

## Sarah Michelle Collins

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### CONTACT INFORMATION

Center for Limnology  
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### ACADEMIC APPOINTMENTS

#### **Postdoctoral Research Fellow**

Center for Limnology, University of Wisconsin May 2016 to present

Fisheries and Wildlife, Michigan State University October 2014-April 2016

- National Science Foundation Postdoctoral Research Fellowship in Biology
- Supervisors: Patricia Soranno and Pang-Ning Tan (MSU), Emily Stanley (UW)

### EDUCATION

#### **Cornell University**, Ithaca, NY

Ph.D., Ecology and Evolutionary Biology January 2015

- Dissertation: Understanding the Effects of Consumers and Light on Stream Food Webs Using Stable Isotope Techniques
- Advisors: Nelson Hairston Jr. and Alexander Flecker

#### **Lewis & Clark College**, Portland, OR

B.A., *Cum Laude*, Biochemistry and Molecular Biology May 2007

### PUBLICATIONS (PUBLISHED OR IN PRESS)

Oliver, S.K., **S.M. Collins**, P.A. Soranno, T. Wagner, E.H. Stanley, J.R. Jones, C.A. Stow, N.R. Lottig. *In Press*. Unexpected stasis in a changing world: Lake nutrient and chlorophyll trends since 1990. *Global Change Biology*. 10.1111/gcb.13810

Tank, J.L., E. Marti, T. Riis, W.K. Dodds, M.R. Whiles, D. von Schiller, L.R. Ashkenas, W.B. Bowden, **S.M. Collins**, C.L. Crenshaw, T.A. Crowl, N.A. Griffiths, N.B. Grimm, S.K. Hamilton, S.L. Johnson, W.H. McDowell, B.M. Norman, E.J. Rosi-Marshall, K.S. Simon, S.A. Thomas and J.R. Webster. *In Press*. Partitioning assimilatory nitrogen uptake in streams: an analysis of stable isotope tracer additions across continents. *Ecological Monographs*.

Cheruvilil K.S., S. Yuan, K.E. Webster, P.N. Tan, J.F. Lapierre, **S.M. Collins**, C.E. Fergus, C.E. Scott, E.N. Henry, P.A. Soranno, C.T. Filstrup, and T. Wagner. 2017. Creating multi-themed ecological regions for macroscale ecology: Testing a flexible, repeatable, and accessible clustering method. *Ecology and Evolution* 7: 3046-3058. DOI: 10.1002/ece3.2884

**Collins, S.M.**, S.K. Oliver, J.F. Lapierre, E.H. Stanley, J.R. Jones, T. Wagner, and P.A. Soranno. 2017. Lake nutrient stoichiometry is less predictable than nutrient concentrations at regional and sub-continental scales. *Ecological Applications* 27: 1529-1540. DOI: 10.1002/eap.1545

Lapierre, J.F., D. Seekell, C.T. Filstrup, **S.M. Collins**, C.E. Fergus, P.A. Soranno, and K.S. Cheruvilil. 2017. Continental-scale variation in controls of summer CO<sub>2</sub> in United States lakes. *Journal of Geophysical Research - Biogeosciences* 122: 875-885.  
DOI: 10.1002/2016JG003525

Warren, D.R., **S.M. Collins**, E.M. Purvis, M.J. Kaylor and H.A. Bechtold. 2017. Spatial variability in light yields co-limitation of primary production by both light and nutrients in a forested stream ecosystem. *Ecosystems* 20: 198-210. DOI: 10.1007/s10021-016-0024-9

