

Elizabeth Watkins North

Curriculum Vitae

University of Maryland
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I. Education

- 1991 B. A., Swarthmore College, Religion (comparative)
- 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

- 2004 – present 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 (2007 indicated by **)

1. Papers in refereed journals

**North, E. W., Z. Schlag, R. R. Hood, M. Li, L. Zhong, T. Gross, V. S. Kennedy. *In press*. 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*.

- **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.
- **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.
- **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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.

2. Other papers

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

- **North, E. W., N. P. Holliday, S. Hughes, and S. McKinnell. 2007b. Report on Theme Session B “Integrating observations and models to improve predictions of ecosystem response to physical variability.” ICES Annual Science Conference, September 17-21, 2007.
- North, E. W., J. H. Vølstad, M. Christman, R. R. Hood, L. Zhong, Z. Schlag, T. F. Gross, D. Lewis, J. Dew, M. Li, 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, 13 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), 3–5 April, Nantes, France. 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.” ICES Annual Science Conference, September 19-24, 2005
- 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.
- 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. 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.
- 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. CBL Ref. No. [UMCES]CBL 00-0306.
- 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.

C. Contracts and Grants (ongoing in 2007 indicated by **)

1. Awarded

- 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.

- 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.
- 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, and J. Xu. *Integrated Models for Quantifying Ecosystem Services and Guiding Effective Restoration of Oysters in the Chesapeake Bay*. Campbell Foundation for the Environment. \$43,078.
- **North, E., W. Boicourt, S.-Y. Chao, M. Roman, C. Epifanio (UDEP), 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., Boicourt, M. Roman, C. Epifanio (UDEP), R. Garvine (UDEP), and A. Valle-Levinson (ODU). *How do changes in physical conditions and megalopae behavior affect blue crab recruitment variability in Chesapeake and Delaware Bays?* Submitting to Delaware, Maryland and Virginia Sea Grant College Programs. 2/1/05 – 1/31/07, \$476,283.
- **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. *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.
- **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.
- **Luckenbach, M., R. Mann, 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. \$29,275.
- **North, E., W. Boicourt, E. Houde, T. Targett (UDEP), R. Garvine (UDEP), J. Olney (VIMS), J. Brubaker (VIMS). *Dynamics of ichthyoplankton ingress from the coastal ocean into Chesapeake and Delaware Bays: comparing spatiotemporal concordance and transport mechanisms*. Maryland Sea Grant College Program. 02/01/2007 - 01/31/2009. \$217,624.
- **North, E. W. SWOLS model application. USFM/Campbell Foundation. 6/15/2007 - 6/14/2008. \$10,000.
- **Kemp, M., W. Boynton, D. DiToro, K. Fennel, M. Li, E. North, D. Secor. *Modeling hypoxia and ecological responses to climate and nutrients*. NOAA Coastal Hypoxia Research Program. 07/01/2007 – 06/01/2012. \$2,231,845.

2. Submitted in 2007

- Glibert, Meritt, Stoecker, North. *HABs and oyster larvae: Incorporating early life stage impacts into a larval transport model for Chesapeake Bay*. ECOHAB EPA, \$373,557. (pending).

North. CAREER: Integrating field methods, numerical models, multi-media tools and teachers to understand and communicate how physics and biology interact in marine systems, \$978,597 NSF CAREER (declined)

North, Coles, Garraffo, McCleave, Werner. Collaborative research: Is there a link between larval transport, climate variability, and eel population decline? NSF Biological Oceanography, \$551,195 (declined).

Secor, Harris, Kimmel, Li, Lookingbill, North, Trice, Wainger, InForeShore: INtegrating multiple stressor effects and FOREcasting regional thresholds in SHOREline development and restoration in the Mid-Atlantic, NOAA Coastal Ocean Program, \$3,285,976. (pending).

IV. Teaching and Training (2007 indicated by **)

A. Courses Taught

***MEES 621 Quantitative Methods*. Fall, 2007 (Larry Sanford co-Instructor, 50% effort).

MEES 698G Quantitative Methods. Fall, 2005 (team taught with Joel Baker).

MEES 608F Bio-physical coupling in upper estuaries: tracing pathways of production at the freshwater-saltwater interface (lead instructor, co-instructors were Byron Crump, Raleigh Hood, Edward Houde, David Kimmel, Michael Roman, and Larry Sanford). Fall, 2006.

MEES directed reading course on “Blue crab life history” for Masters student Jeffery Biermann. Fall, 2005.

Workshop Instructor. Created "Using Surfer: a contour plotting workshop" for graduate students, research technicians, and faculty at UMCES Horn Point Laboratory. September 2001, June 2005, May 2006.

