

CATHERINE M. RISENG, Ph.D.
School of Natural Resources and Environment
University of Michigan
440 Church St, Ann Arbor, 48109-1041
734-763-9422 (work); email: criseng@umich.edu

Education

Ph.D., Natural Resources, Aquatic Resources, University of Michigan, 2001
Advisor: Dr. Michael J. Wiley
Dissertation: Patterns of hydrologic disturbance and benthic community structure in
Midwestern streams

M.S., Biology, Aquatic Ecology, University of Michigan, 1988
Advisor: Dr. Susan Kilham and Dr. Peter Kilham
Dissertation: The role of pH, trace metals and aluminum on the growth rate of
circumneutral and acidophilic diatoms *Asterionella formosa* and *A. ralfii*.

B.S., Botany, University of Michigan, 1975

Professional Experience

2013-present	Research Program Manager, Michigan Sea Grant, and University of Michigan: leading statewide research program for MSG including developing RFP, proposal review, and proposal evaluation as well as developing externally funded projects. 50% FTE
2009-present	Assistant Research Scientist, University of Michigan: Development of the Great Lakes Aquatic Habitat Framework (GLFT); Conducting a Great Lakes Coastal Fish Habitat Assessment (GLBFHP/USFWS); Assessment of Progress Indicator Integration (IJC); Assessing Information Needs and Developing Tools for Great Lakes Ecosystem, (UM Water Center). 100% FTE through 2013, then 50% FTE
2001-2009	Research Associate II, University of Michigan: A collaborative approach to understanding the dynamics of the Muskegon River watershed (Great Lakes Fisheries Trust); The Development and Testing of Structural Equation Models for the National Water Quality Assessment Program (U.S. Department of Interior / USGS); Developing relationships among human activities, stressors and stream ecosystem responses and linkages in integrated regional, multi-stressor models (EPA Star).
1995-2001	Graduate Research Assistant, University of Michigan: Effects of hydrology and nutrients on stream ecosystems across regions (EPA Water and Watersheds); Aquatic community assemblage structure in relation to macro-habitat units in Lower Michigan (The Nature Conservancy).
1986-1988	Graduate Research Assistant, University of Michigan: Effects of acidification on algal species

1978-1981 The design and experimental results of operation of an experimental solar greenhouse, Environmental Research Institute of Michigan (Department of Energy)

Teaching Experience

2014-present Co-instructor for Stream Restoration (PitE/Eng)
2013-winter term Lecturer for Rivers, Lakes, and Wetlands (PitE 311/EEB422) – Lecture and laboratory course covering physical, chemical, and biological ecology of aquatic ecosystems; supervised GSI
2009-winter term Lecturer for Aquatic Entomology – experimental graduate course: Lecture and laboratory course covering the taxonomy, phylogeny and biology of the aquatic insect orders
2001-present Mentor for graduate and undergraduate students
1996-2001 Graduate Student Instructor for *Aquatic Ecosystems* (3 semesters), *Fluvial Ecosystems*, *Aquatic Entomology*
1986-1988 Graduate Student Instructor for *Biology and Human Affairs* and *Practical Botany* (2 semesters each)
1978-1981 Seminar leader for solar energy greenhouse experiments

Other Professional Experience

1990-1995 Aquatic Ecologist, Johnson Johnson & Roy, Inc.
1988-1990 Wetland Ecologist, Applied Science and Technology, Inc
1981-1986 Independent builder/Carpenter
1978-1981 Project Manager and Researcher, ERIM
1975-1977 Coordinator, Michigan Federation of Food Cooperatives

Peer Reviewed Publications

W. Fetzer, B.M. Roth, D.M. Infante, D.F. Clapp, R.M. Claramunt, D.G. Fielder, D.K. Forsyth, J.X. He, T.J. Newcomb, C.M. Riseng, K.E. Wehrly, T.G. Zorn. Spatial and temporal dynamics of nearshore fish communities in Lake Michigan and Lake Huron. *J of Great Lakes Res* 43:319-334. <https://doi.org/10.1016/j.jglr.2016.12.003>

