**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

513-509-9029

senewell@umich.edu

**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 3727, h-index 26, i10-index 34

**REFEREED PUBLICATIONS:**

Starr, L.D., McCarthy, M.J., Hammerschmidt, C.R., Zastepa, A., and **S.E. Newell**. 2024. 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**. 2024. Nitrification in the water column of Lake Erie. Special issue on Lake Erie in *Aquatic Ecosystem Health and Management*

Tammeorg, et al. Sustainable Lake Restoration: from Challenges to Solutions. 2023. *WIREs Wiley Interdisciplinary Reviews.* e1689.

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., Strope\*, 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*](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., Nõges, P., & Nõges, T. (2022). 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., Nõges, P., Nõges, 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 Okeechobee 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.,** LeCleir, 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.,** Babbin, 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

\*designates undergraduate or graduate advisee, +Postdoctoral advisee

**PUBLICATIONS IN REVIEW**

Davidson, J.L.\*, **Newell, S.E.,** Jacquemin, S.J., Hughes, J.C.\*, Starr, L.D.\*, and M.J. McCarthy. Ineffectiveness of phosphorus binding treatments in a semi-enclosed area of a large, shallow, hypereutrophic lake. *Cambridge Prisms: Water*

**Newell, S.E.,** Doll, J., Jutte, M.C., Davidson\*, J.L., McCarthy, M.J., and S.J. Jacquemin. Drivers and Mechanisms of Harmful Algal Blooms Across Hydrologic Extremes in Hypereutrophic Grand Lake St Marys (Ohio). *Harmful Algae*

**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)**:

*University of Michigan SEAS*

2023-present Ran Jin (PhD) “Mercury and nitrogen cycling microbial communities in Antarctic coastal ocean waters”

2023-present Monica Woodruff (Masters) “Moving Toward Ecosystem-Based Fisheries Management: Conceptualizing Lake Erie’s Ecosystem Its Connection to Walleye, Yellow Perch, and Lake Whitefish Recruitment”

2022-present Berk Duruturk (PhD) “Sediment nitrogen dynamics in the Great Lakes”

*Wright State University*

2022-present Ryanne Cimatu (Masters) “Water column nitrogen cycling in the Maumee River”

2020-2023 Joe Davidson (Masters) “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*)

2020-2022 Chris Kishan Gomez (Master’s) “Nitrogen cycling in an enclosed, recirculating multitrophic aquaculture system”

2020-2022 Marissa Despins (Master’s) “Mercury Methylation in Oxic Sub-Polar Marine Regions Linked with Nitrification”

2017-2022 Lindsay Starr (Ph.D.) “Marine mercury and nitrogen cycling”

2018-2021 Justin Myers (Masters) “Internal Sediment N and P loads in Honeoye Lake”

2018-2021 Emily Holliday (Masters, co-advisor) “Internal phosphorus and trace metal dynamics in the Maumee River”

2019-2020 Marie Bezold (Masters) “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 (Masters): “Sediment oxygen dynamics and functional gene expression in the Western Basin of Lake Erie”

2015-2018 Ashlynn Boedecker (Masters) “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**

***HONORS AWARDED***

2024 Frontiers Planet Prize Winning article: *Sustainable lake restoration: From challenges to solutions* (WIREs Water, 2023)

2024 Top Downloaded Article (top 10%) during its first 12 months of publication in: LIMNOLOGY AND OCEANOGRAPHY: METHODS, “Effects of filtration timing and pore size on measured nutrient concentrations in environmental water samples”

2022 Wright State University “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

***STUDENT ADVISEE AWARDS***

2024 Maria D’Amico, Best Student Poster at Aquaculture America. *“Assessing Nitrogen Dynamics in a Closed, Integrated Aquaponics System.”*

