

**Invitation for Public Comment on the List of Candidates for
the Environmental Protection Agency Science Advisory Board
Ecological Processes and Effects Committee**

September 18, 2017

The U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) Staff Office announced in a Federal Register Notice on June 27, 2017 (82 FR 29077 - 29078) that it was inviting nominations of experts to be considered for the Administrator's appointment to the Science Advisory Board (SAB) Ecological Processes and Effects Committee (EPEC). The SAB provides independent advice and peer review to EPA's Administrator on the scientific and technical aspects of environmental issues. The SAB Staff Office sought nominations of experts to serve on the SAB EPEC with demonstrated expertise in one or more of the following disciplines: aquatic ecology; marine and estuarine ecology; ecological risk assessment; complex systems; uncertainty analysis; ecotoxicology; and systems ecology. The SAB Staff Office identified 24 candidates based on their expertise and willingness and ability to serve. We hereby invite public comments on the attached List of Candidates for appointment to the SAB EPEC for consideration by the SAB Staff Office. Comments should be submitted to Dr. Thomas Armitage, Designated Federal Officer, no later than October 9, 2017 at armitage.thomas@epa.gov. E-mail is the preferred mode of receipt. Please be advised that public comments are subject to release under the Freedom of Information Act.

**2017 Candidates for the EPA Science Advisory Board
Ecological Processes and Effects Committee**

Bernhardt, Emily S.

Duke University

Dr. Emily S. Bernhardt is a Professor of Biogeochemistry in the Department of Biology at Duke University. She holds a B.S. in Biology from the University of North Carolina, Chapel Hill and a Ph.D. in Ecology and Evolutionary Biology from Cornell University. She joined the faculty at Duke in 2004. Dr. Bernhardt studies the role of climate and land use change in altering the biogeochemical connections between watersheds and receiving freshwaters. She is particularly interested in understanding how watershed degradation impacts the ecological structure and ecosystem function of streams and wetlands and the potential for reach and watershed scale restoration and intervention to reverse these impacts. Dr. Bernhardt has served as: a member of the National Research Council (NRC) Committee on Challenges and Opportunities in the Hydrologic Sciences (2011-2012); the organizer of the National River Restoration Science Synthesis (2002-2005); a member of the Ecological Society of America Visions Committee (2002-2003); a member of the Frontiers in Ecosystem Science Working Group (2012-present); and was President of the Society for Freshwater Science (2016-2017). She is the recipient of the 2004 Hynes Award from the North American Benthological Society, the 2013 Yentsch-Schindler Award from the Association for the Sciences of Limnology and Oceanography, and the 2014 Mercer Award from the Ecological Society of America. She currently serves as an editorial board member for three journals (*Science Advances*, *Ecosystems* and *Limnology and Oceanography*). Dr. Bernhardt's research projects have examined: the environmental impacts of nanomaterials in aquatic ecosystems; the effects of mountaintop mining on Central Appalachian rivers; the role of development configuration in altering urban stream pollutant signatures; and the effects of saltwater intrusion on coastal wetland carbon and nitrogen cycling. Her research is currently funded by the National Science Foundation. She has received past funding from The Foundation for the Carolinas, U.S. EPA, North Carolina Water Resources Research Institute, and the Great Dismal Swamp Mitigation Bank LLC.

Bernthal, Frederick

Universities Research Association

Dr. Fred Bernthal was President of Universities Research Association (URA) for 17 years and now serves as Senior Advisor to the Board of Trustees. The URA consortium has for 50 years been contractor to the U.S. Department of Energy (DOE) for management of Fermi National Accelerator Laboratory. URA is also part of the three-member Honeywell-led team recently awarded the DOE contract for management of Sandia National Laboratories. From 1990-94, Dr. Bernthal was Deputy Director of the National Science Foundation, where he was for one year acting Director and a member of the National Science Board. From 1988-90, he was Assistant Secretary of State for Oceans, Environment and Science, where he chaired the 50-nation Response Strategies Working Group of the U.N. Intergovernmental Panel on Climate Change and led negotiations for the 1990 US-USSR Agreement for Cooperation in Basic Sciences. He also spearheaded initiatives which banned the export of U.S. hazardous wastes and prohibited the import of elephant ivory. From 1983-88 he was a Member of the U.S. Nuclear Regulatory Commission, where he gained approval for the Commission's first Advanced Reactor Policy Statement. In the wake of the Chernobyl disaster, he led a delegation to the Soviet Union where in 1987 he negotiated and signed the first U.S.-USSR nuclear safety protocol. From 1970-80, he was a professor of chemistry and physics at Michigan State University and was granted tenure. In 1978 he joined the staff of U.S. Senator Howard Baker as a Congressional Science Fellow, and he served as Chief Legislative Assistant to Majority Leader Baker from 1980-83. Dr. Bernthal holds a B.S. in chemistry from Valparaiso University and a Ph.D. in nuclear chemistry from the University of California at Berkeley. He did postdoctoral study at Yale University and was a NATO Senior Scientist Fellow at the Niels Bohr Institute in Copenhagen in 1977. He was a director of PPL Corporation for 18 years, and subsequently of the PPL spin-off Talen Energy Corporation, until Talen was sold in late 2016. From 2001-2008 he was a director of the Society for Science and the Public. The author of more than 40 peer-reviewed scientific publications, he is a Fellow of the American Physical Society and of the American Association for the Advancement of Science.

