Elizabeth Watkins North

University of Maryland Center for Environmental Science
Horn Point Laboratory
Cambridge, MD 21613
Phone: (410) 221-8497
e-mail: enorth@hpl.umces.edu
web: http://northweb.hpl.umces.edu/

I. Education

1991	B. A., Swarthmore College, Religion
1995 – 1996	University of Maryland, College Park, graduate prerequisite courses in calculus, statistics, physics, and organic chemistry
1996	M. S., Johns Hopkins University, Interdisciplinary Science Studies, School of Continuing Studies, concentration in Environmental Science
2001	Ph.D., University of Maryland, College Park, Marine-Estuarine-Environmental Science, specialization in Fisheries Science

II. Professional Experience

2010 – present	Associate Professor. UMCES Horn Point Laboratory, Cambridge, MD
2004 – 2010	Assistant Professor. UMCES Horn Point Laboratory, Cambridge, MD
2001 – 2004	Assistant Research Scientist. UMCES Horn Point Laboratory, Cambridge, MD

III. Research

A. Area of professional expertise

Biological-physical interactions and fisheries oceanography: hydrodynamic and particle trajectory modeling, ichthyoplankton and zooplankton ecology, estuarine physical oceanography, fisheries recruitment variability.

B. Publications

1. Peer-reviewed publications

Goodwin, J. D., E. W. North, and C. M. Thompson. *Submitted*. Evaluating and improving a semi-automated image analysis technique for identifying bivalve larvae. Limnology and Oceanography: Methods.

Schlenger, A. J. , E. W. North, Z. Schlag, Y. Li, D. H. Secor, K. A. Smith, and E. J. Niklitschek. *In press*. Modeling the influence of hypoxia on the potential habitat of Atlantic sturgeon (*Acipenser oxyrinchus*): a comparison of two methods. Marine Ecology Progress Series.

North, E. W., E. E. Adams, S. Schlag, C. R. Sherwood, R. He, S. Socolofsky. 2011. Simulating oil droplet dispersal from the Deepwater Horizon spill with a Lagrangian approach. Geophysical Monograph: Monitoring and Modeling the Deepwater Horizon Oil Spill: A Record Breaking Enterprise. 195: 217-226. Citations: 9 (Google Scholar).

North, E. W., D. M. King, J. Xu, R. R. Hood, R. I. E. Newell, K. T. Paynter, M. L. Kellogg, M. K. Liddel, and D. F. Boesch. 2010. Linking optimization and ecological models in a decision support tool for oyster restoration and management. Ecological Applications 20(3): 851–866. Citations: 6 (ISI).

Smith, K. A., E. W. North, F. Shi, S-N. Chen, R. Hood, W. Koch, and R. I. E. Newell. 2009. Modeling the effects of oyster reefs and breakwaters on seagrass growth. Estuaries and Coasts 32:748–757. Citations: 0 (ISI).

North, E. W., Z. Schlag, R. R. Hood, M. Li, L. Zhong, T. Gross, and V. S. Kennedy. 2008. Vertical swimming behavior influences the dispersal of simulated oyster larvae in a coupled particle-tracking and hydrodynamic model of Chesapeake Bay. Marine Ecology Progress Series 359: 99-115. Citations: 5 (ISI). Citations: 56 (ISI), 79 (Google Scholar)

Chen, S.-N., L.P. Sanford, E.W. Koch, F. Shi, and E.W. North. 2007. A nearshore model to investigate the effects of seagrass bed geometry on wave attenuation and suspended sediment transport. Estuaries and Coasts 30(2): 296-310. Citations: 12 (ISI).

Glibert, P. M., J. Alexander, D. W. Meritt, E. W. North, and D. K. Stoecker. 2007. Harmful algae pose additional challenges for oyster restoration: impacts of the harmful algae *Karlodinium veneficum* and *Prorocentrum minimum* on early life stages of the oysters *Crassostrea virginica* and *Crassostrea ariakensis*. Journal of Shellfish Research 26(4): 919–925. Citations: 5 (ISI).

North, E. W., and E. D. Houde. 2006. Retention mechanisms of white perch (*Morone americana*) and striped bass (*M. saxatilis*) early-life stages in an estuarine turbidity maximum: an integrative mapping and Eulerian approach. Fisheries Oceanography 15(6): 429-450. Citations: 9 (ISI).

North, E. W., R. R. Hood, S.-Y. Chao, and L. P. Sanford. 2006. Using a random displacement model to simulate turbulent particle motion in a baroclinic frontal zone: a new implementation scheme and model performance tests. Journal of Marine Systems 60: 365-380. Citations: 16 (ISI).

Shoji, J., E. W. North, and E. D. Houde. 2005. The feeding ecology of white perch *Morone americana* (Pisces) larvae in the Chesapeake Bay estuarine turbidity maximum: the influence of physical conditions and prey concentrations. Journal of Fish Biology 66: 1328-1341. Citations: 18 (ISI).

North, E. W., R. R. Hood, S.-Y. Chao, and L. P. Sanford. 2005. The influence of episodic events on transport of striped bass eggs to an estuarine nursery area. Estuaries 28(1): 106-121. Citations: 8 (ISI).

North, E. W., S.-Y. Chao, L. P. Sanford, and R. R. Hood. 2004. The influence of wind and river pulses on an estuarine turbidity maximum: numerical studies and field observations. Estuaries 27(1): 132-146. Citations: 30 (ISI).

North, E. W., and E. D. Houde. 2004. Distribution and transport of bay anchovy (*Anchoa mitchilli*) eggs and larvae in Chesapeake Bay. Estuarine, Coastal and Shelf Science 60: 409-429. Citations: 18 (ISI).

North, E. W., and E. D. Houde. 2003. Linking ETM physics, zooplankton prey, and fish early-life histories to white perch (*Morone americana*) and striped bass (*M. saxatilis*) recruitment success. Marine Ecology Progress Series 260: 219-236. Citations: 59 (ISI).

North, E. W., and E. D. Houde. 2001. Retention of white perch and striped bass larvae: biological-physical interactions in Chesapeake Bay estuarine turbidity maximum. Estuaries 24(5): 756-769. Citations: 47 (ISI).

2. Introductions and commentary in peer reviewed journals

Gallego, A.. E. W. North, and E. D. Houde. *In press.* Understanding and quantifying mortality in pelagic, early life stages of marine organisms — Old challenges and new perspectives. Journal of Marine Systems 93: 1-3. Citations: 0 (ISI).

North, E. W., and F. J Mueter. 2009. Marine science with global vision: creating a place for early career scientists. An introduction to selected articles from the 2007 Early Career Scientists Conference. ICES Journal of Marine Science 66: 334–335. Citations: 0 (ISI).

