Curriculum Vitae

JoAnn Burkholder

Professor and Director, NCSU Center for Applied Aquatic Ecology,
Department of Applied Ecology /
Jointly Appointed in the Department of Plant and Microbial Biology;
Affiliate Professor, Department of Marine, Earth and Atmospheric Sciences

Contact Information

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Education

Undergraduate:	Iowa State University	Zoology	B.Sc., 1975
Graduate:	University of Rhode Island	Aquatic Botany	M.Sc., 1981
	Michigan State University	Botanical Limnology	Ph.D., 1986

Research Interests

Nutritional physiology and ecology of algae, especially harmful taxa; and chronic effects of eutrophication (nutrient over-enrichment and associated pollutants) on algal assemblages, submersed aquatic vegetation, and beneficial animals in aquatic ecosystems

Professional Experience (NCSU)

2013 - present	Director, CAAE, Department of Applied Ecology
2013 - present	Professor, Department of Applied Ecology; jointly appointed to the Department of Plant & Microbial Biology (formerly the Department of Plant Biology)
1999 - 2012	Director, CAAE, Department of Plant Biology
1998 - 2012	Professor, Department of Plant Biology (formerly the Department of Botany)
1993 - 1997	Associate Professor, Department of Botany
1993 - present	Affiliate Professor, Department of Marine, Earth and Atmospheric Sciences (MEAS)
1986 - 1992	Assistant Professor, Department of Botany

Awards and Distinctions

2016	Women of Achievement Award, General Federation of Women's Clubs of North Carolina
2015	Fred A. Harris Fisheries Conservation Award, American Fisheries Society - North Carolina Chapter (recognizes non-Chapter members who have distinguished themselves by service or commitment to the fisheries resources of North Carolina)
2009	Borlaug Joint Award for Service to the Environment and Society, College of Agriculture and Life Sciences/ College of Natural Resources, NCSU
2008	William Neal Reynolds Distinguished Professor, College of Agriculture and Life Sciences, NCSU, for excellence in research
2008	J. Compton River Achievement Award, River Network, lifetime achievement for leadership in research to advance water quality protection
2007	Darbaker Prize, Botanical Society of America, for excellence in research
2004	Fellow, American Association for the Advancement of Science (AAAS)
2003	Honorary Doctorate, Knox College, Galesburg, IL

2003	Provasoli Award, best paper of 2002, *Journal of Phycology*
2001	Honorary Doctorate, Southampton College - Long Island University
2000	Fellow, Aldo Leopold Leadership Program, Ecological Society of America
1999	Hutner Award, Society of Protozoologists, for excellence in microalgal research
1998	Scientific Freedom and Responsibility Award, AAAS
1998	Distinguished Service in Environmental Education Award, Environmental Educators of North Carolina
1998	Distinguished Scholarly Achievement Award, NCSU Honors Convocation
1998	Conservationist of the Year Award, National Wildlife Federation
1998	Conservationist of the Year Award, Governor of North Carolina and the North Carolina Wildlife Federation
1998	Jack Bayless Award – outstanding presentation of the year, South Carolina Fishery Workers Association, and the North and South Carolina chapters of the American Fisheries Society
1997	Admiral of the Chesapeake Award, Federal and State Leadership Summit, Washington, DC
1997	Outstanding Achievement Award, Society of Business and Professional Women of North Carolina
1997-2000	Pew Fellow in Marine Conservation, the Pew Foundation
1994	Outstanding Research Award, NCSU Alumni Association

Honors to the NCSU CAAE

2013	The CAAE was recognized as the reason why NCSU placed 31st among the top 50 "Colleges Saving the World" (http://www.onlinecollegesdatabase.org/50-colleges-saving-the-planet).
2012	The CAAE received the highest evaluation possible (Excellent) by an outside Peer Review Panel that reviewed in detail the Center's performance over its entire span of operation. The panel was organized by the NCSU College of Agriculture and Life Sciences as required by the UNC Board of Governors.