Borsuk, Mark

Duke University

Dr. Mark Borsuk is an Associate Professor of Civil and Environmental Engineering at Duke University. As part of his appointment at Duke, Dr. Borsuk directs a new interdisciplinary research and teaching initiative in risk, resilience, and decision-making. Dr. Borsuk received a B.S.E. in Civil Engineering and Operations Research from Princeton University, an M.S. in Statistics and Decision Sciences from Duke University, and a Ph.D. in Environmental Science and Policy from Duke University. He did his post-doctoral training in the Department of Systems Analysis, Integrated Assessment, and Modelling (SIAM) at the Swiss Federal Institute for Aquatic Science and Technology (EAWAG), where he advanced to head of the Decision Analysis and Integrated Assessment group. Dr. Borsuk received the Chauncey Starr Distinguished Young Risk Analyst Award from the Society for Risk Analysis in 2013 and the Early Career Research Excellence Award from the International Environmental Modelling and Software Society in 2008. Before joining the Duke faculty, Dr. Borsuk was a member of the Dartmouth College faculty for 10 years where he held an appointment in the Thayer School of Engineering. Dr. Borsuk's research concerns the development and application of mathematical models for integrating scientific information on natural, technical, and social systems. He is a widely-cited expert in Bayesian network modeling with regular application to environmental and human health regulation and decision making. He is also the originator of novel approaches to climate change assessment, combining risk analysis, game theory, and agent-based modeling. Dr. Borsuk's highly collaborative research has been funded by the National Science Foundation, U.S. EPA, National Institutes of Health, National Institute of Environmental Health Sciences, and U.S. Forest Service, and he has authored or co-authored over 75 peer-reviewed journal publications and 6 book chapters.

Downing, John

Minnesota Sea Grant

Dr. John Downing is the Director of the Sea Grant College Program and a professor in the Department of Biology at the University of Minnesota, Duluth. Dr. Downing holds a B.S. in Biology from Hamline University, an M.S. in Zoology from North Dakota State University, and a Ph.D. in Biology from McGill University. Dr. Downing was previously Regent's Excellence Professor of Ecology, Evolution, and Organismal Biology and Chair of the Environmental Science Graduate Program at Iowa State University. Dr. Downing was also formerly a professor at McGill University and the Université de Montréal where he was Director of the Laurentian Biological Station and a founding member of the Groupe de Recherche Interuniversitaire en Limnologie. Dr. Downing is the former Chair of the Executive Board of the Council of Scientific Society Presidents and former President of the

Association for the Sciences of Limnology and Oceanography. Dr. Downing is an adjunct professor at Itasca Community College and a founding member of the Itasca Water Legacy Partnership. Reflected in over 175 academic publications (H-index 65, i10 index 123, 20,000+ citations), his areas of expertise range from aquatic ecology and fisheries biology to whole ecosystem management, resource economics, and global carbon cycling. He is a sustaining fellow of the Association for the Sciences of Limnology and Oceanography, and a recipient of the Iowa State University Research Excellence Award, the Thieneman-Naumann Medal for excellence in limnological research from the International Society of Limnology (SIL), Bruce Gardner Memorial Prize for Applied Policy Analysis from the Agricultural and Applied Economics Association, the Regent's Faculty Excellence Award from Iowa State University, the Ruth Patrick Award from the Association for the Sciences of Limnology and Oceanography, among others. Dr. Downing's has recently received research grants from the National Science Foundation, U.S. EPA, U.S. Department of Agriculture, and the Iowa Department of Natural Resources.

Easton, Zachary

Virginia Polytechnic Institute and State University (Virginia Tech)

Dr. Zachary Easton is an Associate Professor in Biological Systems Engineering at Virginia Tech. He holds a B.S. in Soil Science from the University of Massachusetts, and an M.S. and Ph.D. in Hydrology from Cornell University. The primary focus of Dr. Easton's work is to improve the understanding of hydrologic and terrestrial processes that control biogeochemical cycles and fluxes with the ultimate goal of developing policies and management practices that protect water, soil, and other natural resources. Water is typically Dr. Easton's central focus because it is arguably the most critical and at-risk resource to humans and ecosystems. His research addresses both native and managed systems, considers processes at plot- to large river basin-scales, and is relatively evenly divided among field study/monitoring, modeling, and application of results to real world problems. Three broad and somewhat overlapping research themes around which Dr. Easton focuses are: (1) Impact of land use and climate change on water quality and quantity, (2) Impact of watershed management practices on water quality, and (3) Bridging basic research and modeling to management and application. Ongoing projects funded by the National Science Foundation (NSF), the U.S. Department of Agriculture (USDA), and the U.S. Environmental Protection Agency (EPA) focus on determining relationships among biogeochemical hotspots, landscape hydrology, and the impact that climate change and variability have on these processes, and how climate change impacts the phenology of agricultural management and the ensuing effect on water quality. His research also focuses on the Chesapeake Bay watershed. He is the Virginia representative to the USDA Southeast Region Climate Hub, an elected member of the EPA Chesapeake Bay Scientific and Technical Advisory Committee, past chair of SERA-43 (the "Water" SERA), and an advisor to the Natural Resources Conservation Service (NRCS) on revisions to the 590 Nutrient Management Standard P-Index. His research over the past two years has been supported by the NSF, USDA's Natural Resources Conservation Service (NRCS), the Pratt Endowment, the Delmarva Land Grant Institution Collaborative Research Seed Funding Program, and EPA.