Gallego, A., E. W. North, and P. Petitgas. 2007. Introduction: status and future of modelling physical-biological interactions during the early life of fishes. Marine Ecology Progress Series 345: 121-126. Citations: 9 (ISI).

Talley, D. M., E. W. North, A. R. Juhl, D. A. Timothy, D. Conde, J. F. C. deBrouwer, C. A. Brown, L. M. Campbell, T. Garstecki, C. J. Hall, F. J. R. Meysman, D. M. Nemerson, P. W. Souza Filho, and R. J. Wood. 2003. Research challenges at the land-sea interface. Estuarine, Coastal and Shelf Science 58: 699-702. Citations: 8 (ISI).

3. Reports

North, E. W., C. M. Thompson, J. D. Goodwin, and S. Gallager. 2012. Pioneering new technologies to enhance shellfish restoration. Report to The Bailey Wildlife Foundation. May 12, 2012. 10 pp.

North, E. W., W. Long, and Z. Schlag. 2012. Native oyster recovery: hydrodynamic and larval transport modeling in Harris Creek. Report to the Army Corps of Engineers, 37 pp.

North, E. W., Z. Schlag, W. Long. 2010. Transport and exchange of blue crab (*Callinectes sapidus*) larvae in the Middle Atlantic Bight. Final report to Maryland Sea Grant College Program. November 23, 2010.

Gallego, A., E. D. Houde, and E. W. North. 2009. Report on Session T: Death in the sea - Mortality in the zooplankton and early-life stages of marine fish (estimates, processes and outcomes). ICES Annual Science Conference. September 20-25, 2009. 2 pp.

North, E. W., A. Gallego, and P. Petitgas (eds). 2009. Manual of recommended practices for modelling physical–biological interactions during fish early life. ICES Cooperative Research Report No. 295. 111 pp. This includes the following chapters:

- Lacroix, G., P. McCloghrie, M. Huret, and E. W. North. Hydrodynamic Models
- Gallego, A, and E. W. North. Initial conditions – spawning locations.
- North, E. W., A. Gallego, and P. Petitgas. Looking toward the future: recommendations and research needs.

North, E. W., and T. M. Wazniak. 2009. Larval Transport Maps. Final report to US Army Corps of Engineers. July 15, 2009. 26 p.

Wazniak, T. M., W. C. Boicourt, and E. W. North. 2009. Residence times of small Chesapeake Bay tributaries. Final report to US Army Corps of Engineers. July 15, 2009. 28 p.

Boesch, D. F., W. C. Dennison, V. S. Kennedy, D. M. King, D. W. Meritt, Horn T. J. Miller, R. I.E. Newell, E. W. North, M. A. Palmer, K. T. Paynter, M. R. Roman, D. H. Secor, and M. J. Wilberg. Pathways to more effective management and restoration of the Eastern Oyster in Maryland's Chesapeake Bay. University of Maryland Center for Environmental Science position statement. February 4, 2008. 7 pp.

North, E. W., N. P. Holliday, S. Hughes, and S. McKinnell. 2007. Report on Theme Session B "Integrating observations and models to improve predictions of ecosystem response to physical variability" at the ICES Annual Science Conference, September 17-21, 2007. 3 pp.

North, E. W., Z. Schlag, R. R. Hood, L. Zhong, M. Li, and T. Gross. 2006. Modeling dispersal of *Crassostrea ariakensis* oyster larvae in Chesapeake Bay. Final Report to Maryland Department of Natural Resources. July 31, 2006. 55 p.

ICES. 2006. Report of the Workshop on Advancements in Modelling Physical-Biological Interactions in Fish Early-Life History: Recommended Practices and Future Directions (WKAMF). Nantes, France. April 3–5, 2006. ICES 2006/OCC:05. 21 pp.

North, E., A. Gallego, and M. St. John. 2005. Report on Theme Session O "Connecting Physical-Biological Interactions to Recruitment Variability, Ecosystem Dynamics, and the Management of Exploited Stocks" at the ICES Annual Science Conference, September 19-24, 2005. 5 pp.

Boesch, D. F., V. S. Kennedy, D. W. Meritt, R. I. E. Newell, E. W. North, and K. T. Paynter. 2005. "Bar Cleaning" in Oyster Restoration. A Consensus Statement from the University of Maryland Center for Environmental Science. 3 pp.

North, E. W., and E. D. Houde. 2000. Potential impact of Site 104 dredging and sediment placement operations on fish eggs and larvae in the upper Chesapeake Bay. Report to Maryland Environmental Services. Ref. No. [UMCES]CBL 00-0165. 9 pp.

Miller, T., E. Houde, and E. Watkins. 1996. Chesapeake Bay fisheries: prospects for multispecies management and sustainability. Scientific and Technical Advisory Committee, Chesapeake Bay Program. Chesapeake Research Consortium Publication No. 154B.

4. Conference Manuscripts

Jahn, G. L., and E. W. North. 2009. Do striped bass (*Morone saxatilis*) spawn in response to high river flow events? International Council for the Exploration of the Seas (ICES) Conference Manuscript (CM): ICES CM/E:27.

Smith, K.A., E. W. North, and D. H. Secor. 2009. Estimating habitat volume based on physical and biogeochemical models. ICES CM/K:09.

North, E. W., D. M. King, J. Xu, R. R. Hood, R. I. E. Newell, K. T. Paynter, M. L. Kellogg, M. K. Liddel, and D. F. Boesch. 2007. An ecosystem approach for oyster restoration and management. ICES CM R:13.

North, E. W., J. H. Vølstad, M. Christman, R. R. Hood, L. Zhong, Z. Schlag, T. F. Gross, D. Lewis, J. Dew, M. Li, and V. S. Kennedy. 2006. Linking larval transport and fisheries demographic models to study the influence of environmental variability and larval behavior on juvenile recruitment to oyster populations. ICES CM/O:11.

Martino, E. J., E. W. North, and E. D. Houde. 2007. Biophysical controls and survival of striped bass larvae in the Chesapeake Bay estuarine turbidity maximum. ICES CM 2007/G:23.

North, E. W., R. R. Hood, L. Zhong, M. Li, and T. F. Gross. 2004. The influence of mixing processes and behavior on larval transport and mortality estimates in a stratified wind- and tidally-forced system. ICES CM/J:10/P:24.

North, E. W., R. R. Hood, S.-Y. Chao, and L. P. Sanford. 2003. Combining Eulerian and Lagrangian numerical approaches to investigate the influence of hydrodynamic variability on the transport of sediment and fish eggs. ICES CM/P:33.

