

## MELISSA B. YOUNGQUIST

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### EDUCATION

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Miami University (2009 - 2015)

Ph.D. in Ecology, Evolution, and Environmental Sciences

Advisor: Dr. Michelle Boone

Title: How local and landscape factors affect anuran species distributions in agricultural landscapes

Pacific Lutheran University (2005-2009)

B.S. Biology

### PROFESSIONAL EXPERIENCE

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University of Minnesota (August 2015-Present): Post-Doctoral Associate. Leading research on the effects of invasive emerald ash borer on wetland fauna in black ash swamps, with a focus on amphibians and aquatic invertebrates. Using a food-web approach, I am assessing the effects that changes in forest structure will have on individual species as well as community composition. Project PIs are Anthony D'Amato and Brian Palik.

Miami University (2011-2014): Teaching Assistant. Taught a lecture course on environmental biology to non-majors; taught introductory biology, animal behavior, and herpetology labs; and was the lead TA for the introductory biology labs, in charge of supply preparation and training other TAs on how to teach the lab to undergraduates.

Miami University (2009-2011): Research Assistant. Investigated how the pesticide carbaryl affects development and metamorphosis of green frog (*Lithobates clamitans*) tadpoles with specific focus on how the pesticide influences thyroid hormone action. This was done by rearing tadpoles at different densities in outdoor artificial ponds through metamorphosis and exposing them to the contaminant. Project PI was Dr. Michelle Boone.

### TEACHING EXPERIENCE

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Guest Lecturer: *Environmental Biology* (Spring 2017)—Invited to talk about water pollution and amphibian populations. Itasca Community College.

Instructor: *GIS Workshop* (Summer 2015)—Taught a six module workshop on basic Geographic Information Systems (GIS; software: ArcGIS) and analytical techniques to faculty and graduate students. Miami University.

Instructor: *Environmental Biology* (Spring 2014)—Independently developed and presented all materials including syllabus, assignments, lectures, exams, activities, and final projects for one lecture section. Miami University.

Head Teaching Assistant: *Biological Concepts: Ecology, Evolution, Genetics, and Diversity*, (Fall 2013; Fall 2014)—Coordinated graduate students responsible for teaching laboratory sections and with Head Preparatory TA for preparation of laboratory supplies. Miami University.

Teaching Assistant: *Animal Behavior ZOO 465/565* (Spring 2013)—Taught one laboratory section.

Guest Lecturer: *Vertebrate Zoology ZOO 311* (Spring 2013)—Invited to talk about salamanders for “Passion Thursday” series. Miami University.

Co-head Lab Preparation: *Biological Concepts: Ecology, Evolution, Genetics, and Diversity* (Fall 2012) —Prepared all materials for each lab sections and coordinated other prep-TAs. I also taught one laboratory section. Miami University.

Teaching Assistant: *Herpetology, ZOO 409/509* (Spring 2012)—Taught one laboratory section and developed new laboratory materials and activities. Miami University.

Guest Lecturer: *Herpetology, ZOO 409/509* (Spring 2012)—Lectured on use of landscape and population genetics as a tool for herpetological conservation. Miami University.

Teaching Assistant: *Biological Concepts: Ecology, Evolution, Genetics, and Diversity* (Fall 2011)— Taught two laboratory sections. Miami University.

### **Training:**

2011 Graduate Student Teaching Enhancement Program (GSTEP). Conducted by: Center for the Enhancement of Learning, Teaching, and University Assessment (CELTUA). A program to develop teaching skills designed to engage and enhance student learning in the classroom. As part of the program, I created a tutorial on how to use Microsoft Excel for undergraduate biology students. This tutorial has since been used by TA’s for introductory biology classes.

### **UNDERGRADUATE MENTORING**

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2016 Chandra Wiley: Conducted independent research on the effects of leaf litter type on caddisfly growth and survival. She will be a co-author on a paper looking at how black ash ecosystem function might respond to emerald ash borer invasion. She also assisted with amphibian and invertebrate surveys in black ash wetlands.