Gluskin, Rebecca

Social Science Research

Dr. Rebecca Gluskin is Chief Statistician leading the quantitative research and analysis efforts for Measure of America. Dr. Gluskin holds a B.S. in Environmental Science from McGill University, an M.S. in Toxicology, and Ph.D. in Epidemiology both from New York University. Dr. Gluskin conducted post-doctoral work at Boston Children's Hospital with the HealthMap.org. She previously served as the Director of Data Analysis and Data Services in the Bureau of Informatics at the New York City Department of Health and Mental Hygiene. Dr. Gluskin has worked for Measure of America for the past two years. A list of organizations that have contributed funding to Measure America is available on the organization's website at www.measureofamerica.org/funders-and-partners.

Haiman, Aaron

Sacramento-San Joaquin Delta Conservancy

Mr. Aaron Haiman is an Environmental Scientist working for the Sacramento-San Joaquin Delta Conservancy, a small state agency. Mr. Haiman's primary duties are managing grants for habitat restoration, water quality improvement, and sustainable agriculture projects. Mr. Haiman also works as the Qualified Biologist on an invasive plant control program. He is leading an assessment of water infrastructure in Suisun Marsh to maximize ecological benefits, coordinates a citizen science litter measuring and removal project, and serves as the agencies tribal liaison. Mr. Haiman holds a B.S. in Environmental Science from the University of California, Berkeley where as part of his studies he conducted an analysis of urban nesting hawk diets, and aided a project studying hummingbird flight. Mr. Haiman also holds an M.S. in Avian Science and a M.S. in Animal

Behavior both from the University of California, Davis. His areas of expertise and research have focused on avian ecology, behavior, and evolution. Mr. Haiman served as a board member for the Hawk Migration Association of North America, and the Point Blue Conservation Science Bird-a-thon Steering Committee. Mr. Haiman does not have any research projects funded from sources outside of his agency.

Henry, Elizabeth

Anchor QEA

Dr. Elizabeth (Betsy) Henry is a Principal Scientist with Anchor QEA. She received a B.S. in Agronomy with highest distinction from Colorado State University and a Ph.D. in Environmental Engineering from Harvard University. Throughout her career, Dr. Henry has focused on site characterization, ecological risk assessment, and restoration of contaminated sites in terrestrial and aquatic environments. Her experience revolves around assessments of transport, fate, and risk of persistent, bioaccumulative and toxic contaminants in the environment. Dr. Henry also has specific expertise in mercury and has worked on mercury cycling and bioaccumulation in fresh and estuarine waters, ecological risk assessment of mercury and methylmercury, mercury biogeochemistry in wetlands, mercury volatilization from contaminated soils, and management options to control methylmercury formation in the environment. Dr. Henry has helped guide contaminated sites through to remediation by: developing remedial goals for contaminants in sediment and fish tissue that are protective for human health and ecological receptors, conducting residual risk analysis, and designing monitoring programs to assess remedy success. She has published papers in the peer-reviewed literature, and has presented regularly and chaired sessions at national scientific conferences. Dr. Henry has also served as guest editor/reviewer for special issues of *Ecological Applications* and *Microbial Ecology* and as a reviewer for EPA STAR grant proposals. She served on the executive committee for the 13th International Conference on Mercury as a Global Pollutant that was held July 16-21, 2017, and is a longstanding member of the American Chemical Society and the Society of Environmental Toxicology and Chemistry. Dr. Henry has received funding in the last two years from The Dow Chemical Company for collaborative research with the Smithsonian Environmental Research Center into the efficacy of activated carbon or other amendments in controlling mercury bioavailability in marshes.

Jackson, C. Rhett

University of Georgia

Dr. C. Rhett Jackson is a Professor of Hydrology in the Warnell School of Forestry and Natural Resources at the University of Georgia. Dr. Jackson's research focuses on the effects of human land use activities, specifically forestry, agriculture, and urbanization, on water quality and aquatic habitat. He conducts applied research into the effectiveness of best management practices (BMPs) in reducing nonpoint pollution. His interests in the basic science of hillslope hydrology inform his research on the fate and transport of nonpoint pollutants. His recent findings on the relative role of shallow lateral subsurface flow in hillslopes have implications for understanding and modeling the transport of dissolved pollutants like nitrate nitrogen. A particular current interest of his is the relationship between riparian vegetation, channel structure, and stream temperature. Given that BMPs are never fully effective, he has lately pondered the question, "How much water quality and habitat change is too much?" His work is trans-disciplinary, and he frequently collaborates with ecologists, animal biologists, and biogeochemists. Dr. Jackson's work has influenced the development of BMPs for forestry and urban development. He currently receives research support from the U.S. Department of Energy, the U.S. Department of Agriculture's (USDA) Forest Service, USDA's Agriculture and Food Research Initiative, the National Science Foundation, and the U.S. Environmental Protection Agency. Other agencies that have supported his work include the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the states of Washington and Georgia, and non-governmental organizations. Dr. Jackson earned B.S.E. and M.S.E. degrees in Civil and Environmental Engineering from Duke University and a Ph.D. in Civil and Environmental Engineering from the University of Washington.

