

Silvia Santa Maria Newell
(formerly Bulow)
U.S. CITIZEN
Director, Michigan Sea Grant
Professor, School of the Environment and Sustainability
University of Michigan, Ann Arbor, MI
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EDUCATION:

2010 Ph.D. in Geosciences, Princeton University, NJ
2007 M.A. in Geosciences, Princeton University, NJ
2004 A.B., Smith College, Northampton, MA; cum laude with Highest Honors
in Biogeochemistry

PROFESSIONAL EXPERIENCE:

2023-present Director, Michigan Sea Grant
Professor, School of the Environment and Sustainability, University of
Michigan, Ann Arbor, MI
2022-2023 Professor, Earth and Environmental Sciences, Wright State University,
Dayton, OH
2018-2022 Associate Professor, Earth and Environmental Sciences, Wright State
University, Dayton, OH
2014-2018 Assistant Professor, Earth and Environmental Sciences, Wright State
University, Dayton, OH
2012-2014 NSF Postdoctoral Research Fellow with Dr. Robinson Fulweiler, Boston
University, Boston, MA
2010-2012 Postdoctoral Researcher and Teaching Fellow with Dr. Lars Hedin,
Princeton University, Princeton, NJ
2005-2010 NSF Graduate Research Fellow with Dr. Bess Ward, Princeton University
2004-2005 Fulbright Scholar, Monteverde Institute, Costa Rica
2003-2004 Honors Thesis at Smith College with Dr. Amy Rhodes, Northampton,
(MA)

SCHOLARHIP

Citations 3493, h-index 25, i10-index 32

REFEREED PUBLICATIONS:

Despins, M.C., Mason, R.P., Aguilar-Islas, A.M., Hammerschmidt, C.R. and **S.E. Newell**. 2023. Linked mercury methylation and nitrification across oxic sub-polar regions. *Frontiers in Inorganic Chemistry. Special Issue on Environmental Chemistry of Mercury: Sources, Pathways, Transformations and Impact*.
Jacquemin, S.J., Doll, J.C., Johnson, L.T., and **S.E. Newell**. 2023. Exploring long-term trends in microcystin toxin values associated with persistent harmful algal blooms in Grand Lake St Marys. *Harmful Algae*, 122, 102374

- Reed*, M.H., Strobe*, E.K., J.A. Myers*, **S.E. Newell**, and M.J. McCarthy. 2022. Effects of filtration timing and pore size on measured nutrient concentrations in natural waters. *Limnology and Oceanography Methods*, <https://doi.org/10.1002/lom3.10529>
- Jacquemin, S.J., Birt, J., Senger, Z., Axe, B., Strang, B., Ewing, C., and **S.E. Newell**. 2022. On the Potential for Reconstructed Wetlands to Remediate Fecal Coliform Loading in an Agricultural Watershed. *Hydrobiologia*, <https://doi.org/10.1007/s10750-022-05078-2>
- Starr*, L.S., Mark J. McCarthy, M.J., Hammerschmidt, C.R., Subramaniam, A., Despins*, M.C., Montoya, J.P., and **S.E. Newell**. (2022) Mercury methylation linked to nitrification in the tropical North Atlantic Ocean. *Marine Chemistry*, 104174.
- Hoffman*, D.K., McCarthy, M.J., Boedecker*, A.R., Myers*, J.A., and **S.E. Newell**. 2022 Internal nitrogen loading supports cyanobacterial harmful algal blooms in western Lake Erie. *Limnology and Oceanography*, 67(9), 2028-2041
- Heiss, E.M., Reed*, M.H., and **S.E. Newell**. 2022 Ammonia oxidizing archaea and ammonium concentration as drivers of nitrification in a protected freshwater lake. *Freshwater Science*, 41(4)
- Cremona, F., Öglü, B., McCarthy, M. J., Newell, S. E., Nöges, P., & Nöges, T. (2021). Nitrate as a predictor of cyanobacteria biomass in eutrophic lakes in a climate change context. *Science of The Total Environment*, 151807.
- Pound, H.L., R.M. Martin, C.S. Sheik, M.M. Steffen, **S.E. Newell**, G.J. Dick, R.M.L. McKay, G.S. Bullerjahn, & S.W. Wilhelm (2021) Environmental studies of cyanobacterial harmful algal blooms should include interactions with the dynamic microbiome. *Environmental Science & Technology*, in press.
- Sepp⁺, M., Kõiv, T., Nöges, P., Nöges, T., **Newell, S.**, and M. McCarthy (2021) Catchment soil characteristics predict organic carbon, nitrogen, and phosphorus levels in temperate lakes. *Freshwater Science*, 41(1)
- Xu, H., McCarthy, M.J., Paerl, H.W., Brookes, J.D., Zhu, G., Hall, N.S., Qin, B., Zhang, Y., Zhu, M., Hampel, J.J., **Newell, S.E.**, Gardener, W.S. (2021) Contributions of external nutrient loading and internal cycling to cyanobacterial bloom dynamics in Lake Taihu, China: Implications for nutrient management. *Limnology & Oceanography*, 1-18. doi: 10.1002/lno.11700
- Hampel*, J.J., M.J. McCarthy, S.L. Aalto, and **S.E. Newell**. (2020) Hurricane disturbance increased nitrification and altered the ammonia oxidizer community in Lake Okechobee and St. Lucie Estuary (Florida). *Frontiers in microbiology*, 11, 1541.
- Vieillard*, A.M., **Newell, S.E.**, and S. Thrush. (2020) Recovering from Bias: A call for further study of under-represented tropical and low-nutrient estuaries. *Journal of Geophysical Research: Biogeosciences*, 125(7), e2020JG005766
- Boedecker*, A.R., Niewinski*, D.N., **Newell, S.E.**, Chaffin, J.C., and M.J. McCarthy. (2020) Evaluating sediments as an ecosystem service in western Lake Erie via quantification of nutrient cycling pathways and selected gene abundances. ELLS-IAGLR special issue, *Journal of Great Lakes Research*, 46(4), 920-932.
- Mullen*, K., **Newell, S.E.**, McCarthy, M.J., and C.R. Hammerschmidt. (2020) External sources inhibit benthic phosphorus fluxes in the Lower Great Miami