Wittmann, M.E. G. Annis, A.M. Kramer, L. Mason, **C.M. Riseng**, E.S. Rutherford, W.L. Chadderton, D. Beletsky, J.M. Drake, D.M. Lodge. 2016. Refining species distribution model outputs using landscape scale habitat data: Forecasting Grass Carp and *Hydrilla verticillata* establishment in the Great Lakes Region. *J. of Great Lakes Res.* 43:298-307. <https://doi.org/10.1016/j.jglr.2016.09.008>

L.A. Mason, **C.M. Riseng**, A.D. Gronewald, E.S. Rutherford, J. Wang, A. Clites, S. Smith, P. McIntyre. 2016. Fine-scale analysis of changes in surface water temperature and ice cover in the North American Great Lakes. *Climatic Change*, 138:71-83. doi: 10.1007/s10584-016-1721-2.

Goodspeed, R., **C.M. Riseng**, K. Wehrly, W. Yin, L. Mason, B. Schoenfeldt. 2016. Applying Design Thinking Methods to Ecosystem Management Tools: Creating the Great Lakes Aquatic Habitat Explorer. *Marine Policy*, 69: 134-145 doi:10.1016/j.marpol.2016.04.017.

D.K. Forsyth, **C. M. Riseng**, K.E. Wehrly, L.A. Mason, M. Robertson, J. Gaoit, T. Hollenhorst, C. Johnston, C. Wyrzykowski, C. Castiglione, G. Annis, K.Todd, J.E. McKenna, D.M. Infante, L. Wang, G. Whelan. 2016. A consistent, binational watershed boundary framework for comparing metrics across the Great Lakes Basin. *J. Am. Water Resources Research*, DOI: 10.1111/1752-1688.12435.

Wang, L., D. Infante, **C. Riseng**, K. Wehrly. 2016. Advancement of geospatial capability in enhancing aquatic ecosystem research and management. *Geoinformatics and Geostatistics: An Overview* 4(2). doi:<http://dx.doi.org/10.4172/2327-4581.1000142>

Glyshaw, P., **C. M Riseng**, T.F Nalepa; S.A Pothoven. 2015. Temporal Trends in Nutritional State and Reproduction of Quagga Mussels (*Dreissena rostriformis bugensis*) in Southern Lake Michigan. *J. of Great Lakes Research*, Special Edition. doi:[10.1016/j.jglr.2015.08.006](https://doi.org/10.1016/j.jglr.2015.08.006).

Wang, L., **C. Riseng**, L. Mason, E. Rutherford, K. Wehrly, J. Mckenna, C. Castiglione, L. Johnson, S. Sowa, D. Infante, J. Schaeffer, M. Robertson, J. Gaiot, T. Hollenhorst, J. Ciborowski, and M. Coscarelli. 2015. A hierarchical spatial framework and database for management, research, and Binational Water Quality Agreement Objectives in the Great lakes basin. *J. of Great Lakes Res.* 41(2): 584–596. doi.org/10.1016/j.jglr.2015.03.017.

Samples, A., **C. Riseng** and J. Day. 2015. Engaging Marina and Harbor Operators in Climate Adaptation. *Michigan Journal of Sustainability - Special Issue on Climate Adaptation in the United States*. Spring Vol 3, doi.org/10.3998/mjs.12333712.0003.004.

Esselman, P., R.J. Stevenson, F. Lupi, **C.M. Riseng**, M.J. Wiley. 2015. Landscape prediction and mapping of game fish biomass, an ecosystem service of Michigan rivers. *N. Am. J. of Fisheries Management* 35:302-320.

David B. Bunnell, Richard P. Barbiero, Stuart A. Ludsin, Charles P. Madenjian, Glenn J. Warren, David M. Dolan, Travis O. Brenden, Ruth Briland, Owen T. Gorman, Ji X. He, Thomas H. Johengen, Brian F. Lantry, Thomas F. Nalepa, Stephen C. Riley, **Catherine M. Riseng**, Ted J. Treska, Iyob Tsehaye, David M. Warner, Maureen G. Walsh, and Brian C. Weidel. 2013. Changing ecosystem dynamics in the Laurentian Great Lakes; bottom-up and top-down regulation. *Bioscience* 64(1): 26-39.

