

## ***CURRICULUM VITAE***

### **William Michael Kemp**

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### ***I. Education***

1969            B.S. Georgia Institute of Technology, Civil Engineering.  
1971            M.S. Georgia Institute of Technology, Environmental Engineering.  
1977            Ph.D. University of Florida, Systems Ecology.

### ***II. Professional Background***

1970-1971    Environmental Engineer, U.S. Environmental Protection Agency,  
                 Boston, MA.  
1977-1978    Post-Doctoral Research, Chesapeake Biological Laboratory, University  
                 of Maryland, Solomons, MD.  
1978-1984    Assistant Professor, Horn Point Environmental Laboratories,  
                 University of Maryland, Cambridge, MD.  
1985           Visiting Faculty, University of Copenhagen (Hillerød) and University  
                 of Aarhus, Denmark.  
1984-1989    Associate Professor, Horn Point Environmental Laboratories,  
                 University of Maryland, Cambridge, MD.  
1998-1999    Sabbatical Scientist, Florida Center for Environ. Studies, Palm Beach Gardens.  
1989-         Full Professor, Horn Point Laboratory, Univ of MD, Cambridge, MD.

### **Awards and Special Recognition**

1987-1989    Estuarine Research Federation Executive Board, At Large.  
1992           Governor's Citation for Chesapeake Bay SAV Research.  
1990           Mathias Medal Award, Chesapeake Research Consortium, Award Nominee.  
1995           External Expert Member, Appointments Board, Univ. Stockholm, Sweden.  
1995-1996    Pew Foundations Fellowship in Conservation & Environment, Award Nominee.  
1996           Royal Swedish Academy of Sciences, Crafoord Award (Sir. Robert May), Invited  
                 Lecturer, Stockholm.  
1998-1999    Distinguished Estuarine Scientist Sabbatical Award, Florida Center for  
                 Environmental Studies, Palm Beach Gardens.

### **III. Research**

#### **A. Areas of Professional Expertise**

Coastal marine ecology: Ecosystem production; Nutrient cycling; Physical-biological coupling; Global patterns; Benthic-pelagic interactions.

Ecosystem analysis: Numerical models; Comparative assessment; Scaling relations.

Seagrass ecology: Light and nutrient relations; Food-web interactions; Plant-sediment physiology-biogeochemistry.

Sediment nitrogen cycling: Nitrification-denitrification; Ammonification; N-interactions with plants and macrofauna.

#### **B. Published Work**

##### 1. Peer-Reviewed Papers

Hoadley, A.W., W.M. Kemp, A.C. Firmin, G.T. Smith and P. Schelhorn. 1974. Salmonellae in the environment of a poultry processing plant. *Appl. Microbiol.* 27:848-857.

Odum, H.T., W.M. Kemp, M. Sell, W. Boynton and M. Lehman. 1977. Energy analysis and the coupling of man and estuaries. *Environ. Mgmt.* 1(4):297-315.

Kemp, W.M., W. Smith, H. McKellar, M. Lehman, M. Homer, D. Young and H.T. Odum. 1977. Energy cost-benefit analysis applied to power plants near Crystal River, FL, pp. 508-543, In: C. Hall & J. Day (eds.), *Ecosystem modeling in theory and practice*. John Wiley, New York.

Ulanowicz, R.E. and W.M. Kemp. 1979. Towards canonical trophic aggregations. *Amer. Naturalist* 114:871-883.

Kemp, W.M. and W.J. Mitsch. 1979. Turbulence and phytoplankton diversity: A general model of the paradox of plankton. *Ecol. Model.* 7:201-222.

Kemp, W.M. and W.R. Boynton. 1980. Influence of biological and physical factors on dissolved oxygen dynamics in an estuarine system: Implications for measurement of community metabolism. *Estuar. Coast. Mar. Sci.* 11:407-431.

Boynton, W.R., W.M. Kemp, and C.B. Osborne. 1980. Benthic nutrient fluxes in the turbid zone of a coastal plain estuary, pp. 93-109. In V. Kennedy (ed.) *Estuarine Perspectives*. Academic Press, NY.

Kemp, W.M., M. Lewis, J. Cunningham, J.C. Stevenson & W. Boynton. 1980. Microcosms, macrophytes and hierarchies: Environmental research in the Chesapeake Bay, pp. 911-939, In: J. Giesy (ed.) *Microcosm Research in Ecology*. ERDA Conf. Ser., NTIS, Springfield, VA.

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- Jones, T.W., W.M. Kemp, J.C. Stevenson, J.C. Means. 1982. Degradation of atrazine in estuarine water/sediment systems and selected soils. *J. Environ. Qual.* 11:109-115.
- Kemp, W.M., R.L. Wetzel, W.R. Boynton, C. D'Elia and C. Stevenson. 1982. Nitrogen cycling at estuarine interfaces, pp. 209-220. In V.S. Kennedy (ed) *Estuarine Comparisons*. Academic Press, NY.
- Boynton, W.R., W.M. Kemp, C.W. Keefe. 1982. A comparative analysis of nutrients and other factors influencing estuarine phytoplankton production, pp. 209-230. In V.S. Kennedy (ed) *Estuarine Comparisons*. Academic Press, New York.
- Kemp, W.M., W.R. Boynton, K. Limburg. 1982. The influence of natural resources and demographic factors on the economic production of nations, pp. 827-839. In W.J. Mitsch, R.W. Bosserman, J.M. Klopatic (eds.). *Energy and ecological modeling*. Elsevier, Amsterdam.
- Boynton, W., W.M. Kemp, A. Hermann, J. Kahn, T. Schueler, S. Bollinger, S. Longergan, J. Zucchetto. 1982. The decline of submerged macrophyte systems in Chesapeake Bay: Modeling the eco/energetic and socio/ economic implications, pp. 441-454. In: W. Mitsch, R. Bosserman, J. Klopatic (eds). *Energy and ecological modeling*. Elsevier, Amsterdam.
- Kemp, W.M., J.C. Means, T.W. Jones, J.C. Stevenson. 1982. Herbicides in Chesapeake Bay and the effects on submerged aquatic vegetation, pp. 503-567. In *Chesapeake Bay Program Technical Studies: A Synthesis*, U.S. EPA, Washington, D.C.
- Lewis, M.R., W.M. Kemp, J.J. Cunningham, J.C. Stevenson. 1982. A rapid technique for preparation of aquatic macrophyte samples for measuring  $^{14}\text{C}$  incorporation. *Aquatic Botany*. 13:203-207.
- Kemp, W.M. 1983. Seagrass communities as a coastal resource. *Mar. Techn. Soc. J.* 17:3-5.
- Kemp, W.M., W.R. Boynton, J.C. Stevenson, R.R. Twilley and J.C. Means. 1983. The decline of submerged vascular plants in upper Chesapeake Bay: Summary of results concerning possible causes. *Mar. Techn. Soc. J.* 17:78-89.
- Kemp, W.M., W. Boynton and A. Hermann. 1983. A simulation modeling framework for analysis of estuarine ecosystems: The case of submerged vascular plants in upper

