

Tyler Anthony Groh

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EDUCATION**Ph.D. Iowa State University**

Environmental Science

August 2018**M.S. University of Illinois Urbana-Champaign**

Natural Resources and Environmental Science

May 2014**B.S. University of Wisconsin Stevens Point**

Watershed Management

December 2011

RESEARCH EXPERIENCE**Penn State University Assistant Research Professor****April 2020-Present**

- 25% Research appointment
- Research centered around soil-water interaction biogeochemistry
 - Set up long-term riparian buffer to measure how the soil's health changes over time under a variety of buffer vegetation and how this change affects nutrients removed.
 - Assessing biochar addition to surface concentrated flow paths to enhance water quality benefits like infiltration.
 - Measure stream sedimentation, TP, and greenhouse gas emission from agricultural streams in Pennsylvania.

Iowa State University Postdoctoral Research**Aug 2018-March 2020**

- Assessing new designs of saturated riparian buffers
- Assessing nitrate removal and hydrology in new designs including
 - Dual outlet design for surface intake drainage systems
 - Double lateral pipe
 - Gravel envelope
- Running infiltration analysis
- Coordinating and mentoring undergraduate assistants
- Managing research lab
- Research collaborator and Co-PI with departments across Iowa State University that are also assessing and modeling saturated riparian buffers
- Mentoring undergraduates in independent study projects
- Consulting on saturated buffer designs across the state of Iowa

Ph.D. Research

Nitrate removal in riparian buffers

May 2014-Aug 2018

- In charge of the nitrate removal, specifically microbial denitrification, research portion of the riparian buffer study
- Saturated and conventional buffers were studied
- Collaborative, multiple lab research (USDA-ARS NLAE and Iowa State)
- Collected soil, water, and gas samples from riparian buffers
- Organized and supervised undergraduate assistants, conducting in lab experiments with soil cores, running water, soil, and gas samples on machines (spectrophotometer, gas chromatograph, elemental analyzer, ion-selective electrodes, pH electrodes, and DO meters)
- Supervised and mentored undergraduate independent projects

M.S. Research

Nitrogen and phosphorus removal, along with greenhouse gas emissions from constructed wetlands

Jan 2012-May 2014

- Main graduate student on the constructed wetland project
- Collaborative, multiple lab research
- Field work: soil, water, and gas sampling from three constructed wetlands
- Field equipment: pressure transducers, data loggers, Agri Drain control box, ISCO automated water samplers
- Sample analyzation: Lachat, ion chromatograph, gas chromatograph, Li-Cor, and elemental
- Undergraduate assistant supervision

PUBLICATIONS

Johnson, G.M., L.E. Christianson, R.D. Christianson, M.P. Davis, C. Diaz-Garcia, **T.A. Groh**, T.M. Isenhardt, J.H. Kjaersgaard, L.A. Pease, R.W. Malone, N.P. Rogovska. 2023. Effectiveness of Saturated Buffers on Water Pollution Reduction From Agricultural Drainage. J. ASABE. (Accepted with Minor Revisions).

McEachran, A.R., L.C. Dickey, C.R. Rehmann, T.M. Isenhardt, **T.A. Groh**, M.A. Perez, C.J. Rutherford. 2022. Groundwater Flow in Saturated Riparian Buffers and Implications for Nitrate Removal. J. Environ Qual. doi:10.1002/jeq2.20428

Dickey, L.C., A.R. McEachran, C.J. Rutherford, C.R. Rehmann, M.A. Perez, **T.A. Groh**, and T.M. Isenhardt. 2021. Slope Stability of Streambanks at Saturated Riparian Buffer Sites. J. Environ. Qual. doi:10.1002/jeq2.20281

Groh, T.A., T.M. Isenhardt, and R.C. Schultz. 2020. Long-term Nitrate Removal in Three Riparian Buffers: 21 Years of Data From the Bear Creek Watershed in Central Iowa, USA. Sci. Total Environ. doi:10.1016/j.scitotenv.2020.140114

McEachran, A.R., L.C. Dickey, C.R. Rehmann, **T.A. Groh**, T.M. Isenhardt, M.A. Perez, and C.J. Rutherford. 2020. Improving the Effectiveness of Saturated Riparian Buffers for Removing Nitrate From Subsurface Drainage. J. Environ. Qual. doi:10.1002/jeq2.20160

Groh, T.A., M.P. Davis, T.M. Isenhardt, D.B. Jaynes, and T.B. Parkin. 2019. Denitrification Potential In Three Saturated Riparian Buffers. *Ag. Ecosys. Environ. J.* doi:10.1016/j.agee.2019.106656.