Kane, Andrew

University of Florida

Dr. Andrew Kane is an Associate Professor of Environmental and Global Health at University of Florida. Dr. Kane received a B.S. degree from Cornell University, a M.S. degree from The Ohio State University, and his Ph.D. degree from University of Maryland School of Medicine. Dr. Kane's research focuses on environmental toxicology and pathology associated with aquatic and marine systems, and he teaches courses in aquatic systems and environmental health, and scientific communications. Dr. Kane has served as principal investigator for multiple federally-supported programs, engaging in community-based research on environmental and public health issues in coastal Gulf of Mexico communities. Recent and current projects involve seafood safety in Gulf coastal communities after Deepwater Horizon (National Institute of

Environmental Health Sciences); oyster resource restoration, sustainable management, and community relations in Apalachicola (National Fish and Wildlife Foundation/Florida Fish & Wildlife Conservation Commission); and seafood worker safety in Gulf fisheries (National Institute for Occupational Safety and Health). Dr. Kane has authored over 70 peer-reviewed papers and book chapters, and has mentored 62 M.S., Ph.D., and Postdoctoral trainees. Dr. Kane is Graduate Program Director for Environmental Health and One Health masters and doctoral programs at University of Florida, serves as deputy director the National Institute for Occupational Safety and Health (NIOSH) Southeastern Coastal Center for Agricultural Health and Safety, directs the Aquatic Pathobiology Laboratory through University of Florida's Emerging Pathogens Institute, and is an aquatic health extension specialist for Florida Sea Grant. Dr. Kane's research program has been supported through multiple federal agencies/organizations (National Institute for Environmental Health Sciences, Centers for Disease Control/National Institute for Occupational Safety and Health, Department of Commerce/National Institute of Standards and Technology, U.S. Environmental Protection Agency, National Oceanic and Atmospheric Administration, National Fish and Wildlife Foundation, U.S. Army), and state agencies/organizations (Maryland Industrial Partnerships, Maryland Sea Grant, Florida Sea Grant, Florida Fish and Wildlife Conservation Commission).

Karimi, Roxanne

Stony Brook University

Dr. Roxanne Karimi is a Research Scientist and Adjunct Assistant Professor at the School of Marine and Atmospheric Sciences at Stony Brook University. Dr. Karimi received a B.A. in Biology from the University of Pennsylvania, and a Ph.D. in Biology from Dartmouth College. Dr. Karimi has expertise in the fields of aquatic ecology and environmental health, and has led research projects spanning freshwater to marine ecosystems, as well as epidemiological studies. Dr. Karimi's research examines the links between aquatic ecosystem processes and human health. Her work over the last 15 years has focused on the influence of ecological factors on metal contaminant and nutrient bioaccumulation in aquatic organisms, the transfer of these metals through the food web to humans through fish consumption and drinking water, and the health impacts of these contaminants and nutrients on aquatic biota and humans. Dr. Karimi received the Karen Wetterhahn Memorial Award from the National Institute of Environmental Health Sciences (NIEHS) Superfund Research Program for her dedication to environmental health research, outreach, and mentorship activities. Dr. Karimi recently co-led the Long Island Study of Seafood Consumption to study the effects of fish consumption on human exposure to nutrients and contaminants, health benefits, and risks. Dr. Karimi is the lead scientist of the Seafood Mercury Database, a public data source that aggregates mercury concentration data for over 2,000 species of fish and shellfish from the academic literature and government monitoring studies. Dr. Karimi regularly provides expertise to numerous public health agencies and organizations that use the database to develop fish consumption advice and understand the benefits and risks of fish consumption. Dr. Karimi recently became a key investigator at the Stony Brook University Global Health Institute to study global environmental health issues. Dr. Karimi has been a member of the American Society of Limnology and Oceanography, Sigma Xi, and the Ecological Society of America. Her research has been supported by the National Institute of Environmental Health Sciences, the Department of Defense Strategic Environmental Research and Development Program, and private foundations. Dr. Karimi has served as a reviewer for the National Science Foundation, international and regional funding agencies, and numerous scientific journals.

Marlborough, Sidney

Noble Energy, Inc.

Dr. Sidney Marlborough is currently a Senior Environmental Toxicologist with Noble Energy, Inc. in Houston, Texas. He is responsible for the corporate chemical stewardship program and manages the risk evaluation of new products for oil and gas exploration and production. He received a B.S. in Environmental Management Systems, M.S. in Environmental Toxicology, and Doctorate in Environmental Science, minoring in molecular genetics, from Louisiana State University. He has 18 years of experience in environmental risk management, toxicology, risk assessment, litigation, and research. He has worked for state government, academia, private consulting, and industry. He has developed numerous human health and ecological risk assessments for expert reports and remedial cleanup requirements. He has studied the toxicity of metals, chlorinated solvents, poly-aromatic hydrocarbons, and pesticides in both human and ecological receptors. Dr. Marlborough has developed an uptake kinetic model simulating the phytoremediation of arsenic with various plant species. He has developed formulas for the extrapolation of toxicity of arsenate and arsenite as part of ecological risk assessment. He has published research in the areas of marine toxicity to benthic invertebrates, arsenic speciation toxicity in ecological receptors, TNT exposure to benthic fish, and phytoremediation of metals. He has researched chemical carcinogenesis and activation pathways that increase microsatellite instability in vulvar squamous cell carcinoma. Dr. Marlborough is currently a member of the Society of Toxicology, American

Chemical Society, and the Society of Petroleum Engineers. Dr. Marlborough has no grant or contract research funding.

