

BETSIE B. ROTHERMEL
Austin Peay State University
The Center of Excellence for Field Biology
P.O. Box 4718
Clarksville, TN 37044
phone: (931) 221-7774
email: rothermelb@apsu.edu

EDUCATION

University of Missouri-Columbia Ph.D., Biological Sciences, 2003
Dissertation: Movement behavior, migratory success, and demography
of juvenile amphibians in a fragmented landscape
Advisor: Dr. R. D. Semlitsch

Pennsylvania State University M.S., Ecology (Conservation Biology option), 1994
Thesis: Microhabitat and landscape characteristics associated with
Allegheny woodrat (*Neotoma magister*) sites in Pennsylvania
Advisor: Dr. R. H. Yahner

Cornell University B.S., Natural Resources, 1990

Additional training:

January 2006 University of New Mexico LTER – SEEK (Science Environment for
Ecological Knowledge) Workshop

June 1997 Highlands Biological Station, NC – Larval Amphibian Biology

June-August 1994 Organization for Tropical Studies (OTS), Costa Rica – Tropical
Biology

RESEARCH AND PROFESSIONAL EXPERIENCE

2006-present Assistant Professor in Department of Biology and Principal Investigator, The Center of
Excellence for Field Biology, Austin Peay State University, Clarksville, TN

2003-06 Assistant Research Scientist (February – May 2006); Postdoctoral Research Associate
(September 2003 – January 2006), University of Georgia, Savannah River Ecology Lab,
Aiken, SC; Faculty Mentor: Dr. J. W. Gibbons.

2003 Graduate Research Assistant, University of Missouri, Division of Biological Sciences,
Columbia, MO – Coordinated site selection, creation of experimental arrays, and other
logistics for the LEAP study in Missouri, South Carolina, and Maine. Facilitated
collaboration among investigators and personnel in federal and state agencies.

1998-99 Resource Management Assistant, Georgia Department of Natural Resources, State Parks &
Historic Sites Division, Atlanta, GA – Coordinated a pilot project to develop
recommendations for conserving biodiversity in four state parks. Developed maps and
educational materials for park personnel using a geographic information system (GIS).

1996-98 Director of Education (June 1997 – June 1998) & Volunteer Coordinator (January 1996 –
June 1997), Georgia Wildlife Federation, Conyers, GA – Coordinated the Backyard &
Schoolyard Wildlife Habitat programs. Conducted public outreach and handled requests for
information. Managed a 500-person volunteer program, special events and field projects,

- including stream monitoring, bird counts, and gopher tortoise surveys. Produced newsletters for environmental educators and GWF members.
- 1995 Stewardship Assistant, The Nature Conservancy of Georgia, Atlanta, GA – Wrote fire management plans and served on fire crew. Monitored rare plant populations. Assisted with preserve management and supervised volunteers.
- 1992-94 Graduate Research Assistant, The Pennsylvania State University, Intercollege Graduate Degree Program in Ecology, University Park, PA – Researched microhabitat and landscape characteristics associated with historical and extant sites used by the threatened Allegheny woodrat in Pennsylvania.
- 1992 Staff Assistant, Zoo Atlanta, Atlanta, GA – Trained and supervised participants in Junior Zoo Crew, a youth volunteer program.
- 1990-91 Assistant Scientist, Versar, Inc. Columbia, MD – Conducted monitoring of estuarine systems for the US EPA's Environmental Monitoring and Assessment Program (EMAP).
- 1989 Research Intern, Cornell Biological Field Station, Bridgeport, NY – Conducted prey selection experiments with larval yellow perch and zooplankton. Supervisor: Dr. E. L. Mills

PUBLICATIONS (undergraduates underlined)

Todd, B. D., **B. B. Rothermel**, R. N. Reed, T. M. Luhring, K. Schlatter, L. Trenkamp, and J. W. Gibbons. Habitat alteration increases invasive fire ant abundance to the detriment of amphibians and reptiles. *Biological Invasions* (In press, DOI 10.1007/s10530-007-9150-9).

Graeter, G. J., **B. B. Rothermel**, and J. W. Gibbons. 2008. Habitat selection and movement patterns of pond-breeding amphibians in experimentally fragmented pine forests in South Carolina. *Journal of Wildlife Management* (In press).

Graeter, G. J., and **B. B. Rothermel**. 2007. The effectiveness of fluorescent powdered pigments as a tracking technique for amphibians. *Herpetological Review* 38(2):162-166.