Groh, T.A., M.P. Davis, T.M. Isenhardt, D.B. Jaynes, and T.B. Parkin. 2019. In situ Denitrification in Saturated Riparian Buffers. *J. Environ. Qual.* doi:10.2134/jeq2018.03.0125 **(2021 JEQ Outstanding Paper Award Recipient)**

Davis, M.P., **T.A. Groh**, D.B. Jaynes, T.B. Parkin, and T.M. Isenhardt. 2019. Nitrous Oxide Emissions from Saturated Riparian Buffers: Are We Trading a Water Quality Problem for an Air Quality Problem? *J. Environ. Qual.* doi:10.2134/jeq2018.03.0127

Davis, M.P., **T.A. Groh**, R.J. Williams, T.B. Parkin, T.M. Isenhardt, and K.S. Hofmockel. 2018. Portable Automation of the Static Chamber Sample Collection for Quantifying Soil Gas Flux. *J. Environ. Qual.* doi:10.2134/jeq2017.10.0387

Groh, T.A., L.E. Gentry, and M.B. David. 2015. Nitrogen Removal and Greenhouse Gas Emissions from Constructed Wetlands Receiving Tile Drainage Water. *J. Environ. Qual.* 44:1001-1010. doi:10.2134/jeq2014.10.0415

Groh, T.A., M.P. Davis, and L.E. Christianson. Long Term Nitrogen and Phosphorus Removal in Constructed Wetlands. (In Prep).

Iowa State NREM Field Notes Article Author **2015-2016**
Authored article titled "Nitrogen Removal in Saturated Riparian Buffers: A Hot Topic." Field Notes is a graduate student edited annual journal that is released to inform the public on research in the NREM department.

BOOK CHAPTERS

Schultz, R.C., T.M. Isenhardt, W.J. Beck, **T.A. Groh**, and M.P. Davis. 2019. Agroforestry practices: riparian forest buffers and filter strips. In: M.R. Mosquera-Losada and R. Prabhu (eds.), *Agroforestry for Sustainable Agriculture*. Burleigh Dodds Science Publishing Limited. <http://dx.doi.org/10.19103/AS.2018.0041.01>

GRANTS AND FUNDING

Funded Grant Proposals:

Total Funding as PI and Co-PI: \$1,814,760.17

P.J. Drohan, H.E. Preisendanz, **T.A. Groh (Co-PI)**, and T.L. Veith. Ready solutions for reducing agricultural nitrogen, phosphorus, and sediment in the Susquehanna River Basin. Funded by the Pennsylvania Department of Agriculture (PDA). 2024. **(\$162,184).**

H.E. Preisendanz, C. Raj, P.J. Drohan, K.Y. Zipp, D.A. Brent, and **T.A. Groh (Co-PI)**. Evaluating and Improving the Integrity of Riparian Buffers For Achieving Water Quality Benefits. Funded by the United States Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA). 2022. **(\$750,000)**.

T.A. Groh (PI), H.E. Preisendanz, and L.E. McPhillips. Water Quality Monitoring Network on Halfmoon Creek in Centre County. Funded by the Pennsylvania Department of Agriculture via the AG Research Awards. 2022. **(\$175,000)**.

T.A. Groh (PI), J.R. Fetter, K.F. Bartling, B.A. Yount, and K.L. Koch. Understanding and Alleviating Barriers to Successful Riparian Buffer Establishment. Funded by the Penn State College of Agricultural Sciences and Penn State Extension. 2022. **(\$10,000)**.