- Collins, S.M.**, J.P. Sparks, S.A. Thomas, S.A. Wheatley and A.S. Flecker. 2016. Increased light availability reduces the importance of bacterial carbon in headwater stream food webs. *Ecosystems* 19: 396-410. DOI: 10.1007/s10021-015-9940-3
- Collins, S.M.**, S.A. Thomas, T. Heatherly II, K.L. MacNeill, A.O.H.C. Leduc, A. Lopez-Sepulcre, B. Lamphere, R.W. El-Sabaawi, C.M. Pringle, D.N. Reznick, and A.S. Flecker. 2016. Fish introductions and light modulate food web fluxes in tropical streams: a whole-ecosystem experimental approach. *Ecology* 97: 3154-3166. DOI: 10.1002/ecy.1530
- Collins, S.M.**, T.J. Kohler, S.A. Thomas, W.W. Fetzer and A.S. Flecker. 2016. The importance of terrestrial subsidies in stream food webs varies along a stream size gradient. *Oikos* 125: 674-685. DOI: 10.1111/oik.02713
- Yuan, S., P.N. Tan, K.S. Cheruvellil, **S.M. Collins** and P.A. Soranno. 2015. Constrained spectral clustering for regionalization: Exploring the trade-off between spatial contiguity and landscape heterogeneity. *IEEE International Conference on Data Science and Advanced Analytics*. DOI: 10.1109/DSAA.2015.7344878
- Soranno, P.A., E.G. Bissell, K.S. Cheruvellil, S.T. Christel, **S.M. Collins**, C.E. Fergus, C.T. Filstrup, J.F. Lapierre, N.R. Lottig, S.K. Oliver, C.E. Scott, N.J. Smith, S. Stopyak, S. Yuan, M.T. Bremigan, J.A. Downing, C. Gries, E.N. Henry, N.K. Skaff, E.H. Stanley, C.A. Stow, P.N. Tan, T. Wagner and K.E. Webster. 2015. Building a multi-scaled geospatial temporal ecology database from disparate data sources: Fostering open science through data reuse. *GigaScience* 4:28. DOI: 10.1186/s13742-015-0067-4
- Dodds, W.K., **S.M. Collins**, S.K. Hamilton, J.L. Tank, S. Johnson, J.R. Webster, K.S. Simon, M.R. Whiles, H.M. Rantala, W.H. McDowell, S.D. Peterson, T. Riis, C.L. Crenshaw, S.A. Thomas, P.B. Kristensen, B.M. Cheever, A.S. Flecker, N.A. Griffiths, T. Cowl, E.J. Rosi-Marshall and R. El-Sabaawi. 2014. You are not necessarily what we think you eat: selective assimilation across multiple whole-stream isotopic tracer studies. *Ecology* 95: 2757-2767. DOI: 10.1890/13-2276.1
- Collins, S.M.**, N. Bickford, P.B. McIntyre, A. Coulon, A.J. Ulseth, D.C. Taphorn and A.S. Flecker. 2013. Population structure of a Neotropical migratory fish: contrasting perspectives from genes and otolith microchemistry. *Transactions of the American Fisheries Society* 142: 1192-1201. DOI: 10.1080/00028487.2013.804005
- Molecular Ecology Resources Primer Development Consortium and 33 others, including **S.M. Collins**. 2011. Permanent Genetic Resources added to Molecular Ecology Resources Database 1 June 2011- 31 July 2011. *Molecular Ecology Resources* 11: 1124-1126. DOI: 10.1111/j.1755-0998.2011.03068.x
- Capps, K.A., M.T. Booth, **S.M. Collins**, M.A. Davison, J.M. Moslemi, R.W. El-Sabaawi, J.L. Simonis and A.S. Flecker. 2011. Nutrient diffusing substrata: a field comparison of commonly used methods to assess nutrient limitation. *Journal of the North American Benthological Society* 30: 522-532. DOI: 10.1899/10-146.1
- Carey, C.C., M.P. Ching, **S.M. Collins**, A.M. Early, W.W. Fetzer, D. Chai and N.G. Hairston, Jr. 2011. Predator-dependent diel migration by *Halocaridina rubra* shrimp (Malacostraca: Atyidae) in Hawaiian Anchialine pools. *Aquatic Ecology* 45: 35-41. DOI: 10.1007/s10452-010-9321-0
- Lapierre, J-F, **S.M. Collins**, D. Seekell, K.S. Cheruvellil, P.N. Tan, N.K. Skaff, Z. Taranu, C.E. Fergus and P.A. Soranno. *In Review*. The role of spatial structure in understanding the relationships between ecosystem properties at macroscales. *Global Ecology and Biogeography*, manuscript number GEB-2017-0327.