Michaels, Patrick

Cato Institute

Dr. Patrick Michaels is Director of the Center for the Study of Science at the Cato Institute. Dr. Michaels was a research professor of Environmental Science at University of Virginia for 30 years, and Virginia State Climatologist for 27 years. Dr. Michaels holds A.B. and S.M. degrees in Biology and Plant Ecology from University of Chicago and a Ph.D. in Ecological Climatology from University of Wisconsin-Madison. Dr. Michaels was president of the American Association of State Climatologists and Program Chair or the Committee on Applied Climatology of the American Meteorological Society. His research has centered around climate and its influence on living systems, including human society. As a co-author of the 2004 climate "paper of the year" awarded by the Association of American Geographers, Dr. Michaels found that, contrary to the EPA's assumption, humans become less sensitive to heat waves as they become more frequent. This finding was in agreement with subsequent research published in 2015 in the *Journal Lancet* demonstrating that global warming will result in substantially fewer temperature-related deaths than we now experience. Dr. Michaels' work is entirely supported by the Cato Institute.

Michalak, Anna

Carnegie Institution for Science

Dr. Anna M. Michalak is a faculty member in the Department of Global Ecology of the Carnegie Institution for Science, and a Professor in the Department of Earth System Science at Stanford University. Prior to joining Carnegie, she was the Frank and Brooke Transue Faculty Scholar and Associate Professor at the University of Michigan in Ann Arbor, with appointments in the Department of Civil and Environmental Engineering and the Department of Atmospheric Oceanic and Space Sciences. She holds a Ph.D. and M.S. in Civil and Environmental Engineering from Stanford University, and a B.Sc.(Eng.) in Environmental Engineering from the University of Guelph, Canada. Dr. Michalak studies the cycling and emissions of greenhouse gases at urban to global scales – scales directly relevant to informing climate and policy – primarily through the use of atmospheric observations. She also explores climate change impacts on freshwater and coastal water quality via influences on nutrient delivery to, and on conditions within, water bodies. Her approach is focused on the development of spatiotemporal statistical data fusion methods that optimize the use of limited *in situ* and satellite data. She is the lead author of the U.S. Carbon Cycle Science Plan, a former Editor of the journal *Water Resources Research*, and Chair of the scientific advisory board for the European Integrated Carbon Observation System. She is the recipient of the Presidential Early Career Award for Scientists and Engineers (nominated by the National Aeronautics and Space Administration), the National Science Foundation CAREER award, and the Leopold Fellowship in environmental leadership. Dr. Michalak has recently received research funding from the National Aeronautics and Space Administration, the National Science Foundation, and Google.

Mirlohi, Susan

Independent Consultant

Dr. Susan Mirlohi is currently an independent consultant and environmental science, engineering, and public health scientist/educator with over 25 years of combined, continuous experience in industry, academia/research, and regulatory sectors. She holds a Doctoral degree in civil engineering/environmental and water resources engineering, and a Master of Science degree in environmental sciences and engineering from Virginia Tech. Most recently, she served as an Assistant Professor of Environmental Health in the Department of Epidemiology and Biostatistics, College of Public Health at Temple University and a Visiting Assistant Professor of Environmental Sciences and Engineering at Wilkes University. Her professional industry experiences include serving as a division director, senior environmental scientist, and aquatic toxicologist, at a private environmental consulting firm. She was also the co-founder and vice president of a private, Virginia state-certified laboratory, operating under the federal Safe Drinking Water Act. Within the government sector, she served as a senior scientist and training coordinator at the State Public Health Laboratory for the Commonwealth of Virginia, where she developed various training programs for the state public health laboratory staff, such as ethics, data integrity, and chemical and biological safety. Dr. Mirlohi's wide range of expertise includes: environmental/aquatic toxicology, environmental engineering applications for drinking water and wastewater treatment, environmental policy/regulations, biological and chemical toxicity assessment for industry funded research projects aimed at solving water quality issues associated with production of safe drinking water and clean non-potable water for large and small municipal and industrial entities within the United States. She was a research fellow in the interdisciplinary graduate doctoral education program (IGEP) that studied public perception, risks, chemistry, and health aspects of water under the theme of "Water for

Health" at Virginia Tech; she also served as a regular guest lecturer for a graduate course in environmental toxicology, covering topics of aquatic toxicology and whole effluent toxicity monitoring for ecological risk assessment studies. Dr. Mirlohi's research interests and expertise are in contaminant exposure studies, including ecological and human toxicity/health effects assessment; drinking water quality (including taste/odor properties); water/wastewater quality/treatment; environmental health; and educational outreach to promote nutritional, safety, and health aspects of drinking water. Dr. Mirlohi has published her academic research work in peer-reviewed journals and has presented at 22 regional, national, and international conferences. She has written numerous technical reports, issued to private and/or governmental organizations for the purpose of research or regulatory compliance with the federal Clean Water Act and Safe Drinking Water Act. Dr. Mirlohi has served as a peer reviewer for multiple journal publications, including the *Journal of Environmental and Occupational Health*, *Journal of Water Supply: Research and Technology – AQUA*; *Journal of Water*, *Journal of American Water Works Association*, and the *International Journal of Environmental Research and Public Health*. She has also served on the Laboratory Practices Committee with the Virginia Chapter of the American Water Works Association and has been a contributing author to a chlorine disinfection manual for waterworks operators. Dr. Mirlohi has no external sources of research funding.

Newman, Michael C.