Rothermel, B. B., J. B. Jensen, C. D. Camp, and T. D. Schwaner. 2007. *Desmognathus folkertsi* (Dwarf Black-bellied Salamander), Geographic Distribution. *Herpetological Review* 38(2):213.

Rothermel, B. B., and R. D. Semlitsch. 2006. Consequences of forest fragmentation for juvenile survival in spotted (*Ambystoma maculatum*) and marbled (*A. opacum*) salamanders. *Canadian Journal of Zoology* 84(6):797-807.

Todd, B. D., and **B. B. Rothermel**. 2006. Assessing quality of clearcut habitats for amphibians: effects on abundances versus vital rates in the southern toad (*Bufo terrestris*). *Biological Conservation* 133(2):178-185.

Gibbons, J. W. et al. (25th of 25 authors). 2006. Remarkable amphibian biomass and abundance in an isolated wetland: implications for wetland conservation. *Conservation Biology* 20(5):1457-1465.

Rothermel, B. B., and T. M. Luhring. 2005. Burrow availability and desiccation risk of mole salamanders (*Ambystoma talpoideum*) in harvested versus unharvested forest stands. *Journal of Herpetology* 39(4):619-626.

Rothermel, B. B. 2004. Migratory success of juveniles: a potential constraint on connectivity for pond-breeding amphibians. *Ecological Applications* 14(5):1535-1546.

Rittenhouse, T. A. G., M. C. Doyle, C. R. Mank, **B. B. Rothermel**, and R. D. Semlitsch. 2004. Substrate cues influence habitat selection by spotted salamanders. *Journal of Wildlife Management* 68(4):1151-1158.

Boone, M. D., R. D. Semlitsch, J. F. Fairchild, and **B. B. Rothermel**. 2004. Effects of an insecticide on amphibians in large-scale experimental ponds. *Ecological Applications* 14(3):685-691.

Rothermel, B. B., and R. D. Semlitsch. 2002. An experimental investigation of landscape resistance of forest versus old-field habitats to emigrating juvenile amphibians. *Conservation Biology* 16(5):1324-1332.

Boone, M. D., C. M. Bridges, and **B. B. Rothermel**. 2001. Growth and development of larval green frogs (*Rana clamitans*) exposed to multiple doses of an insecticide. *Oecologia* 129:518-524.

Balcom, B. J., and R. H. Yahner. 1996. Microhabitat and landscape characteristics associated with the threatened Allegheny woodrat. *Conservation Biology* 10(2):515-525.

Books and book sections:

Rothermel, B. B. In press, 2008. *Hyla cinerea* in Jensen, J., C. Camp, J. W. Gibbons, and M. Elliott (eds.). *Amphibians and Reptiles of Georgia*. University of Georgia Press, Athens, GA.

Rothermel, B. B., and J. W. Gibbons. In press, 2008. *Virginia valeriae* in Jensen, J., C. Camp, J. W. Gibbons, and M. Elliott (eds.). *Amphibians and Reptiles of Georgia*. University of Georgia Press, Athens, GA.

Semlitsch, R. D., and **B. B. Rothermel**. 2003. A foundation for conservation and management of amphibians. Pages 242-259 in Semlitsch, R. D. (ed.). *Amphibian Conservation*. Smithsonian Institution Press, Washington, D. C.

Bishop, C. A., D. C. Cunnington, G. M. Fellers, J. P. Gibbs, B. D. Pauli, and **B. B. Rothermel**. 2003. Physical habitat and its alteration: a common ground for exposure of amphibians to environmental stressors. Pages 209-241 in Linder, G., S. K. Krest, and D. W. Sparling (eds.). *Amphibian Decline: An Integrated Analysis of Multiple Stressor Effects*. SETAC Press, Pensacola, FL.

McCollum, J., **B. B. Rothermel**, and C. Rabolli. 1996. *Georgia Wildlife Viewing Guide*. Georgia Wildlife Press, Conyers, GA.

In review:

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

Rothermel, B. B., S. C. Walls, J. C. Mitchell, C. K. Dodd, L. Irwin, D. E. Green, V. M. Vazquez, J. W. Petranka, and D. J. Stevenson. Widespread occurrence of the fungal pathogen, *Batrachochytrium dendrobatidis*, in amphibian populations in the southeastern United States. *Diseases of Aquatic Organisms*.