MA. V. Bruns, E. Bazilevskaya, F. Di Gioia, D.R. Carrijo, J. Vasco-Correa, and **T.A. Groh (Co-PI)**. Schimadzu GC-2030 Greenhouse Gas Chromatograph (GC) for a Multi-user Soils Research Lab. Funded by the United States Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) via the Equipment Grant Program (EGP).2022. **(\$87,200)**.

T.A. Groh (PI). Assessing Biochar as a Soil Amendment to Help Mitigate Effects of Concentrated Flow Paths in Agronomic Systems. Funded by McIntire-Stennis Capacity Grant through the United States Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA). 2021. **(\$178,627.17)**.

T.A. Groh (PI). Effectiveness of Riparian Buffers for Removing Nitrogen Toward Meeting Water Quality Goals in Pennsylvania. Funded by the Pennsylvania Water Resources Research Center. 2021. **(\$30,000)**.

T.A. Groh (PI), J.R. Fetter, E.N. Rojik, K.L. Koch, D.R. Rhea, D.R. Jackson, and S.K. Xenophon. Establishing and Teaching Riparian Buffer Maintenance Protocols that Work for the Commonwealth of Pennsylvania. Funded by the Penn State College of Agricultural Sciences and Penn State Extension. 2021. **(\$10,000)**.

M.J. Rau. and **T.A. Groh (Co-PI, now PI)**. The Influence of Freshwater Algal Blooms on the Fate of Anthropogenic Particulate Pollutants. Funded by Pennsylvania Sea Grant. 2021. **(\$120,000)**

L.E. McPhillips, S.E. Clark, H. Wu, M.C. Hoffman, **T.A. Groh (Co-PI)**, J.R. Fetter, and S. Gotsch. Ecosystem Services Assessment of Green Stormwater Infrastructure in Lancaster, PA. Funded by Pennsylvania Sea Grant. 2021. **(\$120,000)**.

T.A. Groh (PI), J.R. Fetter, and J. P. Kaye. Long-Term Riparian Buffer Research and Demonstration Site. Science to Practice Grant Funded by the Penn State College of Agricultural Sciences and Penn State Extension. 2020. **(\$10,000)**.

W.J. Beck, **T.A. Groh (Co-PI)**, T.M. Isenhardt, P.L Moore, K.E. Schilling, and R.C. Schultz. Dam! Impacts of Beaver Dams on Surface and Groundwater Quality. Funded by the Iowa Nutrient Research Center. 2020. **(\$94,500)**.

C. Lu, T.M. Isenhardt, W. Crumpton, M.J. Helmers, M.P. Davis, **T.A. Groh (Co-PI)**, and D.B. Jaynes. Before the streams: Modeling the effectiveness of in-field and edge-of-field practices in reducing nitrogen loads. Funded by the Iowa Nutrient Research Center. 2018. **(\$67,249)**.

POSTERS AND PRESENTATIONS

C. K. Jones, D. M. Aller, **T.A. Groh**, C.L. Norman, E. Orr, and D. S. Zamora. 2024. Biochar in Extension. Association of Natural Resource Extension Professionals. **(Presentation)**.

S.J. Hall, L.E. Christianson, J.R. Frankenberger, **T.A. Groh**, and L.C. Breza. 2024. Conservation Drainage and Climate-Smart Agriculture. Conservation Drainage Network Annual Meetings. **(Invited Presentation)**.

H.K. Senerchia and **T.A. Groh**. 2023. Water Quality Monitoring Network on Halfmoon Creek in Centre County, PA. Bucknell University River Symposium. **(Poster Award-1st Place)**.

T.A. Groh. 2023. Assessing Vegetation Shelter Impacts on Tree Growth within Riparian Buffers in Pennsylvania. ASA, SSSA, CSSA International Meeting.

H.K. Senerchia and **T.A. Groh**. 2023. Water Quality Monitoring Network on Halfmoon Creek in Centre County, PA. ASA, SSSA, and CSSA International Meeting. **(Graduate Student Poster-1st Place)**.

B.P. Morris, **T.A. Groh**, H.E. Preisendanz. 2023. Efficacy of Biochar Application on Concentrated Flow Paths in Agronomic Systems for Increasing Water Infiltration, Enhancing Soil Physical Properties, and Nutrient Leaching. ASA, SSSA, and CSSA International Meeting. **(Presentation)**.