- River, southwest Ohio. *Environmental Toxicology and Chemistry*,
<https://doi.org/10.1002/etc.4746>
- Newell S.E.**, Wilhelm S.W., McCarthy M.J. (2020) Nutrient Cycling. In: Gargaud M. et al. (eds) *Encyclopedia of Astrobiology*. Springer, Berlin, Heidelberg,
https://doi.org/10.1007/978-3-642-27833-4_5412-1
- Hampel*, J. J., McCarthy, M. J., Reed, M. H., & Newell, S. E. (2019). Short term effects of Hurricane Irma and cyanobacterial blooms on ammonium cycling along a freshwater–estuarine continuum in south Florida. *Frontiers in Marine Science*, 6, 640.
- Paerl, H.W., Havens, K.E., Xu, H., Zhu, G., McCarthy, M.J., **Newell, S.E.**, Scott, J.T., Hall, N.S., Otten, T., and B. Qin. (2019) Mitigating eutrophication and toxic cyanobacterial blooms in large lakes: The evolution of a dual nutrient (N and P) reduction paradigm. *Hydrobiologia*, 847(21), 4359-4375.
- Hoffman*, D.K., McCarthy, M.J., **Newell, S.E.**, Gardner, W.S., Niewinski*, D. N., Gao*, J., Mutchler, T.R. (2019) Relative contributions of DNRA and denitrification to nitrate removal in *Thalassia testudinum* seagrass beds in coastal Florida (USA). *Estuaries and Coasts*, 42(4), 1001-1014
- Hampel*, J.J., M.J. McCarthy, M. Neudeck, G.S. Bullerjahn, R.M.L. McKay, and **S.E. Newell**. (2019) Ammonium recycling supports toxic *Planktothrix* blooms in Sandusky Bay, Lake Erie: evidence from stable isotope and metatranscriptome data. *Harmful Algae*, 81, 42-52.
- Newell, S. E.**, Davis, T. W., Johengen, T. H., Gossiaux, D., Burtner, A., Palladino, D., and M. J. McCarthy. (2019) Reduced forms of nitrogen are a driver of non-nitrogen-fixing harmful cyanobacterial blooms and toxicity in Lake Erie. *Harmful Algae*, 81, 86-93.
- Hampel*, J. J., McCarthy, M. J. Gardner, W. S., Lu, Z., Xu, H., Guangwei Zhu, G., and **S. E. Newell**. (2018). Nitrification and ammonium dynamics in Lake Taihu, China: seasonal competition for ammonium between nitrifiers and cyanobacteria. *Biogeosciences*, 15(3), 733.
- Slone*, L. A., McCarthy, M. J., Myers*, J. A., Hammerschmidt, C. R., and **S. E. Newell**. (2018). River sediment nitrogen removal and recycling within an agricultural Midwestern USA watershed. *Freshwater Science*, 37(1)
- Gardner, W. S., **Newell, S. E.**, McCarthy, M. J., Hoffman*, D. K., Lu, K., Lavrentyev, P. J., ... & Paerl, H. W. (2017). Community Biological Ammonium Demand: A Conceptual Model for Cyanobacteria Blooms in Eutrophic Lakes. *Environmental Science & Technology*, 51(14), 7785-7793.
- Zheng, Y., Hou, L., Liu, M., **Newell, S. E.**, Yin, G., Yu, C., ... & Wang, R. (2017). Effects of silver nanoparticles on nitrification and associated nitrous oxide production in aquatic environments. *Science Advances*, 3(8), e1603229.
- Newell, S. E.**, McCarthy, M. J., Gardner, W. S., & Fulweiler, R. W. (2016). Sediment Nitrogen Fixation: a Call for Re-evaluating Coastal N Budgets. *Estuaries and Coasts*, 1-13.
- Paerl, H.W., Gardner, W.S., Havens, K.E., Joyner, A.R., McCarthy, M.J., **Newell, S.E.**, Qin, B. and J.T. Scott. (2016). Mitigating cyanobacterial harmful algal blooms in aquatic ecosystems impacted both by climate change and anthropogenic nutrients. *Harmful algae*, 54, 213-222.

- Newell, S.E.,** Pritchard*, K., and R.W. Fulweiler. (2016). Sediment *nifH* expression in a Temperate New England Estuary. *PeerJ*, 4, e1615.
- Paerl, H. W., Scott, J.T., McCarthy, M.J., **Newell, S.E.**, Gardner, W.S., Havens, K.E., Hoffman*, D.K., Wilhelm, S.W. and Wurtsbaugh, W.A., (2016). It Takes Two to Tango: When and Where Dual Nutrient (N & P) Reductions Are Needed to Protect Lakes and Downstream Ecosystems. *Environmental Science & Technology*, 50(20), 10805-10813.
- McCarthy, M. J., **Newell, S. E.**, Carini, S. A., & Gardner, W. S. (2015) Denitrification Dominates Sediment Nitrogen Removal and Is Enhanced by Bottom-Water Hypoxia in the Northern Gulf of Mexico. *Estuaries and Coasts*, 1-16.
- Fulweiler, R. W., Heiss, E. M., Rogener, M. K., **Newell, S. E.**, LeClerc, G. R., Kortebein, S. M., & Wilhelm, S. W. (2015) Examining the impact of acetylene on N-fixation and the active sediment microbial community. *Frontiers in Microbiology*, 6.
- Small, G., Baulch, H., Bechtold, H., Holzer, K., **Newell, S.**, and R. Vaquer. (2014) Headwaters to estuaries: Complex responses to cultural eutrophication at the watershed scale. *EcoDAS X Symposium Proceedings*, ASLO.
- Newell, S.E.**, Damien Eveillard, D., McCarthy, M.J., Gardner, W.S., Liu, Z. and B.B. Ward. (2014) A shift in the archaeal nitrifier community in response to natural and anthropogenic disturbances in the northern Gulf of Mexico. *Environmental Microbiology Brief Reports*. DOI: 10.1111/1758-2229.12114
- Newell, S.E.**, Fawcett, S. E. and B.B. Ward. (2013) Depth Distribution of Ammonia Oxidation Rates and Ammonia-Oxidizer Community Composition in the Sargasso Sea. *Limnology and Oceanography*, 58: 1491-1500.
- Hou, L., Zheng, Y., **Newell, S.**, Liu, M., Zhou, J., Zhao, H., You, L., and X. Chen. (2013) Community Dynamics and Activity of Ammonia-oxidizing Prokaryotes in Intertidal Sediments of the Yangtze Estuary. *Applied and Environmental Microbiology*, AEM-03035.
- Newell, S.E.**, Babbitt, A., Jayakumar, A. and B.B. Ward. (2011) Ammonia oxidation rates and nitrification in the Arabian Sea. *Global Biogeochemical Cycles*, 25(4)
- Rhodes, A. L., A. J. Guswa, and **S. E. Newell**. (2010) Using stable isotopes to identify orographic precipitation events in Monteverde, Costa Rica. In: *Mountains in the Mist: Science for Conservation and Management of Tropical Montane Cloud Forests*. L. A. Bruijnzeel, J. Juvik, F. N. Scatena, L. S. Hamilton & P. Bubb (eds.) Cambridge University Press. Cambridge, UK
- Bulow, S.E.**, Rich, J.J., Naik, H., Pratihary, A., and B.B. Ward. (2010) Denitrification exceeds Anammox as a nitrogen loss pathway in the Arabian Sea Oxygen Minimum Zone. *Deep Sea Research I*, 57: 384-393
- Ward, B.B., Devol, A. H., Rich, J.J., Chang, B.X., **Bulow, S.E.**, Naik, H., Pratihary, A. and A. Jayakumar (2009) Denitrification as the dominant nitrogen loss process in the Arabian Sea. *Nature* 461:78-81
- Bulow, S.E.**, Francis, C.A., Jackson, G., and B.B. Ward (2008) Sediment denitrifier community composition and *nirS* gene expression investigated with functional gene microarrays. *Environmental Microbiology* 10: 3057-3069

