

## Curriculum Vitae

### JoAnn Burkholder

William Neal Reynolds Distinguished Professor  
Director, Center for Applied Aquatic Ecology  
Department of Plant Biology - Center for Applied Aquatic Ecology  
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### Contact Information

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### Education

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

[note - did not have a postdoctoral position]

### Research Interests

Chronic effects of eutrophication on aquatic ecosystems (freshwater, estuarine, and coastal marine); biology, ecology, impacts and mitigation of harmful algal blooms; ecology of aquatic angiosperms; quantification of pollutant loads to rivers and estuaries, and long-term effects; influences of changing land use on water quality

### Professional Experience

1999 - present	Director, CAAE, Department of Plant Biology (formerly Botany), NCSU, Raleigh, NC
1998 - present	Professor, Department of Plant Biology, NCSU
1993 - 1997	Associate Professor, Department of Botany, NCSU
1993 - present	Adjunct Professor, Department of Marine, Earth and Atmospheric Sciences (MEAS), NCSU
1986 - 1992	Assistant Professor, Department of Botany, NCSU
1982 - 1986	Graduate Research Assistant, Michigan State University (W.K. Kellogg Biological Station), Hickory Corners, MI
1981 (fall)	Instructor, <i>Introductory Chemistry</i> (for science majors), Quinebaug Valley Community College, Danielson, CT
1979 - 1980	Instructor of <i>Marine Botany</i> , summers, St. Georges College Prep. School, Newport, RI
1978 - 1981	Graduate Research Assistant and Graduate Teaching Assistant, Department of Botany, University of Rhode Island, Kingston, RI
1976 - 1977	Environmental Scientist, EcolSciences, Inc., Rockaway, NJ
1974 - 1975	Undergraduate Research Assistant, Limnology Laboratory, Department of Zoology, Iowa State University, Ames, IA

### Awards and Distinctions

2009	Borlaug Joint Award for Service to the Environment and Society, College of Agriculture and Life Sciences/ College of Natural Resources, NCSU
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- 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

### Other Honors

- 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 collaborators including the great core professionals at the NCSU CAAE)

### ***Freshwater Ecosystems***

- Research team 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 are also helping to safeguard drinking water supplies depended upon by more than half a million people (platform effort led by Robert Reed)
- Documented adverse effects from confined swine feed operations on surface waters in the Southeast (with research team including graduate students, and colleague Mike Mallin)
- Experimentally quantified interactions between nutrient and sediment loadings in controlling noxious algal blooms in turbid reservoirs (with colleague John Parsons, now deceased)
- First to document widespread occurrence, at low levels, of cyanotoxins in major potable water supplies in North Carolina (with research team including undergraduate students, and colleague Brant Touchette)
- 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 *P. shumwayae*, as causative agents of major estuarine fish kills (with research team); this research also led to colleagues' discovery of a group of *Pfiesteria* toxins, new to science, that may be helpful in understanding human memory disorders
- 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 (platform effort and patent led by collaborator Robert Reed)
- Discovered a striking increase in ammonium concentrations in the Neuse and Cape Fear estuaries over the past decade, linked to increased nonpoint source pollution from confined swine feed operations and other sources, and related the ammonium increase to stimulation of harmful algae (with research team including graduate students)
- 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 (with research team; modeling effort led by Robert Reed and Carol Kinder; statistical trend analysis led by Dave Dickey and Carol Kinder)
- First to show that shallow lagoonal estuarine ecosystems are resilient to the adverse effects of hurricanes, recovering within 4-5 years (with research team and colleagues Reide Corbett, Dave Eggleston, Martin Posey, Cavell Brownie, Gerry Janowitz, and Troy Alphin)

### **Publications** (peer-reviewed - in scientific journals, books, symposia volumes)

- 1) Burkholder JM, Bachmann RW (1979) Potential phytoplankton productivity in three Iowa streams. *Proceedings of the Iowa Academy of Sciences* 86: 22-25.
- 2) Sheath RG, Burkholder JM (1983) Morphometry of *Batrachospermum* populations intermediate

- between *B. boryanum* and *B. ectocarpum* (Rhodophyta). *Journal of Phycology* 19: 324-331.
- 3) Burkholder JM, Sheath RG (1984) The seasonal distribution, abundance and diversity of desmids (Chlorophyta) in a softwater, north temperate stream. *Journal of Phycology* 20: 159-172.
  - 4) Sheath RG, Burkholder JM (1985) Characteristics of softwater streams in Rhode Island. II. Composition and seasonal dynamics of macroalgal communities. *Hydrobiologia* 128: 109-118.
  - 5) Burkholder JM, Sheath RG (1985) Characteristics of softwater streams in Rhode Island, U.S.A. I. A comparative analysis of physical and chemical features. *Hydrobiologia* 128: 97-108.
  - 6) Bachmann MD, Carlton RG, Burkholder JM, Wetzel RG (1986) Symbiosis between salamander eggs and green algae: Microelectrode measurements inside eggs demonstrate effects of photosynthesis on oxygen concentrations. *Canadian Journal of Zoology* 64: 1586-1588.
  - 7) Sheath RG, Burkholder JM, Hambrook JA, Hogeland A, Hoy E, Kane ME, Morison MO, Steinman AD, Van Alstyne KL (1986) Characteristics of softwater streams in Rhode Island. III. Distribution of macrophytic vegetation in a small drainage basin. *Hydrobiologia* 140: 183-191.
  - 8) Sheath RG, Burkholder JM, Morison MO, Steinman AD, Van Alstyne KL (1986) Effect of tree canopy removal by gypsy moth larvae on the macroalgae of a Rhode Island headwater stream. *Journal of Phycology* 22: 567-570.
  - 9) Moeller RE, Burkholder JM, Wetzel, RG (1988) Significance of sedimentary phosphorus to a rooted submersed macrophyte (*Najas flexilis*) and its algal epiphytes. *Aquatic Botany* 32: 261-281.
  - 10) Sheath RG, Burkholder JM (1988) Stream macroalgae, pp. 53-59. In: *Freshwater and Marine Plants of Rhode Island*, by Sheath RG and Harlin MM (eds.). Kendall/Hunt Publishers, Dubuque (IA), 149 pp.
  - 11) Burkholder JM, Wetzel RG (1989) Microbial colonization on natural and artificial macrophytes in a phosphorus-limited hardwater lake. *Journal of Phycology* 25: 55-65.
  - 12) Burkholder JM, Wetzel RG (1989) Epiphytic microalgae on natural substrata in a hardwater lake: Seasonal dynamics of community structure, biomass, and ATP content. *Archives für Hydrobiologie/Supplement* 83: 1-56.
  - 13) Burkholder, J.M. and R.G. Wetzel (1990) Epiphytic alkaline phosphatase on natural and artificial plants in an oligotrophic lake: Re-evaluation of the role of macrophytes as a phosphorus source for epiphytes. *Limnology and Oceanography* 35: 736-747.
  - 14) Burkholder JM, Wetzel RG, Klomparens KL (1990) Direct comparison of phosphate uptake by adnate and loosely attached microalgae within an intact biofilm matrix. *Applied and Environmental Microbiology* 56: 2882-2890.
  - 15) 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.
  - 16) Burkholder JM, Cuker BE (1991) Response of periphyton communities to clay and phosphate loading in a shallow reservoir. *Journal of Phycology* 27: 373-384.
  - 17) Everitt DT, Burkholder JM (1991) Seasonal dynamics of macrophyte communities from a stream flowing over granite flatrock in North Carolina, U.S.A. *Hydrobiologia* 222: 159-172.
  - 18) Burkholder JM (1992) Phytoplankton and episodic suspended sediment loading: Phosphate partitioning and mechanisms for survival. *Limnology and Oceanography* 37: 974-988.
  - 19) 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.