T.A. Groh. 2022. Temporal and Spatial Variation of Nitrate Removal in Riparian Buffers. ASA, SSSA, and CSSA International Meeting. **(Presentation)**.

B.P. Morris and **T.A. Groh**. 2022. Biochar Impacts on Agricultural Landscapes. ASA, SSSA, and CSSA International Meeting. **(Graduate Student Poster-3rd Place)**.

T.A. Groh. 2022. Edge-of-Field Practices: Keeping Nutrients on Farms. Long Island Agricultural Forum Sponsored by Cornell Cooperative Extension. **(Invited Presentation)**.

T.A. Groh. 2022. Dauphin County Research Riparian Buffer. Capital Resource Conservation and Development Area Council Meeting. **(Invited Presentation)**.

C.R. Rehmann, A.R. McEachran, L.C. Dickey, T.M. Isenhardt, **T.A. Groh**, M.A. Perez, C.J. Rutherford. 2022. Improving the Design of Saturated Riparian Buffers to Reduce Nitrate Export from Farmland. American Geophysical Union Fall Meeting. **(Presentation)**.

T.A. Groh. 2021. Siting and Designing Saturated Buffers for Nitrate Removal. New York Department of Agriculture Workshop. **(Invited Presentation)**.

B.F. Redder, **T.A. Groh**, E.W. Boyer, B.R. Swistock. 2021. Groundwater Quality in Private Drinking Water Wells of Pennsylvania: Implications for Policy and Management. American Geophysical Union Fall Meeting. **(Presentation)**.

T.A. Groh. 2021. Biochar for Agriculture and Water Quality. Farm City Dinner Presentation Hosted by the Centre County Conservation District. **(Invited Presentation)**.

T.A. Groh, T.M. Isenhardt, and D.B. Jaynes. 2020. Surface Infiltration in Two Saturated Riparian Buffers. ASA, SSSA, and CSSA International Meeting. **(Presentation)**.

T.A. Groh. 2020. Nutrient Removal in Riparian Buffers: My Research Journey from Iowa to Pennsylvania. Water Insights Presentation Series Sponsored by the Institute for Sustainable Agricultural, Food, and Environmental Sciences (SAFES). **(Presentation)**.

L.C. Dickey, A.R. McEachran, C.J. Rutherford, M.A. Perez, C.R. Rehmann, T.M. Isenhardt, D.B. Jaynes, and **T.A. Groh**. 2020. Slope Stability Analysis of a Saturated Riparian Buffer: A Case Study. Geo-Congress. **(Paper/Presentation)**.

L.C. Dickey, A.R. McEachran, C.J. Rutherford, M.A. Perez, C.R. Rehmann, T.M. Isenhardt, D.B. Jaynes, and **T.A. Groh**. 2020. Slope Stability Analysis of Saturated Riparian Buffers. 20th Annual International Erosion Control Association Environmental Connection Conference. **(Paper/Presentation)**.

T.A. Groh, M.P. Davis, T.M. Isenhardt, D.B. Jaynes, and T.B. Parkin. 2019. Limitations to Denitrification in Saturated Riparian Buffers. NCERA-217 Meeting. **(Poster)**.

T.A. Groh, M.P. Davis, T.M. Isenhardt, D.B. Jaynes, and T.B. Parkin. 2018. Denitrification in Saturated Riparian Buffers. ASA, SSSA, and CSA International Meeting. **(Presentation)**.

M.P. Davis, **T.A. Groh**, D.B. Jaynes, T.B. Parkin, and T.M. Isenhardt. 2018. Nitrous Oxide Emissions from Saturated Riparian Buffers. ASA, SSSA, and CSA International Meeting. **(Presentation)**.

