

Current Address:

100 Galvin Hall
Department of Biological Sciences
The University of Notre Dame
Notre Dame, IN 46617

Matt T. Trentman

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(785) 320 3902

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EDUCATION PhD Candidate, July 2015-Present

The University of Notre Dame, Notre Dame, IN
Major Advisor: Dr. Jennifer L. Tank

Master's Degree, August 2015

Biology, Kansas State University, Manhattan, KS
Major Advisor: Dr. Walter K. Dodds

Dissertation title: "Biotic and abiotic effects on biogeochemical fluxes across multiple spatial scales in a prairie stream network"

Bachelor of Arts, *cum laude* May 2012

Manchester University, North Manchester, IN
Major: Environmental Science, technical concentration
GPA: 3.64/4.00

RESEARCH EXPERINECE

Fall 2018-
Present **University of Notre Dame**
Graduate Teaching Assistant
Advisor: Dr. Jennifer L. Tank

Summer 2015-
2018 **University of Notre Dame**
Graduate Research Assistant
Advisor: Dr. Jennifer L. Tank

Spring 2014-
Summer 2015 **Kansas State University**
Graduate Research Assistant
Scale, Consumers and Lotic Ecosystem Rates (SCALER)

- Comparing and modeling stream biogeochemical rates (N-uptake, metabolism) across a variety of spatial areas on Konza Prairie Biological Station.
- Determining macro consumer (i.e. fish, freshwater mussels) effects on biogeochemical rates

Fall 2012-
Fall 2013 **Kansas State University**
Graduate Teaching Assistant
Advisor: Dr. Walter K. Dodds

Summer 2012 **Kansas State University**
Field Technician: Manhattan, KS
Advisor: Dr. Walter K. Dodds

Summer 2011 **Institute of Ecosystem Studies**
REU Student Intern: Millbrook, NY
Advisor: Dr. William Schlesinger

- "The effect of retention ponds and riparian vegetation on nutrient concentrations in a golf course stream in Millbrook, NY"

Summer 2009 **Middle Eel River Watershed Initiative**
Watershed technician: North Manchester, IN
Dr. Jerry Sweeten

PUBLICATIONS

J. Rüegg et al. Aquatic consumer biomass, richness, and trophic composition within headwater stream networks depends on relative stream size and biome. *In Review*. Global Ecology and Biogeography.

M.T. Trentman, W.K. Dodds, K.B. Gido, J. Rüegg, and C.M. Ruffing. Biotic and abiotic controls of patch-scale biogeochemical fluxes along a prairie stream network. *In Prep*. Aquatic Sciences.

- [11] **M.T. Trentman**. 2018. The impact of long-term regional air mass patterns on nutrient precipitation chemistry within a United States grassland ecosystem. *Journal of Atmospheric Chemistry* 75:399.
- [10] B.R. Hanrahan, J.L. Tank, S.F. Christopher, **M.T. Trentman**, U.H. Mahl, T.V. Royer. 2018. Winter cover crops reduce nitrate loss from an agricultural watershed in the central U.S. *Journal of Agriculture, Ecosystems, and Environment* 265(1): 513-523.
- [9] **M.T. Trentman**, C.L. Atkinson, J.D. Brant. 2018. Native freshwater mussel effects on nitrogen fluxes in benthic sediments: interactive impacts of nutrient limitation and biomass dependency. *Freshwater Science* 37(2): 276-286.
- [8] C. Song, W.K. Dodds, J. Rüegg, A. Argerich, C.L. Baker, W.B. Bowden, M.M. Douglas, K.J. Farrell, M.B. Flinn, E.A. Garcia, A.M. Helton, T.K. Harms, S. Jia, J.B. Jones, L.E. Koenig, J.S. Kominoski, W.H. McDowell, D. McMaster, S.P. Parker, A.D. Rosemond, C.M. Ruffing, K.R. Sheehan, **M.T. Trentman**, M.R. Whiles, W.M. Wollheim, F. Ballantyne IV. 2018. Warming induces asymmetric convergence of stream metabolic balance. *Nature Geoscience* 11: 415-420.
- [7] K.J. Farrell, A.D. Rosemond, J.S. Kominoski, S.M. Bonjour, J. Rüegg, L.E. Koenig, C.L. Baker, **M.T. Trentman**, T.K. Harms, W.H. McDowell. Variation in detrital resource stoichiometry signals differential carbon to nutrient limitation for stream consumers across biomes. *Ecosystems* 1-16. <https://doi.org/10.1007/s1002>.
- [6] B.R. Hanrahan, J.L. Tank, M.M. Dee, **M.T. Trentman**, E.M. Berg, S.K. McMillan. 2018. Restored floodplains enhance denitrification compared to naturalized floodplains in agricultural streams. *Biogeochemistry* 1-19.
- [5] S.F. Christopher, J.L. Tank, U.H. Mahl, H. Yen, J.G. Arnold, **M.T. Trentman**, S.P. Sowa, M.E. Herbert, J.A. Ross, M.J. White, T.V. Royer. 2017. Modeling nutrient removal using watershed-scale implementation of the two-stage ditch. *Ecological Engineering*. 108 (B):358-369.
- [4] C. Song, W.K. Dodds, **M.T. Trentman**, J. Rüegg, and F. Ballantyne IV. 2016. Methods of approximation influence stream metabolism estimates. *Limnology and Oceanography: Methods*. (14):557-569.
- [3] J. Rüegg, K.R. Sheehan, C.L. Baker, W.B. Bowden, M.D. Daniels, W.K. Dodds, K.J. Farrell, M.B. Flinn, T.K. Harms, J.B. Jones, L.E. Koenig, J.S. Kominoski, W.H. McDowell, S.P. Parker, A.D. Rosemond, **M.T. Trentman**, M. Whiles, and W.M. Wollheim. 2016. Multi-scale comparison of baseflow physio-geomorphic heterogeneity in stream networks across diverse biomes. *Landscape Ecology* (31):119-136.