- Chesapeake Bay, pp. 131-158. In: K. Turgeon (ed.) Marine ecosystems modeling. NOAA Publ., Washington, D.C.
- Yarbro, L.A., P.R. Carlson, T.R. Fisher, J.P. Chanton and W.M. Kemp. 1983. A sediment budget for the Choptank River Estuary in Maryland, USA. *Estuar. Coast. Shelf Sci.* 17:555-570.
- Kemp, W.M. and W.R. Boynton. 1984. Spatial and temporal coupling of nutrient inputs to estuarine primary production: The role of particulate transport & decomposition. *Bull. Mar. Sci.* 35:522-535.
- Kemp, W.M., W.R. Boynton, R.R. Twilley, J.C. Stevenson, and L.G. Ward. 1984. Influences of submersed vascular plants on ecological processes in upper Chesapeake Bay, pp. 367-394, In V.S. Kennedy (ed.) Estuaries as filters. Academic Press, New York.
- Cunningham, J.J., W.M. Kemp, J.C. Stevenson and M.R. Lewis. 1984. Temporal responses of the macrophyte, *Potamogeton perfoliatus* L., and its associated autotrophic community to atrazine exposure in estuarine microcosms. *Estuaries.* 7:519-530.
- Jenkins, M. C. and W. M. Kemp. 1984. The coupling of nitrification and denitrification in two estuarine sediments. *Limnol. Oceanogr.* 29: 609-619.
- Ward, L.G., W.M. Kemp and W.R. Boynton. 1984. The influence of water depth and submerged vascular plants on suspended particulates in a shallow estuarine embayment. *Mar. Geol.* 59:85-103.
- Kemp, W.M., W.R. Boynton, J.J. Cunningham, J.C. Stevenson, T.W. Jones, J.C. Means. 1985. Effects of atrazine and linuron on photosynthesis and growth of macrophytes, *Potamogeton perfoliatus* L. & *Myriophyllum spicatum* L., in an estuarine environment. *Mar. Env. Res.* 16: 255-280.
- Boynton, W.R. and W.M. Kemp. 1985. Nutrient regeneration and oxygen consumption by sediments along an estuarine salinity gradient. *Mar. Ecol. Progr. Ser.* 23:45-55.
- Kahn, J.R. and W.M. Kemp. 1985. Economic losses association with the degradation of an ecosystem: The case of submerged aquatic vegetation in Chesapeake Bay. *J. Econ. Environ. Mgmt.* 12:246-263.
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- Kemp, W.M., L. Murray, J. Borum and K. Sand-Jensen. 1987. Diel growth in eelgrass, *Zostera marina*. *Mar. Ecol. Progr. Ser.* 41:79-86.
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- Caffrey, J. M. and W. M. Kemp. 1989. Nitrogen cycling in sediments with estuarine populations of *Potamogeton perfoliatus* and *Zostera marina*. *Mar. Ecol. Progr. Ser.* 66: 147-160.
- Borum, J., L. Murray, W.M. Kemp. 1989. Aspects of nitrogen acquisition and conservation in eelgrass plants. *Aquat. Bot.* 35: 289-300.

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- Kemp, W. M., P. A. Sampou, J. M. Caffrey, M. Mayer, K. Henriksen and W. R. Boynton. 1990. Ammonium recycling versus denitrification in Chesapeake Bay sediments. *Limnol. Oceanogr.* 35: 1545-1563.
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- Caffrey, J. M. and W. M. Kemp. 1990. Nitrogen cycling in sediments with estuarine populations of *Potamogeton perfoliatus* L. and *Zostera marina* L. *Mar. Ecol. Progr. Ser.* 66: 147-160.
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- Kemp, W.M., P.A. Sampou, J. Garber, J. Tuttle, W.R. Boynton. 1992. Seasonal depletion of oxygen from bottom waters of Chesapeake Bay: Relative roles of benthic and planktonic respiration and physical exchange processes. *Mar. Ecol. Progr. Ser.* 85: 137-152.
- Murray, L. W. C. Dennison, and W. M. Kemp. 1992. Nitrogen versus phosphorus limitation for growth of an estuarine population of eelgrass (*Zostera marina* L.). *Aquat. Bot.* 44: 83-100.
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- Neundorfer, J. V. and W. M. Kemp. 1993. Nitrogen versus phosphorus enrichment of brackish waters: Response of *Potamogeton perfoliatus* and its associated algal communities. *Mar. Ecol. Progr. Ser.* 94: 71-82.