Other Honors

2013	Invited presentation on Harmful Algae - Capital Hill Briefing, representing the Coastal and Estuarine Research Federation
2007	Theodore L. Jahn and Eugene C. Bovee Award, International Society of Protozoologists, for best graduate student research paper, to doctoral candidate Hayley Skelton (coauthors of the paper, Burkholder and Parrow)
2001	Elected member, Alumni Hall of Fame, Rock Valley College, Rockford, Illinois
2001	Convocation speaker, Appalachian State University
2001	Convocation speaker, Southampton College - Long Island University
1998	Special recognition for excellence in research, Phi Kappa Phi
1998	Invited testimony, Congressional Hearing on the Value of Estuaries, US Senate, Senate Environment and Public Works Committee
1998	Invited testimony, Congressional Hearing on Harmful Algal Blooms, US Senate, Committee on Commerce, Science and Transportation
1997	Invited testimony, Congressional Hearing on Fisheries Conservation, Wildlife and Oceans, US House of Representatives – Committee on Resources
1997	Invited testimony, Congressional Hearing on Harmful Algae and Human Health, US House of Representatives – Committee on Government Reform and Oversight
1997-1999	Science Advisor, Governor's Commission on *Pfiesteria*, Maryland
1993-1994	Member, North Carolina Coastal Futures Committee (governor-appointed)
1993-1995	Member, Board of Directors, Partnership for the Sounds (directive, environmental

education for eastern North Carolina)
1992-1997 Member-at-large, North Carolina Marine Fisheries Commission (governor-appointed)
1985 Elected member, Phi Kappa Phi, Michigan State University
1984-1986 Graduate fellow, Department of Botany and Plant Pathology, Michigan State University

Selected Research Accomplishments

(with thanks to my graduate students, postdoctoral research associates and other research associates, and collaborators)

Freshwater Ecosystems

- First to maintain automated platform stations with depth profiling capability for advanced research and monitoring of North Carolina reservoirs; the real-time data from these stations is also helping to safeguard drinking water supplies depended upon by ~750,000 people.
- Experimentally quantified interactions between nutrient and sediment loadings in controlling noxious algal blooms in turbid reservoirs.
- First to document widespread occurrence, at low levels, of cyanotoxins in major potable water supplies in North Carolina.
- Documented novel nutritional and physical adaptations of a cryptic group of dinoflagellates in reservoirs affected by episodic suspended sediment loading.

Estuarine and Marine Ecosystems

- Discovered that water-column nitrate enrichment from sewage and other sources inhibits *Zostera marina*, the dominant seagrass of north temperate U.S. waters, as a direct physiological effect.
- Co-discovered the toxic dinoflagellates, *Pfiesteria piscicida* and *Pfiesteria shumwayae*, as causative agents of major estuarine fish kills; this research also led to colleagues' discovery of a group of *Pfiesteria* toxins new to science.
- First to design and maintain a series of automated platform stations for advanced research and monitoring of a North Carolina estuary; coauthor of a patent for an automated depth profiler.
- First to show that shallow lagoonal estuarine ecosystems are resilient to the adverse effects of hurricanes, recovering within 4-5 years.
- Helped to develop a model for water mass transport to the Neuse Estuary; used the model and a detailed dataset for improved quantification of nutrient loads, including decadal trend analysis.

Grants

My research routinely involves analyzing the species composition and abundance of phytoplankton in samples from lakes, reservoirs, rivers, estuaries, and marine coastal environments. For example, my research associate, Ms. Elle Allen, and I recently analyzed 1,000 phytoplankton samples from lakes across the nation as part of a major contract from the U.S. Environmental Protection Agency.

Support for my research and education outreach has been obtained from the National Science Foundation, National Park Service, U.S. Environmental Protection Agency, National Oceanic and Atmospheric Administration, U.S. Department of Defense, the Burroughs Wellcome Fund, the Park Foundation, the Z. Smith Reynolds Foundation, the NCSU Research and Innovation Seed Funding Program, and the North Carolina Clean Water Management Trust Fund.

Publications (179 peer-reviewed in scientific journals, books and symposia volumes); examples:

Cuker BE, Gama P, Burkholder JM (1990) Type of suspended clay influences lake productivity and phytoplankton community response to phosphorus loading. *Limnology and Oceanography* 35: 830-839.

Burkholder JM, Cuker BE (1991) Response of periphyton communities to clay and phosphate loading in a

shallow reservoir. *Journal of Phycology* 27: 373-384.

Burkholder JM (1992) Phytoplankton and episodic suspended sediment loading: Phosphate partitioning and mechanisms for survival. *Limnology and Oceanography* 37: 974-988.

Burkholder JM, Mason KM, Glasgow HB (1992) Water-column nitrate enrichment promotes decline of eelgrass (*Zostera marina* L.): Evidence from seasonal mesocosm experiments. *Marine Ecology Progress Series* 81: 163-178.

Burkholder JM, Glasgow HB, Cooke JE (1994) Comparative effects of water-column nitrate enrichment on eelgrass *Zostera marina*, shoalgrass *Halodule wrightii*, and widgeongrass *Ruppia maritima. Marine Ecology Progress Series* 105: 121-138.