- 20) Burkholder JM, Noga EJ, Hobbs CW, Glasgow HB, Smith SA (1992) New "phantom" dinoflagellate is the causative agent of major estuarine fish kills. *Nature* 358: 407-410, *Nature* 360: 768.
- 21) Mallin MA, Burkholder JM, Sullivan MJ (1992) Benthic microalgal contributions to coastal fishery yield. *Transactions of the American Fisheries Society* 121: 691-695.
- 22) Martin TH, Crowder LB, Dumas CF, Burkholder JM (1992) Indirect effects of fish on macrophytes in Bays Mountain Lake: Evidence for a littoral trophic cascade. *Oecologia* 89: 476-481.
- 23) Noga EJ, Smith SA, Burkholder JM, Hobbs CW, Bullis RW (1993) A new ichthyotoxic dinoflagellate: Cause of acute mortality in aquarium fishes. *Veterinary Record* 133: 48-49.
- 24) 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.
- 25) Coleman VL, Burkholder JM (1994) Community structure and productivity of epiphytic microalgae on eelgrass (*Zostera marina* L.) under water-column nitrate enrichment. *Journal of Experimental Marine Biology and Ecology* 179: 29-48.
- 26) Burkholder JM, Glasgow HB (1995) Interactions of a toxic estuarine dinoflagellate with microbial predators and prey. *Archiv für Protistenkunde* 145: 177-188.
- 27) Burkholder JM, Glasgow HB, Hobbs CW (1995) Distribution and environmental conditions for fish kills linked to a toxic ambush-predator dinoflagellate. *Marine Ecology Progress Series* 124: 43-61.
- 28) Burkholder JM, Glasgow HB, Steidinger KA (1995) Stage transformations in the complex life cycle of an ichthyotoxic "ambush-predator" dinoflagellate, pp. 567-572. In: Harmful Marine Algal Blooms, by Lassus P, Arzul G, Erard E, Gentien P, Marcaillou C (eds.). Lavoisier, Intercept Ltd., Paris.
- 29) Coleman VL, Burkholder JM (1995) Response of microalgal epiphyte communities to nitrate enrichment in an eelgrass (*Zostera marina* L.) meadow. *Journal of Phycology* 31: 36-43.
- 30) Glasgow HB, Burkholder JM, Schmechel DE, Fester PA, Rublee PA (1995) Insidious effects of a toxic dinoflagellate on fish survival and human health. *Journal of Toxicology and Environmental Health* 46: 501-522.
- 31) Lewitus AJ, Jesien RV, Kana TM, Burkholder JM, Glasgow HB, May E (1995) Discovery of the "phantom" dinoflagellate in Chesapeake Bay. *Estuaries* 18: 373-378.
- 32) Mallin MA, Burkholder JM, Larsen LM, Glasgow HB (1995) Response of two zooplankton grazers to an ichthyotoxic estuarine dinoflagellate. *Journal of Plankton Research* 17: 351-363.
- 33) Steidinger KA, Truby EW, Garrett JK, Burkholder JM (1995) The morphology and cytology of a newly discovered toxic dinoflagellate, pp. 83-88. In: Harmful Marine Algal Blooms, by Lassus P, Arzul G, Erard E, Gentien P, Marcaillou C (eds.). Lavoisier, Intercept Ltd., Paris.
- 34) Burkholder JM (1996) Interactions of benthic algae with their substrata, pp. 253-297. In: Benthic Algae in Freshwater Ecosystems, by Stevenson RJ, Bothwell M, Lowe RL (eds.). Academic Press, New York.
- 35) Noga EJ, Khoo L, Stevens JB, Fan Z, Burkholder JM (1996) Novel toxic dinoflagellate causes epidemic disease in estuarine fish. *Marine Pollution Bulletin* 32: 219-224.
- 36) Steidinger KA, Burkholder JM, Glasgow HB, Hobbs CW, Truby E, Garrett J, Noga EJ, Smith SA (1996) *Pfiesteria piscicida* gen. et sp. nov. (Pfiesteriaceae, fam. nov.), a new toxic dinoflagellate with a complex life cycle and behavior. *Journal of Phycology* 32: 157-164.

- 37) Burkholder JM, Glasgow HB (1997) *Pfiesteria piscicida* and other toxic *Pfiesteria*-like dinoflagellates: Behavior, impacts, and environmental controls. *Limnology and Oceanography* 42: 1052-1075.
- 38) Burkholder JM, Glasgow HB (1997) Trophic controls on stage transformations of a toxic ambush-predator dinoflagellate. *Journal of Eukaryotic Microbiology* 44: 200-205.
- 39) 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.
- 40) Levin ED, Schmechel DE, Burkholder JM, Glasgow HB, Deamer-Melia N, Moser VC, Harry GJ (1997) Persistent learning deficits in rats after exposure to *Pfiesteria piscicida*. *Environmental Health Perspectives* 105: 1320-1325.
- 41) 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 streamwaters. *Journal of Environmental Quality* 26: 1622-1631.
- 42) Burkholder JM (1998) Implications of harmful marine microalgae and heterotrophic dinoflagellates in management of sustainable marine fisheries. *Ecological Applications* 8: S37-S62.
- 43) Burkholder JM, Glasgow HB, Lewitus AJ (1998) Physiological ecology of *Pfiesteria piscicida* with general comments on "ambush-predator" dinoflagellates, pp. 175-191. In: *Physiological Ecology of Harmful Algae*, by Anderson DM, Cembella A, Hallegraeff GM (eds.). NATO ASI Series G: Ecological Sciences, Vol. 41. Springer-Verlag, Berlin.
- 44) 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.
- 45) Glasgow HB, Lewitus AJ, Burkholder JM (1998) Feeding behavior of the ichthyotoxic estuarine dinoflagellate, *Pfiesteria piscicida*, on amino acids, algal prey, and fish vs. mammalian erythrocytes, pp. 394-397. In: *Harmful Microalgae – Proceedings, VIIth International Conference on Harmful Algal Blooms* by Reguera B, Blanco J, Fernandez ML, Wyatt T (eds.). Xunta de Galicia and IOC of UNESCO, Paris.
- 46) Burkholder JM, Glasgow HB (1999) Science ethics and its role in early suppression of the *Pfiesteria* issue. *Human Organization* 58: 443-455.
- 47) Burkholder JM, Mallin MA, Glasgow HB (1999) Fish kills, bottom-water hypoxia, and the toxic *Pfiesteria* complex in the Neuse River and Estuary. *Marine Ecology Progress Series* 179: 301-310.
- 48) Burkholder JM, Springer JJ (1999) Signaling in dinoflagellates, pp. 335-359. In: *Microbial Signaling and Communication*, by England RR, Hobbs G, Bainton NJ, Roberts DMcL (eds.). Fifty-Seventh Symposium of the Society for General Microbiology. Cambridge University Press, Oxford.
- 49) Fairey ER, Edmunds JS, Deamer-Melia NJ, Glasgow HB, Johnson FM, Moeller PR, Burkholder JM, Ramsdell JS (1999) Reporter gene assay for fish killing activity produced by *Pfiesteria piscicida*. *Environmental Health Perspectives* 107: 711-714.
- 50) Harvell CD, Kim K, Burkholder JM, Colwell RR, Epstein PR, Grimes J, Hofmann EE, Lipp E, Osterhaus ADME, Overstreet R., Porter JW, Smith GW, Vasta G (1999) Emerging marine diseases: Climate links and anthropogenic factors. *Science* 285: 1505-1510.
- 51) Levin ED, Simon BB, Schmechel DE, Glasgow HB, Deamer-Melia NJ, Burkholder JM, Moser VC, Jensen K, Harry GJ (1999) *Pfiesteria* toxin and learning performance. *Neurotoxicology and Teratology* 21: 215-221.
- 52) Lewitus AJ, Glasgow HB, Burkholder JM (1999) Kleptoplastidy in the toxic dinoflagellate,

