GASTON E. SMALL

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Department of Earth, Environment, and Society
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Updated 4/17/2026

Education

University of Georgia, Athens, GA
Ph.D. Ecology, 2010

University of North Carolina, Chapel Hill, NC
M.A. in Teaching (Science Education), 2002

North Carolina State University, Raleigh, NC
B.S. Environmental Science (Suma Cum Laude), 2001
B.A. English (Suma Cum Laude), 2001
Minor, Outdoor Leadership

Academic Appointments

Professor of Biology, University of St. Thomas	2023-present
Professor of Earth, Environment, and Society, University of St. Thomas	2023-present
Associate Professor of Earth, Environment, and Society, Univ. of St. Thomas	2020-2023
Fellow, University of Minnesota Institute on the Environment	2019-present
Associate Professor of Biology, University of St. Thomas	2018-2023
Assistant Professor of Biology, University of St. Thomas	2012-2018
Adjunct Professor, Macalester College	2011
Postdoctoral Research Associate, University of Minnesota	2010-2012

Leadership Positions

Faculty Director of Grants and Research 2022-present

- Supported grant-writing and research activities for faculty across the university through workshops, training programs, and implementing new support structures
- Advised senior leadership on creation/revision of policies around research
- Earned certification in Research Administration and Research Development (SRAI)
- Co-led successful NSF GRANTED award ($1.6M) to improve post-award processes at UST and share knowledge and practices with other Minnesota private colleges
- Co-led successful proposal to Minnesota Department of Transportation's Research Services Academic Research Program enabling St. Thomas to be eligible for future contracts

Science and Mathematics Division Director 2024-present

- Coordinated renovation projects in public areas in the science building
- Led monthly meetings of faculty from STEM departments
- Coordinated elections for division representation on senate and university committees
- Served on College of Arts & Sciences Executive Committee

Search Committee Member, Vice Provost for Academic Affairs 2025

Environmental Science Program Director 2019-2023

Interim Chair, Department of Earth, Environment, and Society 2021-2022

- Led program through academic merger and creation of new interdisciplinary department
- Contributed to design of new STEAM building
- Led assessment, coordinated advising, built relationship with alumni, and coordinated meetings with prospective students

Faculty Affairs Committee 2020-2024

- Facilitated relationship between faculty and senior administration as part of shared governance model
- Advised provost on policy proposals including COVID re-opening, faculty compensation and evaluations

University Senate 2016-2021

- Represented Division of Science and Mathematics during a major overhaul of the university's core curriculum

Faculty Leadership Fellows Program 2019-2020

- Shadowed Vice President for Mission (fall semester) and Provost (Spring Semester)
- Participated in meetings of President's Cabinet, Academic Affairs, Dean's Council, and Board of Trustees

Student Life Committee 2015-2019

- Advised the Dean of Students and Board of Trustees on student affairs issues

Other Departmental Leadership 2015-present

- Chaired multiple hiring committees for faculty and staff positions, and faculty Tenure and Promotion committees

Teaching, Mentoring, and Student Success

Instruction: Taught 11 different undergraduate courses at UST at a variety of different levels

- First-Year Experience
  - Introduction to College Success
  - Sustainability Theme-Based Learning Community
  - Introduction to Environmental Science (Living Learning Community)
- Study Abroad
  - Introduction to Field Research in Costa Rica
- Sustainability
  - Biology of Sustainability
  - Environmental Problem Solving
- Honors Seminars
  - Darwin and the Origin of Species
  - Astrobiology
- Senior Capstone Courses
  - Environmental Science Capstone
  - Aquatic Biology
  - Urban Ecosystem Ecology

STEM Educational Leadership and Training

- Led Biology Department Teaching Circle (2013-2016), facilitating discussions of pedagogical best practices
- Environmental Science program assessment coordinator, 2016-present
- Inclusive Excellence STEM Advisor Certification
- Writing Across the Curriculum Certification
- Co-PI on $1.1M NSF Noyce STEM teacher training grant
- Engaged 2 secondary STEM teachers in research through NSF Research Experience for Teacher grant supplements
- Engaged 16 high school students in research through grant supplements, paid internships, and volunteer experiences
- Developed and disseminated data-based pedagogical activities through Project OCELOTS (Online Content for Experiential Learning of Tropical Systems) and Project EDDIE (Environmental Data-Driven Inquiry & Exploration)

Mentoring

- Mentored >75 undergraduate research students
- Received Undergraduate Research Mentoring Award (2021)
- Mentored postdoctoral research associate (UST) and served on dissertation committees for four Ph.D. candidates (University of Georgia, University of Minnesota, Linköping University)

Peer-Reviewed Publications

Google Scholar Profile: https://scholar.google.com/citations?user=qotdVyEAAAAJ&hl=en
Citations: 2192
h-index: 25
i10 index: 47

53. **Small GE**, Finlay JC, Keeler BL, Niehoff E, Forgrave R, Wood SA. 2026. Visitor perception of lake water quality in two highly managed urban lakes in Saint Paul, Minnesota. Urban Ecosystems 29 (2), 90.

52. Brown KM, Beall BFN, Bullerjahn GS, Finlay JC, Glavina Del Rio T, **Small GE**, Sterner RW, McKay RM. 2026. Depth-respolved paired metagenomes and metatranscriptomes from the Lake Erie 'dead zone'. Microbiology Resource Announcements 14 (12), e01013-25.

51. Metson GS, Sieczko AK, **Small GE**, Tonderski K, Nicklay JA, Jelinski NA, Shrestha P, LaBine K. 2025. Leaching the good stuff: Nitrogen and phosphorus in real and experimental urban agricultural settings. Npj Urban Sustainability 5)1, 94.

50. de Morais RJ, **Small GE**, Caramoni SS, Teresa FB. 2025. The role of fish in nutrient recycling across a conservation gradient in Neotropical streams. Freshwater Biology 70 (10), e70113.

49. **Small GE**, Bass C, Forgrave R, Janke BD, Wendorff A, Finlay JC. 2025. Modeling the effects of lake morphometry on chloride retention and salt-driven stratification in two urban lakes in St. Paul, MN. Water Resources Research 61 (9), e2025WR040095.