Riseng, C.M., M.J., Wiley, R.W. Black, M.D. Munn. 2011. Impacts of agricultural land use on biological integrity: a causal analysis. *Ecological Applications* 21(8): 3128-3146.

Barbiero, R.P., K. Schmude, B.M. Lesht, **C.M. Riseng**, G.J. Warren, and M.L. Tuchman. 2011. Trends in *Diporeia* populations across the Laurentian Great Lakes, 1997-2009. *J. of Great Lakes Research* 37(1): 9-17.

Riseng, C.M., M.J., Wiley, R.J. Stevenson, P.J. Seelbach. 2010. An ecological assessment of Michigan rivers and streams. *Journal of Great Lakes Research* 36: 505-519.

Ivan, L.N., Rutherford, E.S., **Riseng, C.M.**, and Tyler, J.A. 2010. Density, production and survival of walleye (*Sander vitreus*) eggs in the Muskegon River, Michigan. *J. of Great Lakes Research* (36): 328-337.

Wiley, M.J., D.W. Hyndman, B.C. Pijanowski, A.D. Kendall, **C.M. Riseng**, E.S. Rutherford, S.T. Cheng, M.L. Carlson, J.A. Tyler, R.J. Stevenson, P.J. Steen, P.L. Richards, P.W. Seelbach, J.M. Koches, R. R. Rediske. 2010. A multi-modeling approach to evaluating climate and land use change impacts in a Great Lakes basin. *Hydrobiologia* DOI 10.1007/s10750-010-0239-2.

Stevenson, R.J., L. Novoveska, **C.M. Riseng**, and M.J. Wiley. 2009. Comparing responses of diatom species composition to natural and anthropogenic factors in streams of glaciated regions. *Nova Hedwigia* 135: 1-13.

Riseng, C. M., L. Wang, M.J. Wiley, E. Rutherford, and T. Brendon. 2008. State-of-the-Art Approaches for Assessment of Great Lakes Nearshore and Large River Habitat. Final report to Great Lakes Fishery Trust, U.S. EPA, and Great Lakes Fishery Commission.

Stevenson, R.J., M.J. Wiley, V.L. Lougheed, **C. Riseng**, S.H. Gage, J. Qi, D.T. Long, D.W. Hyndman, B.C. Pijanowski, and R.A. Hough. 2008. Chapter 19: Watershed Science: Essential, Complex, Multidisciplinary and Collaboratory *In: W. Ji, ed., Wetland and Water Resource Modeling and Assessment: A Watershed Perspective*, Taylor & Francis, London.

Wiley, M., B. Pijanowski, R.J. Stevenson, P. Seelbach, P. Richards, **C. Riseng**, D. Hyndman and J. Koches. 2008. Integrated modeling of the Muskegon River: Tools for ecological risk assessment in a Great Lakes watershed. Chapter 20 *In: W. Ji, ed., Wetland and Water Resource Modeling and Assessment: A Watershed Perspective*, Taylor & Francis, London.

Stevenson, R.J., S.T. Rier, **C.M. Riseng**, R.E. Schultz, and M.J. Wiley. 2006. Comparing effects of nutrients on algal biomass in streams in two regions with different disturbance regimes and with applications for developing nutrient criteria. *Hydrobiologia* 561:149-165.

Riseng, C.M., M.J. Wiley, R.J. Stevenson, P.J. Seelbach. 2006. Comparison of coarse versus fine scale sampling on statistical modeling of landscape effects on fish communities of the Muskegon River. Pages 555-576 *in* R.M. Hughes, L. Wang and P.W. Seelbach, editors. Landscape influences on stream habitats and biological assemblages. American Fisheries Society, Symposium 48, Bethesda, Maryland.

M.J. Wiley, B.C. Pijanowski, P. Richards, **C.M. Riseng**, P.J. Seelbach, and R. J. Stevenson. 2004. Combining valley segment classification with neural net modeling of landscape change: a new approach to integrated risk assessment for river ecosystems. In: Proceedings of WEF 2004 Specialty Conference Series: Watershed 2004, pp. 454-468, Dearborn Michigan, Water Environment Federation.