Groh, T.A., M.P. Davis, T.M. Isenhardt, D.B. Jaynes, and T.B. Parkin. 2017. Saturated Riparian Buffer in Situ and Potential Denitrification. ASA, SSSA, and CSSA Annual Meeting. **(Presentation).—Second Place in Presentation Contest.**

Davis, M.P., T.M. Isenhardt, D.B. Jaynes, T.B. Parkin, **T.A. Groh**, M.L.Soupir, K.S. Hofmockel. 2017 Direct and Indirect Nitrous Oxide Emissions from Saturated Riparian Buffers and Woodchip Bioreactors: Are We Trading a Water Quality Problem for an Air Quality Problem? ASA, SSSA, and CSSA Annual Meeting. **(Presentation).—First Place in Presentation Contest.**

Groh, T.A., M.P. Davis, T.M. Isenhardt, D.B. Jaynes, and T.B. Parkin. 2017. Denitrification in Saturated Riparian Buffers. Iowa Water Center Conference. **(Poster).—Third Place in Poster Contest.**

Groh, T.A., T.M. Isenhardt, M.P. Davis, D.B. Jaynes, and T.B. Parkin. 2016. Analyzing Denitrification in Saturated Riparian Buffers. ASA, SSSA, and CSSA Annual Meeting. **(Presentation).**

Davis M.P., D.B. Jaynes, T.B. Parkin, T.M. Isenhardt, **T.A. Groh**. 2016. Greenhouse Gas Emissions from Bear Creek in Central Iowa: The Importance of Direct Measurements on Low Ordered Agricultural Streams. ASA, SSSA, and CSSA Annual Meeting. **(Presentation).**

Groh, T.A., M.P. Davis, T.M. Isenhardt, D.B. Jaynes, and T.M. Parkin. 2016. Nitrate Removal via Microbial Denitrification in Saturated Riparian Buffers. Iowa Water Center Conference. **(Poster).**

Groh, T.A., T.M. Isenhardt, D.B. Jaynes, T.B. Parkin, K.S. Hofmockel, and M.P. Davis. 2015. Nitrate Removal in Saturated Riparian Buffers: A Result of Denitrification? ASA, SSSA, and CSSA Annual Meeting. **(Poster).**

Davis, M.P., T.M. Isenhardt, D.B. Jaynes, T.B. Parkin, K.S. Hofmockel, and **T.A. Groh**. 2015. Greenhouse Gas Emissions from Two Saturated Riparian Buffers Located in Central Iowa. ASA, SSSA, and CSSA Annual Meeting. **(Presentation).**

Groh, T.A. 2015. Nitrate Removal in Saturated Riparian Buffers: A Result of Denitrification? Association for Temperate Agroforestry Meeting. **(Presentation).**

Groh, T.A., T.M. Isenhardt, D.B. Jaynes, T.B. Parkin, K.S. Hofmockel, and M.P. Davis. 2015. Denitrification in Saturated Riparian Buffers Receiving Tile Drainage Water. Association for Temperate Agroforestry Meeting. **(Poster).**

Groh, T.A., and M.P. Davis. 2015. Saturated Buffers Denitrification and Greenhouse Gas Study. Drainage Water Meeting (ADMS and NCERA 217) **(Presentation).**

Isenhardt, T.M., D.B. Jaynes, **T.A. Groh**, and M.P. Davis. 2015. Denitrification within Saturated Riparian Buffers Re-designed to Remove Nitrate from Artificial Subsurface Drainage. Iowa Water Center Conference. (**Poster**).

Groh, T.A., M.B. David, L.E. Gentry. 2013. Nutrient Removal and Greenhouse Gas Fluxes in 19 Year Old Constructed Wetlands: A Temporal Analysis and Comparison. ASA, SSSA, and CSSA Annual Meeting. (**Poster**).

David, M.B., L.A. Schipper, A.J. Gold, B.A. Needelman, K. Addy, L.E. Gentry, M. Goldman, T. Lavaire, **T.A. Groh**, and R.A. Cooke. 2013. Managing Denitrification in Tile-Drained Agricultural Watersheds. ASA, SSSA, and CSSA Annual Meeting. (**Presentation**).

Groh, T.A., M.B. David, L.E. Gentry, and C.M. Smith. 2012. Nutrient Treatment Revisited: A Study of Nutrient Removal and Greenhouse Gas Emissions in 19 Year Old Constructed Wetlands. ASA, SSSA, and CSSA Annual Meeting. (**Poster**).