48. Zeiner CA, Kinsch MN, Lynch ED, Shrestha P, **Small GE**. 2024. Soil microbial activity profiles associated with organic compost fertilizers in an urban garden. Urban Agriculture & Regional Food Systems 9 (1), e20059.

47. **Small GE**, Shrestha P, Zeiner C, Barabás G, Metson GS. 2024. Phosphorus recycling and loss from compost-amended urban gardens: Results from a 7-year study. Urban Agriculture & Regional Food Systems 9 (1), e20055.

46. **Small GE**, Smedsrud M, Jimenez I, Chapman E. 2023. Simulating the fate of compost-derived nutrients in an urban garden. Ecological Modelling 483, 110441.

45. Wang Z, Tao T, Wang H, Chen J, **Small GE**, Johnson D, Chen J, Zhang Y, Zhu Q, Zhang S, Song Y, Gattge J, Guo P, Sun X. 2023. Forms of nitrogen inputs regulate the intensity of soil acidification. *Global Change Biology* 29 (14), 4044-4055.

44. Wang Z, Tao T, Wang Y, **Small GE**, Chen J, Sun X. 2023. Soil quality in urban forests under different understory management practices. *Land Degradation & Development* 34: 899-910.

43. **Small GE**, Martensson N, Janke BD, Metson GS. 2023. Potential for high contribution of 5 urban gardens to nutrient export in urban watersheds. *Landscape and Urban Planning* 229: 1004602.

42. Marzolf NS, **Small GE**, Oviedo-Vargas D, Ganong CN, Duff JH, Ramírez A, Pringle CM, Genereux DP, Ardón M. 2022. Partitioning inorganic carbon fluxes from paired O2-CO2 gas measurements in a Neotropical headwater stream, Costa Rica. *Biogeochemistry* 160: 259-273.

41. Kay, A.D., E.J. Chapman, J.D. Cheruiyot, S. Lowery, S.R. Singer, **G.E. Small**, A.M. Stone, R. Warthen, W. Westbroek. 2022. Potential for urban agriculture to support accessible and impactful undergraduate biology education. *Ecology and Evolution* 12: e8721.

40. Chapman, E.J., **G.E. Small**, P. Shrestha. 2022. Investigating potential hydrological ecosystem services in urban gardens through soil amendment experiments and hydrologic models. *Urban Ecosystems* 25: 867-878.

39. Tao, T., L. Liu, **G.E. Small**, J. Chen, Y. Wang, X. Sun. 2021. The effects of land management patters on soil carbon sequestration and C:N:P stoichiometry in sloping croplands in southern China. *Agriculture, Ecosystems & Environment* 320: 107584.

38. **Small, G.E.**, I. Jimenez, M. Salzl, P. Shrestha. 2020. Urban heat island mitigation due to enhanced evapotranspiration in an urban garden in Saint Paul, Minnesota, USA. *WIT Transactions on Ecology and the Environment* 243: 39-45.

37. Nicklay, J.A., K.V. Cadieux, M.A. Rogers, N.A. Jelinski, K. LaBine, **G.E. Small**. 2020. Facilitating Spaces of urban agroecology: A learning framework for community-university partnerships. *Frontiers in Sustainable Food Systems* 4: 143.

36. Shrestha, P., **G.E. Small**, A. Kay. 2020. Quantifying nutrient recovery efficiency and loss from compost-based urban agriculture. *PloS one* 15: e0230996.

35. **Small, G.E.**, R. McDougall, G.S. Metson. 2019. Would a sustainable city be self-sufficient in food production? *International Journal of Design & Nature and Ecodynamics* 14: 178-194.

34. **Small, G.E.**, P. Shrestha, G.S. Metson, K. Polsky, I. Jimenez, A. Kay. 2019. Excess phosphorus from compost applications in urban gardens creates potential pollution hotspots. *Environmental Research Communications* 1 (9): 091007.

33. Shrestha, P., M.T. Salzl, I. Jimenez, N. Pradhan, M. Hay, H.R. Wallace, J.N. Abrahamson, **G.E. Small**. Efficacy of spent lime as a soil amendment for nutrient retention in bioretention green stormwater infrastructure. *Water* 11:1575.

32. **Small, G.E.**, M. Simeon, P. Shrestha, M. Dahmus, E. L. Amel. 2019. Assessing the potential of urban ecology research to inform municipal sustainability practices. *Cities and the Environment* 12: 4.

31. Rozmarynowycz, M.J., B.F.N. Beall, G.S. Bullerjahn, **G.E. Small**, R.W. Sterner, S.S. Brovold, N.A. D'souza, S.B. Watson, R.M.L. McKay. 2019. Transitions in microbial communities along a 1600 km freshwater trophic gradient. *Journal of Great Lakes Research* 45: 263-276.

30. **Small, G.E.**, P. Shrestha, A. Kay. 2018. The fate of compost-derived phosphorus in urban gardens. *International Journal of Design & Nature and Ecodynamics*. 13: 415-422. DOI: 10.2495/DNE-V13-N4-415-422

29. **Small, G.E.**, E.Q. Niederluecke, P. Shrestha, B.D. Janke, J.C. Finlay. 2019. The effects of infiltration-based stormwater best management practices on the hydrology and phosphorus budget of a eutrophic urban lake. *Lake and Reservoir Management* 35: 1.

28. Cooney, E.M., P. McKinney, R. Sterner, **G.E. Small**, and E. C. Minor. 2018. Tale of two storms: Impact of extreme rain events on the biogeochemistry of Lake Superior. *Journal of Geophysical Research: Biogeosciences* 123: 1719-1731.

27. Ginger, L.J., K.D. Zimmer, B.R. Herwig, M.A. Hanson, W.O. Hobbs, **G.E. Small**, and J.B. Cotner. 2017. Watershed versus within-lake drivers of nitrogen:phosphorus dynamics in 6 shallow lakes. *Ecological Applications* 27: 2155.

26. **Small, G.E.**, B. Sisombath, L. Reuss, R. Henry, and A. Kay. 2017. Assessing how the ratio of food waste to wood chips in compost affects rates of microbial processing and subsequent vegetable yield. *Compost Science & Utilization* 25: 272-281.