Burkholder JM, Mallin MA, Glasgow HB, Larsen LM, McIver MR, Shank GC, Deamer-Melia N, Briley DS, Springer J, Touchette BW, Hannon EK (1997) Impacts to a coastal river and estuary from rupture of a large swine waste holding lagoon. *Journal of Environmental Quality* 26: 1451-1466.

Mallin MA, Burkholder JM, Shank GC, McIver MR, Glasgow HB, Springer J, Touchette BW (1997) Comparative effects of poultry and swine waste lagoon spills on the quality of receiving stream waters. *Journal of Environmental Quality* 26: 1622-1631.

Burkholder JM, Larsen LM, Glasgow HB, Mason KM, Gama P, Parsons JE (1998) Influence of sediment and phosphorus loading on phytoplankton communities in an urban piedmont reservoir. *Lake and Reservoir Management* 14: 110-121.

Burkholder JM (2000) Chronic impacts from toxic microalgae on finfish, shellfish and human health. In: *Proceedings of the Symposium on Conservation Medicine*, by Barakatt C (ed.). School of Veterinary Medicine, Tufts University. Academic Press, New York.

Burkholder JM (2001) Eutrophication and oligotrophication, pp. 649-670. In: *Encyclopedia of Biodiversity*, Vol. 2, by Levin S (ed.). Academic Press, New York.

Burkholder JM (2002) Cyanobacteria, pp. 952-982. In: *Encyclopedia of Environmental Microbiology*, by Bitton G (ed.). Wiley Publishers, New York.

Burkholder J, Eggleston D, Glasgow H, Brownie C, Reed R, Melia G, Kinder C, Janowitz G, Corbett R, Posey M, Alphin T, Toms D, Deamer N, Springer J (2004) Comparative impacts of two major hurricane seasons on the Neuse River and western Pamlico Sound. *Proceedings of the National Academy of Sciences (USA)* 101: 9291-9296.

Burkholder JM, Gordon AS, Moeller PD, Law JM, Coyne KJ, Lewitus AJ, Ramsdell JS, Marshall HG, Deamer NJ, Cary SC, Kempton JW, Morton SL, Rublee PA (2005) Demonstration of toxicity to fish and to mammalian cells by *Pfiesteria* species: Comparison of assay methods and multiple strains. *Proceedings of the National Academy of Sciences (USA)* 102: 3471-3476.

Burkholder JM, Dickey DA, Kinder C, Reed RE, Mallin MA, Melia G, McIver MR, Cahoon LB, Brownie C, Deamer N, Springer J, Glasgow H, Toms D, Smith J (2006) Comprehensive trend analysis of nutrients and related variables in a large eutrophic estuary: A decadal study of anthropogenic and climatic influences. *Limnology and Oceanography* 51: 463-487.

Burkholder JM, Glibert PM (2006) Intraspecific variability: An important consideration in forming generalizations about toxigenic algal species. *African Journal of Marine Science* 28: 177-180.

Zimba PV, Camus A, Gregg K, Allen EH, Burkholder JM (2006) Co-occurrence of white shrimp, *Penaeus vannamei*, mortalities and microcystin toxin in a southeastern USA shrimp facility. *Aquaculture* 261: 1048-1055.

Burkholder JM, Libra B, Weyer P, Heathcote S, Kolpin D, Thorne PS, Wichman M (2007) Impacts of waste from concentrated animal feeding operations on water quality. *Environmental Health*

Perspectives 115: 308-312.

Burkholder JM, Tomasko D, Touchette BW (2007) Seagrasses and eutrophication. *Journal of Experimental Marine Biology and Ecology* 350: 46-72.

Touchette BW, Burkholder JM, Allen EH, Alexander JL, Kinder CA, James J, Britton CH (2007) Eutrophication and cyanobacteria blooms in run-of-river impoundments in North Carolina, U.S.A. *Lake and Reservoir Management* 23: 179-192.

Heisler J, Glibert P, Burkholder J, Anderson D, Cochlan W, Dennison W, Gobler C, Dortch Q, Heil C, Humphries E, Lewitus A, Magnien R, Marshall H, Stockwell D, Suddleson M. (2008) Eutrophication and harmful algal blooms: A scientific consensus. *Harmful Algae* 8: 3-13.

Burkholder JM (2009) Harmful algal blooms, pp. 264-285. In: *Encyclopedia of Inland Waters*, *Volume 1*, by Likens GE (ed.) Elsevier, Oxford, UK.