PUBLICATIONS  
(IN REVIEW OR  
IN REVISION)

Norman, B.C., M.R. Whiles, **S.M. Collins**, A.S. Flecker, S.K. Hamilton, S.L. Johnson, E.J. Rosi-Marshall, L.R. Ashkenas, W.B. Bowden, C.L. Crenshaw, T.A. Crowl, W.K. Dodds, R.O. Hall, R. El-Sabaawi, N.A. Griffiths, E. Marti, W.H. McDowell, S.D. Peterson, H.M. Rantala, T. Riis, K.S. Simon, J.L. Tank, S.A. Thomas, D. von Schiller and J.R. Webster. *In Revision*. Drivers of nitrogen transfer efficiencies in stream food webs across continents. *Ecology*, manuscript number ECY17-0532.

Soranno, P.A. and 79 others listed alphabetically including **S.M. Collins**. *In Revision*. LAGOS-NE: A multi-scaled geospatial and temporal database of lake ecological context and water quality for thousands of U.S. lakes. *Gigascience*, manuscript number GIGA-D-17-00112.

Yuan, S., P.N. Tan, K.S. Cheruvellil, **S.M. Collins** and P.A. Soranno. *In Revision*. Spatially constrained spectral clustering algorithms for region delineation. *International Journal of Data Science and Analytics*, manuscript number JSDA-D-17-00027.

## GRANTS AND AWARDS

### Fellowships

- National Science Foundation Postdoctoral Research Fellowship in Biology (\$207,000), 2014-17
- Andrew and Margaret Paul Graduate Fellow (\$11,000), 2010
- National Science Foundation Graduate Research Fellowship Honorable Mention, 2008-09
- Cornell Fellowship (\$22,000), 2007-08
- Barbara Neeley Scholarship for 4 years full tuition, Lewis & Clark College, 2003-2007

### Research & Travel Grants

- 2016-2021: National Science Foundation Macrosystems Ecology Program: Collaborative research MSB-FRA: A macrosystems ecology framework for continental-scale prediction and understanding of lakes, NSF #1638679, lead PI: P.A. Soranno and 14 collaborators, S. Collins is Senior Personnel. (\$4,257,250)
- 2016-2020: Academy of Finland. Project title: "The ecosystem effects of a rapidly evolving invader: A novel framework for the experimental study of nutrient fluxes", lead PI: A. Lopez-Sepulcre, collaborators: S. Collins, R. El-Sabaawi, S. Thomas. (€455,810)
- 2015: Conference on Biological Stoichiometry Travel Grant (\$400)
- 2012-2014: National Science Foundation Doctoral Dissertation Improvement Grant (\$14,652)
- 2008-2013: Cornell Graduate School Conference Grants (7 awards, total \$2,765)
- 2011: Orenstein Fund Award for travel to Norway (\$700)
- 2008-2010: Kieckhefer Adirondack Fund (3 awards, total \$13,000)
- 2008-2010: Biogeochemistry and Environmental Biocomplexity NSF IGERT Small Grants (4 awards, total \$14,500)
- 2010: Cornell Graduate School Research Travel Grant (\$1,800)
- 2010: Einaudi Center International Research Travel Grant (\$400)
- 2008: Cornell Chapter of Sigma Xi (\$800)
- 2006: Lewis & Clark College Student Academic Affairs Board Research and Conference Grants, total (\$2,430)

### Awards

- Outstanding Teaching Assistant, Cornell University College of Agriculture and Life Sciences, 2013
- North American Benthological Society President's Award, 2011
- Biology Award for Outstanding Graduate, Lewis & Clark College, 2007
- Phi Beta Kappa, 2007

## TEACHING EXPERIENCE

**Michigan State University**, East Lansing, MI

*Instructor* for FW 472: Limnology

2016

*Coursework*: Certificate in Scientific Teaching 2015

*Guest Instructor* for FW 472: Limnology 2015

*Guest Lecturer* for FW 474: Field and Laboratory Techniques for Aquatic Studies 2014

*Attendance at Teaching Development Seminars* 2014-2016

- MSU Teaching Essentials: Introducing models to the classroom using technology, Student grievances, Race matters, Active learning, Learning management systems, Assessment.
- Lily Teaching Workshop: Cooperative learning

