

# CHARLOTTE A. SHADE

## *Curriculum Vitae*

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University of Dayton  
Department of Biology  
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### **EDUCATION:**

University of Dayton, Dayton, OH May 2017  
Bachelor of Science in Biology GPA: 3.94  
Minor: Sustainability, Energy, and the Environment

### **RESEARCH INTERESTS:**

My work in research has taken an interdisciplinary approach that spans multiple ecological scales. I have been trained in various research endeavors that cover the concepts of invasion, functional, and community ecology in order to understand how invasive species transform habitat complexity, ecosystem processes, and shape patterns in biodiversity. I am interested in furthering my career in research to fields such as aquatic biology, marine biology, climate change, and remediation for anthropogenic-caused environmental hazards.

- Ecosystem ecology
- Community ecology
- Invasion ecology
- Functional diversity
- Spatial relationships
- Terrestrial-aquatic connections
- Biogeochemistry
- Invasive species management

### **RESEARCH EXPERIENCE**

University of Dayton, Dayton, OH  
Advisor: Dr. Ryan McEwan

*Independent Thesis Project* Aug. '15- Present

- Amur honeysuckle (*Lonicera maackii*) invasion drives alterations in nutrient dynamics in forests and headwater streams
- Investigating how the invasive shrub Amur honeysuckle affects the nutrient availability in forests and across the terrestrial-aquatic habitat boundary

*Head Undergraduate Research Assistant* May '14-Oct. '14

- Studied soil microbial effects and restoration of North American temperate forests following invasion of Amur honeysuckle
- Gained extensive experience with experimental design, experiment set-up, data entry, bio-massing, and statistical analysis

*Undergraduate Research Assistant*

Sept. '13–Present

- Assist with doctoral research on the biology of Amur honeysuckle and how it contributes to the change in aquatic communities
- Head undergraduate student researcher studying the effects of organic matter availability in streams as invaded by Amur honeysuckle
- Extensive work with aquatic fieldwork, organic matter collection and processing, and water sampling in streams.

**PROFESSIONAL EXPERIENCE**

Montgomery County Environmental Services: Environmental Learning Center  
Moraine, OH

*Program Specialist Intern*

Jan. '15- Dec. '15

- Assists in designing and implementing community education outreach programs about litter prevention and proper solid waste management.

University of Dayton: Dr. Ryan McEwan's Ecology Lab  
Dayton, OH

*Website Coordinator*

May '14-Present

- Update and design lab website and social media platforms as needed  
[McEwanLab.org](http://McEwanLab.org)

University of Dayton Biology Department  
Dayton, OH

*Administrative Assistant*

May '13-Dec. '14

- Filing student folders, organizing department events, keeping office supplies in stock, submitting book orders, assisting students and professors, answering phones, speaking with prospective students, delivering mail, etc.

**RESEARCH AND ANALYTICAL SKILLS:**

**Statistical Analyses:**

Statistical Programs: Prism and Excel

- Data exploration, graphing, and statistical analyses of ecological data

Spatial Analysis and Mapping Programs: ArcGIS

- Identify and visualize spatial patterns and statistically analyze data

**Other Software:** Image J (analyze images: measured macroinvertebrate body metrics), Microsoft programs

## **Field and Laboratory:**

### Forest Characterization:

- Practice surveying using point-center-quarter method and quadrant method
- Canopy cover measured with a densiometer
- Removal of herbaceous and woody invasive species
- Tree and shrub taxonomic identification for eastern deciduous forests

### Biogeochemical availability and transformation:

- Processing of stream water, leaf leachate, and throughfall (rain water in contact with leaf canopies) samples for orthophosphate, soluble reactive phosphorus (SRP/DRP), nitrite, nitrate, total/dissolved nitrogen, ammonium, total/dissolved carbon, and total/dissolved organic carbon
  - Phosphorous: ascorbic acid and malachite green methods ( $\text{PO}_4^{3-}$ )
  - Nitrogen: cadmium reduction method ( $\text{NO}_3\text{-N}$ ), diazotization method ( $\text{NO}_2\text{-N}$ ), Nessler method ( $\text{NH}_4\text{-N}$ ), and sample preparation for total/dissolved nitrogen to be measured via the hydrazine sulfate-copper sulfate reduction method

### Organic matter availability and processing:

- Estimate in-stream, seasonal terrestrial organic matter subsidies via ash-free-dry-mass processing of in-stream plant coarse organic materials (COM)
- Availability of coarse particulate organic matter (CPOM) and fine particulate organic matter (FPOM) within stream and lake water columns
- Leaf pack processing: sorting and identifying leaves and calculation of leaf pack decay coefficients

### Aquatic vertebrate communities

- Tropical fish identification
- Experience electrofishing

### Aquatic habitat characterization:

- Water temperature, conductivity, turbidity, dissolved oxygen, and pH measurement of freshwater systems using a YSI Sonde probe
- In-stream sunlight availability via a portable light meter
- Wetland delineation

### Additional Skills:

- Canoe and kayak
- Trained in Ohio Leaf Taxonomy
- Practice with culturing *Daphnia* and *Hyalella*

## POSTER PRESENTATIONS

1. **Shade, CA**, RE McNeish, RW McEwan (2015) Investigation of the impacts from *Lonicera maackii* riparian forests on plant organic matter availability in headwater streams. *University of Dayton Annual Stander Symposium*. Dayton, OH
2. **Shade, CA**, RW McEwan, KW Custer (2016) Amur honeysuckle invasion as a driver of ecosystem processes: nutrient dynamics in riparian forests and headwater streams. *Ohio Invasive Plant Council Research Conference*. Columbus, OH

## FUNDING (\$4,000)

- 2016 University of Dayton Honors Department  
**Awarded: \$1,500**
- 2015 Keck Environmental Fellowship  
**Awarded: \$2,500**

## RELEVANT COURSE WORK

- General Biology I & II and Labs (BIO 151/L & 152/L)
- General Chemistry I & II and Labs (CHEM 123/L & 124/L)
- Ecology and Lab (BIO 310/L)
- Organic Chemistry I & II and Labs (CHE 2111/L & 2121/L)
- Environmental Geology and Lab (GEO 208/L)
- Biology of Rivers and Lakes (BIO 452)
- Marine Biology and Lab (BIO 320/L)
- Applied Geographic Information Systems (GEO 450)
- Comparative Anatomy of Vertebrates (BIO 309)
- Advanced Application of GIS (GEO 560) (Spring 2016)
- Invertebrate Zoology and Lab (BIO 461/L) (Spring 2016)
- Evolution (BIO 301) (Spring 2016)

## AWARDS

- 2015 Keck Environmental Fellowship
- 2015 C. R. Meyers Memorial Scholarship
- 2013 Dean's List (awarded each semester)
- 2013 University of Dayton's Presidential Scholarship

## MEMBERSHIPS

- 2013-Present *Beta Beta Beta Biological Honorary Society*
- 2014- Present *River Stewards: 2017 Cohort*
- 2014- Present *Sustainability Club: Executive Board*
- 2014- Present *Theta Phi Alpha Sorority*
- 2015- Present *Student Government Association: Sustainability Committee*