In preparation:

Vazquez, V. M., and **B. B. Rothermel**. Experimental infection of North American plethodontid salamanders with the fungus *Batrachochytrium dendrobatidis*. To be submitted to *Diseases of Aquatic Organisms*.

Rothermel, B. B., and D. A. Sattman. Postmetamorphic growth rates and diets of ambystomatid salamanders in Missouri. To be submitted to *American Midland Naturalist*.

GRANTS

2007-08 **Environmental Protection Agency** Regional Environmental Priorities (REP): Enhancement of watershed protection measures in the karst region of Pleasant Grove Creek, Kentucky. PI's: A. N. Barrass, B. B. Rothermel, M. Wilson, D. M. Rogers. \$75,000.

2003-08 **National Science Foundation** Collaborative Research: Land-use practices and persistence of amphibian populations. PI's: R. D. Semlitsch (lead), M. L. Hunter, J. P. Gibbs, J. W. Gibbons, B. B. Rothermel (co-PI for UGA portion - \$283,452). Total award \$1,200,000.

- 2007 **National Park Service** Appalachian Highlands Research Grant: Prevalence and potential threat of an emerging disease to amphibians in the Appalachian Highlands. PI's: B. B. Rothermel, M. Chatfield. \$2,000.
- 2006 **Declining Amphibian Populations Task Force** Seed Grant: Assessing the susceptibility of North American plethodontid salamanders to chytrid fungal infection. PI's: B. B. Rothermel, V. M. Vazquez. \$2,000.
- 2006-07 **National Park Service:** Incidence of chytrid fungal parasitism in Southeast Coast Network parks. PI's: J. W. Gibbons (lead), B. B. Rothermel. \$31,243.
- 2004-06 **National Park Service:** Incidence of chytrid fungal parasitism in southeastern national parks. PI's: J. W. Gibbons (lead), B. B. Rothermel. \$15,000.

Pending (in review):

National Science Foundation Collaborative Research: Persistence of amphibians in heterogeneous landscapes. PI's: R. D. Semlitsch (lead), B. B. Rothermel, M. L. Hunter, J. P. Gibbs, A. K. Calhoun, J. W. Gibbons. \$815,165

Georgia Department of Natural Resources, Nongame Conservation Section: Establishment of an amphibian monitoring program in the Southern Blue Ridge of Georgia. PI: B. B. Rothermel. \$101,529.

SCHOLARSHIPS AND AWARDS

- 1999-2003 University of Missouri, G. Ellsworth Huggins Scholarship
- 2003 Society for Conservation Biology Student Award Finalist, 17th Annual Meeting
- 2003 University of Missouri Graduate and Professional Council Travel Scholarship
- 2000 University of Missouri, Conservation Biology Program Summer Fellowship - \$3,000
- 2000 American Society of Ichthyologists & Herpetologists, Gage Fund Award - \$500

TEACHING EXPERIENCE

Courses Taught:

- 2006-present *Diversity of Life*, Austin Peay State University – Lecture and lab sections of a biology course for non-science majors (3 semesters)
- 1999 *Introductory Biology*, University of Missouri (teaching assistant for 4 lab sections per week; 1 semester)
- 1994 *Mammalogy*, Pennsylvania State University (lab teaching assistant, 1 semester)

Graduate and Undergraduate Mentoring:

- 2007-present Graduate research advisor – Lacey Robertson, Austin Peay State University (Master's thesis: Use of agricultural wetlands by hyloid frogs in western Kentucky and adjacent Tennessee)
- 2004-05 Graduate research committee – Gabrielle Graeter, University of Georgia (Master's thesis: Habitat selection and movement patterns of amphibians in altered forest habitats)
- 2005 Undergraduate research mentor – Rachel Mahan, University of Missouri (Project: Effects of forest management practices on treefrog oviposition site choice)
- 2005 Undergraduate research mentor – Lester Trenkamp, Southern Utah University (Project: Microhabitat selection by amphibians and reptiles in relation to forest management)

- 2005 Undergraduate research mentor – Karen Schlatter, McGill University (REU Project: Factors influencing post-metamorphic survival of ambystomatid salamanders in managed forests)
- 2004 Undergraduate research mentor – Thomas Luhring, University of Georgia (REU Project: Desiccation rates of mole salamanders in harvested vs. unharvested forest stands)
- 2004 Undergraduate research mentor – Aaliyah Green, Rutgers University (REU Project: Anti-predator behavior in juvenile toads exposed to visual and chemical cues from snakes)

