

# MARIO E. MUSCARELLA

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## EDUCATION

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- Indiana University** *Aug 2012 – Jun 2016*  
Biology, Ph.D.; Evolution, Ecology & Behavior Program
- Michigan State University** *June 2010 – Aug 2012*  
Microbiology & Molecular Genetics  
Ecology and Evolutionary Biology
- Armstrong State University** *Aug 2004 – May 2008*  
Biology, Summa Cum Laude, B.S.

## EXPERIENCE

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- Postdoctoral Research Associate** *August 2016 – Present*  
*University of Illinois* *Urbana, IL*  
O'Dwyer Lab: Theoretical Ecology, Microbial Ecology, Traits Based Ecology, Phylogenetic Patterns
- Graduate Research Assistant** *June 2010 – July 2016*  
*Indiana University* *Bloomington, IN*  
Lennon Lab: Aquatic Microbiology, Molecular and Ecological Strategies of Resource Utilization; Interactions between Microbes and Molecules
- Associate Instructor** *January 2013 – May 2015*  
*Indiana University* *Bloomington, IN*  
Courses Taught: Quantitative Biodiversity; Environmental Microbiology; Introductory Biology Lab
- Graduate Teaching Assistant** *June 2011 – August 2012*  
*Michigan State University* *East Lansing, MI*  
Courses Taught: Microbial Metagenomics; Cells and Molecules Lab; Introductory Microbiology Lab
- Research Technician** *June 2008 – June 2010*  
*University of Georgia Marine Institute* *Sapelo Island, GA*  
Booth Lab: Georgia Coastal Ecosystems LTER, & Sapelo Island Microbial Observatory

## PUBLICATIONS

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- Long H, Sung W, Kucukyildirim S, Williams E, Miller S, Guo W, Patterson C, Gregory C, Strauss C, Stone C, Berne C, Kysela D, Shoemaker WR, **Muscarella ME**, Luo H, Lennon JT, Brun YV, Lynch M (In Review) Evolutionary determinants of genome-wide nucleotide composition
- Lennon JT, Placella SA, **Muscarella ME** (2017) Relic DNA contributes minimally to estimates of microbial diversity. bioRxiv, DOI: <https://doi.org/10.1101/131284>
- Patrick T. Kelly, Tom Bell, Alexander, J. Reisinger, Trisha Spanbauer, Lauren Bortolotti, Jennifer Brentrup, Christian Briseno-Avena, Xiaoli Dong, Alison Flanagan, Elizabeth Follett, Julia Grosse, Tamar Guy-Haim, Meredith A. Holgersen, Rachel Hovel, Jessica Luo, Nicole Millette, Aric Mine, **Mario E. Muscarella**, Sam Oliver, Heidi Smith (2017) Ecological Dissertations in the Aquatic Sciences (Eco-DAS): An effective networking and professional development opportunity for early career aquatic scientists. Limnology and Oceanography Bulletin, DOI: 10.1002/lob.10180

Tamar Guy-Haim, Harriet Alexander, Tom W Bell, Raven L Bier, Lauren E Bortolotti, Christian Briseo-Avena, Xiaoli Dong, Alison M Flanagan, Julia Grosse, Lars Grossmann, Sarah Hasnain, Rachel Hovel, Cora A Johnston, Dan R Miller, **Mario Muscarella**, Akana E Noto, Alexander J Reisinger, Heidi J Smith, Karen Stamieszkin (2017) What are the type, direction, and strength of species, community, and ecosystem responses to warming in aquatic mesocosm studies and their dependency on experimental characteristics? A systematic review protocol. *Environmental Evidence*, 6(1):6

**Muscarella ME**, Jones SE, Lennon JT (2016) Species sorting along a subsidy gradient alters bacterial community stability. *Ecology*, 97(8):2034-2043

Shoemaker WR\*, **Muscarella ME\***, Lennon JT (2015). Genome Sequence of the Soil Bacterium *Janthinobacterium* sp. KBS071. *Genome Announcements*, 3(3):e00689-15

**Muscarella ME**, Bird KC, Larsen ML, Placella SA, Lennon JT (2014). Phosphorus resource heterogeneity affects the structure and function of microbial food webs. *Aquatic Microbial Ecology*, 73(3):259-272

Lennon JT, Hamilton SK, **Muscarella ME**, AS Grandy, K Wickings, SE Jones (2013). A source of terrestrial organic carbon to investigate the browning of aquatic ecosystems. *PLoS ONE* 8(10):e75771

J. Awong-Taylor, K. Craven, L. Griffiths, C. Bass and **M. Muscarella** (2008) . Comparison of biochemical and molecular methods for the identification of bacterial isolates associated with failed loggerhead sea turtle eggs. *Journal of Applied Microbiology*. 104:1244-1251