- Pfiesteria piscicida*. *Journal of Phycology* 35:303-312.
- 53) Lewitus AJ, Willis BM, Hayes KC, Burkholder JM, Glasgow HB, Glibert PM, Burke MK (1999) Mixotrophy and nitrogen uptake by *Pfiesteria piscicida* (Dinophyceae). *Journal of Phycology* 35: 1430-1437.
  - 54) Rublee PA, Kempton J, Schaefer E, Burkholder JM, Glasgow HB, Oldach D (1999) PCR and FISH detection extends the range of *Pfiesteria piscicida* in estuarine waters. *Virginia Journal of Science* 50: 325-336.
  - 55) Burkholder JM (2000) Critical needs in harmful algal bloom research, pp. 126-149. In: *Opportunities for Environmental Applications of Marine Biotechnology*. National Academy of Sciences – National Research Council, Washington, DC.
  - 56) 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.
  - 57) Bowers HA, Tengs T, Glasgow HB, Burkholder JM, Rublee PA, Oldach DW (2000) Development of real-time PCR assays for rapid detection of *Pfiesteria piscicida* and related dinoflagellates. *Applied and Environmental Microbiology* 66: 4641-4648.
  - 58) Glasgow HB, Burkholder JM (2000) Water quality trends and management implications from a five-year study of a eutrophic estuary. *Ecological Applications* 10: 1024-1046.
  - 59) Levin ED, Rezvani AH, Christopher NC, Glasgow HB, Deamer-Melia NJ, Burkholder JM, Moser VC, Jensen K (2000) Rapid neurobehavioral analysis of *Pfiesteria piscicida* effects in juvenile and adult rats. *Neurotoxicology and Teratology* 22: 533-540.
  - 60) Levin ED, Schmechel DE, Glasgow HB, Deamer-Melia NJ, Burkholder JM (2000) *Pfiesteria* toxin, pp. 975-976. In: *Experimental and Clinical Neurotoxicology* (2nd edition), by Spencer PS, Shaumburg HS, Ludolph AC (eds.). Oxford University Press, New York.
  - 61) Mallin MA, Burkholder JM, Cahoon LB, Posey MH (2000) The North and South Carolina Coasts. In: *The Seas at the Millennium*, by Shepherd C (ed.). Academic Press, New York. Also among several contributions selected from this multi-volume set, for publication in *Marine Pollution Bulletin* (vol. 41, pp. 56-75).
  - 62) Oldach DW, Delwiche, Jakobsen KS, Tengs T, Brown EG, Kempton JW, Schaefer EF, Bowers H, Glasgow HB, Burkholder JM, Steidinger KA, Rublee PA (2000) Heteroduplex mobility assay guided sequence discovery: elucidation of the small subunit (18S) rDNA sequence of *Pfiesteria piscicida* and related dinoflagellates from complex algal culture and environmental sample DNA pools. *Proceedings of the National Academy of Sciences (USA)* 97: 4303-4308.
  - 63) Touchette BW, Burkholder JM (2000) Overview of the physiological ecology of carbon metabolism in seagrasses. *Journal of Experimental Marine Biology and Ecology* 250: 169-205.
  - 64) Touchette BW, Burkholder JM (2000) Review of nitrogen and phosphorus metabolism in seagrasses. *Journal of Experimental Marine Biology and Ecology* 250: 133-167.
  - 65) Burkholder JM (2001) Chronic impacts from toxic microalgae on finfish, shellfish and human health, pp. 103-126. In: *Waters in Peril*, by Bendell-Young L, Gallaugh P (eds.). Kluwer Academic Publishers, Dordrecht, the Netherlands.
  - 66) Burkholder JM (2001) Eutrophication and oligotrophication, pp. 649-670. In: *Encyclopedia of Biodiversity*, Vol. 2, by Levin S (ed.). Academic Press, New York.
  - 67) Burkholder JM, Glasgow HB (2001) History of toxic *Pfiesteria* in North Carolina estuaries from 1991 to the present. *BioScience* 51: 827-841.

- 68) Burkholder JM, Glasgow HB, Deamer-Melia NJ (2001) Overview and present status of the toxic *Pfiesteria* complex. *Phycologia* 40: 186-214.
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- 72) Glasgow HB, Burkholder JM, Mallin MA, Deamer-Melia NJ, Reed RE (2001) Field ecology of toxic *Pfiesteria* complex species, and a conservative analysis of their role in estuarine fish kills. *Environmental Health Perspectives* 109: 715-730.
- 73) Glasgow HB, Burkholder JM, Morton SL, Springer J (2001) A second species of ichthyotoxic *Pfiesteria* (Dinamoebales, Pyrrhophyta). *Phycologia* 40: 234-245.
- 74) Glasgow HB, Burkholder JM, Morton SL, Springer J, Parrow MW (2001) The fish-killing activity and nutrient stimulation of a second toxic *Pfiesteria* species, pp. 97-100. In: *Harmful Algal Blooms 2000*, by Hallegraeff GM, Blackburn SI, Bolch CJ, Lewis RJ (eds.). IOC of UNESCO, Paris.
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- Burkholder JM, Allen EH, Kinder CA, Morris E (2010) *Assessment of Water Resources and Watershed Conditions in the Chattahoochee River National Recreation Area, Georgia*. Draft Report to the Southeast Coast Inventory and Monitoring Network of the National Park Service, Southeast Regional Office, Atlanta, GA, 202 pp.
- Burkholder JM, Rothenberger MB (2010) *Assessment of Water Resources and Watershed Conditions in Horseshoe Bend National Military Park, Alabama*. Draft Report to the Southeast Coast Inventory and Monitoring Network of the National Park Service, Southeast Regional Office, Atlanta, GA, 51 pp.
- Burkholder JM (2010) *Assessment of Water Resources and Watershed Conditions in the Kennesaw Mountain National Battlefield Park, Georgia*. Draft Report to the Southeast Coast Inventory and Monitoring Network of the National Park Service, Southeast Regional Office, Atlanta, GA, 71 pp.
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- Burkholder JM, Glasgow HB, Rublee PA, Shumway SE (2001) *The Toxic Dinoflagellate, Pfiesteria, as a Potential Biosensor of Estuarine Stress*. Final Report to the U.S. EPA, Washington, DC, 108 pp.
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Burkholder JM (1999) *The Role of Toxic Dinoflagellates in Fish Lesions*. Issue paper prepared for the U.S. Army. Office, Assistant Secretary of the Army - Installations, Logistics and Environment. Pentagon, Washington, DC.

Burkholder JM (1998) *The Toxic Pfiesteria Complex: A Scientific Discussion of its History, Ethology, and Impacts on Human Health*. Office, Assistant Secretary of the Army - Installations, Logistics and Environment. Pentagon, Washington, DC.

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### **Non-Referred and Popular Press Articles**

Burkholder JM (2006) A major potable water supply reservoir poised for increased cyanobacteria blooms. *LakeLine* (summer), pp. 49-51.

Burkholder JM (2003) Science and the press. On-line modules (editor, N. Kriesberg), NCSU, Raleigh.

Schmechel DE, Burkholder JM, Attix DK, Glasgow HB (2002) Toxic *Pfiesteria*. Microbiology No. MB 02-5 (MB-036). *Check Sample, American Society for Clinical Pathology* 45:65-88.

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President's Committee of Advisors on Science and Technology (PCAST) (1998) *Teaming with Life: Investing in Science to Understand and Use America's Living Capital*. Section I: Make Use of Current Knowledge in Managing Biodiversity and Ecosystems of the U.S., p.27. PCAST Panel on Biodiversity and Ecosystems, Washington, DC.

Burkholder JM (1997) *Pfiesteria* and Nutrient Pollution. Requested by Maryland's Governor Glendening for a summit meeting of five governors of states in the Chesapeake Bay watershed, Annapolis, pp. 1-5.

Burkholder JM (1995) Fish kills' message: Get serious about reducing nutrient over-enrichment to our estuaries, pp.1-3. *In: WaterWise*, by Doll B (Ed.). Vol. 1, 2<sup>nd</sup> Quarter. NC Sea Grant News Letter, Raleigh.

Coastal Futures Committee (1994) *Charting a Course for our Coast - A Report to the Governor of North Carolina*. L.R. Preyer, Chair. NC Department of Environment, Health and Natural Resources,

Raleigh, 106 pp. [As the only scientist on the 15-member committee, I contributed substantially to all sections related to water quality, habitat, and fisheries in the document, and to the executive summary of prioritized recommendations.]

Burkholder JM (1993) Vital grasses need clean water to grow. *In: Currents*, News Letter of the Pamlico-Tar River Foundation, Vol. 13, Fall, p.7, Washington (NC).

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Burkholder JM (1993) Golf course runoff: View from below the water surface, pp. 18-23. *In: Is Golfing Green? The Impact of Golf Courses on the Coastal Environment*. Symposium Proceedings (sponsored by the NC Coastal Federation and the NCSU Cooperative Extension Service through the NC Sea Grant College Program), Wilmington.

