

Cristina M. Herren

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Current Position

Postdoctoral Fellow of the Harvard Data Science Initiative *September 2017 – Present*
Appointments in Biostatistics at the Harvard School of Public Health (2017-2019) & the
Department of Biomedical Informatics at Harvard Medical School (2019-2020)

Education

University of Wisconsin-Madison *PhD Granted August 2017*
Freshwater and Marine Sciences PhD Program
Advisor: Dr. Katherine McMahon

Dartmouth College, Hanover, NH *September 2008 – June 2012*
B.A. Biology with High Honors; Minor in Government

Manuscripts In Review & Preprints

Herren, Cristina M. and Michael Baym. "Stronger connectivity of the resident gut microbiome lends resistance to invading bacteria."
Preprint: doi: <https://doi.org/10.1101/261750>

Publications

Herren, Cristina M. "Disruption of cross-feeding interactions by invading taxa can cause invasional meltdown in microbial communities." *In press at Proceedings of the Royal Society B*
Preprint: doi: <https://doi.org/10.1101/2020.01.23.917013>

Herren, Cristina M. "Expected differences in diversity and rarity between communities containing sexually versus asexually reproducing taxa." *Applied and environmental microbiology* (2019): AEM-01099.

Herren, Cristina M., and Katherine D. McMahon. "Keystone taxa predict compositional change in microbial communities." *Environmental microbiology* 20.6 (2018): 2207-2217.

Herren, Cristina M. and Katherine D. McMahon. "Cohesion: A method for quantifying the connectivity of microbial communities." *The ISME journal* 11.11 (2017): 2426.

Herren, Cristina M., Kyle C. Webert, Michael D. Drake, M. Jake Vander Zanden, Árni Einarsson, Anthony R. Ives, and Claudio Gratton. "Positive feedback between chironomids and algae creates net mutualism between benthic primary consumers and producers." *Ecology* 98.2 (2017): 447-455.

Krowiak, Alexander*, **Cristina M. Herren**, Kyle C. Webert, Árni Einarsson, and Anthony R. Ives. "Resource gradients and the distribution and flowering of butterwort, a carnivorous plant." *Annales Zoologici Fennici*. Vol. 54. No. 1–4. (2017).

* mentored undergraduate

Webert, Kyle C., **Cristina M. Herren**, Árni Einarsson, Mireia Bartrons, Ulf Hauptfleisch and Anthony R. Ives. "Midge-stabilized sediment drives the composition of benthic cladoceran communities in Lake Mývatn, Iceland." *Ecosphere* 8.2 (2017).

Herren, Cristina M., Kyle C. Webert, and Katherine D. McMahon. "Environmental Disturbances Decrease the Variability of Microbial Populations within Periphyton." *mSystems* 1.3 (2016): e00013-16.

Bartrons, Mireia, Árni Einarsson, Regina L. G. Nobre, **Cristina M. Herren**, Kyle C. Webert, Sandra Brucet, Sólveig R. Ólafsdóttir, and Anthony R. Ives, "Spatial patterns reveal strong abiotic and biotic drivers of zooplankton community composition in Lake Mývatn, Iceland." *Ecosphere* 6.6 (2015).

Fey, Samuel B. and **Cristina M. Herren**. "Temperature-mediated biotic interactions influence enemy release of non-native species in warming environments." *Ecology* 95.8 (2014): 2246-2256.