Burkholder JM, Frazier W, Rothenberger MB (2010) Source water assessment and treatment strategies for harmful and noxious algae, pp. 299-328. In: *Algae Manual*, AWWA Manual 57, by the American Water Works Association, Denver, CO.

Burkholder JM, Marshall HG (2012) Toxigenic *Pfiesteria* species - updates on biology, ecology, toxins, and impacts. *Harmful Algae* 14: 196-230.

Burkholder JM, Glibert PM (2013) Eutrophication and oligotrophication, pp. 347-371. In: *Encyclopedia of Biodiversity*, 2nd edition, Volume 3, by Levin S (ed.). Academic Press, Waltham, MA.

Gobler CJ, Burkholder JM, Davis TW, Harke MJ, Johengen T, Stow C, Van de Waal DB (2016) The dual role of nitrogen supply in controlling the growth and toxicity of cyanobacterial blooms. *Harmful Algae* 54: 87-97.

Burkholder JM, Gobler CJ, O'Neill JM (2018) Cyanobacteria, pp. 591-595. In: *Harmful Algal Blooms and Their Management: A Compendium Desk Reference*, by Shumway SE, Burkholder JM, Morton SL (eds.). John Wiley & Sons Ltd., Hoboken, NJ.

Burkholder JM, Shumway SE, Glibert PM (2018) Food web and ecosystem impacts of harmful algae, pp. 243-336. In: *Harmful Algal Blooms and Their Management: A Compendium Desk Reference*, by Shumway SE, Burkholder JM, Morton SL (eds.). John Wiley & Sons Ltd., Hoboken, NJ.

Shalygin S, Huang I-S, Allen E, Burkholder J, Zimba PV (2019) *Odorella benthonica* gen & sp. nov. (Pleurocapsales, Cyanobacteria): an odor and prolific toxin producer isolated from a California aqueduct. *Journal of Phycology* 55: 509-520.

Patent

U.S. Patent #7,040,157. "Variable depth automated dynamic water profiler", Reed, Glasgow, Burkholder, Toms, May 2006 (NCSU; patent sold to YSI, Inc.).

Professional Activities (examples)

***Co-Editor of Book*:** (2017) *Harmful Algal Blooms and Their Management: A Compendium Desk Reference*, by Shumway SE, Burkholder JM, Morton SL (eds.). Elsevier, New York.

Editorial

Guest Co-Editor, special issue, *Harmful Algae* (Intraspecific Variation, 2009)
Guest Co-Editor, special issue, *Harmful Algae* (Harmful Algae and Eutrophication), 2007
Guest Co-Editor, special issue, *Harmful Algae* (Ecology of *Pfiesteria*), 2006

Editorial Board, *Journal of Experimental Marine Biology and Ecology*, 2005 - 2016
Editorial Board, *Harmful Algae,* 2002 - 2018
Editorial Board, *Journal of Eukaryotic Microbiology*, 1996-1999
Editorial Board, *Journal of Phycology*, 1995-1997

Other Society Service

Member, Organizing Committee, International Symposium on Harmful Algae, 2009-2010
Member, Organizing Committee, National Symposium on Harmful Algae, 2000, 2002, 2003
Member, Ethics Committee, American Society of Limnology and Oceanography, 1996-1997
Member, Harmful Algae Technical Advisory Committee, Maryland Department of Natural Resources, 1998-2001
Session Chair, Ecology of Aquatic Protozoa session, XIth Meeting, International Congress of Protozoology, 2001
Session Chair, New Harmful Algae, 10th International Conference on Harmful Algal Blooms, 2000
Session Chair, *Pfiesteria* in the Southeast, 1st National Symposium on Harmful Algae, 2000
Session Chair, Harmful Algae, 15th Biennial International Conference of the Estuarine Research Federation, 1999
Session Co-Chair, Harmful Algal Blooms, Annual Summer Meeting, American Society of Limnology and Oceanography, 1998
Session Co-Chair, Harmful Algal Blooms, Joint Meeting - American Society of Limnology and Oceanography and American Geophysical Union, 1997
Chair, Hutchinson Award Committee, American Society of Limnology and Oceanography, 1996
Board of Directors, American Society of Limnology and Oceanography, 1994-1997
Session Chair, Ecology of Freshwater Algae, Joint Meeting - International Phycological Congress and Phycological Society of America, 1991
Session Chair, Phytoplankton, Annual Meeting, American Society of Limnology and Oceanography, 1988

