

Jeremy Mark Testa

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Chesapeake Biological Laboratory
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Education

- 2013** **Ph.D.** University of Maryland, Center for Environmental Science
Marine-Estuarine-Environmental-Sciences, Oceanography
- 2006** **M.S.** University of Maryland, Center for Environmental Science,
Marine-Estuarine-Environmental-Sciences, Systems Ecology
- 2003** **B.S.** State University of New York College of Environmental Science
and Forestry, Environmental and Forest Biology, *magna cum laude*
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Research Interests

Estuarine biogeochemistry and anthropogenic influences on estuarine biological and chemical processes, dissolved oxygen dynamics in estuarine ecosystems, numerical modeling, estuarine systems ecology

Research Grants, Fellowships, Contracts

- 2012** College of Computer, Mathematical, and Natural Sciences Dean's Fellowship (\$5,000)
- 2011** Bay and Rivers Fellowship, University of Maryland Center for Environmental Science, Horn Point Laboratory "Understanding Controls on Hypoxia in Chesapeake Bay" (\$60,000/2 years)
- 2011** Maryland Sea Grant, Aquaculture Research Program, "Predicting Spatial Impacts of Bivalve Aquaculture on Nutrient Cycling and Benthic Habitat Quality." Contract to implement a sediment biogeochemical model to assess impacts of bivalve deposition on sediment biogeochemistry (\$5,000)
- 2005** National Estuarine Research Reserve System (NERRS) Graduate Research Fellowship, "Water quality and nutrient cycling in the Patuxent River estuary: Assessing the role of tidal marshes" (\$28,900)
- 2005** University of Maryland, Horn Point Laboratory, Small Research Grant "Water quality and nutrient cycling in the Patuxent River estuary: Assessing the role of tidal marshes" (\$1,300)
- 2004** University of Maryland, Horn Point Laboratory, Small Research Grant "Seasonal measurements of Plankton Community Production and Respiration in the Patuxent River estuary" (\$1,000)

Professional Experience

Positions

- Current** Assistant Professor ♦ University of Maryland Center for Environmental Science, Chesapeake Biological Laboratory ♦ Solomons, Maryland 20688
- 2013** Postdoctoral Research Associate ♦ University of Maryland Center for Environmental Science, Horn Point Laboratory ♦ Cambridge, Maryland 21613 ♦ Supervisor: Elizabeth North
- 2007** Research Assistant ♦ Moreton Bay Research Station ♦ University of Queensland Centre for Marine Studies ♦ Brisbane QLD 4072 Australia
- 2006** Visiting Scientist ♦ Freshwater Biological Laboratory ♦ University of Copenhagen Helsingørsgade 51, 3400 Hillerød, Denmark
- 2006** Faculty Research Assistant I ♦ University of Maryland Center for Environmental Science, Horn Point Laboratory ♦ Cambridge, Maryland 21613 ♦ Supervisor: W. Michael Kemp
- 2003** Undergraduate Research Assistant ♦ State University of New York College of Environmental Science and Forestry ♦ Syracuse, New York 13210 ♦ Supervisor: Charles A. S. Hall
- 2002** National Science Foundation *Research Experience for Undergraduates* ♦ Boston University Marine Program (at the Marine Biological Laboratory) ♦ Woods Hole, Massachusetts 02543

Workshops and Workgroups

- 2009** National Center for Atmospheric Research (NCAR) Advanced Study Program ♦ “Climate and Marine Ecosystems” ♦ August 5-24 2009 ♦ Boulder, Colorado ♦ I was selected to participate in this 2-week course that explored the interaction between climate and many types of marine ecosystems, which was taught by a team of international guest scientists
- 2008** Centers for Ocean Sciences Education Excellence (COSEE) ♦ “Dead Zones” Educational Module Development Team ♦ June 6-August 12 ♦ Developed Web-Based Educational Program and Associated Classroom Activities to Facilitate Lessons About Low Oxygen Zones
http://www1.coseecoastaltrends.net/modules/dead_zones/get_started/
- 2008** Florida Bay Biogeochemical Processes Workshop ♦ Miami, Florida ♦ June 3-4 ♦ Explored the feasibility of using FATHOM model to compute non-conservative properties in Florida Bay
- 2007** LOICZ Nutrient Budget Methodology and Applications Workshop ♦ Providence, Rhode Island ♦ November 9-10 ♦ Focused on future development of LOICZ biogeochemical budget methods

