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Preface

The purpose of this document is to review the existing state of knowledge for important physical, chemical, geological and biological components of the York River ecosystem within which the four individual reserve sites of Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERRVA) are located. It is developed from a combination of literature and field research studies that provide an overall picture of the Reserve in terms of its ecosystem, management, and research needs. This special issue is not designed to be a complete review of all the ecosystem components, but rather it is designed to provide, through a series of papers, an overview of the York system to students, researchers, resource managers and the general public, and to provide a system context for the individual reserve sites located within the York River estuary. It starts first with an introduction to the Reserve including its mission and objectives. Next the geological, physical and water quality setting of the individual reserve sites and the overall York River ecosystem are described. Scientific overviews of three important primary producer components and habitats within the region (phytoplankton, wetlands and submerged aquatic vegetation) are presented next. Secondary and higher trophic components (zooplankton, benthos, and fishes) are then reviewed, and finally the principal reptiles, amphibians, birds and mammals that are associated with the local estuarine waters are described. This Special Issue concludes with a description of the Reserve's ongoing research and monitoring programs, the Reserve goals and strategies, and an overview of research and monitoring needs for the future.

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Funds for the development of this Special Issue were provided by the National Oceanographic and Atmospheric Administration, National Estuarine Research Reserve System and The Virginia Institute of Marine Science (VIMS), School of Marine Science, College of William and Mary. The editors gratefully acknowledge the major contributions of authors of the individual chapters, without whom this book could not have been completed. Each provided information from their extensive and detailed background of knowledge of the individual components comprising the complex York River estuarine ecosystem. We were most fortunate to be able to call upon the many scientists located at VIMS, the College of William and Mary, Christopher Newport University and Old Dominion University to complete this work.

Dr. Carl H. Hobbs, a long time researcher and Associate Professor at VIMS in the Department of Physical Sciences, provided the overview of the Geology of the Reserve. His primary research interests are in the Quaternary geology of Chesapeake Bay and the mid-Atlantic inner continental shelf and coastal plain.

Dr. Carl T. Friedrichs, a Professor of Marine Science, also in the Department of Physical Sciences at VIMS, authored the review of the Physical Processes and Sediment Transport in the system. His long term research goals are to better understand the fundamental aspects of coastal and estuarine physics which control sediment and other material fluxes at time-and length-scales important to geology, biogeochemistry, and ecology.

Dr. William G. Reay, co-editor of this Special Issue, author of the review of Water Quality in the York River and co-author of the papers on the Introduction to the Reserve and Research the Research and Monitoring Programs in of the Reserve, is an Associate Research Professor in the Department of Physical Sciences at VIMS and Director of the Chesapeake Bay National Es-

tuarine Research Reserve in Virginia. His primary research interest is in the area of watershed hydrology and nutrient dynamics with an emphasis on the study of groundwater-surface water interactions. He is also involved in the development and implementation of shallow water monitoring programs and their integration into ocean and coastal observation systems.

Dr. Kenneth A. Moore, co-editor of this Special Issue, author of the review of submerged aquatic vegetation and co-author of the papers on the Introduction to the Reserve and Research the Research and Monitoring Programs in of the Reserve, is a Professor of Marine Science in the Department of Biological Sciences at VIMS and Research Coordinator of the Chesapeake Bay National Estuarine Research Reserve in Virginia. His research studies have focused on the ecology of estuarine and coastal shallow water environments, especially those vegetated with marshes, seagrasses and other submersed aquatic vegetation. Specifically, he has studied the relationships between these aquatic macrophyte systems and environmental factors including water quality conditions that limit their growth, survival and restoration. His principal responsibilities at CBNERRS are to manage the System-wide Monitoring Program and research within the reserve sites. The development of this Site Profile was his responsibility.

Dr. James E. Perry III and Dr. Robert B. Atkinson are authors of the overview of Ttidal Marshes of the York River system and the individual reserve sites. Dr. Perry is a Professor of Marine Science in the Department of Biological Sciences at VIMS. His primary research interests involve monitoring stress and documenting long-term changes in vascular plant communities of tidal and non-tidal wetlands, and the relationship of those changes to changes in environmental parameters within watersheds. Dr. Atkinson is a Professor on the Graduate Faculty of the Department Biology, Chemistry and Environmental Science at Christopher Newport University. His primary research area is the restoration of damaged ecosystems.

