

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

- Assistant Research Scientist**, Cooperative Institute for Great Lakes
Research, University of Michigan 2018-Present
- Postdoc**, University of Michigan, Advisor: Bradley Cardinale 2015-2018
- Postdoc**, University of Minnesota, Advisor: James Cotner 2013-2015
- Visiting Lecturer**, Cornell College 2012
- Technical Writer**, Hach Company 2006-2008

PUBLICATIONS

- Godwin, C.M. and B.J. Cardinale (in review). "Lifecycle and economic assessments greatly overestimate the potential of algal biofuel production compared to real-world cultivation"
- Carruthers, D.N., C.M. Godwin, D.C Hietala, B.J. Cardinale, X. Lin, and P.E. Savage (submitted). "Biodiversity improves life cycle sustainability metrics in algal biofuel production"
19. Hietala, D. C., C. M. Godwin, B. J. Cardinale, and P. E. Savage. 2019. The independent and coupled effects of feedstock characteristics and reaction conditions on biocrude production by hydrothermal liquefaction. *Applied Energy* 235:714-728.
18. Godwin, C.M., A.R. Lashaway, D.C. Hietala, P.E. Savage, and B.J. Cardinale. 2018. Biodiversity improves the ecological design of sustainable biofuel systems. *Global Change Biology – Bioenergy*, doi:10.1111/gcbb.12524.
17. Godwin, C.M. and J.B. Cotner. 2017. What intrinsic and extrinsic factors explain the stoichiometric diversity of aquatic heterotrophic bacteria? *ISME Journal*, doi:10.1038/ismej.2017.195.
16. J. E. Duffy, C.M. Godwin, and B.J. Cardinale. 2017. Biodiversity effects in the wild are common and as strong as key drivers of productivity. *Nature*, doi:10.1038/nature23886.
15. Godwin, C.M., D.C. Hietala, A.R. Lashaway, A. Narwani, P.E. Savage, and B.J. Cardinale. 2017. Ecological stoichiometry meets ecological engineering: using polycultures to enhance the multifunctionality of algal biocrude systems. *Environmental Science and Technology*, doi: 10.1021/acs.est.7b02137.
14. Phillips, K., C.M. Godwin, and J.B. Cotner. The effects of nutrient imbalances and temperature on the biomass stoichiometry of freshwater bacteria. 2017. *Frontiers in Microbiology*, doi: 10.3389/fmicb.2017.01692.
13. Hietala, D., C. Koss, A. Narwani, A. Lashaway, C. Godwin, B. Cardinale, and P. Savage. 2017. Influence of biodiversity, biochemical composition, and species identity on the quality of biomass and biocrude oil produced via hydrothermal liquefaction. *Algal Research* 26: 203-214, doi: 10.1016/j.algal.2017.07.020.
12. Jeyasingh, P.D., J.M. Goos, S.K. Thompson, C.M. Godwin, and J.B. Cotner. 2017. Ecological stoichiometry beyond Redfield: An ionic perspective on elemental homeostasis. *Frontiers in Microbiology*, doi: 10.3389/fmicb.2017.00722.

11. Godwin, C.M., E.A. Whitaker and J.B. Cotner. 2017. Growth rate and resource imbalance interactively control biomass stoichiometry and elemental quotas of aquatic bacteria. *Ecology* 98: 820-829, doi:10.1002/ecy.1705.
10. Godwin, C.M., D.C. Hietala, A.R. Lashaway, A. Narwani, P.E. Savage, and B.J. Cardinale. 2016. Algal polycultures enhance coproduct recycling from hydrothermal liquefaction. *Bioresource Technology* 224: 630-638, doi:10.1016/j.biortech.2016.11.105.
9. 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.
8. 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, doi: 10.3389/fmicb.2015.00159.
7. 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, doi:10.3354/ame01719.
6. 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, doi: 10.4319/lo.2014.59.3.1011.
5. 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.
4. 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.
3. 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.
2. Carrick, H. J., C. M. Godwin, M. J. Greenwald, C. Rilk, A. Siefert, and C. J. Tzilkowski. 2007. Evaluation of water quality in a spring-fed stream (Spring Creek in Centre County, Pennsylvania) based on benthic algae and macroinvertebrates. *Journal of the Pennsylvania Academy of Science* 80:71-78.
1. 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.

PROFESSIONAL PRESENTATIONS

- Godwin, C.M., D.C. Hietala, A.R. Lashaway, A. Narwani, P.E. Savage, and B.J. Cardinale. Ecological stoichiometry of algal biocrude production: Polycultures balance tradeoffs in nutrient use efficiency. ESA Annual Meeting, Portland, OR, August 10, 2017.
- 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.
- 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.
- 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.

- 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.
- 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.
- 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.
- 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.