- Guswa, Andrew J., A. L. Rhodes, and **S. E. Newell** (2007) Importance of dry-season orographic precipitation to the water resources of Monteverde, Costa Rica. *Advances in Water Resources*, 30:2098-2112
- Rhodes, A.L., Guswa, A.J., and **Newell, S.E.** (2005) Seasonal variations in the stable isotopic composition of precipitation in the tropical montane forests of Monteverde, Costa Rica. *Water Resources Research* 42, W11402
- Green, W. J, Stage, B.R., Preston, A., Wagers, S., Shacat, J. and **Newell, S.** (2005) Geochemical Processes in the Onyx River, Wright Valley, Antarctica: Major Ions, Nutrients, Trace Metals. *Geochimica et Cosmochimica Acta* 69:839-850
- Green, W.J., Stage, B.R., Bratina, B.J., Wagers, S., Preston, A., O'Bryan, K., Shacat, J. and **Newell, S.** (2004) Nickel, Copper, Zinc and Cadmium Cycling with Manganese in Lake Vanda (Antarctica). *Aquatic Geochemistry* 10:303-323
- Shacat, J.A., Green, W.J., **Newell, S.** and DeCarlo, E.H. (2004). The Geochemistry of Lake Joyce, McMurdo Dry Valleys, Antarctica. *Aquatic Geochemistry*, 10:325-352 **R**

*designates undergraduate or graduate advisee, +Postdoctoral advisee

PUBLICATIONS IN REVIEW

- Tammeorg, et al. Sustainable Lake Restoration: from Challenges to Solutions. *WIREs Wiley Interdisciplinary Reviews*.
- Starr, L.D., McCarthy, M.J., Hammerschmidt, C.R., Zastepa, A., and **S.E. Newell**. Mercury concentrations, river fluxes, and potential methylation rates in Lake Erie. Special issue on Lake Erie in *Aquatic Ecosystem Health and Management*
- Hoffman, D.K., McCarthy, M.J., Boedecker, A.R., Zastepa, A., Johengen, T., and **S.E. Newell**. Nitrification in the water column of Lake Erie. Special issue on Lake Erie in *Aquatic Ecosystem Health and Management*

NON-REFEREED PUBLICATIONS

- Newell, S.E.**, Winslow, C., McKay, R.M., Fussell, K. (Editors). 2022. Cooperative Science & Monitoring Initiative. Lake Erie 2024 Cooperative Science and Monitoring Initiative Kickoff Workshop. Proceedings of a Workshop held at Maumee State Park Lodge and Convention Center, Oregon, OH, August 15-16, 2022. Prepared for the Science Advisory Board of the International Joint Commission by the Lake Erie and Aquatic Research Network and Ohio Sea Grant
- McCarthy, M. J., Myers, J. A., & **Newell, S. E.** (2017). Modern HABs, Nitrogen, Lake Management: Old Habits are Hard to Break. *NALMS: Lakeline, Summer* (HABS 2017), 10–13.
- Newell, S.**, Johnson, L., McCarthy, M., Chaffin, J., Salk, K., Skopec, M., Austin, B., Pebbles, V., and K. Gibbons. (2017) How Does Nitrogen Impact Harmful Algal Blooms? <http://www.glc.org/wp-content/uploads/HABS-Role-of-Nitrogen-20170912.pdf>
- McCarthy, M.J., S.M. Collins, E. Jeppesen, and **S.E. Newell**. (2018) Nitrogen Cycling in Climate-impacted Lake Mesocosms (NCyCLMe), web news article (<https://www.aquacosm.eu/2018/12/20/nitrogen-cycling-in-climate-impacted-lake-mesocosms-ncyclme/>)

GRANTS AND FELLOWSHIPS:

- 2023-2026 Great Lakes Fisheries Commission: Moving toward ecosystem-based fisheries management: Conceptualizing Lake Erie's dynamic ecosystem. Lead PI: Jim Hood (Newell \$330K)
- 2022-2025 NSF Chemical Oceanography: Collaborative Research: US GEOTRACES GP-17- OCE and -ANT Sections: External sources, cycling and processes affecting mercury speciation in the South Pacific and Southern Oceans, Lead PI Rob Mason (Newell \$378K)
- 2022-2026 NSF DISES: Coproducing Actionable Science to Understand, Mitigate, and Adapt to Cyanobacterial Harmful Algal Blooms (CHABS), Lead PI Christine Kirchhoff (Newell \$150K)
- 2020-2023 Ohio DNR, H2Ohio Wetland Monitoring Program, (Newell and Jacquemin: \$500K)
- 2022-2023 Ohio Water Resources Center, Modeling total microcystin concentrations in Grand Lake St Marys during a period of exceedingly low external runoff (Newell and Jacquemin: \$28K)
- 2022 International Joint Commission, CSMI Lake Erie planning workshop (Newell, \$23K)
- 2020-2024 NSF, Chemical Oceanography: Collaborative Research: Cyanobacteria, Nitrogen Cycling, and Export Production in the Laurentian Great Lakes. Lead PI-Joseph Werne (Newell \$350K)
- 2020-2022 Ohio Sea Grant: Assessing nitrogen dynamics in a closed, integrated aquaponics systems, co-PI Kevin Neves (\$120K)
- 2020-2021 Nitrogen form influences spring bloom winners in the Baltic Sea. European Union AQUACOSM Transnational Access Program (€8,000)
- 2019 & 2020 ASTRA Archimedes Fellowship, Estonia: Collaborative Research on nitrogen cycling, harmful algal blooms, and eutrophication in Lakes Võrtsjärv and Peipsi (€6600)
- 2020 Ohio Sea Grant RAPID: Mobilization to Establish Baseline Conditions and Assess Post-Treatment Effects of an Imminent (April 2020) Alum Application. Lead PI McCarthy (PI) and co-PI Jacquemin (\$10K)
- 2018-2019 Eppley Foundation: Nitrification in Three Eutrophic Lakes: The search for new nitrifiers that thrive under extreme competition. Sole-PI (\$15K)
- 2017-2020 NSF Molecular & Cellular Biology RUI, Collaborative: The Microcystis microbiome: Interactions in the cyanobacterial phycosphere. PI: Morgan Steffen, co-PI: Louie Wurch (Newell \$150K)
- 2019 Nitrogen cycling in climate-impacted lake mesocosms 2 (NCyCLMe2). European Union AQUACOSM Transnational Access Program (€17,600; co-PI).
- 2018 Nitrogen cycling in climate-impacted lake mesocosms (NCyCLMe). European Union AQUACOSM Transnational Access Program (€10,000; co-PI).
- 2016-2018 Ohio Sea Grant, Characterizing water column ammonium dynamics affecting harmful cyanobacterial blooms in Lake Erie (Sole-PI \$120K)

- 2016- 2017 Florida Sea Grant Rapid: Urgent response to the current cyanobacterial bloom in Lake Okeechobee: community ammonium dynamics. Co-PI: M.J. McCarthy (\$9998)
- 2016-2018 Wright State Research Initiation Grant: Nutrient Removal and Greenhouse Gas Production Trade-offs in Constructed and Natural Wetlands (Sole-PI \$15,000)
- 2018 Women in Science Giving Circle, Faculty Award (\$5K)
- 2012-2015 NSF Postdoctoral Research Fellowship (\$160K)
- 2009 Princeton Environ. Inst. Grand Challenges Grant (\$200K, with Dr. Lars Hedin, P.I.)
- 2006-2009 NSF Graduate Research Fellow
- 2005-2006 Princeton Alumnae of the Can. Geological Soc. Fellowship
- 2005 Sigma Xi Research Grant (\$1K)
- 2004-2005 Fulbright Scholar, Costa Rica
- 2003 Schultz Foundation Fellowship recipient
- 2000 Smith College Dora Windes Zollman Scholar (top 10 of entering class)

TEACHING

COURSES TAUGHT:

Wright State University:

- 2021-2023 (3 semesters) EES 4240/6240 Oceanography
- 2020-2021 (2 semesters) EES 4010/6010 Graduate Seminar on Writing for Research
- 2020-2021(2 semesters; co) EES 1990 First Year Seminar on Climate Change
- 2021 (1 summer; co) EES 4010/6010 Limnology
- 2019-2021 (3 summers) EES 4360/6360 Environmental Field Techniques
- 2014-2023 (8 semesters) EES 4330*/6330/ES7020, Global Biogeochemical Cycles
- 2014-2015 (2 semesters) EES 4780/6780, Environmental Sciences Seminar
- 2016-2020 (6 semesters) EES 4280/6280, EES Colloquium
- 2016-2019 (3 semesters; team) SM 2100, Interdisciplinary Scientific Inquiry (ASK)
- 2016-2021 (6 semesters) EES 4320/6320, Environmental Microbiology
- 2016-2017 Repeat Guest Lecturer, ES 7120 Environmental Biology
- 2014-2021 EES 4960 Senior Thesis Research
- 2014-2021 EES 8990 Thesis
- 2014-2021 ES 8130 Dissertation Research

*4000 level denotes advanced undergraduate course, 6000 Master's, and 7000 Ph.D.

Princeton University

- 2011 Repeat Guest Lecturer, Topics in Ecology: Nutrient Limitation in Ecosystems
- 2010 Lecturer/Lab Instructor (new curriculum design), Ecosystems and Global Change
- 2010 Curriculum design, Advanced Oceanography lab course
- 2009 Lab instructor, Climate, Past, Present and Future
- 2009 Lab Instructor, Introduction to Oceanography
- 2008 Instructor, Senior Thesis Writing Workshop
- 2008 Assistant Instructor, Introduction to Environmental Science

TEACHER TRAINING COURSES

- 2020 Participant, Online Teaching in Pilot, Center For Teaching and Learning, Wright State University
- 2015 Participant, Active Learning in the Classroom, Center For Teaching and Learning, Wright State University
- 2008 Participant, Teaching Science course, McGraw Center Princeton University

GRADUATE THESES ADVISED (MAJOR ADVISOR):

