Curriculum Vitae
Tiffany L. Messer, PhD, PE

Gatton Foundation Chair, Associate Professor, Bioenvironmental

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Current Position

Gatton Foundation Chair, Associate Professor, University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. January 2024 to present.

Education

Doctor of Philosophy, Biological and Agricultural Engineering, Emphasis: Ecological Engineering; North Carolina State University, Raleigh, NC; January 2011 – December 2015. Dissertation: Predicting Impacts of Rerouting Drainage Water from the Pamlico Sound to Restored Wetlands: A Hydrologic and Water Quality Assessment. Advisor: Dr. Michael R. Burchell, Ph.D. GPA: 3.77

Master of Science. Biological and Agricultural Engineering, Emphasis: Water Resources and Environmental Engineering and Minor: Soil Science, North Carolina State University, Raleigh, NC; August 2008 – December 2010. Thesis: Groundwater Nitrate Reductions within Upstream and Downstream Sections of a Riparian Buffer. Advisor: Dr. Michael R. Burchell, Ph.D. GPA: 3.77

Bachelor of Science, Biosystems and Agricultural Engineering, University of Kentucky, Lexington, KY; August 2004- May 2008. Emphasis: Bioenvironmental Engineering. GPA: 3.57 Magna Cum Laude.

Employment History

Gatton Foundation Chair University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. January 2024 – Present. Supervisor: Michael Montross, Ph.D., P.E.

Responsibilities include: utilizing funds from chairship to support student training, water-quality needs assessments in Kentucky, and research of low-cost water quality treatment options for rural communities, overseeing Messer Water Quality Laboratory, and extensive outreach efforts to the Commonwealth to distribute research findings.

Associate Professor, University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. July 2023 – Present. Supervisor: Michael Montross, Ph.D., P.E.

Responsibilities include: Research and teaching activities related to identifying, tracing, and treating water in agroecosystems for biosystems and agricultural engineering. Highlights since receiving tenure in July 2023 include: receiving over $18M in newly funded grants, publishing 9 peer reviewed publications, advising 26 undergraduate and 3 high school summer research projects, supervising(ed) 10 graduate student projects (completed 6), developing and teaching 3 interdisciplinary water resources courses.

Assistant Professor, University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. October 2020 – June 2023. Supervisor: Michael Montross, Ph.D., P.E.

Responsibilities include: Research and teaching activities related to identifying, tracing, and treating water in agroecosystems for biosystems and agricultural engineering. Highlights include: receiving over $1.3M in funded grants, publishing 16 peer reviewed publications, advising 13 undergraduate and 1 high school summer research projects, completed 2 graduate student projects, developed and taught interdisciplinary 2 water resource courses, chaired the department recruiting committee.

Assistant Professor, Department of Biological Systems Engineering and School of Natural Resources, University of Nebraska –Lincoln, Lincoln, NE. January 2017 – September 2020. Supervisor: David Jones, Ph.D., P.E.

Responsibilities included: Research and Teaching activities related to identifying, tracing, and treating water in agroecosystems for biological systems engineering and school of natural resources. Highlights included: receiving $2.3M in funded grants, advising 12 undergraduate research projects, supervising(ed) 10 graduate student projects (completed 4 and an additional 3 after move to Kentucky, additional students were transferred to another advisor upon move), developing and teaching interdisciplinary wetlands course, teaching every student in both the undergraduate and graduate programs during their first year.

Postdoctoral Associate, Biogeochemistry, Organic Chemistry, and Mass Spectrometry, Nicholas School of Environment, Duke University, Durham, NC. August 2015 –December 2016. Supervisor: Martin Doyle, Ph.D.

Responsibilities included: developed innovative methods for evaluating pesticide degradation in natural waters, mentor graduate students, published journal articles, and constructed competitive grant and fellowship applications.

Laboratory Manager, Research, and Teaching Assistant, Department of Biological and Agricultural Engineering, North Carolina State University, Raleigh, NC. August 2008 – August 2015. Supervisor: Michael R. Burchell, Ph.D.

Responsibilities included: modeled nitrogen transformations and loading rates in wetland systems; developed ^{15}N tracer protocol, experimental design, and monitoring scheme, co-authored two funded research grants, managed wetland research laboratory, managed wetland and riparian buffer field monitoring sites, modeled wetland hydrology in DRAINMOD and developed water management plan, co-lectured and served as a teaching assistant for multiple classes for 7 years.

Water Resources Engineering Intern, Hazen and Sawyer, Lexington, KY and Raleigh, NC. May 2008 – August 201. Supervisors: John Steinmetz, P.E. (Lexington) and Everette Knight, P.E. (Raleigh)

Responsibilities included: drafted future force main for Winchester, KY water treatment plant, co-authored proposals and quarterly reports, **e**valuated future construction site locations, researched and reported new BMP regulations in the state of North Carolina and organized webinars for modeling software in GIS and AutoCAD.

Research and Teaching Assistant, Biosystems and Agricultural Engineering, Lexington, KY. May 2005 – May 2008. Supervisors: Steven Workman, Ph.D., P.E. & Scott Shearer, Ph.D., P.E.

Responsibilities included: laboratory instructor for Basic Principles of Surveying, assisted in organizing water quality awareness extension events, researched flow rate effects for various forms of porous concrete, installed and evaluated erosion control measures on equine farms, and developed evapotranspiration predictor in Microsoft Excel.

Environmental Engineering Intern, CDP Engineers, Lexington, KY. May 2005 – December 2006. Supervisors: Sandy Camargo, P.E.

Responsibilities included: Co-developed Phase II programs for various cities in Kentucky and Ohio, surveyed future construction sites, designed rain gardens, and drafted stream restoration projects.

Summary

Prior to beginning my position at the University of Kentucky (UK), I served in an assistant professor position in the Biosystems Engineering Department at the University of Nebraska-Lincoln (UNL). In an effort to separate accomplishments prior to my transfer and continuation into a tenure track position in the Biosystems and Agricultural Engineering Department major accomplishments have been separated to represent work: a) completed post tenure at UK (July 2023 to present); b) completed prior to tenure at UK (October 2020-June 2023), c) Initiated at UNL and completed at UK (2020-2021), d) Completed at UNL (January 2017 – October 2020), e) completed prior to UNL (prior to January 2017).

Grants[α]

Role	UK June 2023 - Present	UK Oct 2020 – June 2023	UNL Jan 2017 – Sept 2020	Prior to UNL Prior to 2017	Total
PI Nationally Competitive	$810,134 (2)	$1,008,868 (2)	$532,148 (2)	$291,000 (2)	$1,832,016 (6)
Co-PI Nationally Competitive	$18,000,000 (1)	-	$1,752,203 (4)	$49,728 (2)	$1,801,931 (6)
PI Other	-	$237,647(8)	$142,725 (6)	-	$360,471 (13)
Co-PI Other	-	$70,678(3)	$413,044 (2)	-	$447,966 (4)
PI In-Review[β]	$749,383 (1)	-	-	-	-
Co-PI In-Review[β]	-	-	-	-	-
Total	**$18,810,134 (3)**	**$1,317,194 (13)**	**$2,840,120 (14)**	**$340,728 (4)**	**$23,308,176 (34)**

[α]Number of grants in parenthesis.
[β]Not included in total.

Refereed Publications[α]

Role	UK June 2023 - Present	UK Oct 2020 – June 2023	UNL Jan 2017 – Sept 2020	Prior to UNL Prior to 2017	Total
Published	17 (9)	16 (8)	11 (8)	2 (1)	46 (26)
In Press	-	-	-	-	-
In Review[β]	3(2)	-	-	-	3(2)
In Prep for 2025 Submission[β]	4(4)	-	-	-	4(4)
Total	**17 (9)**	**16 (8)**	**11 (8)**	**2 (1)**	**46 (26)**

[α]Publications in parenthesis are as first author or when graduate student under direct supervision is first author.
[β]Not included in total.

Presentations[α]

Role	UK June 2023 - Present	UK Oct 2020 – June 2023	UNL Jan 2017 – Sept 2020	Prior to UNL Prior to 2017	Total
Invited Speaker	2	5	4	-	11
Conference (Self)	4	5	9	24	42
Conference (Student from Research Team)	23	25	16	-	64
Conference (Collaborator)	0	2	7	4	13
Invited Seminars	3	3	5	-	11
Media Interviews/ Press Releases	7	6	6	-	19
Invited Extension Trainings	11	1	13	4	29
Total	**48**	**47**	**60**	**32**	**187**

Teaching

Activity	UK June 2023 - Present	UK Oct 2020 – June 2023	Initiated at UNL Completed at UK	UNL Jan 2017 – Sept 2020	Prior to UNL Prior to 2017	Total
Courses Developed	1	3	1	4	1	10
Courses Taught[ɣ]	4	4	1	12	8	29
Guest Lectures	2	5	-	14	-	21
Graduate Students Currently Advising	5	-	-	-	-	5
Graduate Students Completed	8	2	3[δ]	4	-	17
Undergraduate Students Advised	31	13	-	56	-	100

[ɣ] Courses taught represent the total courses taught including repeated courses. [δ]Three of the graduate students I was advising prior to my move stayed at UNL and I continued to be their major graduate advisor. I retained full graduate advising status at UNL until the completion of their degrees. One MS student completed her degree in December 2020, another MS student completed his degree July 2021, and the PhD student completed his degree in July 2022.

Grants and Contracts

(Total: $23,308,176; $3,954,150 to Messer program)

Externally Funded Research Grants

(Total: $22,444,081; $3,621,380 to Messer program)

Current

1. **T. Messer**, C. Crofcheck, C. Rodriguez. 2024. The Effects of PFAS Loading on Biogeochemical Cycling, Fate, and Transport in Wetlands. 1/2025-12/2027, **$309,908** (80% to Messer Program)

   As PI, I lead the team that included two departments and two federal agency partners. I advise one PhD student funded by the project. My lab will conduct the majority of the mesocosm, isotopic tracing, and modeling effort of the project.

2. S.Berry, M.L. Scotch, J.W. Keck, S.H. Olson, A. Hoover, **T. Messer,** L.E. Ormsbee, and L. Xiang. 2024. PIPP Phase II Theme 4 - Pandemic ESCAPE: Environmental Surveillance Center for Assessing Pathogen Emergence, NSF PIPP Phase II, 7/1/2024-6/30-2031, **$18,000,000** ($1,072,800 to Messer Program).

   As Senior Personnel, I will lead the outreach and mesocosm experiments related to waste management for the project along with advising one PhD student.

3. **T. Messer** and T. Barzee. 2024. REU Site: Multidisciplinary Approaches for Overcoming Water Resources and Sustainable Engineering Challenges in Appalachian Regions, NSF REU 19-582, 6/1/2024-5/31/2027, **$500,226** ($400,180 to Messer Program).

   As PI, I lead the recruitment, assessment, and training for the REU program. We will be recruiting 10 undergraduate participants staring in summer 2025.

4. **T. Messer**. 2021. CAREER: Impact of Pesticide and Antibiotic Cocktails on Nitrogen Removal Processes in Treatment Wetlands, NSF-Environmental Engineering, 7/1/2021-6/30/2026, **$529,105** ($529,105 to Messer Program).

   The Faculty Early Career Development (CAREER) Program is a National Science Foundation's most prestigious award to support early-career faculty. As the sole PI, I lead and direct the research and education components of the award and advise one PhD student and on MS student funded by the project. My lab conducts microcosm, mesocosm and field research along with modeling efforts for this project. To date 1 publication and 3 conference presentations has resulted from this project.

5. **T. Messer**, M. Montano, and D. Miller. 2021. Evaluation of Nanopesticide Fate and Transport and Biogeochemical Implications in Agroecosystems, USDA-NIFA A1511 Nanotechnology for Agricultural and Food Systems, $**479,763**. 1/1/21-12/31/2025, Messer: PI ($383,810 to Messer Program).

   As PI, I lead a multi-institutional team (including two universities and one national lab and two industrial partners), direct the research, advised two master's students funded by the project. My lab conducts the majority of the mesocosm and field research along with modeling efforts. To date 1 publication and 3 conference presentations have resulted from this project.

Completed

1. S. Bartelt-Hunt, **T. Messer**, and D. Snow. 2019. Influence of Agrochemical Mixtures on Treatment Wetland Ecosystem Services, USDA-NIFA, **$499,999**, 05/01/2019-04/30/2023, Messer: Co-PI ($199,999 to Messer Program).

   As co-PI, I direct the research related to the mesocosm component of the project and advised one PhD student funded by the project. My lab conducts the majority of the mesocosm, isotopic tracing, and modeling effort of the project. To date 1 publication is in prep and 4 conference presentations have resulted from this project.

2. **T. Messer**, D. Snow, and M. Doyle. 2018. Photodegradation of Insecticides in Rivers Adjacent to Agricultural Intensive Regions: A Novel Water Quality Monitoring Approach, USDA-NIFA, **$498,500**, 3/1/18-2/28/2023, Messer: PI ($398,800 to Messer Program).
   As PI, I lead a multi-institutional team (including three universities), direct the research, and advised two PhD students funded by the project. My lab conducts majority of the microcosm and field research along with modeling efforts. To date 1 publication is in prep, 4 conference presentations, and 1 completed PhD student have resulted from this project.

3. S. Fernando, S. Bartlett-Hunt, D. Loy, **T. Messer**, G. Morota, H. Paz Manzano, A. Schmidt, D. Snow, and R. Stowell. 2018. Investigating mobile genetic elements and resistance gene reservoirs towards understanding the emergence and ecology of antimicrobial resistance in beef cattle production systems, USDA-NIFA, **$773,607**, 2/15/2018 – 2/14/22, Messer: Co-PI ($38,680 to Messer Program).
   As co-PI, I directed the research related to the field component of the project and advised one master's student funded by the project. My lab conducted the majority fate and transport effort of the project. To date 1 publication is in-prep (delayed to COVID-19 data processing delay), 3 conference presentations, and 1 graduated MS students resulted from this project.

4. T. Gilmore, A. Mittelstet, and **T. Messer**. 2018. Survey of Groundwater Transit Times and Nitrate Delivery to Bazile Creek, Nebraska DEQ, **$30,000**, 06/01/2018-5/31/2020, Messer: Co- PI ($3,000 to Messer Program).
   As co-PI, I provided guidance for field sampling funded by the project. To date 1 publication and 1 graduated MS students resulted from this project.

5. **T. Messer**, T. Gilmore, and A. Mittelstet, 2019. LTAR Research: Testing a Novel Groundwater Age-dating Technique in Bazile Creek Watershed, **$33,648**, 11/1/2019 – 10/30/2021, Messer: PI ($33,648 to Messer Program).
   As PI, I directed the research funded by the project. My lab guided majority of the field research. To date 1 publication and 1 additional in review, 1 conference presentation, and 1 graduate PhD student resulted from this project.

6. S. Bartelt-Hunt, C. Wittich, E. James, S. Kim, Y. Li, **T. Messer**, J. Eun, X. Li, J. Steelman, C. Sim. REU Site: Sustainability of Horizontal Civil Networks in Rural Areas, NSF REU 19-582, **$448,597,** 5/1/2020-4/30/2023., Messer: Co-PI ($22,429 to Messer Program).
   As co-PI, I provided mentorship to an undergraduate summer research assistant to study best management practices in rural communities of Nebraska. To date 20 undergraduate students have participated in this project.

7. **T. Messer**, 2016. Photodegradation of Imidacloprid in Rivers Adjacent to Agricultural Facilities: A Novel Water Quality Monitoring Approach, USDA AFRI NIFA ELI Post Doc Fellowship, **$165,000**, Messer: Fellow ($165,000 to Messer Program).
   As PI, I directed the research funded by the project. My lab guided majority of the field research. To date 2 conference presentations, and 3 months of completed post-doctoral funding resulted from this project.

8. **T. Messer.** 2012. Predicting Impacts of Rerouting Drainage Water from the Pamlico Sound to Restored Wetlands – A Critical Component to Galvanize Stakeholder Cooperation, EPA STAR Fellowship, **$126,000**, Messer: Fellow ($126,000 to Messer Program).
   As PI, I directed the research funded by the project, which was the basis of my PhD project and covered stipend and tuition with an additional yearly research allowance. To date 3 publications, 17 conference presentations, and 1 graduated PhD student resulted from this project.

9. Burchell, Michael R., F. Birgand, S.W. Broome, and **T.L. Messer**. 2013. A Mesocosm Study to Determine Nitrogen Assimilation Capacity of a Restored Wetland Slated to Receive Pumped

Drainage Water - a Critical Component to Maximize Improvement to the Pamlico Sound. **$29,914**. NCSU Water Resources Research Institute 03/01/2013 - 02/28/2014, Messer: Co-PI ($0 to Messer Program).

As a co-PI, I completed the isotopic microcosm study funded by the project. To date 1 publication, 3 conference presentations, and 1 graduated PhD student resulted from this project.

10. Burchell, M.R and **T.L. Messer**. 2012. Predicting Water Quality Impacts of Rerouting Drainage Water from the Pamlico Sound to Restored Wetlands. NCSU Sea Grant Program. **$19,814.** 09/01/2012 – 04/30/2014, Messer: Co-PI ($0 to Messer Program).

    As a co-PI, I completed the nutrient enrichment experiments for 18 wetland mesocosm nutrient studies. To date 1 publication, 3 conference presentations, and 1 graduated PhD student resulted from this project.

Internally Funded Research Grants

(Total: $828,338; $325,618 to Messer program)

Current

None.

Completed

1. **T. Messer** and C. Crofcheck. The Effects of PFAS Loading on Biogeochemical Cycling, Fate, and Transport in Wetlands, USGS 104(b). (95% Messer Proram). **$19,992.** 9/1/2023 - 9/31/2024.

    As PI, I direct the research related to the field component of the project and advised one master's student funded by the project. My lab conducts the experimental development, execution, and laboratory analytical resources to analyze water quality samples from the experiments.

2. T. Messer **and E. Ernhardt.** Evaluating the Risk of Extreme Events to Tap Water Quality in Eastern Kentucky: A Novel Method for Tracing and Fingerprinting Sulfur Sources. UK CARES, **$23,673.** (50% to Messer Program). 2/1/2023 – 1/31/2024

    As PI, I direct the research related to the field component of the project and advised one master's student funded by the project. My lab conducts the majority fate and transport effort of the project.

3. **T. Messer** and E. Nottingham. Surface Water Monitoring for Contaminants of Emerging Concern (CECs) in Four Kentucky Watersheds. Central Appalachian Regional Education Research Center (CARERC). $14,628. (100% Messer Program). 8/1/2022 – 7/31/2023

    As PI, I direct the research related to the field component of the project and advised one master's student funded by the project. My lab conducts the majority fate and transport effort of the project.

4. W. Ford and **T. Messer**. Coupled Impacts of Agricultural Runoff and Ethanol Pollution on Dissolved Oxygen in Streams. Southeast Center for Agricultural Health and Injury Prevention Pilot Proposal. **$25,000**. 8/1/2022 – 7/31/2023 (25% to Messer Program).

    As a co-PI, I provide guidance to the graduate student and laboratory analytical resources to analyze water quality samples from the experiments.

5. **T. Messer** and W. Ford. Emerging Contaminant Exposure Following WWTP Processes to Surface Waters and Agroecosystems, USGS 104(b). **$10,000.** 8/1/2021 -11/31/2022. ($7,500 to Messer Program).

    As PI, I direct the research related to the field component of the project and advised one master's student funded by the project. My lab conducts the majority fate and transport effort of the project. To date 2 conference presentations have resulted from this project.

6. **T. Messer** and W. Ford. 2021-2022 CAFÉ Research Activity Award. **$2,937.60**, 11/10/2021 – 6/30/2022. ($2,937.60 to Messer Program).
   As PI, I direct the research related to the field component of the project and advised one master's student funded by the project. My lab conducts the majority fate and transport effort of the project. To date 2 conference presentations have resulted from this project.