North, E. W., R. R. Hood, S.-Y. Chao, and L. P. Sanford. 2002. Retention of fish early-life stages and copepod prey in an estuarine nursery area: the influence of environmental variability. ICES CM/N:04.

North, E. W., and E. D. Houde. 2000. Time, space, food and physics: the temporal and spatial distribution of anadromous fish larvae in an estuarine turbidity maximum (ETM). ICES CM/N:23.

5. Other Publications

Fine, R., R. Beardsley, P. Bontempi, J. Campbell, N. Chotiros, E. Klein, E. North, C. Olsen, C. Robles, W. Seyfried, D. Thomas. 2010. Committee of Visitors Advises NSF Division of Ocean Sciences, Eos Trans. AGU, 91(8), 73, doi:10.1029/2010EO080001.

North, E.W. 2010 "Q&A: Elizabeth North" ICES Insight, September 2010, vol. 47, p. 43-44.

Schlag, Z. R., E. W. North, and K. A. Smith. 2008. Larval TRANSport Lagrangian model (LTRANS) User's Guide. University of Maryland Center for Environmental Science, Horn Point Laboratory. Cambridge, MD. 146 pp.

North, E. W. 2001. Transport and retention of fish early-life stages in Chesapeake Bay: mechanisms and implications for recruitment. Ph.D. dissertation, University of Maryland, College Park. Citations: 0 (ISI), 10 (GS).

Watkins, E. 1996. The relationship between estuarine hydrodynamics and larval recruitment in fish and crustacean populations: a review and case study. M.S. Graduate Project. The Johns Hopkins University School of Continuing Studies, Baltimore, MD.

6. Publications in Preparation

Biermann, J. B., and E. W. North. *in prep*. The distribution of *Callinectes sapidus* (blue crab) megalopae at the mouths of Chesapeake and Delaware Bays: implications for larval ingress. Estuaries and Coasts.

Jahn, G. L., and E. W. North. *in prep*. The influence of episodic river flow events on striped bass (*Morone saxatilis*) spawning in Chesapeake Bay, USA.

North, E. W., E. E. Adams, Z. Schlag, R. He, S. Socolofsky, S. D. Peckham. *In prep*. Simulating the subsurface dispersal of aging oil from the Deepwater Horizon spill: a model sensitivity study. Geophysical Research Letters.

North, E. W., E. D. Houde, and BITMAX program participants. *in prep*. From physics to juvenile fish in upper Chesapeake Bay: making the climate connection to striped bass populations. Oceanography.

North, E. W., Z. Schlag, M. Li. *in prep*. The influence of anoxia on oyster larval transport: a model-based hypothesis.

North, E. W., Z. Schlag, M. Li, L. Zhong, C. Hannah. *in prep*. Parameterizing biophysical particle-tracking models: recommendations and implications for dispersal of planktonic organisms. Journal of Marine Systems.

North, E. W., Z. Schlag, W. Long. *in prep*. Transport and exchange of blue crab (*Callinectes sapidus*) larvae in the Middle Atlantic Bight.

Thompson, C.M., E.W. North, S.M. Gallager, S.N. White. In prep. An analysis of bivalve larval shell pigments using Raman spectroscopy. Journal of Raman Spectroscopy.

C. Contracts and Grants

1. Awarded

North, E., S. Gallager, V. Kennedy, C. Thompson, and S. White. EAGER Collaborative research: Can Raman spectroscopy be used as a high-accuracy method to identify bivalve larvae? National Science Foundation Biological Oceanography, 07/01/2012 – 6/30/2014, $268,865.

North, E., S. Gallager, J. Goodwin, and C. Thompson. Continuing to pioneer new technologies to enhance shellfish restoration. The Bailey Wildlife Foundation, 6/1/2012-05/31/2013, $45,224.

North, E., and C. Thompson. Chesapeake Bay Oysters: Past, Present and Future. Booz Allen Cares, 4/1/2012-02/28/2013, $15,000.

Eggleston, D., J. Fodrie, R. Luettich, and E. North. Collaborative Research: Interacting effects of local demography and larval connectivity on estuarine metapopulation dynamics. National Science Foundation Biological Oceanography, 03/15/2012- 02/28/2015, $175,838 (North).

Chapman, P., and 18 other PIs including E. North. Gulf Integrated Spill Response Consortium. Gulf of Mexico Research Initiative, 09/01/2011- 08/31/2015, $489,109 (North).

North, E., S. Gallager, and C. Thompson. Pioneering new technologies to enhance shellfish restoration. The Bailey Wildlife Foundation, 6/1/2011-05/31/2012, $52,000.

North, E. W., E. E. Adams, R. He, S. Peckham, C. R. Sherwood, R. Signell. RAPID Collaborative Research: Deepwater Horizon: Simulating the three dimensional dispersal of aging oil with a Lagrangian approach. National Science Foundation Physical Oceanography, 07/01/2010-08/31/2011, $89,098.

North, E. Sea Grant Program Development Grant. Maryland Sea Grant College Program, 2/1/2009 - 1/31/2010, $ 9,998.

North, E., and W. Boicourt. Larval transport maps and small tributary flushing times. US Army Corps of Engineers, 1/22/09 – 05/01/09, $48,373.

North, E. Integrating field methods and numerical models to quantify the links between larval transport, connectivity, and population dynamics, NSF Biological Oceanography, 10/01/08 – 9/30/13, $750,989.

Kemp, M., W. Boynton, D. DiToro (UDEL), K. Fennel (Dalhousie), J. Kirby (UDEL), M. Li, L. Murray, E. North, D. Secor. Modeling hypoxia and ecological responses to climate and nutrients. NOAA Coastal Hypoxia Research Program. 07/01/2007 – 06/01/2012. $1,875,400.

Targett, T. (UDEL), W. Boicourt, J. Brubaker (VIMS), R. Garvine (UDEL), E. North, J. Olney (VIMS), E. Houde. Dynamics of ichthyoplankton ingress from the coastal ocean into Chesapeake and Delaware Bays: comparing spatiotemporal concordance and transport mechanisms. Funded by Delaware, Maryland and Virginia Sea Grant College Programs.. 02/01/2007 - 01/31/2009. $468,900 (UMCES portion: $186,000).

North, E. SWOLS model application. USFM/Campbell Foundation. 6/15/2007 - 6/14/2008. $10,000.

Luckenbach, M. (VIMS), R. Mann (VIMS), and E. North. Developing a relationship between oyster gamete concentrations, turbulent mixing and fertilization efficiency in *Crassostrea*. NOAA Chesapeake Bay Integrated Science Program. 1/1/2007 – 12/31/2007. $88,703.

North, E. Organizational Support for the ICES/PICES Young Scientist Conference: June 2007. North Pacific Marine Science Organization (PICES) 3/31/06 – 12/31/07. $13,060.