25. Vanni, M.J., P.B. McIntyre, … **G.E. Small,** … and K.D. Zimmer. 2017. A global database of nitrogen and phosphorus excretion rates of aquatic animals. *Ecology* 98:1475.

24. Halvorson, H.M., and **G.E. Small**. 2016. Observational field studies are not appropriate tests of consumer stoichiometric homeostasis. *Freshwater Science* 35: 1103-1116.

23. **Small, G.E.,** J.C. Finlay, R.M.L. McKay, M.J. Rozmarynowycz, S. Brovold, G.S. Bullerjahn, K. Spokas, and R.W. Sterner. 2016. Large differences in potential denitrification and sediment microbial communities across the Laurentian great lakes. *Biogeochemistry*. 128: 353-368.

22. Loken, L.C., **G.E. Small**, J. C. Finlay, R. W. Sterner, and E.H. Stanley. 2016. Nitrogen cycling in a freshwater estuary. *Biogeochemistry* 127: 199-216.

21. **Small, G.E.**, M. Ardón, J.H. Duff, A.P. Jackman, C.M. Pringle, A. Ramírez, and F.J. Triska. 2016. Phosphorus retention in a lowland neotropical stream following an eight-year phosphorus enrichment experiment. *Freshwater Science* 35: 1-11.

20. Ganong, C., **G.E. Small**, M. Ardón, W.H. McDowell, D. Genereux, J.H. Duff, and C.M. Pringle. 2015. Interbasin flow of geothermally modified ground water stabilizes stream exports of biologically important solutes against variation in precipitation. *Freshwater Science* 34: 276-282.

19. Sun, X., **G.E. Small**, X. Zhou, H. Li, and C. Liu. 2015. Variation in C:N:S stoichiometry and nutrient storage related to body size in a holometabolous insect (*Curculio davidi*) (Coleoptera: Curculionidae) larva. *Journal of Insect Science* 15.

18. Snyder, M.N., **G.E. Small**, and C.M. Pringle. 2014. Diet-switching by omnivorous freshwater shrimp diminishes differences in nutrient recycling rates and body stoichiometry across a food quality gradient. *Freshwater Biology* 60: 526-536.

17. **Small, G.E.**, R.W. Sterner, and J.C. Finlay. 2014. An ecological network analysis of nitrogen cycling in the Laurentian Great Lakes. *Ecological Modelling* 293:150-160.

16. Sun, X., A.D. Kay, H. Kang, **G.E. Small**, G. Liu, X. Zhou, S. Yin, and C. Liu. 2013. Correlated biogeographic variation of magnesium across trophic levels in a terrestrial food chain. *PloS one* 8, e78444.

15. Finlay, J.C., **G.E. Small**, and R.W. Sterner. 2013. Human influences on nitrogen removal in lakes. *Science* 342: 247-250.

14. **Small, G.E.,** J.H. Duff, P.J. Torres, and C.M. Pringle. 2013. Insect emergence as a nitrogen flux in Neotropical streams: Comparisons with microbial denitrification across a stream phosphorus gradient. *Journal of Freshwater Science* 32: 1178-1187.

13. Ardón, M., J.H. Duff, A. Ramirez, **G.E. Small**, A.P. Jackman, F.J. Triska, and C.M. Pringle. 2013. Experimental acidification of two biogeochemically-distinct neotropical streams: Buffering mechanisms and macroinvertebrate drift. *Science of the Total Environment* 443: 267-277.

12. **Small, G.E.**, J.B. Cotner, J.C. Finlay, R.A. Stark, and R.W. Sterner. 2013. Nitrogen transformations at the sediment-water interface across redox gradients in the Laurentian Great Lakes. *Hydrobiologia* 731: 95-108.

11. **Small, G.E.**, G.S. Bullerjahn, R.W. Sterner, B.F.N. Beall, S. Brovold, J.C. Finlay, R.M.L. McKay, M. Mukherjee. 2013. Rates and controls of nitrification in a large oligotrophic lake. *Limnology & Oceanography* 58: 276-286.

10. **Small, G.E.**, P.J. Torres, L.M. Schweizer, J.H. Duff, and C.M. Pringle. 2013. Importance of terrestrial arthropod subsidies in lowland neotropical rain forest stream ecosystems. *Biotropica* 45: 80-87. **received 2014 Biotropica Outstanding Paper Award*

9. Sun, X., X. Zhou, **G.E. Small**, R. Sterner, H.Z. Kang, and C. Liu. 2013. Energy storage and C:N:P variation in a holometabolous insect (Curculio davidi Fairmaire) larva across a climate gradient. *Journal of Insect Physiology* 59: 408-415.

8. **Small, G.E.**, M. Ardon, A.P. Jackman, J.H. Duff, F.J. Triska, A. Ramirez, M. Snyder, and C.M. Pringle. 2012. Rainfall-driven amplification of seasonal acidification in poorly buffered tropical streams. *Ecosystems* 15: 974-985.

7. Davis, J., A.D. Rosemond, and **G.E. Small**. 2011. Increasing donor ecosystem productivity decreases terrestrial consumer reliance on a stream resource subsidy. *Oecologia* DOI: 10.1007/s00442-011-2026-9.

6. **Small, G.E.**, R. Bixby, C. Kazanci, and C.M. Pringle. 2011. Partitioning stoichiometric components of epilithic biofilm using mixing models. *Limnology & Oceanography: Methods* 9: 185-193.

5. **Small, G. E.**, M. Pyron, J.H. Duff, and C.M. Pringle. 2011. Emergent role of the fish, *Astyanax aeneus* (Characidae), as a Keystone Nutrient Recycler in low-nutrient Neotropical streams, Costa Rica. *Ecology* 92: 386-397.

4. **Small, G.E.**, J.P. Wares, and C.M. Pringle. 2011. Phosphorus limitation by a fast-growing detritivore across natural- and experimental P-gradients: evidence for adaptation to local conditions. *Limnology & Oceanography* 56: 268-278.

3. **Small, G.E.** and C.M. Pringle. 2010. Deviation from strict homeostasis across multiple trophic levels in an invertebrate consumer assemblage exposed to high chronic phosphorus enrichment in a Neotropical stream. *Oecologia* 162: 581-590.

