoming, Laramie |
| BS Environmental Science, 1994 | University of Massachusetts, Amherst |

EMPLOYMENT

| | | |
|----------------------------|--------------|---|
| <i>Associate Professor</i> | 2006-present | Department of Biological Sciences, Idaho State University |
| <i>Assistant Professor</i> | 2001-2006 | Department of Biological Sciences, Idaho State University |
| <i>Postdoctoral</i> | 2000-2001 | Thermal Biology Institute, Montana State University |
| <i>Research Associate</i> | 1998-2000 | Department of Biology, Wake Forest University, NC |
| <i>Co-Instructor</i> | 1997 | Department of Range Ecology, University of Wyoming |
| <i>GIS Specialist</i> | 1996-1998 | Geographic Information Systems, University of Wyoming |
| <i>Teaching Assistant</i> | 1994-1996 | Laboratory Instructor; University of Wyoming |
| <i>Research Assistant</i> | 1993 | Hubbard Brook Ecosystem Study, Inst. Ecosystem Studies |
| <i>Research Assistant</i> | 1992 | USFS/University of Massachusetts Ozone Project, NH |

PUBLICATIONS (*graduate student advisee)

33) Debinski D.D. Wickham H., Kindscher K, Caruthers JC, **Germino MJ**. (in press) Montane meadow change during drought varies with background hydrologic regime and plant functional group. *Ecology*. #09-0567

32) Bansal S*, **Germino MJ**. (in press) Variation in ecophysiological properties among conifers at an ecotonal boundary: comparison of establishing seedlings and established adults at timberline. *Journal of Vegetation Science* JVS-A-0025

31) Prevey J*, **Germino M**, Huntly N. (in press) Loss of foundation species increases population growth of exotic forbs in sagebrush steppe. *Ecological Applications* #09-0750

30) Prevey J*, **Germino MJ**, Huntly NJ, Inouye RS. (in press, available online first) Exotic plants increase and native plants decrease with loss of foundation species in sagebrush steppe. *Plant Ecology*.

29) Sankey J*, **Germino MJ**, Glenn NF. 2009. Relationships of post-fire aeolian transport to soil and atmospheric moisture, *Aeolian Research* 1: 75-85.

- 28) Norton J, Glenn NF, **Germino MJ**, Weber K, Seefeldt K. 2009. Relative suitability of indices derived from Landsat ETM+ and SPOT 5 for detecting fire severity in sagebrush steppe. *Int. J. Appl. Earth Observation and Geoinformation* 11: 360-367
- 27) Alongi-Johnson DA, Hill JP, **Germino MJ**. 2009. Opportunistic heterotrophy in gametophytes of the homosporous fern *Ceratopteris richardii* (Pteridaceae L.) and its ecophysiological and evolutionary implication. *Botany* 87: 1-8
- 26) Sankey J*, **Germino MJ**, Glenn NF. 2009. Aeolian sediment transport following wildfire in sagebrush steppe. *Journal of Arid Environments* 73: 912-919
- 25) Smith WK, **Germino MJ**, Johnson DM, Reinhardt K. 2009. The altitude of alpine treeline: a bellwether of climate change effects. *The Botanical Review* 75(2):163-190
- 24) Bansal S*, **Germino MJ**. 2009. Temporal variation of nonstructural carbohydrates in montane conifers: similarities and differences among developmental stages, species, and environmental conditions. *Tree Physiology* 29: 559-568
- 23) Bansal S*, **Germino MJ**. 2008. Carbon balance of conifer seedlings at timberline: relative changes in uptake, storage, and utilization. *Oecologia* 158: 217-227
- 22) Sankey TS, **Germino MJ**. 2008. Detection of juniper encroachment using remote sensing and GIS. *Journal of Rangeland Ecology. Rangeland Ecology and Management* 61: 359-464
- 21) Seefeldt S, **Germino MJ**, DiChristina KM*. 2007. Prescribed fires have minor and transient effects on herbaceous vegetation cover and composition. *Applied Vegetation Science* 10: 249-256
- 20) DiCristina K*, **Germino MJ**. 2006. Correlation of neighborhood relationships, carbon assimilation, and water status of sagebrush seedlings establishing after fire. *Western North American Naturalist* 66: 441-449
- 19) Maher E*, **Germino MJ**. 2006. Microsite differentiation among conifer species during seedling establishment at alpine-treeline. *Ecoscience* 13: 334-341
- 18) **Germino MJ**, Hasselquist NJ*, McGonigle TM, Smith WK, Sheridan P. 2006. Colonization of conifer seedling roots by fungal mycelium in an alpine-treeline ecotone: Relationships to microsite, developmental stage, and ecophysiology of seedlings. *Canadian Journal of Forest Research* 36: 901-909
- 17) Broderson C, **Germino MJ**, Smith WK. 2006. Photosynthesis during an episodic drought in *Abies lasiocarpa* and *Picea engelmannii* across an alpine treeline. *Arctic, Antarctic, and Alpine Research* 38: 34-41
- 16) Hill JP*, **Germino MJ**, Wraith JM, Olson B, Swan M. 2006. Advantages in water relations contribute to greater photosynthesis in *Centaurea maculosa* compared to established grasses. *International Journal of Plant Sciences* 167: 269-277
- 15) Hill JP*, **Germino MJ**. 2005. Coordinated variation in ecophysiological properties among life stages and tissue types in an invasive forb of shrub steppe. *Canadian Journal of Botany* 83: 1488-1495