North, E. Advancements in modeling physical-biological interactions in fish early-life history: recommended practices and future directions. NSF International Research and Education Planning Visits and Workshops, 8/1/05 – 7/31/07. $48,000.

Houde, E., S.-Y. Chao, B. Crump, R. Hood, D. Kimmel, E. North, M. Roman, and L. Sanford. Dynamic stability and particle transformations: tracing pathways of production in Estuarine

Turbidity Maxima. National Science Foundation Biological Oceanography Program. 10/1/05 – 9/31/09, $2,500,000.

North, E., W. Boicourt, M. Roman, C. Epifanio (UDEL), R. Garvine (UDEL), and A. Valle-Levinson (ODU). How do changes in physical conditions and megalopae behavior affect blue crab recruitment variability in Chesapeake and Delaware Bays? Funded by Delaware, Maryland and Virginia Sea Grant College Programs. 2/1/05 – 1/31/07, $476,283. (UMCES portion: $181,076)

North, E., W. Boicourt, S.-Y. Chao, M. Roman, C. Epifanio (UDEL), and Senior Investigator L. Murray. Collaborative Research: Larval transport in a coupled-estuary-shelf system: a modeling study. National Science Foundation Biological Oceanography Program, 11/1/04 – 10/31/07, $285,464.

North, E., R. Hood, and J. Xu. Integrated models for quantifying ecosystem services and guiding effective restoration of oysters in the Chesapeake Bay. Campbell Foundation for the Environment. 4/1/04 – 9/30/05, $43,078.

North, E., and R. Hood. A partnership proposal: technology transfer of a larval dispersal model. NOAA Chesapeake Bay Office, 10/1/2004 – 9/30/2005, $49,990 total.

North, E., R. Hood, M. Li, and T. Gross (NOAA). Modeling dispersal of *Crassostrea ariakensis* oyster larvae in Chesapeake Bay. Maryland Department of Natural Resources, 1/23/2004-3/31/2005, $99,885.

Hood, R., E. Koch, R. I. E. Newell, E. North, and L. Sanford. Do oyster filtration and wave attenuation associated with oyster reefs and breakwaters improve seagrass habitat? Maryland Sea Grant College Program, 02/01/03 - 01/31/05. $191,435.

2. Pending

Wilberg, M., M. Li, and E. W. North. Linking Individual Based and Bayesian models to quantify impacts of climate variability and change on population connectivity and dynamics. National Science Foundation, Biological Oceanography, 10/1/2013 – 9/30/16, $930,990.

D. Awards and Honors

International Council for the Exploration of the Sea (ICES) Service Award for Chairmanship of the Working Group on Modelling Physical-Biological Interactions (WGPBI) from 2010-2011.

ICES Service Award for serving as Co-Chair of the "Workshop on understanding and quantifying mortality in pelagic, early life stages of marine organisms: experiments, observations and models (WKMOR)" held in Aberdeen, UK. March 22-24, 2010. Co-Chairs: A. Gallego and E. D. Houde.

Plenary speaker. ICES Annual Science Conference. Berlin, Germany. September 24, 2009.

Plenary speaker. 32nd Annual Larval Fish Conference, Kiel, Germany. August 6, 2008.

Invited Speaker, Coastal Ocean Circulation Gordon Research Conference. New London, New Hampshire. June 11, 2009.

Recipient of the Estuarine Research Federation's Cronin Award for Early Career Achievement, 2007.

Invited Speaker, Coastal Ocean Modeling Gordon Research Conference. New London, New Hampshire. June 18, 2007.

ICES Service Award for hosting the ICES/PICES Early Career Scientists Conference in Baltimore, MD. June 26-29, 2007.

Visiting Scientist, National Taiwan Ocean University, Academia Sinica, and National Central University in Taiwan. Host: Dr. Frank Shiah. November 30 - December 1, 2006.

ICES Service Award for Co-Chairmanship of the "Workshop on advancements in modelling physical-biological interactions in fish early-life history: recommended practices and future directions". Co-Chairs: A. Gallego and P. Petitgas. Nantes, France. April 3-5, 2006.

Visiting Scientist, French Research Institute for Exploitation of the Sea (IFREMER), Nantes, France. Host: Dr. Pierre Petitgas. September 27 - October 1, 2004.

E. Invited Seminars

1. Invited department seminars

North, E. W. Blue crab larval transport. University of Maryland Eastern Shore, Princess Anne, MD. February 3, 2012. Host: Brad Stevens.

North, E. W. Going with the flow? Larval transport in Chesapeake Bay. UMCES Institute of Marine and Environmental Technology, Baltimore, MD. May 26, 2010. Host: J. Sook Chung.

North, E. W. Making the link between numerical models of biological-physical interactions and fisheries management and restoration: A case study of oysters in Chesapeake Bay. University of Delaware, Physical Ocean Science and Engineering Department. Newark, DE. May 8, 2009. Host: Andreas Muenchow.

North, E. W. Making the link between numerical models of biological-physical interactions and fisheries management and restoration: A case study of oysters in Chesapeake Bay. Scripps Institute of Oceanography. La Jolla, CA. January 20, 2009. Host: Dr. Arthur Miller.

North, E. W. Making the link between numerical models of biological-physical interactions and fisheries management and restoration: A case study of oysters in Chesapeake Bay. University of California, Santa Cruz. Santa Cruz, CA. January 21, 2009. Host: Dr. Andrew Moore.

North, E. W. Investigating interactions between physical conditions and larval ecology. Rutgers University, Institute of Marine and Coastal Sciences. New Brunswick, NJ. November 17, 2008. Host: Mr. Donglai Gong.

North, E. W. Using our understanding of physics and biology to enhance oyster population restoration in Chesapeake Bay. Johns Hopkins University, Baltimore, MD, November 11, 2008. Host: Dr. William Ball.

North, E. W., Z. Schlag, R. R. Hood, M. Li, L. Zhong, T. Gross, V.S. Kennedy. The influence of larval behavior on oyster larvae transport and settlement: a numerical approach. University of Washington Oceanography Department. Seattle, WA. January 26, 2007. Host: Dr. Neil Banas.

North, E. W., Z. Schlag, R. R. Hood, M. Li, L. Zhong, T. Gross, V.S. Kennedy. Investigating the influence of larval behavior on oyster larvae transport and population connectivity with a numerical approach. Duke Marine Laboratory. Beaufort, NC. February 28, 2007. Host: Ms. Lesley Thorne.

North, E. W. Complexity of larval behavior versus complexity in physical fields. Institute of Marine Research. Bergen, Norway. March 22, 2007. Host: Dr. Lars Asplin.