7. A. Adedeji, T. Barzee, J. Shi, and **T. Messer**. OVPR Fourier Transform Infrared Spectrometer (FTIR), UK OVPR Equipment Fund. **$35,756.04**. 5/2024

8. **T. Messer**. Treating Non-Point Source Cocktails: Pesticide Removal Utilizing In-stream Best Management Practices, Robert B. Daugherty Water for Food Global Institute at the University of Nebraska, **$62,800**, 7/1/2019-6/30/2022, Messer: PI ($62,800 to Messer Program).
   As PI, I direct the research related to the field component of the project and advised one PhD student funded by the project. My lab conducts the majority fate and transport effort of the project. To date 1 publication, 3 conference presentations, and 1 graduated PhD student resulted from this project.

9. **T. Messer** and W. Sanderson. 2021. Early Career Award: Evaluating the Risk of Complex Mixtures of Emerging Contaminants, Heavy Metals, and Nutrient Exposure: Identifying Hot Spots and Hot Times in Surface Water Across Kentucky. UK CARES, **$37,620**, 4/1/2021-3/30/22, Messer: PI ($37,620 to Messer Program).
   As PI, I directed the research related to the field and homeowner sampling component of the project and advised one master's student funded by the project. My lab conducted the majority analytical analysis and reporting of the project. To date 1 publication is in prep, 3 conference presentations, and 1 graduated MS student resulted from this project.

10. **T. Messer**, S. Comfort, and A. Mittelstet. Surface Water Nutrient Removal in Eutrophic Ponds Using Floating Treatment Wetlands in Nebraska, 2021 Nebraska Environmental Trust, Sponsor amount: **$111,797,** ($0 to Messer Program as would not transfer to UK and was transferred to co-PI Comfort). 5/1/2021-4/30/2022.
    I was initially the PI of the project. However, after moving to the University of Kentucky, this award was transferred to Steven Comfort as the primary PI as this is a state specific award and I continued to serve as an external advisor. I directed the research related to the field and microcosm component of the project and advised one master's student funded by the project. To date 2 conference presentations have resulted from this project.

11. McAlister, M., S. Evans, and **T.L. Messer**. Building Local Capacity for Detection of Sewage-Related Threats in Eastern Kentucky, UK Center for Appalachian Research in Environmental Sciences (UK-CARES) Community Grants. **$9,922**. 8/1/2021 -3/31/2022. ($2,000 to Messer Program).
    As a co-PI, I provide guidance to the research team and statistical analyses for the project.

12. **T. Messer**, S. Bartelt-Hunt, and D. Snow. PFAS Exposure from WWTPs to Surface Water and Agricultural Fields. USGS 104(b). **$19,928**. 3/1/2020 – 2/28/2021. Messer: PI ($6,636 to Messer Program).
    As PI, I directed the research related to the field sampling component of the project and advised one master's student funded by the project, who was reassigned to Dr. Daniel Snow following my move to the University of Kentucky. To date 1 publication is in review, 1 conference presentation, and 1 graduated MS student resulted from this project.

13. **T. Messer**. 2019. FIRST: Treating Non-Point Source Cocktails: Pesticide Removal Utilizing In-stream Best Management Practices, NSF-Nebraska-EPSCoR, **$25,000**, 4/1/2019-3/31/2020, Messer: PI ($25,000 to Messer Program).
    As PI, I directed the research related to the mesocosm water quality component of the project and advised one master's student funded by the project. My lab conducted the

majority analytical analysis and reporting of the project. To date 1 publication is in review, 2 conference presentations, and 1 graduated MS student resulted from this project.

14. **T. Messer**. 2018. Understanding Floating Treatment Wetland Potential for Toxic Algal Bloom Prevention in Recreational Lakes, Robert B. Daugherty Water for Food Global Institute at the University of Nebraska, **$17,000**, 7/1/2018-6/30/2019, Messer: PI ($17,000 to Messer Program).
    As PI, I directed the research related to the mesocosm water quality component of the project and advised one master's student funded by the project. My lab conducted the majority analytical analysis and reporting of the project. My lab conducted the majority analytical analysis and reporting of the project. To date 1 publication, 8 conference presentations, and 1 graduated MS student resulted from this project.

15. A. Mittelstet, **T. Messer**, and T. Gilmore. 2017. Managing Water Resources at the U.S. Meat Animal Research Center, ARD & US MARC, **$83,612**, 7/3/17 – 12/31/19, Messer: Co-PI ($25,083 to Messer Program).
    As co-PI, I directed the research related to the field component of the project and advised one master's student funded by the project. My lab conducted majority of the field collection and analytical effort of the project. To date 2 publications, 9 conference presentations, and 1 graduated MS student and 1 graduate PhD student resulted from this project.

16. D. Snow, **T. Messer**, S. L. Bartelt-Hunt, M. D'Alessio, D. Hage, and L. Xu. 2019. Xevo TQ-S micro System, ARD Equipment Fund, **$329,432**, 2019, Messer: Co-PI ($32,943 to Messer Program).
    As co-PI, I provided support in the proposal for funds to acquire new equipment for evaluating water quality samples for emerging contaminants in the Nebraska Water Center. The equipment was imperative for the success of evaluating emerging contaminants.

17. **T. Messer** and S. Comfort. 2019. Nebraska Floating Wetlands Pilot Project, **$15,000**, 12/10/2019-12/09/2020, Messer: PI ($7,500 to Messer Program).
    As PI, I directed the research related to the mesocosm water quality component of the project and advised one master's student funded by the project. My lab conducted the majority analytical analysis and reporting of the project. To date 1 publication, 3 conference presentations, and 1 graduated MS student resulted from this project.

18. **T. Messer**, A. Mittelstet, and D. Snow. 2018. Pesticide Exposure in Recreational Lakes, 104(b), **$19,997**, 3/3/2018-2/8/2019, Messer: PI ($9,998 to Messer Program).
    As PI, I directed the research related to the field monitoring water quality component of the project, advised one master's student funded by the project, and conducted the reporting of the project. To date 1 publication, 2 conference presentations, and 1 graduated MS student resulted from this project.

Hatch Project

Current

1. Armbrust, K.L., S. Brander, J. Burger, B. Dari, J. Gan, J. Hoverman, J.J. Jenkins, M. Kaiser, H. Li, Q.X. Li, **T. Messer**, F.C. Michel, S.J. Parikh, J. Pedersen, R. Peterson, B.K. Richards, G. Robbins, D. Schlenk, M.S. Sepulveda, D.G. Seth Carley, D. Snow, T. Sterling, and M. Tessum. 2020. Agrochemical Impacts on Human and Environmental Health: Mechanisms and Mitigation. W-4045. 10/01/2020-9/30/2025. Messer: Co-PI.

Completed

1. Comfort, S., **T. Messer**, T. Franti, S. Thomas, J. Corman, and K. Pekarek. 2017. A Multidisciplinary Approach to Pond and Small Lake Restoration in Nebraska: A Cooperative Case Study using Cushman Lake (Lincoln, NE). NE 1014685. 6/1/2017-9/30/2021. Messer: Co-PI.

Institutional Review Boards (IRB)

Current

1. **T. Messer**. mesoReach Program, Lexington, KY, June, 6, 2023. IRB # 86571. University of Kentucky. 6/9/2023 -6/8/2025.
2. **T. Messer**. NSF CAREER mesoEXPLORE: Wetlands College Course, Lexington, KY, April, 3, 2023. IRB # 73222. University of Kentucky. 4/3/2023 -4/2/2025.
3. **T. Messer**. Evaluating the Risk of Extreme Events to Tap Water, Lexington, KY, March, 27, 2023. IRB # 86571. University of Kentucky. 3/27/2023 -3/26/2025.
4. **T. Messer**. AEES DEIJ, Lexington, KY, May, 30, 2023. IRB # 86571. University of Kentucky. 5/30/2023 -3/26/2025.

Completed

1. **T. Messer**. Motivations and Challenges for Interdisciplinary Design Courses. IRB # 2020010053EX. University of Nebraska-Lincoln. 1/17/2020 -6/30/2025.

University of Nebraska Funded Non-Research Grants (Total: $11,100)

Current

None

Completed

1. **T. Messer**, 2019 CAREER Club, ORED CAREER Club Fund, 11/2019-7/2020. **$10,000**. Messer: PI ($10,000 to Messer Program).
   Provided funds to visit Washington D.C. to meet with NSF program officers and provide guidance for resubmitting NSF CAREER proposal.

2. **T. Messer.** 2018 ASABE Annual International Meeting, IANR Travel Fund, 7/23/18, $500. Messer: PI ($100 to Messer Program).
   Provided funds to attend 2018 ASABE Annual International Meeting to present results from Nebraska teaching and research.

3. **T. Messer**. 2017 WETPOL Annual International Meeting, SNR/IANR Faculty Development Fund, 8/19/17. $1,000. Messer: PI ($1,000 to Messer Program).
   Provided funds to attend 2017 WETPOL International Meeting to participate in treatment wetland.

External Research Grants In-Review

($799,984; $374,671 to Messer Program)

1. **T. Messer**, S. Bartelt-Hunt, and C. Tobias. Partnership: Fate and Implications of Microplastics and PFAS Contributions from Fertilizer Applications in Agroecosystems. 3/15/2025-3/14/2025. USDA-NIFA Quantity and Quality. **$449,605**. (60% to Messer Program). Submitted 9/27/2024.

Internal Research Grants In-Review

None

Non-Awarded Grant Proposals (Not Included in Total)

2. E. Santillan-Jimenez, K. Pennell, M. Guzman, I. Escobar, and **T. Messer.** WASTE NOT: Waste Science, Technology, and Engineering as a Nexus of Opportunities for Training. 3/2025-2/2030. NSF-NRT. **$3,000,000** (15% Messer Program). Submitted 11/14/2024.

3. **T. Messer**, M. Montano, and D. Rider. 3/15/2025-3/14/2029. Partnership: Characterizing, Tracing, and Identifying Movement and Implications of Nanoplastics in Agroecosystems on Biogeochemical Processes. USDA-NIFA Nanotechnology. **$799,737** (60% Messer Program). Submitted 9/19/2024.

4. **T. Messer**, J. McMaine, K. Pennell, A. Ernhardt, and S. Berry. 3/1/2025-2/28/2028. Development of De Facto Water Reuse Risk Frameworks and Mitigation Interventions to Identify and Treat "Hot Times" and "Hot Spots" from Complex Wastewater Sources. **$2,968,750** (60% Messer Program). Submitted 8/21/2024

5. W. Sanderson, J. Sottile, K. Butler, M. Montross, T. Prince, T. Uhl, J. Christian, S. Stanifer, K. Bradley, S. Sampson, **T. Messer**, K. Winter, M. Able, S. Browning, S. Vincent, J. Hoch, P. Gribble, Z. Agioutantis, N. Heebner, M. Peterson, and P. Rochanchi. Central Appalachian Regional Education Research. 7/1/2024 – 6/30/2029. NIOHS. **$9,000,000.** (2% Messer Program). Submitted 9/15/2023.

6. **T. Messer**, S. Bartelt-Hunt, and C. Tobias. Implications of Microplastic Contributions from Fertilizer Application Practices to the Nitrogen Cycle in Agroecosystems. 3/15/2024-3/14/2028. USDA-NIFA Quantity and Quality. **$899,905**. (60% to Messer Program). Submitted 9/27/2023.

7. **T. Messer,** S. Bartelt-Hunt, and D. Snow. Elucidation of Passive and Real-time Sampling Methodologies for Monitoring PFAS in Stormwater, Surface Water, and Sediment Fractionation, Department of Defense. **$1,559,469.** 6/1/2023 -5/31/2027.

8. **T. Messer,** C. Crofcheck, C. Rodriguez Lopez. Implications of PFAS to Water Quality Improvements in Treatment Wetlands, USGS 104(g)-PFAS. **$278,906.** 9/1/2023 -9/31/2026.

9. **Messer** and T. Bartzee REU Site: Multidisciplinary Approaches for Overcoming Water Resources and Sustainable Engineering Challenges in Appalachian Regions, NSF REU 19-582, $489,270, (60% to Messer Program). Submitted 9/1/2022.

10. **T. Messer**, S. Bartelt-Hunt, and D. Snow. Elucidation of Passive and Real-time Sampling Methodologies for Monitoring PFAS in Stormwater, Surface Water, and Sediment Fractionation. Department of Defense. $1,559,469. (60% to Messer Program). Submitted 1/10/2023.

11. **T. Messer** and S. Bartelt-Hunt. Implications of Microplastic Contributions from Fertilizer Application Practices to the Nitrogen Cycle in Agroecosystems. USDA-NIFA Soil Health. $749,983. (60% to Messer Program). Submitted 9/6/2022.

12. **T. Messer**, W. Ford, and S. Bartelt-Hunt. Implications of Microplastic Contributions from Fertilizer Application Practices to the Nitrogen Cycle in Agroecosystems. USDA-NIFA Soil Health. **$749,343**. (50% to Messer Program). Submitted 6/10/2021. **Planned resubmission to NSF in Fall 2022 grant cycle based on reviews and recommendations from USDA.**

13. S. Berry, J. Keck, and **T. Messer.** Measurement of biomarkers in environmental samples. THREADS (Translational Health Research with Environmental Analytes for Disease Surveillance) Alliance. $5,000. (3% Messer Program). Submitted 6/10/2022.

14. O. Wendroth, M. Sama, H. Poggenbarger, C. Knott, T. Messer, and S. Silvestri. Sustainable Use of Terrestrial Ecosystems for Securing Water Quality and Food Supply. University of Kentucky 2021 Sustainability Challenge Grant. $49,885.95 (10% to Messer Program). Submitted 5/27/2021.

15. O. Wendroth, M. Sama, H. Poggenbarger, C. Knott, **T. Messer**, and S. Silvestri. Towards Sustainable Water and Nitrogen Management in High Crop Production. **$649,683** (10% to Messer Program). Submitted 6/17/2021.

16. **T. Messer**, S. Bartelt-Hunt, T. Gilmore, A. Schmidt, and D. Miller. Implications of Microplastic Contributions from Fertilizer Application Practices to the Nitrogen Cycle in Agroecosystems. USDA-NIFA Soil Health. **$498,548.** (50% to Messer Program). Submitted 4/8/2020. **— Resubmitted in 2021 grant cycle.**

17. J. Lau, S. Bartelt-Hunt, H. Hatton-Bowers, **T. Messer**, T. Roy, and A. Schmidt. Building Resilience Against Flood-induced Chemical Contamination and Other Environmental, Social and Psychological Factors for the Vulnerable Communities with Failed On-site Wastewater Management in Rural Nebraska. EPA-G2019-STAR-E1. **$799,833** (18% Messer). Submitted 9/30/2019.
18. M. Wilkins, I. Ciampitti, Y. Demirel, S. Dishari, I. Dweikat, T. Field, R.S. Frazier, F.J. Hay, S. Hu, D. Keshawni, J. Keshawni, F. Mattos, **T. Messer**, W. Niu, L. Pytlik Zillig, R. Saha, S. Sattler, J. Schnable, J. Shi, P. Twigg, J. Yang, and Y. Zheng. Reducing High Plains Aquifer Depletion Through Lignin Valorization and Drought-Tolerant Crop Plant Design: From Burning To Earning (B2E). USDA-NIFA Sustainable Agricultural Systems. **$9,985,466** (3% Messer). Submitted 9/28/2019.

19. **T. Messer**, D. Snow, W. Woldt, C. Neale, and S. Comfort. Feasibility of Innovative Wetlands for Nutrient Treatment. EPA STAR Program. **$999,413** (40% Messer) Submitted 12/10/2019.

20. **T. Messer**, S. Comfort, and A. Mittelstet. Surface Water Nutrient Removal in Eutrophic Ponds Using Floating Treatment Wetlands in Nebraska, 2019 Nebraska Environmental Trust, Sponsor amount: **$301,161** (33.3% Messer). Submitted 9/3/2019**). — Resubmitted and Funded in 2021.**

21. **T. Messer**. CAREER: Impact of Pesticide and Antibiotic Cocktails on Nitrogen Removal Processes in Treatment Wetlands, NSF-Environmental Engineering, 7/1/2020-6/30/2025, **$518,623** (100% Messer). **— Resubmitted and Funded in 2021.**

22. J. Keshwani, S. Frerichs, E. Ingram, **T. Messer**, and S. Pitla. Garden Tools: Technology Opportunities in Outdoor Learning Spaces, USDA-AFRI. Submitted 8/2019, **$299,802** (20% Messer).

23. J. Luck, S. Banerjee, D. Heeren, **T. Messer,** H. Nemela, and S. Pitla. INFEWS/T2 Experimentation, Technological Implementations and Novel Algorithmic Approaches for Futuristic Smart Farming, NSF, 07/01/2019-06/30/2024, **$2,246,511** (15% Messer).

24. Y. Qi, C. Allen, **T. Messer**, C. Neale, Z. Tang, D. Uden, B. Wardlow, and W. Woldt. Mapping Wetlands for Transportation Planning in Nebraska Using GIS Predictive Models, Nebraska Department of Transportation, 07/01/2019-12/31/2020. **$286,079** (10% Messer).

25. D. Hage, S. Bartelt-Hunt, D. Snow, **T. Messer**. Development of a new flow-based approach to directly measure the bioavailability of emerging contaminants in water and binding by these agents with soluble organic components in environmental samples, USGS 104(b), 3/1/2019-2/28/2020, **$20,000** (5% Messer).

26. Y. Li, S. Bartelt-Hunt, T. Gilmore, M. Harner, A. Mittelstet, **T. Messer**, E. Rogan, and D. Snow. Nitrogen Legacy in Anthropogenic Landscapes: Connecting Water Quality and Citizen Science, University of Nebraska Collaboration Initiative, 7/1/18 – 6/30/20, **$150,000**, (12.5% Messer).

27. **T. Messer**. FIRST: Flowing Through Nature: Removing *E. Coli* and Preventing Toxic Algal Blooms in High Use Waterbodies, NSF-Nebraska-EPSCoR, 4/1/2018-3/31/2019, **$24,967**, (100% Messer). Accepted into final round of applicants. **— Resubmitted and Funded in 2019.**

28. J. Luck, D. Heeren, **T. Messer**, and H. Nemala, Building Market-Driven Management Approaches for Sustainable Water Quality and Quantity in Production Agriculture, USDA-NIFA, 3/1/2018-2/28/2022, **$437,240**, (25% Messer).

29. S. Comfort, T. Franti, **T. Messer**, K. Pekarek, S. Thomas, and W. Woldt. A System Science Approach to Pond and Small Lake Restoration in Nebraska: A Cooperative Case Study using Cushman Lake (Lincoln, NE), University of Nebraska Collaboration Initiative, 1/1/18 – 12/31/19**, $149,823** (10% Messer).

30. D. Snow, S. Bartlett-Hunt, and **T. Messer**. Cumulative Effect of Intentional and Unintentionally-Introduced Nitrogen Bio-cycle Inhibitors in Aquatic Environments, USGS 104(g), 1/1/18 – 12/31/19, **$150,000** (33% Messer).

31. Y. Li, S. Bartlett-Hunt, X. Li, and **T. Messer**. Fate of Nitrate during Transport across the Groundwater-Surface Water Interaction under Future Climate, Department of Energy, 1/1/18-12/31/2020, **$540,000** (25% Messer).

32. **T. Messer**, T. Gilmore, and D. Gosselin. Tracing Exported Dissolved Organic Matter from Degraded Headwater Wetlands in Agroecosystems, 4/1/2017-3/31/2018, Cycle 12 Energy Center, **$134,985** (50% Messer).

33. S. Thomas, T. Gilmore, D. Gosselin, and **T. Messer**. Pre-proposal Sand Hills streamflow: more than a faucet? USGS 104(b), 1/1/17 -12/31/17. **$20,000** (25% Messer).