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- Madden, C. J. and W. M. Kemp. 1996. Ecosystem model of an estuarine submersed plant community: Calibration and simulation of eutrophication responses. *Estuaries*. 19 (2B): 457-474. (CEES Contrib. No. 95-2653).
- Boynton, W. R., L. Murray, J. Hagy, C. Stokes and W. M. Kemp. 1996. A comparative analysis of eutrophication patterns in a temperate coastal lagoon. *Estuaries*. 19 (2B): 408-421. (CEES Contrib. No. 95-2622).
- Petersen, J., C.-C. Chen and W. M. Kemp. 1997. Scaling aquatic primary productivity: Experiments under nutrient and light limited conditions. *Ecology* 78: 2326-2338.
- Kemp, W. M., E. M. Smith, M. Marvin-DiPasquale and W. R. Boynton. 1997. Organic carbon-balance and net ecosystem metabolism in Chesapeake Bay. *Mar. Ecol. Progr. Ser.* 150: 229-248.

- Chen, C.-C., J. Petersen and W. M. Kemp. 1997. Spatial and temporal scaling of periphyton growth on walls of estuarine mesocosms. *Mar Ecol Prog Ser* 155: 1-15.
- Petersen, J. E., L. Sanford and W. M. Kemp. 1998. Coastal plankton responses to turbulent mixing in experimental ecosystems. *Mar. Ecol. Progr. Ser.* 171: 23-41.
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- Petersen, J. E., J. Cornwell and W. M. Kemp. 1999. Implicit scaling in the design of enclosed experimental aquatic ecosystems. *Oikos* 85: 3-18.
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- \*Boynton, W.R., W. M. Kemp. 2008. Nitrogen in estuaries. In: D. Capone, E. Carpenter, D. Bronk, M. Mulholland (eds.) *Nitrogen in the marine environment*. Academic Press, New York (In press).
- \*Ball, W., D. Brady, M. Brooks, R. Burns, B. Cuker, D. Di Toro, T. Gross, W.M. Kemp, L. Murray, R. Murphy, E. Perlman, M. Piasecki, J. Testa). 2008. A prototype system for multi-disciplinary shared cyberinfrastructure—Chesapeake Bay Environmental Observatory (CBEO). *J. Hydrol. Eng., ASCE* (in press).
- \*Testa, J. and W.M. Kemp. 2008. Regional, seasonal, and inter-annual variability of biogeochemical processes and physical transport in a partially stratified estuary: Box-modeling analysis. *Mar. Ecol. Prog. Ser.* 356: 63-79. (UMCES Contrib. #4125)
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## 2. Invited Book Chapters

Bayley, S.E., H.T. Odum and W.M. Kemp. 1976. Energy evaluation and management alternatives for Florida's east coast. *N. Amer. Wildl.* 41:87-104.

Walker, R.T., J.J. Zucchetto, W.M. Kemp and S.E. Bayley. 1976. Energy and diversity in natural and human systems, p 5-9. In T.E. Oliva and M. Peters (eds.), *General systems theory applications A genesis*. Soc. Gen. Syst. Res. Publ., Wash., D.C.

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- Boynton, W.R., W.M. Kemp and J.C. Stevenson. 1979. A research design for understanding and managing complex environmental resource systems, pp. 169-177 In R.R. Johnson and J.F. McCormick (eds.) Strategies for the protection and management of wetlands and other riparian ecosystems. U.S. Dept. Agriculture, Forest Service, GTR-WO-12, Washington, D.C.
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### C. Contracts and Grants

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- \*Kemp, W.M. Box-modeling analysis of the Corsica/Chester River estuarine system MD DNR. May 2007 – May 2008 (\$50,000).
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"Denitrification and related processes in the sediments of Patuxent estuary. NOAA, MD  
Sea Grant College, Jan. 1983 - Jun. 1985. (\$72,200).
- Boynton, W.R. and W.M. Kemp. Chesapeake Bay Biological Monitoring: Ecosystem  
processes. MD Health Dept. OEP, Jul. 1984 - Jun. 1985. (\$172,149).
- Kemp, W.M. (L. Murray, Co-PI) "Seagrass-nutrient interactions" NOAA, MD Sea Grant  
College, Jun 1984 - Jun 1985. (\$5,000).
- Kemp, W.M. (Co-P.I., L. Murray) "Seagrass-nutrient interactions" NOAA, MD Sea Grant  
Coll. Jan. 1985 - Dec. 1985 (\$10,500).
- Kemp, W.M., W.R. Boynton and J.C. Stevenson (P.I.'s) "Light-nutrient interactions in  
relation to production of *Thalassia testudinum* in a tropical estuary. NSF International.  
Nov. 1983 - Sept. 1985 (\$12,720).
- Twilley, R.R. (P.I.), W.M. Kemp (Co-P.I.) "Denitrification in relation to Chesapeake Bay  
nitrogen budgets" U.S. EPA. Jul 1984 - Jun. 1985. (\$19,910).
- Kemp, W.M. and W.R. Boynton. Physical and biological processes regulating anoxia in  
Chesapeake Bay: Short-term dynamics regarding benthic and pelagic oxygen-consuming  
processes. NOAA Sea Grant College, Nov 1985-Dec 1986. (\$30,000).
- Kemp, W.M. and W.R. Boynton. Relative roles of benthic versus pelagic oxygen-consuming  
processes in the seasonal cycle of Chesapeake Bay anoxia. NOAA Sea Grant College,  
Jan 1986-Dec 1986 (\$45,000).
- Boynton, W.R. and W.M. Kemp. Chesapeake Bay biological monitoring: Ecosystem  
processes. Maryland Dept. of Health, Office of Environ. Programs. Jul. 1985-Jul. 1986  
(Renewal, \$182,000).
- Kemp, W.M. and W.R. Boynton. Relative roles of benthic versus pelagic oxygen-consuming  
processes in the seasonal cycle of Chesapeake Bay anoxia. NOAA Sea Grant College.  
Jan 1987-Dec 1987 (\$43,350).
- Kemp, W.M. Relative roles of benthic vs. pelagic oxygen-consuming processes in  
establishing and maintaining anoxia in Chesapeake Bay. NOAA (Sea Grant). July 1986-  
Dec 1987 (\$20,000).
- Boynton, W.R., W.H. Kemp. Chesapeake Bay biological monitoring: Ecosystem processes.  
MD Health Dept., OEP, July 1986-Jun 1987 (\$192,000 total; \$17,000 to WMK).
- Kemp, W.M. Responses of submerged aquatic vegetation to nitrogen vs. phosphorus  
fertilization: Resource management implications. Proctor and Gamble Co. (through  
Ches. Bay Trust), Jan-Dec 1987 (\$10,000).
- Kemp, W.M. Eutrophication of submerged aquatic vegetation in upper Chesapeake Bay:  
Nitrogen vs. phosphorus effects on growth. Water Resources Research Center (USGS).  
May 1987-Apr 1988 (\$21,700).
- Boynton, W.R. and W.M. Kemp. "Chesapeake Bay biological monitoring: Ecosystem  
processes" MDE, Jul 1987 - Jul 1988 (\$11,000 to WMK).
- Kemp, W.M. Potential for Restoration of submerged aquatic vegetation in upper Chesapeake  
Bay with forty percent reduction in nutrient inputs. USGS Water Resources Research  
Center. May 1988-Apr 1989 (\$14,400).
- Kemp, W.M. Integration of ecological processes relating nutrient enrichment to anoxia and  
trophic dynamics in Chesapeake Bay: A simulation study. NOAA Sea Grant College.  
Sep 1987-Dec 1989 (\$41,000).

