

Curriculum Vitae

Todd Douglas Levine
Post-doctoral Researcher

Hancock Biological Station,
Department of Biology & Watershed Studies Institute
Murray State University

tlevine@murraystate.edu
Office (270) 474-2272
Cell (314) 578-7450

Education:

Doctor of Philosophy, Ecology Graduate Program, Department of Zoology, Miami University, 2009
Dissertation title: Consequence of life history variation in freshwater mussels:
Demography and host relationships

Bachelor's Degrees in Biology and Political Science 2003, University of Missouri – Saint Louis,
graduated Magna Cum Laude with a minor in Chemistry, Honors College and Conservation
Certificates

Wilderness and Civilization Program, University of Montana, 2000-2001

NSF: Research Experience for Undergraduates (REU) participant at University of Michigan Biological
Station, 2000

Appointments:

Post-doctoral Research Associate, Hancock Biological Station, Murray State University, Murray, KY
(January 2009-)

Instructor, Project Dragonfly: Plants and People (Graduate Course), Miami University/Cincinnati Zoo
and Botanical Gardens (Fall semesters 2007 & 2008), Baja: Field Methods in Ecology (Graduate
Course, onsite summer 2010, online fall 2010, scheduled to teach again summer 2011)

Research Assistant, funded by New Mexico Department of Game and Fish, Miami University, Oxford,
OH (Fall 2006-2008)

Teaching Assistant: Biology of Dinosaurs, Miami University, Oxford, OH (Spring 2006, Dennis
Claussen, instructor)

Teaching Assistant: Limnology, Miami University, Oxford, OH (Fall 2005, Mike Vanni, instructor)

Graduate Assistant: NSF-funded: Leadership Alliance in the Biological Sciences, Miami University,
Oxford, OH (LABS, Fall 2003-Spring 2005, Rob Blair, Jan Trybula and Jim Hickey, co-PIs)

Field Assistant, Missouri Ozark Forest Ecosystem Project, University of Missouri, St. Louis (Marquis
Lab, Summer 2003)

Teaching and support (Little Creek Nature Area) and Substitute Teacher, Ferguson-Florissant School
District (2002-2003, Judy Huck, supervisor)

Intern, Saint Louis Children's Aquarium, 2001

Intern, Great Bear Foundation 2000-2002 (Chuck Jonkel, director and supervisor)

Field Assistant, Missouri Ozark Forest Ecosystem Project (Sork Lab, Spring 2000)

Administrative Assistant, NSF-funded: Students and Teachers as Research Scientists (STARS) program, University of Missouri – Saint Louis (1999)

Greenhouse Assistant, University of Missouri – Saint Louis (1999)

Publications in preparation:

Hansen, H†, GW Gerald, and **TD Levine**. Assessing the effect of shell ornamentation on burrowing performance and dislodgement in a freshwater mussel (*Potamilus alatus*). (to be submitted to **Proceedings of the National Academy of Sciences**, 21 pages, 7 figures).

Block, J†, GW Gerald, and TD Levine. Effects of temperature on aspects of burrowing in *Potamilus alatus*, a freshwater mussel. (to be submitted to the **Journal of Thermal Biology**, 16 pages, 3 figures)

Levine, TD., CL Elderkin, JL Metcalfe-Smith, JP Carney, and DJ Berg. Comparative phylogeography of two closely related, common mussel species (to be submitted to **Molecular Ecology**; 17 pages, 10 figures and tables).

Viers, BL†, **TD Levine** and DE Saar. The impacts of introduced loblolly pine (*Pinus taeda* L.) on native early successional plant communities in western Kentucky, northwestern Tennessee, and Southern Illinois. (to be submitted to **Forest Ecology and Management**, 36 pages, 9 figures, 1 appendix)

Levine, TD BK Lang and DJ Berg. In Draft*. A ten-year mark-and-recapture study: Insights on population dynamics and the effects of extreme hydrologic variability. (to be submitted to **Journal of the North American Benthological Society**, 24 pages, 8 figures and tables)

Publications and Reports:

Levine, TD, DS White. Submitted. Changes in the phenology of annual zooplankton densities across 20 years in a large reservoir, Kentucky Lake. **Freshwater Biology** (17 pages, 9 figures and tables)

Levine, TD, BK Lang, and DJ Berg. Submitted. The niche concept in mussel-host relationships: a comparison of laboratory and field studies of glochidial infestation of fishes by *Popenaias popeii* (Bivalvia: Unionidae). **Oikos** (23 pages, 5 figures and tables).