Guest lecturer:

- 2007 *Amphibian Ecology and Conservation*, University of Tennessee-Knoxville
- 2004 *Amphibian and Reptile Conservation*, Davidson College

PROFESSIONAL SERVICE AND AFFILIATIONS

- 2006-present Adjunct Faculty, Institute of Ecology, University of Georgia
- 2007-present Co-Chair, SSAR Conservation Committee
- 2004-present Wharton Conservation Center Advisory Panel, Georgia Wildlife Federation
- 2005 Judging Committee, SREL Graduate Student Symposium
- 2002-03 President, Missouri Chapter of the Society for Conservation Biology
- Reviewer for: (last 5 years) *Alytes*, *Applied Herpetology*, *Biological Conservation*, *Conservation Biology*, *Copeia*, *Ecological Applications*, *Ecology*, *Herpetologica*, *Journal of Herpetology*, *Journal of Wildlife Management*, *Southeastern Naturalist*, *Wetlands*, *Wetlands Ecology and Management*
- Member of: Ecological Society of America, The Wildlife Society, Society for Conservation Biology, American Society of Ichthyologists & Herpetologists, Society for the Study of Amphibians and Reptiles, Association of Southeastern Biologists

INVITED PRESENTATIONS

- September 2007 The Wildlife Society, 14th Annual Conference, Conservation of Amphibians on Managed Landscapes Symposium – Testing competing hypotheses regarding the effects of forest removal on postmetamorphic salamanders
- February 2006 Austin Peay State University, Department of Biology – Frog out of water: how does forest fragmentation affect amphibians?
- October 2005 University of Georgia, Institute of Ecology – Dispersal vs. death and other conundrums of amphibian population declines
- November 2004 University of Georgia, School of Forest Resources – Amphibian responses to forest fragmentation: integrative and experimental approaches
- April 2003 University of Georgia, Savannah River Ecology Lab – Beyond the pond: factors influencing dispersal of juvenile amphibians in fragmented landscapes
- September 2000 Canadian Amphibian and Reptile Conservation Network, Annual Meeting – *Keynote talk*: Beyond the pond: terrestrial and landscape ecology of aquatic-breeding amphibians

CONFERENCE PRESENTATIONS (first-authored)

- July 2007 Joint Meeting of Ichthyologists and Herpetologists, St. Louis, MO – *Paper*: Migratory patterns and relative abundance of juvenile toads and salamanders in experimentally harvested pine forests
- September 2006 Tennessee Herpetology Conference, Martin, TN – *Paper*: Is there a golden toad in Tennessee’s future?
- August 2005 Ecological Society of America, Montreal, QC – *Evening session presentation*: Cryptic journeys: understanding the significance and challenges of migration in amphibians
- July 2005 Joint Meeting of Ichthyologists and Herpetologists, Tampa, FL – *Paper*: Influence of forest fragmentation on growth and survival of juvenile salamanders (*Ambystoma* spp.)
- April 2005 Association of Southeastern Biologists, Florence, AL – *Paper*: Preliminary results of an experimental study of salamander (*Ambystoma* spp.) responses to intensive forest management
- August 2004 Ecological Society of America, Portland, OR – *Poster*: Demographic responses of juvenile salamanders (*Ambystoma* spp.) to forest fragmentation: insights from an enclosure study
- July 2003 Society for Conservation Biology, Duluth, MN – *Paper*: Assessing landscape resistance and complementation for amphibians based on migratory behavior of juveniles
- April 2003 Dispersal in Fragmented Landscapes Symposium, Louvain-la-Neuve, Belgium – *Poster*: Migratory behavior and success of juvenile amphibians in a fragmented landscape
- July 2002 Joint Meeting of Ichthyologists and Herpetologists, Kansas City, MO – *Poster*: Movement behavior of juvenile *Ambystoma* in a fragmented landscape: Is emigration random or target-oriented?
- July 2001 Society for the Study of Amphibians and Reptiles, Indianapolis, IN – *Paper*: Landscape resistance of forest versus fields to emigrating juvenile amphibians
- September 1999 Missouri Herpetological Association, Bowling Green, MO – *Paper*: Preliminary results from an experimental investigation of genetic structure and optimal outcrossing in gray treefrogs
- April 1993 Pennsylvania Chapter of The Wildlife Society, Erie, PA – *Paper*: Landscape characteristics associated with Allegheny woodrat (*N. floridana magister*) colonies in Pennsylvania