- 14) Maher E*, **Germino MJ**, Hasselquist NJ*. 2005. Interactive effects of tree and herb cover on survivorship, physiology, and microclimate of conifer seedlings at the alpine-treeline ecotone. *Canadian Journal of Forest Research* 35: 567-574
- 13) Hasselquist NJ*, **Germino MJ**, McGonigle TC, Smith WK. 2005. Variability of *Cenococcum* infection and its ecophysiological significance for young conifers at alpine-treeline. *New Phytologist* 165: 867-873
- 12) Johnson DM, **Germino MJ**, Smith WK. 2004. Abiotic factors limiting photosynthesis in *Abies lasiocarpa* and *Picea engelmannii* seedlings below and above alpine timberline. *Tree Physiology* 24: 377-387
- 11) Smith WK, **Germino MJ**, Hancock TE, Johnson DM. 2003. A more unified approach for interpreting elevational limits of upper timberlines. *Tree Physiology* 23: 1101-1113
- 10) **Germino MJ**, Wraith JM. 2003. Plant water relations influence carbon gain along sharp gradients of soil temperature. *New Phytologist* 157: 241-250
- 9) **Germino MJ**, Resor, CAC, Smith WK. 2002. Conifer seedling distribution and survival in an alpine-treeline ecotone. *Plant Ecology* 162: 157-168
- 8) Bastian CT, McLeod D, **Germino MJ**, Reiners WA, Blasko BJ. 2002. Environmental amenities and agricultural land values: a hedonic model using geographic information systems data. *Ecological Economics* 40: 337-349
- 7) Bastian CT, McLeod D, **Germino MJ**, Reiners WA, Blasko BJ. 2002. Exploring the potential for using GIS to measure environmental and visual amenities when valuing agricultural lands. *Journal of the ASFMRA* 43: 134-140
- 6) **Germino MJ**, Smith WK. 2001. Relative importance of microhabitat, plant form, and photosynthetic physiology to carbon gain in two alpine herbs. *Functional Ecology* 15: 243-251
- 5) **Germino MJ**, Reiners WA, Blasko BJ, McLeod D, Bastian CT. 2001. Estimating visual properties of Rocky Mountain Landscapes using GIS. *Landscape and Urban Planning* 53: 71-83
- 4) **Germino MJ**, Smith WK. 2000. High resistance to low-temperature photoinhibition in two alpine, snowbank species. *Physiologia Plantarum* 110: 89-95
- 3) **Germino MJ**, Smith WK. 2000. Differences in microsite, plant form, and low-temperature photoinhibition in alpine plants. *Arctic, Antarctic, and Alpine Research* 32: 388-396
- 2) **Germino MJ**, Smith WK. 1999. Sky exposure, crown architecture, and low-temperature photoinhibition in conifer seedlings at alpine treeline. *Plant, Cell, & Environment* 22: 407-415
- 1) Smith SD, Naumburg E, Niinemets U, **Germino MJ**. 2004. Environmental Limitations: Dry and cold environments. In: *Photosynthetic Adaptation from the Chloroplast to the Landscape*. Eds: Smith WK, Vogelmann, TC, Critchley, C. Academic Press (peer reviewed)