Riseng, C.M., M.J. Wiley and R.J. Stevenson. 2004. Hydrologic disturbance and nutrient effects on benthic community structure in Midwestern US streams: a covariance structure analysis. *Journal of the North American Benthological Society* 23(2): 309-326.

Riseng, C.M., R.W. Gensemer, and S.S. Kilham. 1991. The effect of pH, aluminum, and chelator manipulations on the growth of acidic and circumneutral species of *Asterionella*. *Water, Air, and Soil Pollution* 60: 249-261.

Manuscripts in Process

Riseng, C.M., K. Wehrly, L. Wang, E. Rutherford, L. Mason, L. Johnson, S Sowa. In review by co-authors. An ecological classification for the Great Lakes ecosystem. Submit to Canadian Journal of Fisheries and Aquatic Sciences

Riseng, C.M., M.J. Wiley, I. Waite, R. Black, and M. Munn. In prep. A causal analysis of the impacts of urban and agricultural land use on stream ecosystems across the U.S. Likely submit to Freshwater Biology

Wiley, M.J., C.Riseng, E. Rutherford, B. Pijanowski. In prep. Great Lakes tributary tipping points to coastal waters.

Reports and other publications

Roth, B.M., **C.M. Riseng**, B.L. Sparks-Jackson, W. W. Fetzer, D. R. Infante. Assessment of Progress Indicator Data Integration and Data Gaps. Report to International Joint Commission, for Contract P1500170. Submitted February 11, 2016. Reviewed by GLWQA Task Force.

Riseng, C.M., B.L. Sparks-Jackson. 2013. Data Availability Assessment: IJC Apex Ecological Indicators for Evaluation of Progress toward Restoring the Great Lakes. Submitted to the IJC 4/30/2013. Reviewed by GLWQA Task Force.

Riseng, C.M., L. Wang, M Wiley, E. Rutherford, T. Brendan. 2008. State-of-the-Art Approaches for Assessment of Great Lakes Nearshore and Large River Fish Habitat. Research report submitted to the Great Lakes Fishery Commission.

Riseng, C.M. 2001. Patterns of hydrologic disturbance and benthic community structure in Midwestern streams. Ph.D. Dissertation. University of Michigan.

Riseng, C.M. 1999. Bioassessment of Mallets Creek, Washtenaw County, MI. Submitted to Tilton and Associates as part of Mallets Creek Rehabilitation Plan.

Riseng, C.M., J. Sparks & J. Smith. 1999. Fish survey of Woodruff Creek, Livingston County MI. Submitted to McNamee, Porter and Seeley, Inc.

Maes, R., **C. Riseng**, G. Thomas and M. Mandeville. 1980. Demonstration of an advanced solar garden with a water ceiling. DOE R510122-2.

Maes, R., H. McKenney and **C. Riseng**. 1979. The design, experimental results and socioeconomic impact of a northern climate commercial greenhouse. Solar Energy Proceedings. Atlanta, Georgia.

Research Grants/Awards

My research was highlighted in two newsletters in 2015:

Water Center Researcher highlight in August 2015 web newsletter - Freshwater Perspective: An interview with freshwater researcher, Dr. Catherine Riseng:

<http://graham.umich.edu/water/newsletter/freshwater-perspective>

Great Lakes Fishery Trust Researcher highlight in August 2015 web newsletter Q&A with researcher Catherine Riseng (link no longer works – hard copy attached).

Grants

Integration of GLAHF with WRF-Hydro: C. Riseng PI (\$21K), CILER, May 2016 through August 2016.

Conducting a Condition Assessment of Nearshore Fish Habitat in the Great Lakes Basin: C. Riseng PI (\$216K), GLFT & GLBFHP, Sept 2014 through December 2016.

Assessment of Progress Indicator Data Integration: C. Riseng UM PI (\$80K total, UM \$27K), IJC, March 2015 through October 2015.

Michigan's Great Lakes Coastal Wetlands Climate Change Strategy: Enhancing Local Government Capacity to Address Change: C. Riseng UM sub-contract PI (\$82K), MDEQ-CZM, October 2015 through December 2016.

Assessing Information Needs and Developing Tools for Great Lakes Ecosystem Management, C.M. Riseng and K. Wehrly, CoPIs (\$215K), Water Center U of M, Jan 2014 – Sept 2015.

