University of New Hampshire

Department of Natural Resources and the Environment

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**Education**



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| 2012 | Ph.D. Natural Resources and Environmental Science, University of New  Hampshire, Durham, NH   * Dissertation Title: *The Role of Red-backed Salamanders in Ecosystems* * Committee: Kim Babbitt, Mark Ducey, Adrienne Kovach, Tom Lee & John Maerz * Minor: Cognate in College Teaching |
| 2007 | M.A. Biological Sciences, University of Missouri, Columbia, MO   * Thesis Title: *Gray Treefrog Breeding Site Selection and Offspring Performance in Response to Forest Management* * Committee: Ray Semlitsch, Jim Carroll & Josh Millspaugh |
| 2003 | B.S. Environmental Conservation, University  of New Hampshire, Durham, NH,   * Minor: Chemical Engineering * *Magna Cum Laude* |

# Research & Professional Experience



***Research Interests***

* Faunal response to land-use (forestry, urbanization, disturbance) and climate change (range shifts, community structure) at varying spatial scales
* Habitat restoration, creation, and mitigation techniques for successful wildlife population maintenance, enhancement, and reintroduction
* Statistical advances for modeling species activity, abundance, and detection (mixed models, estimating equations, hierarchical mixture models using Bayesian inference, and integrated population models)
* Role of vertebrates in terrestrial ecosystem functions and services

***Current Appointment***

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| 2012 - Present | Postdoctoral Research Associate, University of New Hampshire, Durham, NH |

***Previous Experience***

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| 2007-2012 | Doctoral Research, University of New Hampshire, Durham, NH |
| 2004-2007 | Master’s Research, University of Missouri, Columbia, MO |
| 2004 | Research Technician, University of Missouri, Columbia, MO |
| 2002-2003 | Field & Laboratory Technician, University of New Hampshire, Durham, NH |

**Publications** (undergraduate mentored)



Anderson, T. L., **D. J. Hocking**, C. A. Conner, J. E. Earl, E. B. Harper, M. S. Osbourn, W. E. Peterman, T. A. G. Rittenhouse, and R. D. Semlitsch. *In review.* The influence of priority effects on metamorph traits and recruitment of two pond-breeding salamanders. *Oecologia.*

**Hocking, D. J.** and K. J. Babbitt. *In review*. The role of red-backed salamanders on ecosystem functions. *PLOS One*.

**Hocking, D. J.** 2013. Comparing the influence of ecology journals using citation metrics: making sense of a multitude of metrics. *Ideas in Ecology & Evolution*. 6(1), 55–65. doi:10.4033/iee.v6i1.4949

**Hocking, D. J.,** S. A. Callaghan, K. J. Babbitt, and M. Yamasaki. 2013. Comparison of silvicultural and natural disturbance effects on terrestrial salamanders in northern hardwood forests. *Biological Conservation*. 167: 194-202. DOI: 10.1016/j.biocon.2013.08.006

**Hocking, D. J.**, G. M. Connette, C. A. Conner, B. R. Scheffers, S. E. Pittman, W. E. Peterman, R. D. Semlitsch. 2013. Effects of experimental forest management on a terrestrial, woodland salamander in Missouri. *Forest Ecology and Management.* 287: 32-39

Osbourn, M. S., **D. J. Hocking**, C. A. Conner, W. E. Peterman, and R. D. Semlitsch. 2011. Use of fluorescent visible implant Alphanumeric tags to individually mark juvenile ambystomatid salamanders. *Herpetological Review* 42(1): 43-46.

**Hocking, D. J.** 2010. *Hyla squirella* (squirrel treefrog) reproduction. *Herpetological Review* 41(1):64.

Semlitsch, R. D., S. M Blomquist, A. J. K. Calhoun, J.W. Gibbons, J. P. Gibbs, G. J. Graeter, E. B. Harper, **D. J. Hocking**, M. L. Hunter, D. A. Patrick, T. A. G. Rittenhouse, B. B. Rothermel, and B. D. Todd. 2009. Effects of timber management on amphibian populations: understanding mechanisms from forest experiments. *Bioscience* 59(10):853-862. (Cover Photograph)

Scheffers, B., E. D. McDonald, **D. J. Hocking**, C. A. Conner, and R. D. Semlitsch. 2009. A comparison of two artificial cover objects for sampling amphibians and reptiles. *Herpetological Review* 40(4): 419-421.

Babbitt K. J., M. J. Baber, D. L. Childers, and **D. J. Hocking**. 2009. The influence of agricultural upland habitat type on larval anuran assemblages in seasonally-inundated wetlands. *Wetlands* 29(1): 294-301.

**Hocking, D. J.** and R. D. Semlitsch. 2008. Effects of clearcut logging on gray treefrog (*Hyla versicolor*) tadpole performance. *Journal of Herpetology* 42: 689-698.