Dr. Harold G. Marshall who authored the overview of the Phytoplankton of the York River presently holds a Professor Emeritus position at Old Dominion University His research interests have emphasized phytoplankton studies in diverse habitats including: freshwater environments, the continental shelf waters of eastern United States, and the Chesapeake Bay and its tidal rivers. In addition, he has studied harmful bloom and toxin producing algal species. He is a past recipient of Old Dominion University's Tonelson Distinguished Faculty Award, the University's Faculty Research Award, and is a Fellow and past President of the Virginia Academy of Science.

Dr. Deborah K. Steinberg and Dr. Robert H. Condon co-authored the review of Zooplankton in the York River System. Dr. Steinberg is a Professor of Marine Science in the Department of Biological Sciences at VIMS. Her research interests are in zooplankton ecology and physiology, coastal and deep-sea food webs, nutrient cycling, and marine detritus ("marine snow"). Dr. Robert Condon is a graduate in the Department of Biological Sciences at VIMS. His doctoral research focused on the ecology of gelatinous zooplankton in the Chesapeake Bay.

David J. Gillett and Dr. Linda C. Schaffner co-authored the review of the Benthos of the York River system. David Gillett is a doctoral candidate and NERRS Graduate Research Fellow. His current research is on food web energetics of macrobenthic invertebrate communities. Dr. Linda Schaffner is a Professor of Marine Science in the Department of Biological Sciences at VIMS. Her research program focuses on the ecology of benthic systems and benthic processes of estuarine and coastal ecosystems. Specifically she is interested in how natural processes and anthropogenic alterations of coastal ecosystems influence the structure and function of benthic communities, including meiofauna, macrofauna and associated nekton, via processes such as disturbance (mortality) and recruitment.

Dr. Mary C. Fabrizio, Amanda Hewitt, and Julia Ellis are co-authors of Fisheries of the York River System. Dr. Fabrizio is an Associate Professor of Marine Science in the Department of Fisheries Science at VIMS. Her specialties include quantitative fisheries ecology with particular emphasis on modeling long-term trends from fisheries survey data and estimating habitat use and occupancy using mark-recapture models. She is currently leader of two spatially extensive and long-term survey programs at VIMS aimed at estimating recruitment of fishes, including the Juvenile Fish Survey and the Striped Bass Seine Survey. Amanda Hewitt is a former Marine Scientist who was a co-principal investigator on the Virginia Juvenile Striped Bass Survey in the Department of Fisheries Science at VIMS. Julia Ellis is a former Marine Scientist with the Juvenile Fish Survey in the Department of Fisheries Science at VIMS. Other VIMS scientists contributed important information for this chapter. Patrick McGrath, a Ph.D. candidate in the Department of Fisheries Science at VIMS contributed information on longnose gar. Dr.Christopher Hager, a Fisheries Specialist at VIMS in the Virginia Sea Grant Program, provided information on Atlantic sturgeon; Chris is working on several projects to increase sturgeon populations in Virginia's tributaries. Paul Gerdes, a Marine Scientist and the Nunnally Ichthyological Collections Manager in the Department of Fisheries Science at VIMS, contributed to the section on sharks and rays. David Hewitt, a Ph.D. graduate from the Department of Fisheries Science at VIMS, provided information on the blue crab; David's dissertation work focused on population dynamics and stock assessment of blue crab in the Chesapeake Bay and was supported by the Willard A. Van Engel Fellowship.

Joseph Brown and Sandra Erdle co-authored the overview of the reptiles, amphibians, birds and mammals associated with the York River. Joseph Brown is a life-long local naturalist and Public Services Assistant at the Hargis Library at VIMS. Sandra Erdle, the Coastal Training Program Coordinator at CBNERRVA, is knowledgeable about local mammals and wildlife; information she gained from many years of research and study at Virginia Commonwealth University, and the Department of Conservation and Recreation, Division of Natural Heritage.

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