

Qualifications Summary

- More than 20 years of experience researching and working in coastal systems
- Direct experience in shellfish aquaculture, including hatchery construction and operation
- Water quality assessments include total maximum daily load (TMDL) and coastal nutrient criteria development
- Manages multi-disciplinary projects
- Possesses strong writing and verbal communication skills
- Over one year committed to Natural Resource Damage Assessment (NRDA) field operations associated with Deepwater Horizon accident (LA, MS, AL, FL, and offshore)
- Developed restoration alternatives associated with salt marsh environments
- Constructed and operated shellfish hatchery at research laboratory in Zanzibar (Tanzania) and conducted shellfish growth experiments in remote island villages
- Experience in development of watershed nutrient loading and estuarine system response models

JOHN W. BRAWLEY, Ph.D.

Senior Marine Systems Ecologist

Professional Affiliations

Coastal and Estuarine Research Federation (Governing Board)
New England Estuarine Research Society (President-Elect)
Massachusetts Aquaculture Association
East Coast Shellfish Growers Association (Board of Directors)

Fields of Expertise

Research, technical writing, and project management associated with coastal and estuarine systems. Technical specialties include marine and estuarine water quality and habitat studies, shellfish aquaculture, hydrologic studies, watershed modeling, hazardous waste site assessment, development of water quality monitoring programs, international development projects, and public and private engineering projects. Special interest and expertise include business development and collaboration with economists, policy analysts, and others on multi-disciplinary projects.

Higher Education

Ph.D., Marine/Estuarine Systems Ecology, University of Maryland (2002)

M.A., Coastal Hydrogeology, Boston University (1992)

B.A., Political Science/Philosophy, University of Vermont (1988)

Employment History

2012-Present	Senior Marine Systems Ecologist, Woods Hole Group, Inc.
2010-2012	Marine Scientist/Leader, NewFields.
2007-2012	Co-founder and Senior Scientist, Saquish Scientific LLC.
2003-2007	Senior Scientist, Battelle.
2000-2003	Senior Scientist/Operations Manager, Tetra Tech EMI
1996-2000	Research Scientist, University of Connecticut.
1993-1995	Graduate Research Fellow, University of Maryland.
1992-1993	Associate, The Cadmus Group.

Key Projects

Natural Resource Damage Assessment (NRDA) - NOAA Federal Representative, Scientist, and Team Leader

Team Leader for the following Deepwater Horizon oil spill NRDA field collection operations:

- Submerged Oil Characterization (Fall 2010 and Summer 2011)
- NRDA Spring and Summer 2011 Epipelagic Plankton Bongo & Neuston Sampling
- Subtidal Oyster Recruitment (Summer 2011)
- Intertidal Oyster Recruitment (Winter 2012)

Responsibilities included oversight of research field team operations, coordination with NOAA management, and sample/data transfer. Submerged oil characterization work consisted of sediment sample collection using ponar grabs and cores. In some cases oil collecting materials were deployed and analyzed for contaminant via ultraviolet light detection. Oyster recruitment operations included collection of oysters within intertidal and subtidal environments and water quality analyses. Epipelagic plankton work consisted of multiple biweekly deployments to offshore sampling sites where bongo and neuston nets were applied to collect samples for preservation and analysis.

Nutrient Criteria for Coastal Waters in Maine – Project Manager/Senior Scientist

Project manager for EPA Region 1 task order to support Maine DEP's development of nutrient criteria in coastal waters. This project ran from 2008 through 2010 and included data collection and database development, data analysis, monitoring plan development, and the monitoring a series of estuaries (summer 2009). Results were presented by Dr. Brawley at a series of stakeholder meetings and a report covering project activities, including recommendations for future work, was submitted to EPA Region 1 and Maine DEP.

Florida Consent Decree TMDLs – Project Manager/Senior Scientist

Dr. Brawley supported EPA Region 4 in the review, reanalysis, and revision of 9 Total Maximum Daily Load (TMDL) reports. These covered 7 freshwater systems in Florida's Myakka River Basin and were associated with nutrients, dissolved oxygen, and coliform impairments.