Publications

- Testa, J.M.** and W.M. Kemp. 2013. Spatial and temporal patterns in winter-spring oxygen decline in Chesapeake Bay bottom waters. *Estuaries and Coasts*, submitted.
- Testa, J.M.**, D.C. Brady, D.M. Di Toro, W.R. Boynton, and W.M. Kemp. 2013. Sediment flux modeling: Nitrogen, phosphorus and silica cycles. *Estuarine, Coastal and Shelf Science*, doi: 10.1016/j.ecss.2013.06.014.
- Brady, D.C., **J.M. Testa**, D.M. Di Toro, W.R. Boynton, and W.M. Kemp. 2013. Sediment flux modeling: Calibration and application for coastal systems. *Estuarine, Coastal and Shelf Science* 117: 107-124.
- Testa, J.M.** and W.M. Kemp. 2012. Hypoxia-induced shifts in nitrogen and phosphorus cycling in Chesapeake Bay. *Limnology and Oceanography* 57: 835-850.
- Testa, J.M.**, W.M. Kemp, C.S. Hopkinson, and S.V. Smith. 2012. Ecosystem Metabolism. In: Day, J.W., Crump, B.C., Kemp, W.M., and Yáñez-Arancibia, A. (Eds.), *Estuarine Ecology*, Volume 2, Chapter 15, pp. 381-416. John Wiley & Sons, Inc., Hoboken, NJ.
- Stæhr, P.A., **J.M. Testa**, W.M. Kemp, J.J. Cole, K. Sand-Jensen, S.V. Smith. 2012. The metabolism of aquatic ecosystems: History, methods, and applications. *Aquatic Sciences* 74: 15-29.
- Kemp, W.M. and **J.M. Testa**. 2011. Metabolic Balance between Ecosystem Production and Consumption. In: Wolansky, E. and McLusky, D.S. (eds.), *Treatise on Estuarine and Coastal Science*, Vol 7, pp. 83-118. Waltham: Academic Press.
- Testa, J.M.** and W.M. Kemp, 2011. Oxygen - Dynamics and Biogeochemical Consequences. In: Wolansky, E. and McLusky, D.S. (eds.), *Treatise on Estuarine and Coastal Science*, Vol 5, pp. 163-199. Waltham: Academic Press.
- Lookingbill, T., T.J.B. Carruthers, **J.M. Testa**, W.K. Nuttle, and G. Shenk. 2010. Environmental models: Providing synthesis, analysis, simulation, and prediction. In: B.J. Longstaff, T.J.B. Carruthers, W.C. Dennison, T.R. Lookingbill, J.M. Hawkey, J.E. Thomas, E.C. Wicks, and J. Woerner (eds.) *Integrating and applying science: A handbook for effective coastal ecosystem assessment*. IAN Press, Cambridge, MD, 133-149.
- Testa, J.M.**, C. Gurbisz, L. Murray, W. Gray, J. Bosch, C. Burrell, and W.M. Kemp. 2010. Investigating Aquatic Dead Zones: A series of activities designed to explore a mystery of the deep. *The Science Teacher*, February Issue.
- Kemp, W.M., **J.M. Testa**, D.J. Conley, D. Gilbert, and J.D. Hagy. 2009. Temporal responses of coastal hypoxia to nutrient loading and physical controls. *Biogeosciences* 6: 2985-3008.