## **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**

### ***Editorial***

Editorial Board, *Journal of Experimental Marine Biology and Ecology*, 2005 - present

Editorial Board, *Harmful Algae*, 2002 - present

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 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 of the International Congress of Protozoology, 2001

Session Chair, New Harmful Algae, 10<sup>th</sup> International Conference on Harmful Algal Blooms, 2000

Session Chair, *Pfiesteria* in the Southeast, 1<sup>st</sup> National Symposium on Harmful Algae, 2000

Session Chair, Harmful Algae, 15<sup>th</sup> Biennial International Conference of the Estuarine Research Federation, 1999

Session Co-Chair, Harmful Algal Blooms, Annual Summer Meeting of the American Society of Limnology and Oceanography, 1998

Session Co-Chair, Harmful Algal Blooms, Joint Meeting of the American Society of Limnology and Oceanography and the 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 of the International Phycological Congress and

the Phycological Society of America, 1991  
Session Chair, Phytoplankton, Annual Meeting of the American Society of Limnology and Oceanography, 1988

### ***External Panels and Reviews***

Member, panel review of the South Florida Environmental Report for the South Florida Water Management District, 2006, 2007, 2008, 2009, 2010, 2011  
Examiner (“Opponent”) of doctoral candidate Johannes Hagström, 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)***

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  
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  
Conflicted Science / Integrity in Science Conference and Workshop, Center for Science in the Public Interest, Washington, DC, 2003  
Estuarine Fish Disease, Delaware Department of Natural Resources & Environmental Control, 2000  
Harmful Algae Technical Advisory Committee Workshop, Maryland Department of Natural Resources (MD DNR) and Maryland Department of Environment (MD DE), 2001, 2001, 2000  
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  
*Pfiesteria* Workshops - Sampling and Identification (organizer), NCSU, 1998  
*Pfiesteria* Sampling and Identification Protocols, Centers for Disease Control & Prevention, 1998  
European Harmful Algal Blooms (EUROHAB) Science Initiative, Marine Science and Technology Programme of the European Commission, 1998  
*Pfiesteria* and Water Quality Monitoring Standards Workshop, NOAA, 1998  
*Pfiesteria* and Human Health Workshop, Maryland Department of Health and Mental Hygiene and the Maryland Medical Team, University of Maryland and Johns Hopkins, 1998  
State/Federal *Pfiesteria* Working Group - Monitoring Protocols, U.S EPA and NOAA, 1998  
Maryland Technical Advisory Committee Workshop on *Pfiesteria*, Fish Kills and Water Quality Monitoring, MD DNR, Baltimore, MD, 1998  
*Pfiesteria* Workshop, 14<sup>th</sup> Biennial International Conference of the Estuarine Research Federation,

Providence, RI, 1997

The Cambridge *Pfiesteria*/Nutrients Workshop, convened by Governor Glendening of Maryland, 1997. The final report, *The Cambridge Consensus*, was used by the governor and the Maryland legislature to change policy about non-point water pollution control in tributaries to Chesapeake Bay and led to passage of the Maryland Water Quality Act of 1998.

Impacts of Toxic *Pfiesteria*/*Pfiesteria*-like Dinoflagellates on Fisheries and Human Health, US EPA (Philadelphia, PA; Washington, DC; Pensacola, FL), 1997; Delaware Department of Environment and Water Resources, 1997

Harmful Algal Blooms and Human Health, NIEHS, 1997

Pocomoke River Fish Disease, MD DNR, 1997

Climate Variability and Human Health, American Society of Microbiology, 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

Sustainable Marine Fisheries, National Academy of Sciences Ocean Studies Board, 1996

Disease Events and Meteorology along the US Atlantic Coast, Harvard Medical School, 1995

National Nutrient Assessment Workshop - Estuaries, US EPA, Washington, DC, 1995

Harmful Algal Blooms - Research Initiative Development, NSF / NOAA, 1994

Seagrasses and Eutrophication Impacts, US EPA / Sarasota Bay National Estuary Program, 1993

Techniques in Sampling and Identification of *Pfiesteria* – NOAA, 1992; Florida Department of Environmental Protection - Florida Marine Research Institute, 1992; MD DNR, 1993; MD DE, 1993; Delaware Division of Water Quality, 1993

Target Issues: Development of RFP guidelines for a New NOAA Coastal Ocean Program Initiative on Harmful Algal Blooms, NOAA, 1992

Phytoplankton of the Southeastern United States, North Carolina Department of Environment, Health and Natural Resources (NC DEHNR) and Duke Power Company, 1992

Target Issues for Funding Support of Research on Toxic Phytoplankton, NOAA, 1992

Improved Data Base and Optimal Approaches for Modeling Water Quality in the Albemarle-Pamlico Estuarine System, US EPA and NC DEHNR, 1992

Water Quality Regulations for Protection of Seagrass Habitat on the Gulf Coast, US EPA, 1992

Improved Standards for Protecting Water Quality in the Albemarle-Pamlico Estuarine System, US EPA, 1991

Teaching Aquatic Botany to High School Students (organizer), NCSU, 1987, 1988

Light Microscope-Autoradiography of Microalgae (organizer), Bowling Green State University, Bowling Green, OH, 1987

## **Grants and Contracts**

Support for research and education outreach in aquatic sciences has been obtained from the National Science Foundation, the National Park Service, the U.S. Environmental Protection Agency, the National Oceanic and Atmospheric Administration, the U.S. Department of Defense, the Park Foundation, the Z. Smith Reynolds Foundation, the Centers for Disease Control and Prevention via the North Carolina Department of Health and Human Services, the North Carolina General Assembly, the UNC General Administration, the UNC Water Resources Research Institute, the North Carolina Clean Water Management Trust Fund, the Cities of Raleigh and High Point, GlaxoSmith Kline, and private donors.

## **Research Presentations**

*Water Quality* (Eutrophication, Seagrasses, etc.)

## 2011

- UNC Water Resources Research Institute, Raleigh, NC (excessive ammonium concentrations throughout the Falls Lake water column, and implications for the Falls Lake Rules - with published abstract)
- American Water Works Association National Webinar, online technology used to monitor algae and associated environmental conditions (invited, with published abstract)
- LOICZ Open Science Conference 2011 – Coastal Systems, Global Change and Sustainability, Yantai, China (Shumway SE, Burkholder JM: mitigating coastal eutrophication – are filter-feeding shellfish the answer?) (plenary, with published abstract)

## 2010

- UNC Water Resources Research Institute, Raleigh, NC (status of water quality in the most important potable water supply in North Carolina - with published abstract)

## 2009

- National Shellfisheries Association, Savannah, GA (bivalve shellfish aquaculture and eutrophication)
- North Carolina Academy of Science, Warren Wilson College, Swannanoa, NC (documenting microbial changes in reservoirs using metagenomics – coauthor)
- Department of Civil and Environmental Engineering, Northwestern University, Chicago, IL (decadal analysis of land use, water quality, and phytoplankton assemblages in a coastal watershed)
- 20<sup>th</sup> Biennial Conference of the Coastal and Estuarine Research Federation (increasing ammonium in eutrophic estuaries, and its potential importance in governing phytoplankton assemblages)

## 2008

- Department of Occupational and Environmental Health, U IA (water quality and algal blooms in watersheds influenced by industrialized agriculture)
- NOAA National Symposium on Shellfish and the Environment, Warwick, RI (chronic effects of eutrophication on shellfish)
- American Society of Limnology and Oceanography, St. Johns, Newfoundland, Canada (microdynamics of physical/chemical structure in a lagoonal estuary - lead, R. Reed; with published abstract)
- North Carolina Water Quality Monitoring Forum, Charlotte (recent advances in technology for tracking algal blooms and related environmental conditions; with published abstract).

## 2007

- Horn Point Environmental Laboratory, U MD (chronic eutrophication of the Neuse Estuary)
- UNC Water Resources Research Institute, Raleigh (CAAE's Falls Lake Monitoring and Research Program; with published abstract).
- UNC Water Resources Research Institute, Raleigh (groundwater and benthic nitrogen flux in the Neuse Estuary - lead, K. Null; poster with published abstract).
- UNC Water Resources Research Institute, Raleigh (long-term impacts of changing land use practices on water quality and phytoplankton assemblages in the Neuse River ecosystem - lead, M. Rothenberger; poster with published abstract).
- Annual Conference of the North Carolina Academy of Science, Greenville (inorganic nitrogen flux across the sediment-water interface in the Neuse Estuary - lead, K. Null; poster with published abstract).
- Conference, Water Initiatives: What's on the Horizon for Lake Users and Managers, Greensboro.
- 19<sup>th</sup> Biennial Conference of the Estuarine Research Federation, Norfolk, VA (temporal and spatial variability in high-resolution, cross-estuarine physical/chemical structure in the Neuse Estuary – lead, R. Reed; poster with published abstract).
- 19<sup>th</sup> Biennial Conference of the Estuarine Research Federation, Norfolk, VA (multivariate analysis of phytoplankton and environmental factors in a eutrophic estuary - lead, M. Rothenberger; poster with published abstract).