Kathryn S. Craven, Judy Awong-Taylor, Laura Griffiths, Crystal Bass & **Mario Muscarella** (2007). Identification of Bacterial Isolates from Unhatched Loggerhead (*Caretta caretta*) Sea Turtle Eggs in Georgia, USA. *Marine Turtle Newsletter* 115:9-11

(\* co-first authors)

## GRANTS

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**NSF Doctoral Dissertation Improvement Grant \$19,004** 2015 – 2017

DISSERTATION RESEARCH: Metabolic Resource Partitioning: Scaling Microbial Physiology from Individual Activity to Ecosystem Function

**Indiana Academy of Sciences Senior Research Grant \$2,200** 2014 – 2015

Metabolic Fate of Terrestrial Carbon Resources: Anabolic vs. Catabolic Processes

**Huron Mountain Wildlife Foundation Grant Renewal \$3,299** 2012 – 2014

Browning of Freshwater Ecosystems: Will Terrestrial Carbon Loading Alter the Diversity and Function of Aquatic Microbial Communities?

**Huron Mountain Wildlife Foundation \$5,600** 2011 – 2012

Browning of Freshwater Ecosystems: Will Terrestrial Carbon Loading Alter the Diversity and Function of Aquatic Microbial Communities?

## HONORS AND AWARDS

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**Floyd Microbiology Summer Fellowship \$2000** 2013 – 2014

Department of Biology, Indiana University, Bloomington, IN

**Floyd Microbiology Travel Award \$300** 2012

Department of Biology, Indiana University, Bloomington, IN

**University Distinguished Fellowship** 2010

Graduate School, Michigan State University, East Lansing, MI

<b>Early Start Fellowship</b>	2010
College of Natural Sciences, Michigan State University, East Lansing, MI	
<b>Les Davenport Award</b>	2008
Biology Department, Armstrong State University. Savannah, GA	
<b>ASB Research Award in Microbiology</b>	2008
Presented at the 69th Annual Association of Southeastern Biologists Conference	
Best Paper Presentation in the Area of Microbiology	
<b>Faculty Recognition Award</b>	2007
Biology Department, Armstrong State University. Savannah, GA	

## SYMPOSIA AND WORKING GROUPS

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<b>2016</b>	Ramon Margalef Summer Colloquia Microbes in a Changing World: Diversity and Biogeochemistry, Barcelona, Spain
<b>2016</b>	Predicting the Response of Host-associated Microbiomes to Disturbance Santa Fe Institute Working Group, Santa Fe, NM
<b>2016</b>	Eco-DAS XII: Ecological Dissertations in the Aquatic Sciences, Honolulu, HI

## WORKSHOPS

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<b>2013</b>	Software Carpentry Workshop, Bloomington IN
<b>2012</b>	DOM Fluorescence Workshop, INSTAAR, Boulder CO
<b>2010</b>	Mothur Software Workshop, Detroit MI

## PROFESSIONAL AFFILIATIONS

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*Ecological Society of America*  
*Association for the Sciences of Limnology and Oceanography*  
*Great Lakes Ecological Observatory Network*  
*American Society for Microbiology*

## SERVICE

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### Reviewer

Journals: *Aquatic Ecology*, *Aquatic Microbial Ecology*, *Environmental Microbiology*, *Environmental Science & Technology*, *ISME*, *L&O Letters*, *Microbial Ecology*  
 Books: *Processes in Microbial Ecology*, Kirchman (2012)

### Committee Member

Michigan State University: *MMG Grad Committee*  
 Indiana University: *IU Biology GRW Transportation*

### Outreach

Jim Holland Summer Enrichment Program (Indiana University): *Stream Health & Micro-Invertebrate Assessment* (2012 – 2016)  
 Wonderlab Science Museum (Bloomington, IN): *Good Microbes Exhibit* (2012 – 2014)  
 Women in STM (Indiana University): *Stream Micro-Invertebrate Assessment* (2012)

### Professional Society Leadership

Graduate Student Liaison for Microbial Ecology Section, ESA (2013 – 2015)

### Special Session Co-Organizer

The Dance Between Microbes and Molecules  
ASLO Summer Meeting, Santa Fe NM (2016)

### Conference Co-Organizer

2015 Midwest Ecology and Evolution Conference. Bloomington, IN

### Course Development

Quantitative Biodiversity (2015, Indiana University)  
repo: <https://github.com/quantitativebiodiversity>  
website: <http://documentup.com/QuantitativeBiodiversity/QuantitativeBiodiversity>

## INVITED SEMINARS

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**Muscarella ME** (2015) Microbes and resources: individuals, communities, and ecosystem function. Program in Ecology, Evolution, and Conservation Biology, University of Illinois at Urbana-Champaign.

## CONTRIBUTED PRESENTATIONS

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**Muscarella ME**, O'Dwyer, JP (2017) A Phylogenetic Framework for Trait Innovation and Selection in Microbial Communities. Ecological Society of America Annual Meeting, Portland OR.