David, M.B., L.E. Gentry, **T.A. Groh**, R.A. Cooke, D.A. Kovacic, and G.F. Czapar. 2012. Managing Denitrification in Constructed Wetlands. ASA, SSSA, and CSSA Annual Meeting. (**Presentation**).

Groh, T.A., and P.M. McGinley. 2011. Groundwater Phosphorus: Can Anything Control This Macronutrient? College of Natural Resources Annual Undergraduate Research Symposium (**Poster**).

EXTENSION AND OUTREACH

Penn State University Watershed Management Extension Specialist

April 2020-Present

- 75% Extension appointment
- Provide science-based education focused on water quality in agricultural water and urban stormwater to stakeholders across Pennsylvania.
 - Creator, Organizer, and Facilitator of Water Cooler Talk Webinar Series
 - Monthly webinar covering current water resource research and work across Pennsylvania
 - Typically 200-500 Registrants per webinar
 - Stream Health Subteam Leader for Penn State Extension Water Resources Team
 - Organize and lead Penn State Extension Educators and programming around stream health topics.
 - Established and maintaining three research and extension riparian buffers for Penn State across the Commonwealth of Pennsylvania.

- Create content centered on stream health education and improving water quality both local to Pennsylvania and regional. (Examples of some of the larger programs offered below.)

- Backyard Stream Repair (**Award Winning Program**)

Educate, equip, and empower landowners to repair their eroding streambanks. Practices taught include riparian buffer planting, grading and seeding vertical, highly erosive banks, and how to care for riparian zones. Both in class lectures and field days are offered as part of this course.

First Two years of Program Impact:

Length of Buffer Planted: **8505 ft**

Average Buffer Width: **50 ft**

Acres of buffers planted: **10 acres**

Water Quality Benefits from Impacts:

Pounds of N removed: **1000 lb N**

Pounds of P removed: **88 lb P**

Pounds of Sediment removed: **24,830 lb**

2022 Penn State Extension Directors Award for most Impactful Program Winner

2022 National Association of County Agricultural Agents' Search for Excellence in Environmental Quality, Forestry, and Natural Resources National Award Winning Program

- Riparian Buffer Maintenance School

Initially funded through a Science 2 Practice grant supported through the Penn State College of Agriculture and Penn State Extension

Educate and demonstrate proper maintenance for stream side tree plantings along with collection of scientifically sound evidence for these practices

Deliverables included webinars, field day material, and a field guidebook for buffer maintenance.

Funded 4 Extension employees, including Dr. Groh, to be Category 18 (Research and Demonstration) Pesticide Applicators through the Pennsylvania Department of Agriculture.

- Research and Tracking Tool for Stream Side Tree Planting (In Progress)

Currently funded through a Science 2 Practice grant supported through the Penn State College of Agriculture and Penn State Extension.

Develop a GPS tool (tablet based) to track and monitor tree growth and mortality. Also use this tool to generate tree growth and mortality data on research and extension buffers.

Develop educational resources to train people how to use this tool to better keep track of their tree plantings in riparian buffers to ensure success.

- Broadening Extension Through Student Training (BEST) Program
 - Developed programing for graduate students interested in extension as a future career path.
 - Trained 5 graduate students in the summer of 2022 (pilot year) in extension history, theory, and programming development. Included a full week training and a summer-long mentorship to develop extension programming related to the students' research.
- Co-founder and Head of Riparian Buffer Workgroup
 - Extension-based interdisciplinary group of specialists and educators that work with riparian buffers
 - Mission is to create a more unified educational message relating to riparian buffers for all stakeholders across Pennsylvania
- Author of Watershed Winds Articles
 - Watershed Winds is a monthly electronic publication put out by the PSU Extension Water Team with over 23,000 subscribers

**New York Conservation District Employees'
Association Water Symposium**

March 2020

- Invited Speaker
- Siting and designing saturated buffers in Chesapeake Bay Watershed

Design of Drainage Water Quality Practices Workshop

Dec 2019 and 2018

- Presented on siting and designing saturated buffers
- Workshop through Iowa State University Extension

TEACHING EXPERIENCE

**Penn State University (0% Teaching Appointment)
Guest Lecturer in the Following Courses:**

April 2020-Present

- SOILS 071-Introduction to soil science topics for general education credits. (Taught twice)
Taught introduction to agricultural water quality issues lecture.
- SOILS 418-Nutrient Management in Agricultural Systems (Taught twice)
Provided field day learning experiences centered around riparian buffers and stream health.