2. **Small, G.E.**, A.M. Helton, and C. Kazanci. 2009. Can consumer stoichiometric regulation control nutrient spiraling in streams? *Journal of the North American Benthological Society* 28: 747-764.

1. **Small, G.E.**, C. M. Pringle, F.J. Triska, J.H. Duff, A.P. Jackman, M. Hidalgo, A. Ramírez, and M. Ardón. 2008. The dynamics of phosphorus retention during an eight-year P-addition in a Neotropical headwater stream. *Verhandlungen Internationale Vereinigung für theoretische und angewandte Limnologie* 30:551-554.

Other Publications and Products

Polik CA, Neumiller G, **Small GE**, Finlay JC. 2025. Minneapolis-St. Paul Metro Area lakes surface water quality characteristics. Environmental Data Initiative. https://portal.edirepository.org/nis/mapbrowse?packageid=knb-lter-msp.11.1

Ganong C, **Small GE**. 2024. Fish, forests, and phosphorus: How do tropical fish, rainforest canopies, and groundwater inputs affect stream phosphorus cycling? Online Content for

Experimental Learning of Tropical Systems.
https://qubeshub.org/community/groups/ocelots/publications?id=4811&v=1

Small GE, Finlay J, Keeler B. 2024. Como and Phalen lake ChatBot water quality and recreation text survey, 2022 and 2023. Environmental Data Initiative.
https://portal.edirepository.org/nis/mapbrowse?packageid=knb-lter-msp.6.1

Small GE, Shrestha P. 2024. Influence of soil amendment and crop species on nutrient cycling in a St. Paul urban garden, 2017-2023. Environmental Data Initiative.
https://portal.edirepository.org/nis/mapbrowse?packageid=edi.1098.3

Small GE, Shevtsov J. 2024. The Ecosystem Concept. Encyclopedia of Biodiversity (Third Edition), 6: 326-334. doi.org/10.1016/B978-0-12-822562-2.00341-8

Small GE, Hawkins S. 2024. From Vacant Land to Urban Oasis: Challenges and Opportunities in Saint Paul, Minnesota. The Nature of Cities Festival short documentary.

Reuss L, **Small GE**. 2020. Earthworm Distribution in the Schoolyard Ecosystem. *Science Scope* 43(8).

Small, GE. 2017. Water quality in the Great Lakes. In: Biodiversity, Conservation, and Environmental Management in the Great Lakes Basin. Eds. E. Freedman, M. Neuzil. Routledge.

Pringle, CM, Anderson EP, Ardon M, Bixby R, Connelly S, Duff JH, Jackman AP, Paaby P, Ramirez A, **Small GE**, Snyder M, and Triska FJ. 2015. The Riverine Ecosystems. *In*: M. Kapelle and L. Diego Gomez (eds.) *Ecosystems of Costa Rica.* University of Chicago Press, Chicago, Illinois.

Small, G.E., H. Baulch, H. Bechtold, K. Holzer, S. Newell, and R. Vaquer. Headwaters to estuaries: Complex responses to cultural eutrophication at the watershed scale. 2014. Eco-DAS IX Symposium Proceedings. Waco, TX: Association for the Sciences of Limnology and Oceanography. DOI: 10.4319/ecodas.2014.978-0-984559.

Kavanaugh, M.T., G.W. Holtgrieve, H. Baulch, J.R. Brum, M.L. Cuvelier, C.T. Filstrup, K.J. Nickols, and **G.E. Small**. 2013. A Salty Divide Within ASLO? *Limnology & Oceanography: Bulletin* 22: 34-37.

Riskin, S. H., **G.E. Small**, R. Mikkelsen, A. Bateman, J. Cooper, O. S. Hanserud, P. Haygarth, C. Lapoumadares, M. McCrackin, G. Metson, and S. Remington. 2012. Managing phosphorus in urban and agricultural landscapes. *In:* K. Wyant, J. Corman, and J. Elser (eds.) Phosphorus, Food, and Our Future. Oxford University Press.

Small, G.E. 2012. The Postdoc Dilemma. *Nature* 483: 235.

Small, G.E. 2011. Time to Tweet. *Nature* 479: 141.

Sterner, R.W., **G.E. Small**, and J. Hood. 2011. The conservation of mass. *Nature Education Knowledge* 2:11.

Presentations at National and International Meetings *(#Co-author presented; *Undergraduate advisee presented; **Undergraduate advisee co-author)*