Wright State University

- 2022-present Ryanne Cimatu (Masters) Water column nitrogen cycling in the Maumee River
- 2022-present Berk Duruturk (PhD) "Sediment nitrogen dynamics in the Great Lakes"
- 2020-present Joe Davidson (Master's) "Effects of repeated aluminum sulfate and algicide treatment on nutrient dynamics and a planktothrix bloom in a shallow, semi-enclosed lake area" (*expected graduation May 2023*)
- 2020-present Chris Kishan Gomez (Master's) "Nitrogen cycling in an enclosed, recirculating multitrophic aquaculture system"
- 2020-2022 Marissa Despina (Master's, co-advisor) "*hgcAB* and *nxr* gene expression in the tropical Atlantic Amazon plume"
- 2017-2022 Lindsay Starr (Ph.D., co-advisor) "Marine mercury and nitrogen cycling"
- 2018-2021 Justin Myers (Master's) "Internal Sediment N and P loads in Honeoye Lake"
- 2018-2021 Emily Holliday (Master's, co-advisor) "Internal phosphorus and trace metal dynamics in the Maumee River"
- 2019-2020 Marie Bezold (Master's) "Sediment nutrient dynamics in a agricultural settling pond."
- 2018-2020 Shannon Collins "Internal N cycling in Long Term Mesocosms at Aarhus University in Silkeborg, Denmark"
- 2015- 2020 Daniel Hoffman (Ph.D.) "Ammonium dynamics in Lake Erie"
- 2016-2018 Desiree Niewinski (Master's): "Sediment oxygen dynamics and functional gene expression in the Western Basin of Lake Erie"
- 2015-2018 Ashlynn Boedecker (Master's) "Sediment nitrogen dynamics in the Maumee River"
- 2014- 2019 Justyna Hampel (Ph.D.) "Nitrification in Hypereutrophic Lakes Taihu and Okeechobee"
- 2014-2016 Lee Slone (Masters) "Are sediments a nitrogen source or sink in the Great Miami River?"

UNDERGRADUATE HONORS STUDENTS ADVISED:

- 2021 John Hughes "Sediment trace metal fluxes in Grand Lake St Marys"
- 2020 Margaret Lingane "Denitrification in the Great Miami River"
- 2020 Ian Crumrine "Internal nitrogen loading in the Maumee River"
- 2019 Zak Schultz "Nutrient Loading from Stormwater Systems in Dayton, OH"
- 2019 Megan Reed "Water Sampling for Nutrient Concentrations"
- 2018 Allison Savoie "Ammonium Dynamics and Phytoplankton Communities in Coastal Texas Estuaries"

- 2017 Justin Myers “Nitrate uptake and loss in a constructed wetland”
 2015 Erica Strope “Nutrient sampling protocol: Does pore size really matter?”

mentored, Boston University

- 2013 Kaitlyn Pritchard (Undergraduate Senior Thesis) ‘Sediment *nifH* expression in Waquoit Bay.’
 2013 Kristin Yoshimura (Undergraduate Senior Thesis) ‘Investigating the Presence of Methane- and Nitrous Oxide-Producing Microbes in the Digestive Tract of the Salt-Marsh Fiddler Crab *Uca pugnax*.’

ACADEMIC AWARDS

STUDENT ADVISEE AWARDS

- 2022 Marissa Despina, NSF Graduate Research Fellowship
 2020 Joe Davidson, College of Science & Math Honors Top Scholar
 2019 Zak Schultz, College of Science & Math Honors Top Scholar
 2018 Allison Savoie, NSF Graduate Research Fellowship
 2018 Allison Savoie, WSU Honors Research Scholarship
 2018 Allison Savoie, College of Science & Math Honors Top Scholar
 2018 Justyna Hampel, Environmental Science Ph.D. Graduate Excellence Award
 2017 Megan Reed, College of Science & Math Honors Scholarship, \$250
 2017 Megan Reed, Women in Science Giving Circle Scholarship
 2017 Allison Savoie, NSF REU Fellowship
 2017 Justin Myers, College of Science & Math Honors Top Scholar
 2016 Justin Myers, WSU Student Employee of the Year
 2015 Justin Myers, Ohio EPA Environmental Education Scholarship, \$2500

HONORS AWARDED

- 2022 “Excellence in Grantsmanship” for securing over \$1,000,000.00 in funding for research over the last 5 years.
 2021 AGU Top 10 Most Downloaded Paper of the Year (Vieillard et al. 2020)
 2021 *Limnology & Oceanography* Outstanding Reviewer
 2019-2020 ASTRA Fellow, Estonia
 2018 Women in Science Giving Circle Award (\$5K)
 2010 Princeton University APGA Teaching Award
 2010 Princeton University Dept. of Geosciences Teaching Award
 2010 Eco-DAS IX Symposium Participant
 2009 First International Conference on Nitrification, Graduate Student poster prize
 2004 Highest Departmental Honors in Biogeochemistry, Smith College

CONFERENCE PRESENTATIONS (last 3 years):

- 2023 Myers J.A., Newell S.E., Grunden M., and S.J. Jacquemin S.J. Assessing nutrient load reduction in a constructed wetland: A case study from Brooks Park. Ohio Academy of Sciences
- 2023 Santa Ana, G.*, Owens C.*, Jacquemin S.J., Davidson J.L.*, Selby A.*, Grunden M., Hughes J*, Myers J.A., McCarthy M.J., Newell S.E. Algal abundance and toxin concentrations in Grand Lake St Marys. Ohio Academy of Sciences
- 2023 Duruturk*, B., Werne, J., Gonzaolez-Boy, K., Suder, T., and **S.E. Newell**. Nitrogen loss and recycling in the western and seasonally hypoxic central basins of Lake Erie. Association for the Sciences of Limnology and Oceanography International Conference 2023, Mallorca, Spain.
- 2023 Khan, N.N., Muenich, R.L., Paerl, H.W, and **S.E. Newell**. Assessment of Long-Term Variation of TKN concentrations in Maumee River. International Association for Great Lakes Research annual meeting. Toronto, Canada
- 2023 Johnson, O.F., Mendonca, R., Becker, R., Bridgeman, T., Doro, K., Chaffin, J.D., Fussell, K.D., Jacquemin, S.J., Johnson, L.T., Kerns, J., Liu, G., McCluney, K., Michaels, H., Midden, W.R., **Newell, S.E.**, Winslow, C.J., Wright, N., and L. Kinsman-Costello. Developing a new program for monitoring the nutrient function of restored wetlands in Ohio. International Association for Great Lakes Research annual meeting. Toronto, Canada
- 2023 Bezold*, M.G., **Newell, S.E.**, Gomez*, C.K., Davidson*, J.L., Myers,* J.A., Collins*, S.M., Fondriest, S., and M.J. McCarthy. The role of an agricultural settling pond as a source vs. sink for nitrogen runoff. International Association for Great Lakes Research annual meeting. Toronto, Canada
- 2022 Starr*, L.D., C.R. Hammerschmidt, M.J. McCarthy, A. Zastepa, S.M. Collins*, I. Crumrine*, M. Despina*, **S.E. Newell**, Sources and cycling of total and methylmercury in western Lake Erie. Joint Aquatic Sciences Meeting, Kalamazoo, MI
- 2022 McCarthy, M.J., **S.E. Newell**, M. Sepp, M. Tamm, L. Tuvikene, P. Zingel, T. Feldmann, K. Olli, J.A. Myers, and T. Nöges. Sediment nitrogen transformations during an ice-free winter in a large, shallow, eutrophic lake. Joint Aquatic Sciences Meeting, Kalamazoo, MI
- 2022 T.W. Suder, **S.E. Newell**, K. Gonzalez-Boy*, M.J. McCarthy, M. O'Beirne, T. Hamilton, H. Sauer, R.D. Ricketts, E.Elliott, and J.P. Werne, Assessing the fidelity of the epor proxy for tracking cyanobacterial vs eukaryotic production in the Laurentian Great Lakes. Joint Aquatic Sciences Meeting, Kalamazoo, MI
- 2022 Kinsman-Costello, L., J. Kerns, R. Mendonca, R. Becker, T. Bridgeman, J.D Chaffin, K.Doro, K. Fussell, S.J. Jacquemin, L. Johnson, G. Liu, K.E. McCluney, H. Michaels, W. R. Midden, **S.E. Newell**, and C. Winslow. Establishing a Flexible but Robust Framework to Assess Nutrient Removal in Diverse Wetland Restorations (Ohio, USA). Joint Aquatic Sciences Meeting, Kalamazoo, MI
- 2022 Gonzalez-Boy*, K., **S.E. Newell**, M.J. McCarthy, J.A. Myers, M. Despina*, T.W. Suder, M. O'Beirne, R. D. Ricketts, and J.P. Werne. Sediment-water interface N

