

Casey Michael Godwin

EDUCATION

- Doctor of Philosophy**, Ecology, Evolution and Behavior 2013
University of Minnesota, Saint Paul, MN
- Master of Science**, Ecology 2006
The Pennsylvania State University, University Park, PA
- Bachelor of Arts**, Biology and Environmental Studies, *magna cum laude* 2003
Cornell College, Mount Vernon, IA

PROFESSIONAL APPOINTMENTS

- Postdoctoral Research Fellow**, University of Michigan 2015-Present
Postdoctoral Research Associate, University of Minnesota 2013-2015
Visiting Lecturer, Cornell College 2012
Technical Writer, Hach Company 2006-2008

PUBLICATIONS

- Godwin, C.M., D.C. Hietala, A.R. Lashaway, P.E. Savage, and B.J. Cardinale.
Biodiversity enhances nutrient recycling in algal biocrude production. *Submitted to Environmental Science and Technology*.
- Godwin, C.M., E.A. Whitaker and J.B. Cotner. Growth rate and resource imbalance interactively control biomass stoichiometry and respiration of heterotrophic bacteria. *Revised Ecology*.
- Godwin, C.M. and J.B. Cotner. 2015. Aquatic heterotrophic bacteria have highly flexible phosphorus content and biomass stoichiometry. *ISME Journal*, doi: 10.1038/ismej.2015.34.
- Godwin, C.M. and J.B. Cotner. 2015. Stoichiometric flexibility in diverse aquatic heterotrophic bacteria is coupled to differences in cellular phosphorus quotas. *Frontiers in Microbiology* 5:159.
- Godwin, C.M. and J.B. Cotner. 2014. Carbon: phosphorus homeostasis of aquatic bacterial assemblages is mediated by shifts in assemblage composition. *Aquatic Microbial Ecology* 74: 245-258.
- Bellinger, B.J., B.A.S. Van Mooy, J.B. Cotner, H.F. Fredricks, C.R. Benitez-Nelson, J. Thompson, A. Cotter, M. Knuth, and C.M. Godwin. 2014. Physiological modifications of seston in response to physicochemical gradients within Lake Superior. *Limnology and Oceanography* 59: 1011-1026.
- Godwin, C.M., P.J. McNamara, and C. Markfort. 2013. Evening methane emission pulses from a boreal wetland correspond to convective mixing in hollows. *JGR Biogeosciences* 118: doi:10.1002/jgrg.20082.
- Godwin, C.M., M.A. Arthur, and H.J. Carrick. 2009. Periphyton nutrient status in a temperate stream with mixed land-uses: Implications for watershed nitrogen storage. *Hydrobiologia* 623: 141-152.
- Godwin, C.M. and H.J. Carrick. 2008. Spatio-temporal variation of periphyton biomass and accumulation in a temperate spring-fed stream. *Aquatic Ecology* 42: 583-595.

Godwin, C.M. and S.A. McCollum. 2005. "Do fathead minnows, *Pimephales promelas* (Cyprinidae), visually communicate that they detect alarm substances?" BIOS 76 (2): 102-106.

Manuscripts in Preparation (version available upon request)

- Godwin, C.M. and B.J. Cardinale. Ecological stoichiometry of algal biocrude production: polycultures can mitigate tradeoffs in multi-nutrient use efficiency. *In preparation for* Frontiers in Microbiology.
- Godwin, C.M. and J.B. Cotner. Which is most important in determining the elemental content and stoichiometric flexibility of aquatic bacteria: phylogeny, growth rate, or the environment? *In preparation for* Ecology Letters.
- Phillips, K., C.M. Godwin, and J.B. Cotner. "Sensitivity of heterotrophic bacteria in aquatic systems to nutrient imbalances and warming" *In preparation for* Frontiers in Microbiology.