2025. Leveraging our local long-term ecological research project for undergraduate training. Association for Environmental Studies and Sciences. June 2025. Saint Paul, MN.
2025. Phosphorus dynamics in Neotropical stream food webs: Cathy Pringle's pioneering work at La Selva Biological Station, Costa Rica. Society for Freshwater Science. San Juan, PR.
2024. Visitor perception of lake water quality in highly managed urban lakes. Minnesota Water Resources Conference. Saint Paul, MN.
2024. National Adaptation Forum. Urban agriculture as a tool for climate resilience: A case study from Minneapolis-Saint Paul. Saint Paul, MN.
2024. Rapid phosphorus removal can promote sustained decreased nitrogen concentrations in lakes, but how? Association for the Sciences of Limnology and Oceanography. Madison, WI.
2024. Visitor perception of lake water quality in highly managed urban lakes. Association for the Sciences of Limnology and Oceanography. Madison, WI.
2024. The role of phosphorus availability on nitrogen cycling: from Great Lakes to urban lakes. Association for the Sciences of Limnology and Oceanography. Madison, WI.
2023: Phosphorus recycling and loss from compost-amended urban gardens: Results from a six-year experiment. Ecological Society of America. Portland, OR.
2023: **Urban lakes in the Twin Cities Metro Area. MSP LTER Summer Symposium.
2022: Effects of alum treatment on lake nitrogen concentrations. National Association of Lake Managers annual meeting. Minneapolis, MN.
2022: **Potential for high contribution of urban gardens to nutrient export in urban watersheds. Ecological Society of America. Montreal, QC.
2022: Recycling nutrients through urban agriculture: Challenges and opportunities. The Nature of Cities Festival (online).
2021: Nutrient recycling and loss from compost applied to urban gardens. Conference on the Environment. Air & Waste Management Association: Upper Midwest Section (online).
2021: Interaction between compost amendments, soil chemistry, and microbial activity in garden soil. Ecological Society of America (online).
2020: **Urban garden evapotranspiration and potential for urban heat island mitigation. Ecological Society of America (online).
2020: **Urban heat island mitigation due to enhanced evapotranspiration in an urban garden in Saint Paul, Minnesota, USA. WIT Urban Agriculture 2020 (online).
2019: #Initial trends in ecosystem service metrics of urban agriculture in Minneapolis/St. Paul, MN. ASA, CCSA, and SSSA International Annual Meetings. San Diego, CA.
2019: #**The influence of plant species richness and top-down pest control on insect herbivory, disease, and plant productivity in urban gardens. Ecological Society of America, Louisville, KY.
2019: #Urban agriculture as a facilitator of accessible and impactful biology education.
2019: Metrics of Sustainability in urban agriculture. The Nature of Cities Summit. Paris.
2018: Quantifying nutrient recycling, recovery and loss from urban agricultural practices. Wessex Institute Urban Agriculture 2018. New Forest, UK.
2018: *Is coffee chaff an effective mulch for urban agriculture? Ecological Society of America, New Orleans, LA.
2018: #Quantifying nitrogen and phosphorus recycling, recovery and loss from urban agricultural practices. Ecological Society of America, New Orleans, LA.
2018: Quantifying nutrient recycling, recovery and loss from urban agricultural practices. 2018 Urban Food Systems Symposium, Minneapolis, MN.
2018: *Effect of water treatment residual (WTR) on phosphorus sorbtion for rain garden application. 2018 Urban Food Systems Symposium, Minneapolis, MN.

2018: *Evaluating leachate nutrient flux losses from various compost treatments in urban agriculture. 2018 Urban Food Systems Symposium, Minneapolis, MN.
2018: #Real LIFE science: Culturally-relevant curriculum for urban students. 2018 Urban Food Systems Symposium, Minneapolis, MN.
2017: Are urban gardens a source of P pollution? SETAC North America. Minneapolis, MN.
2017: *Measuring the fate of P lost through leachate from urban gardens. SETAC North America. Minneapolis, MN.
2017: *Assessing the nutrient imbalance from compost application in urban agriculture. Ecological Society of America. Portland, OR.
2017: *Assessment of the current state of the field of urban ecology and its alignment with the information needs of municipal sustainability workers. Ecological Society of America. Portland, OR.
2017: **Quantifying nutrient recycling and loss in urban agriculture. Ecological Society of America. Portland, OR.
2016: Nutrient recycling and loss from urban agriculture. Twin Cities Urban Agriculture Research Workshop. Minneapolis, MN.
2015: Stewardship Science: Connecting undergraduate-led sustainability research with community service. The Association for the Advancement of Sustainability in Higher Education, Minneapolis, Minnesota.
2015: **Hydroponic gardens as a mitigation strategy for nutrient pollution in urban lakes. Ecological Society of America, Baltimore, Maryland.
2015: #Insights from the 25+ year dataset in lowland Costa Rica: Effects of hydrologic connectivity from the mountains to the sea on stream ecosystems of an inland protected area. Ecological Society of America, Baltimore, Maryland.
2015: * Yield benefits and environmental costs of different compost sources on urban garden plots. Ecological Society of America, Baltimore, Maryland.
2015: *Assessing how the ratio of wood chips to food waste in compost affects rates of microbial processing. Ecological Society of America, Baltimore, Maryland.
2014: #Climate-driven changes in riverine inputs affecting the stoichiometry of Earth's largest lake. American Geophysical Union, San Francisco, Callifornia.
2014: Quantifying nutrient processing rates in a freshwater estuary using a hydrologic mixing model. Joint Aquatic Science Meeting, Portland, Oregon.
2014: # Sediment properties control denitrification rates in a Lake Superior freshwater estuary. Joint Aquatic Science Meeting, Portland, Oregon.
2013: #Slow changes in a large lake: Trends in carbon and nutrient pools in Lake Superior. American Geophysical Union, San Francisco, Callifornia.
2013: *Community gardens as neighborhood compost sites: a cost-benefit analysis. Ecological Society of America, Minneapolis, Minnesota.
2013: *Turning food waste into food: Measuring carbon, nitrogen, and phosphorus efficiency in coupled vermicomposting-aquaponics systems. Ecological Society of America, Minneapolis, Minnesota.
2013: Climate-driven acidification in lowland Neotropical streams: Insights from a 25-year dataset on groundwater-surface water interactions. Ecological Society of America, Minneapolis, Minnesota.
2013: *Response of phytoplankton to nutrient loading in an urban, freshwater estuary. ESA 2013. Ecological Society of America, Minneapolis, Minnesota.
2013: #Denitrification patterns of the Saint Louis River Estuary. Ecological Society of America, Minneapolis, Minnesota.
2012: Denitrification along a biogeochemical gradient in the Laurentian Great Lakes. Association for the Sciences of Limnology and Oceanography, Lake Biwa, Japan.