## 2006

Department of Biology, Cornell University (water quality trends in the Neuse Estuary)  
Department of Marine Sciences, U CONN (water quality trends in the Neuse Estuary)

## 2005

Department of Biology, UNC Greensboro (water quality trends in the Neuse Estuary)  
Wilkes Community College, Wilkesboro, NC (honors seminar series - water quality issues)

## 2003

Center for Science in the Public Interest: Conflicted Science Conference, Washington, DC (water quality and confined animal feed operations [CAFOs] - with published abstract)  
Yale University - Conference, The Chicken (environmental impacts of CAFOs - with published abstract)

## 2002

Medical School, Harvard University (marine diseases, anthropogenic influences)  
Wilkes Community College, Wilkesboro (honors seminar series - water quality issues)

## 2001

Washington College (Chesterton, MD; environmental impacts of CAFOs)  
Veterinary, Wildlife and Ecological Toxicology Department, Veterinary Biosciences College of Veterinary Medicine, U IL (national water quality issues)  
School of Design, NCSU (environmental effects of CAFOs)  
Wilkes Community College (honors seminar series - water quality issues)  
American Society of Agronomy and the Soil Science Society of America (Northeast Branch) – annual meeting, URI (environmental effects of CAFOs; with published abstract)

## 2000

American Fisheries Society - annual meeting, St. Louis, MO (environmental effects of CAFOs – with published abstract).  
American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America - joint meeting, Minneapolis, MN (nutrient management on CAFOs, and effects on surface water resources - with published abstract)  
Association of Southeastern Biologists, Chattanooga, TN: Plenary Speaker (national water quality issues - with published abstract)  
Rock Valley College - Natural Resources and Community Action Series, Rockford, IL: Plenary Speaker (national water quality issues)  
U MASS, Amherst - Environmental Policy Seminar Series (invited; national water quality issues)  
Yale University, School of Forestry (national and state water quality issues)  
Department of Zoology, U WA - Seattle (national water quality issues)  
American Fisheries Society (NC chapter), New Hill, NC (impacts of Hurricane Floyd on water quality in the Neuse River and Estuary, and Pamlico Sound - with published abstract)

## 1999

US Department of Agriculture - National Resources Conservation Service, Washington, DC (state water quality issues)  
Simon Fraser University - Oceans Limited Conference, Vancouver, British Columbia, Canada (chronic effects of eutrophication - with published abstract)  
Department of Biology, University of Louisville, Louisville, KY (chronic effects of eutrophication)

## 1998

Society of Environmental Toxicology and Chemistry - annual meeting, Charlotte, NC: Keynote Speaker (effects of chronic eutrophication - with published abstract)

1997

Conference, Nutrients in the Neuse River: Working Toward Solutions (sponsor, UNC Water Resources Research Institute [WRRI]), NCSU (effects of chronic eutrophication - with published abstract)

1996

National Association of Biology Teachers - annual meeting, Charlotte, NC (effects of chronic eutrophication - with published abstract)

Texas A&M University, Corpus Christi (effects of pulsed nutrient enrichment on seagrass physiology)  
Department of Zoology, Oregon State University (OSU), Corvallis (seagrasses and eutrophication)

1995

Statewide Nutrient Summit (sponsors, NC Sea Grant, NC DEHNR), NCSU (effects of chronic eutrophication - with published abstract)

Water Quality Research and Extension Overview, College of Agriculture and Life Sciences (CALs), NCSU (surface water quality research in CALs - with published abstract)

1994

NC Academy of Sciences - annual meeting, Manteo - Keynote Speaker (state water quality issues - with published abstract)

1993

UNC WRRI Seminar Series, Keynote Accomplishments in Research on Water Resources in NC, Raleigh (seagrasses and water-column nitrate enrichment - with published abstract)

Horn Point Environmental Laboratory, U MD (seagrasses and water-column nitrate enrichment)

1992

UNC WRRI Seminar Series, Keynote Accomplishments in Research on Water Resources in NC (sediment and phosphorus loading: predicting reservoir water quality – with published abstract)

American Society of Limnology and Oceanography - annual meeting, Edmonton, Alberta, Canada (seagrasses and eutrophication - with published abstract)

1990

Department of Zoology, U WI - Madison (phototrophy vs. heterotrophy in turbid reservoirs)

1987

Department of Biology, Bowling Green State University, Bowling Green, OH (biological interactions that structure stream plant communities)

1986 (nutrient interactions - macrophytes, epiphytes)

Department of Botany, NCSU

Department of Biology, Fordham University, Bronx, NY

Savannah River Ecology Laboratory, Aiken, SC

University of Michigan Biological Station, University of Michigan, Pellston, MI

1985

Department of Biology, West Virginia University, Morgantown, WV - importance of benthic microalgae in stream ecosystems

Massachusetts Audubon Society, Lincoln, MA - effects of acid deposition on aquatic ecosystems

### ***Harmful Algal Research***

2010

North American Lake Management Society (NALMS), Winston-Salem, NC (climate change and harmful algal blooms in the Southeast - with published abstract)

Webinar Lecture Series, Northwestern University, given at the University of British Columbia, Vancouver, BC, Canada (overview on harmful algae)

#### 2008

Burdick Lecture, Department of Biology, Alfred University, Alfred, NY (*Pfiesteria*, other harmful dinoflagellates - toxicity, impacts)

Annual Toxicology and Risk Assessment Conference, Cincinnati, OH (the toxins of inland algae - with published abstract)

#### 2007

Joint meeting of the Phycological Society of America and the International Society of Protozoologists (cyanobacteria in eutrophic turbid impoundments of the North Carolina Piedmont - lead, J. Burkholder; poster with published abstract).

Joint meeting of the Phycological Society of America and the International Society of Protozoologists (axenic cultivation of a heterotrophic dinoflagellate - lead, H. Skelton; with published abstract).

4<sup>th</sup> National Symposium on Harmful Algae, Woods Hole, MA (axenic cultivation of *Pfiesteria shumwayae* on a semi-defined medium; poster with published abstract).

#### 2006

Kalmar University, Kalmar, Sweden (*Pfiesteria*, other harmful dinoflagellates - toxicity, impacts)

American Society of Limnology and Oceanography - annual summer meeting: Plenary Speaker, Victoria, British Columbia, Canada (stimulation of harmful algae by eutrophication – with published abstract)

#### 2005

North American Lake Management Society (NALMS) - National Meeting, U WI - Madison – Keynote Speaker (cyanobacteria in potable water supplies - with published abstract)

GEOHAB (Global Ecology and Oceanography of Harmful Algal Blooms) Symposium, Nutritional Ecology of Harmful Algae, Baltimore, MD (importance of intraspecific variation – with published abstract)

Medical School, Harvard University (harmful algae and seafood safety)

NALMS Southeast Chapter Meeting, Asheville, NC (cyanobacteria in potable water supplies - with published abstract)

American Water Works Association - Source Water Protection Symposium, West Palm Beach, FL (cyanobacteria in potable water supplies - with published abstract)

#### 2004

XI<sup>th</sup> International Conference on Harmful Algae, Cape Town, South Africa: Plenary Speaker (intraspecific variation in toxicity, behavior and nutrition - with published abstract)

St. Johns Water Management District, Orlando, FL (effects on fish and mammalian health)

International EnviroVet Program, Harbor Branch Oceanographic Institute, Fort Pierce, FL (marine diseases)

Department of Oceanography, U WA - Seattle (science, policy)

Shannon Point Marine Laboratory, Western Washington University (science, policy)

NSF Undergraduate Education Honors Program, NCSU (science, policy)

#### 2003

Elon University - Voices of Discovery Seminar Series: Keynote Speaker (*Pfiesteria*)

International EnviroVet Program, Harbor Branch Oceanographic Institute (toxic dinoflagellates)

Florida Institute of Technology (toxic dinoflagellates)

Conference on Emerging Waterborne Pathogens, NC Department of Health and Human Services (DHHS), Wilmington, NC: Two presentations - toxic dinoflagellates; toxic cyanobacteria)

#### 2002

Hopkins Marine Laboratory, Stanford University, Monterey, CA (*Pfiesteria*, other toxic dinoflagellates -

science, policy, science ethics)  
National Ocean Service, NOAA, Charleston, SC (progress in *Pfiesteria* research)  
Symposium, Climate Change and Fisheries in the Gulf of Maine (sponsor, NOAA), College of the Atlantic,  
Bar Harbor, ME (harmful algae and climate change)  
Department of Biology, UNH, Durham (toxic dinoflagellates).  
Department of Biology, Williams College, Williamston, MA (toxic dinoflagellates)  
Department of Biology, Miami University of Ohio, Athens (toxic dinoflagellates)