(grey literature reports and proceedings papers, reviewed or not, are not listed here)

Papers currently in review on community ecology of sagebrush-steppe in *Ecology* and in *Applied Vegetation Science*, on post-fire plant community form and soil surface change in *Geomorphology*, and on alpine treeline ecology in *Environmental and Experimental Botany*.

GRANTS

Competitive grants funded since 2006 (about ½ of grant support shown)

Germino MJ, Chambers J, Brown C. Exotic *Bromus* grasses in agroecosystems of the western US: REEnet synthesis of current and future invasions, impacts, and management USDA AFRI, \$200,000/4 yr.

Germino MJ and others. 2008. Climate and water, Research Infrastructure Improvement Grant. \$275,000/3 yr to MJG. NSF EPSCoR

Maschner H, **Germino MJ**, Rosentreter R, McCurry M. 2007. MRI: Acquisition of Mass Spectrometers and Related Equipment to Create the ISU Interdisciplinary Lab for Elemental and Isotopic Analysis (ILEIA), \$587,410 (\$350K to IRMS used by MJG)

Glenn N, **Germino MJ**. 2007. Data fusion for remote surveillance of wind erosion in semiarid landscapes. DOD EPSCOR. \$360,000/3 yr (1/2 to MJG)

Germino MJ, Graumlich LJ, Littell J, Mantua N. 2007. Climatic and biotic co-limitation of conifer establishment at treelines: addressing uncertainty in bioclimatic model forecasts of forest change. DOE National Institute for Climate Change Research. \$335,000/3 yr (\$130K to MJG)

Germino MJ, Horton JL, Marshall JD, Huntly NJ, Inouye R. 2006. Land use effects on persistence of exotic forbs in sagebrush steppe: Are loss of foundation species and disruption of soil resource partitioning causal links? USDA NRI Biology of Weedy and Invasive Plants. \$325,000/3 yr (current) (\$245K to MJG)

Germino MJ. 2006-2008. Evapotranspiration of constructed sagebrush-steppe communities at INL. Stoller Corp/DOE, \$80,000/3 yr

TEACHING

Current rotation

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| Plant Ecology | BIOL 409g, | 3 cr, Spring alternating years, excl 2009, 2010 |
| Field Ecology | BIOL 489g, | 4 cr, Spring every year |
| Plant Form & Function | BIOL 408g, | 3 cr, Fall alternating years |
| Plant Physiology | BIOL 404gL, | 4 cr, Fall every year |
| Ecotopics | BIOL 418g, | 2 cr, Occasional |
| Topical Grad Seminars | BIOL 692, | 1 cr, Spring every year |

Recent rotations included Physiological Ecology (4 cr, BIOI 307), Environmental Physiology (3 cr, BIOL 607), GIS and remote sensing classes (variable credit). Ecotopic and graduate seminars offered on topic like Ecosystem Ecology, Fire Ecology, Ecohydrology, and Resource Ecology.

Advisees

Postdocs

Lachlan Ingram, 2008-2009, currently faculty at University of Sydney
Post-fire plant and ecosystem ecology

Keith Reinhardt, 2009-current
Ecology of sagebrush steppe and alpine treeline

Niles Hasselquist, 2009-current
Nutrient redistribution in aeolian soils following fire

Current graduate students

Amber Hoover, MS expected in 2010; BS, Pennsylvania State University
Relationships of plant communities, soil microtopography, landscape aerodynamic properties, and wind erosion in post-fire cold desert.
(Best Poster Award, Idaho State University Graduate Research Symposium, 2009)

Brandy Janzen,
MS rec'd with me in '09, now PhD exp'd 2011; BS, Colorado State University
Community ecology and water-use in sagebrush-steppe.