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- [2] **M.T. Trentman**, W.K. Dodds, J.S. Fencl, K. Gerber, J. Giarneri, S. Hitchman, Z. Peterson, and J. Rüegg. 2015. Quantifying ambient nutrient uptake and functional relationships in streams: a comparison between tracer, pulse and steady-state approaches. *Biogeochemistry* 125 (1): 65-79.
- [1] J. Rüegg, J. Brant, D. Larson, **M.T. Trentman**, and W.K. Dodds. 2015. A portable, modular, self-circulating chamber to measure benthic processes under controlled water velocity. *Freshwater Science* 34 (3), 831-844.

TEACHING EXPERIENCE

Teaching Assistant, University of Notre Dame, 2017-present

Stream Ecology (Fall 2018)

Aquatic Insects (Fall 2017)

Teaching Assistant, Kansas State University, 2012-2015

Undergraduate research mentor (Spring 2015); "Measuring reach-scale uptake of organic compounds"

Freshwater Ecology, (Fall 2014)

Organismic Biology, (Fall 2013, Spring 2014)

Principles of Biology, (Fall 2012, Spring 2013, Spring 2015)

Lab Assistant, Manchester University, 2010-2012

Principles of Biology (Spring 2012), Academic Mentor

Principles of Biology (Fall 2010, Fall 2011)

UNDERGRADUATES MENTORED

- Anna-Sophie Hoppe-REU Mentor (Summer 2017); "The impact of stream restoration on aquatic insect community and diversity in an agricultural stream"
- Undergraduate research mentor (Spring 2015); "Measuring reach-scale uptake of organic compounds"
- John Brant-REU Mentor, (Summer 2013); "The effect of crayfish on nitrogen cycling rates in a prairie stream"

AWARDS

Spring 2015 Mulholland Fund Award- Society of Freshwater Science Endowment Fund (\$1000)

GRANTS

Fall 2018 Graduate School-University of Notre Dame

- Graduate Student Professional Development Grant (\$1000)

Spring 2018 Environmental Change Initiative- University of Notre Dame

- Linked Experimental Ecosystem Facility Research grant (\$1500)

Department of Biological Sciences- University of Notre Dame

- Department matching funds for student research (\$500)

Graduate Student Union- University of Notre Dame

- Conference Presentation Grant (\$150)

Fall 2017 WaterSmart Innovations Conference

- Student Travel Grant (\$1000)

CUASHI Sensor Workshop

- Student Travel Grant (\$500)

Department of Biological Sciences- University of Notre Dame

- Department matching funds for student travel (\$500)