Development of Hatchery-Based Shellfish Production in Zanzibar – Principal Investigator

The goal of this project is to engage several hundred women farmers across some six villages in Zanzibar, Tanzania, in generating collectively 50,000 to 100,000 kg of shellfish meats per year, and TSh50-100 million in annual revenue (over \$100 equivalent, per farmer per year). This activity will provide a sustained and improved income stream for women shellfish farmers on the island. A central aspect of the project is the construction of a small shellfish hatchery on Zanzibar to support increased production by shellfish farmers. Together with the training capacity built by the project in local organizations and in the villages themselves, this project is developing a new, ecologically and economically sustainable source of protein for local consumption and income for women in Zanzibar's coastal villages. Dr. Brawley is involved with most aspects of this project as a contracted employee of the Woods Hole Oceanographic Institution. The project is funded by the Island Creek Oyster Foundation.

Key Projects (continued)

Massachusetts Coastal Resource Assessments – Senior Scientist/Project Manager

Performed shellfish and submerged aquatic vegetation (SAV) surveys and assessments for a variety of private and public clients along Massachusetts coast. Reports provided to clients were primarily to support permitting requirements and municipal shellfish stock assessments. Responsibilities also included attending town meetings to answer questions regarding project area marine resources.

Essential Fish Habitat Studies – Senior Scientist

Prepared Essential Fish Habitat reports associated with proposed bridge repairs/reconstruction for Massachusetts DOT permitting process. Assessments of fish and benthic habitat were conducted through field investigations and literature reviews. Completed reports included Mitchell River Bridge in Chatham, MA and Upper County Road Bridge and Route 28 Bridge (Main St.) in Dennis, MA.

Taunton River Estuary/Mount Hope Bay Liquefied Natural Gas EIS Review – Senior Scientist

Provided technical review and testimonial with regard to the Weaver's Cove Energy LLC application to dredge and construct an LNG berth and pipeline. The project consisted of a review of the applicant's draft EIR and NOI reports and the submission of written and oral comments at Somerset (MA) Conservation Commission hearings.

Scientific Assessment of Nutrient Concentrations, Loads, and Biological Response in the Northern Gulf of Mexico - Project Manager and Senior Scientist

The purpose of this project was to provide information to be used by gulf states toward the development of nutrient criteria and management responses to nutrient enrichment issues. The ultimate result of this project is the development of a scientifically-derived characterization and analysis of nutrient concentrations and loadings in the northern Gulf of Mexico ecosystem. Dr. Brawley worked on two distinct phases: (1) collecting, screening, and compiling a database of regional water quality, watershed loading, and physical parameters, and (2) performed analyses to support development of reference water quality and coastal ecosystem conditions.

Monitor/Indicator Programmatic Support for the National Estuary Program - Senior Scientist

Dr. Brawley worked for EPA on the development of monitoring and ecological indicators programs for the Tillamook Bay (OR), Mobile Bay (AL), and Delaware Bay National Estuary Program (NEP) sites. Dr. Brawley attended steering committee meetings and comprehensive stakeholder workshops as both an estuarine systems ecologist and co-organizer. In addition to technical support, he provided meeting organization and facilitation.

A Phase I Assessment of Potential Water Quality-Related Ecological and Human Health Risks and Benefits of a Proposed Redistribution of Mississippi River Water into the Maurepas Swamps - Senior Scientist

EPA Region 6 was responsible for developing an environmental impact statement (EIS) on the proposal to create a diversion from the Mississippi River to Lake Maurepas (LA). This diversion is meant to increase the availability of nutrients and sediments to the Maurepas Swamp which is believed to be in a process of degradation due to subsidence. The health of this cedar/tupelo swamp would benefit from increasing accretion rates through direct sediment deposition and nutrient-enhanced production of swamp fauna. Dr. Brawley supported this effort through identifying

Key Projects (continued)

potential ecological benefits and problems associated with this diversion. Site characterizations were produced through literature review, site visits, and collaborations with Louisiana state and federal scientists and managers and academic scientists (LSU, LUMCON). The development of conceptual models, reviews of mechanistic/simulation models, and comparative studies are some of the methods that he applied toward this Phase I EIS.