Max Barney, MS expected in 2011; BS, Idaho State University
Ecological aspects of wind erosion

Past graduate students

Joel Sankey, PhD received in 2009; BS, MS, Montana State University
Wind erosion of soil following wildfire in sagebrush steppe
Co-advisor for research, in Applied Engineering and Science Interdisciplinary Program

Judson Hill, MS received in 2009; BS, MS, Wake Forest University
Contribution of flexibility in photosynthetic ecophysiology to carbon gain advantages in exotic forbs of sagebrush steppe. (National Hispanic Scholar)

Sheel Bansal, PhD received in 2008; BA, MA, University of Pennsylvania
Role of carbon balance during establishment of conifer trees in the timberline ecotone
(Outstanding Graduate Student award for Idaho State University, 2009)

Janet Prevey, MS received in 2008; BS, Colorado College
Linking ecophysiological differences between exotic and native plants to population dynamics of exotic species in disturbed sagebrush steppe.
(Best oral presentation award, Utah State Graduate Research Symposium, April 2009)

Ryan Baum, MS in GIS received in 2005; BS, Black Hills State University
Disturbances increase variability in remotely sensed indices of vegetation in sagebrush steppe over the past ca. 20 years.

Katherine DiChristina, MS received in 2004; BS, University of Montana
*Effects of neighboring vegetation and soil moisture on establishment of mountain big sagebrush (*Artemisia tridentata* spp. *vaseyana*) seedlings after fire.*
(Best Student Poster Award, Society for Range Management annual meeting, 2004)

Eliza Maher, MS received in 2004; BS, Keene State University
Effects of surrounding vegetation on establishment of conifer seedlings in alpine treeline ecotones of the Rocky Mountains.

Niles Hasselquist, MS received in 2004; BS, University of California, Berkeley
Interactions of fungal symbionts and conifer seedlings near alpine-treeline
Co-advised.

INVITED PRESENTATIONS

Germino MJ. 2009. Physiological limitation and treeline ecology: insights from tree seedlings in the Rocky Mountains USA. Conference on global change in harsh environments, Centro Investigaciones Ecosistemas Patagonia. Coyhaique, Chile, December 10.

Germino MJ, Leger E. 2009. Exotic and native herbs in sagebrush steppe: Diagnoses, prognoses, and prescriptions for restoration. Restoring the West Conference, Logan UT, October 27-28.

Germino MJ. 2009. Plants at their climate margin: coupling ecological and ecophysiological perspectives on alpine treeline. University of Sheffield, June 4, 2009.

From the 2009 International Association for Landscape Ecology, Snowbird, UT, April 12-16

-Debinski D, **Germino MJ**, Demshar D. Effects of Experimental Snow Removal on Soil Moisture and Plant Communities in Montane Meadows.

-**Germino MJ** Landscape effects on responses of tree seedlings to climate manipulations at treeline

-Kueppers MJ, Harte J, Torn M, Mitton J, **Germino MJ.** Can Experiments Help us Predict Plant Species Range Shifts with Climate Change?

Germino MJ. 2009. Global warming and plant community movements. Idaho Native Plant Society, Idaho Museum of Natural History. February 2.

Germino MJ. 2008. Climate and whitebark pine establishment in the alpine treeline ecotone. Whitebark Pine Ecosystem Foundation Annual Meeting. Grand Targhee Resort, Alta WY. September 13.

Germino MJ, Glenn NF, Sankey J, Hoover A. 2008. Eolian transport following fire in cold desert: relationship of surficial heterogeneity to sediment transport. ARO review meeting, DOD Army Corps of Engineers Topographic Engineering Center, Alexandria VA. September 11.

Germino MJ, Prevey J, Horton J. 2008. Land use effects on persistence of exotic forbs in semiarid rangelands: Are loss of foundation species and disruption of soil water partitioning causal links? USDA NRI PI meeting, Milwaukee WI, August 6.