North, E. W. Numerical modeling in support of oyster management. Virginia Institute of Marine Science. Gloucester Point, VA. November 30, 2007. Host: Dr. Debbie Bronk.

North, E. W. Models of larval transport with oysters in the spotlight. University of Delaware Center for Marine Science. Lewes, DE. May 9, 2006. Host: Dr. William Ullman.

North, E. W. Modeling native and non-native oyster larvae dispersal in Chesapeake Bay. Marine Biological Laboratory. Woods Hole, MA. April 25, 2006. Host: Dr. Jennifer Bowen.

North, E. W. Striped bass, oysters, blue crabs and physical-biological interactions: methods, insights, and next steps. Hampton University. Hampton, VA. April 17, 2006. Host: Dr. Deidre Gibson.

North, E. W. Using particle-tracking models to improve our understanding of larval transport: methods and case studies. National Central University. December 1, 2006. Taiwan. Host: Dr. Tso-ren Wu.

North, E. W., Z. Schlag, R. R. Hood, M. Li, L. Zhong, T. Gross. The influence of larval behavior on oyster larvae transport and settlement: a numerical approach. Academia Sinica. Taiwan. November 30, 2006. Host: Dr. Kon-Kee Liu.

North, E. W. Fish larvae and physics: combing field observations and models to investigate biological-physical interactions in an Estuarine Turbidity Maximum. National Taiwan Ocean University. November 29, 2006. Host: Dr. Gong.

North, E. W. Striped bass, oysters, blue crabs and physical-biological interactions: methods, insights, and next steps. Salisbury University Biology Department. Salisbury, MD. December 8, 2005. Host: Dr. Ann Barse.

North, E. W. Linking physics and fish recruitment in an Estuarine Turbidity Maximum (ETM). Baltic Sea Research Institute. Warnemuende, Germany. April 12, 2005. Host: Dr. Hans Burchard.

North, E. W. Linking physics and fish recruitment in an Estuarine Turbidity Maximum (ETM). Hamburg University, Institute for Hydrobiology and Fisheries Science. Hamburg, Germany. April 13, 2005. Host: Dr. Michael St. John.

North, E. W. From physics to fish recruitment: biological-physical interactions in the Estuarine Turbidity Maximum (ETM). French Research Institute for Exploitation of the Sea (IFREMER).

Nantes, France, September 28, 2004 and Brest, France, September 29, 2004. Host: Dr. Pierre Petitgas.

North, E. W. Using particle-tracking models: simulating turbulent particle motion, fish egg sinking, and larval behavior. IFREMER. Nantes, France, September 30, 2004 and Brest, France, September 29, 2004. Host: Dr. Pierre Petitgas.

North, E. W. From physics to fish recruitment: biological-physical interactions in the Estuarine Turbidity Maximum (ETM). State University of New York, Stony Brook University, Marine Sciences Research Center. Stony Brook, NY. May 17, 2004.

North, E. W. The role of the Estuarine Turbidity Maximum (ETM) in fish recruitment: linking physics, prey, and fish early-life histories. Universit Laval, Quebec, Canada. April 2, 2004. Host: Dr. Geshe Winkler.

North, E. W. Biological-physical interactions in an Estuarine Turbidity Maximum (ETM): linking physics, prey, and fish early-life histories with recruitment. University of Texas Marine Science Institute. Port Aransas, TX. March 29, 2004.

North, E. W. Linking environmental variability to fish population fluctuations using field and modeling approaches. University of Maryland, Department of Meteorology, College Park, MD. March 18, 2004. Host: Dr. Eugenia Kalnay.

North, E. W. Linking ETM physics, zooplankton prey, and fish early-life histories to striped bass and white perch recruitment using field and modeling techniques. Cooperative Oxford Laboratory. Oxford, MD. February 19, 2004. Host: Carol McCollough.

North, E. W., S.-Y. Chao, R. R. Hood, and L. P. Sanford. Modeling the estuarine turbidity maximum with the Princeton Ocean Model (POM): sediment transport and biological-physical interactions. Old Dominion University, Center for Coastal Physical Oceanography. Norfolk, VA. November 11, 2002. Host: Dr. Eileen Hofmann.

North, E. W. Retention of white perch and striped bass larvae in an estuarine turbidity maximum. University of North Carolina, Department of Marine Sciences. Chapel Hill, NC. March, 2001. Host: Dr. Francisco Werner.

North, E. W. Biological-physical interactions in an estuarine turbidity maximum: physics, fish larvae, and implications for anadromous fish recruitment. Woods Hole Oceanographic Institute, Department of Applied Ocean Physics and Engineering. Woods Hole, MA. February, 2001. Host: Dr. Wayne R. (Rocky) Geyer.

2. Invited conference presentations

North, E. W. Inviting feedback to clarify uncertainty. Chesapeake Community Modeling Symposium. Annapolis, MD. May 11, 2010.

North, E. W., and Z. Schlag. The influence of anoxia on larval connectivity: a model-based hypothesis. 2010 Ocean Sciences Meeting. Portland, OR. February, 2010.

North, E. W. What can science tell us the fishermen don't already know? Plenary talk at the International Council for the Exploration of the Sea (ICES) Annual Science Conference. Berlin, Germany. September 24, 2009.

North, E. W. Getting mixing right: Why the bar is higher from an oyster's point of view. Gordon Research Conference on Coastal Ocean Circulation. New London, NH. June 11, 2009.

North, E. W. Investigating interactions between physical conditions and larval ecology. Plenary talk at 32nd Annual Larval Fish Conference. Kiel, Germany. August 6, 2008

North, E. W., D. M. King, J. Xu, R. R. Hood, R. I. E. Newell, K. T. Paynter M. L. Kellogg, M. K. Liddel, and D. F. Boesch. An ecosystem approach for oyster restoration and management. Chesapeake Community Modeling Program Conference. Annapolis, MD. May 13, 2008

North, E. W. Water, passive particles and plankton: why sub-grid scale turbulence and organism behavior are necessary for bio-physical Lagrangian models. Gordon Research Conference on Coastal Ocean Modeling. New London, NH. June 18, 2007.

IV. Teaching and Training

A. Courses Taught or in Preparation

MEES 698F: Fisheries Oceanography, 3 credits. Lead instructor. Spring, 2012. 11 students. (http://northweb.hpl.umces.edu/education_outreach/FOG.htm).

MEES 607 Quantitative Methods, 3 credits. Co-Instructor with Lora Harris. Fall, 2011.

MEES 608O: Dispersion, degradation, and ecosystem effects of oil in the marine environment, 1 credit. Co-instructors were J. Pierson and M. Roman.