PROFESSIONAL PRESENTATIONS

- J.B. Cotner, C.M. Godwin, and K. Phillips. Bacterial biomass composition and its implications for Earth's biogeochemical processes and feedbacks. ESA Annual Meeting, Baltimore, MD, August 13, 2015.
- Godwin, C.M. and J.B. Cotner. Stoichiometric homeostasis and elemental content of heterotrophic bacteria from lakes: biomass C:P shows dampened interspecific variability under low resource imbalance, but flexibility is prevalent under P-limitation. Conference on Biological Stoichiometry 2105, Peterborough, Ontario, Canada, June 24, 2015.
- J.B. Cotner and C.M. Godwin. Polyphosphate in freshwater plankton. Conference on Biological Stoichiometry 2105, Peterborough, Ontario, Canada, June 24, 2015.
- Godwin, C.M. and J.B. Cotner. Can phylogenetic affiliation or genome sequences explain the biomass stoichiometry and homeostatic regulation of aquatic heterotrophic bacteria? The Royal Society, Theo Murphy Meeting: "Elements, genomes, and ecosystems: cascading nitrogen and phosphorus impacts across levels of biological organization", Chicheley, U.K., June 1, 2015.
- J.B. Cotner and C.M. Godwin. Bacterial growth and stoichiometry in diverse freshwater trophic regimes. The Royal Society, Theo Murphy Meeting: "Elements, genomes, and ecosystems: cascading nitrogen and phosphorus impacts across levels of biological organization", Chicheley, U.K., June 1, 2015.
- Cotner, J. B., C.M. Godwin, and A. Little. Bacterial growth and stoichiometry in diverse freshwater trophic regimes. ASLO Aquatic Sciences Meeting, Granada, Spain, Feb 27, 2015.
- Whitaker, E. A., C.M. Godwin, and J.B. Cotner. What is the resource stoichiometry experienced by heterotrophic bacteria in aquatic environments? ASLO Aquatic Sciences Meeting, Granada, Spain, Feb 27, 2015.
- Godwin, C. M. and J.B. Cotner. The Effect Of Organic Carbon Partitioning In Stoichiometric Models Of Aquatic Heterotrophic Bacterial Assemblages. ASLO Aquatic Sciences Meeting, Granada, Spain, Feb 24, 2015.
- Godwin, C.M. and J.B. Cotner. "Making the most of it: biomass phosphorus content and allocation in bacterioplankton from lakes across a productivity gradient." Joint Aquatic Sciences Meeting, Portland, OR. May 22, 2014.
- Cotner, J.B. and C.M. Godwin. "What's salt got to do with it?: Why do marine plankton make poly-phosphate and freshwater plankton don't?" Joint Aquatic Sciences Meeting, Portland, OR. May 22, 2014.

- Godwin, C.M. and J.B. Cotner. "Ecological Stoichiometry of Assemblages: Physiological Tradeoffs Couple Competitive Ability and Homeostasis." Ecological Society of America, Minneapolis, MN. August 8, 2013.
- Cotner, J.B. and C.M. Godwin. "Arsenic and old lace: Just how much phosphorus does a bacterium need." ASLO Aquatic Sciences Meeting, New Orleans, LA. February 18, 2013.
- Godwin, C.M., P.J. McNamara, and C. Markfort. "Daytime chamber measurements miss substantial nighttime methane spikes captured by flux tower." American Geophysical Union Fall Meeting, San Francisco, CA. December 05, 2011.
- Godwin, C.M. and J.B. Cotner. "Phosphorus stoichiometry of bacterial assemblages: do species shifts influence homeostasis?" American Society for Limnology and Oceanography Aquatic Sciences Meeting, San Juan, PR. February 14, 2011.
- Cotner, J.B., C.M. Godwin, and J.T. Scott. "Trade-offs with phosphorus and carbon among bacteria and Winnie-the-Pooh." American Society for Limnology and Oceanography Aquatic Sciences Meeting, San Juan, PR. February 18, 2011.
- Godwin, C.M. "Periphyton Biomass and Nutrient Status in a Temperate Spring-Fed Stream." Ecology Symposium, The Pennsylvania State University, University Park, PA. April 25, 2006.
- Godwin, C.M. and H.J. Carrick. "Patterns in Plant Nutrient Stoichiometry and Nutrient Limitation in a Temperate Trout Stream: A Case Study from Spring Creek, PA." Environmental Chemistry Student Symposium, The Pennsylvania State University Center for Environmental Chemistry and Geochemistry, University Park, PA. March 18, 2006.
- Rilk, C.L., C.M. Godwin, R.P. Cushman, and H.J. Carrick. "Use of Biotic Indices to Evaluate Water Quality in a Temperate, Spring-Fed Stream, Spring Creek, Pennsylvania." Environmental Chemistry Student Symposium, The Pennsylvania State University Center for Environmental Chemistry and Geochemistry, University Park, PA. March 17, 2006.
- Godwin, C.M. and H.J. Carrick. "Longitudinal and Temporal Patterns of Stream Periphyton Biomass and Nutrient Composition in a Temperate Coldwater Stream." Regional Science Consortium, Tom Ridge Environmental Center, Erie, PA. October 6, 2005.
- Godwin, C.M., H.J. Carrick, and M. Johnston-Greenwald. "Temporal Patterns of Periphyton Accumulation in a Temperate Cold-Water Stream." Joint Assembly of the American Geophysical Union and the North American Benthological Society, New Orleans, LA. May 24, 2005.
- Godwin, C.M. and S.A. McCollum. "Visual Communication of Predation Threat Perceived by Chemical Alarm Signals in Fathead Minnows, *Pimephales promelas* (Cyprinidae)." Minnesota Academy of Science and the Tri-Beta Biological Society Joint Meeting, Minneapolis, MN. April 25, 2003.