Iowa State University

Fall 2017

**Graduate Teaching Assistant: Junior Ecology
BIOL/AECL 312**

- Developed Team-based Learning (TBL) materials for new TBL section
- Team activity development
- Taught and assisted groups during class
- Grading
- Assisted in Scholarship of Teaching and Learning (SoTL) for new TBL section

Iowa State University

Springs 2017 and 2016

**Graduate Teaching Assistant: Senior and Graduate Watershed Management
NREM 407/507**

- Responsibilities: grading, in-class teaching assistance, weekly 6-hour field trip assistance, individual student group assistance, and laboratory instructor when primary instructor was absent

Iowa State University

Fall 2016

**Instructor of Record: Freshman Introduction to Renewable Natural Resources
NREM 120**

- One of the two instructors on record for NREM 120's in-class section
- Open to a variety of majors
- Enrollment: 262
- Developed lecture as well as online Blackboard and Top Hat materials

Iowa State University **Spring and Fall 2017 and 2016**
Graduate Teaching Assistant: Junior and Senior Field Experience in Soil
Description and Interpretation
AGRON 370

- In-class and in-field undergraduate instruction of how to describe soils taxonomically while understanding the science of soil profiling
- Class annually participates in both the American Society of Agronomy (ASA) and the North American Colleges and Teachers of Agriculture (NACTA) competitions
- Assisted with trips as an assistant coach and organized trip logistics

Iowa State University **Fall 2015**
Graduate Teaching Assistant: Freshman Introduction to Soils
AGRON 154

- Responsibilities: assist in the agronomy learning center where students from the class went to get help on online course content as well as their weekly quizzes

University of Illinois Urbana-Champaign **Spring of 2014, 2013, and 2012**
Graduate Teaching Assistant: Sophomore Introduction to Soils
NRES 201

- Taught one of the five three hour laboratories
- Responsibilities: weekly preparation for the lab, both in the actual lab and out in the field, preparing a 20-30 lecture before each lab, proctoring exams for the main lecture, and making sure the exams were appropriate for the students' level of comprehension

University of Illinois Urbana-Champaign **Fall 2013**
Graduate Teaching Assistant: Freshman Introduction to Natural Resources and Environmental Sciences for Majors
NRES 102

- Responsibilities: teach a few lectures when main professor was not around, grade assignments, help out during lectures when students had questions, and help teach the field day

University of Illinois Urbana-Champaign **Fall 2012**
Graduate Teaching Assistant: Sophomore Watershed Water Quality
NRES 285

- Responsibilities: grading, organizing labs, answering questions during class activities, and lecturing during field days
- Course included both a lecture and lab component

University of Illinois Urbana-Champaign **Fall 2012**
Graduate Teaching Assistant: Freshman Introduction to Natural Resources and Environmental Science for Non-majors
NRES 102 (Online)

- Responsibilities: organizing and grading 150 students' discussions, assignments, and quizzes
- Class operated through the Illinois Compass 2G platform (Blackboard)
- Proctored three in-class exams which brought all 500 students together

Teaching Awards

ISU Department of NREM Outstanding TA Award Recipient **Spring 2017**
Nominated and chosen by the NREM department for my work as a TA. This award is for any outstanding NREM TA who shows dedication to teaching while continuing their research in the department.

University of Illinois List of Teachers Ranked As Excellent **Spring 2012**
Spring 2013
Fall 2013
Spring 2014

The names placed on this list belonged to those university teachers who achieved a high enough score on the semester student evaluations. Each semester I had students evaluate me, I had a high enough score to be on this esteemed list.