- dynamics in a large, oligotrophic lake. Joint Aquatic Sciences Meeting, Kalamazoo, MI
- 2022 **Newell^S, S.E.**, S.J. Jacquemin, J.A. Myers, and L. Kinsman-Costello. Assessing nutrient load reduction across constructed wetland types: case studies from Grand Lake St Marys, Buckeye Lake, and the Great Miami River. Joint Aquatic Sciences Meeting, Kalamazoo, MI
- 2022 **S.E. Newell^S**, D.K. Hoffman*, J.A. Myers*, and M.J. McCarthy. Hidden Nitrogen: the key to modeling cyanoHAB toxin concentrations? State of Lake Erie conference. Cleveland, OH (oral)
- 2022 Despina, M.C., R.P. Mason, **S.E. Newell**, A.M. Aguilar-Islas, and C.R. Hammerschmidt. Mercury cycling in the Gulf of Alaska, Bering Sea, and Chukchi Sea. Association for the Sciences of Limnology and Oceanography International Conference 2022 (virtual, oral).
- 2022 Bulathsinghalage*, R., M.J. McCarthy, M. Despina*, J.A. Myers, M.G. Bezold, J.L. Davidson*, M.R. Reed*, C.K. Gomez*, & **S.E. Newell**. Efficacy of a Constructed Wetland in Nutrient Runoff Reduction. The Ohio Journal of Science Abstracts with Programs 122(1).
- 2022 Hughes J*, **Newell SE**, Starr LE**, Davidson JL**, Myers JA, McCarthy MJ, Jacquemin SJ. Trace metal fluxes across the sediment-water interface in Grand Lake St Marys: Internal release of dissolved iron may help drive harmful algal blooms. The Ohio Journal of Science Abstracts with Programs 122(1).
- 2022 Owens C*, Jacquemin SJ, Davidson JL**, Hughes J*, Myers JA, McCarthy MJ, Newell SE. Microcystin gene abundance and toxin concentrations in Grand Lake St Marys. The Ohio Journal of Science Abstracts with Programs 122(1).
- 2021 **S.E. Newell**, M.J. McCarthy, M.J. Tamm, M. Sepp, L. Tuvikene, and T. Nöges. Ammonium cycling in Lakes Vörtsjärv & Pepsis^S, International Conference on Nitrification (virtual, oral)
- 2021 L.D. Starr, C.R. Hammerschmidt, M.J. McCarthy, J. Montoya, A. Subramaniam, **S.E. Newell**. Co-occurrence of Hg methylation and nitrification in oxic surface waters of the tropical North Atlantic Ocean. Association for the Sciences of Limnology and Oceanography International Conference 2021. (virtual, oral)
- 2021 J.J. Hampel, M. Steffen, L. Wurch, M.J. McCarthy, D.K. Hoffman, J. Myers, M. Bezold, M. Reed, and **S.E. Newell**. Resource scarcity: a story of heterotrophic bacterial aid in Microcystis dominance. Association for the Sciences of Limnology and Oceanography International Conference 2021. (virtual, oral)
- 2021 J. Davidson*, **S.E. Newell**, Stephen Jacquemin, J.A. Myers, and M.J. McCarthy. Effects of Aluminum sulfate treatment on nutrient dynamics and a planktothrix bloom in a shallow, semi-enclosed lake area. Shallow Lakes Meeting 2021, Brazil (virtual, oral)
- 2021 S. Collins*, T.D. Brannon*, **S.E. Newell**, E. Jeppesen, J.A. Myers*, and M.J. Carthy. Community Structure had greater effect on water column ammonium cycling than nutrient and temperature in shallow lake mesocosms. Shallow Lakes Meeting 2021, Brazil (virtual, oral)
- 2021 J.J. Hampel*, M.J. McCarthy, S., Aalto, and **S.E. Newell⁺**. Hurricane disturbances stimulated nitrification and altered ammonia oxidizer community structure in