Boynton, W.R., J. Garber, W.M. Kemp. "Chesapeake Bay water quality monitoring program: Ecosystem processes." MD Dept. Environ., Jul 1988- Jul 1989. (\$10,000 to WMK).

Kemp, W.M. and J. Caffrey. Influence of submersed vascular plants on cycling of nitrogen in aquatic sediments. NSF, BSR. Aug 1988-July 1989 (\$4,500).

Kemp, W.M., P.A. Sampou, J. Cornwell. Sediment data collection program: Denitrification and Anaerobic Processes. US EPA (via MDE). Apr 1988-Jun 1989 (\$260,000).

Boynton, W.R., J. Garber, W.M. Kemp. Chesapeake Bay water quality monitoring program: Ecosystem processes." MD Dept. Environment, Jul 1989- Jul 1990. (\$3,800 to WMK).

Kemp, W.M. and W.R. Boynton. Macrofaunal effects on nitrification and its coupling to denitrification in coastal marine sediments. NSF, Biol. Oceanogr. Jan 1989-Jun 1991. (\$138,000).

Kemp, W. M. Ecosystem modeling of planktonic and benthic processes in Chesapeake Bay. NOAA Sea Grant, Oct 1990-Jun 1991 (\$14,175).

Kemp, W.M., W.C. Dennison, L. Murray. Resurgence of submerged aquatic vegetation in Chesapeake Bay (1985-1988): A natural experiment to test eutrophication effects. Apr 1989-May 1990 (\$18,700).

Kemp, W.M., P.A. Sampou and J. Cornwell. Sediment data collection program: Denitrification and anaerobic processes. Renewal from USEPA (via MDE). May 1989-Apr 1990 (\$65,000).

Boynton, W.R., J. Garber, W.M. Kemp. "Chesapeake Bay water quality monitoring program: Ecosystem processes." MD Dept. Environ., Jul 1990- Jul 1991. (\$3,600 to WMK).

Kemp, W. M., S. Brandt and W. R. Boynton. Ecosystem models of the Patuxent River estuary relating nutrient and organic loading to production of selected fish populations. Maryland Governor's Council on Chesapeake Bay. Jun 1991- Dec 1992. (\$168,000).

Boynton, W. R., L. Murray and W. M. Kemp. Development of a management action plan for Maryland's coastal bays. Oct 1991-Oct 1992, 5 % annual effort (\$5,500 to HPEL).

Kemp, W. M., J. Gooch and J. Baker. Ecosystem processes related to transport, partitioning and effects of organic contaminants in Chesapeake Bay: A simulation modeling study. Feb 1992-Feb 1993, 10% annual effort (\$60,000; \$45,000 to HPEL).

Kemp, W. M. Community metabolism of Chesapeake Bay: An index of ecosystem trophic condition and potential O<sub>2</sub> depletion. NOAA Sea Grant. Jan 1992-Dec 1993 (\$74,600).

Kemp, W. M. and J. Baker. Ecosystem processes related to transport, partitioning and effects of organic contaminants in Ches Bay: A simulation modeling study. NOAA, Feb 1993-Feb 1994, 10% annual effort (~\$105,000; \$65,000 to HPEL).

Kemp, W. M., S. Brandt and W. R. Boynton. Ecosystem models of the Patuxent River estuary relating nutrient and organic loading to production of selected fish populations. US EPA CBPO Jan 1993- Dec 1993. (~\$148,000).

Dennison, W., W. Kemp, L. Murray and J. Stevenson. The role of light attenuation processes and plant-sediment interactions in determining seagrass survival. NOAA--Estuarine Habitat Research Program Aug 1990-Jul 1993. (\$2,500/yr to WMK).

Kemp, W. M. Community metabolism of Chesapeake Bay: Importance of shallow water regions. NOAA Sea Grant. Jan 1994-Dec 1995 (\$96,600, 15% annual effort).

Kemp, W. M., S. Brandt and W. Boynton. Ecosystem models of the Patuxent River estuary relating nutrient and organic loading to production of selected fish populations. US EPA CBPO May 1994- Apr 1995. (~\$175,000).