2014 Tommy Drought: Assisted with amphibian surveys throughout western Ohio as part of a project funded by NSF DDIG.

2014 Ashley Gordon: Conducted independent research on population genetics of bullfrogs in southwest Ohio. She received funding from Miami University DUOS.

2013 Ashley Gordon: Conducted independent research on the interactive effects of hydroperiod and predation on larval cricket frogs. She is the first author on a paper published in *Copeia* (Gordon et al. 2016). Her research was funded by Miami University Hughes Scholar.

2012 Kevin Downard: Conducted independent research on larval competition between cricket frogs, green frogs, and tree frogs. Was a co-author on a publication, *Competitive interactions between cricket frogs (Acris blanchardi) and other anurans* (Youngquist et al. 2015; *Herpetologica*). His project was funded by Miami University Undergraduate Summer Scholar.

2011 Bradley Skelton: Conducted independent research on the effects of nitrogen fertilizer on cricket frog tadpole growth and survival. His research was funded by Miami University Undergraduate Summer Scholar.

2010 Andrew McDermott: Conducted independent research on the effects of canopy cover on cricket frog and bullfrog tadpole growth and survival. Also assisted with amphibian surveys in southwest Ohio.

## PUBLICATIONS

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\* Indicates undergraduate author

- Youngquist, MB, SL Eggert, AW D'Amato, BJ Palik, and RA Slesak. 2017. Potential effects of foundation species loss on wetland communities: a case study of black ash wetlands threatened by emerald ash borer. *Wetlands*. 37:787-799
- Youngquist, MB, K Inoue, DJ Berg, and MD Boone. 2016. Effects of land use on population presence and genetic structure of an amphibian in an agricultural landscape. *Landscape Ecology*.
- \*Gordon, A, MB Youngquist, and MD Boone. 2016. Interactive effects of hydroperiod and predation on cricket frog (*Acris blanchardi*) larval development. *Copeia*. 104:482-486.
- Youngquist, MB, \*K Downard, and MD Boone. 2015. Competitive interactions between cricket frogs (*Acris blanchardi*) and other anurans. *Herpetologica*. 71:260-267.
- Youngquist, MB and MI Sitvarin. 2015. Predicting predatory outcomes in the context of carryover effects: Interactions between juvenile frogs and spider predators. *Ethology*. 121:601-608.
- Youngquist, MB and MD Boone. 2014. Movement of amphibians through agricultural landscapes: the role of habitat on edge permeability. *Biological Conservation*. 175:148-155.
- Boone, MD, SA Hammond, N Veldhoen, M Youngquist, and CC Helbing. 2013. Specific time of exposure during tadpole development influences biological effects of the insecticide carbaryl in green frogs (*Lithobates clamitans*). *Aquatic Toxicology*. 130-131:139-148.

### **In Review:**

Youngquist, MB and MD Boone. The suitability of created ponds in agricultural landscapes as habitat for amphibian larvae. *Herpetologica*.

### **In Preparation:**

- Youngquist, MB, \*C Wiley, SL Eggert, AW D'Amato, BJ Palik, and RA Slesak. Linking emerald ash borer invasion to changes in ecosystem function: role of litter quality on caddisfly growth and leaf litter breakdown. Target journal: *Ecosystems*
- Youngquist, MB, and MD Boone. Role of habitat suitability and landscape connectivity on amphibian distribution. Target journal: *Ecography*
- Youngquist, MB, SL Eggert, AW D'Amato, BJ Palik, and RA Slesak. Effects of black ash loss on wetland community composition. Target journal: *Aquatic Conservation*