New York Shellfish Pathogen TMDL - Project Manager/ Senior Research Scientist

Dr. Brawley led a technical team to analyze and develop a TMDL report on a set of 71 individually classified water bodies (estuaries) in NY, including 25 within the Peconic Bay estuary system. These estuaries have experienced recurring violations of fecal coliform levels due to contaminated runoff from contributing watersheds, migratory waterfowl, and *in situ* wildlife. State and county monitoring data were compiled, screened, and statistically analyzed to determine existing conditions. Methods associated with the National Shellfish Sanitation Program (NSSP) were considered and followed in the analysis. Sources of fecal coliform to each receiving water body were determined through a variety of methods, including the development of watershed loading models, tidal prism models, and reference to independent source-tracking analyses. As a corollary to this work, Dr. Brawley co-instructed an undergraduate semester long seminar at Wheaton College to analyze variability and uncertainty in observed fecal coliform and how this potentially affects regulatory and scientific decision making.

Vessup Bay Dissolved Oxygen TMDL - Project Manager/Lead Scientist

Vessup Bay is a relatively small, narrow and shallow embayment located along the southeastern coast of St. Thomas, USVI. Water quality monitoring (typically quarterly) has indicated that the bay periodically experiences low dissolved oxygen (DO) events which resulted in its inclusion in the USVI 303(d) list of impaired waters. Initial efforts to study and model DO dynamics within Vessup Bay only considered loads of biochemical oxygen demand (BOD) from watershed, wastewater facility and illicit boat discharges. Results of this early analysis suggested the intuitive conclusion that DO concentrations within the water column are primarily governed by processes other than BOD, particularly sediment oxygen demand (SOD), however, the relationship between SOD and its governing factors were not yet explored. Dr. Brawley worked directly with EPA Region 2 to evaluate how the Vessup Bay TMDL could be improved through the inclusion of water column and benthic primary productivity: the primary driver of organic matter supply to Vessup Bay. Factors that determine primary productivity – nutrient loads, depth, water clarity, and water residence time – were investigated and used to further evaluate DO dynamics in Vessup Bay. The EPA WASP model was applied to specific conditions to test relative sensitivities of DO concentrations to biogeochemical and physical processes. A series of comparative studies were also introduced to verify and corroborate assumptions and conclusions associated with this study.

Principal Scientist/Acid Deposition TMDLs for New York State Forest Preserve Waters - Project Manager

New York State currently has a number of waterbodies listed on the 1998 Section 303(d) list that are pH impacted. A major contributor to this impact is suspected to be acid deposition, more commonly known as “acid rain”. The US Environmental Protection Agency’s Acid Rain Program is working to significantly reduce electric utilities’ emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x),

Key Projects (continued)

the pollutants responsible for acid deposition. The program's system of tradable SO₂ emissions allowances is a landmark use of market incentives in environmental protection. The Battelle team of scientists developed a TMDL support document through the application of an innovative pH numerical simulation model (PHREEQC). The modeling process included watershed/subwatershed delineations, soil and groundwater biogeochemical processes (e.g., acid neutralizing capacity [ANC]), and water column and benthic pH dynamics. Historical (pre-industrial) and current conditions were modeled. Dr. Brawley provided project management and technical review support to the development of TMDLs for 136 water bodies that are not meeting their designated end uses.

Monitor/Indicator Programmatic Support for the National Estuary Program - Principal Scientist

Dr. Brawley has served as an estuarine scientist in supporting the development of monitoring and ecological indicators programs for the Tillamook Bay (OR), Mobile Bay (AL), and Delaware Bay National Estuary Program (NEP) sites. Dr. Brawley attends steering committee meetings and comprehensive stakeholder workshops as both an estuarine systems ecologist and co-organizer.