**Hocking, D. J.**,T. A. G. Rittenhouse, B. B. Rothermel, J. R. Johnson, C. A. Conner, E. B. Harper, and R. D. Semlitsch. 2008. Breeding and recruitment phenology of amphibians in Missouri oak-hickory forests. *American Midland Naturalist* 160: 41-60.

Semlitsch, R. D., C. A. Conner, **D. J. Hocking**, T. A. G. Rittenhouse, and E. B. Harper. 2008. Effects of timber harvesting on pond-breeding amphibian persistence: testing the evacuation hypothesis. *Ecological Applications* 18(2): 283-289

**Hocking, D. J.** and R. D. Semlitsch. 2007. Effects of timber harvest on breeding site selection by gray treefrogs (*Hyla versicolor*). *Biological Conservation* 138: 506-513.

**Selected Presentations**



**Hocking, D. J.,** K. J. Babbitt, M. Yamasaki. Improved Estimation of Forestry Edge Effects Accounting for Detection Probability. 2013. ESA Annual Meeting. Minneapolis, MN.

Sargent, P. J., **D. J. Hocking**, K. J. Babbitt. Relating Hematological Patterns in Red-backed Salamanders to Stress in Different Habitats and Densities. 2013. Undergraduate Research Conference, UNH, Durham, NH.

**Hocking, D. J.** and K. J. Babbitt. Comparisons of models for analyzing seasonal activity using longitudinal count data. 2012 World Congress of Herpetology Meeting. Vancouver, BC, Canada.

**Hocking, D. J.** and K. J. Babbitt. Comparisons of models for analyzing seasonal activity using longitudinal count data. Ecological Society of America Annual Meeting, Portland, OR.

Marquis, A. J., **D. J. Hocking**, K. J. Babbitt. Landscape and local-scale effects on stream salamanders in southeastern New Hampshire. 2012. Undergraduate Research Conference, UNH, Durham, NH.

Willey, E., **D. J. Hocking**, K. J. Babbitt. The effects of forest fragmentation on the abundance and body condition of the red backed salamander (*Plethodon cinereus*). 2010 Undergraduate Research Conference, UNH, Durham, NH.

**Hocking, D. J.** A great leap backwards: amphibians in crisis. 2009 Department of Natural Resources and the Environment Seminar Series, UNH, Durham, NH.

**Hocking, D. J.,** S. A. Callaghan, K. J. Babbitt, M. Yamasaki. The Effects of Natural and Anthropogenic Disturbance on Red-backed Salamanders in Northern Hardwood Forests. 2008 Northeast Partners for Amphibian and Reptile Meeting, Powdermill, PA.

**Hocking, D. J.,** C. A., Conner, E. D. McDonald, B. Scheffers, and R. D. Semlitsch. Initial Effects of Experimental Forest Management on a Terrestrial, Woodland Salamander in Missouri. 2008 Joint Meetings of Ichthyologists and Herpetologists, Montreal, Canada.

**Hocking, D. J.** and R. D. Semlitsch. Breeding Site Selection and Tadpole Performance of the Gray Treefrog (*Hyla versicolor*) in Response to a Forest Gradient. 2007 Ecological Society of America Annual Meeting, San Jose, CA.

# Grants, Honors, Awards



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| 2011 | National Geographic Society. Waitt Grant. *Climate change effects on elevational distributions of salamanders in Great Smoky Mountains National Park*. J. A. Crawford (PI), D. J. Hocking (Co-PI), J. Milanovich (Co-PI), and W. E. Peterman (Co-PI). | $14,932 |
| 2011 | University of New Hampshire. *Dissertation Year Fellowship. The contributions of woodland salamanders to ecosystem functions.* | $16,500 |
| 2011 | NH Agricultural Experiment Station. McIntire-Stennis. *The role of red-backed salamanders (Plethodon cinereus) in forest-floor ecosystem functions.* K. J. Babbitt (PI), D. J. Hocking (Co-PI). | $42,000 |
| 2010 | University of New Hampshire. Department of Natural Resources & the Environment. Farrington Fund student travel support. | $1000 |
| 2010 | College of Life Sciences & Agriculture, University of New Hampshire. Graduate Scholarship. | $500 |
| 2010 | University of New Hampshire. NRESS Student Research Support. | $960 |
| 2009 | University of New Hampshire. Summer T.A. Fellowship. | $3,125 |
| 2008 | University of New Hampshire. College of Life Sciences & Agriculture Summer Fellowship. | $5,000 |
| 2008 | University of New Hampshire. Summer T.A. Fellowship. | $3,000 |
| 2008 | University of New Hampshire. Natural Resources Travel Funds. | $500 |
| 2006 | University of Missouri. TWA Scholarship. | $7,000 |
| 2005 | University of Missouri. Biology Graduate Student Association Travel Funds. | $260 |
| 2004 | Life Science Fellowship, University of Missouri (2004-2006). | $63,000 |