- Kemp, W.M., T. Malone, W. Boicourt (and 11 others). Responses of a major land-margin ecosystem to changes in terrestrial inputs: internal nutrient cycling, production and export. NSF, BSR (LMER Initiative). Sep 1988-Aug 1993, plus Sep 1993-Aug 1994. (\$2,600,000 total; \$345,000 to WMK).
- Kemp, W. M. Chesapeake Bay ecosystem modeling program: Ecosystem process models. US EPA, CBPO May 1995- Apr 1999. (\$75,000/year).
- Boynton, W. R., W. C. Boicourt, E. Houde, W. M. Kemp and M. Roman. Trophic interactions in estuarine systems (TIES). NSF LMER Sep 94-Aug 2000 (\$3,000,000, ~\$60,000/yr for WMK).
- Kemp, W. M. and J. C. Cornwell. Role of benthic communities in the cycling and balance of nitrogen in Florida Bay," US EPA \$50,000. (May 1999- May 2000).
- Kemp, W. M. Modeling planktonic production, respiration and microbial dynamics. U. S. Army Corps of Engg., Waterways Expt. Station, Dec '99- Dec '00 (\$15,000, ~10% annual effort).
- Kemp, W. M. and W. R. Boynton. Water quality and living resources in Chesapeake Bay: Modeling potential responses to nutrient loading reductions. UMCES Integration and Application Network (IAN), Jul '00- Jul '01, (\$45,000, ~10% annual effort).
- Cornwell, J and W. M. Kemp. Nitrogen and phosphorus biogeochemistry of Florida Bay sediments. NOAA Coastal Oceans Progr. Aug 00 - Sep'02, (\$236,000, 10% ann. effort).
- Kennedy, V. et al. (with 18 other PIs) A multi-scale experimental ecosystem research center. EPA--Centers for Excellence in Environmental Research. May 1992-July 2003, (WMK portion  $\approx$  \$60,000/yr, ~20 % annual effort).
- Kemp, W. M., L. Murray, J. Cornwell. Seagrass-nutrient interactions: Role of spatial pattern. MD Sea Grant College, Feb '00 - Feb '02 (wmk portion ~\$41,000/yr plus graduate student stipend, ~15% annual effort).
- Miller, T. et al. Ecosystem variability and estuarine fisheries: A synthesis. NOAA COP, Oct 2002 – Sep 2004, (\$1,180,00, wmk portion ~\$170,00). ~15% annual effort)
- Ball, W., D. DiToro, W.M. Kemp, T. Gross, Y. Amir, R. Burns. Concept Development toward a Collaborative Large-Scale Engineering Analysis Network for Environmental Research (CLEANER) with a Focus on the Chesapeake Bay. NSF BES Environ. Engineering. "Planning grant" Sep'04–Dec'05 (wmk portion ~\$5,000, ~2% ann. effort).
- Kemp, W. M., L. Murray, J. Cornwell. Seagrass-nutrient interactions: Role of spatial pattern. MD Sea Grant College, Feb '03 - Feb '05 (wmk portion ~\$41,000/yr plus graduate student stipend, ~15% annual effort).
- Fisher, T, et al. Integrated modeling system of watershed and estuarine ecology for management of the Patuxent Basin. MD Dept. of Environment, Sep '02 – Jun '05 (wmk portion ~ \$15,000/yr, ~2.5% annual effort).
- Breitburg, D., R. Newell, M. Kemp, M. Luckenbach. Predicting effects of changing oyster abundance on managed finfish and their prey through retrospective analysis and ecosystem modeling. US EPA Chesapeake Bay Program. Jan '04 – Oct '06 (\$141,000 total, wmk portion ~\$18,000 , ~5% annual effort).
- Kemp, W. M. Monie Bay NERR Site literature review and synthesis. MD DNR (from NOAA, NERR). May 2005 – June 2006 (\$45,556).
- Testa, Jeremy (W.M. Kemp). Water quality and nutrient cycling in the Patuxent River estuary: Assessing the role of tidal marshes. NOAA NERR Fellowship Program. Apr 2005 – May 2006 (\$20,000).

- Kemp, W.M. Box-modeling analysis of the Corsica/Chester River estuarine system MD DNR. May 2006 – May 2007 (\$50,000).
- Kemp, W.M., L. Murray. Large-scale restoration of submerged aquatic vegetation in mesohaline Chesapeake Bay: A design-with-nature approach. NOAA Chesapeake Bay Office, Oct 2006 – Sep 2007 (\$81,436 awarded).
- Murray, L., W.M. Kemp. Production and field planting of vegetative tubers for restoration of *Potamogeton perfoliatus* and *Stucknia pectinata* in Chesapeake Bay US Army Corps of Engineers, Engineering Research and Development Center,, May 2006 – Apr 2007 (\$89,500).
- Kemp, W.M. Plankton controls on suspended sediments and water clarity: Empirical models describing interactions in Chesapeake Bay. MD Dept of Environment, Mar 2004 – Mar 2007 (\$150,000).