Publications

1: Undergraduate student, 2: Masters student, 3: Ph.D. student, 4: Postdoctoral researcher, *: First Author

Refereed (38 Total)

Published (36)

1. Byers, E.N.[3,*], **Messer, T.L.**, Unrine, J., Barton, C., Agouridis, C., Miller, D.N. 2025. The occurrence and persistence of surface water contaminants across differentt landscapes. *Science of The Total Environment*. 287: 124294. doi: 10.1016/j.scitotenv.2024.177837
   Author Role: Dr. Messer was the PI on the project, dissertation advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

2. Byers, E.N.[3,*], **Messer, T.L.**, Tobias, C., Miller, D.N., Barton, C., Unrine, J., Agouridis, C. 2025. Isotopically tracing the impact of water contaminant "cocktails" on nitrogen pathways in constructed treatment wetlands. *Water Research*. 287: 124294. doi: 10.1016/j.watres.2025.124294
   Author Role: Dr. Messer was the PI on the project, dissertation advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

3. Byers, E.N.[3,*], **Messer, T.L.**, Miller, D.N., Barton, C., Unrine, J., Agouridis, C. 2025. Contaminant mixtures and their impact on nitrate removal in wetlands: A mesocosm study. *Journal of Environmental Management*. 383: 125518. doi: 10.1016/j.jenvman.2025.125518
   Author Role: Dr. Messer was the PI on the project, dissertation advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

4. Ristola, K.J.[2,*], **Messer, T.**, Crofcheck, C., Barzee, T.J., Sanderson, W. 2025. Wetland treatment systems for municipal wastewater at a bourbon distillery and potential value of incorporating stillage for water treatment enhancement. *Journal of Natural Resources and Agricultural Ecosystems.* doi:10.13031/jnrae.16206
   Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

5. Russell, M.[3*], **Messer, T.L.**, Snow, D.D., Bartelt-Hunt, S. 2025. Review of fate and ecological implications of antibiotics in aquatic agricultural environments. *Environmental Science & Health*. 45: 100618. doi: 10.1016/j.coesh.2025.100618
   Author Role: Dr. Messer was the PI on the project, dissertation advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

6. Fulazzaky, M.A.*, Salim, N.A.A., Puteh, N.H., **Messer, T.L.,** Othman, M.H.D., Jaafar, J., Ismail, A.F., and Rahman, M.A. 2024. Mass transfer kinetics of Cr(VI) absorption by green mussel shell-polyethersulfone membrane. *Material Advances.* 6: 1695-1709. doi: 10.1039/d4ma01068j
   Author Role: Dr. Messer provided editing technical expertise for the manuscript.

7. McCoy, J., Chaffee, M., Mittelstet, A., **Messer, T.L.,** Comfort, S. 2024. Nitrate removal by floating treatment wetlands aerated and unaerated conditions: Field and laboratory results. *Nitrogen*. doi: 10.3390/nitrogen5040053
   Author Role: Dr. Messer was a co-PI on the project, provided experimental design and editing of the manuscript.

8. Sigler, K.[2], **Messer, T.L.***, Ford, W., Sanderson, W. 2024. Occurrence, transformation, and transport of PFAS entering, leaving, and flowing past wastewater treatment plants with diverse land uses. *Journal of Environmental Management.* doi: 10.1016/j.jenvman.2024.123129
Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

9. Muda, K., Fulazzaky, M.A., **Messer, T.L.,** Omar, A.H., and Omoregie, A.I. 2024. Mass transfer mechanisms and decolorization kinetics of the mixed azo dyes. *Environmental Sciences and Technology Engineering.* doi: 10.1021/acsestengg.4c00258
Author Role: Dr. Messer provided editing technical expertise for the manuscript.

10. Fulazzaky, M.A., Salim, N.A.A., Puteh, N.H., **Messer, T.L.,** Othman, M.H.D., Jaafar, J., Ismail, A.F., and Rahman, M.A. 2024. Mechanisms and mass transfer kinetics of Cr(VI) absorbed by mussel shell incorporated adsorptive membrane. *Desalination and Water Treatment.* 319: 100537. doi: 10.1016/j.dwt.2024.100537
Author Role: Dr. Messer provided editing technical expertise for the manuscript.

11. Fulazzaky, M.A., Yuzir, A., **T.L. Messer**, and Sofyan, A. 2024. Methanogensis kinetics of organic matter of leachate in an up-flow anaerobic sludge blanket reactor. *Waste Management Bulletin.* 2: 1-20. doi: 10.1016/j.wmb.2024.08.003
Author Role: Dr. Messer provided editing technical expertise for the manuscript.

12. Russell, M.[3*], **Messer, T.L.**, Bartelt-Hunt, S., Snow, D.D., Smith, R.L., Repert, D.A., and Reed, A.P. 2024. Influence of Four Veterinary Antibiotics on Constructed Wetland Nitrogen Transformation. *Toxics.* 12(5): 346. doi: 10.3390/toxics12050346
Author Role: Dr. Messer was the PI on the project, dissertation advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

13. Borsuah, J.F.[3], **Messer, T.L.***, Snow, D.D., Comfort, S.D., Bartelt-Hunt, S. 2024. Dissolved Organic Matter on Photodegradation Rates, Byproduct Formations, and Degradation Pathways for Two Neonicotinoid Insecticides in Simulated River Water. *Sustainability.* 16, 118. doi: 10.3390/su16031181
Author Role: Dr. Messer was the PI on the project, dissertation advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

14. Trejo, B.[2], Russell, M. V., Bartelt-Hunt, S. L., Naderi Beni. N., Snow, D. D., **Messer, T. L***. 2023. Occurrence and Persistence of Antibiotics Administered to Cattle in a Newly Established Feedlot. *Journal of Environmental Quality. 52(6):* 1193-1205. doi: 10.1002/jeq2.20516
Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

15. Chaffee, M., Mittelstet, A.*, Comfort, S., Messer, T., and Shrestha, N. 2023. Monitoring temporal chlorophyll-a using Sentinel-2 imagery in urban retention ponds receiving a biological-chemical treatment. *Journal of Ecological Engineering*, doi: 197:107123.
Author Role: Dr. Messer provided experimental design guidance and editing of the manuscript.

16. Beni, N.N.*, Karimifard, S. Gilley, **Messer, T.L.**, Schmidt, A., and Bartelt-Hunt, S. 2023. Higher Concentrations of Microplastics in Runoff from Biosolid-Amended Croplands than Manure-amended Croplands. *Communications Earth & Environment*, 42(4). doi: 10.1038/s43247-023-00691-y
WOS Metric Year: 2020 | Category: Multidisciplinary Sciences | JIF: 69.504 | Rank by JIF: 1/73 | Rank by TC: 1/134
Author Role: Dr. Messer provided experimental design guidance and editing of the manuscript.

17. Lindgren, J.K.[2], **Messer, T.L.***, Miller, D.N., Snow, D.D., and Franti, T. 2022. Neonicotinoid Pesticide Contamination Does Not Affect Nitrate Removal in Floating Treatment Wetlands. *Journal of Environmental Quality*, 1-13. doi: 10.1002/jeq2.20411
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 3.866 | Rank by JIF: 134/274| Rank by TC: 168/324
Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

18. Weijia, N.[4*], Mittelstet, A., **Messer, T.L.**, and Tang, Y. 2022. Impact of Climate and Land Use Change on Economic Development in the Baoxing River Watershed in Giant Panda National Park. *Journal of the American Water Resources Association*, 58(6):1561-1574.
WOS Metric Year: 2020 | Category: Environmental Engineering | JIF: 2.695 | Rank by JIF: 41/54 | TC: 14| Rank by TC: 32/71 doi: 10.111/1752-1688.13057
Author Role: Dr. Messer was the co-PI on the project, study abroad co-advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

19. Cherry, M., Gilmore, T.*, **Messer, T.L.,** Yusong, L., and Westrop, J. 2022. A Pivotal New Approach to Groundwater Quality. *Environmental Science and Technology Water,* 12(2): 2297-2304. doi: 10.1021/acsestwater.2c00121
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: N/A | Rank by JIF: N/A | Rank by TC: N/A
Author Role: Dr. Messer provided experimental design guidance and editing of the manuscript.

20. Caniglia, J., Snow, D.*, **Messer, T.L.**, and Bartelet-Hunt, S. 2022. Extraction, Analysis, and Occurrence of Per- and Polyfluoroalkyl Substances (PFAS) in Wastewater and After Municipal Biosolids Land Application to Determine Agricultural Loading. *Frontiers in Environmental Science*, 4: doi: 10.3389/frwa.2022.892451.
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 7.963 | Rank by JIF: 82/279 | Rank by TC: 132/324
Author Role: Dr. Messer was the PI on the project, provided experimental design, analysis, and editing of the manuscript.

21. McKercher, L.J.[2], **Messer, T.L.*,** Mittelstet, A.R., and Comfort, S.D. 2022. A Biological and Chemical Approach to Restoring Water Quality: A Case Study in an Urban Eutrophic Pond. *Journal of Environmental Management.* 318: 115463. doi. 10.1016/j.jenvman.2022.11563
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 6.789 | Rank by JIF: 34/274 | TC: 0| Rank by TC: 35/306
Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided design and analysis guidance, and edited the manuscript. This is included as an example publication.

22. Zhang, L.*, Tang, Z., **Messer, T.L.**, Burbach, M., Hayes, M., Yuzhen, Z, and Hu, Q. 2022. Integrating Wetland Conservation Efforts into Local Comprehensive Plans: Learned from Nebraska, USA. *Ecosystem Health and Sustainability.* 8(1): 2070550. doi. 10.1080/20964129.2022.2070550
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 3.116 | Rank by JIF: 134/274 | TC: 0| Rank by TC: 161/306
Author Role: Dr. Messer provided guidance on wetland processes and editing.

23. Yuan, Y.*, Book, R., Douglas-Mankin, K., Koropeckyj-Cox, L., Christianson, L., **Messer, T.,** Christianson, R. 2022. Overview of Effectiveness of Agricultural Conservation Practices for Water Quality Improvement. *Trans. ASABE,* 65(2): 419-426. doi. 10.13031/ja.14503
WOS Metric Year: 2020 | Category: Agricultural Engineering | JIF: 1.188 | Rank by JIF: 10/14 | TC: 0| Rank by TC: 9/16
Author Role: Dr. Tiffany Messer wrote the constructed wetlands section of the manuscript and editing

24. **Messer, T.L.*,** Miller, D.N., Little, H., and Oathroat. 2022. Nitrate-N Removal Rate Variabilities in Floating Treatment Wetland Mesocosms with Diverse Planting and Carbon Amendment Designs. *Ecological Engineering.* 174: 106444. doi. 10.1016/j.ecoleng.2021.106444
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 7.963 | Rank by JIF: 25/274 | TC: 0| Rank by TC: 16/306
Author Role: Dr. Messer was the PI on the project, undergraduate advisor for two of the authors, provided experimental design, analysis, composition, and editing of the manuscript.

25. Nottingham, E.[3]* and **Messer, T.L.** 2021. A literature review of wetland treatment systems used to treat runoff mixtures from urban and agricultural landscapes. *Water*. 13(2): 3631 doi. 10.3390/w13243631
WOS Metric Year: 2020 | Category: Water Resources | JIF: 3.103 | Rank by JIF: 39/98 | TC: 1| Rank by TC: 56/120
Author Role: Dr. Messer was the dissertation advisor for the first author, provided design and analysis guidance, and edited the manuscript.

26. Russell, M., Mittelstet, A.R.*, **Messer, T.L.**, and Korus, J. 2021. Evolution of three streambanks before and after stabilization and record flooding. *Ecological Engineering.* 170: 106357. doi. 10.1016/j.ecoleng.2021.106357
WOS Metric Year: 2020 | Category: Environmental Engineering | JIF: 4.035 | Rank by JIF: 26/54 | TC: 0| Rank by TC: 20/67
Author Role: Dr. Messer provided experimental design guidance and editing of the manuscript.

27. **Messer, T.L.*,** Moore, T.L., Nelson, N., Ahiablame, L., Bean, E., Boles, C., Hall, S., McMaine, J., and Schlea, D. 2021. Invited: Constructed Treatment Wetlands for Agroecosystems: A Synthesis for Nutrient Removal. *Transactions of American Society of Agricultural and Biological Engineering.* 64(2): 625-639. doi: 10.13031/trans.13976
WOS Metric Year: 2020 | Category: Agricultural Engineering | JIF: 1.188 | Rank by JIF: 10/14 | TC: 3| Rank by TC: 9/16
Author Role: Dr. Messer led the review, provided experimental design, analysis, composition, and editing of the manuscript.

28. Abimbola, O.P.*, Mittelstet, A.R., Messer, T.L., Berry, E.D., and Griensve, A. 2021. Modeling and prioritizing interventions using pollution hotspots for reducing nutrients, atrazine, and *E. coli* concentrations in a watershed. *Sustainability*. 13(1): 103. doi. 10.3390/su13010103

WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 3.251 | Rank by JIF: 124/274 | TC: 7| Rank by TC: 163/306
Author Role: Dr. Messer provided experimental design guidance and edited the manuscript.

29. Satiroff, J.[2], **Messer, T.L.***, Mittelstet, A.R., and Snow, D. 2021. Pesticide occurrence and persistence entering recreational lakes in watersheds of varying land uses. *Environmental Pollution*. 273: 116399. doi. 10.1016/j.envpol.2020.116399
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 8.071 | Rank by JIF: 23/274| TC: 7| Rank by TC: 18/306
Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided experimental design, analysis, and editing of the manuscript. This is included as an example publication.

30. Richards, G., Gilmore, T.*, **Messer, T.L.**, Snow, D. and Mittelstet, A.R. 2021. Nitrate dynamics within the nested watersheds of a gaining headwater agricultural stream, Nebraska, USA. *Agriculture, Ecosystems, and Environment*, 308: 107223. doi. 10.1016/j.agee.2020.107223
WOS Metric Year: 2020 | Category: Agriculture, Multidisciplinary | JIF: 5.567 | Rank by JIF: 1/57 | TC: 15| Rank by TC: 5/83
Author Role: Dr. Messer provided experimental design guidance and editing of the manuscript.

31. Borsuah, J.[3]*, **Messer, T.L.,** Snow, D., Comfort, S., and Mittelstet, A. 2020. Literature Review: Global neonicotinoid occurrence in aquatic environments. *Water,* 12: 3388. doi. 10.3390/w12123388
WOS Metric Year: 2020 | Category: Water Resources | JIF: 3.103 | Rank by JIF: 39/98 | TC: 35| Rank by TC: 56/120
Author Role: Dr. Messer was the PI on the project, dissertation advisor for the first author, provided design and analysis guidance, and edited the manuscript.

32. Naderi Beni, N., Snow, D.D., Berry, E.D., Mittelstet, A.R., **Messer, T.L**., Bartelt-Hunt, S.* 2020. Measuring the occurrence of antibiotics in surface water adjacent to cattle grazing areas using passive samplers. *Science of the Total Environment.* 726: 138296. doi. 10.1016/j.scitotenv.2020.138296
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 7.963 | Rank by JIF: 25/274 | TC: 11| Rank by TC: 16/306
Author Role: Dr. Messer provided experimental design guidance and editing of the manuscript.

33. Abimbola, O.P.*, Mittelstet, A.R., **Messer, T.L.**, Berry, E.D., Bartelt-Hunt, S.L., and Hansen, S.P.[2] 2020. Predicting Escherichia coli loads in cascading dams with machine learning: An integration of hydrometeorology, animal density and grazing pattern. *Science of the Total Environment*, 722: 137894. doi. 10.1016/j.scitotenv.2020.137894
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 7.963 | Rank by JIF: 25/274 | TC: 13| Rank by TC: 16/306
Author Role: Dr. Messer provided experimental design guidance and editing of the manuscript.

34. Hansen, S.[2], **Messer, T.L.***, Mittelstet, A., Berry, E.D., Bartelt-Hunt, S., Abmibola, F. 2020. *Escherichia Coli* Concentrations in Waters of a Reservoir System Impacted by Cattle and Migratory Waterfowl. *Science of the Total Environment*. 705(25), https://doi.org/10.1016/j.scitotenv.2019.135607. (Impact Factor: 7.963/ Cite Score: 10.5)
WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 7.963 | Rank by JIF: 25/274 | TC: 12| Rank by TC: 16/306

Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

35. **Messer, T.L.*,** Douglas-Mankin, K.R., Nelson, N.G., and Etheridge, J.R. 2019. Wetland Ecosystem Resiliency: Protecting and Restoring Value Ecosystems. *Transactions of American Society of Agricultural and Biological Engineering,*62(2): 1541-1543. doi: 10.13031/trans.13578
    WOS Metric Year: 2020 | Category: Agricultural Engineering | JIF: 1.188 | Rank by JIF: 10/14 | TC: 0| Rank by TC: 9/16
    Author Role: Dr. Messer led the collection, composition of the manuscript, and editing.

36. Keilhauer, M.[2], **Messer, T. L.***, Mittelstet, A., Corman, J., Franti, T. 2019. Nitrate Removal Potential of Floating Treatment Wetlands Amended with Spent Coffee: A Mesocosm Scale Evaluation. *Transactions of American Society of Agricultural and Biological Engineering*. 62(6): 1619-1630. doi: 10.13031/trans.13431. (Impact Factor: 1.188)
    WOS Metric Year: 2020 | Category: Agricultural Engineering | JIF: 1.188 | Rank by JIF: 10/14 | TC: 5| Rank by TC: 9/16
    Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

37. Hansen, S.[2], **Messer, T. L.***, and Mittelstet, A. 2019. Mitigating the Risk of Atrazine Exposure Across Nebraska, USA: Identifying Hot Spots and Hot Times in Surface Water Watersheds. *Journal of Environmental Management,* 250: 109424. doi: 10.1016/j.jenvman.2019.109424
    WOS Metric Year: 2020 | Category: Environmental Sciences | JIF: 6.789 | Rank by JIF: 34/274 | TC: 36| Rank by TC: 35/306
    Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided experimental design, analysis, and editing of the manuscript. This is included as an example publication.

38. **Messer, T.L.***, Bírgand, F., and Buchell, M.R. 2019. Diel Fluctuations of High Level Nitrate and Dissolved Organic Carbon Concentrations in Constructed Wetland Mesocosms. *Ecological Engineering,* 133: 76-87. doi: 10.1016/j.ecoleng.2019.04.027.
    WOS Metric Year: 2020 | Category: Environmental Engineering | JIF: 4.035 | Rank by JIF: 26/54 | TC: 7| Rank by TC: 20/67
    Author Role: Dr. Messer provided experimental design, analysis, composition, and editing of the manuscript.

39. Mittelstet, A. R.*, Gilmore, T. E., **Messer, T.L.,** Rudnick, D. R., Heatherly, T. 2019. Evaluation of Watershed Characteristics to Identify Best Management Practices to Reduce Nebraskan Nitrate Concentrations from Nebraska to the Mississippi/Atchafalaya River Basin. *Agriculture, Ecosystems, and Environment*. 277: 1-10. doi. 10.1016/j.agee.2019.02.018
    WOS Metric Year: 2020 | Category: Agriculture, Multidisciplinary | JIF: 5.567 | Rank by JIF: 1/57 | TC: 15| Rank by TC: 5/83
    Author Role: Dr. Messer provided data analysis and editing of the manuscript.

40. **Messer, T.L.*,** Burchell, M.R., and Bírgand, F. 2017. Comparison of Four Nitrate Removal Kinetic Models in Two Distinct Wetland Restoration Mesocosm Systems. *Water*, 9: 517-537. doi. 10.3390/w9070517
    WOS Metric Year: 2020 | Category: Water Resources | JIF: 3.103 | Rank by JIF: 39/98 | TC: 13| Rank by TC: 56/120
    Author Role: Dr. Messer provided experimental design, data collection, analysis, composition of the manuscript, and editing.

41. **Messer, T.L.*,** Burchell, M.R., Bírgand, F., Broome, S., and Chescheir, G. 2017. Nitrate Removal Potential of Restored Wetlands Loaded with Agricultural Drainage: A Mesocosm Scale Experimental Approach, *Ecological Engineering,* 106: 541-554. doi. 10.1016/j.ecoleng.2017.06.022.
WOS Metric Year: 2020 | Category: Environmental Engineering | JIF: 4.035 | Rank by JIF: 26/54 | TC: 5| Rank by TC: 20/67
Author Role: Dr. Messer provided experimental design, data collection, analysis, composition of the manuscript, and editing.

42. **Messer, T.L.***, Burchell, M.R., Böhlke, J.K., and Tobias, C.R. 2017. Tracking the Fate of Nitrate through Restored Wetlands: A Mesocosm Scale ^{15}N Enrichment Tracer Study, *Ecological Engineering*, 106: 597-608. doi. 10.1016/j.ecoleng.2017.06.016. (Impact Factor: 4.025 / Cite Score: 7.8)
WOS Metric Year: 2020 | Category: Environmental Engineering | JIF: 4.035 | Rank by JIF: 26/54 | TC: 22| Rank by TC: 20/67
Author Role: Dr. Messer provided experimental design, data collection, analysis, composition of the manuscript, and editing.