**Teaching Experience**



***Instructor***

2009 *Vertebrate Biology* (NR 655), University of New Hampshire

2007 *Introduction to Conservation Biology* (BIO 105), Moberly Area Community College, Columbia, MO

***Teaching Assistant***

2007, 2009 *Wildlife Techniques* (NR 646), University of New Hampshire

2008 *Conservation Biology* (NR 650), University of New Hampshire

***Tutor***

2008-2010 *Sociology Statistics* (Soc 502), University of New Hampshire

2010 *Introductory Biology* (Bio 412), University of New Hampshire

2010 *Freshwater Resources* (NR 504), University of New Hampshire

2009 *Contemporary Conservation Issues* (NR 435), University of New Hampshire

***Environmental Education***

2003-2004 *Senior Environmental Intern***,** Audubon MD-DC, Bozman, MD

2001-2002 *Naturalist/Interpreter*, Seacoast Science Center, Rye, NH

***Student******Mentoring***

I have mentored 10 undergraduate students on independent research projects

**Outreach**



Guest Speaker. Great Smoky Mountain Institute at Tremont, GSMNP, NC. July 2012. Talked to science camp group about salamander biodiversity in Great Smoky Mountains National Park.

Guest Speaker. Traip Academy, Kittery, ME. May 2011. Discussed college programs in math and science and career paths in ecology and conservation with high school seniors.

Guest Speaker. Dover High School, Dover, NH. February 2008. Discussed the writing process with sophomore English classes.

Guest Speaker. Hickman Highschool Biology Club. October 2006. Amphibians, reptiles, and college planning for aspiring biologists.

BioBlitz Organizer and Team Leader. Columbia, MO. 2005 & 2006, <http://BioBlitz.missouri.edu>.

**Training & Professional Development**



Webinar Series: The Evolution of Regression from Classical Linear Regression to Modern Ensembles. Organized by Salford Systems. Spring 2013.

National Science Foundation Grant Writing Workshop. NH EPSCoR State Conference. Waterville Valley, NH. November 2012.

Webinar: An Introduction to Hierarchical Modeling and Inference in Ecology using unmarked. Organizer by USGS Patuxent Wildlife Research Center. January 2012.

Stable Isotope Short Course. Biology 7475: Stable Isotopes in Ecology. University of Utah, Salt Lake City. Summer 2008.

**Academic Service**



Invited and Hosted Seminar Speaker, Richard Chandler. University of New Hampshire. 2012. Environmental Sciences Seminar Series.

Organizer. NRESS Seminar. University of New Hampshire. 2008. Helped organize the spring seminar series for the Natural Resource and Earth System Science program.

Vice President. Biology Graduate Student Association. University of Missouri. 2005-2006.

Webmaster. Land-use Effects on Amphibian Populations (LEAP) Collaboration ([www.leap.missouri.edu](http://www.leap.missouri.edu)). 2004-2005.

Webmaster. Missouri Chapter of the Society for Conservation Biology. 2005-2006.

Co-Chair. Outreach Committee for the Missouri Chapter of the Society for Conservation Biology. 2005-2006.

Journal Referee: American Midland Naturalist, Conservation Biology, Copeia, Ecosphere, Forest Ecology and Management, Herpetological Conservation and Biology, Herpetological Review, Journal of Herpetology, Journal of Wildlife Management, Northeastern Naturalist, Oikos, Urban Ecosystems, Wetlands

**Professional Affiliations**



American Society of Ichthyologists and Herpetologists

Chelonian Conservation Fund

Ecological Society of America

Partners for Amphibian and Reptile Conservation

Society for Conservation Biology

Society for Ecological Restoration

Society for the Study of Amphibians and Reptiles

**Additional Skills**



**Proficient Computer Skills:** R statistical programming language, RStudio, JAGS/BUGS, Microsoft Office Suite including Access, Filemaker Pro

**Basic Computer Skills:** SAS, C/C++, Python, ArcGIS, Git/GitHub, Bash (Unix Shell), SQL, MySQL, SQLite, PostgreSQL, HTML, XML, KML

**References**



Dr. Kimberly J. Babbitt (Ph.D. Advisor)

Professor of Wildlife Ecology, Department of Natural Resources and the Environment

University of New Hampshire

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Durham, NH

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Dr. John A. Crawford (Collaborator)

Assistant Professor of Biology, Department of Biology

Lindenwood University

Young Hall 201B

Saint Charles, MO

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Dr. Raymond Semlitsch (Master’s Advisor)

Curator’s Professor, Division of Biological Sciences

University of Missouri

212 Tucker Hall

Columbia, MO

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