External Panels and Reviews

Member, panel review of the annual South Florida Environmental Report for the South Florida Water Management District, 2006-2011
Examiner ("Opponent") of doctoral candidate Johannes Hagstrőm, Kalmar University, 2006
Member, review team for the Department of Botany, Miami University of Ohio, 2005
Member, review team for the Marine Sciences Programs, Institut für Meereskunde, Salzau, Germany, 1998
National Science Foundation, Biological Oceanography Panel, 1995
UNC Water Resources Research Institute Panel, 1991-1993
Member, review team, Lake Okeechobee Ecosystem Project, South Florida Water Management District, 1991
Workshops (Invited Participant) – examples:

Aquatic Plant Biology, Ecology and Identification – participant and invited speaker at a NCSU – Extension conference, Raleigh, NC, 2018
Taxonomy and Ecology of Algae in the Southeast – co-organizer of a workshop for members of the North Carolina Lake Management Society (NALMS – Southeast Chapter), sponsored by NALMS, 2009, 2010, 2011, 2012
Algae Affecting Potable Water Supplies – AWWA, Savannah, GA, 2010
Identifying Harmful Cyanobacteria in North Carolina Potable Water Supplies – Organizer; two workshops for potable water treatment plant operators, sponsored by the NC Department of Health and Human Services, 2006
Occurrence of Toxigenic Cyanobacteria in the USA, International Symposium on Harmful Cyanobacterial Blooms, US Environmental Protection Agency (EPA), 2005

National Plan for Harmful Algal Research, Ecological Society of America and the National Oceanic and Atmospheric Administration (NOAA), 2004
Social and Environmental Impacts of Concentrated Animal Feed Operations, The University of Iowa and the National Institute of Environmental Health Sciences (NIEHS), 2004
Harmful Algae Technical Advisory Committee Workshop, Maryland Department of Natural Resources (MD DNR) and Maryland Department of Environment (MD DE), 2000, 2001, 2002
Re-evaluation of Microbial Water Quality: Powerful New Tools for Detection and Risk Assessment, American Academy of Microbiology, 2000
Conservation Medicine Workshop, Center for Conservation Medicine of Tufts University, 1999
Harmful Algal Blooms: Research and Monitoring Programs, US EPA - Region IV, 1998
European Harmful Algal Blooms (EUROHAB) Science Initiative, Marine Science and Technology Programme of the European Commission, 1998
Harmful Algal Blooms and Human Health, NIEHS, 1997
Pocomoke River Fish Disease, MD DNR, 1997
Developing an Environmental Education Video on Water Resource Issues in North Carolina, Z. Smith Reynolds Foundation, 1997
Control of Blue-Green Algae in Rainbow Springs, Florida, Department of Fisheries and Aquaculture, University of Florida, 1996
Harmful Algal Blooms - Research Initiative Development, NSF / NOAA, 1994
Seagrasses and Eutrophication Impacts, US EPA / Sarasota Bay National Estuary Program, 1993
Water Quality Regulations for Protection of Seagrass Habitat on the Gulf Coast, US EPA, 1992

Research Presentations (examples, past five years)

Buczek SB, Cope WG, Shehdan M, Bishop WM, Richardson RJ, Burkholder JM, Kwak TJ, Jessup J, Black TR. In situ Evaluation of Freshwater Mussel Sensitivity to Prescribed Algaecide Applications in a North Carolina Piedmont Reservoir. North Carolina Chapter of the American Fisheries Society, Morganton, NC (2019, with published abstract).

Glibert PM, Wilkerson FP, Dugdale RC, Raven JA, Dupont CL, Leavitt PR, Parker AE, Burkholder JM, Kana TM. Pluses and minuses of ammonium and nitrate uptake and assimilation by phytoplankton and implications for productivity and community composition, with emphasis on nitrogen-enriched conditions. ASLO – Puerto Rico (2019, with published abstract).

Lindor NL, Burkholder JM. Nutrient profiles, phytoplankton biomass, and algal assemblages in Falls Lake, North Carolina. UNC Water Resources Research Institute, Raleigh (2019, with published abstract).

Burkholder JM, Kinder CA, Reed RE, James J, Mackenzie L, Allen EH. Changing Water Quality in Falls Lake, the Triangle's Major Potable Source Water. UNC Water Resources Research Institute, Raleigh, NC (2018, with published abstract).

Lindor N, Burkholder JM. Eutrophication, nutrient stoichiometry, and phytoplankton blooms in a southeastern U.S. reservoir. Fall meeting of the North Carolina chapter of NALMS, Raleigh (2018, with published abstract).