43. Wiseman, J., Burchell, M.R.*, Grabow, G.L., Osmond, D.L., and **Messer, T.L**. 2014. Groundwater nitrate concentration reductions in a riparian buffer enrolled in the NC Conservation Reserve Enhancement Program. *Journal of American Water Resources Association*, 50(3): 653-664. doi. 10.1111/jawr.12209
WOS Metric Year: 2020 | Category: Environmental Engineering | JIF: 2.695 | Rank by JIF: 41/54 | TC: 14| Rank by TC: 32/71
Author Role: Dr. Messer composition of the literature review portion of the manuscript and editing.

44. **Messer, T. L.,** Burchell, M.R.*, Osmond, D.L., and Grabow, G.L. 2012. Groundwater Nitrate Reductions within Upstream and Downstream Sections of a Riparian Buffer. *Ecological Engineering,* 47: 397-407. doi. 10.1016/j.ecoleng.2012.06.017
WOS Metric Year: 2020 | Category: Environmental Engineering | JIF: 4.035 | Rank by JIF: 26/54 | TC: 45| Rank by TC: 20/67
Author Role: Dr. Messer provided experimental design, data collection, analysis, composition of the manuscript, and editing.

In Press (4)

None to report

Publications In Review/Prep (Not Included in Total)

1. Borsuah, J.[3*], **Messer, T.L.**, Bartelt-Hunt, S., Mittelest, A. and Snow, D. Pesticide Occurrence, Distribution, and Loading in Rivers with Varying Land Uses and Precipitation Regimes. *Science of the Total Environment*. [In Prep with Planned Submission Winter 2024].
Author Role: Dr. Messer was the PI on the project, dissertation advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

2. Rud, W.[2], **Messer, T.L.***, Sanderson, W., Agouridis, C., and Montano, M.) Impact of Nanopesticides in Field Scale Agricultural Applications. *Toxics*. [In Prep with Planned Submission Winter 2024].
Author Role: Dr. Messer was the PI on the project, dissertation advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

3. Rodriguez Jimenez[2], D.N., **Messer, T.L.***, Ford, W., and Sanderson, W. Implications to Tap and Stream Water Chemistry Due to Variations in Sampling Locations and Watershed Land Use. *Environmental Science and Technology: Water*. [In Prep with Planned Submission Spring 2025].
   Author Role: Dr. Messer was the PI on the project, thesis advisor for the first author, provided experimental design, analysis, and editing of the manuscript.

4. Sutton, M.*, Bartelt-Hunt, S., and **Messer, T.L.** Influence of Polyethylene and Polystyrene Microplastics of Nitrogen Transformation in Floating Treatment Wetlands. *Environmental Science and Technology*. [In Prep with Planned Submission Winter 2024].
   Author Role: Dr. Messer provided experimental design guidance and editing of the manuscript.

Non-Refereed Publications (7 Total)

1. **Messer, T. L**., M.R. Burchell, and F. Birgand. 2014. Determining the Nitrogen Loads for Rerouted Agricultural Drainage Water into Restored Wetlands – An Experimental and Modeling Approach. ASABE Paper No. 141895614. Montreal, Canada: ASABE.
2. **Messer, T. L**. and M.R. Burchell. 2014. Tracing the Fate of Nitrate through Restored Wetlands: A mesocosm ^{15}N Tracer Study. ASABE Paper No. 141892505. Montreal, Canada: ASABE.
3. **Messer, T. L**., M.R. Burchell, D.L. Osmond, and G.L. Grabow. 2011. Groundwater Nitrate Reductions within Upstream and Downstream Sections of a Riparian Buffer. ASABE Paper No. 1111361. Louisville, KY: ASABE.
4. **Messer, T.L**., M.R. Burchell, A.S.Tilak, and J.D. Wiseman. 2010. Effectiveness of Nitrate Reduction in Riparian Buffers: A Riparian Buffer Hydrologic and Biogeochemical Evaluation. ASABE Paper No. 1009104. Pittsburgh, PA: ASABE.
5. Wiseman, J.D., M.R. Burchell, **T.L. Messer**, and A.S. Tilak. 2010. Groundwater Nitrate Reduction Processes in a Riparian Buffer Enrolled in the NC Conservation Reserve Enhancement Program. ASABE Paper No. 1009119. Pittsburgh, PA: ASABE.
6. Tilak, A.S., M.R. Burchell, M.A. Youssef, R.R. Lowrance, R.G. Willams, **T. Messer**, and J. Wiseman. 2010. Hydrologic Analysis of a Riparian Buffer Enrolled in Conservation Reserve Enhancement Program in North Carolina Using Riparian Ecosystem Management Model (REMM). ASABE Paper No. 1009197. Pittsburgh, PA: ASABE.
7. **Graham, T[1].** 2008. Water Resources Intern Experience. *Kentucky Environmental and Natural Resource Spring Newsletter.*
   [1]née

Other Publications (10 Total)

1. Nottingham, E.[3], **Messer, T.L.**, and Agouridis, C. 2025. *Wetland Curriculum for Kentucky High Schools,* Kentucky Cooperative Extension. *AEN-178.*
2. Nottingham, E.[3], Gumbert, A., and **Messer, T.L.** 2024. *Understanding and Protecting Kentucky Wetlands,* Kentucky Cooperative Extension. *ID-279.*
3. **Messer, T.L.** 2021. *mesoWheels Outreach Program: Floating Treatment Wetland,* Nebraska Extension and 4-H.
4. **Messer, T.L.** 2021. *mesoWheels Outreach Program: Wetland in a Pan Experiment,* Nebraska Extension and 4-H.
5. **Messer, T.L.** 2021. *mesoWheels Outreach Program: What is a River?,* Nebraska Extension and 4-H.
6. **Messer, T.L.** 2021. *mesoWheels Outreach Program: What Lives in a Wetland?,* Nebraska Extension and 4-H.
7. **Messer, T.L.** 2021. *mesoWheels Outreach Program: Water Cycle,* Nebraska Extension and 4-H.

8. **Messer, T.L.** 2021. *mesoWheels Outreach Program: Aquifers Clean Our Water,* Nebraska Extension and 4-H.
9. **Messer, T.L.** 2020. *Case Study: Floating Wetlands.* H_2O Today Smithsonian Traveling Exhibit.
10. **Messer, T. L.** 2019. NRES/BSEN 468/868: Wetlands. University of Nebraska Digital Commons. Lincoln, NE. Peer Review of Teaching Project.

Presentations

1: Undergraduate student, 2: Masters student, 3: Ph.D. student, 4: Postdoctoral researcher, *Student Presented

Invited Speaker and Keynote Presentations (12 Total)

1. **Messer, T.L.** 2025. Ecological Engineering Solutions Validated through High School Programming Efforts for Local Drinking Water Impairments. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Toronto, Canada, July 15, 2025.

2. **Messer, T.L.** 2024. Exploring Wetland Treatment Processes Through Engagement with High School Researchers. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Anaheim, CA, July 31, 2024.

3. **Messer, T. L.** OVPR Secrets of Early Research Success, *University of Kentucky,* Lexington, KY, 18 October 2023.

4. **Messer, T. L.** Water Quality Challenges in Kentucky, *University of Kentucky Gatton Gift,* Lexington, KY, 25 May 2023.

5. **Messer, T. L.** Emerging Contaminant Exposure Following Wastewater Treatment Plant Processes, *Lexington-Fayette County Government,* Lexington, KY, 3 March 2023.

6. **Messer, T. L.** Key Partnership for Water Quality Sampling and Monitoring, *University of Kentucky Sustainability Poster Competition,* Lexington, KY, 8 December 2022.

7. **Messer, T.L.** Implications of Emerging Contaminants on Nitrogen Removal Processes in Treatment Wetlands. 11th INTECOL International Wetlands Conference. Virtual conference. 12 October 2021.

8. **Messer, T.L.** Wetland Ecosystem Resiliency: Current and Future Considerations as Influent Water Chemistry Evolves. Distinguished Lecture Series. American Society of Agricultural and Biological Engineers 2021. Virtual Conference. 13 July 2021.

9. **Messer, T.L.**, Water Quality and Conservation: A Global Perspective. Glenwood, IA, 2018 Iowa Women Gaining Ground Conference. 10 March 2018.

10. **Messer, T.L.**, Constructed Wetlands for Onsite Wastewater Treatment. Grand Island, NE, 2018 Onsite Wastewater Management Conference. 14 February 2018.

11. **Messer, T.L.**, Balancing N Inputs and Outputs: The Puzzling Case of Nitrogen Cycling in Restored Wetlands. Lincoln, NE. Nebraska Water Symposium. 26 October 2017.

12. **Messer, T.L.**, Completing the puzzle of nitrogen cycling in restored wetlands. Big Sky, MT. 7th International Symposium for Wetland Systems for Water Pollution Control (WETPOL). 23 August 2017. (Invited Mini-Keynote Speaker)

Conference Presentations (114 Total)

1. Miller, D.N., **Messer, T.L.,** Montano, M. Evaluation of Nanoparticle Impacts on N Cycling in Agricultural Soil and Nearby Wetland Sediment. *ASA, CSSA, and SSSA Annual Meeting,* San Antonio, TX. November 10, 2024.

2. Stickney, C.[2*], **Messer, T. L.,** Montano, M. (Poster) Nanopesticide Fate and Transport in Agroecosystems: A Field Study, *Kentucky Water Research Institute Annual Meeting*, Lexington, KY, September 27, 2024.

3. Nottingham, E. R.[3*], **Messer, T. L.,** Barton, C., Unrine, J., Agouridis, C. Contaminant Mixtures and Their Impact on Wetland Treatment Processes: A Mesocosm Study, *Kentucky Water Research Institute Annual Meeting*, Lexington, KY, September 27, 2024.

4. **Messer, T.L.** (Poster) Multidisciplinary Approaches for Overcoming Water Resources and Sustainable Engineering Challenges in Appalachian Regions. *2024 NSF Engineering Education and Centers Conference*, Alexandria, VA, September 11, 2024

5. Nottingham, E. R.[3*], **Messer, T. L.,** Barton, C., Unrine, J., Agouridis, C. Contaminant Mixtures and Their Impact on Wetland Treatment Processes: A Mesocosm Study, *American Society of Agricultural and Biological Engineers Annual International Meeting*, Anaheim, CA, July 31, 2024.

6. Ristola, K.[3*], **Messer, T. L**. Wetland Treatment Systems for Municipal Wastewater at a Bourbon Distillery and Potential Value Incorporating Stillage for Water Treatment Enhancement, *American Society of Agricultural and Biological Engineers Annual International Meeting*, Anaheim, CA, July 30, 2024.

7. Stickney, C.[2*], **Messer, T. L.,** Montano, M. Nanopesticide Fate and Transport in Agroecosystems: A Field Study , *American Society of Agricultural and Biological Engineers Annual International Meeting*, Anaheim, CA, July 30, 2024.

8. Rud, W.[3*], **Messer, T. L.,** Montano, M. Impacts of Nanopesticides in Mississippi River Water: Photodegradation Rates, Byproduct Formations, and Degradation Pathways, *American Society of Agricultural and Biological Engineers Annual International Meeting*, Anaheim, CA, July 30, 2024.

9. **Messer, T. L.,** Montano, M., Miller, D., Rud. W.[2*], Powers, K.[2*], Stickney, C[2*]. Evaluation of Nanopesticide Fate and Transport and Biogeochemical Implications in Agroecosystems, *Nanoscale Science and Engineering for Agriculture and Food Systems Gordon Conference,* Manchester, NH, June 28, 2024.

10. **Messer, T.L.** SURES Identifying Environmental Contaminants. Undergraduate Research Experience in Environmental Health Sciences (SURES) Research Talk, June 14, 2024.

11. Power, K.P.[2*], **Messer, T.L.,** Rud. W. Implications of Nanopesticides on Downstream Wetland Ecosystems, *American Ecological Engineering Society Annual Meeting*, Blacksburg, VA, May 31, 2024.

12. Ristola, K.[3*], **Messer, T. L.** 2024. Wetland Treatment Systems for Treating Bourbon Stillage and Wastewater, *American Ecological Engineering Society Annual Meeting*, Blacksburg, VA, May 29, 2024.

13. Nottingham, E. R.[3*], **Messer, T. L.** The Fate of Nitrate in the Presence of Contaminant Mixtures: A 15N Isotopic Study at the Mesocosm Scale , *American Ecological Engineering Society Annual Meeting*, Blacksburg, VA, May 29, 2024.

14. Rud, W.[2] *, **Messer, T.L.,** Montano, M. Field Scale Agricultural Applications of Nanopesticides for Fate, Transport, and Impact to Nutrient Cycling. SouthOn+ Southeast Regional Research Symposium, Lexington, KY. March 25-27, 2024.

15. Russell, M.[3*], **Messer, T.L.**, Bartelt-Hunt, S., Snow, D. Effects of Antibiotics on Microflora and Nutrient Levels. SouthOn+ Southeast Regional Research Symposium, Lexington, KY. March 25, 2024.

16. **Messer,** T.L., Nottingham, E.[3*]. Surface Water Monitoring for Contaminants of Emerging Concern (CECs) in Four Kentucky Watersheds. SouthOn+ Southeast Regional Research Symposium, Lexington, KY. March 27, 2024.

17. **Messer, T.,** Sigler[2], K., Ford, B. Fate and Transport of Emerging Contaminants Entering, Leaving, and Flowing Past Wastewater Treatment Plants in Central Kentucky, *SETAC North America 44th Annual Meeting,* Louisville, KY Nov 15, 2023.

18. Power[2], K., **Messer, T.,** Montano, M. (Poster) The Effects of Nanopesticides on Wetland Ecosystems, *SETAC North America 44th Annual Meeting,* Louisville, KY Nov 16, 2023.

19. Rud[2], K., **Messer, T.,** Montano, M. (Poster) Field Scale Agricultural Applications of Nanopesticides for Fate, Transport, and Impact on Nutrient Cycling, *SETAC North America 44th Annual Meeting,* Louisville, KY Nov 16, 2023.

20. Nottingham[3], E., **Messer, T**. (Poster) The Impact of Pesticides and Human Use Pharmaceuticals on Nitrogen-Removal Processes in Wetland Treatment Systems, *SETAC North America 44th Annual Meeting,* Louisville, KY Nov 16, 2023.

21. Russell[3], M., **Messer, T**., Bartlet-Hunt, S., Snow, D. (Poster) Assessing the Impact of Co-Occurring Contaminants of Emerging Concern (CECs) in Constructed Floating Treatment Wetlands, *SETAC North America 44th Annual Meeting,* Louisville, KY Nov 16, 2023.

22. **Messer, T.,** Richardson[2], J., Miller, D. Nanopesticide Influence on Soils, *A1511 Project Directors Meeting,* Knoxville, TN. Aug 10, 2023.

23. Power, K.P. [2*], **Messer, T.L.,** Montaño, M.D. Implications of Nanopesticides on Downstream Wetland Habitats, *Ecological Society of America Annual Meeting*, Portland, OR, August 9, 2023.

24. **Messer, T.,** Richardson[2], J., Miller, D. Nanopesticide Influence on Soils, *American Society of Agricultural and Biological Engineers Annual International Meeting*,, Omaha, NE. July 11, 2023.

25. Rud, W.D. [2*], **Messer, T. L.**, Montaño, M., and Miller, D. Impact of Nanopesticides in Field Scale Agricultural Applications, *American Society of Agricultural and Biological Engineers Annual International Meeting*,, Omaha, NE, July 11, 2023

26. Nottingham, E. R. [3*], **Messer, T. L.** Land Use Practices and their Resulting Impacts on Surface Water Quality: A Case Study Across Four Kentucky Streams , *American Society of Agricultural and Biological Engineers Annual International Meeting*, Omaha, NE, July 11, 2023.

27. Power, K.P. [2*], **Messer, T.L**., Montaño, M.D. Implications of Nanopesticides on Downstream Wetland Habitats, *American Society of Agricultural and Biological Engineers Annual International Meeting*, Omaha, NE, July 11, 2023.

28. McFadden, K. A. [2*], **Messer, T.L.**, Erhardt, A.M. (Poster) Isotope Tracing to Determine Infrastructure Failures, *American Society of Agricultural and Biological Engineers Annual International Meeting*, Omaha, NE, July 10, 2023.

29. Ristola, K. J. [2*], **Messer, T. L.** Wetland Treatment Systems for Treating Wastewater and Bourbon Stillage, *American Society of Agricultural and Biological Engineers Annual International Meeting*, Omaha, NE, July 11, 2023

30. Russell, M. V. [3*]**, Messer, T. L**., Bartelt-Hunt, S. L., Snow, D. D. Assessing the Impact of Four Veterinary Antibiotics on Floating Treatment Wetland Nitrogen Processes, *American Society of Ecological Engineering Annual Meeting*, Tampa, FL, June 8, 2023.

31. Rud[2*], W.D., **Messer, T. L.**, Montaño, M., and Miller, D. Nanopesticides in Field Scale Agricultural Applications, *American Society of Ecological Engineering Annual Meeting,* Tampa, FL, June 6, 2023

32. Nottingham, E. R. [3*], **Messer, T. L.** Land Use Practices and their Resulting Impacts on Surface Water Quality: A Case Study Across Four Kentucky Streams , *American Society of Ecological Engineering Annual Meeting,* Tampa, FL. Jun 2023.

33. Russell, M. V. [3*]**, Messer, T. L.,** Bartelt-Hunt, S. L., Snow, D. D. Assessing the impact of Veterinary Antibiotic species on Treatment Wetland Nutrient Removal at the Mesocosm Scale (No. EGU23-8135). Copernicus Meetings. Vienna, Austria, April 27th, 2023.

34. Sigler, K. [2*] and **Messer, T. L.** Emerging Contaminant Exposure Following Wastewater Treatment Plant Processes, *Winchester Municipal Utilities,* Winchester, KY, 3 April 2023.

35. Nottingham, E. [3*], **Messer, T.** Land Use Practices and their Resulting Impacts on Surface Water Quality, *EGU General Assembly 2023*, Vienna, Austria, 24–28 Apr 2023, EGU23-906, https://doi.org/10.5194/egusphere-egu23-906.

36. **Messer, T.,** Sigler, K. [2], Ford, W. Emerging Contaminant Exposure Following Wastewater Treatment Plant (WWTP) Processes, *Lexington and Fayette County Government Stormwater Stakeholder Meeting,* Lexington, KY. March 3, 2023.

37. Nottingham, E. R. [3*], **Messer, T. L.** The Impact of Land use Practices on Surface Water Throughout Kentucky, *Integrated Food, Energy, and Water Systems Symposium,* Lexington, KY, December 8, 2022.

38. Sigler, K. [2*], **Messer, T.** Ford, W. Emerging Contaminants Flowing into, out of, and around WWTPs in Central Kentucky, *NSF Integrated Food, Energy, and Water Symposium,* Lexington, KY. Dec 8, 2022.

39. Nottingham, E. R. [3*], **Messer, T. L.** Water quality monitoring across four Kentucky streams based upon land use practices, *University of Kentucky Sustainability Poster Competition,* Lexington, KY, November 2022.

40. Borsuah, J.[3*], **Messer, T.L.**, Snow, D. Impact of DOM on Imidacloprid and Thiamethoxam Photodegradation Rates, Byproduct Formation, and Degradation Pathways in Simulated River Waters. American Society of Agricultural and Biological Engineers 2022 Conference. Houston, TX, July 19, 2022.

41. **Messer, T. L,** Rodriguez, D.N.[2], Ford, W. 2022. Implications to Tap and Stream Water Chemistry Due to Variations in Sampling Location and Watershed Land Use, American Society of Agricultural and Biological Engineers 2022 Conference. Houston, TX, July 18, 2022.

42. Russell, M.[3*], **Messer, T.L.**, Bartelt-Hunt, S., Snow, D, Smith, R., Repert, D., Reed, A. Assessing Veterinary Antibiotic Partitioning in Floating Treatment Wetlands at the Mesocosm Scale. American Society of Agricultural and Biological Engineers 2022 Conference. Houston, TX, July 18, 2022.