- Testa, J.M.**, W.M. Kemp, W.R. Boynton, and J.D. Hagy III. 2008. Long-term changes in water quality and productivity in the Patuxent River estuary: 1985 to 2003. *Estuaries and Coasts* 31: 1021-1037.
- Ball, W.P., D.C. Brady, M.T. Brooks, R. Burns, B.E. Cuker, D.M. Di Toro, T.F. Gross, W.M. Kemp, L. Murray, R.R. Murphy, E. Perlman, M. Piasecki, **J.M. Testa**, I. Zaslavsky. 2008. A Prototype System for Multi-Disciplinary Shared Cyberinfrastructure – Chesapeake Bay Environmental Observatory (CBEO). *Journal of Hydrologic Engineering* 13(10): 960-970.
- Testa, J.M.** and W.M. Kemp. 2008. Regional, seasonal, and inter-annual variability of biogeochemical processes and physical transport in a partially stratified estuary: a box-modeling analysis. *Marine Ecology Progress Series* 356: 63-79.
- Newell R.I.E., W.M. Kemp, J.D. Hagy, C.F. Cerco, **J.M. Testa**, and W.R. Boynton. 2007. Top-down control of phytoplankton by oysters in Chesapeake Bay, USA: Comment on Pomeroy et al. (2006). *Marine Ecology Progress Series* 341: 293-298.
- Testa, J.M.**, M.A. Charette, E.R. Sholkovitz, M.C. Allen, A. Rago, and C.W. Herbold. 2002. Cycling of dissolved iron in the subterranean estuary of a coastal bay: Waquoit Bay, Massachusetts. *Biological Bulletin* 203(2): 255-256.

Technical Reports

- Boynton, W.R., **J.M. Testa**, and W.M. Kemp. 2009. An Ecological Assessment of the Corsica River Estuary and Watershed: Scientific Advice for Future Water Quality Management. Final Report to Maryland Department of Natural Resources. Ref. No. [UMCES]CBL 09-117.
- Boynton, W.R., E.M. Bailey, L.A. Wainger, M.A.C. Ceballos, K.V. Wood, W.M. Kemp, **J.M. Testa**, M.T. Brooks, J.C. Cornwell, M. Owens, and C. Palinkas. 2008. Maryland Chesapeake Bay Water Quality Monitoring Program Ecosystem Processes Component: Level One Report No. 25 Interpretive Report. MD DNR. Ref. No. [UMCES]CBL 08-080.
- Boynton, W.R., J.C. Cornwell, W.M. Kemp, C. Palinkas, **J.M. Testa**, E.M. Bailey, M. Owens, K.V. Wood, S. Moese, L. Moore. 2007. Targeted Watershed Measurement Program and Key Process Evaluation. Year 1: Corsica River Estuary: Data Report. MD DNR. Ref. No. [UMCES]CBL 07-088.
- Testa, J.M.** 2006. Water quality and nutrient cycling in the Patuxent River estuary: Assessing the role of tidal marshes. Final Technical Report. NOAA NERR system.
- Testa, J.M.** 2006. Factors regulating variability in water quality and net biogeochemical fluxes in the Patuxent River estuary. Masters Thesis. University of Maryland at College Park. College Park, Maryland. 179 pp.
- Testa, J.M.** 2003. Simulating spatial and temporal fluctuations of dissolved oxygen in Flax Pond, New York. Honors Thesis. The State University of New York College of Environmental Science and Forestry, Syracuse, New York. 61 pp.

Leadership Experience

2005-2006 Graduate Student Organization Chair, Horn Point Laboratory
2009-present Program Co-Chair, Atlantic Estuarine Research Society (AERS)
2010-2013 Student Affairs Chair, Atlantic Estuarine Research Society (AERS)

Teaching Experience

Professional

Professional Development Workshop for Dorchester County Public School Teachers “Using STELLA Software for Problem Based Learning”. 2008, 2009. University of Maryland - Horn Point Laboratory. Course written and co-taught with Dr. Michael Kemp

Graduate

Guest Lecturer, 2008, 2011, University of Maryland, Estuarine Systems Ecology (MEES 611)

Graduate Teaching Assistant, 2008, University of Maryland. Responsible for aiding in grading and course presentation for Estuarine Systems Ecology (MEES 611)

Graduate Teaching Assistant, 2004, University of Maryland. Responsible for aiding in grading and course presentation for Quantitative Methods in the Environmental Sciences (MEES 698G)

Undergraduate

Undergraduate Teaching Assistant, 2001, State University of New York College of Environmental Science and Forestry. Responsible for teaching all material, developing tests, and grading tests for the laboratory of Dendrology I (EFB 336)

Undergraduate Teaching Assistant, 2002, State University of New York College of Environmental Science and Forestry. Responsible for laboratory preparation and grading of tests and projects for Systems Ecology (EFB 518)