Teaching and Service

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|---|--------------------------|
| Informal Statistical Consulting for Colleagues | 2012 - Present |
| Researchers/datasets: Dr. Timothy Paustian (oral microbiome), Dr. Kimberly Dill-McFarland (cow rumen microbiome), Dr. Ben Oyserman (wastewater bacteria), Dr. Peter Blank (avian communities), Dr. Brandon Barton (aphid predation), Dr. Richard Barker (plants in microgravity), Dr. Jesse Miller (plant distributions), Dr. Ebony Murrell (plant diseases), Alex Linz (lake bacteria), Robin Rohwer (lake bacteria), Francisco Moya (phage-bacteria interactions), Rachael Zinn (virus inactivation), Kyle Webert (zooplankton and terrestrial insects), Catherine Frock (seed dispersal), Amy Uhrin (Bayesian statistics), Sian Owen (<i>Salmonella</i> growth) | |
| Elected Graduate Student Representative for UW-Madison LTER Program | 2015 - 2016 |
| <i>North Temperate Lakes Long Term Ecological Research Program</i> | |
| Graduate Student Mentor for REUs and Undergraduate Interns | 2012 - 2015 |
| Each of the 11 students I have mentored has completed an independent project, which has resulted in 1 paper with a mentee as first author and many undergraduate theses | |
| Teaching Assistant for Zoology 260, Introductory Ecology | Spring 2013, Spring 2014 |
| <i>UW-Madison Department of Zoology</i> | |
| Undergraduate TA for Genetic Variation & Evolution | Spring 2012 |
| <i>Dartmouth College Department of Biology</i> | |
| Tutor for courses in Statistics, Calculus, and Physics | 2011 - 2012 |
| <i>Dartmouth College</i> | |

Previous Research Experience

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| Lab and Field Researcher, Lab of Dr. Kathryn Cottingham <i>Dartmouth College Department of Biology</i> | <i>2011 – 2012</i> |
| Senior Honors Thesis, Advised by Dr. Mark McPeck <i>Dartmouth College Department of Biology</i> | <i>2011 – 2012</i> |
| Mathematical Modeler, Advised by Dr. Meredith Greer <i>Bates College Math Department</i> | <i>Summer 2011</i> |

Awards and Scholarships

Harvard Data Science Initiative Postdoctoral Fellowship, 2017 – 2020
NSF Graduate Research Fellowship, 2014-2017
Anna Grant Birge Award, UW-Madison Center for Limnology, 2016. \$1000
Anna Grant Birge Award, UW-Madison Center for Limnology, 2015. \$2000
John Jefferson Davis Travel Grant, UW-Madison Zoology Department, 2015. \$800
Biological Scholars Award, University of Wisconsin-Madison, 2012. \$2250
1st place, Neukom Prize for Outstanding Undergraduate Research in Computational Science, Neukom Institute at Dartmouth College, 2012. \$1000
3rd place, Neukom Prize for Outstanding Graduate Research in Computational Science, Neukom Institute at Dartmouth College, 2012 (joint submission with Sam B. Fey). \$250
Presidential Scholar, Dartmouth College, 2012.
Robert C. Byrd Honors Scholarship, US Department of Education, 2008-2012. \$4500
James O. Friedman Presidential Scholar, Dartmouth College, 2010. \$750

Presentations and Posters

Metabolite-Explicit Models of Microbial Interactions Lend Insight to Coexistence and Invasion in Microbial Communities – Poster Presentation at ASLO Meeting in Victoria, Canada, June 2018
Small Subsets of Highly Connected Taxa Predict Compositional Turnover in Microbial Communities – Oral Presentation at ASLO Conference in Honolulu, Hawaii, March 2017
Connectedness and Compositional Turnover in Plankton Communities – Oral Presentation at the North Temperate Lakes LTER meeting, April 2016
Mutualism Between Chironomids and Their Benthic Algal Resources – Poster at ASLO Conference in Granada, Spain, February 2015
Ecology of Lakes – Guest Lecturer in Zoology 260, Ecology for Non-Majors (enrollment of 200), March 2014
Ecology of Lakes – Guest Lecturer in Zoology 260, Ecology for Non-Majors (enrollment of 170), February 2013
Enemy Release Promotes Dominance of an Invasive Zooplankton, UW-Madison Limnology Seminar Series, October 2012
Modeling Coevolution in Predator-Prey Systems – Senior Thesis public defense, May 2012

Invited Presentations

Modeling Microbial Communities Panel – Panelist at ISME in Leipzig, Germany, August 2018