## GRANTS

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- 2014 NSF Doctoral Dissertation Improvement Grant, "Living on the edge: how land cover and landscape connectivity interact to determine species ranges." With Michelle Boone. \$18,410
- 2014 Department of Biology Academic Challenge Research Grant, "The bullfrogs are coming: assessing how landscape features influence dispersal in anthropogenic landscapes." \$1,500
- 2013 Miami University Doctoral Undergrad Opportunities for Scholarship (DUOS) Program: "How the Great Miami River impacts population connectivity and gene flow of American bullfrogs." With Ashley Gordon. \$1,000
- 2012 Amphibian Specialist Group/Amphibian Research and Monitoring Initiative Seed Grant: "Does Implementation of No-till Agriculture Reduce Larval Stress of Blanchard's cricket frog (*Acris blanchardi*)?" \$1,570
- 2011 American Society for Ichthyologists and Herpetologists: Gaige Award, "At the Edge: Implications for Amphibian Dispersal." \$500

**Awards:**

- 2014 Dissertation Scholar; Spring Semester 2015
- 2014 Miami University Graduate Students' Achievement Fund
- 2011 American Society for Ichthyologists and Herpetologists: Storer Award for Best Student Poster in Herpetology, "The Curious Case of Blanchard's Cricket Frog: Structure in a Fragmented Landscape."

**SEMINAR PRESENTATION**

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**Conference Oral Presentation:**

- Youngquist, MB and MD Boone. 2017. *Understanding species distributions: the effects of landscape composition, configuration, and scale*. 2017 Joint Meeting of Ichthyologists and Herpetologists. Austin, TX.
- Youngquist, MB, A D'Amato, B Palik, SL Eggert, and R Slesak. 2016. *Predicting the indirect effects of invasive emerald ash borer on amphibians in black ash forests*. 2016 Midwest Fish and Wildlife Conference. Grand Rapids, MI.
- Youngquist, MB and MD Boone. 2015. *Effects of habitat suitability and landscape connectivity on species distributions*. Society for Integrative and Comparative Biology. West Palm Beach, FL.
- Youngquist, M. 2014. *Utility of human-made ponds for amphibian conservation*. 2014 Joint Meeting of Ichthyologists and Herpetologists. Chattanooga, TN.
- Youngquist, M and MD Boone. 2012. *Habitat preference and movement behavior of juvenile bullfrogs (*Lithobates catesbeianus*) and Blanchard's cricket frogs (*Acris blanchardi*) at habitat edges*. 7th World Congress of Herpetology. Vancouver, British Columbia, Canada.
- Youngquist, M, MD Boone, C Helbing, J Jordon, M Kobylarz, N Veldhoen, C Wilson. 2010. *Is timing everything? The effects of carbaryl on green frog (*Rana clamitans*) development and the thyroid hormone axis*. 2010 Joint Meeting of Ichthyologists and Herpetologists. Providence, RI.
- Youngquist, M, E Dornfeld, and MD Behrens. 2008. *Diet Shifts of Pricklebacks: a case for paired field and laboratory studies*. 17th Regional Conference on Undergraduate Research of the Murdock College Science Research Program. Tacoma, WA.

**Conference Poster Presentations:**

\*Indicates undergraduate student

- Youngquist, MB, SL Eggert, AW D'Amato, BJ Palik, and RA Slesak. 2017. *Potential effects of emerald ash borer invasion on wetland community composition*. 2017 Joint Meeting of Ichthyologists and Herpetologists. Austin, TX.
- Youngquist, MB, SL Eggert, AW D'Amato, BJ Palik, RA Slesak, and M Slater. 2017. *Potential effects of emerald ash borer invasion on wetland community composition*. Science and Management of Ash Forests after EAB. Duluth, MN.
- Youngquist, MB, \*C Wiley, SL Eggert, AW D'Amato, BJ Palik, RA Slesak, and M Slater. 2017. *Linking emerald ash borer to changes in ecosystem function: how changes in litter quality may influence leaf decomposition and invertebrate growth*. Science and Management of Ash Forests after EAB. Duluth, MN.
- Youngquist, MB and MD Boone. 2015. *Structure in a fragmented landscape: effects of land use on cricket frog populations*. Society for Integrative and Comparative Biology. West Palm Beach, FL.