2024 Abby Reed, NSF Graduate Research Fellowship

2022 Marissa Despins, 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

**CONFERENCE PRESENTATIONS (last 3 years):**

2024 Woodruff, M., Hood, J., Newell, S., Vanderbilt, L., Frank, K., & Ludsin, S. Using Fuzzy Cognitive Mapping to Support Ecosystem-Based Fisheries Management in Lake Erie. American Fisheries Society Annual Meeting. Honolulu, Hawai'i

2024 D’Amico, M.E.\*, Gomez, C.K.\*, Neves, K.J., **Newell, S.E.** Assessing Nitrogen Dynamics in a Closed, Integrated Aquaponics System. Aquaculture America. San Antonio, TX

2024 **Newell, S.E.,** Norton, R.K., Shriberg, M. and K. Cameron. Building Capacity for Resilient Great Lakes Coastal Community Decision-Making. Association for the Sciences of Limnology and Oceanography, Ocean Sciences Meeting. New Orleans, LA

2024 Shriberg, M., **Newell, S.E.,** Norton, R.K., and K. Cameron. Building Capacity for Resilient Great Lakes Coastal Community Decision-Making. International Association for Great Lakes Research annual meeting. Windsor, ON

2024 **Newell S.E.**, Myers J.A., Jutte M., and S.J. Jacquemin. Assessing nutrient load reduction in a constructed wetland: Case Studies from Brooks Park and the Burntwood- Langenkamp Wetlands. International Association for Great Lakes Research annual meeting. Windsor, ON

2024 Cimatu, R.A.\*, Myers J.A., Jutte M., S.J. Jacquemin, and **S.E. Newell.** Closing the Gap: Nitrogen Dynamics in the Maumee River International Association for Great Lakes Research annual meeting. Windsor, ON

2023 Myers J.A., **Newell S.E.,** Grunden M., and S.J. Jacquemin. 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 Cimatu, R.A., Myers J.A., and **S.E. Newell.** What a Waste: Nitrogen Runoff in the Maumee River. Ohio Academy of Sciences

2023    Duruturk\*, B., Werne, J., Gonzalez-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. Despins\*, **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. Nõges. 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 εpor 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. Despins\*, 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.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$**, 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 Despins, 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. Despins\*, 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).

\*designates undergraduate or graduate advisee

+Presenting author, if not first author

$invited speaker

**INVITED TALKS** (Last 4 years)

2024 **Newell S.E.,** Harmful Algal Blooms, North Central Region Water Network’s Algal Bloom Action Team

2024 **Newell S.E.,** Harmful Algal Blooms, U.S. EPA

2024 **Newell S.E.,** Harmful Algal Blooms, Wicked Problems Conference, Michigan State University Extension Agriculture and Agribusiness Institute, Keynote speaker

2024 **Newell S.E.,** Harmful Algal Blooms 101, National Sea Grant Community of Practice

2024 **Newell S.E.,** Harmful Algal Blooms, Great Lakes Commission Great Lakes Regional HABs Policy Workshop, Maumee Bay State Park, Keynote speaker

2024 **Newell S.E.,** Assessing nutrient load reduction in a constructed wetland: Case Studies from Brooks Park and the Burntwood-Langenkamp Wetlands. NOAA Great Lakes Environmental Research Lab, Cooperative Institute for Great Lakes Research

2023 **S.E. Newell and K. Neves** Nitrogen Dynamics in a recirculating Aquacultures System, Ohio Sea Grant public webinar

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? SEAS, 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

**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 State of Michigan Domestic Action Plan Western Lake Erie Science Advisory Board

2024-present State of Western Lake Erie Subwatershed Monitoring Advisory Committee

2022-present Ohio Watershed Region III Great Miami River Technical Advisory Panel

2023-present Lake Huron Advisory Team Resilient Coastal Projects Initiative

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:

2024 Water Quality Impacts of Great Lakes Wetland Restoration and Management. International Association for Great Lakes Research, Windsor, Ontario

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, Coastal and Estuarine Research Federation, International Association of Great Lakes Research, Society for Freshwater Sciences, 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>