2011: Effects of anthropogenic stressors on carbon transport and processing in tropical rivers: Current understanding and knowledge gaps. American Society of Limnology and Oceanography, San Juan, Puerto Rico.
2011: #Controls over denitrification in sedimentary environments of Lake Superior. International Association of Great Lakes Research, Duluth, Minnesota.
2011: High Areal nitrification rates in Lake Superior. International Association of Great Lakes Research, Duluth, Minnesota.
2010: Amplification of seasonal acidification in poorly-buffered neotropical streams following an historically large ENSO Event. Ecological Society of America, Pittsburgh, Pennsylvania.
2010: Phosphorus retention in a lowland Neotropical stream following an eight-year phosphorus enrichment experiment. American Society of Limnology and Oceanography and the North American Benthological Society, Santa Fe, New Mexico.
2010: Adaptive response of stream detritivores to nutrient heterogeneity of food resources. Gordon Research Conference on Metabolic Basis of Ecology, Biddeford, Maine.
2009: Are terrestrial insects an important nutrient subsidy in Neotropical headwater streams? Ecological Society of America, Albuquerque, New Mexico.
2009: Diet strategy and body stoichiometry create keystone nutrient recyclers in low-nutrient streams. North American Benthological Society, Grand Rapids, Michigan.
2008: What are the effects of chronic phosphorus loading over millennia on food web stoichiometry? North American Benthological Society, Salt Lake City, Utah.
2008: Exploring the other side of the spiral: Stoichiometric control of nutrient cycling in stream ecosystems. Gordon Research Conference on Metabolic Basis of Ecology, Biddeford, Maine.
2007: Effects of food quality on nutrient storage and retention in a freshwater invertebrate consumer. American Society for Limnology and Oceanography, Santa Fe, New Mexico.
2007: Phosphorus dynamics during an eight-year P-addition in a Neotropical headwater stream. Congress of the International Society of Limnology, Montreal, Canada.
2006: Estimating the P-content in epilithon components across a natural phosphorus gradient using mixing models. North American Benthological Society, Columbia, South Carolina.
2006: Using descriptive ecosystem models to compare the importance of Consumer Nutrient Recycling in high- and low-phosphorus Neotropical streams. North American Benthological Society, Anchorage, Alaska.

Invited Lectures
2025 City as Lab Research Coordination Network, Arizona State University, Tempe, AZ
2025 Urban-Rural Systems Research Coordination Network, Davenport, IA
2024 City as Lab Research Coordination Network, NJ Institute of Technology, Newark, NJ.
2024 Wayne State University, Detroit, MI.
2023 Linköping University, Linköping, Sweden
2020 Selim Center, University of St. Thomas, St. Paul, MN
2019 University of Minnesota Institute on the Environment
2019 City of Shoreview MN Environmental Speaker Series
2019 Finn Legacy Society, University of St. Thomas, St. Paul, MN

2017 University of Minnesota, Department of Ecology, Evolution and Behavior. St. Paul, MN
2016 Hamline University, Biology Department, St. Paul, MN
2015 Ramsey County Master Gardeners
2012 University of St. Thomas, Saint Paul, MN
University of Florida, Gainesville, FL
Kent State University, Kent, OH
Colby College, Waterville, ME
2011 Keene State College, Keene, NH
2010 Lake Superior Winter Gala, St. Paul, MN
Diversity, Evolution, and Genetics Seminar Series, UGA
2008 Gordon Research Seminar, Metabolic Basis of Ecology
2006, 2007 La Selva Biological Station, Costa Rica

Other Awards

- 2014 *Biotropica* Outstanding Paper Award
- 2011 Excellence in Research Award by Graduate Students in Life Sciences, UGA
- Best Student Paper, 2010 UGA Ecology Graduate Research Symposium
- Best Oral Presentation in Basic Research (Runner-up), 2009 North American Benthological Society Meeting
- Best Student Paper (Runner-up), 2008 UGA Ecology Graduate Research Symposium
- ASLO Early Career Travel Award, 2010
- Odum School of Ecology Travel Award, 2009, University of Georgia
- Emerging Leaders Program, 2007, University of Georgia Graduate School
- Post-Course Research Award, Organization for Tropical Studies

Teaching related grants and awards
2023: Project OCELOTS (Online Content for Experiential Learning of Tropical Systems) module development
2022: Project EDDIE (Environmental Data-Driven Inquiry & Exploration) workshop and module development
2021: STEM Inclusive Advising Training
2016: Engaged Scholar, UST Office of Sustainability Initiatives. ($5,300)
2015: Faculty Learning Community facilitator: Creating Self-Regulated Learners
2014: Campus Sustainability Fund Grant. *Growing science: An interdisciplinary project to develop urban agriculture research, education, campus nutrition, and urban renewal.* ($21,450)
2013: College of Arts and Sciences Environmental Stewardship Curriculum Grant. *Integrating Systems Thinking Activities into "The Biology of Sustainability".* ($1,000)
2012: Campus Sustainability Fund Grant. *Using Service Learning to Increase Visibility of Sustainability at UST*. G. Small, A. Kay, M. Dahmus, and D. Martinović-Weigelt ($5,600)
2012: Campus Sustainability Fund Grant. *Developing the UST Stewardship Garden to Enhance Undergraduate-Led Research in Sustainability Science*. A. Kay, D. Martinović-Weigelt, and G. Small ($4,125)
2011: Education Scholar, Ecological Society of America

Mentoring

Postdocs:

Paliza Shrestha (2018-2019)

Graduate students:

Dissertation committee member for Erin Mittag, University of Minnesota (2017-2024)
Co-advisor for Paulien van de Vlasakker, Linköping University, Sweden (2020-2023)
Dissertation committee member for Jennifer Nicklay, University of Minnesota (2019-2025)
Dissertation committee member for Carissa Ganong, University of Georgia (Ph.D. 2015)

Undergraduate Research Students:

- Isaac Nowak, Clara Schimnowski (2025). *Measuring parameters associated with water quality perception in urban lakes.*
- Ryan Eatchel, Jack Karlen, Fatou Ndiaye, Lauren Retzer, Alana Wick. *Measuring ecosystem services from urban agriculture.*
- Fru Donatus Junior (2025): UST Ignite Scholar Grant. In situ *Microbial respiration rates in compost-amended garden soil.*
- Olivia Abraham (2025): *Modeling urban lake oxygen dynamics.*
- Madison Sherrill (2024-2025): *Modeling the effects of climate change on ecosystem services provided by urban agriculture.*
- James Faul (2024-25): *Effects of lake morphometry on chloride retention in urban lakes.*
- Celia Nordling, Batriyo Ali, Lukas Struss (2024): *Visitor perception of urban lake water quality.*
- Connor Cieminski (2024): *Simulating effects of road salt inputs on lake stratification using the GLM-AED lake model.*
- Ben Johnson (2023-24): *Using the GLM-AED lake model to simulate changes in urban lakes.*
- Tony Graham, Makayla Melchior, Shukri Sheikh, Ellie Sizemore, Madison Sherrill, Maya Rmeiti, Tom Park (2023): *Quantifying nutrient recycling efficiency in urban gardens.*
- Megan West, Joe Bergeron (2023): *Measuring parameters associated with water quality perception in urban lakes.*
- Luis Osorio (2022): *Identifying and correcting structural racism in managing environmental risks and sharing environmental benefits in the Twin Cities Metro.*
- Ethan Lynch, Maria Kisch (2022) UST Sustainability Scholar Grant ($4,000): *Effects of garden soil amendments on the soil microbial community. Co-advised by Dr. Carolyn Zeiner.*
- Ryan Hemenway, Frank Marchio, Megan Goodsell, Mae Macfarlane, Mary Holst (2021): *Quantifying nutrient recycling efficiency in urban gardens.*
- Katie McGinnis (2021), UST Sustainability Scholar Grant ($4,000): *Measuring nitrogen retention in urban lakes.*
- BJ Huls (2020), UST Sustainability Scholar Grant ($4,000): *Assessing potential water savings from campus irrigation. Co-advised by Dr. Tom Hickson.*
- Marisa Smedsrud and Ivan Jimenez (2020), UST Center For Applied Mathematics Fellowship: *Modeling urban garden nutrient dynamics*.
- Griffin Swenson (2019), UST Sustainability Scholar Grant ($4,000): *Effects of garden soil amendments on the soil microbial community. Co-advised by Dr. Carolyn Zeiner.*
- Michael Salzl, Spencer Wihlm, Erin Mahre, Jenna Abrahamson, Madison Dielhe, Ivan Jimenez (2018-2019): *Measuring capacity of water treatment residual to retain phosphorus from raingardens.*

- Megan Hay, Michael Salzl, Erin Mahre, Ryan Avenido, Haley Dare (2019): *Quantifying nutrient recycling efficiency in urban gardens.*
- Spencer Wihlm, Emma Smith, Tove Conway, Sophia Brown, Christian Heisler, Isabella Granse (2019): *Effects of crop diversity on resistance to damage from insects and plant pathogens. Co-advised by Dr. Adam Kay.*
- Megan Hay, Karl Buttel, Sunita Dharod, Michael Salzl, Spencer Wihlm, Alyssa Gilmore, Erin Mahre, Jenna Abrahamson (2018): *Quantifying nutrient recycling efficiency in urban gardens.*
- Courtney Pelissero, Megan Deppa, JP Fisher, Jake Walters, Meagan McFarlin, Sarah Schwabenbauer (2018): *Effects of crop diversity on resistance to damage from insects and plant pathogens. Co-advised by Dr. Adam Kay.*
- Hannah Wallace (2018): *Community education and outreach through urban agriculture.*
- Tyler Schmitt, Megan Hay, Isabelle Tjokrosetio, Katie Dennis, Cari Monroe, Garret Pahl, Alex Guzman, and Will Kreuser (2017): *Quantifying nutrient recycling efficiency in urban gardens. Co-advised by Dr. Adam Kay.*
- Sara Osborne (2017): *Measuring the fate of phosphorus leachate in urban gardens.*
- Katherine Connelly (2017): *A survey of nutrient management practices in urban gardens in the Twin Cities.*
- Anneliese Johnson (2017), UST Sustainability Scholar Grant ($4,000): *Comparison of lysimeter designs. Co-advised by Dr. Adam Kay.*
- Courtney Pelissero (2017), UST Sustainability Scholar Grant ($4,000): *Investigating the use of coffee chaff as a soil amendment in urban gardens. Co-advised by Dr. Adam Kay.*
- Gwen Miller and Rowan Humer (2017): *Measuring compost nutrient loss and retention in an urban park reclamation project. Co-advised by Dr. Adam Kay.*
- Brittany Allen (2016): *Effects of spatial configuration of pollinator gardens on pollinator diversity.*
- Zachary Beckman and Brandon Paulson (2016): *Nutrient loss rates for compost application in community gardens.*
- Casey Clemenson (2016): *Measuring nitrogen loss rates from Minnesota wetlands.*
- Jenny Walz (2015-2016): *Effects of soil organic matter on microbial activity. Co-advised by Dr. Adam Kay.*
- Kristen Bastaug (2015), UST Young Scholars Grant ($4,000): *Evaluating the effects of compost types on vegetable production. Co-advised by Dr. Adam Kay.*
- Jessica Brown (2014), UST Young Scholars Grant ($4,000): *Measuring nutrient limitation in urban lake hydroponic gardens.*
- Quinn Neiderleucke (2014-2016): *Meauring denitrification rates in an urban lake.*
- Tanner Ruprecht (2014): *Quantifying nutrient loss through leachate from urban gardens.*
- Brendan Sisombath (2014-2015): *Assessing how composition of compost affects rates of microbial processing.*
- Isaac Bergstrom (2013): *Optimizing nutrient use efficiency in aquaponics systems.*
- Meaghan Hunt (2013), UST Community Research Award ($4,000): *Optimizing soil fertility for the Youth Farm and Market Project.*
- Lauren Reuss (2013-2015): *Measuring nutrient Limitation in the St. Louis River Estuary.*
- Louis Sand (2013), UST Young Scholars Grant ($4,000): *Using Hydroponics for Bioremediation in Urban Lakes: A Feasibility Study.*
- Alyssa Schroeder (2013), UST Collaborative Inquiry Grant ($1,000): *Measuring the Carbon Footprint of UST Students.*
- Martin Sicam (2013): *Developing FV-COM Model for St. Louis River Estuary*.
- Laura Willson (2013), NSF-REU Supplement ($7,245), UST Collaborative Inquiry

High School research students:

- Jennifer Trinidad Osorio (2023-2025): *Quantifying nutrient recycling efficiency in urban gardens.*
- Roxy Neset, Orono High School (2021): *Role of soil amendments on weed diversity in urban gardens.*
- Angela Zbaracki, Benilde-St. Margaret's High School (2021): *Quantifying nutrient recycling efficiency in urban gardens.*
- Wilmar Camposeco, Cristo Rey Jesuit High School (2019-2022): *Quantifying nutrient recycling efficiency in urban gardens.*
- Ayres Warren, Christina Radichel, Breck School (2020): *Testing for potassium limitation in compost-amended urban garden soil.*
- Louise Kim, Darlene Radichel, Breck School (2018): *Effects of urban garden soil amendments on microbial metabolic diversity.*
- Ivan Jimenez, Cristo Rey Jesuit High School (2016-2018): *Quantifying nutrient recycling efficiency in urban gardens.*
- Christiana Wilke, David Ahrens, and Cas Roland, Breck School (2017): *Effects of precipitation intensity and soil amendments on nutrient leachate in urban gardens.*
- Julie Erickson, Courtney Mohs, and Samantha Smalley, Academy of Holy Angels (2017): *Dried food waste as a substitute for compost in urban gardens.*
- Cassidy Yueh and Alex Guzman, Breck School (2015): *Can fish waste be used to power aquaponics systems? Received 3rd place out of 191 entries at regional science fair, 3M Inventor Award, 3M Renewable Energy Award, US Navy/Marine Office of Naval Research Award, presented at 2016 International Word Energy, Engineering, and Environment Project, presented at 2016 International Science and Engineering Fair*

Professional Service

Reviewer for journals:

Agriculture
Agronomy
American Midland Naturalist
Aquatic Ecology
Biogeochemistry
Biogeosciences
Biological Invasions
BioScience
Biotropica
Can. Journal of Fisheries and Aquatic Sciences
Catena
City and Environment Interactions
Communications Earth & Environment
Ecological Applications
Ecological Engineering
Ecological Modeling
Ecology
Ecology Letters
Global Biogeochemical Cycles
Global Environmental Change
Hydrobiologia
Insect Conservation and Diversity
Journal of Environmental Management
Journal of Environmental Sciences
Journal of Hydrology
Lake & Reservoir Management
Lakes and Reservoirs
Land Use and Urban Planning
Nature Knowledge
Oecologia
Oikos
PLOS-ONE
Recycling
Renewable Agriculture and Food Systems
Science of the Total Environment
Urban Ecology

Ecosphere
Ecosystems
Environment and Sustainability Indicators
Environmental Challenges
Environmental Modelling and Software
Environmental Monitoring and Assessment
Environmental Pollution
Environmental Technology & Innovation
Freshwater Biology
Freshwater Science
Frontiers in Ecology and the Environment
Frontiers in Sustainable Food Production
Geophysical Research Letters
Urban Forestry & Urban Greening
Waste Management
Water
Water Resources Research
Water Science and Technology
Wetlands

Grant reviewer:
National Science Foundation
U.S. Environmental Protection Agency
University of Minnesota Institute on the Environment
University of Minnesota Water Resources Program
Wisconsin Water Resources Institute

Additional activities:
Diversity, Equity, and Inclusion Committee, MSP LTER (2022-2023)
Environmental Stewardship Institute Mentor, Friends of the Mississippi River (2021)

Aquatic Section Secretary, Ecological Society of America (2019-2021)
Guest associate editor, Frontiers in Sustainable Food Systems Special Issue on Agroecology and Ecosystem Services. (2019-2020)
Member of International Scientific Advisory Committee: Wessex Institute 2nd International Conference on Urban Agriculture and City Sustainability. (2019-2020)
Produced report for The Freshwater Society on urban agriculture as green infrastructure. (2017)
Produced report for Mississippi Watershed Management Organization on stormwater benefits of urban agriculture. (2016)
Produced report for Mississippi Watershed Management Organization assessing gaps in pollinator gardens in Twin Cities. (2016)
Produced report for City of Elk River assessing costs-benefits of implementing a green roof at city's wastewater treatment plant. (2016)
Produced report for City of Saint Paul analyzing feasibility of using community gardens as neighborhood composting sites. (2013)
Collaboration with Healing Haiti to optimize food production efficiency in their aquaponics systems. (2013)
Reviewers for Life Discovery-Doing Science Conference, Ecological Society of America
Careers columnist for *Nature*. (2011).
Co-organizer of special session at ASLO Aquatic Sciences Meeting: "Effects of Global Change on Carbon Transport and Processing in Tropical Freshwater Ecosystems". (2011)
Served on Science Committee for NSF-RCN, "Changes in Tropical Forests", Organization for Tropical Studies. (2011)
Co-organizer of NSF-RCN funded workshop: "Carbon Transport and Processing in Tropical Streams and Rivers". (2010)
Co-organizer of special session at annual meeting of Ecological Society of America: "Alternate Ecology: An Exploration of Ecological Counterfactuals" (2009)
Mentor-student relations committee co-chair, North American Benthological Society. (2008)
Co-chair, Graduate Student Symposium, Odum School of Ecology. (2008)
Organized graduate student workshop at annual meeting of the North American Benthological Society: "Maintaining Ecosystem Services in an Urbanizing Watershed." (2007)
Graduate student representative to Institute of Ecology faculty. Served on search committee for director of Institute of Ecology. (2006-2007)
Volunteer for UGA Center for Undergraduate Research Opportunities (CURO). Led workshops on scientific writing, reviewed abstracts, and convened oral sessions. (2005-2009)
Coordinated undergraduate poster symposium (2005-2006) and program committee (2007) for Institute of Ecology Graduate Research Symposium.
Hosted Science and Math program on local television station. (2001-2003).
Coached Science Olympiad Team at Broughton High School (2001-2003).
Volunteer, N.C. Science Olympiad (2000) and N.C. Ocean Science Bowl (2001).

Service to the University of St. Thomas
Faculty Development Committee (2024-present)
Division Director, Science and Math (sabbatical replacement, 2024)
Faculty Affairs Committee (2020-2024)
Faculty Leadership Fellows Program (2019-2020)
Faculty Senate (2016-2021)
Coordinator, First-Year Experience Environmental Sustainability Theme-Based Learning Community (2020-2024)
Environmental Science Program Director (2020-2023)

Environmental Science Advisory Board (2014-present)
Biology Department Assessment Committee (2015-present)
Student Life Committee faculty representative (2015-2019)
Teacher Education Partnership Committee (2012-present)
Epidemiologist Hiring Committee (2014)
Computational Biologist Hiring Committee Chair (2016)
Clinical faculty positions Hiring Committee (2016)
College of Arts and Sciences Curriculum Committee (sabbatical replacement, 2015)
University Curriculum Committee (sabbatical replacement, 2014)