- Lake Okeechobee and St. Lucie Estuary, FL. Shallow Lakes Meeting 2021, Brazil (virtual, oral)
- 2021 M.Sepp*. T. Kõiv, P. Nõges, T. Nõges, **S.E. Newell**, and M.J. McCarthy. Catchment land cover and soil and predictors of organic carbon, nitrogen, and phosphorus levels in temperate lakes. Shallow Lakes Meeting 2021, Brazil (virtual, oral)
- 2021 **S.E. Newell**^S, D.K. Hoffman*, T.W. Davis, J.A. Myers*, and M.J. McCarthy. Spatial and temporal dynamics of water column ammonium in western Lake Erie: uptake, internal recycling, and CyanoHABs. Hidden Nitrogen: the key to modeling cyanoHAB toxin concentrations? Lahti Lakes Meeting 2021, Finland (virtual, oral)
- 2021 M.J., McCarthy, M.Sepp*, M. Tamm, L. Tüvikene, T. Nõges, and **S.E. Newell**. A Tale of Two Winters: under-ice (2019) vs. ice-free (2020) sediment-water interface nitrogen dynamics in Lake Võrtsjärv (Estonia). Lahti Lakes Meeting 2021, Finland (virtual, oral)
- 2021 J. Davidson*, **S.E. Newell**, Stephen Jacquemin, J.A. Myers*, and M.J. McCarthy. Effects of repeated aluminum sulfate and algicide treatment on nutrient dynamics and a planktothrix bloom in a shallow, semi-enclosed lake area. Lahti Lakes Meeting 2021, Finland (virtual, oral)
- 2020 M. Sepp*, T. Kõiv, T. Nõges, **S.E. Newell**, and M.J. McCarthy. Variation in dissolved organic matter (DOM) quantity and quality in temperate lakes. International Association for Great Lakes Research annual meeting (virtual) 2020, oral.
- 2020 I. Crumrine*, **S.E. Newell**, J.A. Myers*, and M.J. McCarthy. Potential for nitrogen removal by Maumee River sediments. International Association for Great Lakes Research annual meeting (virtual) 2020, oral.
- 2020 T. D. Brannon*, J. A. Myers*, D. K. Hoffman*, **S. E. Newell**, and M. J. McCarthy. Seasonal changes in water column ammonium cycling in the Maumee River. International Association for Great Lakes Research annual meeting (virtual) 2020, oral.
- 2020 M.G. Bezold*, C.K. Gomez*, J.L. Davidson*, T.D. Brannon*, J.A. Myers*, **S.E. Newell**, and M.J. McCarthy. Sediment microbial nitrogen dynamics in an agricultural sediment pond during the non-growing season. International Association for Great Lakes Research annual (virtual) 2020, oral.
- 2020 E.L. Holliday*, C.R. Hammerschmidt, S.E. Newell, J.A. Myers*, and M.J. McCarthy. Phosphorus fluxes from sediments in the Maumee River in 2019. International Association for Great Lakes Research annual meeting (virtual) 2020, oral.
- 2020 L.D. Starr*, **S.E. Newell**, and C.R. Hammerschmidt. Summertime sources and cycling of methylmercury in western Lake Erie tributaries. International Association for Great Lakes Research annual meeting (virtual) 2020, oral.
- 2020 S.M. Collins*, T.D. Brannon*, **S.E. Newell**, E. Jeppesen, J.A. Myers*, and M.J. McCarthy. Effects of climate warming and nitrogen loading on water column ammonium cycling in shallow lake mesocosms. International Association for Great Lakes Research annual meeting (virtual) 2020, oral.

- 2020 J.A. Myers*, **S.E. Newell**, R. Razavi, L. Cleckner, and M.J. McCarthy. Internal nitrogen and phosphorus loading supports harmful algal blooms in a shallow, temperate lake. International Association for Great Lakes Research annual meeting (virtual) 2020, oral.
- 2020 J.J. Hampel*, M.M. Steffen, L. Wurch, M. Gardner, A. Hoke, D. Lockwood, M.J. McCarthy, M. Bezold*, and **S.E. Newell**⁺. Resource scarcity: heterotrophic bacteria aid in *Microcystis* dominance. International Association for Great Lakes Research annual meeting (virtual) 2020, oral.

*designates undergraduate or graduate advisee

⁺Presenting author, if not first author

[§]invited speaker

INVITED TALKS (Last 4 years)

- 2023 **S.E. Newell and K. Neves** Nitrogen Dynamics in a recirculating Aquacultures System
- 2022 **S.E. Newell** Nitrogen availability: the missing piece to modeling toxic HABs? University of California Santa Cruz
- 2022 **S.E. Newell** Nitrogen availability: the missing piece to modeling toxic HABs? University of Michigan
- 2021 **S.E. Newell**. Nitrogen as a driver of harmful algal blooms. Understanding Harmful Algal Blooms: State of the Science Virtual Conference for Lake Erie, Keynote speaker
- 2021 **S.E. Newell**. Nitrogen as a driver of harmful algal blooms. Miami University Geology Department, Oxford, OH
- 2021 **S.E. Newell**. Growing Up in Science seminar. Scripps Institution of Oceanography University of California, San Diego
- 2019 **Newell, S.E.** Linking new nitrogen to nitrate loss through nitrification: Using functional genes as a proxy for microbial community structure and abundance, who are the major nitrifiers and how do marine and freshwater communities compare? Estonian University of Life Sciences, Tartu, Estonia
- 2019 **Newell, S.E.** Nitrogen cycling in eutrophic environments. University of Pittsburgh, Pittsburgh, PA.
- 2018 **Newell, S.E.** Nitrogen loading from watersheds and cycling in the water column of eutrophic lakes, with emphasis on competitive dynamics for ammonium between nitrifiers and cyanobacteria: case studies from Taihu and Lake Erie. Estonian University of Life Sciences, Tartu, Estonia
- 2018 **Newell, S.E.** Nitrogen as a driver of HABs: Case studies in Lakes Taihu and Erie. University of Toledo, Toledo, Ohio
- 2018 **Newell, S.E.** Nitrogen as a driver of HABs: A case study in Lake Erie. Science-Policy Confluence Conference: Great Lakes Harmful Algal Blooms: Science-based Policy Solutions. Ann Arbor, MI.
- 2018 **Newell, S.E.** Nitrogen as a driver of HABs: Case studies in Lakes Taihu and Erie. Miami University, Oxford, Ohio
- 2018 **Newell, S.E.** Nitrogen as a driver of HABs: Case studies in Lakes Taihu and Erie. University of Louisville, Louisville, KY.