#### **D. Seminars and Presentations**

##### 1. Invited Seminars:

- University Maryland, Zoology Dept., College Park, "Quantitative analysis of ecological food webs." (Apr 1977).
- US Geological Survey, Reston, VA. "Systems analysis of the Potomac River ecosystem" (Jun 1977).
- Johns Hopkins University, Baltimore, MD. Energy analysis for natural resources management. (Oct 1977).
- Univ. Maryland, Botany Dept., College Park. "General systems theory and ecological modeling" (Nov, Dec 1977).
- Illinois Inst. Technology, Chicago, IL. Systems analysis of power plant ecosystems (Feb. 1978).
- Univ. Pennsylvania, Philadelphia. Systems ecology and Chesapeake Bay (Apr 1978).
- Cornell University, Ithaca. Systems analysis in environmental research (Dec 1978).
- Univ. Maryland (Civil Eng.) College Park. Systems analysis of primary production in Chesapeake Bay (Feb 1979).
- Virginia Institute Marine Science, Gloucester Pt., VA. Submerged aquatic vegetation in upper Chesapeake Bay (Mar 1979).
- US Environmental Protection Agency, Ocean City, MD. Submerged aquatic vegetation in Chesapeake Bay (May 1980).
- Univ. Maryland (MEES 631) Solomons, MD. Estuarine nutrient cycling (Apr 1980).
- College of William and Mary (VIMS), Gloucester Pt, VA. Marine ecosystems analysis (Sep 1981).
- College of William and Mary (VIMS), Gloucester Pt, VA. Examples of marine ecosystem modeling (Nov 1981).
- Univ. of Connecticut, Groton, CT. Models and experiments of competition for light and nutrients among autotrophs in a seagrass ecosystem (Apr 1982).
- Salisbury State College, Salisbury, MD. Estuarine ecosystems analysis with special reference to submerged aquatic plants in Ches Bay (Feb 1982).
- Salisbury State College, Salisbury. "Introduction to Marine and Estuarine Chemistry," Undergrad. Marine Sci. Course (Feb 1983).

University of Kiel, Germany. "New versus recycled nutrients relative to estuarine primary production," Oceanography Sem. Ser. (Jul 1983).

University of Stockholm, Sweden. Decline of seagrasses in Chesapeake Bay: Possible causes and resource management options. Zool. Dept., Askø Lab (Jul 1983).

University of Copenhagen, DK. "Nutrient-light effects on seagrass growth and survival in Chesapeake Bay," Freshwater Biol. Lab. (Jul 1983).

Bigelow Laboratory, Boothbay, ME. "Nitrogen cycling in estuarine sediments," Seminar Series (Aug 1984).

Univ. Maryland, College Park. "Nitrogen cycling in relation to estuarine primary production," Microbiol. Dept. (Nov 1984).

Woods Hole Oceanographic Institute, Woods Hole, MA. "Ecological implications of seagrass decline: Lessons from Ches Bay" (Oct 1985).

Woods Hole Oceanographic Institute, Woods Hole, MA. "The role of eutrophication in the decline of submerged aquatic plants" (Oct 1985).

Massachusetts Institute of Technology, Cambridge, MA. "The decline of seagrasses in Chesapeake Bay: Models and Experiments" (Apr 1986).

Salisbury State University, "Chesapeake Bay Anoxia," Lecture, Salisbury, MD (Sept 1986).

Salisbury State College, Salisbury, MD. "Ecosystem modeling in Chesapeake Bay research" (Sep 1986).

Univ. Maryland, College Park. "Productivity in relation to nitrogen cycling in the Patuxent estuary" (Oct 1986).

State Univ. of New York, Stony Brook. "Carbon, oxygen and nitrogen dynamics in mesohaline Chesapeake Bay," Marine Sciences Research Center (Apr 1987).

University of Maryland, CBL. "Nitrogen cycling in Ches Bay sediments (Apr 1987).

University of Virginia, Dept. Environmental Sciences. "Role of physical and biological processes in coupling of benthic and pelagic processes in mesohaline Chesapeake Bay" (Feb 1988).

Syracuse University, School of Forestry and Environ. Resources. "An ecosystem analysis of anoxia in Chesapeake Bay" (Apr 1988).

Australian Office of Supervising Scientists, Jabiru, NT. "The decline and resurgence of SAV in Chesapeake Bay" (Aug 1988).

Australian CSIRO, Perth, WA. "Causes and consequences of the seagrass decline in Chesapeake Bay" (Aug 1988).

Salisbury State University (Smith Is.) "Nutrient cycling in Chesapeake Bay," Guest Lecturer, Biol. 502 (Aug 1989).

Marine Biological Laboratory, Woods Hole, MA. "Perspective on nitrogen cycling in Chesapeake Bay: Modulation of Terrigenous inputs to the sea," MBL/BUMP Seminar Series (Mar 1990).

University Rhode Island, Graduate School of Oceanography, Narragansett. "Seasonal dynamics and integrated budgets of oxygen in Chesapeake Bay" (Mar 1990).

Marine Ecology Institute, University of Stockholm, Sweden, "Biogeochemical processing of nutrient and organic carbon at the land-sea interface" (Sep 1991).

Danish National Environmental Research Institute, Silkeborg, "Nitrogen dynamics and nitrogen budgets in estuaries," Seminar (Oct 1991).

US EPA Tampa Bay Estuary Program, Tampa, Florida. "Simulation modeling of estuarine ecosystem processes," (Feb 1992).