College of William & Mary

Dr. Michael C. Newman is currently the A. Marshall Acuff, Jr. Professor of Marine Science at the College of William & Mary School of Marine Science where he also served as Dean of Graduate Studies from 1999 to 2002. Previously, he was a faculty member at the University of Georgia Savannah River Ecology Laboratory. His research interests include quantitative ecotoxicology, environmental statistics, risk assessment, population effects of contaminants, metal chemistry, bioaccumulation and biomagnification modeling, and during the last 15 years, qualities of innovative concepts and technologies that foster or inhibit their adoption by the ecotoxicology scientific community. In addition to more than 150 articles, he authored five books and edited another five on these topics. Mandarin and Turkish translations of his *Fundamentals of Ecotoxicology* are available from Chemical Industry Press (Beijing) and PALME (Ankara). His marine risk assessment book was translated into Mandarin in 2011. He taught full semester and short courses at universities throughout the world including the University of California, University of South Carolina, University of Georgia, College of William & Mary, Jagiellonian University (Poland), University of Antwerp (Belgium), University of Joensuu (Finland), University of Technology – Sydney (Australia), University of Hong Kong, University of Koblenz-Landau (Germany), Huazhong Normal University (P.R. China), and Royal Holloway University of London (UK). He served numerous international, national, and regional organizations including the Organisation for Economic Co-operation and Development (OECD), U.S. EPA Science Advisory Board, U.S. EPA Ecological Committee on FIFRA Risk Assessment Methods (ECOFRAM), U.S. EPA Scientific and Technological Achievement Awards Committee (STAA), and the U.S. National Academy of Science NRC. He was a Fulbright Senior Scholar (University of Koblenz-Landau, Germany, 2009) and a Government of Kerala Scholar in Residence/Erudite Scholar (Cochin University of Science and Technology, Cochin University, Kerala, India, 2011). In 2004, the Society of Environmental Toxicology and Chemistry (SETAC) awarded him its Founder's Award, "the highest SETAC award, given to a person with an outstanding career who has made a clearly identifiable contribution in the environmental sciences." In 2014, he was also named a SETAC Fellow, for "long-term and significant scientific and science policy contributions." Dr. Newman's research has recently been funded by DuPont.

Reash, Robin

American Electric Power

Mr. Robin Reash is a Consulting Environmental Scientist with American Electric Power's (AEP's) Water and Ecological Resource Services Section in Columbus, Ohio. He has worked at AEP for over 25 years. His principal duties include designing and conducting technical studies for wastewater compliance issues, evaluating the development of regulatory standards at the state and federal level, and conducting applied research on the effect of power plant pollutants. Mr. Reash received a B.A. in Biology from Wittenberg University (1981) and a M.S. in Environmental Biology from The Ohio State University (1984). He has extensive experience in the bioaccumulation and terrestrial deposition of mercury and other trace elements, thermal biology and its effects, whole effluent toxicity, and trace element cycling. Mr. Reash serves as Chairman of the Electric Power Research Institute (EPRI) Water Quality Criteria Research Program, the Utility Water Act Group (UWAG) Water Quality Committee, and the Ohio River Valley Water Sanitation Commission (ORSANCO) Power Industry Advisory Committee. He is also a member of the Ohio Environmental Protection Agency's (Ohio EPA) panel on nutrient criteria development. In 2005, Mr. Reash served as a member of the U.S. Environmental Protection Agency's (EPA's) Science Advisory Board Panel evaluating EPA's methodology for deriving aquatic life criteria. In 2002, he was an external peer reviewer for EPA's "Draft Revised Aquatic Life Criteria for Selenium." Mr.

Reash is a frequent presenter at technical conferences around the country and participated in two Society of Environmental Toxicology and Chemistry (SETAC) Pellston workshops. Before working at AEP, Mr. Reash worked with the Ohio EPA and the Oklahoma Water Resources Board. He has published over 30 papers in peer-reviewed journals, authored or co-authored five book chapters, and currently serves on the editorial board of the SETAC journal: *Integrated Environmental Assessment and Management*. He is a Certified Fisheries Professional and has received multiple Technology Transfer Awards from EPRI. He often partners with EPRI to conduct targeted applied research. His current or recent research projects include: (1) speciation of mercury in power plant waste streams and ambient water; (2) development of a site-specific whole effluent toxicity criterion for a southeastern Ohio receiving stream; (3) use of fish otolith microchemistry to evaluate exposure to trace metals in receiving streams; (4) assessment of mercury, methylmercury, and selenium levels in Ohio River fish collected near coal-fired power plants; and (5) evaluation of a site-specific human health criterion for mercury based on EPA's methylmercury fish tissue criterion. During the past two years Mr. Reash's research has been funded by the Electric Power Research Institute and American Electric Power.

Reavie, Euan

University of Minnesota, Duluth

Dr. Euan Reavie is a Senior Research Associate and Assistant Director at the Natural Resources Research Institute, Water Initiative, University of Minnesota, Duluth. Dr. Reavie holds a Ph.D. in Biology from Queen's University and he completed postdoctoral training in geology at the University of Toronto. Dr. Reavie and his research team pursue research in applied aquatic studies on freshwater ecosystems, evaluating water quality issues. Dr. Reavie's recent studies have focused on: development of environmental quality indicators in the Great Lakes using algal communities; tracking long-term pollution trends using fossil remains in sedimentary profiles from northern Minnesota; assessing the efficacy of potential ballast water treatments intended to prevent non-native species introductions to the Great Lakes; and long-term monitoring of Great Lakes phytoplankton responses to stressors, including nutrient enrichment and climate change. Dr. Reavie's research has recently been funded by: the U.S. Maritime Administration, U.S. Environmental Protection Agency, Minnesota Sea Grant, the National Oceanic and Atmospheric Administration, the Minnesota Pollution Control Agency, and the Minnesota Aquatic Invasive Species Research Center.