Germino MJ. 2008. The climate of the mountain is not the climate of the tree: a biophysical perspective of alpine treelines. ISU Department of Geosciences, February 6.

Germino MJ. 2008. Climate and ecophysiological controls of plant species change in western landscapes. Department of Ecology and Evolution, Iowa State University, Ames. January 31.

2007. Idaho Weed Summit Keynote, Idaho State Department of Agriculture, Boise, October 3.
2007. University of Idaho, Moscow, October 15.

2007. Weed Science Society of America Annual Meeting. San Antonio TX. February 6

2007. Idaho Academy of Sciences Annual Meeting, Idaho Falls ID. April 21

2006. Environmental Sciences Department, Washington State University, Pullman, October 19.

2006. Univ of Wyo/NPS Research Station, AMK Ranch, Grand Teton National Park, WY, June 22.

2006. Intermountain Native Plant Society annual meeting. Boise ID, March 28.

2006. Geology Department, Boise State University. March 6.

2005. USDA CSREES, Washington DC, October 17-18.

- 2005. (co-author). Glacier National Park MT, September 13
- 2005. University of Texas, Arlington, April 20.
- 2004. Symposium on remote sensing and rangeland change. Idaho State University. October 7.
- 2004. Society for Ecological Restoration annual meeting, Victoria, BC. Aug 24-26.
- 2003. Idaho National Engineering and Environmental Lab, Idaho Falls ID, November 15.
- 2002. Idaho National Engineering and Environmental Lab, Idaho Falls ID, February 20
- 2001. Ecology Department, Montana State University, Bozeman MT, March 8
- 2001. Department of Biology, Idaho State University, Pocatello ID, February 15
- 2000. Land Resources Department, Montana State University, Bozeman MT, May 8
- 2000. Station Alpine du Lautaret, Grenoble, France, August 31-September 2
- 1999. Ecological Society of America Annual Meeting, Spokane WA, August 8-12
- 1996. Department of Biology, Denver University, October 12

(Not listed here: >60 *contributed* presentations as presenter or co-author not shown at meetings such as Ecological Society of America, American Geophysical Union, Society for Range Management since 1994).

Forthcoming invited talks through August 2010: 1) University of Nevada, Reno; 2) University of California, Merced; 3) 16th Wildland Shrub symposium, Logan UT; 4) Five-needle pine meeting, Missoula MT; 5) Ecological Society of America, Pittsburg PA.

SERVICE

Manuscript and proposal reviews

National Science Foundation, USDA NRI (now AFRI) Competitive Grants Program, DOE National Institute for Climate Change Research, Netherlands Organization for Scientific Research

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| Agroforestry Systems | Forest Ecol and Management | Northwest Science |
| American Journal of Botany | Frontiers in Ecology | Oecologia |
| Arctic and Alpine Research | Global Ecology and | Oikos |
| Australian Journal of Botany | Biogeography | Plant Biology |
| Biol J of the Linnean Society | International J of Plant Sciences | Plant Ecology |
| Climate Change Biology | Invasive Plant Species Mgmt | Plant Species Biology |
| Ecological Monographs | Journal of Applied Ecology | Rangeland Ecol & Management |
| Ecological Research | Journal of Arid Environments | Restoration Ecology |
| Ecology | Journal of Ecology | Tree Physiology |
| European Journal of Forest | J of Tropical Forest Science | Trees-Structure and Function |
| Research | Journal of Vegetation Science | Western North Am. Naturalist |
| Evolution. | New Phytologist | |

Editorial appointments, panel service, symposium organization

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| 2005-2006 | Editorial review board for Tree Physiology |
| 2008 | USDA National Research Initiative, CSREES |
| 2007-2010 | On Coordinating Committee for Great Basin Research and Management Partnership |
| 2010 | Organizing session with proceedings on "Wind Erosion in warm and cold desert shrublands: causes, consequences, and management implications" for the 16 th Annual Wildland Shrub Symposium in Utah, May 18-20 th . |
| 2010 | Co-organizing session on ecology of reproduction and growth in five-needled pines for the High-Five Pine Meeting in Missoula MT, June 28-30 th . |