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- Spring 2017 Graduate Student Union- University of Notre Dame
- Conference Presentation Grant (\$300)
- Spring 2016 Environmental Change Initiative- University of Notre Dame
- Linked Experimental Ecosystem Facility Research grant (\$1500)
- Graduate School Professional Development- University of Notre Dame
- Zahm Research Travel Grant Fund-University of Notre Dame (\$500)
- Graduate Student Union- University of Notre Dame
- Conference Presentation Grant (\$120)
- Department of Biological Sciences- University of Notre Dame
- Department matching funds for student travel (\$500)
- Fall 2015 College of Arts and Sciences- Kansas State University
- Arts & Sciences Graduate Student Research Travel Award (\$1000)
- Biology Graduate Student Association- Kansas State University
- Travel Grant (\$500)
- Spring 2014 Biology Graduate Student Association- Kansas State University
- Workshop Grant (\$300)
- Fall 2013 College of Arts and Sciences- Kansas State University
- Arts & Sciences Graduate Student Research Travel Award (\$1000)

PRESENTATIONS

ORAL-First Author Only

M.T Trentman, J.L. Tank, S. McMillan, T.V. Royer. Comparing the role of biotic and abiotic factors influencing P cycling in multiple agricultural stream floodplains. Society of Freshwater Science meeting. May 2018

M.T Trentman, J.L. Tank, S. McMillan, T.V. Royer. Comparing the role of biotic and abiotic factors influencing P cycling in multiple agricultural stream floodplains. Invited Speaker-University of Central Arkansas. May 2018

M.T Trentman, J.L. Tank, B. Hanrahan, S. Christopher, K. Prior., U.H. Mahl, S.L. Speir, T.V. Royer. Comparing the Effectiveness of Increased Winter Land Cover on Nutrient Export Across Two Indiana Agricultural Watersheds. University Council on Water Resources Annual meeting. June 2017

M.T Trentman, J.L. Tank, H.V. Goodson, B. Peters, Y. Wu. Measuring uptake of organic and inorganic phosphorous using experimental streams. Society of Freshwater Science meeting. June 2017

M.T Trentman, J.L. Tank, B. Hanrahan, S. Christopher, K. Prior. T.V. Royer. Can Changes in Land Cover and Floodplain Connection Alter Nutrient Export from Agricultural Watersheds? National Non-point Source Pollution Workshop. Aug. 2016.

M.T Trentman, J.L. Tank, B. Hanrahan, S. Christopher, K. Prior. T.V. Royer. Can watershed-scale cover crops reduce nutrient export from agricultural watersheds? North American Manure Expo. Aug. 2016

M.T. Trentman, J.L. Tank, B. Hanrahan, R.T. Davis, S. Roley, K. Prior, T.V. Royer. The interaction between floodplain restoration and changing land cover on stream metabolism in a Midwestern agricultural stream. Indiana Water Resources Association annual meeting. June 2016

M.T. Trentman, J.L. Tank, B. Hanrahan, R.T. Davis, S. Roley, K. Prior, T.V. Royer. The interaction between floodplain restoration and changing land cover on stream metabolism in a Midwestern agricultural stream: continuation of a multi-year dataset reflecting a range of conservation practices. Society of Freshwater Science annual meeting. May 2016.

M.T. Trentman, W.K. Dodds, K. Gido, J. Rüegg, C. Ruffing. Using structural equation modeling to determine effects of fish presence and environmental factors on stream benthic biogeochemical rates. Society of Freshwater Science annual meeting. May 2015.

M.T. Trentman, W.K. Dodds, K. Gido, J. Rüegg, C. Ruffing. Watershed position, habitat heterogeneity, and macro consumers affect ecosystem rates at patch scales. Society of Freshwater Science annual meeting. May 2014.

M.T. Trentman, W.K. Dodds, K. Gido, J. Rüegg, C. Ruffing. Watershed position, habitat heterogeneity, and macro consumers affect ecosystem rates at patch scales. KSU Division of Biology Forum. Mar 2014.

M.T. Trentman, J. Rüegg, W. Dodds, K. Gido, D. Larson. Scaling metabolism and nutrient uptake at patch (0.1 m) and reach (60 m) scales in a reference prairie stream. Society of Freshwater Science annual meeting. May 2013.

M.T. Trentman. The effect of retention ponds and riparian vegetation on nutrient concentrations in a golf course stream in Millbrook, NY. Manchester University Student Research Symposium. April 13, 2012. Manchester University. North Manchester, IN. March 2012.

M.T. Trentman, W. Schlesinger, S. Findlay. The effect of retention ponds and riparian vegetation on nutrient concentrations in a golf course stream in Millbrook, NY. REU Undergraduate Research Symposium. Cary Institute of Ecosystem Studies. Millbrook, NY. August 2011.

M.T. Trentman. Population estimation of Gypsy moths (*Lymantria dispar*) for determination of potential sites of eradication along a quarantine line. Manchester University Student Research Symposium. North Manchester, IN. April 2011.