Levine, TD. 2010. Annual report: Clarks River Mussel Survey. Submitted to US Fish and Wildlife Service, Field Office, Frankfort, KY.

Levine, TD, BK Lang and DJ Berg. 2009. A New Trophic Link Provides Insight into the Costs of Reproduction in a Critically Endangered Species. **American Midland Naturalist**. 162: 1 - 6.

Berg, DJ, **TD Levine**, JA Stoekel and BK Lang. 2008. A conceptual model linking demography and

population genetics of freshwater mussels. **Journal of the North American Benthological Society**. 27 (2): 395 – 408.

Levine, TD and DJ Berg. 2007. Annual Report to the Share with Wildlife Program For Contract No. 05-516.0000.0082 “Development of an Immunological Approach to Determining Host Fishes of the Texas Hornshell (*Popenaias popeii*)” Submitted to New Mexico Department of Game and Fish.

Berg, DJ and **TD Levine**. 2007. Annual Report to the Share with Wildlife Program For Contract No. 05-516.0000.0082 “Development of an Immunological Approach to Determining Host Fishes of the Texas Hornshell (*Popenaias popeii*)” Submitted to New Mexico Department of Game and Fish.

Berg, DJ and **TD Levine**. 2006. Annual Report to the New Mexico Department of Game and Fish For Contract No. 05-516.0000.0082 “A Mark-and-Recapture Study of the Texas hornshell, *Popenaias popeii*, in the Black River, NM: Preliminary Analysis and Refinement of Methods” Submitted to New Mexico Department of Game and Fish.

Berg, DJ and **TD Levine**. 2006. Annual Report to the Share with Wildlife Program For Contract No. 05-516.0000.0082 “Development of an Immunological Approach to Determining Host Fishes of the Texas Hornshell (*Popenaias popeii*)” Submitted to New Mexico Department of Game and Fish.

Invited Seminars and Talks:

Levine, TD. 2010. Zooplankton Phenology: Two decades of questions and answers from the long-term monitoring of Kentucky Lake. Academy of Natural Sciences – Philadelphia.

Levine, TD. 2009. Populations and patterns: life-history and the genetic landscape in freshwater mussels. Murray State University.

Levine, TD. 2009. Attached at the gills: Demography and host relationships of freshwater mussels. Missouri State University.

Levine, TD. 2008. Population Biology of the Texas Hornshell. Arkansas State University.

Levine, TD. 2007. Brown bag seminar on the demography and host relationships of *Popenaias popeii*. Dexter National Fish Hatchery.

Grants and Awards:

2010 US Fish and Wildlife Service. Unionid biodiversity and distribution survey of the Clarks River, Kentucky. \$20,000

2009 Spring Graduate Student Achievement Award, Miami University recognizing significant achievement related to the publication of a manuscript in *American Midland Naturalist*

2007 Doctoral Undergraduate Opportunities for Scholarship; Office for the Advancement of Research and Scholarship, Miami University \$1000 (undergraduate collaborator: Philip Iffland)

2006 Fall Dissertation Support Award, Miami University (ca. \$500 to thin section mussel shells)

2005 Fall Dissertation Support Award, Miami University (ca. \$600 to purchase biogeographic datasets)

2005 Doctoral Undergraduate Opportunities for Scholarship; Office for the Advancement of Research and Scholarship, Miami University \$ 1000 (undergraduate collaborator: Nancy Benight)

Presentations:

† Francisco, L ‡, **TD Levine** and DS White. 2011. Comparing two zooplankton sampling methods in long-term community and population monitoring. Posters at the Capitol, Lexington, KY. (also to be submitted to Ecological Society of America for 2011)