GRANTS AND FUNDING

- DOE Joint Genome Institute Community Sequencing Program**, Translating stoichiometric diversity into genomic diversity: What genomic elements are responsible for variability in bacterial biomass stoichiometry? (PI J. Cotner, co-PIs C. Godwin and Cody Sheik) *under review*.
- NSF Division of Biological Sciences – Integrative Organismal Systems**, Homeostasis of prokaryotes in natural environments (PI J. Cotner), 2013-2016, \$525,000. *Although I was not formally a co-PI on this grant, I helped J. Cotner prepare the proposal while I was a Ph.D. student.

- Itasca Director's Graduate Research Fellowship**, University of Minnesota, Itasca Biological Station and Laboratories, 2011, \$5,000
Graduate Fellowship, University of Minnesota and the National Science Foundation: IGERT, 2008 – 2010
Research Grant, University of Minnesota and the National Science Foundation: IGERT, 2009, \$5,000
Katherine Mabis McKenna Fellowship, The Pennsylvania State University, 2005, \$3,500

AWARDS/HONORS

- Best Dissertation Competition department nominee and honorable mention, University of Minnesota, 2015
University Fellowship, The Pennsylvania State University, 2004 – 2005
Katherine Mabis McKenna Fellowship, The Pennsylvania State University, 2005 – 2006
Phi Beta Kappa, Cornell College, 2003
Dr. Frank G. Brooks Memorial Scholarship, Cornell College, 2003

UNDERGRADUATE RESEARCH MENTORING

- Emily Whitaker, *Interactive effects of P limitation and growth rate on bacterial stoichiometry, elemental content, and metabolism*, 2013-2014
James K. Lawton III, *Simultaneous CO₂ and O₂ measurements in bacterial cultures using membrane-inlet mass spectrometry*, 2013 (Through HHMI Research Mentor Program)
Alexandra Daniels, *Multiple responses of bacterioplankton to P limitation*, 2013
Rachel Womack (Carleton College), *Predicting bacterial stoichiometry with batch culture bioassays*, 2012-2013
Emily Ellingson, *Bacterial chemotaxis in response to P availability*, 2012-2013

TEACHING ASSISTANT APPOINTMENTS

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|---|---------|
| Teaching Assistant , University of Minnesota, Ecology | 2013 |
| Teaching Assistant , University of Minnesota, Limnology Laboratory | 2010-12 |
| Teaching Assistant , University of Minnesota, Foundations of Biology | 2011 |
| Teaching Assistant , The Pennsylvania State University, Limnology | 2005 |

JOURNAL REVIEWS

- Biogeochemistry, Biogeosciences, Ecology Letters

OUTREACH

- Judge, Twin Cities Regional Science Fair, 2013-2014
Judge, Phi Beta Kappa award for Undergraduate Research Symposium, 2013-2014
Science Shanty, Art Shanties Project, 2008-2010