Burkholder JM, Allen EH. Potable Source-Water Reservoirs in the Southeast: Forecast for Cyanobacteria Blooms. Southeast Chapter of the North American Lake Management Society, Asheville, NC (2018, with published abstract).

Burkholder JM, Allen EH. Droughts, Internal and External Nutrient Supplies, and Toxic Cyanobacteria Outbreaks in Potable Source Waters of the Southeast. Society for Freshwater Science, Raleigh, NC (2017, with published abstract).

Academic Contributions

Courses Taught

- PB 595A, *Aquatic Plant Ecology* (4 credits; 1987 - present, fall alternate years; updated each time)
- PB 595W / AEC 495/592, *Environmental Issues in Aquatic Ecology* (3 credits, 1990 - present, usually fall alternate years) - special topics/current events graduate course, updated each time
- PB/MB 774, *Phycology* (3 credits including laboratories; 1987 - present, spring alternate years, updated each time)
- BO 595E, *Ecology, Evolution and Diversity* – (2003; course coordinator, Jon Stuckey); mini-course: designed and taught one of eight modules on aquatic vascular plants as bioinvaders
- PB 824C, *Plant Biology Colloquium* (1 credit) – co-taught with Nina Allen (spring 2002, 2004, 2006) or Bill Thompson (spring 2009, 2011, 2013); graduate students receive training to give presentations, write grant proposals, and critique grant proposals)
- HON 398, *Honors Seminar on Aquatic Ecology* (1 credit, spring 2008) – seminar/discussion course for undergraduate honors students on aquatic natural resource issues in North Carolina
- EMS 496/622/822 or TDE 490/610 – STEM Education Seminar Course, *Environmental Issues in Estuarine Ecology and Pedagogical Applications* (1 credit, spring 2010), co-taught with P. Simmons and A. Clark.
- AEC 495/592, *The Biology, Ecology and Diversity of Algae* (3 credits including laboratories; spring 2019)

Major or Co-major Advisor of Graduate Students

Nicole Lindor, Ph.D. (Plant and Microbial Biology, in progress, 2014-)
Received a WRRI grant ($10,000, 2018)

Stacie Flood, Ph.D. (Plant and Microbial Biology, 2017)
Thesis: Ecotoxicology of estuarine phytoplankton growth and toxicity in response to atrazine exposures.
Post-Graduate Position: Postdoctoral research associate, U.S. EPA, Research Triangle Park, NC (2017).

Stephanie Mixson, Ph.D. (Plant and Microbial Biology [department name change from Plant Biology] - 2013)
Thesis: *Dunaliella* spp. under environmental stress: Enhancing lipid production and optimizing harvest
Honor: Secured a grant to help support her dissertation research, from the Charles A. and Anne Morrow Lindbergh Foundation (2010)
Post-Graduate Position: Analytical Development Specialist, Medicago USA, Research Triangle Park (2013)

Kimberly Null, Ph.D. (MEAS; co-advisor with Dr. Dave DeMaster), 2010
Thesis: Ammonium dynamics in a shallow lagoonal estuary
Honors: Secured two grants to help support her dissertation research, from the NC Academy of Science (2006) and the Geological Society of America (2006)
Post-Graduate Positions: Post-Doctoral Research Associate, University of California - Santa Cruz, then Post-Doctoral Research Associate, East Carolina University - Greenville, NC (research in Antarctica)

Hayley Skelton, Ph.D. (MEAS; co-advisor, Dr. Dan Kamykowski), 2008
Thesis: Nutritional features and feeding behavior of the heterotrophic dinoflagellate, *Pfiesteria shumwayae*
Honor: Won the Theodore L. Jahn and Eugene C. Bovee Award for best graduate student research paper, annual meeting of the International Society of Protozoologists, Providence, RI (2007)

Post-Graduate Positions: Post-Doctoral Fellow, National Research Council, NOAA / University of Connecticut (2008), then Supervisor of Algal Culturing, Algenol Biofuels, Fort Myers, FL (2009)

Meghan Rothenberger, Ph.D. (Plant Biology), 2007
Thesis: Long-term impacts of changing land use practices on water quality and phytoplankton assemblages in the Neuse Estuary ecosystem, North Carolina
Honors: Won best graduate research presentation, Graduate Student Forum, Department of Plant Biology (2007)
Won best Ph.D. dissertation of the year (2007) at NCSU, from the NCSU Graduate School (2008)
Post-Graduate Positions: Post-Doctoral Associate, CAAE (Visiting Professor, UNC Greensboro; then assistant professor at Lafayette College, Easton, PA)