Rogers, David

Independent Consultant

Mr. David Rogers is a multidisciplinary Scientist, Environmentalist, Technology Manager and Educator. He holds an Executive MBA, M.S., and B.S. from the Rochester Institute of Technology. Mr. Rogers lives a life focused on ecology, with 30 years of experience developing an ecologically biodiverse flora - fields and woodlands, and varied fauna, on his land in upstate New York near Lake Ontario. He has researched and developed architectural plans for a U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) sustainable zero-energy home for the site. In his house, he recycles everything, hoping for a limited, waste-free circular economy. As an Applied Research Scientist, the scope of Mr. Rogers' experience includes analytical chemistry, chemical hygiene, medical lab testing, biomedical engineering, and clinical development. Mr. Rogers has co-authored 40 peer-reviewed papers resulting in 25 presentations at national and international symposia. In addition, as a Senior Research Scientist and TeleHealth Executive, he has researched and co-written grants, and has been awarded grants and negotiated contracts for over \$2,000,000. He has taught college and high school chemistry, biology, physics, earth science, environmental science, oceanography, and coastal ecology. His recent summers were spent at Hobart and William Smith College - Finger Lakes Institute and Crossing Boundaries, learning applied field testing and monitoring chemical runoff from farms - and their impact on micro- and macrobiota in streams and lakes. Mr. Rogers has a working knowledge of Arc GIS data mapping. Mr. Rogers is now retired and residing in Florida, and has been accepted as a volunteer at the Smithsonian Aquarium to help with aquaculture of corals and study of the Indian River pollution that reflect his research interests. He has experience in statistics, data mapping, chemistry and ecology as well as business and public policy expertise.

Shaw, Joseph

Indiana University

Dr. Joseph R. Shaw is an Associate Professor in the School of Public and Environmental Affairs at Indiana University, and holds adjunct appointments in the Indiana University School of Public Health and Center for Genomics and Bioinformatics. He also holds a partial appointment as a Senior Lecturer in the environmental genomics group at the University of Birmingham, UK. Dr. Shaw earned his doctoral degree in environmental toxicology from the Graduate Center for Toxicology at the University of Kentucky in 2001, where he was awarded the Society of Environmental Toxicology and Chemistry (SETAC), Proctor and Gamble doctoral

fellowship to explore molecular, physiological, and population-level mechanisms of silver toxicity. He then moved to Dartmouth College where he received a National Institute of Environmental Health Sciences (NIEHS) post-doctoral fellowship to apply emerging Omics technologies to characterize mechanisms of toxicant actions. He joined the faculty of the School of Public and Environmental Affairs at Indiana University, Bloomington in 2007. Dr. Shaw was named an Outstanding New Environmental Scientist (ONES) by the NIEHS in 2010 and recognized as an exceptional talent in the environmental sciences by the Royal Society, UK in 2013 for his work investigating toxicant exposure, genome structure and toxic effects on individuals and populations. Contributing to these efforts he is a founding member of both the Daphnia and Fundulus Genomics Consortia where he helps lead over 600 scientists around the world working to develop new models for environmental genomics. He also co-founded the Consortium for Environmental Omics and Toxicology (now called the Environment Care Consortium) that seeks to apply twenty-first century technologies to predictive toxicology. He has been invited to present his research to the National Academy of Sciences, Gordon Research Conferences, and participate in SETAC Pellston workshops among other outlets. Dr. Shaw has trained over 300 students in environmental genomics through the Mount Desert Island summer workshop in environmental genomics that he co-developed in 2011, and which is now offered annually in the U.S. (funded through the National Institutes of Health – Big data to knowledge program) and in the U.K. (funded through the Natural Environment Research Council). Dr. Shaw was appointed to the editorial board for *Environmental Toxicology and Chemistry* in 2009, and in 2013 was promoted to editor. Over the past two years he has received funding from National Institute of Environmental Health Sciences, National Science Foundation, and National Institutes of Health. His work as an environmental toxicologist embraces new high-throughput molecular techniques and couples these with ecological and evolutionary theory, statistical analysis, and bioinformatics in order to integrate toxic-response across levels of biological organization, and discover critical, specific and causative molecular toxicological and disease pathways resulting from complex environmental exposures. He applies these research experiences to understand the chemicals around us and lead the way in stopping them from causing harm to both humans and ecosystems.

Shea, Damian

North Carolina State University and Statera Environmental, Inc.

Dr. Damian Shea is a Professor of Environmental Chemistry and Toxicology at North Carolina State University and President and Founder of Statera Environmental, Inc., an environmental technology and consulting company. He received his Ph.D. in Environmental Chemistry from the University of Maryland in 1985 and was awarded a National Research Council Post-Doctoral Fellowship at the National Institute of Standards and Technology (1985-1987). In 1987, he was awarded an American Association for the Advancement of Science Environmental Science and Engineering Fellowship to work at the U.S. Environmental Protection Agency. From 2001 to 2011 he served as Head of the Department of Environmental and Molecular Toxicology and Department of Biology and also as the Founding University Director of the U.S. Department of the Interior Southeast Climate Science Center and the Program Director for the Howard Hughes Medical Institute Undergraduate Science Education Program. Dr. Shea has been studying the sources, fate, and effects of chemicals in the environment for over 30 years. His research and teaching is highly interdisciplinary and applied to solving real-world environmental problems. By combining his knowledge and experience in chemistry, toxicology, risk assessment, and the social sciences his ultimate goal is to improve our ability to assess, communicate, and mitigate the risks of chemicals to human and ecological health. He is a member of the American Chemical Society, Society for Environmental Toxicology and Chemistry, and International Society of Exposure Science and previously a member of the Society of Toxicology, American Geophysical Union, among others. He also provides scientific leadership to a startup company focusing on environmental technologies. Dr. Shea receives research funding from the National Institute of Environmental Health Sciences, U.S. Department of Agriculture, U.S. Geological Survey, and U.S. Fish and Wildlife Service.