**Cornell University, Ithaca, NY**

*Teaching Assistant*

- BioEE 1780: Evolutionary Biology and Diversity 2013
- BioEE 4780: Ecosystem Biology and Global Change 2013
- BioEE 1610: Ecology and the Environment 2012
- BioEE 4560: Stream Ecology 2011
- BioEE 2780: Evolutionary Biology and Diversity (Head TA) 2008, 2009

*Guest Lecturer*

- BioEE 4780: Ecosystem Biology and Global Change 2013
- BioEE 4560: Stream Ecology 2011

MENTORING  
EXPERIENCE

**Cornell University, Ithaca, NY**

*Co-director* for Biology Research Fellowship Program 2011-2013

- Directed NSF-funded summer research program for underrepresented students in the biological sciences for three years
- Led research training and professional development seminars to prepare students for graduate school

*Mentor and Supervisor* for undergraduate field and laboratory technicians 2008-2014

- 12 undergraduate or post-graduate students assisted with the field component of my dissertation research
- 8 undergraduate students assisted with sample processing for my dissertation research
- Supervised independent study project for Jaquelyn Lauletta (Cornell Class of 2013)

INVITED  
SEMINARS

2016 Reed College, Biology Department Seminar

2014 Michigan State University, Ecology, Evolutionary Biology, and Behavior Colloquium

2014 Michigan State University, Department of Fisheries and Wildlife Seminar

2014 Cornell University, Ecology and Evolutionary Biology Department Seminar

2007 Lewis & Clark College Biochemistry and Molecular Biology Department Seminar

CONFERENCE  
PRESENTATIONS

- Collins, S.M., K.S. Cheruvilil, C.E. Fergus, J.F. Lapierre, S.K. Oliver, N.K. Skaff, P.A. Soranno, J. Stachelek, P.N. Tan, S. Yuan and T. Wagner. 2017. Which measures of climate are the best predictors of lake water quality at sub-continental scales? Ecological Society of America Annual Meeting, Portland, OR.
- Collins, S.M., S.K. Oliver, J.F. Lapierre, E.H. Stanley, J.R. Jones, T. Wagner, and P.A. Soranno. 2016. What drives lake nitrogen and phosphorus concentrations at continental scales, and why is it so hard to explain nutrient ratios? Association for the Sciences of Limnology and Oceanography Summer Meeting, Santa Fe, NM.
- Collins, S.M., S.K. Oliver, J.F. Lapierre, E.H. Stanley, K.S. Cheruvilil, P.A. Soranno, CSI Limnology Research Team. 2015. Integrating a spatial dimension into the relationship between landscape and lake chemistry through the use of a large, multi-themed database. American Geophysical Union Annual Meeting, San Francisco, CA (invited talk)
- Collins, S.M., R.W. El-Sabaawi, T.N. Heatherly, B. Lamphere, A. Leduc, A. Lopez-Sepulcre, K.L. MacNeill, S.A. Thomas and A.S. Flecker. 2015. Fish introductions and light availability modulate food web fluxes in tropical streams. Oral Presentation at the Ecological Society of America Annual Meeting, Baltimore, MD.
- Collins, S.M., S.K. Oliver, J.F. Lapierre, E.H. Stanley and P.A. Soranno. 2015. Macroscale patterns in lake N:P stoichiometry: influence of multiple landscape drivers. Poster Presentation at the Conference on Biological Stoichiometry, Peterborough, Ontario.
- Collins, S.M., T. Kohler, S.A. Thomas, W.W. Fetzer and A.S. Flecker. 2015. The importance of terrestrial subsidies in stream food webs varies along a stream size gradient. Oral Presentation at the Society of Freshwater Science Annual Meeting, Milwaukee, WI.
- Collins, S.M., S.A. Thomas and A.S. Flecker. 2013. Examining the role of bacteria in food webs using a dual-isotope tracer approach. Oral Presentation at the Ecological Society of America Annual Meeting, Minneapolis, MN.
- Collins, S.M., J.M. Lauletta and A.S. Flecker. 2013. Evaluating resource use on a stream size gradient using isotopic and genetic approaches. Oral Presentation at Society for Freshwater Science Annual Meeting, Jacksonville, FL.
- Collins, S.M., S.A. Thomas, K.L. MacNeill, T.N. Heatherly, A.S. Flecker. 2012. Examining the role of bacteria in stream food webs using a dual-isotope tracer approach. Oral Presentation at Biogeomon 2012: the 7th International Symposium on Ecosystem Behavior, Northport, ME.
- Collins, S.M., N. Bickford, P.B. McIntyre, A. Coulon, A.J. Ulseth and A.S. Flecker. 2011. Genetic and microchemical analysis of population structure in a migratory Neotropical fish. Oral Presentation at the American Fisheries Society Annual Meeting, Seattle, WA.
- Collins, S.M., S.A. Thomas and A.S. Flecker. 2011. Increased light availability influences the role of bacteria in stream food webs: a dual C and N isotope tracer approach. Oral Presentation at the North American Benthological Society Meeting, Providence, RI.
- Collins, S.M., S.A. Thomas, R.W. El-Sabaawi, W.K. Dodds, A.S. Flecker. 2010. A dual isotope tracer approach to assessing food web dynamics. Oral Presentation at the American Society of Limnology and Oceanography and North American Benthological Society Joint Meeting, Santa Fe, NM.
- Collins, S.M., R.W. El-Sabaawi, J.P. Sparks, S.A. Thomas, and A.S. Flecker. 2009. Assessing allochthonous inputs to stream food webs using dual carbon and nitrogen stable isotope tracers. Poster presentation at the North American Benthological Society Annual Meeting, Grand Rapids, MI.