43. Richardson, J.[2*], **Messer, T.L.** Evaluation of Biochar for Sulfate Removal Within Inundated Streams in Appalachia. American Society of Agricultural and Biological Engineers 2022 Conference. Houston, TX, July 18, 2022. Poster Presentation.

44. Nottingham, E.[3*], **Messer, T.L.** Wetland Treatment Systems Used to Treat Runoff Mixtures from Urban and Agricultural Landscapes: A Review. American Society of Agricultural and Biological Engineers 2022 Conference. Houston, TX, July 18, 2022. Poster Presentation.

45. Russell, M.[3*], **Messer, T.L.**, Bartelt-Hunt, S., Snow, D, Smith, R., Repert, D., Reed, A. Assessing Common-use Veterinary Antibiotic Partitioning in Floating Treatment Wetlands at the Micro- and Mesocosm Scale. American Ecological Engineering Society 2022 Conference. Baltimore, MD, June 23, 2022.

46. Borsuah, J.[3*], **Messer, T.L.**, Snow, D, Comfort, S., Mittelstet, A. Estimating Neonicotinoids Loading into Urban and Agricultural Watersheds Using Drainage Area Weighting Method Combined with Soil Water Assessment Tool (SWAT). American Ecological Engineering Society 2022 Conference. Baltimore, MD, June 23, 2022.

47. **Messer, T. L** and Rodriguez, D.N.[2] 2022. Implications to Tap and Stream Water Chemistry Due to Variations in Sampling Location and Watershed Land Use, American Ecological Engineering Society 2022 Conference. Baltimore, MD, June 23, 2022.

48. Sigler, K.[2] and **Messer, T.L.** 2022. Emerging Contaminants in Surface Waters and Sediment Following WWTP Processes, American Ecological Engineering Society 2022 Conference. Baltimore, MD, June 22, 2022. Poster Presentation.

49. Rud, K.[2] and **Messer, T.L.** 2022. Fate and Transport of Nanopesticides in Field Scale Agricultural Applications, American Ecological Engineering Society 2022 Conference. Baltimore, MD, June 22, 2022. Poster Presentation.

50. Nottingham, E.[3] and **Messer, T.L.** 2022. Wetland treatment systems and their treatment effects on runoff mixtures containing emerging contaminant and nutrients: A review, American Ecological Engineering Society 2022 Conference. Baltimore, MD, June 22, 2022. Poster Presentation.

51. **Messer, T. L** and Rodriguez, D.N.[2] 2022. Implications to Tap and Stream Water Chemistry Due to Sampling Location and Watershed Land Use, University of Kentucky for Clinical and Translational Science: Climate and Health, Lexington, Ky.

52. Nottingham, E. R.[3*] and **Messer, T. L.** 2021. A systematic literature review of wetland treatment systems used to treat runoff mixtures from urban and agricultural landscapes, Integrated Food Energy and Water Systems Symposium*,* Lexington, Ky.

53. Borsuah, J.F.[3*], **Messer, T.L.,** Snow, D, and Mittelstet, A. Using Soil & Water Assessment Tool (SWAT) to Model Neonicotinoid Loading into Urban and Agricultural

Watersheds. American Society of Agricultural and Biological Engineers 2021 Conference. July 12-16, 2021.

54. Russell, M.[3*], **Messer, T.L.**, Bartelt-Hunt, S., Snow, D, Smith, R., Repert, D., Reed, A. Influence of Common Veterinary Antibiotics on Treatment Wetland Ecosystem Services at the Mesocosm Scale. American Society of Agricultural and Biological Engineers 2021 Conference. July 12-16, 2021.

55. **Messer, T.L.,** Bartelt-Hunt, S., Russell, M.[3], Lindgren, J.[2], Sutton, M. Implications of Emerging Contaminants on Treatment Wetlands. American Society of Agricultural and Biological Engineers 2021 Conference. July 12-16, 2021.

56. Yuan, Y., Book, R., Douglas-Mankin, K., Koropeckyj-Cox, L., Christianson, L., **Messer, T.,** Christianson, R. Performance Effectiveness and Cost Effectiveness of Agricultural Conservation Practices in Reducing Nutrient Losses. American Society of Agricultural and Biological Engineers 2021 Conference. July 12-16, 2021.

57. Russell, M.[3*], **Messer, T.L.**, Bartelt-Hunt, S., Snow, D, Smith, R., Repert, D., Reed, A. Influence of Common Veterinary Antibiotics on Treatment Wetland Ecosystem Services at the Mesocosm Scale. American Ecological Engineering Society 2021 Conference. 25-26 May 2021.

58. Caniglia, J., Snow, D., **Messer, T.L.**, Bartelt-Hunt, S. Extraction and Elution for Per- and Polyfluoroalkyl Substances. American Ecological Engineering Society 2021 Conference. 25-26 May 2021. Poster Presentation.

59. Russell, M.[3*], **Messer, T.L.**, Bartelt-Hunt, S., Snow, D. Assessing Nutrients Removal Rates in Floating Treatment Wetlands Introduced to Common-Use Agricultural Antibiotics. SETAC. 16-18 November 2020.

60. Hildebrand, PJ[1*], **Messer, T.L**., McKercher, L.[2], and Russell, M.[3] Evaluating Water Quality Data of Nebraska Lakes for Eutrophication and Treatment. UNL UCARE Virtual Conference. 8 July 2020.

61. Stover, J.[1*], **Messer, T.L**., McKercher, L.[2], and Russell, M.[3] Floating Treatment Wetland Placement in Nebraska Lakes. UNL UCARE Virtual Conference. 8 July 2020.

62. Lindgren, J.[2*] and **Messer, T.L**. Neonicotinoid Pesticide and Nutrient Removal in Floating Treatment Wetland Mesocosms. American Society of Agricultural and Biological Engineers 2020 Virtual Conference. 12-16 July 2020.

63. Borsuah, J. [3*] and **Messer, T.L**. Hot Spots" and "Hot Times" of Neonicotinoid Pesticides in Agriculturally Dominated Watersheds. American Society of Agricultural and Biological Engineers 2020 Virtual Conference. 12-16 July 2020. Poster Presentation.

64. McKercher, L. [2*], **Messer, T.L.,** and Comfort, S. Assessment for Scaling Up Floating Treatment Wetlands from Microcosm to Field Scale. American Society of Agricultural and Biological Engineers 2020 Virtual Conference. 12-16 July 2020.

65. **Messer, T.L.,** Little, H., and Oathout, K. Nutrient Removal Potential of Established Floating Treatment Wetlands Receiving Carbon Amendments. American Society of Agricultural and Biological Engineers 2020 Virtual Conference. 12-16 July 2020.

66. **Messer, T.L.,** Moore, T.L., Nelson, N., Ahiablame, L., Bean, E., Boles, C., Hall, S., McMaine, J., and Schlea, D. Constructed Treatment Wetlands for Agroecosystems: A Synthesis for

Nutrient Removal. American Society of Agricultural and Biological Engineers 2020 Virtual Conference. 12-16 July 2020.

67. Lindgren, J.[2*], **T.L. Messer**, and Jessica Satiroff[2]. Neonicotinoid Pesticide and Nutrient Removal in Floating Treatment Wetland Mesocosms. American Ecological Engineering Society 2020 Virtual Poster Symposium, 1-5 June 2020. Poster Presentation.

68. Trejo, B.[2*], **T.L. Messer**, S.L. Bartelt-Hunt, and D. Snow. Occurrence and Persistence of Antibiotics Administered to Cattle in a Newly Established Feedlot. Midwest Antimicrobial Resistance Consortium, 29 May 2020.

69. **Messer**, **T.L.,** D. Snow, and A. Mittelstet. Treating the Water Quality Cocktail Entering Recreational and Agricultural Lakes. Nebraska Water Conference, Norfolk, NE, 10 October 2019.

70. Bartelt-Hunt, S.L., N.N. Beni[3], B. Trejo[2], O. Hassan, **T.L. Messer**, J. Gilley, S.L. 2019. Fate of microplastics after land application of biosolids. International Association of Food Protection Conference, Louisville, KY, 21-24 July 2019.

71. **Messer**, **T.L.,** M. Keilhauer[2], D. Snow, and A. Mittelstet. 2019. Pesticide exposure in recreation lakes. 2019 American Society of Agricultural Engineering International Meeting, Boston, MA, 7-10 July 2019.

72. Trejo, B.[2*], N.N. Beni[3], M. Sutton, O. Hassan, **T.L. Messer**, J. Gilley, S.L. Bartelt-Hunt. 2019. The fate of microplastics (MP) in an agricultural system after land application of biosolids. 2019 American Society of Agricultural Engineering International Meeting, Boston, MA, 7-10 July 2019.

73. Satiroff, J.[2*], **T.L. Messer**, A. Mittelstet, D. Snow, and M. Greiner. 2019. Identifying Common Use Pesticide Degradation Byproducts and Pathways. 2019 American Society of Agricultural Engineering International Meeting, Boston, MA, 7-10 July 2019.

74. Russell, M., A. Mittelstet, **T.L. Messer**, and J. Korus. 2019. Quantification of erosional and depositional processes near implemented streambank stabilization practices. 2019 American Society of Agricultural Engineering International Meeting, Boston, MA, 7-10 July 2019.

75. Abimbola, O., A. Mittelstet, **T. L. Messer**, and E. Berry. 2019. Fuzzy-logic based approach for *E. coli* load predication in cascading dams. 2019 American Society of Agricultural Engineering International Meeting, Boston, MA, 7-10 July 2019.

76. Abimbola, O., A. Mittelstet, **T. L. Messer**, and E. Berry. 2019. Modeling the effects of land use and agricultural management on nutrient loss, atrazine, and *E. coli* concentrations in a watershed using SWAT. 2019 American Society of Agricultural Engineering International Meeting, Boston, MA, 7-10 July 2019.

77. **Messer**, **T.L.,** M. Keilhauer[2], D. Snow, and A. Mittelstet. 2019. Pesticide accumulation in recreation lakes. 2019 American Society of Ecological Engineers Annual Meeting, Asheville, NC, 5 June 2019.

78. Johnson, M.[1*] and **T.L. Messer.** 2019. Ecotoxicology Assessment of Carbon Amendment to Floating Treatment Wetlands. 2019 UCARE Poster Showcase, Lincoln, NE, 15 April 2019. Poster Presentation.

79. **Messer, T.L.** and M. Keilhauer[2]. 2019. Nutrient Removal Utilizing Floating Treatment Wetlands. 2019 Daughterly Water for Food Showcase, Lincoln, NE, 4 April 2019. Poster Presentation.

80. Russell, M., A. Mittelstet, and **T.L. Messer**. 2019. Quantification of erosional and depositional processes near implemented streambank stabilization practices. 2019 Daughterly Water for Food Showcase, Lincoln, NE, 4 April 2019. Poster Presentation.

81. Satiroff, J.[2*], **T.L. Messer,** and A.R. Mittelstet. 2018. Removal of Common Use Pesticides by Floating Treatment Wetlands in the Midwest. Nebraska Water Center Symposium. 25 October 2018. Lincoln, NE. Poster Presentation.

82. Hansen, S.P.[2*], **T.L. Messer** and A.R. Mittelstet. 2018. Spatiotemporal Analysis of Atrazine and Nitrate in Surface Waters across Nebraska. Nebraska Water Center Symposium. 25 October 2018. Lincoln, NE. Poster Presentation.

83. Keilhauer, M.[2*] and **T.L. Messer**. 2018. Removal of Common Use Pesticides by Floating Treatment Wetlands in the Midwest. Nebraska Department of Environmental Quality. 10 October 2018. Lincoln, NE.

84. **Messer, T.L.,** Challenging Discipline Perceptions in Ecological Engineering Using Interdisciplinary Team Design Projects. 2018 International ASABE Meeting, 31 July 2018. Detroit, MI.

85. **Messer, T.L.,** S. Hansen[2], and A. Mittelstet. Mitigating the Risk of Atrazine in Surface Waters Across Nebraska. 2018 International ASABE Meeting, 31 July 2018. Detroit, MI.

86. Keilhauer, M.[2*] and **T. Messer**. Nutrient Treatment Potential of Floating Treatment Wetlands. 2018 American Society of Ecological Engineering Conference. 14 June 2018. Houston, TX.

87. Hansen, S.[2*] and **T. Messer**. Mitigating the risk of atrazine in surface waters across Nebraska. 2018 American Society of Ecological Engineering Conference. 13 June 2018. Houston, TX.

88. **Messer, T.L.,** L. Ferguson, and M. Doyle. Photodegradation of Imidacloprid in Southeastern Rivers. 2017 International ASABE Meeting. 18 July 2017. Spokane, WA.

89. Keilhauer, M.[2*] and **T.L. Messer**. Nutrient Removal Capacity of Floating Treatment Wetlands. Society of Wetland Scientists Conference. 30 May 2018. Denver, CO.

90. Nguyem, A.[1*], **T.L. Messer**, and *Keilhauer, M. Evaluation of floating treatment wetlands on high use lake waters. UNL Environmentors Program Poster Competition. 15 May 2018. Lincoln, NE. Poster Presentation. (Poster Contest: 1st Place).

91. Mittelstet, A.R., **T.L. Messer**, and T.E. Gilmore. "Managing Water Resources at the U.S. Meat and Animal Research Center", *Invited Speaker* at 3rd Annual Meeting of IANR ARD and US MARC on Enhanced Research Collaborations, US Meat Animal Research Center, Clay Center, NE, 29 November 2017

92. Keilhauer, M.[2*] and **T.L. Messer**. Nutrient Removal Capacity of Floating Treatment Wetlands. Nebraska Water Symposium. 26 October 2017. Lincoln, NE. Poster Presentation. (Poster Contest: 3rd Place).

93. Hansen, S.P.[2*], **T.L. Messer**, and A.R. Mittelstet. Natural Contributions of *E. coli* at a Nebraskan Animal Facility. Nebraska Water Symposium. 26 October 2017. Lincoln, NE.

94. Abimbola, O.P., A.R. Mittelstet and **T.L. Messer**. Impact of Conservation Practices on Pollutant Loads in the Big Sandy Creek Watershed. Nebraska Water Symposium. 26 October 2017. Lincoln, NE.

95. **Messer, T.L.,** M. Doyle, M.R. Burchell, and F. Birgand. Do First Order Nitrate Removal Models Accurately Predict Nitrate Removal in Wetlands and Stream? 2016 American Society of Ecological Engineering Conference. 9 June 2016. Knoxville, TN.

96. **Messer, T.L.,** L. Ferguson, and M. Doyle. Photodegradation of Imidacloprid in Rivers: A Novel Water Quality Monitoring Approach. 2016 American Society of Ecological Engineering Conference. 8 June 2016. Knoxville, TN.

97. **Messer, T.L**. and M.R. Burchell. A ^{15}N tracer evaluation of the impact of nitrate load and soil type on nitrogen cycling in restored wetlands. 2015 International ASABE Meeting. 29 July 2015. New Orleans, LA.

98. **Messer, T.L**., M.R. Burchell, and F. Birgand. An evaluation of the reliability of for nitrate reduction models. 2015 International ASABE Meeting. 28 July 2015. New Orleans, LA.

99. **Messer, T.L.,** M.R. Burchell, and F. Birgand. Comparison of four nitrogen removal kinetic models in two distinct wetland ecosystems receiving agricultural drainage water. 2015 Water Resource Research Institute Conference. 18 March 2015. Raleigh, NC.

100. **Messer, T.L.,** and M.R. Burchell. Where is nitrate going in restored wetlands? A ^{15}N Tracer Evaluation on Nitrogen Cycling in Restored Wetlands. NCSU Graduate Research Symposium. 25 March 2015. Raleigh, NC. Poster Presentation. (Poster Contest: 3rd Place in Ag and Life Sciences Division).

101. **Messer, T.L**. and M.R. Burchell. Where is nitrate going in restored wetlands? A ^{15}N Tracer Evaluation on Nitrogen Cycling in Restored Wetlands. Purdue Future Faculty Workshop. 2 March 2015. West Lafayette, IN. Poster Presentation.

102. **Messer, T.L**. and M.R. Burchell. Where is nitrate going in restored wetlands: A Mesocosm ^{15}N Tracer Study. 58th Annual Meeting of the Soil Science Society of North Carolina. 21 January 2015. Raleigh, NC.

103. **Messer, T.L**. and M.R. Burchell. Tracing the Fate of Nitrate through Restored Wetlands: A mesocosm ^{15}N Tracer Study. 2014 International ASABE Meeting. 15 July 2014. Montreal, Canada.

104. **Messer, T.L**., M.R. Burchell, and F. Birgand. Defining Ideal Loads of Nitrogen for Rerouted Drainage Water into Restored Forested Wetlands – An Experimental and Modeling Approach. 2014 International ASABE Meeting. 16 July 2014. Montreal, Canada.

105. **Messer, T.L**. and M.R. Burchell. Tracking the NO_3^- Fate through Restored Wetlands: A^{15}N Tracer Study. 2014 American Ecological Engineering Society Conference. 10 June 2014. Charleston, SC.

106. M.R. Burchell, **Messer, T.L.,** and F. Birgand. Determining Ideal Nitrogen Loads in Restored Forested Wetlands Slated to Receive Agricultural Drainage. 2014 American Ecological Engineering Society Conference. 10 June 2014. Charleston, SC.

107. **Messer, T.L**. and M.R. Burchell. Tracing the Fate of NO_3^- through Restored Wetlands: A Mesocosm ^{15}N Tracer Study. 2014 Water Resource Research Institute Annual Conference. 20 March 2014. Raleigh, NC.

108. **Messer, T.L**. and M.R. Burchell. Methods for Tracing the Fate of NO_3^- through Restored Wetlands: A Mesocosm ^{15}N Tracer Study. North Carolina State University Graduate Research Symposium. 26 March 2014. Raleigh, NC. Poster Presentation.

109. **Messer, T.L**., M.R. Burchell, and F. Birgand. Determining Ideal Nitrogen Loads in Rerouted Drainage Water into Restored Forested Wetlands – An Experimental and Modeling Approach. 2014 Water Resource Research Institute Annual Conference. 20 March 2014. Raleigh, NC.

110. **Messer, T.L**., M.R. Burchell, and F. Birgand. Determining Ideal Nitrogen Loads in Rerouted Drainage Water from the Pamlico Sound to Restored Forested Wetlands – An Experimental and Modeling Approach. 2013 International ASABE Meeting. 22 July 2013. Kansas City, MO.

111. Burchell, M.B., **T. L. Messer**, and F. Birgand. Determining Ideal Nitrogen Loads for Two Distinct Restored Wetland Soils – An Experimental and Modeling Approach. WRRI 2013 Annual Conference. 20-21 March 2013. Raleigh, NC.

112. **Messer, T.L**., M.R. Burchell, G.M. Chescheir, and K.L. Bass. Determining Ideal Hydraulic Loads in Rerouted Drainage Water from the Pamlico Sound to Restored Forested Wetlands Utilizing DRAINMOD. 2013 International ASABE Meeting. 22 July 2013. Kansas City, MO. Poster Presentation.

113. Bass, Kris, M.R. Burchell, G. Chescheir, and **T. Messer**. Lux Farms Hydrologic Restoration Project: An Innovative Partnership for Agriculture and Water Quality at the End of the World, North Carolina. Stream Restoration in the Southeast: Innovations for Ecology Conference. 15-18 October 2012. Wilmington, NC.

114. **Messer, T.**, M.R. Burchell, and G.M. Chescheir. Determining Ideal Nitrogen Loads of Rerouted Drainage Water from the Pamlico Sound to Restored Forested Wetlands. 2012 Water Resources Research Institute Conference. 27 March 2012. Raleigh, NC. Poster Presentation.

115. **Messer, T.L**. and M.R. Burchell. Groundwater Nitrate Reductions within Upstream and Downstream Sections of a Riparian Buffer. 2011 International ASABE Meeting. 8 August 2011. Louisville, KY.

116. **Messer, T.L**. and M.R. Burchell. Groundwater Nitrate Reductions within Upstream and Downstream Sections of a Riparian Buffer. 11th Annual Meeting Engineering for Ecological Services. 24 May 2011. Asheville, NC.