Science Learning for the 21st Century: Implementation of a Stream Restoration Course to Develop Inquiry-based Approaches in a Multidisciplinary Context. CoPIs A. Cotel, C. Riseng, L. Sano. TLTC Program (\$25K), Jan 2014-Dec 31 2014

Great Lakes Aquatic Habitat Framework, C.M. Riseng (PI), E. Rutherford, L. Wang, J. McKenna, L. Johnson, D. Infante, S. Sowa (Co-PIs), GLFT (\$530K), Sept 2011-Sept. 2014.

Modeling land use impacts on stream systems across U.S. USGS Cooperative Agreement GIOAC00069. M.J. Wiley (PI), C.M. Riseng (Co-PI), \$72,861. Sept. 2011- Sept. 2012.

Evaluation and synthesis of methods for identifying and quantifying critical fisheries habitat for Great Lakes lower riverine and nearshore zones. Great Lakes Fisheries Trust. Lead PI with Co-PI's M.J. Wiley, L. Wang, E. Rutherford and P. Webb.

A Collaborative Approach to Understanding the Dynamics of the Muskegon Watershed: A Comprehensive Model, Risk Assessment and Tools for Use in Management – Addendum. Great Lakes Fisheries Trust. Co-PI with lead PIs: M.J. Wiley, B.C. Pijanowski, .J.K. Koches, P.W. Seelbach. 2002.

Rackham Graduate School dissertation grant. 2000.

Rackham Graduate School research grant. 1999.

Select Presentations

C. Riseng, K. Wehrly, L. Wang, R. Goodspeed, E. Rutherford, L. Mason. The Great Lakes Aquatic Habitat Framework: a spatial framework, database and tools to meet the needs of Great Lakes management and research. IAGLR June, 2016

C. Riseng, K. Wehrly. The Great Lakes Aquatic Habitat Framework: a spatial framework, database and tools to meet the needs of Great Lakes management and research. NOAA-GLERL invited and webcast seminar July 2015.

- C. Riseng**, K. Wehrly, L. Mason, B. Schoenfeldt, L. Wang. GLAHF-DST: Assessing Information Needs and Developing Tools to Meet the Needs of Great Lakes Ecosystem Management. Latornell, November 2015.
- C. Riseng**, K. Wehrly, L. Mason, B. Schoenfeldt, L. Wang. Developing Spatially Referenced Tools for Adaptive Management of Great Lakes Ecosystems. IAGLR, May 2015.
- Mason, L., **C. Riseng**, K. Wehrly, L. Wang, S. Rutherford, M. Robertson, J.E. McKenna, Jr., C. Castiglione, R. Goodspeed, B.L. Sparks-Jackson. A Great Lakes geospatial framework and decision support tools. American Association of Geographers, April 2015.
- C. Riseng**, K. Wehrly, J. McKenna, L. Johnson. D. Infante, E. Rutherford. Conducting a Condition Assessment of Nearshore Fish Habitat in the Great Lakes Basin. 7th National Summit on Coastal and Estuarine Restoration and 24th Biennial Meeting of The Coastal Society, November 4, 2014
- D. Forsyth, **C. Riseng**, K. Wehrly, L. Mason, L. Wang. A New, Consistent, Bi-National Dataset for the Great Lakes: The Development and Analysis of Aggregated Reach Catchments Across the Basin. Midwest Fish and Wildlife conference, December 2013.
- C. Riseng**, M. Wiley, D. Hyndman, B. Pijanowski, J. Stevenson. Restoring the Muskegon River Watershed: linking science to restoration. IAGLR, May 2013.2013.
- C.M. Riseng**, L. Mason, E. Rutherford, L. Wang. Great Lakes Aquatic Habitat Framework poster. H2Objective conference 9/29-9/30, 2011. Wayne State University, Detroit, MI, 2011.
- Carter, Glenn, **C.M. Riseng**, S.Adlerstein. 2011. Trends in the Great Lakes Benthos: 1997-2010. International Assoc of Great Lakes Research, Duluth, MN, 2011.
- Riseng, C.M.**, M.J., Wiley, R.W. Black, M.D. Munn. Impacts of agricultural land use on biological integrity: a causal analysis. North American Benthological Society, Sante Fe, NM, 2010.
- Riseng, C.M.**, M.J. Wiley, R. J. Stevenson, D. W. Hyndman, and B.J. Pijanowski. Muskegon Futures: assessing impacts of landscape change on biotic communities. International Assoc of Great Lakes Research, Toledo, OH, 2010.
- Riseng, C.M.**, M.J. Wiley, R.W. Black, and M. Munn. 2009. Effects of land use on trophic structure in agricultural streams. North American Benthological Society, Grand Rapids, MI, 2009.
- Riseng, C.M.**, M.J. Wiley, and P.W. Seelbach. A biological assessment of the condition of Michigan rivers and streams. American Fisheries Society. San Francisco, CA, 2007.
- Riseng, C.M.**, M.J. Wiley, and R. J. Stevenson. Interacting effects of channel unit, substrate and physiography on benthic standing stock in the lower Muskegon River (Michigan). North American Benthological Society. Anchorage, A., 2006.
- Riseng, C.M.**, M.J., Wiley, R.J. Stevenson. Ecological assessment of Michigan rivers and streams. Midwest Fish and Wildlife Conference. Grand Rapids, MI, 2005.