Critical Habitat Study and Preliminary Ecological Assessment for the Rockaway Inlet (Jamaica Bay, NY) Alternative - Principal Scientist

Dr. Brawley conducted a preliminary analysis of potential ecological impacts associated with a proposed wastewater treatment effluent outfall relocation alternative for the NY DEC. Primary tasks include the collection and review of ecological, biogeochemical, and physical data and the development of a synthesis report that summarizes existing conditions, identifies potential ecological risks, and identifies data gaps within the study area.

Study of Minimum Flows and Levels (MFLs) on Water Quality in the St. Johns Water Management District, Palatka, FL - Project Manager/Principal Scientist

This project focused on the study of the effect of setting minimum instream flows and levels on water quality. The focus of the research was on the effect of permitted water withdrawals on filtration and absorption of nutrients and other pollutants. Dr. Brawley managed this project and served as a technical resource for the following activities: review and analysis of experiments that examined how riparian wetland functions and hyporheic zone processes respond to variations in the hydrologic regime. This project resulted in recommendations of study designs to identify biogeochemical measurements which can be used as ecohydrological indicators of functional water quality and filtration/absorption processes.

Pearl Harbor and Nawiliwili Bay TMDLs - Senior Estuarine Scientist/Hydrologist

Dr. Brawley supported two significant total maximum daily load (TMDL) assessments in Hawaii. Each TMDL required field data collection, meteorological, watershed, stream, and estuarine data analysis in addition to numerical and empirical modeling. He contributed to the development of two

Key Projects (continued)

water quality models to study the relative effects of nitrogen and sediment loading to these estuaries. In-depth research and community/stakeholder involvement were major components of this project.

Winsegansett Marsh Restoration - Project Manager/Principal Scientist

Dr. Brawley supported the National Oceanographic and Atmospheric Administration (NOAA) in the study and restoration of two Massachusetts tidal marshes. The purpose of this project was to complete an assessment and prepare a restoration plan that restores and enhances the ecological functioning of Winsegansett marsh by improving tidal exchange, controlling *Phragmites australis*, and increasing the cover and biological diversity of a *Spartina*-dominated marsh. Dr. Brawley worked closely with NOAA scientists and local/regional public stakeholders. He managed a team of ecologists and engineers through a series of field investigations, hydrologic modeling, the development of engineering design options, permitting issues, long-term monitoring and the development of a series of restoration plan alternatives.

Yarmouth Marine Park Feasibility Study - Project Manager/Principal Scientist

Dr. Brawley assembled and led a team of specialists to support the Town of Yarmouth, MA in design, permitting, environmental studies, and community consensus building as related to a proposed marine park. Components include a wet basin, dry rack facility, buildings and infrastructure, parking, aquaculture research station, and public walkways and nature areas. Tasks included geological investigations, water quality assessment, boat traffic study, automobile traffic study, percolation testing for wastewater treatment and discharge, development of financial *pro forma*, wetlands delineation and permitting, wet basin design, hydrodynamic modeling for flushing scenarios, and public meetings for project consensus building.

Cape Cod Nutrient Loading Study - Project Manager

Assessed the rates of total nitrogen loading to three shallow embayments on Cape Cod, Massachusetts. Incorporated and compared several watershed nitrogen loading models and subsequent estuarine response methods. Recruited watershed stakeholder participation (in three towns) in both technical and management aspects of the project. Assisted municipalities with writing grant proposals for funding of volunteer citizen monitoring groups. Results from these modeling exercises, and associated data synthesis, were applied to a critical load analysis for each system.

Waterways Management Plan, Town of Yarmouth, Massachusetts - Project Manager

Developed draft waterway management plan based on the collection of existing environmental, water/recreational use, community preference, zoning, and other related data. Worked closely with town departments and communities in establishing preferential uses for all coastal and inland water bodies.