Silliman, Brian

Duke University

Dr. Brian Silliman is the Rachel Carson Associate Professor of Marine Conservation Biology at Duke University. He holds both B.A. and M.S. degrees from the University of Virginia, and completed his Ph.D. in Ecology and Evolutionary Biology at Brown University. Dr. Silliman was named a David H. Smith Conservation Fellow with The Nature Conservancy in 2004, a Visiting Professor with the Royal Netherlands Society of Arts and Sciences in 2011 and was elected a Fellow of the American Association for the Advancement of Science (AAAS) in 2016. He has also received several awards, including the Young Investigator Award from the American Society of Naturalists (2006), a Young Investigator Grant Award from the Andrew Mellon Foundation (2007) and a National Science Foundation Career Grant Award (2011). Dr. Silliman has published 19 book chapters and over 140 peer reviewed journal articles, and has co-edited three books: *Human Impacts on Salt Marshes: A Global*

Perspective (with T. Grosholtz and M. D. Bertness), *Marine Community Ecology and Conservation* (with M. Bertness, J. Bruno and J. Stachowicz), and *Effective Conservation Science: Data not Dogma* (with P. Kareiva, and M. Marvier). Dr. Silliman's teaching and research are focused on community ecology, food-webs, conservation and restoration, global change, plant-animal interactions, and evolution and ecological consequences of cooperative behavior. Dr. Silliman's research is currently funded by the National Aeronautics and Space Administration, the National Science Foundation, North Carolina Sea Grant, the Edward Stolarz Foundation, the Society of Conservation Biology, and the Duke University Ramus Research Fund.

Ward, Adam

Indiana University

Dr. Adam Ward is an Assistant Professor in the School of Public and Environmental Affairs at Indiana University (since 2014) and was previously an Assistant Professor at the University of Iowa (2011-2014). Dr. Ward holds a Ph.D. in Civil Engineering from Pennsylvania State University and an M.S. and B.S in Civil Engineering from Michigan Technological University. Dr. Ward's research foci are quantifying the transport of water, energy, nutrients, and pollutants through hydrological landscapes, and the ecological implications of these fluxes. His work seeks to understand how connections between streams, their landscapes, and their aquifers control biogeochemical processes and ecosystem function, particularly the transport and fate of compounds in the environment. He uses a combination of field-based experiments, environmental observation, and numerical modeling to quantify couplings between physical, biological, and chemical systems, and apply this knowledge to predict water quantity, water quality, and ecosystem responses to changes in key drivers including land use change, land management activities, and climate change. Dr. Ward has recently received research funding from the National Science Foundation, the U.S. Department of Agriculture, the Leverhulme Trust, and the European Commission.

Zwiernik, Matthew

Michigan State University

Dr. Matthew Zwiernik is a Professor of Ecotoxicology in the Department of Animal Science at Michigan State University (MSU). He is a member of the MSU Institute for Integrative Toxicology and is the Director of the MSU Wildlife Toxicology Laboratory (MSU-WTL). Dr. Zwiernik received a B.S. in Biochemistry and a Ph.D. in Environmental Toxicology from the Michigan State University Department of Biochemistry and College of veterinary medicine respectively. Dr. Zwiernik has been a faculty member at MSU since 1999 and in that time has conducted multiple long-term litigation quality studies, assessing the impacts of human activities on wide array of wildlife populations in differing ecosystems. Dr. Zwiernik is an expert in assessing the effects of complex contaminant mixtures on riverine ecosystems. His team has pioneered work pertaining to wildlife species sensitivity to contaminate mixtures, and wildlife exposure and effects assessments. The MSU-WTL approach of combining laboratory based site-specific contaminant exposure protocols with direct field measures of exposure and individual and population health has informed and streamlined the ecological risk assessment process for numerous superfund sites. Dr. Zwiernik specializes in quantifying population dynamics in response to fluctuations in resources and stressors, utilizing a data driven multiple lines of evidence, hypothetic-deductive approach, including adverse outcome pathway assessment. Dr. Zwiernik is particularly interested in improving the certainty of the quantification of the ecological risk associated with wildlife exposure to complex contaminant (stressor) mixtures by improving approaches for the identification of contaminant interactions, site-specific chemodynamics, the identification of germane measurement parameters to derive risk estimates that inform sustainable remedial decisions. Dr. Zwiernik's funding is derived from a wide range of sources including industry, local community advisory groups, and state and federal government organizations including EPA, DOD and others. Dr. Zwiernik is a member of the Society of Environmental Toxicology and Chemistry. He has been an expert consultant to the International Joint Commission on Issues of Emerging Contaminants in the Great Lakes. Additional information on projects and qualifications including greater than 85 peer-reviewed publications, 22 invited papers, 3 keynote address, and greater than 150 scientific presentations and reports, as well as three book chapters pertaining to wildlife impact assessment can be obtained at www.riverwildlife.msu.edu.