Riseng, C.M., M.J., Wiley, R.J. Stevenson, P.J. Seelbach. Comparison of coarse versus fine scale sampling on statistical modeling of landscape effects on fish communities of the Muskegon River. American Fisheries Society, Madison, WI, 2004.

Riseng, C.M., M.J., Wiley, R.J. Stevenson, P.J. Seelbach and B. Pijanowski. Ecological assessment of Great Lakes tributaries using normalization models. North American Benthological Society. Vancouver, BC, Canada, 2004.

Wiley, M., P. Seelbach, **C.M. Riseng,** R. J. Stevenson, and B. Pijanowski. Ecological status of the Great Lakes tributary rivers of the Michigan Peninsula: a regional normalization approach to multi-agency datasets. International Association for Great Lakes Research, Chicago, I., 2003.

Riseng, C.M., M.J. Wiley, B. Pijanowski and R. J. Stevenson. The effects of land use change on fish species diversity in the Muskegon River (Michigan). North American Benthological Society. Pittsburgh, PA, 2002.

Riseng, C.M., M.J. Wiley and R.J. Stevenson. Direct and indirect effects of disturbance and nutrients on stream communities of the Midwestern U.S. Ecological Society of America, Madison, WI, 2001.

Riseng, C.M., M.J. Wiley, R.J. Stevenson, P.W. Seelbach and J.R. Holomuzki. Effects of fish on the trophic structure of Michigan streams: evidence from a nutrient gradient study. North American Benthological Society. Keystone Resort, CO, 2000.

C.M. Riseng, M.J. Wiley and R.J. Stevenson. Effects of hydrology and nutrients on invertebrate biomass in streams from two ecoregions. North American Benthological Society. PEI, Canada, 1998.

C.M. Riseng and B. Gensemer*. The response of and acidophilic and circumneutral clone of the planktonic diatom *Asterionella* to aluminum: the importance of pH and trace metal interactions. Phycological Society of America. Columbus OH, 1987.

Professional Affiliation and Service Activities

Member

Intentional Association of Great Lakes Research
Association of Freshwater Science
Ecological Society of America

Reviewer for

American Fisheries Society
Aquatic Ecosystem Health and Management
Ecological Applications
Environmental Management
Journal of Great Lakes Research
Journal of Freshwater Science
Environmental Monitoring and Assessment
Limnology and Oceanography

Service

Current

Co-Chair Natural Areas Technical Advisory Committee, Washtenaw County Parks and Recreation Department appointment

Member SNRE Research Committee
Faculty for MDNR Conservation Steward training and certification program
Technical expert for Huron River Watershed Counsel

Past

Park Advisory Commission, Ann Arbor, MI

Mayor appointed special task force examining park maintenance
Greenways Special Committee

Environmental Commission, Ann Arbor, MI

Special Task force assessing status and developing recommendations for the
Huron River and its' impoundments within city boundaries

Greenbelt Advisory Commission, Ann Arbor, MI

Mayor appointed, City Council confirmed