117. **Messer, T.L**. and M.R. Burchell. Groundwater Nitrate Reductions within Upstream and Downstream Sections of a Riparian Buffer. North Carolina Graduate Research Symposium. 21 March 2011. Raleigh, NC. Poster Presentation.

118. **Messer, T.L**. Effectiveness of Nitrate Reduction in Riparian Buffers: A Riparian Buffer Hydrologic and Biogeochemical Evaluation. 2010 International ASABE Meeting. 23 June 2010. Pittsburgh, PA.

119. **Messer, T.L**., J. Wiseman, A. Tilak, M.R. Burchell, D. Osmond, and M. Youssef. Field Assessment and Modeling of Groundwater Nitrate Reduction in Riparian Buffers. Water Resources Research Institute Conference. 30-31 March 2010. Raleigh, NC. Poster Presentation.

120. Burchell, M.R, A. Tilak, J. Wiseman, and **T. Messer**. Effectiveness of Nitrate reduction in Differing Riparian Buffers. Soil and Water Conservation Exhibition. 2-4 January 2010. Raleigh, NC. Poster Presentation.

121. **Messer, T**. Effectiveness of Nitrate Reduction in Differing Riparian Buffer Widths. 2009 International ASABE Meeting. 23 June 2009. Reno, NV. Poster Presentation.

Seminars (8 Total)

1. **Messer, T.L.** Pesticide Occurrence and Persistence Entering Recreational Lakes Residing in Watersheds of Various Land Uses. Lincoln, NE, 2021. Teledyne Technologies. 15 November 2021. (15 people)
2. **Messer, T.L.**, Influence Pesticides and Antibiotics on Floating Treatment Wetland Ecosystem Services. Lexington, KY, 2020. University of Kentucky Plant and Soil Science Departmental Seminar. 23 October 2020. (12 people)
3. **Messer, T.L.**, The Messy Journey to the Development of the *meso* Research Program. Lexington, KY, 2020. University of Kentucky ASABE Student Branch. 7 October 2020. (12 people)
4. **Messer, T.L.**, The Messy Journey to the Development of the *meso* Research Program. Lincoln, NE, 2019 Biological Systems Engineering Colloquium Series. 11 December 2019. (60 people)
5. **Messer, T.L.** Instructional Improvement Plan. Lincoln, NE. Department of Biological Systems Engineering Teaching Workshop, 8 May, 2019. (40 people)
6. **Messer, T.L.** Evaluating Treatment Wetlands Using Mesocosms. Lincoln, NE. Department of Biochemistry. 22 February 2019. (15 people)
7. **Messer, T.L.**, How should water quality be monitored in natural systems? A tale of diverse techniques and scales. Lincoln, NE. 2017 UNL Biological Systems Engineering Graduate Student Seminar. 19 April 2017. (20 people)
8. **Messer, T.L.**, Water Quality Research: The Importance of Diverse Monitoring Techniques and Scales. Lincoln, NE. 2017 UNL Environmental and Water Resources Engineering Graduate Student Seminar. 10 February 2017. (20 people)

Media Interviews/News/Press Releases (17 Total)

1. Strickler, J. One University of Kentucky student's search for contaminants in Appalachian Streams. August 6, 2025.
2. Strickler, J. UK greenhouse study offers hope for protecting, cleansing waterways. July 16, 2025.
3. Leader-News, Dr. Messer from University Visits MCHS Ag Class. September 27, 2024.
4. Strickler, J. UK launches program to address water resources and sustainable engineering challenges in Appalachia. June 4, 2024
5. Carney, C. Gatton Foundation Endowed Chairs Announced, Advancing Kentucky Through Promising Research. May 13, 2024
6. CSA News Magazine, Persistence of Antibiotics in Feedlots Varies by Administration Method. January 2024
7. Strickler, J. Reviving Pollinators: How a University of Kentucky Professor Offer Hopes. August 9, 2023
8. Featured in CSA News Magazine, Wetlands, Soil Organic Matter, and Neonicotinoids: New Research Provides Important Information for Efforts to Limit Non-Target Exposure of the Insecticides. 27 June 2023.
9. Strickler, J. UK Researcher Takes Home Prestigious Agricultural Engineering Award. 3 August 2022.
10. Featured in Theakston, R.H. University of Kentucky Women Making History. March 2022.
11. Well, H. UK Assistant professor recognized for low-cost water treatment project. ABC WTVQ 36 Lexington, 2021.
12. Pratt, K. UK's Messer Studying Low-cost Water Treatment Options with NSF Award News CAFÉ UK and features on UKNow, 2021.
13. Pratt, K. UK Researcher studying impacts of nanopesticides on Nitrogen. News CAFÉ UK and features on UKNow, 2021.
14. Richter-Ryerson. Researchers testing ability of floating wetlands to survive winter. Nebraska Today, 2020.

15. Fedderson, T. Daugherty's global focus flows into statewide impacts. Nebraska Today, 2020.
16. KHGI, Open Jan. 26, "H20 Today" highlights the global trends to conserve water. Nebraska TV ABC, 14 January 2020.
17. Kenworthy, C. The Impact of climate change on Nebraska water: Too much and too little. Lincoln Journal Star Newspaper, 2020.
18. **Messer, T. L**. How is it Growing? Lincoln, NE. KZUM radio. 4 December, 2019
19. Garbacz, M. and E. Frenzen**.** Improving Water Quality and Quantity for Everyone. Strategic Discussions for Nebraska. 2018.

Extension Presentations (29 Total)

1. **Messer, T.L.** *meso*Wheels Treatment Wetland Program. Breathitt County High School. 14 October 2024. (20 students)
2. **Messer, T.L.** *meso*Wheels Treatment Wetland Program. Brian Station High School. 8 October 2024. (25 students)
3. **Messer, T.L.** *meso*Wheels Treatment Wetland Program. Menifee County High School. 30 September 2024. (25 students)
4. **Messer, T.L.** *meso*Wheels Treatment Wetland Program. Muhlenberg County High School. 23 September 2024. (25 students)
5. **Messer, T.L.** *meso*Wheels Treatment Wetland Program. Apollo High School. 23 September 2024. (60 students)
6. **Messer, T.L.** *meso*Wheels Treatment Wetland Program. Hopkins County High School. 22 March 2024. (30 students)
7. **Messer, T.L.** *meso*Wheels Treatment Wetland Program. Brian Station High School. 22 March 2024. (30 students)
8. **Messer, T.L.** *meso*Wheels Treatment Wetland Program. Perry County High School. 19 March 2024. (25 students)
9. **Messer, T.L.** Runoff Cocktails and Their Impact on Wetland Treatment Processes. Alabama's Mountains, Rivers, and Valleys RC&D Council 16 February 2024. (100 students)
10. **Messer, T.L.** Runoff Cocktails and Their Impact on Wetland Treatment Processes. Virtual. From the Woods Today. 31 January 2024. (35 people)
11. **Messer, T.L.** Fate and Transport of PFAS Entering, Leaving, and Flowing Past Wastewater Treatment Plants Entering Agroecosystems. Virtual. The North Central Region: The Current. 17 January 2024. (450 people)
12. **Messer, T.L.** Water Quality Lessons for Preschoolers for North Central Pre-K Educators. Virtual. UNL Extension Service. 7 November 2022. (750 people)
13. **Messer, T.L.** E. coli and Emerging Pathogens. Norfolk, NE. Natural Resource Conservation Service Training Event. 20 November 2019. (50 people)
14. **Messer, T.L.** E. coli and Emerging Pathogens. North Platte, NE. Natural Resource Conservation Service Training Event. 6 November 2019. (50 people)
15. **Messer, T.L.** Water Quality Lessons for Preschoolers for Extension Educators Webex. Lincoln, NE. UNL Extension Service. 29 October 2019. (10 people)
16. **Messer, T.L.** Floating Treatment Wetlands. Lincoln, NE. North Hills Homeowners Association. 9 October 2019. (30 people)
17. **Messer, T.L.** Pesticide accumulation in recreation lakes Webex. Tennessee Department of Environmental Quality, Knoxville, TN, 23 August 2019. (15 people)
18. **Messer, T.L.** Floating Treatment Wetlands. Lincoln, NE. Lincoln Parks and Recreation. 21 August 2019. (15 people)
19. **Messer, T.L.** Monitoring Floating Treatment Wetlands. Lincoln, NE. Teledyne ISCO. 12 August 2019. (10 people)
20. **Messer, T.L.** Floating Treatment Wetlands. Lincoln, NE. Department of Environment and Energy. 18 April 2019. (20 people)

21. **Messer, T.L.** E. coli Fate and Transport in Agricultural Systems. Lincoln, NE. Department of Environment and Energy. 22 May 2019. (40 people)
22. **Messer, T.L.** Floating Treatment Wetlands. Lincoln, NE. Wilderness Hills Golf Course. 17 May 2019. (3 people)
23. **Messer, T.L.** Treatment Wetlands. Lincoln, NE. Nebraska Department of Transportation. 3 March 2019. (15 people)
24. **Messer, T.L.** What are wetlands? Lincoln, NE. Dimensions Education Eat and Explore. 7 February 2019. (200 people)
25. **Messer, T.L.** Lincoln Public Schools STEM Share – Presented *meso*Wheels Program for Lincoln Public Schools curriculum, March 15 2019. (200 people)
26. **Messer, T.L.** Kure Beach Sand Dune Infiltration System Extension Workshop, North Carolina State University, Kure Beach, NC. 2012. (40 people)
27. **Messer, T.L.** Best Management Practices Extension Workshop, North Carolina State University, Raleigh, NC. 2011. (60 people)
28. **Messer, T.L.** Wetland Mesocosm Laboratory Professional Tour, North Carolina State University, Raleigh, NC. 2012-2014. (15 people)
29. **Messer, T.L.** Composting Extension Workshop, University of Kentucky, Lexington, KY. 2004. (30 people)

Teaching and Advising

Courses Taught

**Note a teaching release was awarded in 2024 to allow for outreach program related to NSF CAREER Award Research.*

[1]***BAE/CE 667: Stormwater Modeling, University of Kentucky***

Semester	Number of Students	Course Quality	Teaching Quality
[1,2]Fall 2023	14	4.0	4.2
[2]Fall 2025	11	TBD	TBD

[1]Developed Course.
[2]Scale: 1 to 5.

[1]***BAE/CE 538: GIS for Water Resources, University of Kentucky***

Semester	Number of Students	Course Quality	Teaching Quality
[1,2]Fall 2021	15	4.6	4.8
[2]Fall 2022	18	Not Evaluated	Not Evaluated
[2]Fall 2023	15	4.3	4.5
[2]Fall 2025	27	TBD	TBD

[1]Developed Course.
[2]Scale: 1 to 5.

[1]***BAE 599-003: Wetland Design and Delineation, University of Kentucky***

Semester	Number of Students	Course Quality	Teaching Quality
[1,2]Fall 2022	11	3.8	4.4

[1]Developed Course. [2]Scale: 1 to 5.

[1]***BAE 750: Stormwater Engineering Management, University of Kentucky***

Semester	Number of Students	Course Quality	Teaching Quality
[1,2]Fall 2021	1	Not Evaluated	Not Evaluated

[1]Developed Course. [2]Scale: 1 to 5.

[1]***BSEN/AGEN 350: Water Resources Engineering, University of Nebraska-Lincoln***

Semester	Number of Students	Course Quality	Teaching Quality
[1,2,3]Fall 2020	18	4.10	4.20

[1]Developed Course.
[2]Scale: 1 to 5.
[3]During COVID19 Pandemic

[1]***BSEN/NRES 468/868: Wetlands, University of Nebraska-Lincoln***

Semester	Number of Students	Course Quality	Teaching Quality
[4]Spring 2018	28	3.27	3.46
[4]Spring 2019	21	3.46	3.60
[2,3]Spring 2020	23	4.44	4.44

[1]Developed Course.
[2]Scale: 1 to 5.
[3]During COVID19 Pandemic
[4]Scale: 1 to 4.

[1]***AGEN 112: Computer Aided Problem Solving (Co-Taught), University of Nebraska-Lincoln***

Semester	Number of Students	Course Quality	Teaching Quality
[4]Spring 2019	78	2.78	3.19
[2,3]Spring 2020	82	4.29	4.29

[1]Developed Course.
[2]Scale: 1 to 5.
[3]During COVID19 Pandemic
[4]Scale: 1 to 4.

[1]***BSEN/AGEN 889: Graduate Seminar, University of Nebraska-Lincoln***

Semester	Number of Students	Course Quality	Teaching Quality
[4]Fall 2017	20	3.33	3.68
[4]Fall 2018	24	3.42	3.71
[2]Fall 2019	20	4.74	4.74
[2,3]Summer 2020	6	4.95	4.95

[1]Developed Course.
[2]Scale: 1 to 5.
[3]During COVID19 Pandemic
[4]Scale: 1 to 4.

BSEN 896: Special Topics: Analytical Chemistry Methods, University of Nebraska-Lincoln

Semester	Number of Students	Course Quality	Teaching Quality
[1]Fall 2019	1	Not Evaluated	Not Evaluated
[3]Fall 2020	1	Not Evaluated	Not Evaluated

[1]Developed Course.
[3]During COVID19 Pandemic

BSEN 957: Vadose Zone (Co-Taught), University of Nebraska-Lincoln

Semester	Number of Students	Course Quality	Teaching Quality
[4]Spring 2018	20	3.00	3.17

[4]Scale: 1 to 4.

BAE 200: Computer Methods in Biological Engineering Laboratory Instructor), North Carolina State University[5]

Semester	Number of Students	Course Quality	Teaching Quality
Fall 2008	28	Not Evaluated	Not Evaluated
Fall 2009	37	Not Evaluated	Not Evaluated
Fall 2010	39	Not Evaluated	Not Evaluated
Fall 2011	36	Not Evaluated	Not Evaluated
Fall 2012	42	Not Evaluated	Not Evaluated
Fall 2013	55	Not Evaluated	Not Evaluated
Fall 2014	54	Not Evaluated	Not Evaluated

[5]Course was not evaluated due to serving as a teaching assistant and not the instructor on record.

AEN 103: Basic Principles of Surveying (Laboratory Instructor), University of Kentucky

Semester	Number of Students	Course Quality	Teaching Quality
[1]Fall 2007	22	Not Evaluated	Not Evaluated

[1]Developed Course.

Guest Lectures

1. BAE 775 (Biosystems and Agricultural Engineering Seminar), University of Kentucky, Presented 12/9/2024 (18 people)
2. IPS 625 (Trans-disciplinary Research in Integrated Plant and Soil Science), University of Kentucky, Presented 11/6/2024 (20 people)
3. NRES 201 (Introduction to Natural Resources and Environmental Science), University of Kentucky, Presented 3/7/2023 (38 people).
4. EGR 101 (Introduction to Engineering), University of Kentucky, Presented 9/12/2022 and 9/16/2022. (200 people)
5. ESCI 497R (Water Quality), Western Washington University, Presented 4/21/2022. (15 people)
6. BAE 570 (Engineering Controls for Agricultural Safety and Health Hazards), UK. Presented 11/12/21. (10 people)
7. BAE 437 (Land and Water Resources Engineering), UK. Presented 4/27/21. (15 people)
8. BAE 437 (Land and Water Resources Engineering), UK. Presented 4/29/21. (15 people)
9. ENVR 189H (Environmental Justice Honors), UNL. Presented on 9/24/20. (15 people)
10. MSYM 354 (Soil Conservation), UNL. Presented on 11/21/19. (25 people)
11. NRES 101 (Introduction to Natural Resources), UNL. Presented on 10/16/19. (100 people)
12. NRES 101 (Introduction to Natural Resources), UNL. Presented on 10/17/19. (100 people)
13. BSEN 100 (Introduction to Biological Systems Engineering), UNL. Presented on 9/24/19. (60 people)
14. ENVR 189H (Environmental Justice Honors), UNL. Presented on 9/24/19. (15 people)
15. BSEN 355 (Introduction to Ecological Engineering), UNL. Presented on 3/12/19. (15 people)
16. NRES 101 (Introduction to Natural Resources), UNL. Presented on 10/11/18. (100 people)
17. BSEN 100 (Introduction to Biological Systems Engineering), UNL. Presented on 9/18/18. (60 people)
18. MSYM 354 (Soil Conservation), UNL. Presented on 9/20/18. (45 people)
19. BSEN 455 (Nonpoint Source Pollution), UNL. Presented on 11/17/17. (15 people)
20. MSYM 354 (Soil Conservation), UNL. Presented on 11/16/17. (15 people)
21. BSEN 355 (Introduction to Ecological Engineering), UNL. Presented on 3/16/17. (25 people)
22. BSEN 355 (Introduction to Ecological Engineering), UNL. Presented on 3/9/17. (25 people)

Graduate Student Major Advising

Full Membership of Graduate Faculty since 7/1/2023 at University of Kentucky
Partial Member of the Graduate Faculty 1/1/2024 at University of Nebraska – Lincoln
Partial Member of the Graduate Faculty 1/1/2023 at Western Washington University
Full Member of the Graduate Faculty since 1/1/17 to 12/31/2023 at University of Nebraska – Lincoln

Completed (17)

1. **Caleb Stickney,** (M.S.), ERC Fellow, Biosystems and Agricultural Engineering, UK. May 2025, Nanopesticide Fate and Transport in Agroecosystems: A Field Study. August 2023-May 2025. Advisor. Current Position: Engineer at Beaver Creek Hydrology
2. ***Matthew Russell***, (Ph.D.), ERC Fellow, Biosystems and Agricultural Engineering, UK. August 2025. Influence of Agrochemical Mixtures on Nitrogen Transformations in Floating Treatment Wetlands. May 2019-August 2025. Current Position: Postdoctoral Associate at the University of Kentucky
3. **Emily Nottingham**, (Ph.D.), NRT Fellow and ERC Fellow, Biosystems and Agricultural Engineering, UK. May 2024. The Efficacy of Wetland Treatment Systems Used to Treat Runoff Mixtures from Different Landscapes Across Kentucky. June 2021 – May 2024. Advisor. Current Position: Postdoc for USDA-ARS (Columbus, OH)
4. **Katherine Ristola,** (M.S.), Biosystems and Agricultural Engineering, UK. May 2024, Wetland Treatment Systems for Municipal Wastewater at a Bourbon Distillery and Potential Value of Incorporating Stillage for Water Treatment Enhancement. March 2023 - May 2024. Advisor. Current Position: PhD Student at the University of Kentucky Biosystems and Agricultural Engineering Department (Lexington, KY).
5. **Alexis McFadden,** (M.S.), NRT Fellow, Biosystems and Agricultural Engineering, UK. August 2024. Utilizing Isotope Tracing to Assess Land Use Implications to Tap and Stream Water Chemistry. June 2022- August 2024. Advisor. Current Position: Engineer 1 at Resource Environmental Solutions, LLC (Louisville, KY).
6. **Kiley Power,** (M.S.), Biosystems and Agricultural Engineering, UK. May 2024. Implications of Nanopesticides on Downstream Wetland Ecosystems. August 2022- May 2024. Advisor. Current Position: Engineer at Third Rock (Lexington, KY).
7. **William Rud,** (M.S.), UK CARES Fellow, Biosystems and Agricultural Engineering, UK. August 2023, Fate and Transport of Nanopesticides in Agricultural Field Plots in Central Kentucky. August 2021- August 2023. Advisor. Current Position: Ph.D. Student and Laboratory Manager at the University of Kentucky Biosystems and Agricultural Engineering Department (Lexington, KY).
8. **Kyra Sigler**, (M.S.), NRT Fellow, and UK CARES Fellow, Biosystems and Agricultural Engineering, UK. Completion: May 2023, Fate and Transport of Emerging Contaminants Entering, Leaving, and Flowing Past Wastewater Treatment Plants in Central Kentucky. August 2021- May 2023. Current Position: Ph.D. student at Virginia Tech (Blacksburg, VA).
9. ***Jacob Richardson***, (M.S.), NRT Fellow, Biosystems and Agricultural Engineering, UK. December 2022. Nanopesticide Influence on Nitrogen Cycling in Soils. January 2021 – December 2022. Advisor. Current Position: PhD Student at Duke University (Durham, NC)
10. **Josephus Borsuah**, (Ph.D.), Natural Resources, UNL. Water for Food Fellow. August 2022. Insecticide Fate and Transport in Rivers Adjacent to Agricultural Intensive Regions. Water Food Foundation Fellow, Natural Resources, UNL. August 2019-August 2022. Advisor. Current Position: Senior Research Specialist at the Oklahoma State University Water Resources Center (Stillwater, OK).
11. ***Dayana Rodriguez Jimenez***, (M.S.), Biosystems and Agricultural Engineering, UK. May 2022. Implications to Tap and Stream Water Chemistry Due to Variations in Sampling Locations and Watershed Land Use. August 2019- May 2022. Advisor. Current Position: Water Resources Engineering at PROtect (Fort Collins, CO).
12. ***Levi McKercher***, (M.S.) Natural Resources, UNL. July 2021. A Combined Biological-Chemical Approach to Removing Nutrients from Eutrophic Waters. August 2019 - July 2021. Co-Advisor. Current Position: PhD student at University of South Carolina (Columbia, SC).