- \*Gordon, AG, MB Youngquist, MD Boone. 2014. *How the Great Miami River impacts population connectivity and gene flow of American bullfrogs (Lithobates catesbeianus)*. Miami University Undergraduate Research Forum. Oxford, OH.
- Youngquist, MB, 2014. *Utility of human made ponds for amphibian conservation: effects of land use on tadpole growth and survival*. Midwest Ecology and Evolution Conference. Dayton OH.
- \*Gordon, AG, MB Youngquist, MD Boone. 2014. *Tricky times in temporary times: effects of pond drying and predation on Blanchard's cricket frogs (Acris blanchardi)*. Midwest Ecology and Evolution Conference. Dayton OH.
- \* Downard, K, M Youngquist, and MD Boone. 2013. *Similar life histories influence competition in aquatic communities: a case study of Blanchard's cricket frogs (Acris blanchardi)*. Miami University Undergraduate Research Forum. Oxford, OH.
- Youngquist, M. 2012. *The curious case of Blanchard's cricket frogs: structure in a fragmented landscape*. 2012 Midwest Partners in Amphibian and Reptile Conservation Annual Meeting. Pioneer, OH.
- Youngquist, M and MD Boone. 2012. *Habitat choice and movement by juvenile bullfrogs and cricket frogs in southwest Ohio*. 2012 Ohio Amphibian Research and Conservation Conference. Columbus, OH.
- \*Skelton, B, M Youngquist, and MD Boone. 2012. *Aquatic exposure of ammonium nitrate and its effects on growth and survival of larval cricket frogs (Acris blanchardi)*. Miami University Undergraduate Research Forum. Oxford, OH.
- Youngquist, M. 2011. *The curious case of Blanchard's cricket frogs: structure in a fragmented landscape*. 2011 Joint Meeting of Ichthyologists and Herpetologists. Minneapolis, MN.
- Dornfeld, E, M Youngquist, and MD Behrens. 2008. *From SARS to Salmonella: human infectious diseases and their emergence*. 17th Regional Conference on Undergraduate Research of the Murdock College Science Research Program. Tacoma, WA
- Youngquist, M, S Agoncillo and MD Behrens. 2007. *Habitat partitioning by three prickleback fishes*. 16th Regional Conference on Undergraduate Research of the Murdock College Science Research Program. Salem, OR.
- Agoncillo, S, M Youngquist, and MD Behrens. 2007. *Disease prevalence of sea urchins on the Olympic Peninsula*. 16th Regional Conference on Undergraduate Research of the Murdock College Science Research Program. Salem, OR.

**Departmental Seminar:**

- Youngquist, MB and MB Boone. 2015. *A multi-scale approach to species conservation: How land-use affects species distributions in agricultural landscapes*. Miami University, Department of Biology, Biology Seminar Series.

**SERVICE**

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**Committee:**

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| 2014        | Biology Chair Search Committee                     |
| 2012 – 2015 | Hefner Museum Advisory Committee                   |
| 2010 – 2011 | Chair's Graduate Student Advisory Committee        |
| 2009 – 2011 | Graduate Student Representative to Faculty Meeting |

**Public Outreach:**

- 2016 Engaged fourth grade students in a project to demonstrate the experimental method at Marcel Experimental Forest, MN.
- 2014 Collaboration with the Robert A. Hefner Museum of Natural History, at Miami University, to translate my research on land use effects on cricket frog distribution into a display for the general public.
- 2011-2013 Miami University Science Week with the Talawanda School District: developed experiments for elementary students (grades 1-5) to explore different aspects of amphibian ecology and evolution such as jumping behavior, diet, and habitat preferences.

***Other Service:***

Reviewer for *E.E. Williams Research Grant in Herpetology*, Herpetologists League

Reviewer for *Copeia*, *Landscape Ecology*, *Canadian Journal of Zoology*

Coordinator for Ecology, Evolution, and Environmental Biology Eco-lunch, Spring 2014