Total Maximum Daily Load (TMDL) for EPA Region 3 – Senior Scientist

Dr. Brawley reviewed 25 draft TMDLs in the states of Pennsylvania and Maryland. The TMDLs included acid mine drainage (AMD), sediments, nitrogen, phosphorus, CBOD, NBOD, and PCBs. This review work included the assessment of ecosystem and water quality impairments in freshwater

and estuarine environments. Drafted Decision Rationales for approximately five TMDLs. He edited and revised existing draft PCB TMDLs for eight 303(d) listed water bodies in Pennsylvania.

Shellfish Characterization: Muddy Creek Tidal Restriction – Senior Scientist

Characterized historical and existing shellfish populations upstream and downstream of a culvert system near the mouth of Muddy Creek, a nitrogen-enriched estuary in Harwich and Chatham, MA. Field investigations and collaboration with MA DMF provided information that Dr. Brawley synthesized and incorporated into a technical memorandum based on reconstructing the culvert to augment tidal exchange with Pleasant Bay.

Publications and Presentations

- Brush, M.J. and J.W. Brawley. 2008. Adapting the light • biomass (BZI) models of phytoplankton primary production to shallow marine ecosystems. *Journal of Marine Systems* 75:227-235.
- Brawley, J.W. 2005. Irreversibility, sustainability, safe minimum standard in relation to restoration ecology. NOAA Coastal Services Center.
(<http://www.csc.noaa.gov/coastal/economics/irreversibility.htm>).
- Brawley, J.W., M.J. Brush, J.N. Kremer, and S.W. Nixon. 2003. Potential applications of an empirical phytoplankton production model to shallow water ecosystems. *Ecological Modelling* 160:55-61.
- Brush, M.J., J.W. Brawley, S.W. Nixon, and J.N. Kremer. 2002. Modeling phytoplankton production: Problems with the Eppley Curve and an empirical alternative. *Marine Ecology Progress Series* 238:31-45.
- Brawley, J.W. 2002. Dynamic modeling of nutrient inputs and ecosystem responses in the Waquoit Bay estuarine system. Ph.D. Thesis. University of Maryland, College Park, MD.
- Brawley, J. 2001. A Conversation with Bill. In: P. Auster "ed." *I Thought My Father Was God*. New York. Henry Holt and Company, LLC.
- Deegan, L., J. Kremer, T. Webler, and J. Brawley. 2001. The use of models in integrated resource management in the coastal zone. In: B. Von Bundon and R.K. Turner "eds." *Science and Integrated Coastal Management Dahlem Workshop Report*. Berlin. Dahlem University Press.
- Brawley, J.W., G.N. Collins, J.N. Kremer, C.H. Sham, and I. Valiela. 2000. A time-dependent model of nitrogen loading to estuaries from coastal watersheds. *Journal of Environmental Quality* 29:1448-1461.
- Valiela, I., G. Collins, J. Kremer, K. Lajtha, M. Geist, B. Seely, J. Brawley, and C.H. Sham. 1997. Nitrogen Loading from Coastal Watersheds to Receiving Estuaries: New Methods and Application. *Ecological Applications* 7(2): 358-380.
- Sham, C.H., J.W. Brawley, and M.A. Moritz. 1996. Analyzing Septic Nitrogen Loading to Receiving Waters: Waquoit Bay, Massachusetts. In *GIS and Environmental Modeling: Progress and Research Issues*. ed. M.F. Goodchild et al. Fort Collins: GIS World Books.
- Sham, C.H. and J. Brawley, 1996. Ecological Risk Assessment for Watersheds: Waquoit Bay Nitrogen Loading Model Development and Results. Technical Report to the U.S. Environmental Protection Agency, Office of Science and Technology, Washington, D.C., 24 pp. appendices.

Publications and Presentations (continued)

Sham, C.H., J.W. Brawley, and M.A. Moritz. 1995. Quantifying Septic Nitrogen Loadings to Receiving Waters: Waquoit Bay, Massachusetts. *International Journal of Geographic Information Systems* 9(4):463-473.