- Cornell University, Dept Ecology and Systematics, Ithaca, NY. "Scale effects on benthic-pelagic interactions in aquatic ecosystems" (Mar 1992).
- Assoc. Ecosystem Research Ctrs., Smithsonian Inst., Washington, D. C. "Land-sea interactions at the global scale: patterns and processes of coastal eutrophication" Invited presentation (Nov 1993).
- University of Maryland, CP. MEES 608, "Advances in marine ecology" (Sebens) "Numerical modeling of coastal ecosystems" (Sep 1993).
- Simulation modeling of benthic-pelagic interactions," HPEL Seminar Series, Cambridge (July 1994).
- Univ. California, Davis. Benthic-pelagic mesocosm studies in MEERC, (Aug 1994).
- Horn Point Lab Seminar Series, "Mixed-depth regulates net ecosystem production" (Sep 2000).
- Institute of Ecosystem Studies, Millbrook, NY. "Eutrophication and trophic transfer efficiency in aquatic ecosystems." (Mar 2002).
- Kemp, W.M. 2004. Linking nutrient enrichment and fisheries harvest in coastal ecosystems: implications for integrated estuarine ecosystem management. Plenary Speaker. Estuarine, Coastal Science Association/Estuarine Research Federation meeting. Balina, NSW, Australia (June).
- Kemp, W.M. 2004. Eutrophication and fisheries harvest in coastal ecosystems. Invited seminar. UMCES, Chesapeake Biological Laboratory (December).
- Kemp, W.M. 2005. Linking nutrient enrichment and fisheries production in coastal marine ecosystems. UMCES, Horn Point Laboratory (February).
- Kemp, W.M., L. Murray. 2006. SAV Restoration reconsidered: Designing with nature. Invited presentation before the Chesapeake Bay Program, Living Resources Subcommittee, SAV Work Group (January).
- Kemp, W.M., J. Testa. 2006. Inferring biogeochemical and ecological processes from "observatory" data: Example from the Patuxent River estuary. Invited seminar, UMCES Appalachian Laboratory (February).
- Kemp, W. M. and J. Testa. 2006. Response of estuarine ecosystem to climate variations and nutrient input reduction: The Patuxent River estuary. Invited seminar, Dept. Geography and Environmental Science, Johns Hopkins University, Baltimore (October)
- Kemp, W. M. and J. Testa. 2006. Ecological and physical responses to climate variability and nutrient management in the Patuxent River estuary. Virginia Institute of Marine Science, Gloucester Point (November).

## 2. Presentations at Professional Meetings (Unpublished)

- Kemp, W.M. Studies of the metabolism and structure of power plant canal ecosystems on the Gulf Coast of Florida. Presented at Second Thermal Ecology Sympos. Savannah R. Ecol. Lab., August, GA. (Aug 1975).
- Kemp, W.M. Photosynthesis and respiration of power plant canal ecosystems and their plankton component. Amer. Soc. Limnol. Oceanogr. Savannah, (Jun 1976).
- Kemp, W.M., W.R. Boynton and C. Osborne. Dissolved oxygen dynamics of an estuarine ecosystem near Calvert Cliffs, Chesapeake Bay. Atl. Est. Res. Soc., Atlantic Beach, N.C. (Apr 1977).

- Kemp, W.M., J.C. Stevenson, and W.R. Boynton. Historical data and conceptual models investigating the role of submerged aquatic vegetation in the Chesapeake Bay. ASLO, Corpus Christi, TX (Jan 1978).
- Cunningham, J.J., M. Lewis, W.M. Kemp and J.C. Stevenson. Effects of herbicide stress on aquatic microcosm communities with submerged macrophytes. Savannah River Ecology Lab., Augusta, GA (Nov 1978).
- Boynton, W.R., W.M. Kemp, and J.C. Stevenson. A research design for understanding and managing complex environmental resource systems. US Dept. Interior, Calloway Gardens, GA (Dec 1978).
- Kemp, W.M. and W.R. Boynton. Nutrient budgets in a coastal plain estuary. Amer. Soc. Limnol. Oceanogr. Stonybrook, NY (Jun 1979).
- Osborne, C.G., K. Kaumeyer, W.R. Boynton and W.M. Kemp. Nutrient dynamics of the Patuxent Estuary near Chalk Point Power Plant. Atl. Estuar. Res. Soc., Rehobeth Beach, Del. (Apr 1979).
- Lewis, M.R., W.M. Kemp, J.C. Stevenson, and J.J. Cunningham. Ecosystem metabolism and community homeostasis. Amer. Soc. Limnol. Oceanogr. (Poster), Stonybrook, NY (Jun 1979).
- Boynton, W.R., W.M. Kemp and C.G. Osborne. Benthic nutrient fluxes in the sediment-trap portion of the Patuxent Estuary. Estuar. Res. Fed., Jekyll Island, GA (Oct 1979).
- Meteyer, M., W. Boynton, J. Means, J.C. Stevenson and W.M. Kemp. Water and habitat quality in relation to distribution and abundance of SAV in upper and middle Ches. Bay. Atl. Estuar. Res. Soc., Virginia Beach, VA (Nov 1980).
- Schueler, T.R., W.M. Kemp et al. Modeling watershed hydrology and chemical transport to assess the impact of agricultural runoff on water quality and macrophyte production. AERS (Nov 1980).
- Staver, K.W., W.M. Kemp and W.R. Boynton. Interactions between macrophytes and their epiphytic community as related to plant distribution and abundance in upper Chesapeake Bay. AERS (Nov 1980).
- Kaumeyer, K.R., W.M. Kemp et al. In situ measurements of nutrient uptake kinetics in an estuarine macrophyte community. AERS (Nov 1980).
- Metz, J.J., W.M. Kemp et al. Ammonium uptake kinetics for aquatic macrophytes in upper Chesapeake Bay. AERS (Nov 1980).
- Jones, T.W., W.M. Kemp, J.C. Stevenson. Uptake of atrazine by *Potamogeton perfoliatus* and associated photosynthetic response. AERS (Nov 1980).
- Cunningham, J.J., W.M. Kemp et al. Response of brackish water macrophytes to herbicide stress in microcosm experiments. AERS (Nov 1980).
- Bollinger, S., W.M. Kemp, W.R. Boynton. Competition for light and nutrients among autotrophic groups in an estuarine environment: An ecosystem simulation model. AERS (Nov 1980).
- Marbury, G.D., W.M. Kemp and J.C. Stevenson. Nitrogen transformations in sediments of submerged aquatic vegetation communities. AERS (Nov 1980).
- Lubbers, L., W.M. Kemp et al. Comparative structure of fish communities associated with submerged aquatic vegetation. AERS (Nov 1980).
- Bunker, S.M., W.R. Boynton and W.M. Kemp. Ration, assimilation and respiration of small fish associated with estuarine macrophyte communities. AERS (Nov 1980).