SERVICE

National

- 2021-present Earth Science Women's Network, Board of Directors, Secretary
2020-2021 Coastal and Estuarine Research Federation, Governing Board Nomination Committee
2020-2022 Joint Aquatic Sciences Meeting Planning Committee
2019-2020 Coastal and Estuarine Research Federation National Awards Committee Member
2019-2020 Association for the Sciences of Limnology and Oceanography and Society for Freshwater Sciences Joint Summer Meeting, Diversity Mixer Committee
2018 Coastal and Estuarine Research Federation, Margalef Awards Committee

Regional

- 2023-present Saginaw Bay Advisory Board
2023-present MI Western Lake Erie Advisory Board
2022-present Ohio Watershed Region III Great Miami River Technical Advisory Panel
2016-present Founding member of Lake Erie Area Research Network, President 2018-2021
2016-present Great Lakes HABs Collaboratory, Steering Committee Co-Chair 2018-2020, Steering Committee member 2020-2022, and Nitrogen Working Group Chair 2016-2018

Wright State University

- 2018-present CoSM Steering Committee, *Recording Secretary* 2018-2019, *Chair* 2019-2020
2019-2020 EES Faculty Development Committee, Evaluation Subcommittee Member
2019-present EES Vehicles Committee
2017- present CoSM Graduate Studies Committee, *Chair* 2018-2020
2016- 2019 Earth and Environmental Science Masters Program, Admissions Committee Member
2014- present EES Science Library Liaison
2015- present CoSM Academic Mediation Committee Member
2016- present Consadine Scholars Selection Committee Member
2016- present Environmental Science Ph.D. Program, Admissions Committee Member

PROFESSIONAL:

Reviewer (since 2014; Peer reviewed 15 journal articles in 2018, 15 in 2019, 18 in 2020) for *Estuaries and Coasts*, *Biogeochemistry*, *Biogeosciences*, *Marine Ecological Progress Series*, *Environmental Pollution*, *Journal of Environmental Quality*, *Microbial Ecology*, *Journal of Plankton Research*, *Environmental Science and Pollution Research*, *Freshwater Science*, *Applied and Environmental Microbiology*, *Journal of Geophysical Research – Biogeosciences*, *Limnology and Oceanography Letters (a Reviewer of the Year in 2020)*, *Limnology and Oceanography: Methods*, *Geomicrobiology*, *Journal of*

Soils and Sediments, Journal of Microbial Ecology, Water, Lake and Reservoir Management, Environmental Microbiology, Applied Microbiology and Biotechnology, Frontiers in Microbiology, ISME, Water Resources Research, Freshwater Biology, Phycology, Environmental Science and Technology, Science of the Total Environment, Hydrological Processes, Journal of Geophysical Research – Oceans, Marine Pollution

2022 Review Editor, Frontiers

2016-2021 National Science Foundation Panelist and ad hoc reviewer (EPSCoR, GRFP, Chemical Oceanography, Division of Environmental Biology, CAREER, MRI)

2017 Wisconsin Sea Grant Panelist

2014-2016 Lake Harsha Project advisory committee to improve local water quality

Proposal Reviewer for the *National Science Foundation (2015-2020), New York Sea Grant (2020), Wisconsin Sea Grant (2015), Maryland Sea Grant (2015-2019), Massachusetts Sea Grant (2015), American Association for the Advancement of Science (2014), Ohio Water Resources Center (2020)*

Session Co-chair:

2019 Great Lakes HABs Collaborative session at International Association for Great Lakes Research, Brockport, NY

2018 Re-eutrophication of Lake Erie: Causes, consequences, and possible solutions. Society for Freshwater Sciences, Detroit, MI

2016 Molecular approaches to understanding drivers of CyanoHABs and toxin/metabolite production. International Association for Great Lakes Research, Guelph, Ontario

2016 Wayne's World: A session to celebrate the career of Wayne Gardner and his broad contributions to understanding the biogeochemistry of aquatic systems. Association for the Sciences of Limnology and Oceanography, Santa Fe, June 2016

2015 Holy Toledo! Nitrogen in the Great Lakes (Yes, Nitrogen): Blooms, Cyanotoxins, and Hypoxia, International Association for Great Lakes Research, Burlington, VT

Memberships: Association for the Sciences of Limnology and Oceanography (2006-2017), Coastal and Estuarine Research Federation (2012-2017), International Association of Great Lakes Research (2015-2017), Society for Freshwater Sciences (2012), HABs Collaboratory, and the Lake Erie Area Research Network

OUTREACH:

Dayton STEM school (2020, 2021), week-long Water Quality project with 6th grade Marshall Elementary Career Day (2019)

Dayton Children's Water Festival (2016-2018)

Greenon Middle School, week-long Water Quality project & wetland fieldtrips with 8th grade class (2017-2019)

Pro-bono assistance to improve water quality, Delphos Reservoir (2017)

Greenon High School, Water Quality Presentation, 9th Grade (2017)

Tipp City Cub Scout pack 285, Water Quality activity, ~15 boys (2016)

Tipp City Elementary School, States of Matter activity, 3rd Grade (2015-2016)
Monroe Elementary School, States of Matter activity, 3rd Grade (2015)
Dayton Lego League, Learning Environments (2015)

IN THE MEDIA

2022 North Coast Chronicles podcast; Green Curls on the Water: Harmful Algal Blooms in the Great Lakes <https://anchor.fm/aspn/episodes/Green-Curls-on-the-Water-Harmful-Algal-Blooms-in-the-Great-Lakes--North-Coast-Chronicles-e1psgka/a-a8ouh8e>

2022 https://www.theeveningleader.com/news/looking-at-what-lies-ahead-for-grand-lake-st-marys/article_c123fe7e-8903-11ec-83c2-f7a7460022d1.html

2022 'Lake's 2021 Toxic Algae Blooms to be Researched'. The Daily Standard. Celina, Ohio Newspaper. February 7

2020 <https://ohioseagrant.osu.edu/news/2020/0r10a/learn-network-h2ohio-wetlands>

2020 <https://webapp2.wright.edu/web1/newsroom/2020/09/17/water-power-2/silvia-newell/>

2020 <https://publicintegrity.org/environment/growing-food-sowing-trouble/lake-erie-toxic-algae-farm-manure-runoff/>

2019 <https://www.mpnnow.com/news/20170831/little-lake-sees-big-developments-with-honeoye-research>

2019 <https://ohioseagrant.osu.edu/news/2019/trlm4/nitrogen-trackers>

2018 <https://science-math.wright.edu/about/article/why-wetlands>

2015 <http://www.fondriest.com/news/nitrogen-dynamics-in-the-field-with-scientists-tackling-dual-nutrient-questions.htm>