Valiela, I., K. Foreman, M. LaMontagne, D. Hersh, J. Costa, P. Peckol, B. DeMoe-Anderson, C. D'Avanzo, M. Babione, C.H. Sham, J.W. Brawley, and K. Lajtha. 1992. Couplings of Watersheds and Coastal Waters: Sources and Consequences of Nutrient Enrichment in Waquoit Bay, Massachusetts. *Estuaries* 15:443-457.

Peer-Reviewed Reports:

Saquis Scientific 2010. Nutrient Criteria Development in Maine Coastal Waters: Review of Existing Data and Preliminary Statistical Analyses. Final Report submitted to the U.S. Environmental Protection Agency, Region I.

Duxbury Bay Management Commission 2007/8. Final Aquaculture Management Plan. Town of Duxbury, Massachusetts.

Battelle 2006. Final Report for Peconic Bay Pathogens TMDL. Final Report submitted to the U.S. Environmental Protection Agency, Region II and the Environmental Protection Agency Oceans and Coastal Protection Division, Washington, DC. WA3-17.

Battelle 2005. Phase 1 Assessment of Potential Water Quality and Ecological Risk and Benefits From a Proposed Reintroduction of Mississippi River Water into the Maurepas Swamp. Final Report submitted to the U.S. Environmental Protection Agency, Region VI and the Environmental Protection Agency Oceans and Coastal Protection Division, Washington, DC. WA2-32.

Battelle 2005. Gulf of Mexico Program Technical Support Work Assignment No. 2-01, Amendment 1 Task 5: Northern Gulf Nutrient Pilot Study Subtasks 7, 8, and 9. Final Report submitted to the U.S. Environmental Protection Agency Gulf of Mexico Program and the Environmental Protection Agency Oceans and Coastal Protection Division, Washington, DC. WA2- 01

Battelle 2005. Dissolved Oxygen TMDL for Vessup Bay and Redhook Bay, St. Thomas, U.S. Virgin Islands. Final Report submitted to the U.S. Environmental Protection Agency, Region II and the Environmental Protection Agency Oceans and Coastal Protection Division, Washington, DC. WA1-17.

Battelle 2004. A scientific assessment of nutrient concentrations, loads, and biological response in the northern Gulf of Mexico. Final Report submitted to the U.S. Environmental Protection Agency Gulf of Mexico Program and the Environmental Protection Agency Oceans and Coastal Protection Division, Washington, DC. WA1- 01

Publications and Presentations (continued)

Public Presentations:

Brawley, J.W. Loss of resilience, tipping points, and alternative stable states in estuarine and nearshore ecosystems. New England Estuarine Research Society (NEERS), May 2008, Portsmouth, NH.

Brawley, J.W. Waquoit bay's critical nitrogen loading threshold(s). New England Estuarine Research Society (NEERS), May 2008, Portsmouth, NH.

Brawley, J.W., N. S. Banas, A.D. Mansfield, and M. Jiang. A transferable method for assessing carrying capacity of shellfish aquaculture in the Massachusetts coastal zone. New England Estuarine Research Society (NEERS), March 2006, Boston, MA.

Brawley, J. W.; Field, J. M.; Wisneski, C. L.; Libby, P. S.; Kurtz, J. C.; Magee, M.; Tervelt, L., A Scientific Assessment of Nutrient Concentrations, Loads, and Biological Response in the Northern Gulf of Mexico. Estuarine Research Federation, October 2005, Norfolk, VA.

Gunster, D. G.; Brawley, J. W.; Wisneski, C. L.; Gnatek, M. A.; Teague, K., An assessment of potential ecological and human health risks and benefits of a proposed redistribution of Mississippi River water into the Maurepas Swamps. Estuarine Research Federation, October 2005, Norfolk, VA.

Libby, P. S.; Brawley, J.W., Mickelson, M. J., Revisiting a mass balance approach – bounding the impact due to transfer of the MWRA outfall from Boston Harbor to Massachusetts Bay: predictions vs. reality. Estuarine Research Federation, October 2005, Norfolk, VA.