#### 2001

XI<sup>th</sup> International Congress of Protozoology, Salzburg, Austria (dinoflagellates - complex life histories and  
feeding behaviors – with published abstract)  
George Clark Lecture Series, Wetlands Institute, Cape May, NJ (*Pfiesteria*, other dinoflagellates)  
Society for Risk Analysis, Research Triangle Park (biomarkers for species and toxins)  
Environmental Lecture Series, Ashland University, Ashland, OH (harmful algae - eutrophication)  
Marine Conservation Biology Series, Wheaton College, Springfield, MA (chronic effects of harmful algae  
on fish and mammalian health)

#### 2000

IX<sup>th</sup> International Conference on Harmful Algal Blooms, Hobart, Tasmania, Australia: Plenary Speaker  
(toxic *Pfiesteria* - with published abstract)  
Elliott-Nowell-White Symposium, Delta State University, Delta State, MS: Keynote Speaker (chronic and  
sublethal impacts on mammalian health)  
Society of Toxicology of Canada - annual meeting, Montreal, Quebec, Canada (toxic dinoflagellates - with  
published abstract)  
Department of Biology, State University of NY - Syracuse (toxic dinoflagellates)  
Brookhaven National Laboratory, Brookhaven, NY (toxic dinoflagellates)  
State University of New York - Stony Brook (toxic dinoflagellates)  
XIII<sup>th</sup> World Congress of the International Society of Toxinology, Paris, France (toxic *Pfiesteria*)  
Centers for Disease Control & Prevention, Atlanta - conference, *Pfiesteria*: From Biology to Public Health  
(ecology and conservative analysis of role in fish kills - with published abstract)  
National Association of Biology Teachers - Biotechnology Conference. VPI, Blacksburg (harmful algal research)  
University of Mississippi, Oxford - Conference, Sustainability of Wetlands and Water Resources (toxic  
dinoflagellates)  
Department of Biology, University of Memphis (toxic dinoflagellates)  
Society of Microbiology - Northeast Chapter, Sturbridge, MA (toxic dinoflagellates)  
Society of Toxicology - annual meeting (sponsor, US EPA), Philadelphia (toxic dinoflagellates - with  
published abstract)  
Southeastern Estuarine Research Society - annual meeting in conjunction with the 29<sup>th</sup> Benthic Ecology  
Meeting and the annual meeting of the Atlantic Estuarine Research Society, Wilmington, NC (toxic  
dinoflagellates - with published abstract)

#### 1999

National Academy of Sciences - Workshop on Critical Research Needs, Washington, DC (research needs to  
advance understanding about harmful algae)  
Lake Biwa Research Institute, Forum on Water Quality, Kyoto, Japan: Keynote Speaker (*Pfiesteria*, other  
toxic dinoflagellates)  
Woods Hole Oceanographic Institute, Falmouth, MA (toxic dinoflagellates)  
Veterinary School, Tufts University, Grifton, MA (toxic dinoflagellates)  
Department of Biology, Yale University (improved mitigation of harmful algal blooms)  
Georgetown Conference on Policy and *Pfiesteria*, Georgetown University, Washington, DC: Keynote Speaker  
(science, policy of *Pfiesteria* - with published abstract)

American Association for the Advancement of Science (AAAS) - annual meeting, Anaheim, CA, session, "Human Health Risks in the Ocean" (chronic and sublethal impacts - with published abstract)  
AAAS - annual meeting, Anaheim, CA, session "Harmful Algal Blooms" (toxic *Pfiesteria* - with published abstract)  
Department of Geology, University of Oslo (Oslo, Norway) (toxic *Pfiesteria*)  
Society of Protozoologists - annual meeting, Raleigh: Keynote Speaker (toxic *Pfiesteria* - with published abstract)  
Department of Ecology Evolution and Behavior, U MN - Minneapolis (toxic dinoflagellates - with published abstract)  
Phi Beta Kappa Seminar Series, Elon University (toxic *Pfiesteria*)  
Honors Seminar Series, Southampton College, Southampton, NY (toxic dinoflagellates)  
Department of Biology, Barton College, Wilson (toxic dinoflagellates)  
Department of Biology, Davidson College, Davidson (toxic dinoflagellates)  
Wilkes Community College, Wilkesboro (toxic dinoflagellates)  
Department of Biology, NC A&T University, Greensboro (toxic dinoflagellates)  
Department of Pathology, UNC Chapel Hill (toxic dinoflagellates)  
Department of Biology, UNC Greensboro (toxic dinoflagellates)  
Department of Biology, University of Louisville (toxic dinoflagellates)  
Sigma Xi - NC Chapter meeting, Appalachian State University, Boone, NC (toxic *Pfiesteria*)

#### 1998

AAAS - annual meeting, Philadelphia, session, "Management of Harmful Marine Microbes: When Science and Politics Don't Mix" (harmful algae - with published abstract)  
Medical School, Harvard University (harmful algae)  
Shallow Water Conference (sponsor, US EPA), Atlantic City, NJ: Keynote Speaker (effects of toxic *Pfiesteria* on fish and mammals - with published abstract)  
Gordon Conference - annual meeting, Ventura, CA (acute/chronic effects of toxic dinoflagellates - with published abstract)  
Department of Biology, Rutgers University (chronic effects of toxic dinoflagellates)  
Department of Biology, URI (toxic dinoflagellates)  
Department of Pharmacology, U GA - Athens (toxic dinoflagellates)  
American Biological Safety Association - 41<sup>st</sup> Annual Biological Safety Conference, Lake Buena Vista, FL: Eagleston Lecture (*Pfiesteria*, other toxic dinoflagellates - with published abstract)  
Wildlife Disease Association - 47<sup>th</sup> Annual Conference, U WI - Madison (toxic *Pfiesteria* - with published abstract)  
Department of Biology, Purdue University (toxic dinoflagellates)  
American Institute of Biological Sciences - 49<sup>th</sup> annual meeting (toxic dinoflagellates - with published abstract)  
Microbiology Society of NC - annual meeting, Research Triangle Park: Keynote Speaker (*Pfiesteria*, other toxic dinoflagellates)  
NC Water Resources Association - Conference on Water Pollution Issues in NC, Asheville: Keynote Speaker (*Pfiesteria*, other toxic dinoflagellates - with published abstract)  
Northeast Algal Symposium - annual meeting, Plymouth, MA – Keynote Speaker (toxic *Pfiesteria* - with published abstract)  
American Society of Limnology and Oceanography - joint summer meeting with the Ecological Society of America, Symposium Session Honoring Minority Students: Keynote Speaker (*Pfiesteria*, other harmful algae – with published abstract)  
Stanford University, Institute of Ecosystem Ecology (toxic *Pfiesteria*)  
NASA, Goddard Space Center, Baltimore, MD (*Pfiesteria*, other toxic dinoflagellates)  
Keynote Seminar Series in Marine Sciences, Wilmington, DE (sponsors, U DE, DE Sea Grant):

Presentation (*Pfiesteria*)

Friends of the Library, NCSU (*Pfiesteria*, other toxic dinoflagellates)  
Department of Biology, Auburn University (toxic dinoflagellates)  
Department of Environmental Sciences, Drexel University, Philadelphia (toxic *Pfiesteria*)  
Department of Biology, Hampden Sydney College, Hampden-Sydney, VA (toxic dinoflagellates)  
Department of Biology, UNC Charlotte (*Pfiesteria*, other toxic dinoflagellates)  
Headquarters, US EPA, Washington, DC (toxic *Pfiesteria*)  
Distinguished Lecturer Series, Old Dominion University, Norfolk, VA (*Pfiesteria*)

1997

Society for Conservation Biology - annual meeting, Victoria, British Columbia, Canada (harmful algae and eutrophication - with published abstract)  
Department of Biology, University at Buffalo, Buffalo, NY (*Pfiesteria*, other toxic dinoflagellates)  
Departments of Zoology and Oceanography, OSU (toxic algae)  
3<sup>rd</sup> Annual Conference on Population-Level Effects of Marine and Estuarine Contamination, Charleston, SC (science, policy - with published abstract)  
Wagner College, Staten Island, NY (special college-wide seminar, toxic *Pfiesteria*)  
Department of Biological Science, Florida State University, Tallahassee (toxic dinoflagellates)  
Department of Botany, Duke University (*Pfiesteria*, other toxic dinoflagellates)  
Conference on Fisheries, Habitat and Pollution (sponsors, SC Sea Grant, TerrAqua Environmental Science and Policy Institute), Charleston, SC (chronic and sublethal effects of harmful algae - with published abstract)  
Institute of Ecosystem Studies, Millbrook, NY (chronic and sublethal effects)  
American Fisheries Society, NC Chapter - annual meeting, Lake Wylie, SC (*Pfiesteria* - with published abstract)