Susan Pate, M.Sc. (Botany), 2006
Thesis: Impacts of the toxic dinoflagellate *Alexandrium monilatum* on three ecologically important shellfish species
Post-Graduate Position: Laboratory Administrator (Biotechnology), Duke University

Matthew Parrow, Ph.D. (Botany), 2003
Thesis: Feeding, reproduction, and sexuality in *Pfiesteria* spp. and cryptoperidiniopsoid estuarine heterotrophic dinoflagellates
Honor: Won the Kellar Award for outstanding dissertation research (NCSU), 2004
Post-Graduate Positions: Post-Doctoral Associate, CAAE (now Assistant Professor, UNC Charlotte)

Paul Cancellieri, M.Sc. (Botany), 2001
Thesis: Chemosensory attraction of *Pfiesteria* spp. to fish secreta
Post-Graduate Position: Teacher, Durant Middle School, Raleigh

Howard Glasgow, Ph.D. (MEAS; co-advisor; main advisor, Dr. Dan Kamykowski), 2000
Thesis: Biology and impacts of toxic *Pfiesteria* complex species
Post-Graduate Position: Researcher, CAAE (permanently disabled by a neurological illness)

Jeffrey Springer, M.Sc. (MEAS; co-advisor, Dr. Dave Eggleston), 2000
Thesis: Interactions between two commercially important species of bivalve molluscs and the toxic estuarine dinoflagellate, *Pfiesteria piscicida*
Honor: Won the Best Student Presentation Award at the Annual Meeting of the National Shellfish Association, Seattle, WA, 2002
Post-Graduate Position: Research Associate, CAAE

Naomi Tsurumi, M.A. (Botany), 2000 Thesis: Influence of Industrialized Swine Agriculture on Air Quality
Post-Graduate Position: Environmental Policy M.A. program, Duke University

Brant Touchette, Ph.D. (Botany), 1999
Thesis: Physiological and developmental responses of eelgrass (*Zostera marina* L.) to increases in water-column nitrate and temperature
Post-Graduate Position: Assistant Professor, Elon University (now associate professor)

Elizabeth Fensin, M.Sc. (Botany), 1997
Thesis: Population dynamics of *Pfiesteria*-like dinoflagellates, and environmental controls in the mesohaline Neuse Estuary, North Carolina, USA
Post-Graduate Position: Research Assistant, North Carolina Department of Environment and Natural Resources (then called the NC Department of Environment, Health, and Natural Resources)

L. Michael Larsen, Ph.D. (Zoology; co-advisor with Dr. Sam Mosley), 1995
Thesis: Responses of *Diaphanosoma brachyurum* (Cladocera: Suicide) and other zooplankton to clay loading and algal food quality in a turbid southeastern reservoir.
Post-Graduate Position: Assistant Professor, Campbell University, Fayetteville, NC (now Professor and Department Chair, Biology)

Leslie (Taylor) Taggett, M.Sc. (Botany), 1995
Thesis: Nitrate reductase activity of two intertidal macroalgae across gradients of temperature, salinity and desiccation
Post-Graduate Position: Research Assistant – Analytical Chemistry Laboratory, NC DEHNR

Virginia Coleman, M.Sc. (Botany), 1993
Thesis: Community structure and productivity of epiphytic microalgae on eelgrass (*Zostera marina* L.) under water-column nitrate enrichment
Post-Graduate Position: Research Associate – Algal Laboratory, NC Department of Environment and Natural Resources

Phumelele Gama, M.S. (Botany), 1992
Thesis: Phytoplankton response to a sediment loading gradient in a mesotrophic reservoir
Post-Graduate Position: Lecturer of Botany, University of Zululand, South Africa

Deborah Everitt (Tan), M.S. (Botany), 1992
Thesis: Seasonal dynamics of macrophyte communities from a stream flowing over granite flatrock in North Carolina, USA
Post-Graduate Position: Stream Scientist, MD Department of Natural Resources