Brawley, J.W., D.J. Yozzo, W. Pabich, M. Fobert, and T. Benjamin. 2005. A study of long-term ecosystem state change as a result of perturbation to Winsegansett Marsh, Fairhaven, MA. New England Estuarine Research Society (NEERS) Spring 2005 Meeting, Eastham, MA.

Brawley, J.W., D.J. Yozzo, W. Pabich, M. Fobert, and T. Benjamin. 2004. The development of a restoration plan for the Winsegansett East Marsh, Fairhaven, MA. New England Estuarine Research Society (NEERS) Spring 2004 Meeting, Burlington, VT.

Brawley, J.W., D.J. Yozzo, W. Pabich, M. Fobert, and T. Benjamin. 2004. The development of a restoration plan for the Winsegansett East Marsh, Fairhaven, MA. Atlantic Estuarine Research Society (AERS) Spring 2004 Meeting, Salisbury, MD.

Brawley, J.W. and J.N. Kremer. 2002. Critical Nitrogen Load to the Waquoit Bay Estuarine System. New England Estuarine Research Society (NEERS) Fall 2002 Meeting, Groton, CT.

Publications and Presentations (continued)

- Kremer, J.N., W.J.S. Currie, and J. Brawley. 2001. Changing land use and estuaries, C.L.U.E. for informed management. 2001 ASLO Winter Meeting, Albuquerque, NM.
- Brawley, J.W. and J.N. Kremer. 2000. Modeling ecosystem responses in the Waquoit Bay estuarine system. New England Estuarine Research Society. Fall 2000 Meeting. Block Island, RI.
- Kroeger, K.D., M.L. Cole, J. Brawley, and I. Valiela. 2000. The influence of watershed land use and vadose zone thickness on the quantity and lability of organic nitrogen transported by groundwater to coastal waters. New England Estuarine Research Society. Fall 2000 Meeting. Block Island, RI.
- Kremer, J.N., J.W. Brawley, S. Nixon, M. Brush, L. Deegan, J. Hughs, and I. Valiela. 1999. Exploring transferability in an estuarine ecological model. Estuarine Research Federation, Fall 1999 Meeting, New Orleans, LA.
- Bowen, J.L., J.W. Brawley, J.N. Kremer, G. Collins, and I. Valiela. 1999. Historical changes in land use within the Waquoit Bay, MA watershed: impacts on eelgrass meadows. Estuarine Research Federation, Fall 1999 Meeting, New Orleans, LA.
- Brush, M.J., J.W. Brawley, S.W. Nixon, and J.N. Kremer. 1999. Modeling phytoplankton production: problems with the Eppley Curve and an empirical alternative. Estuarine Research Federation, Fall 1999 Meeting, New Orleans, LA.
- Deegan, L., J. Kremer, J. Hughs, J. Brawley, and T. Webler. 1999. Changing land use and estuaries (CLUE): modeling the links between land use and fish production. Estuarine Research Federation, Fall 1999 Meeting, New Orleans, LA.
- Brawley, J.W., J.N. Kremer, I. Valiela, F. Short, C.H. Sham, and M. Geist. 1998. Simulating the ecological responses to nitrogen loads in shallow estuaries. 4th Marine and estuarine shallow water science and management conference, Atlantic City, NJ.
- Brush, M.J., J.W. Brawley, S.W. Nixon, and J.N. Kremer. 1998. Modeling phytoplankton production. I. Problems with the Eppley Curve and an empirical alternative. New England Estuarine Research Society, New London, CT.
- Brawley, J.W., M.J. Brush, J.N. Kremer, and S.W. Nixon. 1998. Modeling phytoplankton production. II. Application of an empirical model to shallow water ecosystems. New England Estuarine Research Society, New London, CT.

Publications and Presentations (continued)

Brawley, J.W., J.N. Kremer, I. Valiela, F. Short, C.H. Sham, and M. Geist. 1997. Simulating the ecological effects of nitrogen loads to a shallow estuary. Estuarine Research Federation, Providence, RI.