† Mueller, K ‡, ST Flynt, DS White and **TD Levine**. 2011. Habitat affinities in the Clarks River, Kentucky. Posters at the Capitol (also scheduled for presentation at Freshwater Mollusks Conservation Society for 2011)

† Hansen, H ‡, GG Gerald, and **TD Levine**. 2011. Assessing the effect of shell ornamentation on burrowing performance and dislodgement in a freshwater mussel (*Potamilus alatus*). (scheduled for presentation at Nebraska Academy of Sciences and accepted for presentation at Freshwater Mollusk Conservation Society 2011)

† Block, JE ‡, GG Gerald and **TD Levine**. 2011. Temperature effects on burrowing amongst smooth-shelled unionid mussels. (scheduled for presentation at Freshwater Mollusks Conservation Society 2011)

Sluss, T, **TD Levine** and DS White. 2010. Temporal and spatial trends of zooplankton community structure in a mainstem reservoir, Kentucky Lake, over a twenty year period. North American Benthological Society. Santa Fe, NM.

Levine, TD. 2010. Mussel community responses to new species in Kentucky Lake over a 20-year period. 6th Annual Kentucky Mollusk Meeting. Frankfort, KY

Levine, TD and DS White. 2009. Spatial and temporal patterns in zooplankton densities with emphasis on *Daphnia* in a large reservoir, Kentucky Lake. Ecological Society of America: Albuquerque, NM.

Levine, TD, JP Carney, AD Christian, JL Metcalf-Smith, N Benight ‡ and DJ Berg. 2009. Range-wide phylogeography of two *Quadrula* species: Common features and contrasts. North American Benthological Society. Grand Rapids, MI.

Levine, TD, BK Lang and DJ Berg. 2009. Identification of ecologically relevant hosts for *Popenaias popeii*. Freshwater Mollusk Conservation Society. Baltimore, MD.

Levine, TD, BK Lang and DJ Berg. 2009. Identification of ecologically relevant hosts for *Popenaias popeii*, (Bivalvia, Unionidae). Western Division of the American Fisheries Society. Albuquerque, NM.

Levine, TD. 2009. Man and Mussel. Murray State University Wildlife Society Chapter. Murray, Kentucky.

Iffland, PH ‡, **TD Levine**, MHH Stevens, BK Lang and DJ Berg. 2008. Comparing methods for estimating growth curves in a critically endangered mussel. Ecological Society of America, Milwaukee, WI.

Levine, TD, BK Lang and DJ Berg. 2008. Assessing the Mussel-Host Relationship for recruitment potential and conservation. Society for Conservation Biology, Chattanooga, TN.

Levine, TD. 2008. Competition and biogeography in freshwater mussels. Society for Integrative and Comparative Biology, San Antonio, Texas.

Levine, TD, BK Lang and DJ Berg. 2007. Identification of host fishes utilized by the freshwater mussel, *Popenaias popeii*: Host-parasite compatibility versus ecological relevance. Ecological Society of America: San Jose, CA.

Levine, TD, BK Lang and DJ Berg. 2007 Demography and age-structure of an endangered species: *Popenaias popeii* in New Mexico. Freshwater Mollusk Conservation Society Biannual Meeting: Little Rock, AR.

Berg, DJ, JA Stoeckel, **TD Levine** and BK Lang. 2007 A stage-based model to investigate linkages between demographic and genetic features of unionid populations. Freshwater Mollusk Conservation Society Biannual Meeting; Little Rock, AR.

Iffland, PH†, **TD Levine**, DJ Berg and BK Lang. 2007. Larval and early post-larval biology of the endangered freshwater mussel, Texas hornshell (*Popenaias popeii*). Undergraduate Research Forum: Oxford, OH.

Saxen, ME†, **TD Levine** and DJ Berg. 2007. Phylogeography of large-river fishes with emphasis on parasite phylogeography. Undergraduate Research Forum, Oxford, OH.

Levine, TD, BK Lang and DJ Berg. 2006. Habitats and Hosts: Critical factors in the conservation of an endangered species. Ecological Society of America: Memphis, TN.