13. ***Julia Lindgren***, (M.S.), Environmental Engineering, UNL. December 2020. Floating Treatment Wetland Potential to Remove Neonicotinoid Pesticides. August 2019 - December 2020. Advisor. Current Position: Water Resources Engineer at NRCS-Idaho (Boise, ID).
14. ***Jessica Satiroff***, (M.S.), Environmental Engineering, UNL. May 2020. Fate and Transport of Neonicotinoids Entering Recreational Lakes. August 2018- August 2020. Co-Advisor. Current Position: Staff Engineer at Infrastructure Design Group, Inc. (Sioux Falls, SD).
15. ***Brittany Trejo***, (M.S.), Environmental Engineering, UNL. May 2020. Occurrence and Persistence of Antibiotics Administered to Cattle in a Newly Established Feedlot. August 2018-May 2020. Co-Advisor. Current Position: Structural Engineer at Los Alamos National Laboratory (Los Alamos, NM).
16. ***Mary Keilhauer***, (M.S.), Natural Resources, UNL. Water for Food Fellow. 2019. Nitrate Removal and Placement of Floating Treatment Wetlands in the Midwest. August 2017-June 2019. Advisor. Current Position: Water Resources Engineering MIG (Denver, CO).
17. ***Samuel Hansen***, (M.S.), Biological Systems Engineering, UNL. 2019. Predictive Modeling of Fate and Transport of Three Prevalent Contaminants in Midwest Agroecosystem Surface Waters: Nitrate-N, Atrazine, and *Escherichia coli*. June 2017 – May 2019. Advisor. Current Position: Environmental Engineer at Nebraska Department of Environment and Energy (Lincoln, NE).

In-Progress (5)

1. **William Rud,** (Ph.D. Student), ERC Fellow, Biosystems and Agricultural Engineering, UK. Anticipated Completion: May 2027, Implications of PFAS and Microplastics to Wetland Nitrogen Processes. August 2023- Present.
2. **Katherine Ristola,** (Ph.D. Student), Biosystems and Agricultural Engineering, UK. Anticipated Completion: May 2028, Utilizing Treatment Wetlands as Secondary Treatment System for Package Wastewater Treatment Plant for Distillery. March 2023- Present.
3. **Dylan McPeake,** (Ph.D. Student), Biosystems and Agricultural Engineering, UK. Anticipated Completion: May 2028, Implications of PFAS on Biogeochemical Processes in Wetlands. August 2025- Present.
4. **Julio Benedicto-Perez,** (M.S. Student), Integrates Plant and Soil Science, UK. Anticipated Completion: May 2027, Implications of PFAS on Bacterial Processes on the N Cycle in Wetlands. August 2025- Present.
5. **Isaac Stevens,** (M.S. Student), Biosystems and Agricultural Engineering, UK. Anticipated Completion: May 2027, Fate and Transport of *E. coli* and Microplastics in Rural Septic Systems. August 2025- Present.

Graduate Student Advisory Committee Member

Completed (19)

1. **Katie Emmett** (M.S.), Biosystems and Agricultural Engineering UK. 2025. Fate and Transport of Phosphorus in Rivers. Advisor: William Ford
2. **Meredith Sutton,** (Ph.D), Civil Engineering UNL. 2025. Implications of Microplastics on Nitrogen processing in Wetlands. Advisor: Shannon Bartelt-Hunt
3. **Hong Cheng Tay,** (Ph.D.), Civil Engineering UK. 2025. Advancing Vapor Intrusion Science using Systematic Frameworks to Foster Informed Decision Making. Advisor: Kelly Pennell
4. **Isaac Oluk,** (Ph.D.), Civil Engineering UK. 2025. Quantitative Microbial Risk Assessment (QMRA) for Urban Stormwater Reuse After Treatment Through A Bioretention System. Advisor: Diana Byrne
5. **Nasrin Bendi**, (Ph.D), Civil Engineering UNL. 2023. Fate and Transport of Microplastics in the Terrestrial Environment. Advisor: Shannon Bartelt-Hunt
6. **Matthew Chaffee**, (M.S.), Biosystems Engineering UNL. 2023. The Impact of Biological and Chemical Treatment on an Urban Pond Macroinvertebrate Population and Chlorophyll Concentrations. Advisor: Aaron Mittelstet
7. **Jenna McCoy,** (M.S.), Natural Resources UNL. 2023. Nitrate Removal via Plant Uptake and Denitrification from Floating Treatment Wetlands Under Aerated and Unaerated Conditions: Field and Laboratory Results. Advisor: Steven Comfort

8. **Ligang Zhang**, (Ph.D), Natural Resources UNL, 2022. Integrated Study of Using Planning Tools and Remote Sensing Approaches to Monitor and Assess Wetland Conservation in Nebraska. Advisor: Zhenghong Tang
9. **Justin Caniglia**, (M.S.), Natural Resources UNL, 2021. Extraction and Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Wastewater Matrices to Determine Environmental Loading in the Midwest. Advisor: Daniel Snow (originally Tiffany Messer, but reassigned following departure from UNL)
10. **Mikaela Cherry**, (Ph.D), Natural Resources UNL. 2021. Assessment and Visualization of Controls on Groundwater Transport and Nitrate Contamination. Advisor: Troy Gilmore
11. **Gina DeGraves**, M.S. Biosystems and Agricultural Engineering, UK. 2021. Sediment Nitrogen Dynamics in Backwater Wetland Confluences of a Regulated River. Advisor: William Ford
12. **Cory Radcliff**, (M.S.), Biosystems and Agricultural Engineering, UK. 2021. Quantifying the Source and Pathway of Dissolved Reactive Phosphate in Karst Drainage of the Inner-Bluegrass. Advisor: William Ford
13. **Brandi Brown**, (Ph.D),. Biological Systems Engineering, UNL. 2021. Efficient Polyhydroxyalkanoate Production by *Rhodopseudomonas palustris* from Lignocellulosic Biomass. Advisor: Mark Wilkins
14. **Bo Smith**, (M.S.), Biosystems and Agricultural Engineering, UK. Modeling Energy Flows in Floating In-Pond Raceways Utilizing Solar Power Back-up. 2021, Advisor: Joe Dvorak.
15. **Galen Richards**, (M.S.), Natural Resources, UNL. Nitrate Dynamics and Source within Nested Watersheds of an Agricultural Stream, Nebraska, USA. 2020. Advisor: Troy Gilmore
16. **Matthew Russell**, (M.S.), Natural Resources, UNL. Impact of Streambank Stabilization on Sediment Deposition and Erosion in Central Nebraska Streams. 2018- 2020. Advisor: Aaron Mittelstet.
17. **Mara Zelt**, (M.S.), Biological Systems Engineering, UNL. 2019. Persistence and Mitigation of Antibiotic Resistance in Manure and Manure-Amended Soils. January 2017- December 2019. Advisor: Amy Schmidt.
18. **Femi Abimbola**, (Ph.D),Biological Systems Engineering, UNL. Modeling Streambed Vertical Hydraulic Conductivity, Water Quality Pollutants, and Best Management Practices Using Machine Learning and the Soil and Water Assessment Tool. 2019. Advisor: Aaron Mittelstet.
19. **Linda Schott**, (Ph.D), Biological Systems Engineering. 2018. Soil Health Effects and Stakeholder Perceptions of Manure and Woody Biomass Application to Cropland in Nebraska. January 2017 – May 2018. Advisor: Amy Schmidt.

In-Progress (3)

1. **Ariel Robinson,** (Ph.D.), Civil Engineering UK. Anticipated Completion: August 2025. Advisor: Kelly Pennell
2. **Myranda Hentges,** (M.S.), Biosystems and Agricultural Engineering. Anticipated Completion: August 2027
3. **Syeda Sabrina Akter,** (Ph.D.), Biosystems and Agricultural Engineering. Anticipated Completion: August 2028

Postdoctoral Associates

1. **Russell, Matthew**, Fate and Transport of *E. coli* and Microplastics in Straight Pipe Networks, May 2025 – Current, Advisor.

International Interns

1. **Weijia Ni**, (Ph.D.) Sichuana University, Chengdu, China, Water Quality Modeling of the Dam Removal in the Western Mountains of China, September 2018 – August 2020, Co-Advisor.

Undergraduate Student Advising

Undergraduate Research Assistants (32)

1. Amanda Beall, REU student, 2025-current, Chemical Engineering, Advisor
2. Isabelle Howard, 2025-current, Biosystems Engineering, Advisor
3. Avery Krahwinkel, REU student, 2025, Biosystems Engineering, Advisor
4. Madeline Andreatta, 2025, Biosystems Engineering, Advisor.
5. J.P. Edie, REU student, 2025, Biosystems Engineering, Advisor
6. Elizabeth Frericks, 2024-2025, Biosystems Engineering, Advisor
7. Ada Lasley, 2024 Biosystems Engineering, Advisor
8. Gretchen Wahoff, 2024, UK Biosystems Engineering, Advisor
9. Kyle Lemaster, 2021 – 2024, UK Mechanical Engineering, Advisor
10. Isaac Stevens, 2023 – 2024, UK Biosystems Engineering, Advisor
11. Rebecca Stacy, 2023, UK Biosystems Engineering, Advisor
12. Shreya Pokharel, 2023, UK Mechanical Engineering, Advisor
13. Madeleine Spencer, 2023, UK Natural Resources and Environmental Science, Advisor
14. Adam Ransdell, 2022 – 2023, UK Natural Resources and Environmental Science, Advisor
15. Lillian Schlaug, 2022 – 2023, UK Biosystems Engineering, Advisor
16. Abbey Osbourne, 2021-2022, UK Biosystems Engineering, Advisor
17. Erin Remley, 2021- 2022, UK Biosystems Engineering, Advisor
18. Kaitlyn Duncan, 2021, UK Engineering Summer Undergraduate Research Fellowship Recipient ($1,958), UK Biosystems Engineering, Advisor
19. Vanessa Spring, 2021, UK Biosystems Engineering, Advisor
20. Rachel Rohrer, 2021, UK Biosystems Engineering, Advisor
21. Benjamin Wordens, 2019-2020, UNL First Year Research Experience Scholar, Biological Systems Engineering Undergraduate, Expected Graduation 2022, Advisor
22. Samantha Perez, 2019, NSF Research Experiences for Undergraduates Scholar, Environmental Science Undergraduate at Saint Mary's University, Advisor
23. Helen Little, 2018-2021, UNL Undergraduate Creative Activities and Research Experience Scholar, UNL Biological Systems Engineering Undergraduate, Expected Graduation 2022, Advisor
24. Ken Oathoat, 2018 – 2021, Research Assistant, UNL Biological Systems Engineering Undergraduate, Graduated 2021, Field Engineer Natural Resources Conservation Service York, NE, Advisor
25. Garrett Isom, Summer 2019, Research Assistant, UNL Biological Systems Engineering Undergraduate, Expected Graduation 2022, Advisor
26. Trevor Kaslon, Summer 2019, Research Assistant, UNL Biological Systems Engineering Undergraduate, Expected Graduation 2022, Advisor
27. Maddie Johnson, 2018-2019, UNL Undergraduate Creative Activities and Research Experience Scholar, Water Resources Engineering at Kiewit, Kansas City, MO, Advisor
28. Rob Schroeder, Undergraduate Cabela's Apprenticeship, Summer 2018, Advisor
29. Brody Zabel, Summer 2018, UNL Mechanical Engineering Undergraduate, Expected Graduation 2021, Advisor
30. Alexa Davis, 2017-2018, UNL Undergraduate Creative Activities and Research Experience Scholar, UNL School of Natural Resources Master's Student, Natural Resource Program Specialist at Nebraska Department of Energy, Lincoln, NE, Advisor
31. Autumn Dunn, 2017-2018, UNL Undergraduate Creative Activities and Research Experience Scholar, Master's Student in Nicholas School of Environment Duke University, Durham, NC, Expected Graduation 2021, Advisor
32. Bailey Monroe, 2017-2018, UNL Undergraduate Creative Activities and Research Experience Scholar, Water Resource Engineer at NRCS-Iowa, Des Moines, Iowa, Advisor

Research Assistants (4)

1. Amelia McCurry, 2023-2024, Layfette High School, Advisor
2. Zac Fulton, 2023-2024, Layfette High School, Advisor

3. Brennan Stansbury, 2023, Dunbar High School, Advisor
4. Aidan Arora, 2022-2023, Layfette High School, Advisor

Senior Design (13 Groups)

1. BAE 402/403: Senior Design. Biobed Design Project. Fall 2024 and Spring 2025. 4 students. Advisor
2. BAE 402/403: Senior Design. Four Roses WWTP. Fall 2023 and Spring 2024. 4 students. Advisor
3. BAE 402/403: Senior Design. Sink Hole Design for Lexington. Fall 2022 and Spring 2023. 4 students. Advisor
4. BAE 402/403: Senior Design. Wetland WWTP Design for Ohio. Fall 2022 and Spring 2023. 4 students. Advisor
5. BAE 402/403: Senior Design. FTW for Dr. Sanderson. Fall 2021 and Spring 2022. 4 students. Advisor
6. BAE 402/403: Senior Design. Elizabethtown BMP Project. Fall 2020 and Spring 2021. 4 students. Advisor
7. BSEN 470/480: Senior Design. Pine Lake Reservoir Restoration. Fall 2019 and Spring 2020. 5 Students. Advisor.
8. BSEN 470/480: Senior Design. Floating Mechanism for Water Quality Sensor: *meso*Flow. Fall 2018 and Spring 2019. 4 Students. Advisor and Sponsor.
9. BSEN 470/480: Senior Design. Best Management Design for Omaha Transportation Site. Fall 2018 and Spring 2019. 4 Students. Advisor.
10. BSEN 470/480: Senior Design. Rainwater Management Design for Omaha Extension Building. Fall 2017 and Spring 2018. 4 Students. Advisor.
11. Matthew Greiner, 2018-2019, School of Natural Resources Senior Thesis
12. Alexa Davis, 2017-2018, School of Natural Resources Senior Thesis
13. Autumn Dunn, 2017-2018, School of Natural Resources Senior Thesis

Average number of undergraduate students academically advised per year (42 Total)

2024 - 0
2023 – 0
2022[1] – 0
2021[1] – 0
2020 - 10
2019 - 10
2018 – 14
2017 – 8

[1]*2021 and 2022 were following move to the University of Kentucky and resulted in delayed advising assignments due to COVID19 pandemic.*

Honors and Awards

National and International Research Awards and Recognition

1. **ASABE Gale A. Holloway Professional Development Award (2022):** Encourages and recognizes outstanding leadership and active involvement in ASABE for early career members.
2. **ASABE Educational Aids Blue Ribbon Award: "Water Lessons for Preschoolers" (2022):** The Educational Aids Blue Ribbon Awards Competition promotes excellence in informational materials which contribute to the understanding of agricultural and biological engineering subjects outside of the traditional classroom setting.
3. **NSF CAREER Award, University of Kentucky (2021): *CAREER*:** The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization.
4. **ASABE Superior Paper Award (2020):** Winners are chosen from articles published in *Journal of the ASABE*, *Applied Engineering in Agriculture*, and the *Journal of Agricultural Safety and Health* during the previous calendar year.
5. **ASABE Associate Editor Recognition (2020):** Awarded to Associate Editors meeting the *Journal of the ASABE*'s best practices for the calendar year receive a certificate of recognition.
6. **USDA AFRI NIFA ELI Post Doc Fellowship**, **Duke University (2016):** The competitive national fellowship program to cultivate future leaders who can solve emerging agricultural challenges and included 4 years of post-doctoral stipend, tuition, and research funds.
7. **EPA STAR Fellowship, North Carolina State University (2013):** The competitive national fellowship program was established to support the nation's next generations of scientists and engineers in their pursuit of environmentally related academic degrees. This program provided diverse, interdisciplinary environmental research experiences, including 3 years of graduate student stipend, tuition, and research funds.

Regional, Local, and University Research Awards and Recognition

1. Gatton Foundation Endowed Chairship (2024-present)
2. Kentucky Water Research Institute Affiliate (2024 – present)
3. UK James B. Beam Institute Fellow, University of Kentucky (2024 – present)
4. UK Agriculture Safety and Health Core Fellow, University of Kentucky (2022 – present)
5. UK Center for Appalachian Research in Environmental Sciences (UK CARES) Fellow, University of Kentucky (2021 – present)
6. National Science Foundation Graduate Research Traineeship Advisor (INFEWS), University of Kentucky (2021- present)
7. Daugherty Global Institute Water for Food Fellow, University of Nebraska (2017-2023)

Regional, Local, and University Teaching Awards and Recognition

1. University of Nebraska-Lincoln College of Engineering Research Recognition (2019)
2. Nominated for University of Nebraska-Lincoln IANR Outstanding Research Award (2019)
3. Peer Review of Teaching Project Fellow, University of Nebraska-Lincoln, Lincoln, NE, (2018-2019)
4. University of Nebraska-Lincoln Parents Recognition Award (2019)
5. Nominated for CASNR Outstanding Teaching Award (2019)
6. Certificate of Accomplishment Teaching Program, North Carolina State University, Raleigh, NC (2014)
7. North Carolina State University College of Agriculture and Life Sciences Professional Development Award (2011)
8. University of Kentucky Biosystems & Agricultural Engineering Outstanding Senior Award (2008)
9. University of Kentucky Student Excellence Award (2006)

Professional Organization Membership

1. American Society of Agricultural and Biological Engineers (ASABE), 2004-present
2. American Society of Agricultural and Biological Engineers (ASABE) Committees, NRES-25 (2008-current), NRES-28 (2008-current), NRES-02 (2018-2020), P-120 (2017-current)
3. American Ecological Engineering Society (AEES), 2012-present
4. American Ecological Engineering Society (AEES) Community Initiatives Committee (2021 – present)
5. Alpha Epsilon Honors Society, 2007

Professional Development

Research Professional Development

1. UK-CARES Advocacy Training Workshop, 22 January 2025
2. Great Plains PFAS Consortium, 4-6 September 2024
3. FTIR Training Workshop, 27 August 2024
4. UK CARE Research Summit, 23 August 2024
5. KWRI Affiliates Meeting, University of Kentucky, 12 January 2024
6. CAFE Proposal Training: Basics and a Refresher, University of Kentucky, 7 March 2023
7. Joint DOE/EDA Webinar Series: Investing in Energy Communities, 22 February 2023
8. Nano Convergence for Climate Change Webinar, North Carolina State University, 21 February 2023
9. University of Kentucky, IRC Networking Event, 16 February 2023
10. Sub-500 nm Simultaneous IR+Raman Microscopy for Microplastics and Materials Science Research Webinar, 8 February 2023, Thermo Fisher Scientific
11. P30 Early-Stage Investigator Workshop, UK CARES, 24 September 2022
12. Kentucky Water Resources Annual Symposium, KY WRRI, 13 September 2022
13. Responsible Conduct of Community Engaged Research Training, UK CARES, https://www.youtube.com/watch?v=KGWUMj3C4r8, 1 August 2021
14. AQ400 Training, Seal Analytical Training, 26-29 April 2021
15. Environmental Mass Spectrometry for Sustainability Training, Waters Analytical, 14 April 2021
16. University of Kentucky, CAFE Conversation: Kentucky Waterways, 23 March 2021
17. University of Kentucky, CAFE Conversation: Black Agriculture, 24 February 2021
18. USDA SARE Funding Workshop, 1 August 2019
19. University of Nebraska-Lincoln College of Engineering Promotion and Tenure Training, 24 July 2019
20. Department of Energy, Demystifying the U.S. Department of Energy Workshop, December 2018
21. University of Nebraska-Lincoln Write Winning Grant Proposals, March 2017
22. University of Nebraska-Lincoln NSF CAREER Workshop, March 2017
23. University of Nebraska-Lincoln Treatment Wetland Training Workshop, August 2017
24. Purdue Future Faculty Workshop. 1-3 March 2015. West Lafayette, IN.
25. Virginia Tech Future Faculty Program. 11-14 2015. Blacksburg, VA.
26. Navigating the Dangerous Waters of Plagiarism Workshop. North Carolina State University, 2012
27. How to Handle a Phone Interview Workshop. North Carolina State University, 2012
28. How Business Ideas are Born Workshop. North Carolina State University, 2012
29. Writing Federal Research Proposal Workshop. North Carolina State University, 2012
30. North Carolina State University Graduate Student Professional Development Workshop: 1 of 34 students selected in the College of Agriculture and Life Sciences to participate in a weekend workshop to learn advanced professional development, interviewing, and personal management.