2013 NRES department nominee for the College of ACES's Louis V. Logeman Graduate Student Teaching Award

This award is only given to two teaching assistants per academic year, and the College of Agricultural, Consumer and Environmental Sciences only gave these awards to graduate students who are nominated by their department as one of the best their home department has to offer. I was the department of Natural Resources and Environmental Sciences' nominee in 2013, and was honored to be chosen to represent the department for this outstanding teaching award.

SERVICE

PSU Ecosystem Science and Management Department's **2022-Present**
Graduate Program Committee
SOILS Program Representative for evaluating graduate student applications and Teaching Assistant (TA) funding requests.

PSU Water Council Member **July 2022-Present**
One of twelve members that represent the Penn State Water Community. We continue to build an interdisciplinary graduate program in Water Resources and bring all faculty members from the larger Penn State University community who are interested in water science and policy together to collaborate and connect.

Journal of Environmental Quality Associate Editor	Jul 2021-Present
Chesapeake Bay Program Ag Water Workgroup Alternative At-Large Member for Pennsylvania	Mar 2021-Present
PA Department of Environmental Protection's Sewage Advisory Committee Alternative At-Large Member	Feb 2021-Present
Pennsylvania Department of Natural Resources Riparian Buffer Advisory Committee Member	Jun 2020-Present
PSU's College of Agricultural Sciences' Graduate Student Competitive Grants Program Faculty Reviewer	Nov 2020, 2021, 2022
Iowa State Department of Natural Resource Ecology and Management's Graduate Student Organization Welcome and Social Chair	2016-2017
Treasurer Field Notes Article Editor Interview Committee Member Weekly Seminar Committee Member	2015-2016
Field Notes Article Committee Member	2014-2015
Iowa State Interdisciplinary Program of Environmental Science's Graduate Student Organization President	2016-2017
Vice President	2015-2016
University of Illinois Department of NRES Graduate Student Representative for the Turner Hall and Introduction to Soil Science Laboratory Renovation Project Committee	2012-2014
<ul style="list-style-type: none"> • Took part in both fundraising events as well as developing plans for new laboratories and classrooms in Turner Hall on the University of Illinois campus. 	

HONORS

American Society of Agronomy Environmental Quality Section's Inspiring Early Career Scientist Award	2022
Presented to Dr. Groh for inspirational research and extension programming in Soil and Water Science within first 7 years of career after terminal degree.	
Journal of Environmental Quality (JEQ) Outstanding Paper Award	2021
For Groh et al., 2019 <i>In Situ Denitrification in Saturated Riparian Buffers</i> . doi:10.2134/jeq2018.03.0125	
Given to those papers that have made the largest impact in their first two years after publishing. Narrowed down by number of citations and downloads and voted on by the JEQ Editor and Technical Editors.	
University of Wisconsin-Stevens Point Chancellor's Leadership Award Recipient	2011
Given to graduating seniors who demonstrate leadership in both campus and community activities as well as personal growth throughout their time at UWSP. The Chancellor's Leadership Award is limited to 30 recipients graduating in December.	
University of Wisconsin-Stevens Point Chapter Phi Kappa Phi Honor Society Member	2010
University of Wisconsin-Stevens Point Chapter Phi Eta Sigma Honor Society Member	2008

PROFESSIONAL SOCIETIES

Soil Science Society of America (SSSA)
American Society of Agronomy (ASA)
Crop Science Society of America (CSSA)
American Water Resources Association (AWRA)
Soil and Water Conservation Society (SWCS)

SOCIETY-BASED ACTIVITIES

ASA Environmental Quality (EQ) Section Vice Chair	2022
<ul style="list-style-type: none"> Assist the EQ section with organizing annual conference programming, including helping communicate between EQ Section's communities and their leaders. 	
ASA Community Chair	2021
<ul style="list-style-type: none"> Managing Denitrification in Agronomic Systems Community 	

ASA Community Vice Chair	2020
<ul style="list-style-type: none"> Managing Denitrification in Agronomic Systems Community 	
ASA Soil Judging Committee	2017-2019
ASA Leadership Conference Attendee	2015
ASA Annual Meeting Student Intern	2015 and 2012
SSSA Editor for K-12 soil chemistry webpage	2012
SSSA Advisor for high school nutrient filter experiment	2012