Peralta AL, **Muscarella ME** (2017) How can we manage microbial functions to restore ecosystem services in human-dominated landscapes? Ecological Society of America Annual Meeting, Portland OR.

**Muscarella ME**, Lennon JT (2015) Bacterial growth efficiency: do consumer and resource diversity influence the fate of carbon in aquatic ecosystems? Ecological Society of America 100th Annual Meeting, Baltimore MD.

**Muscarella ME**, Locey KJ, Nevo E, Raz S, Lennon JT (2014) Microbial community assembly at Evolution Canyon: Does dormancy dilute the effects of dispersal and filtering? Ecological Society of America 99th Annual Meeting, Sacramento CA.

**Muscarella ME**, Bird KC, Larsen ML, Placella SA, Lennon JT (2014) Phosphorus resource heterogeneity affects the structure and function of microbial food webs. American Society of Limnology and Oceanography, Portland OR.

**Muscarella ME**, Bird KC, Larsen ML, Placella SA, Lennon JT (2014) Phosphorus resource heterogeneity affects the structure and function of microbial food webs. Midwest Ecology and Evolution Conference, Dayton OH.

**Muscarella ME**, Jones SE, Lennon JT (2013) Species Sorting Along a Subsidy Gradient Affects Community Stability. Ecological Society of America 98th Annual Meeting, Minneapolis MN.

**Muscarella ME**, Jones SE, Lennon JT (2013) Life in brown waters: Aquatic bacteria respond to increased terrestrial carbon loading. Midwest Ecology and Evolution Conference, South Bend, IN.

Lennon JT, **Muscarella ME**, Jones SE (2013) Bacteria and browning: implications of terrestrial carbon subsidies for aquatic ecosystems. American Society of Limnology and Oceanography, New Orleans, LA.

**Muscarella ME**, Jones SE, Lennon JT (2013) Life in brown waters: Aquatic bacterial responses to increased terrestrial carbon loading. American Society of Limnology and Oceanography, New Orleans, LA

**Muscarella ME**, Jones SE, Lennon JT (2012) Life in brown waters: Aquatic bacteria respond to increased terrestrial carbon loading. LTER All Scientists Meeting, Estes Park, CO.

Booth MG, Gifford S, Doherty M, **Muscarella M**, and Moran MA (2010) Expression of two carbon metabolism genes identified thorough transcriptomic analysis of estuarine bacterial communities of Sapelo Island, GA, U.S.A. International Society of Microbial Ecology Conference, Seattle, WA.

Doherty M, Poretsky R, **Muscarella ME**, Moran MA, Booth MG (2009) Tracking Metabolism of an Important Terrestrial Carbon Source by Marine Bacterioplankton. Coastal and Estuarine Research Federation 20th Biennial Conference. Portland, OR.

**Muscarella M**, Awong-Taylor J, Zettler J (2009) The Inability of Pathogenic and Nonpathogenic Strains of Escherichia coli to Survive in Coastal Beach Sand. 2009 Annual Conference of the South-eastern Branch American Society for Microbiology. Savannah, GA.

**Muscarella M**, Awong-Taylor J (2008) Role of Curli Fibers in the Adhesion of Escherichia coli O157:H7 to Bean Sprouts. American Society for Microbiology 108th Annual Meeting. Boston, MA.

**Muscarella M**, Awong-Taylor J, Zettler J (2008) The Potential for Pathogenic and non-pathogenic Escherichia coli to Survive in Beach Sand from Tybee Island, GA. Association of Southeastern Biologists 69th Annual Meeting. Spartanburg, SC.

**Muscarella M**, Awong-Taylor J (2008) A Method to Compare the Effectiveness of Different Washes on Removal Rates of E. coli from Plant Roots. Southern Regional Honors Council 36th Annual Conference. Birmingham, AL.

Griffiths L, Bass C, **Muscarella M**, Awong-Taylor J, Craven K (2006) Using Traditional and Molecular Techniques to Determine if Microbial Contamination Plays a Role in Embryonic Death of Loggerhead Sea Turtle Eggs. Florida Academy of Sciences 70th Annual Meeting. Melbourne, FL

## ACADEMIC ADVISORS

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**James P. O'Dwyer** University of Illinois (Postdoc)

**Jay T. Lennon**, Indiana University (Ph.D.)

**Judy Awong-Taylor**, Armstrong State University (B.S.)

## MENTEES

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### ***Undergraduate Students:***

Belen Muniz (*University of Illinois* 2017)

Mollie Carrison (*Indiana University* 2015 – 2016)

Rachel Ferrill (*Transylvania University* 2015)

Xia Meng Howey (*Indiana University* 2012 – 2014)

### ***High School Students:***

Dakayla Calhoun (*Shortridge International Baccalaureate High School, Indianapolis, IN* 2015)

Nick Nelson (*Bishop Noll Institute, Hammond, IN* 2012)