31. North Carolina Graduate Student Research Symposium: Selected from Biological and Agricultural Engineering Department to present “Groundwater Nitrate Reductions within Upstream and Downstream Sections of a Riparian Buffer.”
32. University of Kentucky Engineering Leadership Class: 1 of 16 students selected from the College of Engineering to participate and gain insight in styles of leadership by meeting with accomplished leaders whose responsibilities impact engineering in Kentucky, the United States, and the world.
33. University of Kentucky Leadership Summit: 1 of 100 leaders from the university chosen by President Todd to encourage positive change for the University of Kentucky community.
34. Federal University of Viçosa in Viçosa, Brazil Study Abroad Program: Sponsored by the University of Kentucky to learn Portuguese and assist in a research study of an innovative irrigation system for rice, while networking with professors and students for future research projects between universities.

Teaching Professional Development

1. University of Kentucky, 2024 Women’s Circle: Trust, Conflict, and Difficult Conversations, 9 February 2024
2. Harvard University, The Food-Energy-Water Nexus: Using Hydroviz to Support Undergraduate Student Learning about Complex Socio-Hydrologic Issues, 30 January 2023
3. University of Kentucky, Cultivating Inclusion in CAFE, 12 May 2022
4. University of Kentucky, Diversifying Syllabi and Curriculum in CAFE, 6 April 2021
5. University of Kentucky, Critical Compassion in CAFE, 9 February 2021
6. University of Nebraska-Lincoln, Annual Undergraduate Curriculum Workshop, May 2020
7. University of Nebraska-Lincoln, Keep Teaching Seminar April 2020
8. University of Nebraska-Lincoln Safe Spaces Training, October 2019
9. University of Nebraska-Lincoln IANR Fall Faculty Training, 28 August 2019
10. University of Nebraska-Lincoln School of Natural Resources Fall Faculty Training, 23 August 2019
11. University of Nebraska-Lincoln Peer Review of Teaching Project Training, 7 May 2019
12. University of Nebraska-Lincoln Creating Rubrics, BSE CIPA Brown Bag, 17 April 2019
13. University of Nebraska-Lincoln Peer Review of Teaching Project Training, 13 April 2019
14. University of Nebraska-Lincoln IANR Water Conference, 14 March 2019
15. University of Nebraska-Lincoln Instruction Design Techniques in the Flipped, Blended, and Traditional Classroom Workshop, August 2018
16. University of Nebraska-Lincoln Undergraduate Curriculum Workshop, May 2017, May 2018, May 2019
17. University of Nebraska-Lincoln CASNR Winter Interim Teaching and Learning Workshop, 2018, 2019, 2020
18. University of Nebraska-Lincoln Training for Suicide Prevention: Question, Persuade, Refer, January 2018
19. Writing Learning Outcomes: North Carolina State University, 18-21 September 2013.
20. Learning Styles. North Carolina State University. January 14-18, 2013.
21. Managing Disruptive Classroom Behavior. North Carolina State University. 22-26 October 2012.
22. Establishing Credibility in the Classroom. North Carolina State University. 23-27 July 2012.
23. Motivational Teaching Strategies. North Carolina State University. 6 July 2012.
24. Effective Questioning Techniques. North Carolina State University. 25 June 2012.

Service

Manuscript Editorship

1. Associate Editor, Transactions of American Society of Agricultural and Biological Engineering, September 2018 – Current

Manuscript Review

1. Journal of Ecological Engineering (2 reviews - 2016, 4 reviews -2017, 3 review – 2018; 1 review – 2020; 1 review - 2021; 1 review – 2023; 1 review -2024)
2. Biogeochemistry (2 reviews - 2017)
3. Environmental Science & Technology (1 review - 2018)
4. Transactions of American Society of Agricultural and Biological Engineering (1 review – 2018; 10 review -2019; 1 review -2020; 2 reviews – 2024; 2 reviews - 2025)
5. Journal of Environmental Quality (1 review – 2018, 1 review – 2019; 1 review – 2021; 1 review – 2023; 2 reviews -2024)
6. Geoderma (1 review – 2018)
7. Desalination and Water Treatment (1 review -2018)
8. Science of the Total Environment (1 review -2020; 1 review – 2023; 1 review -2024; 1 review- 2025)
9. Environmental Pollution (1 review – 2022; 1 review – 2023; 1 review -2024; 1 review- 2025)

Proposal Reviews

1. NSF Environmental Engineering CAREER Panel (October 2021, 2023, 2024)
2. NSF Science and Technology Centers Review Panel (May 2022)
3. NIFA AFRI Nanotechnology for Agriculture and Food Systems (A1511) Review Panel (August 2021; December 2023)
4. NSF Environmental Engineering 1440 Review Panel (April 2021)
5. Water Advance Research and Innovation (WARI) Fellowship Panel (October 2019)
6. 104(g) Review Panel (April 2019, April 2021)
7. USDA SBIR NIFA Review Panel (January 2018; February 2019; January 2021; December 2023)
8. The National Academies of Sciences, Engineering, and Medicine Cycle 19 of the U.S. Egypt Science and Technology Joint Fund (March 2018)
9. North Carolina Sea Grant Review Panel (April 2017)

Departmental

Leadership positions on Department Committees

1. Search Committee, BAE Bioenvironmental Assistant/Associate Professor, Chair (2023)
2. Student Recruitment Committee, UK-BAE, Chair, (2020 – 2023)
3. Student Success Committee, UNL, Co-Chair (2019- 2020)
4. North Carolina State University Biological and Agricultural Engineering GSA President (2009-2010)
5. University of Kentucky Biosystems and Agricultural Engineering Student President (2007-2008)

Membership positions on Department Committees

1. Search Committee, Business officer (2024)
2. Search Committee, UK Landscape Architecture Faculty Position (2024)
3. Social Committee, UK, Member (2021 – current)
4. Undergraduate Curriculum Committee, UK, Member (2021 – 2024)
5. Stream and Watershed Science Graduate Certificate Committee (2021-current)

6. Search Committee, BAE Electronics Engineer, member (2021)
7. Search Committee, BAE Research Facilities Manager, member (2021)
8. Safety Committee, BAE UK, Member (2020 – 2021)
9. Awards Committee, BAE UK, Member (2020 – 2021)
10. External Relations Committee, UNL, Member (2019 – 2020)
11. Soil/Water Committee, UNL, Member (2017 – 2020)
12. Environmental Science Committee, UNL, Member (2017 – 2020)
13. Facilities Committee, UNL, Member (2018 – 2020)
14. Undergraduate Curriculum and ABET Committee, UNL, Member (2018-2020)
15. Colloquium Committee, UNL, Member, (2018-2019)
16. North Carolina State University Biological and Agricultural Engineering Recruitment Weekend, Assistant, (2009-2014)
17. North Carolina State University Biological and Agricultural Engineering High School Summer Camp, Assistant (2009-2014)

College

1. Martin-Gatton College of Agriculture, Food, and Environment Faculty Council (2025-2028)
2. UK College of Engineering and Society of Women Engineers Women Engineering (Wie) Day, UK, panelist (2021, 2022, 2023, 2024)
3. Healthy Agricultural Systems, UNL, Member (2019 – 2020)
4. IANR Science Literacy Initiative Advisory Board, UNL, Member (2018 – 2020)
5. College of Engineering Undergraduate Scholars Program, UNL, Member (2018 – 2020)
6. Nebraska Water Center Advisory Board, UNL, Member (2018 – 2020)
7. North Carolina State Graduate Student Association Assistant Representative, Member (2010-2012)
8. North Carolina State University Engineering Leadership Weekend (2009-2012)
9. University of Kentucky Engineering Ambassador (2005-2008)
10. University of Kentucky Ag Student Council Senior Representative (2007-2008)
11. University of Kentucky Ag Student Council Treasurer (2006-2007)

University

1. University of Kentucky Emerging Leaders Academy (2025-2026)
2. UNL CASNR Dean Search Committee, Member (Fall 2018)

Regional and National Service Roles

Regional

1. 2024 – present Kentucky Farm Bureau Sustainability Advisory Committee
2. 2024 – present Kentucky Energy and Environment Cabinet PFAS Committee
3. 2021-2022 Nebraska ASABE Section External Advisor
4. 2020-2021 Nebraska ASABE Section Awards Chair
5. 2019-2020 Nebraska ASABE Section President
6. 2018-2019 Nebraska ASABE Section Meeting Coordinator
7. 2017-2020 Nebraska Private Onsite Wastewater Treatment System Advisory Committee
8. 2017-2018 Nebraska ASABE Section Secretary/Treasurer
9. 2016-2017 Nebraska ASABE Section Newsletter Coordinator

National

1. President-Elect/President/Outgoing President, American Ecological Engineering Society (AEES), 2025-2028
2. NRES-01, American Society of Agricultural and Biological Engineers (ASABE), NRES Executive Committee, Secretary/Vice Chair/Chair/Outgoing Chair, 2024 - 2029
3. Secretary, American Ecological Engineering Society (AEES), 2021 – 2023

4. Nominating Committee, American Society of Agricultural and Biological Engineers (ASABE), member, 2022-2024
5. NRES-25, American Society of Agricultural and Biological Engineers (ASABE), Streams, Wetlands, and Reservoirs Group, Chair, 2022-2024
6. NRES-25, American Society of Agricultural and Biological Engineers (ASABE), Streams, Wetlands, and Reservoirs Group, Vice-Chair, 2021-2022
7. ASABE E 05/03, American Society of Agricultural and Biological Engineers (ASABE), Chair, 2021-2022
8. Community Initiatives Committee, 2021- present
9. P-120, ASABE, Student Scholarships Judge, 2019- 2021
10. NRES-28, American Society of Agricultural and Biological Engineers (ASABE), Ecological Engineering Group, Outgoing Chair, 2019-2020
11. NRES-28, American Society of Agricultural and Biological Engineers (ASABE), Ecological Engineering Group, Chair, 2018-2019
12. NRES-28, American Society of Agricultural and Biological Engineers (ASABE), Ecological Engineering Group, Vice-Chair, 2017-2018
13. NRES-25, ASABE, Streams, Reservoirs, and Wetland Group, Standards Chair, 2015-2018
14. NRES, ASABE, Student Poster Competition Judge, 2017-present
15. ASABE Speed Networking Volunteer, 2016- present
16. American Society of Ecological Engineers, Student Poster Competition Judge, 2017-present

Technical Session Moderator

1. Section Moderator, Invited: Treatment Wetlands, 2024 American Society of Agricultural and Biological Engineering International Meeting, 2024.
2. Section Moderator, DEIJ Update and Discussion, 2024 American Ecological Engineering Meeting, 2024.
3. Section Moderator, Water Resources and Food Production, 2023 American Society of Agricultural and Biological Engineering International Meeting, 2023.
4. Section Moderator, Emerging Contaminants, Pathogens, and Antibiotic Resistance, 2023 American Society of Agricultural and Biological Engineering International Meeting, 2023.
5. Section Moderator, Streams, Reservoirs, and Wetlands, 2022 American Society of Agricultural and Biological Engineering International Meeting, 2022.
6. Section Moderator, Resource Recovery & Eco-Entrepreneurial, 2022 American Ecological Engineering Meeting, 2022.
7. Section Moderator, Special Session: Wetlands, 2021 American Society of Agricultural and Biological Engineering International Meeting, virtual, 2021.
8. Section Moderator, Waterborne Pathogens and Emerging Contaminants, 2020 American Society of Agricultural and Biological Engineering International Meeting, virtual, 2020.
9. Section Moderator, Waterborne Pathogens and Emerging Contaminants, 2019 American Society of Agricultural and Biological Engineering International Meeting, Boston, MA, July 7-10, 2019.
10. Section Moderator, Treatment Wetlands, 2019 American Ecological Engineering Society Meeting, Ashville, NC, June 4, 2019.
11. Section Moderator, Nutrient, Removal, and Recycle Part 2, Detroit, MI, July 30, 2018.
12. Section Moderator, Stormwater Management I, American Society of Ecological Engineering, Houston, TX, June 12, 2018.
13. Section Moderator, Nitrogen Removal in Wetlands, WETPOL Conference, Big Sky, MT, August 23, 2017.

Other Service

University Service Events

1. 5/1/2024 *meso*Wheels Treatment Wetland Program UK Visit (Organizer). University of Kentucky. 1 May 2024. (60 participants)
2. 7/1/2020 H_2O Today Virtual Field Trip at Morrill Hall (150 people)
3. 1/25/2020 Introduce a Girl to Engineering Day at UNL Innovation Campus (300 people)

4. 10/27/2019 Sunday with a Scientist at Morrill Hall (150 people)
5. 10/14/2019 Dr. Carol Swarts Tour of *meso*LAB (5 people)
6. 9/6/2019 Lincoln Parks and Recreation Tour of *meso*LAB (5 people)
7. 8/16/2019 Daughterly Water for Food Interview and Tour of *meso*LAB (5 people)
8. 7/17/2019 United States Geological Service Tour of *meso*LAB (10 people)
9. 6/11/2019 Big Red Summer Camp Presenter
10. 4/22/2019 Newman Grove High School Tour of *meso*LAB (30 people)
11. 10/24/2018 Distinguished Scholars Days Mock Lecture
12. 6/26/18 UNL Environmentor Tour of *meso*LAB (30 people)
13. 2018 Women in Science Dinner Host (150 people)
14. 7/3/18 UNL Environmentor Tour of East Campus Beaver Dam (30 people)
15. 6/18/18 Big Red Summer Camp Presenter (30 people)
16. 2017 Water for Food Graduate Student Poster Competition Judge (30 people)
17. 2017-2018 Environmenter (Mentored local high school student on wetland laboratory experience) (1 person)
18. 2012-2014 Wetland Mesocosm Laboratory Undergraduate Tour, North Carolina State University, Raleigh, NC, 4 occasions (30 people)
19. 6/2012 Kure Beach Sand Dune Infiltration System Tour, North Carolina State University, Raleigh, NC (25 people)
20. 22 April 2015. Hyde County Wetland Restoration Project Stakeholders Meeting. (20 people)
21. June 2013. Hyde County Wetland Restoration Project Stakeholders Meeting (15 people)
22. 25 October 2012. Groundwater Nitrate Reductions within Upstream and Downstream Sections of a Riparian Buffer. North Carolina State University Biological and Agricultural Mini-Seminar for Dr. Vladimir Novotny. Raleigh, NC. (10 people)
23. October 2012. Hyde County Wetland Restoration Project Stakeholders Meeting (25 people).
24. June 2011. Hyde County Wetland Restoration Project North Carolina Department of Natural Resources Meeting (25 people).

College Service Events

1. Women in Engineering Day Faculty Panel, 10/9/2024
2. Women in Engineering Day Faculty Panel, 4/10/2024
3. ELLP Freshman Orientation (300 people), 8/15/2023
4. Women in Engineering Day Faculty Panel, 4/14/2022
5. Women in Engineering Day Faculty Panel, 11/19/2021
6. Institute for Future Agriculture Leaders (IFAL) host, 6/22/2021
7. UK Engineering Day Video, January 2021
8. E2 Day Session Presenter (20 high school students), 2018, 2019, 2020
9. Strategic Discussion for Nebraska Presenter, 2018
10. ENGR 10 Video Presenter, 2018
11. Eureka! Girls Inc. Demo, 2018
12. UNL Spring Research Fair Graduate Poster Competition Judge, 2017

Unit Service Events

1. Senior Design Poster Session, 4/24/2024
2. Senior Design Poster Session, 4/24/2023
3. Senior Design Poster Session, 4/25/2022
4. Senior Design Virtual Poster Session, 3/5/2021
5. Engineering Day Robotic Car Judge, 12/3/2019
6. Fall Environmental Studies Showcase Judge, 12/1/2019
7. Student recruitment meetings
    a. 3/7/2019 - Malayna Wingert
    b. 4/22/2019 - Drake Spohr
    c. 8/5/2019 - Caleb Lohrberg
8. Engineering Day Robotic Car Judge, 2018, 2019
9. 2017 Lego League Recruitment Activity: Storm the Drain Presentation/Activity
10. Faculty Pancake Flip, 22 February 2017

11. Engineering Day Edible Car Judge, 2017

Unit Community Development

1. 3/15/2021 –Establisher and organizer of the Chalk Talk Group, which is comprised of five multidisciplinary research teams that meet bi-weekly throughout the year to discuss academic and industry career planning techniques at UK
2. 5/15/2019 Led establishment of Mother's Room in Biological Systems Engineering Department at UNL
3. 8/15/2017 –Establisher and organizer of the Chalk Talk Group, which is comprised of five research teams that meet bi-weekly throughout the year to discuss academic and industry career planning techniques at UNL

Community and Non-professional Service

1. Farm Bureau Sustainability Advisory Board, Louisville, KY (2024 – present)
2. Fayette County Parks and Recreation Camp, Lexington, KY (2023)
3. Bryan Station High School (Title I School) Advisory Board, Lexington, KY (2022 – present)
4. Dimensions Education Nature Explore, Pre-K Board, Lincoln, NE (2019-2020)
5. Fred Olds Elementary Science Fair: Judged fourth and fifth science fair projects Raleigh, NC (2013-2105).
6. Forest View Elementary Durham, NC: Designed and installed rain garden learning center at low-income school (2011).
7. Lunch Box Program: Contributed and delivered food boxes to low income families, Durham, NC (2011-2013).
8. English as a Second Language: Offered childcare services for students, Durham, NC (2012).
9. Make a Wish Foundation: Ran ½ marathon to support foundation, Durham, NC (2011).
10. Stream Cleanup: Assisted in a cleanup at Jordan Lake in Raleigh, NC (2010).
11. Walk for the Cure: Raised money and walked for cancer research, Lexington, KY (2004 – 2009)

Licensure and Certification

1. Profession Engineering License, Commonwealth of Kentucky, May 2025, License #: 41011
2. Peer Review of Teaching Certificate, University of Nebraska – Lincoln, May 2019
3. Watershed Assessment and Restoration Certificate, North Carolina State University, August 2015
4. Certificate of Accomplishment in Teaching, North Carolina State University, May 2014
5. Engineer-In-Training, Commonwealth of Kentucky, May 2008 to present.

Technical Skills

- Analytical chemistry equipment: Seal AQ300/400, Hach Lachat, DOC analyzer, UV-vis spectrometer, CPS+ Photosimulator
- ESRI ArcPro
- Wetland, stream, and stormwater BMP design, water quality monitoring, and hydrology modeling.
- Stable isotope protocol development, experimental design, and implementation.
- Rod Surface Elevation Table (rSET) station setup and monitoring
- Programming in Microsoft Office, DRAINMOD, Matlab, R Studio, and SAS.
- Experience with AutoCAD, SWAT, HEC-RAS, Surfer, and JMP programming and design.
- Portuguese Language: Completed Portuguese Level 1 and 2 in Viçosa, Brazil.
- Extensive surveying experience.