Collins, S.M., N. Bickford, P.B. McIntyre, A. Coulon, A.J. Ulseth and A.S. Flecker. 2008. Genetic and microchemical analysis of population structure in a migratory Neotropical fish. Oral presentation at the North American Benthological Society Annual Meeting. Salt Lake City, UT.

Collins, S.M., J.V. Hopper and E. Michel. 2006. Trematode prevalence, diversity and lifecycles in *Lavageria nassa*: A co-evolutionary arms race between gastropods and parasites. Poster at the Western Society of Naturalists Annual Meeting. Redmond, WA.

POPULAR  
WRITING

"At home underwater and on land: A conversation with Dr. Mary Power," *Scientific American*, 20 April 2012. <http://blogs.scientificamerican.com/guest-blog/2012/04/20/at-home-underwater-and-on-land-a-conversation-with-dr-mary-power/>

"Energy flow between stream and forest," *Oikos Journal Blog*, 02 October 2015. <http://www.oikosjournal.org/blog/energy-flow-between-stream-and-forest>

OTHER SKILLS

Proficient in Spanish, conversational in Swahili, certified SCUBA diver (PADI Advanced Open Water and Rescue Diver), experienced working in remote field conditions, field research experience in Montana, Kenya, Tanzania, Florida, Hawaii, New York, Trinidad and Tobago

MEMBERSHIPS  
AND SERVICE

**Society Memberships**

- American Geophysical Union (2015-present)
- Ecological Society of America (2007-present)
- Association for the Sciences of Limnology and Oceanography (2014-present)
- Society for Freshwater Science (2007-present)

**Reviewer**

- Manuscript reviews: *Ambio*, *Biotropica*, *Canadian Journal of Fisheries and Aquatic Science*, *Conservation Genetics*, *Ecological Applications*, *Ecology*, *Ecosystems*, *Food Webs*, *Freshwater Biology*, *Freshwater Science*, *Hydrobiologia*, *Journal of Geophysical Research - Biogeosciences*, *Lake and Reservoir Management*, *Landscape Ecology*, *North American Journal of Fisheries Management*, *Oecologia*, *Restoration Ecology*
- Grant reviews: *Biogeochemistry and Environmental Biocomplexity Small Grants*, *Cornell Sigma Xi Chapter Research Grants*, *Society for Freshwater Science Undergraduate Travel Grants* and *Instars Travel Grants*

**Committee Work**

- Editorial board of *Ratios Matter*, the ecological stoichiometry newsletter
- Special session co-organizer: ASLO 2016 Summer Meeting
- Cornell Ecology and Evolutionary Biology Graduate Student Association (2007-2014): webmaster, holiday party, invited speaker, recruitment
- Cornell Biogeochemistry and Environmental Biocomplexity Graduate Student Association (2007-2012): co-president, seminar committee chair

Updated August 23, 2017