MEES 698F: Fisheries Oceanography, 3 credits. Lead instructor. Spring, 2010 (http://northweb.hpl.umces.edu/education_outreach/FOG.htm).

MEES 699(0327): Global Ocean Ecosystem Dynamics (GLOBEC) Seminar Series directed reading course, 1 credit. Lead instructor. Spring, 2009. (http://northweb.hpl.umces.edu/education_outreach/GLOBEC_Directed_Reading/MEES699-0327.htm)

MEES 607 Quantitative Methods, 3 credits. Co-Instructor with Larry Sanford. Fall, 2007.

MEES 698G Quantitative Methods, 3 credits. Co-Instructor with Joel Baker. Fall, 2005.

MEES 608F Bio-physical coupling in upper estuaries: tracing pathways of production at the freshwater-saltwater interface, 1 credit. Lead instructor, co-instructors were B. Crump, R. Hood, E. Houde, D. Kimmel, M. Roman, and L. Sanford. Fall, 2006.

MEES 699 Blue crab early-life life history directed reading course, 1 credit. Lead instructor. Fall, 2005.

Workshop: Using Surfer: a contour plotting workshop, no credit (designed for graduate students, research technicians, and faculty at UMCES). Instructor. September 10, 2001, June 2, 2005, May 12, 2006, April 21, 2012.

Workshop: Making Animations and Videos for Science Communication, no credit (designed for graduate students, research technicians, and faculty at UMCES). Instructor. January 28, 2008.

B. Guest Lecturer

Guest Lecturer for two classes in MEES 621 Biological Oceanography. 2009, 2010, 2011 (Instructor: Raleigh Hood).

Guest Lecturer on finfish ecology during a 1-day research training cruise for MEES 621 Biological Oceanography in 2004, 2005, 2007, 2008, 2009, 2010, 2011. (Instructor: Raleigh Hood).

Guest Lecturer for one class in MEES 698F Early Life History of Marine Fishes in 2011 (Instructor: Edward Houde).

Invited Lecture on "Principles for presenting data: from plots to presentations" at the CBL Graduate Student Workshop (at the request of CBL students), January 10, 2007.

Guest Lecturer for one class in MEES 608E "Operational marine ecology: closing the gap between science and management" in 2008. (Instructor: Thomas Malone).

C. Advising and Mentoring

1. Undergraduate student mentor for:

Ginger Jahn (REU student from Hawaii Pacific University, summer 2005)
Katharine Smith (REU student from Princeton University, summer 2006)
Pia Marie Paulone (Gallaudet University, summer 2006)
Kiera Jarvis (REU student from Westminster College, summer 2007)
Daryl Lundy (COSEE program student from Hampton University, summer 2009)
Kayla Hinson (REU student from University of Texas, El Paso, summer 2011)

2. Graduate student adviser for:

Jacob Goodwin (PhD, in progress)
Andrew Keppel (Masters, in progress, co-adviser)
Adam Schlenger (Masters, completed 2012)
Ginger Jahn (Masters, completed 2010)
Jeffery Biermann (Masters, completed 2008)

3. Graduate committee member for:

In progress:
Mindy Forsyth (Masters, UMCES CBL)
Jia Gao (Masters, UMCES HPL)
Wei Liu (Masters, UMCES HPL)
Sarah Rains (Masters, UMCES CBL)

Completed:
Allison Chandler (Masters, UMCES CBL, 2010)

Shih-nan Chen (Ph.D., UMCES HPL, 2008)
Kari Fenske (Masters, UMCES CBL, 2009)
David Keller (Ph.D., UMCES HPL, 2010)
Edward Hale (Ph.D., UDEL, 2012)
Maude Livings (Masters, UMCES CBL, 2010)
Carlos Lozano (Masters, UMCES CBL, 2011)

4. Postdoctoral mentor for:
Christine Thompson (in progress)
Wen Long (Pacific Northwest National Lab)
Jiangtao Xu (NOAA Office of Coast Survey, Coast Survey Development Laboratory)

5. Scientist mentor for high school and middle school teachers:
Stephanie Snyder, North Dorchester High School, Cambridge, MD, summer 2004
Shaaban Fundi, Garisson Middle School, Baltimore, MD, summer 2008
April Rishert, Chesapeake High School, Pasadena, MD, summer 2009

V. Outreach and Service

A. Editorial

Guest Editor for theme section in *Journal of Marine Systems* based on workshop on "Understanding and quantifying mortality in pelagic, early life stages of marine organisms: experiments, observations and models (WKMOR)". Co-editors: A. Gallego and E. D. Houde.

Lead Editor for 2009 ICES Cooperative Research Report entitled "Manual of recommended practices for modelling physical–biological interactions during fish early life". See North et al. (2009) citation for ICES Cooperative Research Report No. 295.

Lead Guest Editor of collected papers in ICES Journal of Marine Science (2009, volume 66) based on the ICES/PICES Early Career Scientists Conference.

Guest Editor for theme section entitled "Advances in modeling physical-biological interactions in fish early life history" in Marine Ecology Progress Series (published 2007) based on presentations made at the ICES "Workshop on advancements in modelling physical-biological interactions in fish early-life history: recommended practices and future directions."

Manuscript reviewer (2004-2011) for Deep Sea Research, Estuaries and Coasts, Estuarine, Coastal and Shelf Science, Fisheries Oceanography, ICES Journal of Marine Science, Journal of Marine Systems, Limnology and Oceanography, Marine Biology, Marine Ecology Progress Series, Marine and Freshwater Research, North American Journal of Fisheries Management.

Panel member for NSF Biological Oceanography Program (2004, 2008) and Sea Grant (2008, 2010).

Proposal reviewer for the NSF Department of Mathematical Sciences (2006, 2010), Ocean Technology and Interdisciplinary Coordination (2004, 2007), Biological Oceanography (2003, 2007, 2010) Programs.

B. Regional and State Service

Invited speaker, EPA Chesapeake Bay Program Modeling Subcommittee. Annapolis, MD. April 5, 2011.

Invited speaker, US Army Corps of Engineers Native Oyster Restoration Master Plan Team meeting. Annapolis, MD. February 18, 2009.

Provided an animation of oyster larval transport to Governor Martin O'Malley who used it in a presentation in the Senior Executive Seminar as part of the 2008 ESRI International Users Conference in San Diego, CA. August 3, 2008.

Invited speaker, Oyster Advisory Commission. Annapolis, MD. October 15, 2008

Invited speaker, US Army Corps of Engineers Native Oyster Restoration Master Plan Team. Baltimore, MD. October 2, 2008.

Invited speaker, Atlantic States Marine Fisheries Commission Shellfish Advisory Board. Baltimore, MD. September 12, 2007.