POSTER

M.T. Trentman, J.L. Tank, T.V. Royer, B.R. Hanrahan, U.H. Mahl, K. Prior, S.L. Speir. Comparing biotic controls on phosphorus cycling in stream sediments and floodplain soils in agricultural streams. University of Notre Dame College of Science and Engineering- Joint Annual Meeting. December 2018.

A-S Hoppe, J.L. Tank, **M.T. Trentman**. The impact of stream restoration on aquatic insect community and diversity in an agricultural stream. Society of Freshwater Science meeting. May 2018. **Awarded best poster by an Undergraduate Student.**

M.T. Trentman, J.L. Tank, T.V. Royer, B.R. Hanrahan, U.H. Mahl, K. Prior, S.L. Speir. The impact of winter cover crops on the export of phosphorus from tile drains in the agricultural Midwest. WaterSmart Innovations Conference. Las Vegas, NV. October 2017.

A-S Hoppe, J.L. Tank, **M.T. Trentman**. The impact of stream restoration on aquatic insect community and diversity in an agricultural stream. University of Notre Dame REU Summer Symposium. Notre Dame, IN. August 2017.

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M.T. Trentman, W.K. Dodds, K.B. Gido, J. Rüegg, C.M. Ruffing, C. Song. Scaling nested measurements of biogeochemical rates across prairie stream reaches with varying biotic and abiotic characteristics. LTER-All Scientists Meeting. Estes Park, CO. September 2015.

J. Brant, **M.T. Trentman**, K. Culbertson, W.K. Dodds. Crayfish effects on ecosystem rates in prairie streams. Society of Freshwater Science annual meeting. May 2014.

PROFESSIONAL TRAINING

Heterotrophic regimes in streams

- Switzerland, Sept 2018
- Workshop to discuss heterotrophic regimes in stream ecology

Using In-Situ Water Quality Sensors: Lagrangian and Eulerian Applications

- University of Florida, Gainesville, FL. Nov. 2017
- Training for use of aquatic sensors.

Multivariate Statistics in PRIMER Short Course

- North Carolina State University, Raleigh, NC. July 2016
- Instructed on the use of PRIMER for multivariate statistical analyses.

Social Responsibilities of Researchers (SRR) Fellow

- John J. Reilly Center for Science, Technology, and Values, University of Notre Dame, IN. 2016
- Training in ethical, social engagement, and communication of research.

Fundamentals of Ecosystem Science Short Course

- Cary Institute of Ecosystem Studies, Milbrook, NY. Jan 2016
- Interacted with Cary scientists and a diverse pool of students to better understand the fundamentals of ecosystem ecology.

An Introduction to Structural Equation Modeling for Ecology & Evolutionary Biology

- University of Massachusetts, Boston, Mass. Jan 2015
- Worked with Dr. Jarret Byrnes to learn SEM and path analyses in R.

Hybrid Single Particle Integrated Trajectory (HYSPLIT) Model Workshop

- NOAA Air Resources Laboratory, College Park, Maryland. June 2014.
- Worked with HYSPLIT model experts to better understand atmospheric modeling of particle trajectories and dispersion.

PROFESSIONAL MEMBERSHIPS

Society of Freshwater Science (SFS)

SERVICE

Reviewer for: Environmental Science and Technology, Biogeochemistry, Freshwater Biology, Ecosystems, Freshwater Science, Environmental Monitoring and Assessment, Journal of Environmental Quality, Journal of Great Lakes Research.

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UND Biology Graduate Student Organization Executive Committee

- 2017 Vice President
- 2016 Treasurer

Society of Freshwater Science- Student Resources Committee

- Mentor-Mixer committee chair, 2016 meeting.
- Silent Book Auction committee member, 2017 meeting
- Silent Book Auction committee member, 2018 meeting

ND Linked Experimental Ecosystem Facility (LEEF)

- Science Sunday 2015, 2016, 2017, 2018. Open to community.
- Earth Day Every Day, 2016. Teachers and HS students
- HS science outreach, 2016. Penn HS, Mishawaka, IN. Advanced Chemistry Class.

Session Organizer, 2014 Society of Freshwater Science meeting. May 2014.

- A. Rugenski, C.L Atkinson, E. Moody, **M. Trentman**. From individuals to ecosystems: Consumer driven nutrient recycling across aquatic ecosystems.

KSU Biology Graduate Student Association Executive Committee

- 2014 Treasurer/2014 Food-Fun Committee Chair

Science Fair

- Guest Judge, Wamego High School, KS 2014