1996

AAAS - annual meeting, session Global Change and Emerging Infectious Diseases (effects of harmful algae on fish and mammalian health - with published abstract)  
NATO Workshop, Physiological Ecology of Harmful Marine Phytoplankton, Bermuda Biological Station for Research (raptorial dinoflagellates - with published abstract)  
Sigma Xi - UNC Greensboro and NCCU Chapters: Keynote Speaker (toxic *Pfiesteria*)  
Department of Biology, Southampton College, Long Island University, Southampton, NY (toxic dinoflagellates)  
Department of Biology, University of Cincinnati, Cincinnati (toxic dinoflagellates)  
NIEHS, Research Triangle Park (toxic *Pfiesteria*)  
Whitney Laboratory, U FL - St. Augustine (toxic dinoflagellates)  
Department of Biology, Wake Forest University, Winston-Salem (toxic dinoflagellates)  
Association of Women in Science, UNC Chapel Hill (*Pfiesteria*, other toxic dinoflagellates)  
Texas A & M University, Corpus Christi, TX (*Pfiesteria*, other toxic dinoflagellates)

1995

Society of Protozoologists - annual meeting, U AL, Tuscaloosa, AL: Keynote Speaker (toxic *Pfiesteria* and its microbial, macroinvertebrate and vertebrate prey - with published abstract)  
5<sup>th</sup> Pan American Symposium on Animal, Plant and Microbial Toxins, Baltimore, MD (*Pfiesteria* - with published abstract)  
Department of Toxicology, NCSU (toxic dinoflagellates)  
Department of Biology, U MD, Baltimore, MD (toxic *Pfiesteria*)

1994

First International Conference on Ecosystem Health and Medicine, Ottawa, Ontario, Canada (effects on human health - with published abstract)  
E-MAP Monitoring Program, US EPA, Research Triangle Park (emerging toxic algae - effects on fisheries and public health)

Department of Biology, University of Richmond (emerging toxic algae)  
Department of Environmental Health, Boston University (toxic dinoflagellates)  
Department of Biology, SUNY - Stony Brook (toxic dinoflagellates)  
International Society for Evolutionary Protistology - Biennial Meeting, Halifax, Nova Scotia, Canada:  
Keynote Speaker (*Pfiesteria* and its prey - with published abstract)  
Institute of Ecology, U GA - Athens (harmful heterotrophic dinoflagellates)  
Department of Fisheries and Aquaculture, U FL - Gainesville (toxic dinoflagellates)

### 1993

Fifth International Conference on Modern and Fossil Dinoflagellates (Zeist, the Netherlands): Keynote Speaker (toxic *Pfiesteria* - with published abstract)  
Beta Beta Beta Biological Honors Society, Elon University: Keynote Speaker (effects of toxic *Pfiesteria* on estuarine food webs)  
Chesapeake Biological Laboratory, Solomons, MD (toxic dinoflagellates)  
Southeastern Fisheries Society, Reidsville, NC (toxic dinoflagellates on fish)  
Dauphin Island Marine Laboratory, Dauphin Island, AL (toxic dinoflagellates)  
Department of MEAS, NCSU (*Pfiesteria*)

### 1992

V<sup>th</sup> International Symposium on Toxic Algae, Newport, RI (toxic *Pfiesteria* - with published abstract)  
Southeast Regional Directors of the Sea Grant College Program - annual meeting: Keynote Speaker (*Pfiesteria*)  
Department of Zoology, NCSU (toxic *Pfiesteria*)  
US Geological Survey, Raleigh (toxic *Pfiesteria*)  
NC Statewide Phytoplankton Meeting, Duke Power Company (Huntersville, NC: Keynote Speaker (harmful dinoflagellates)  
Department of Biology, UNC Wilmington (*Pfiesteria*, other toxic dinoflagellates)  
Department of Biology, Appalachian State University, Boone, NC (toxic dinoflagellates)  
Department of Biology, UNC Greensboro (toxic dinoflagellates)  
US EPA, Narragansett, RI (*Pfiesteria*, other toxic dinoflagellates)  
Department of Biology - Marine Sciences Group, UNC Chapel Hill (toxic dinoflagellates)  
Bodega Marine Laboratory, U CA - Davis, Bodega Bay (toxic dinoflagellates)

### ***Other Algae***

### 2010

Webinar, Northwestern University special summer course for graduate students, given at the University of British Columbia, Vancouver, BC (the ecology of periphyton)

### 2007

Society of International Limnologists (SIL) - 30<sup>th</sup> Congress of the International Association of Theoretical and Applied Limnology, Montreal, Quebec, Canada (importance of benthic microalgae across freshwater, estuarine and marine ecosystems - with published abstract)

### 1999

Society for General Microbiology - Symposium, Microbial Signaling and Communication, University of Edinburgh, Edinburgh, Scotland (signaling in dinoflagellates - with published abstract)

### 1991

Department of Biology, VPI, Blacksburg, VA (phytoplankton survival of pulsed suspended sediment loading)

### 1990

Center for Reservoir Research, Hancock Biological Station, Murray State University, Paducah, KY

(phytoplankton and periphyton dynamics in turbid, eutrophic reservoirs)  
Department of Zoology, NCSU - Aquatic Ecology Seminar Series (mutualistic symbioses involving algae)  
Department of MEAS, NCSU (role of benthic microalgae in eutrophication of freshwater and coastal marine habitats)

#### 1989

Experimental Lakes Area (ELA), University of Manitoba, Winnipeg, Manitoba, Canada (relative importance of the water column and macrophytes as nutrient sources for epiphytes)  
Hampton University, Hampton, VA (biotechnology in aquatic ecology)  
Department of Biology, University of Louisville, Louisville, KY (use of autoradiography to examine nutrient dynamics of microalgal biofilms)  
Duke Marine Laboratory, Beaufort (nutrients and epiphytes – unifying trends in freshwater and marine ecosystems)

#### 1988

Department of Biology, UNC Chapel Hill - Marine Macroalgae Seminar Series (epiphytes)  
Department of Biology, East Carolina University (phosphorus sources for epiphytic microalgae)  
Department of Botany, Duke University (nutrient sources for epiphytic microalgae)  
Environmental Section, Carolina Power and Light Company, New Hill, NC (epiphytic microalgae - role in nutrient cycling of lakes)

### ***Science Ethics and Environmental Issues***

#### 2006, 2007, 2008, 2009, 2010, 2011

Park Scholars Program, NCSU (role of science ethics in environmental issues)

#### 2005

Department of Epidemiology, UNC Chapel Hill, Forum “Funding, Academic Freedom, and Public Responsibility” (industry and water quality)

#### 2004

Department of Biology, Cornell University (toxic algae)  
Department of Civil Engineering, NCSU (water quality)  
Department of Biology, UNC Asheville (water quality)

#### 2003

New York Metropolitan Association of College and University Biologists – 36<sup>th</sup> Annual Conference, Wagner College, Staten Island: Keynote address (role of science ethics in natural resource issues)  
NSF Environmental Education Program, NCSU (toxic algae, water quality)

#### 1999

Department of Geology, University of Oslo, Oslo, Norway (toxic algae, water quality)  
Park Foundation Lecture Series, College of Journalism, UNC Chapel Hill (critical role of journalists in environmental science education and ethics)

#### 1998

Metcalf Institute for Marine and Environmental Journalism - annual board meeting, URI: Keynote Speaker (how environmental journalists could help to strengthen science ethics)

### **Academic Contributions**

#### ***Courses Taught***

- PB 595A, *Aquatic Plant Ecology* (4 credits; 1987 - present, fall alternate years)

- PB 595W, *Environmental Issues in Aquatic Ecology* (3 credits, 1990 - present, usually fall alternate years) - special topics/current events graduate course
- PB/MB 774, *Phycology* (3 credits including laboratories; 1987 - present, spring alternate years)
- 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 2008, 2009); 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.