Invited speaker, CBP Oyster Management Plan Workshop. La Plata, MD. December 5, 2007.

Invited speaker, EPA Chesapeake Bay Program Modeling Subcommittee. Annapolis, MD. December 4, 2007.

Invited speaker, EPA Chesapeake Bay Program joint meeting of the Living Resources and Modeling Subcommittees. Annapolis, MD. December 5, 2006.

Invited speaker, Oyster EIS Update meeting for MD DNR Secretary Franks and other federal/state agency representatives. UMCES Horn Point Laboratory. Cambridge, MD. October 13, 2006.

Invited speaker, EPA Chesapeake Bay Program Scientific and Technical Advisory Committee Spatial Management Workshop 2. Annapolis, MD. March 21, 2006.

Invited speaker, EPA Chesapeake Bay Program Modeling Subcommittee. Annapolis, MD. January 25, 2006.

Invited speaker, Maryland Department of Natural Resources MANTIS seminar. Annapolis, MD. December 8, 2005.

Invited speaker, Maryland Department of Natural Resources Demographic Modeling Workshop. Annapolis, MD. July 21, 2004.

Invited speaker, Maryland Department of Natural Resources Demographic Modeling Workshop. Cambridge, MD. October 25, 2004.

C. National Service

Workshop participant, National Science and Technology Council's Sub-Committee on Ocean Science and Technology (NSTC SOST) "Deepwater Horizon Oil Spill Principal Investigator One Year Update Workshop" in St. Petersburg, FL on October 25-26, 2011.

Chair, Oil/dispersants Fate and Extent breakout group at the JSOST Deepwater Horizon Oil Spill Principal Investigator (PI) Conference, St. Petersburg, FL, October 5-6, 2010.

Member, US Global Ocean Ecosystem Dynamics (GLOBEC) Program Standing Committee for Synthesis. May 2007 to 2011.

Invited speaker, OneNOAA Science Seminar Series. Silver Spring, MD. October 26, 2009.

Member, National Science Foundation Committee of Visitors (COV) for the Division of Ocean Science's Marine Geoscience Section, Ocean Section, Ocean Technology and Interdisciplinary Coordination (OTIC) Program, and the Educational Programs. June 4-5, 2009.

Invited speaker, OneNOAA Science Seminar Series. Silver Spring, MD. June 18, 2008.

D. International Service

Member, International Council for the Exploration of the Seas (ICES) Working Group on Modeling Physical-Biological Interactions, 2003 to 2011. Co-Chair for 2011.

Co-Chair for ICES "Understanding and quantifying mortality in pelagic, early life stages of marine organisms: experiments, observations and models (WKMOR)". Co-Chairs: A. Gallego and E. D. Houde. Aberdeen, UK. March 22-24, 2010. (http://northweb.hpl.umces.edu/WKMOR/WKMOR-home.htm)

Theme Session co-Chair, "Death in the sea - Mortality in the zooplankton and early-life stages of marine fish (estimates, processes and outcomes)" Co-Chairs: A. Gallego and E. D. Houde. ICES Annual Science Conference. Berlin, Germany. September, 2009.

Theme Session Chair, "Integrating observations and models to improve predictions of ecosystem response to physical variability". Co-Chairs: N. P. Holliday, S. Hughes, and S. McKinnell. ICES Annual Science Conference. Helsinki, Finland. September, 2007.

Local Host of the ICES/PICES Early Career Scientists Conference (ECSC) "New Frontiers in Marine Science" in Baltimore, June 26-29, 2007, and *Member* of the ECSC Steering Committee, 2005 to 2007. (Conference information at: http://www.pices.int/newfrontiers.aspx).

Workshop participant, BASIN: Basin-scale Analysis, Synthesis, and INtegration. Chapel Hill, North Carolina. May 1-3, 2007.

Co-Chair for International Council for the Exploration of the Seas (ICES) "Workshop on advancements in modelling physical-biological interactions in fish early-life history: recommended practices and future directions". Received ICES Service Award for efforts related to this workshop. Co-Chairs: A. Gallego and P. Petitgas. Nantes, France. April 3-5, 2006.

Theme Session Chair, "Connecting Physical-Biological Interactions to Recruitment Variability, Ecosystem Dynamics, and the Management of Exploited Stocks". Co-Chairs: A. Gallego and M. St John. ICES Annual Science Conference. Aberdeen, Scotland. September, 2005.

E. University System of Maryland and UMCES Laboratories

UMCES HPL Education Committee, 2010 – present.
Member, Institutional Animal Care and Use Committee (IACUC), 2009 – present.
Co-author of white paper "Pathways to More Effective Management and Restoration of the Eastern Oyster in Maryland's Chesapeake Bay" by UMCES scientists, February 4, 2008.
Participant in USM faculty forum hosted by ESSIC, College Park, MD. May 31, 2007.
Participant in meeting with MD DNR Secretary Griffin, April 20, 2007.
Participant in Oyster Roundtable at Horn Point Laboratory (HPL), April 3, 2007.
Participant in Governor O'Malley visit to HPL, March 12, 2007.
Presentation to Maryland Delegates, December 13, 2006.
Chair of UMCES HPL Open House Committee, 2006.
Chair of UMCES HPL Computer Committee, 2006, 2007.
Presentation to UMCES Board of Visitors, April 28, 2006.
UMCES Administrative Council Data Forum participant, July 18, 2006.
IAN Oversight Committee, 2005.
UMCES HPL Computer Committee, 2003-2005, 2009, 2013.

F. Public Service

Mentor and contributor for "Chesapeake Bay oysters: past, present and future". Mentored C. Thompson in the development of, and contributed sections to, this webinar which was presented to 50 Booz Allen Hamilton employees and 125+ people at the HPL Open House. The webinar is available on YouTube: http://www.youtube.com/playlist?list=PLg4xOCr-qp5-0muCFz-vZExc1Ma3vjvz2

Producer, "The Tiny Life of Oysters", a 2.5 min animation created for the 2011 HPL Open House that describes the challenges that oysters in the Chesapeake Bay face and the good news about their restoration. It was shown to 100+ people at the HPL Open House. The film is posted on Youtube (http://www.youtube.com/watch?v=pEzTPoYGTrg) and has 254 views as of March 9, 2012. It was presented ~60 people at the 2012 Ocean Sciences Film Festival in Salt Lake City, UT.

Panel member, Shore Leadership Oyster Panel, September 22, 2010, Tilghman Island.

Participant, ASLO Ocean Sciences film making workshop. The film "From Physics to Fish in the upper Chesapeake Bay" that was presented at the workshop appears on the COSEE web page: http://www1.coseecoastaltrends.net/modules/fish_and_physics/get_started/

Producer, "Critters of the Choptank", a 2-min video created for HPL Open House that describes the life histories of striped bass, blue crabs, razor clams, and oysters that are found in the Choptank River. The video was shown to >260 children and adults.