Other Graduate Student Committee Memberships

Ph.D.
Stephanie Archer, Applied Ecology
Yini Shangguan, U MD (Center for Environmental Science)
Brett Hartis, Fisheries, Wildlife and Conservation Biology
Geoff Sinclair, MEAS
Diane Whitaker, Science Education
Katherine Galucci, Science Education
Daniel Dickerson, Science Education
Nancy White, Forestry
Louis Elsing, Forestry
Dennis Hazel, Forestry
Gary Kirkpatrick, Zoology
Francois Bergand, Biological and Agricultural Engineering
Leslie Dorworth, MEAS
Thomas Shahady, Zoology
Randall Jackson, Zoology
Elise Irwin, Zoology
Kimberly Jones, Chemistry (UNC Wilmington)
George Hess, Biomathematics
Ann Darrien, Zoology
Elizabeth Marschall, Zoology

M.Sc.
Emily Vulgamore, Crop and Soil Science
Katherine Culatta, Plant and Microbial Biology

Susan Randolph, Science Education
John Grady, Plant Biology
Carolyn Foley, Botany
Chad Coley, Soil Science
Angela Poovey, Crop and Soil Science
Scott Thomas, Biological and Agricultural Engineering
Kristin Toffer, Biology, UNC Greensboro
Beth Buffington, Crop and Soil Science
Edward Walycz, MEAS
Lisa Hartley, Botany
Robert Clark, Zoology
Beth Walker, Zoology
Rose Ragnacci, MEAS
Karen Kracko, Zoology

Postdoctoral Associate Advisor

Meghan Rothenberger, 2007: Present position, Assistant Professor, Lafayette College
Matthew Parrow, 2004-2006: Present position, Assistant Professor, UNC Charlotte
Brant Touchette, 2000-2002: Present position, Associate Professor, Elon University
Cheng Zhang, 1999-2003: Present position, Research Scientist, North Carolina Department of Environment and Natural Resources

Visiting Fulbright Scholar

Allasanne Ouattara, Ivory Coast, 2008-2009: Professor from the University of Abobo-Adjamé

Activities in Other Academic Programs

Kenan Fellows Program (for gifted K-12 teachers)

Mentor to Amanda Warren (2009-2010)
Mentor to Susan Randolph (2009-2010)
Mentor to Diane Whittaker (2007-2008)
Secondary mentor to Gayle Powell (2007-2008)
Panelist on selection committee for Kenan Fellows (2007-2009)

Other NC State Service (examples)

Chair, Tenure Promotion Evaluation Committee (for Dr. A. Krings; departmental – Plant and Microbial Biology, 2016-present)
Member, Focus Group guiding the Office of the Executive Vice Chancellor and Provost in creating a Strategic Communications Plan for the Provost's office (University, 2016)
Member, CALS Innovation and Efficiency Committee (college, 2015)
Member, Big Ideas Committee (college, 2014-2015)
Member, William Neal Reynolds Distinguished Professor Selection Committee (college, 2014)
Member, College of Agriculture and Life Sciences Research Committee (college, 2011-2016)
Member, Executive Committee, Applied Ecology (departmental, 2013-)
Member, Advisory Committee for the NCSU publication, *Results: Research and Innovation at North Carolina State University* (university, 2013-)

Education Outreach (examples, past five years)

K-12 Students and Teachers

The CAAE's *Floating Classroom Program* aboard our research/education ship, *RV Humphries*: Provided hands-on education in aquatic science (1/2-day cruise on the Neuse Estuary for 282 8th graders and their teachers (2016), 278 8th graders and their teachers (2015), 345 9th graders and their teachers (2014), 360 9th graders and their teachers (2013), and 480 9th graders and their teachers (2012) from Wayne County schools in economically depressed areas

General Citizenry

Randleman High School, Randleman, NC – senior science classes, invited presentation on harmful algae (2018)

League of Women Voters, Chapel Hill, NC – invited presentation on water quality issues in NC (2018)

Environmental Seminar Series - Water, High Point University (invited presentation on North Carolina's environmental report card), 2017

Women's Club of Raleigh, Raleigh, NC, (invited presentation on the safety of the area's drinking water), 2016

Good Shepherd United Church of Christ, Cary, NC, March 2015 (Ms. Anne Mackie)

Status of Drinking Water Quality and Protection in North Carolina (League of Women Voters), 2014

Forum on Status of the Neuse Estuary and Industrialized Swine Production (presentation to Coastal River Watch), 2013

Water Quality in High Rock Lake (presentation to the Yadkin Riverkeeper Foundation), 2015

Other Service - Member, City of Raleigh Stormwater Commission, 2015-2016

Society Memberships – American Association for the Advancement of Science (AAAS), Association for the Sciences of Limnology and Oceanography (ASLO), Coastal and Estuarine Research Federation (CERF), North American Lake Management Society (NALMS), Phi Kappa Phi, Phycological Society of America, Sigma Xi