B. Guest Lecturer

***Guest Lecturer* 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* on finfish ecology during a research training cruise for MEES 621 Biological Oceanography (with Vic Kennedy) in 2004, 2005, 2007.

C. Students

***Undergraduate student mentor for*: Ginger Jahn (REU student from Hawaii Pacific University, 2005), Katie Smith (REU student from Princeton University, 2006), Pia Marie Paulone (Gallaudet University, 2006), Kiera Jarvis (Westminster College, 2007)

***Graduate student adviser for*: Jeffery Biermann (Masters, in progress), Ginger Jahn (Masters, in progress)

***Graduate committee member for*: Allison Chandler (CBL), Shih-nan Chen (HPL), Kari Fenske (CBL), David Keller (HPL), and Carlos Lozano (CBL)

V. Outreach and Service (2007 indicated by **)

A. Editorial

- ***Guest Editor* for theme section ICES Journal of Marine Science based on the ICES/PICES Early Career Scientists Conference (ongoing).
- ***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* (2004-2007) 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*.
- Panel member* for NSF Biological Oceanography Program (2004).
- ***Proposal reviewer* for the NSF Department of Mathematical Sciences (2006), Ocean Technology and Interdisciplinary Coordination (2004, 2007), Biological Oceanography (2003, 2007) Programs.

B. Public Service

- ***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 entitled 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).
- ***Presenter*, “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.
- ***Presenter*, “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 entitled 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, 23 October 2006, Salisbury, MD.
- 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/>)
- Invited speaker*, "Striped bass, oysters, blue crabs and physical-biological interactions: methods, insights, and next steps". Hampton University. Hampton, VA. April 17, 2006.
- 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.
- Invited speaker*, "Striped bass, oysters, blue crabs and physical-biological interactions: methods, insights, and next steps." Salisbury University Biology Department. Salisbury, Maryland. December 8, 2005. Host: Dr. Ann Barse.
- 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://www.hpl.umces.edu/~enorth/videos_animations/BITMAX.htm)

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

Mentor for high school teacher Stephanie Snyder as part of the UMCES Horn Point Teacher Fellows Program. Summer 2004.

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>

C. Federal/State/Local Government

****Member**, US Global Ocean Ecosystem Dynamics (GLOBEC) Program Scientific Steering Committee. May 2007 to present.

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

****Workshop participant and speaker**, CBP Oyster Management Plan Workshop, La Plata, Maryland. December 5, 2007.

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

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

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

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

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

Workshop participant, Population Dynamics of American Eel 22-23 March 2005, Virginia Polytechnic Institute, Blacksburg, VA

Workshop participant and speaker, Maryland Department of Natural Resources Demographic Modeling Workshop. July 21, 2004. Annapolis, Maryland.

Workshop participant, Maryland Sea Grant Hypoxia Workshop. August 2-3, 2004. College Park, MD.

Workshop participant and speaker, Maryland Department of Natural Resources Demographic Modeling Workshop. October 25, 2004. Cambridge, Maryland.

Workshop participant, Identifying and Prioritizing Research Required to Evaluate Ecological Risks and Benefits of Alternative Actions to Restore Oysters to Chesapeake Bay: Introducing *Crassostrea ariakensis* and Other Alternatives, STAC Workshop, December 2-3, 2003, Annapolis, Maryland

D. International

- ***Member*, International Council for the Exploration of the Seas (ICES) Working Group on Modeling Physical-Biological Interactions, 2003 to present.
- ***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 September, 2007, Helsinki, Finland.
- ***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.
- ***Visiting Scientist*, Institute for Marine Research (IMR), Bergen, Norway. Host: Dr. Lars Asplin. March 21 -23, 2007.
- Visiting Scientist*, National Taiwan Ocean University, Academia Sinica, and National Central University in Taiwan. Host: Dr. Frank Shiah. November 30 - December 1, 2006.
- 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. 3-5 April 2006, Nantes, France.
- 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 September, 2005, Aberdeen, Scotland.

E. University System of Maryland

- **Participant in USM forum hosted by ESSIC, College Park, MD. May 31, 2007

F. UMCES Laboratories

- **Participant in meeting with MD DNR Secretary Griffin, April 20, 2007
- **Participant in Oyster Roundtable at HPL, April 3, 2007
- **Participant in Governor O'Malley visit to HPL, March 12, 2007
- Presentation to Maryland Delegates, 13 December 2006
- Chair of Horn Point Laboratory Open House Committee, 2006
- Chair of Horn Point Lab Computer Committee, 2006
- Presentation to UMCES Board of Visitors, 28 April 2006
- UMCES Administrative Council Data Forum participant, 18 July 2006
- IAN Oversight Committee, 2005
- Horn Point Lab Computer Committee, 2003- 2005