**Guest Lectures** (examples, past seven years)

- PB 101, *Introduction to Plant Biology*, Department of Plant Biology, NCSU (once per year, 2006-2011)
- PB 250, *Plant Biology*, Department of Plant Biology, NCSU (2010, 2011)
- PB 595E, *Plant Functional Ecology*, Department of Plant Biology, NCSU (spring 2007, 2008, 2009)
- ALS 103, *Introductory Topics in Agriculture and Life Sciences*, College of Agriculture and Life Sciences, NCSU (2004-2008)
- IDS 303, *Humans and the Environment*, Department of Plant Biology, NCSU (2006-2007)
- *Research Ethics Seminar Module*, Department of Crop Science, NCSU (2007)
- SSC/BAE 780, *Movement of Chemicals in Soils and Natural Waters*, Department of Crop Science, NCSU (2004, 2005)
- PP590A, *Agriculture, Ethics, and the Environment*, Department of Plant Pathology, NCSU (2006)
- ZO 512, *Symbiosis*, Department of Zoology, NCSU (2006-2009)
- *Park Scholars*, NCSU (once per year, 2006-2011)
- BIO 568, *River Ecology*, Department of Biology, University of North Carolina Wilmington (2006-2007)
- GEHP 152:121, *Global Environmental Health*, The University of Iowa (2006)
- BIOL 304, *Microbial Ecology*, Alfred University (Alfred, NY, 2008)
- BIOL 140 *Global Ecology*, Alfred University (Alfred, NY, 2008)
- Freshman Focus Program, “Science, Society, Uncertainty, and Conflicting Values” (Duke University, Durham, NC, 2010)

**Major or Co-major Advisor of Graduate Students**

Stephanie Mixson, Ph.D. (Plant Biology), in progress (initiated spring 2009)

Stacie Flood, Ph.D. (Plant Biology), in progress (initiated fall 2007)

Eva Ngulo, M.A. (Plant Biology, 2011)

Final paper: Influence of clay treatment on noxious planktonic cyanobacteria

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 Position: Post-Doctoral Research Associate, University of California - Santa Cruz

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 Position: Post-Doctoral Fellow, National Research Council, NOAA / University of Connecticut

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.S. (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 cryptoperidiniopsis 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.S. (Botany), 2001  
Thesis: Chemosensory attraction of *Pfiesteria* spp. to fish secretions  
Post-Graduate Position: Teacher, Durant Middle School, Raleigh

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

Jeffrey Springer, M.S. (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.S. (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 North Carolina 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) 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.S. (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.S. (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 DEHNR

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 DNR

***Other Graduate Student Committee Memberships*** (NCSU unless otherwise noted)

**Ph.D.**

Yini Shanguan (Horn Point Env. Lab., U MD)  
Brett Hartis, Forestry and Environmental Resources  
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

**Ph.D.** (cont'd.) Elizabeth Marschall, Zoology

**M.S.** 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, Professor and Chair of the Biology Department, Elon Univ.  
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** (examples, past seven years)

***Kenan Fellows Program*** (for gifted K-12 teachers)

Mentor to Susan Randolph, 2008-2009  
Mentor to Amanda Warren, 2008-2009  
Mentor to Diane Whittaker, 2006-2007  
Secondary mentor to Gayle Powell, 2006

***Other Service to NCSU***

Member, Radiation Safety Committee (university)  
Member, College of Agriculture and Life Sciences Research Committee (college)  
Member, Advisory Committee, Plant Biology (departmental)  
Member, Green Committee, Plant Biology (departmental)  
Chair, Plant Biology Post-Tenure Evaluation Committee (departmental)  
Member, Selection Committee for Evolutionary Ecologist Position (departmental)  
Member, Larry A. Whitford Botany Scholarship/Fellowship Award Committee (departmental)  
Member, Plant Biology Mentoring Committee for Alexander Krings (departmental)  
Member, Plant Biology Mentoring Committee for Bill Hoffmann (departmental)  
Member, Plant Biology Undergraduate Curriculum Committee (departmental)  
Member, Search Committee, Plant Biology - Evolutionary Ecologist (departmental)  
Member, Water Quality Committee (university)  
Member, Water Resources Curriculum Committee (university)

Member, Ad Hoc Committee on Marine Science (university)

Member, Advisory Committee for the NCSU publication, *Results: Research and Innovation at North Carolina State University* (university, 2011-)

## **Education Outreach** (examples, past seven years)

### ***K-12 Students and Teachers***

Guilford County high school teachers' training – presentation to ~30 teachers on designing experiments, 2011

Presentations to nine high schools in Wayne County, NC, in both spring and fall semesters, about the importance of aquatic science (3,200 students), 2011

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 480 9<sup>th</sup> graders and their teachers from Wayne County schools in economically depressed areas, 2011; and for 980 8<sup>th</sup> graders and their teachers from Craven County schools, 2009

Cardinal Gibbons High School, Cary, NC – presentation to ~80 students on water quality issues nationally and in our State (senior-level courses, *Ecology* and *Environmental Issues*), 2010

Randleman High School, Randleman, NC – presentation to ~70 students on water quality issues, 2010

Kenan Fellows Program: *Teaching Students to Think Outside the Book* - the CAAE's Floating Classroom Program was prominently featured in this video for helping to make the Kenan Fellows Program a major success, 2009

Water Quality Institute: Presentation to 35 high school teachers – state water quality issues (sponsored by the Office of Environmental Education, NC DENR), 2008, 2009

Wayne Early-/Middle College High School, Goldsboro, NC, 2008 – two presentations to ~60 students on water quality issues

The CAAE *Floating Classroom Program* aboard the *RV Humphries*: Provided hands-on education opportunities (1/2-day cruise on the Neuse Estuary) for 310 8<sup>th</sup> graders and their teachers in 2006; 140 8<sup>th</sup> graders and their teachers in 2007; 636 8<sup>th</sup> graders and their teachers in 2009; 180 9<sup>th</sup> graders and their teachers in 2010; and 560 9<sup>th</sup> graders and their teachers in 2011

NC Student Academy of Sciences - Student Statewide Research Competition, NC School of Science and Mathematics, Durham: Keynote address to ~600 6<sup>th</sup> to 12<sup>th</sup> grade students, parents and teachers - careers in aquatic ecology, 2007

Ethics and Leadership Conference, NC School of Science and Mathematics, Durham: Keynote address to ~450 high school students, teachers - importance of ethics in science leadership, 2007

NC School of Science and Mathematics; also teleconferenced to Brunswick Community College: Presentation to senior biology and environmental sciences classes - influence of scientists' conduct on progress in natural resource issues, 2006

Fuquay-Varina High School, Fuquay-Varina: Presentation to the senior biology class - state water quality issues, 2007

Garner High School, Garner: Presentation to the senior biology class - water quality issues, 2007

Southwest Guilford High School, Greensboro, NC: Presentation to the honors science class - algae in NC streams), 2007; presentations to the honors science class - how to design a scientifically sound experiment, and to the junior and senior biology and chemistry classes - state water quality issues, 2006

Southwest Guilford High School: Guided a senior science project, together with chemistry teacher Ms. Diane Whittaker (student was 1 of 5 selected to present his/her science project in an international science forum in China for gifted young scientists), 2007

Kenan Fellows Program for High School Teachers, NCSU: Two presentations - algae for high school students; and approaches in teaching how to design scientifically sound experiments, 2006

Daniels Middle School, Raleigh: Two presentations to 7<sup>th</sup> grade and 8<sup>th</sup> grade science classes - state water

quality issues, 2006

**General Citizenry** (invited presentations, other activities - examples, past seven years)

The Need for Co-Management of Nitrogen and Phosphorus to Protect Florida Waters from Degradation by Nutrient Pollution (presentation to the Florida Sierra Club), 2012

Nutrient Management Plan for High Rock Lake (presentation to the concerned citizens group, Yadkin Riverkeeper), 2011

Status of Water Quality in Falls Lake (presentation to the concerned citizens group, Wake Up Wake County), 2010

Status of Water Quality in High Rock Lake (presentation to the Yadkin Riverkeeper Foundation), 2009

Forum on Falls Lake Water Quality: Science and Policy (1 of 3 panelists - sponsored by the Neuse Riverkeepers Foundation), 2009

North Carolina Water Works Association, Raleigh (Lab Tech Day) - advanced technology for monitoring environmental conditions in near-real time, 2008

FL Department of Environmental Protection (Secretary of the Environment, staff, and agency personnel), Tallahassee: Influence of fertilizer nutrients on the Florida red tide, 2006

Public seminar series (sponsor, TREE Foundation), Sarasota, FL: Emerging linkages between harmful algae and nutrient pollution, 2006

**Other Service**

Member, City of Raleigh Stormwater Commission, 2010-present

**Society Memberships**

American Association for the Advancement of Science, American Society of Limnology and Oceanography, Estuarine Research Federation, Society of International Limnologists, North American Lake Management Society, Phi Kappa Phi, Psychological Society of America, Sigma Xi