Workshop Leader, State University of New York College of Environmental Science and Forestry. Responsible for facilitating a weekly recitation-style workshop for students in General Chemistry I (FCH 150) and General Chemistry II (FCH 152)

Presentations

- 2011** Testa, J.M., Kemp, W.M. Production and transport of organic matter to fuel hypoxia in Chesapeake Bay: A modeling analysis. Coastal and Estuarine Research Federation Meeting, Daytona Beach, FL.
- 2011** Testa, J.M., Kemp, W.M. Oxygen effects on nutrient biogeochemistry: feedback effects on coastal eutrophication. AERS Spring Meeting, Solomons, MD.
- 2011** Testa, J.M., Kemp, W.M.. Patterns and controls on spring oxygen depletion in Chesapeake Bay. ASLO Aquatic Sciences Meeting, San Juan, Puerto Rico.
- 2010** Brady, D., Testa, J.M., Kemp, W.M., Di Toro, D. Sediment-water oxygen and nutrient exchanges in Chesapeake Bay: Insights from model-data comparisons. Chesapeake modeling Symposium, Annapolis, MD
- 2009** Testa, J.M. Recovery and intensification of coastal hypoxia in Chesapeake Bay and beyond. Marine-Estuarine-Environmental Sciences Annual Colloquium, Annapolis, MD
- 2009** Testa, J.M., Murphy, R., Kemp, W.M. Recalcitrance and tipping points in recovery from hypoxia in Chesapeake Bay. Coastal and Estuarine Research Federation Meeting, Portland, OR
- 2009** Testa, J.M., Kemp, W.M., Boynton, W.R., Hagy J.D. Long-term changes in water quality and productivity in the Patuxent River estuary: Interacting effects of nutrient management, climate, and food web dynamics. Chesapeake Bay Research Consortium Ecosystem-Based Management Meeting, Baltimore, MD
- 2009** Testa, J.M., Kemp, W.M., Brooks, M.T., Boynton, W.R., Cornwell, J.C. Nutrient input management, benthic photosynthesis, and restoration of shallow eutrophic coastal ecosystems. ASLO Ocean Sciences Meeting, Nice, France.
- 2008** Testa, J.M. Water quality responses to nutrient loading reductions in the Patuxent River estuary: Ecological and climatic controls along an estuarine gradient. Chesapeake Bay Seminar Series, Integration and Application Network, Annapolis, MD
- 2008** Testa, J.M. and Kemp, W.M. The effects of hypoxia and anoxia on sediment-water nutrient exchanges: Insights from long-term analyses in Chesapeake Bay. AERS Meeting, Lewes, DE
- 2006** Testa, J.M. Response of water quality to changes in nutrient loading in the Patuxent River estuary. Freshwater Biological Laboratory, Hillerød, Denmark
- 2006** Testa, J.M. and Kemp, W.M. Exchanges of nitrogen and phosphorus between tidal freshwater marshes and the Patuxent River estuary: Temporal variability and relevance in large-scale nutrient budgets. AERS Spring Meeting, Philadelphia, PA

- 2005 Testa, J.M.**, Kemp, W.M., Boynton, W.R., and Hagy J.D. Response of water quality to climate and nutrient loading in the Patuxent River estuary. Estuarine Research Federation Meeting, Norfolk, VA
- 2005 Testa, J.M.** and Kemp, W.M. Net ecosystem production and biogeochemical nutrient transformations along the axis of a coastal plain estuary. ASLO Summer Meeting, Santiago de Compostela, Spain
- 2005 Testa, J.M.** and Kemp, W.M. Interacting effects of climate and nutrient management in net metabolism and biogeochemical fluxes in the Patuxent River estuary. AERS Spring Meeting, Solomons, MD
- 2003 Testa, J.M.** and Hall, C.A.S. Simulating spatial and temporal fluctuations of dissolved oxygen in Flax Pond, New York. SUNY ESF Spotlight on Student Research, Syracuse, NY
- 2002 Testa, J.M.**, Charette, M.A., Sholkovitz, E.R., Allen, M.C., Rago A., and Herbold, C.W. Dissolved iron cycling in the subterranean estuary of a coastal bay: Waquoit Bay, Massachusetts. General Scientific Meetings of the Marine Biological Laboratory, Woods Hole, MA