Levine, TD, BK Lang and DJ Berg. 2006. Conservation of an endangered desert mussel: Population dynamics and a complex life history. Midwest Ecology and Evolution Conference: Saint Louis, MO.

Benight, NM†, **TD Levine** and DJ Berg. 2006. Genetic diversity of a freshwater mussel: *Quadrula pustulosa*. Undergraduate Research Forum: Oxford, OH.

Levine, TD, CL Elderkin, JL Metcalfe-Smith, J Carney, and DJ Berg. 2005. Population genetics of *Quadrula quadrula*: Regional differences. Freshwater Mollusk Conservation Society Biannual Meeting: St. Paul, MN.

† Talks scheduled for this year

‡ Undergraduate authors

Conservation Activities:

Contributor of fisheries data for Ecology of the Grey Redhorse and Blue Sucker in the Lower Pecos River, New Mexico

Texas Hornshell Recovery Planning Committee (2006-2007)

Co-author of peer Review of Proposed Rule to Remove the Idaho Springsnail from the List of

Threatened or Endangered Wildlife (2006)

Contributor of genetic data for COSEWIC Assessment and Status Report on the Mapleleaf Mussel
Quadrula quadrula

Professional Skills and Training:

Field: Global Positioning Systems (GPS), seine, hoop net, trammel net, backpack and boat mounted electroshocking equipment, digital camera (for data collection), PADI certified SCUBA diver, Wilderness First Responder (WFR - last certified 2001 Aerie School for Backcountry Medicine), hair trap non-invasive sampling, large mammal handling training (Great Bear Foundation), various plankton and benthos sampling methods, pitfall trapping

Analytical: R - statistical programming, some Java programming, some C++ programming, some C# programming, ImageJ - image analysis software, Bioedit - sequence alignment software, limited analyses in Mesquite - phylogeny software, Arlequin - population genetic software, MEGA - phylogenetic analysis software, program MARK - mark and recapture software (intermediate level workshop 2005), IHA - Indicators of Hydrologic Alteration analysis software, DNA extraction, Polymerase Chain Reaction (PCR), cycle sequencing

Professional Affiliations:

Ecological Society of America

Freshwater Mollusk Conservation Society

Sigma Xi

Society for Conservation Biology (former)

Society for Integrative and Comparative Biology (former)

American Fisheries Society (former)

North American Benthological Society (former)

Professional Activities:

I participated in a variety of activities at Miami University. These activities included acting as student representative to faculty meetings, coordinating and presenting at Ecolunch (an informal research seminar) and serving on my department's curriculum committee. I also provided recommendations for speakers for departmental seminar series at both Miami University and Murray State University and hosted Dr. Allen Strand to speak at Miami University (spring 2007) and have hosted 4 speakers for the Murray State University Biology Department seminar series (2009-2010) and will host another this spring. In my community, I have volunteered several times as a science fair judge. I have also served as a research mentor to several undergraduate students, who have produced or will produce intramural, university-wide research presentations describing their work and expect to submit their findings to peer-reviewed journals within the upcoming year. Phil Iffland, one of those students, presented his findings at the Ecological Society of America meeting in Milwaukee, WI during the summer of 2008. I presented invited research seminars at Dexter National Fish Hatchery in Roswell, NM (2007), Arkansas State University (2008), Missouri State University (2009), Murray State University (2009)

and University of Kentucky (2010). One of my peer-reviewed publications was described in Natural History Magazine in September 2009. I have also conducted numerous friendly reviews and reviewed papers for American Midland Naturalist.

I have also contributed **peer-reviewed** educational materials to EcoEd.net, a publication and teaching resource developed by the Ecological Society of America:

Levine, TD. 2008. Split view underwater and above the surface of a stream in a deciduous forest. EcoEd.net Available: <http://www.ecoed.net>

Levine, TD. 2008. Bark scorpion (*Centroides* sp.) in the field under a blacklight (UV light). EcoEd.net Available: <http://www.ecoed.net>

Levine, TD. 2008. Texas hornshell mussels (*Popenaias popeii*) marked with shellfish tags. EcoEd.net. Available: <http://www.ecoed.net>