Invited speaker, "Using our understanding of physics and biology to enhance oyster population restoration in Chesapeake Bay". Presented to 30 citizen members of the Izaak Walton League. Easton, MD. January 26, 2009. Presented to 35 high school science students in the Women in Science Seminar Series, Baltimore Polytechnic High School. Baltimore, MD. January 5, 2009.

Writer, “Chesapeake Bay science sleuths: science for solutions”, an article that appeared in The Star Democrat newspaper as part of a series written by Horn Point scientists. August 2, 2009.

Producer, "Blue crab and oyster larvae transport", a 6-min video created for HPL Open House about larval transport of blue crabs and oysters. Graduate student Jeffery Biermann narrated and was featured in the blue crab section. The video was shown to 250 children and adults.

Invited speaker, “Out of the Fire … Into the Bay” public outreach event held at Out of the Fire restaurant, April 8, 2008.

Invited speaker, “Striped bass scales and life history tales: fish and physics in Chesapeake Bay” to Maryland Saltwater Sportfishermen’s Association, Dorchester County Chapter, Cambridge, Maryland. August 20, 2008.

Interviewee, "The Motherly Art and Daughterly Science of Life Forms" by Lynn Teo Simarski and Guy G. Guthridge in Bay Weekly, Volume 15, Issue 48. November 29 - December 5, 2007

Producer, “From physics to fish in the upper Chesapeake Bay”, a 6-min educational video for HPL Open House about BITMAX program research activities and findings. This video was shown to >170 citizens (adults and children) at the Horn Point Laboratory Open House (October 13, 2007) and to ~35 school children (4th and 5th grades) at White Marsh elementary school (November 27, 2007).

Invited speaker, “Physics and biology interact during the early life of striped bass, oysters, and blue crabs” presented to ~30 middle-school and high school teachers at the Centers for Ocean Sciences Education Excellence (COSEE) COSEE-MA Conference on Ocean Observing Systems in the Classroom. Horn Point Laboratory, July 11, 2007. Presentation also was given to ~30 people at the DC Science Writers Association on July 14, 2007 at HPL.

Invited speaker, “Striped bass scales and life history tales: fish and physics in Chesapeake Bay” presented at HPL to middle school teachers for Coastal Ocean Science Observatory Course (2004, 2005, 2006), to Chesapeake Bay Foundation educators as part of the Chesapeake Bay Ecology Course (2004, 2005, 2006), to Salisbury University Environmental Health Club (March 6, 2007), and to the Coastal Conservation Association in Talbot County (September 13, 2007).

Interviewee, "Charting our course on Chesapeake Science" Press article on ETM and ETM science by Lynn Teo Simarski and Guy G. Guthridge in the Bay Weekly, vol.15, issue 11, March 2007.

Interviewee, "Estuary nurseries: When freshwater collides with dense salty ocean water, it creates a cloudy area that makes a perfect fish nursery" radio program re-broadcast on Our Ocean World entitled on March 7, 2007. To hear the show, go to: http://www.ouroceanworld.com/2001/shows070301.htm

Interviewee, "Explore and Restore: Horn Point Laboratory's Mission on the Bay.” Chesapeake Bay Maritime Museum newsletter, winter 2006-2007 issue. Article by Michael Valliant.

Interviewee, “Spawning Hopes: An Update”. Film by Susanne Stahley. Aired on Outdoors Maryland, Maryland Public Television. November 28, 2006.

Invited speaker, "Physics and biology interact during the early life of striped bass, oysters, and blue crabs". Salisbury School. Salisbury, MD. October 23, 2006.

Interviewee, "Understanding the Blue Crab: From bay to ocean and back again*".* Article by Chris Conner, Environmental Insights from the University of Maryland Center for Environmental Science, Fall 2006.

Producer, "Blue Crab Beginnings", a 6-min video, was produced by PI North. The video introduces blue crab life history and research operations on board the *R/V Hugh R. Sharp*. This video has been shown to more than 100 people and can be found on the CRAB-DMV website (http://northweb.hpl.umces.edu/CRAB-DMV/CRAB-DMV_movies.htm).

Interviewee, "Into the depths for blue crab research: 'Mocness' uses nets to collect water samples, study young crustaceans". Article by Alan Piñon. Published in The Daily Times on September 20, 2006

Interviewee, "On the trail of the crab. Using the latest in marine science gear, researchers track billions of larvae drifting from sea back to bays". Article by Chris Guy. Published in The Baltimore Sun on September 13, 2006. This article was picked up by the Associated Press. A condensed version was published in >40 newspapers around the country.

Interviewee, "Blue crab research aboard the *R.V. Sharp*". Slideshow produced and photographed by Alan Piñon in September 2006 and posted on-line at The Daily Times Online-only and Multimedia Content web page (http://www.delmarvanow.com/multimedia/bluecrabs/)

Interviewee, "Local scientist probes future of bay oyster" by Erica Goldman. The Capital. March 8, 2006.

Interviewee, "A model scientist: following oysters from spawning to settlement" by Erica Goldman in Chesapeake Quarterly 4(3). Maryland Sea Grant College. Fall, 2005.

Invited speaker," Fisheries and physical-biological interactions: methods, insights, and next steps." Johns Hopkins University School of Continuing Studies. Baltimore, Maryland. November 13, 2005.

*Invited speaker, "*Invertebrates and physical-biological interactions in Chesapeake Bay." Swarthmore College, Invertebrate Zoology Class. Swarthmore, Pennsylvania. November 18, 2005. Host: Dr. Rachel Merz.

Web page creator, "BITMAX Videos and Animations", a public web page that contains the "Science on the Chesapeake Bay: a BITMAX program research cruise" video and animations of ETM model results. (http://northweb.hpl.umces.edu/videos_animations/BITMAX.htm)

Web page creator, "Where could the stripers be?" (www.hpl.umces.edu/~enorth/ COSEEActivity _North.htm), a web-based teaching activity constructed for the Coastal Ocean Science Observatory Course (COSEE).

Presenter, "The Estuarine Turbidity Maximum (ETM): from physics to fish recruitment", a talk to high school teachers as part of the Environmental Science Education Partnership Teacher Fellows Program at UMCES Horn Point Laboratory, June 23, 2004.

Interviewee, "Estuary Nurseries: When fresh water collides with dense salty ocean water, the result causes a cloudy area which is a natural fish trap full of life," Our Ocean World radio show,

November 12, 2004. To hear the piece, go to:
http://www.ouroceanworld.com/2001/shows041101.htm