- Yarbro, L., P.R. Carlson, T.R. Fisher, R. Crump, W.M. Kemp. Sources of suspended particulate material in the Choptank River Estuary. Estuar. Res. Federation, Newport, Oregon (Oct 1981).
- Kemp, W.M. and W.H.B. Smith. The impact of power plant operation on a coastal ecosystem: Calibration and verification of ecological simulation models. Int. Soc. Ecol. Model. "Energy and Ecological Modeling", Louisville, KY. (May 1981).
- Ward, L.G., W.R. Boynton, W.M. Kemp. Dynamics of suspended material transport in shallow subtidal environments dominated by submerged macrophyte communities. "Dynamics of Turbid Coastal Environments" Bedford Instit. Halifax, N.S. (Dec 1981).
- Means, J.C., W.R. Boynton, N. Kaumeyer, W.M. Kemp, J.C. Stevenson. Distribution of selected herbicides in upper Chesapeake Bay. Amer. Chem. Soc. Washington, D.C. (Jan 1981).
- Terlizzi, D.E., M.R. Lewis, E.P. Karlander, J.C. Stevenson, and W.M. Kemp. Nitrite accumulation in *Potamogeton perfoliatus*: Evidence for dissimilatory nitrate reduction. Amer. Soc. Limnol. Oceanogr. Milwaukee, WI. (Jun 1981).
- Twilley, R.R., W.M. Kemp, K.W. Staver, J.C. Stevenson, W.R. Boynton, J.C. Means. Nutrient enrichment and the decline of submerged vegetation in Chesapeake Bay: An experimental investigation. Estuar. Res. Federation, Newport, Oregon (Oct 1981).
- Stevenson, J.C., W.R. Boynton, W.M. Kemp, D. Marbury, K. Kaumeyer, J. Metz, M. Jenkins, M. Shenton, R. Twilley. Nitrogen cycling in brackish submerged macrophytes communities. ERF, Newport, Oregon (Oct 1981).
- Goldsborough, W.J. and W.M. Kemp. Light-shade adaptation in the submerged aquatic plant, *Potamogeton perfoliatus*: Changes in pigments, morphology and photosynthesis-irradiance relations. AERS. Richmond, VA. (Nov 1982).
- Staver, K.W. and W.M. Kemp. Nutrient enrichment, algal growth and the response of submerged vascular plants in upper Chesapeake Bay: An experimental approach. Atl. Est. Res. Soc. Richmond, VA. (Nov. 1982).
- Twilley, R.R., P. Romare, G. Ejdung and W.M. Kemp. Effects of aquatic plant decomposition on estuarine water quality. AERS Baltimore, MD (May 1982).
- Jenkins, M. and W.M. Kemp. Coupling of nitrification and denitrification in estuarine sediments. Atl. Est. Res. Soc. Baltimore, MD. (May 1982).
- Twilley, R.R., W.M. Kemp, W.R. Boynton, K.W. Staver, J.C. Stevenson. Effects of nutrient enrichment on aquatic macrophyte production. Amer. Soc. Limnol. Oceanogr. Raleigh, NC (Jun 1982).
- Kemp, W.M. and W.R. Boynton. Sediment nutrient regeneration and diagenic processing along the salinity gradient of the Patuxent River estuary. Amer. Soc. Limnol. Oceanogr., St. Johns, Newfoundland, Can. (Jun 1983).
- Twilley, R.R., M. Jenkins, W.M. Kemp, J.C. Stevenson, W.R. Boynton. Measurements of nitrification and denitrification in the sediments of the Choptank River estuary. ASLO, St. Johns, Newfoundland, Can. (Jun 1983).
- Boynton, W.R. and W.M. Kemp. Long-term patterns of phytoplankton productivity and biomass in Chesapeake Bay. ASLO, St. Johns, Newfoundland, Can. (Jun 1983).
- Kemp, W.M. et al. Nitrification and denitrification in estuarine and coastal sediments. Amer. Geophys. Union, Baltimore (Jun 1983).

- Kemp, W.M., A. Hermann, W.R. Boynton. Competition for light and nutrients in a seagrass community: An ecosystem simulation model. *Ecol. Soc. Amer. (AIBS, ISEM)*, Grand Forks, ND (Aug 1983).
- Boynton, W.R., J.A. Mihursky, W.M. Kemp, C.D'Elia, D. Heinle. Evaluation of long-term ecosystem trends in a coastal plain estuary. *Estuar. Res. Fed.*, Va Beach, VA (Oct 1983).
- Kemp, W.M. Submerged aquatic vegetation in Chesapeake Bay: A summary of recent findings. *Estuar. Res. Fed.*, Virginia Beach, VA (Oct 1983).
- West, K., L. Murray & M. Kemp. Downward transport of O<sub>2</sub> through vascular system of a submersed estuarine plant. *AERS*, Salisbury, MD (Oct 1984).
- Kemp, W.M. and W.R. Boynton. New versus regenerated nitrogen relative to estuarine primary production. *Atl. Estuar. Res. Soc.*, Salisbury, MD (Oct 1984).
- Kemp, W.M., T.C. Malone and W.R. Boynton. Wind forcing of the pycnocline and response of estuarine phytoplankton. *ASLO*, San Francisco (Dec 1984).
- Boynton, W.R. and W.M. Kemp. Spatial-temporal characteristics of sediment oxygen demand in estuaries. *ASLO*, San Francisco (Dec 1984).
- Twilley, R.R., W.M. Kemp. Significance of sediment denitrification to N-budgets of two Chesapeake Bay tributaries. *ASLO*, San Francisco (Dec 1984).
- Sellner, K., R. Magnien, W. Boynton and W.M. Kemp. Relationships between nutrients and plankton in Chesapeake Bay. II. Phytoplankton dynamics and the fate of primary production. *ASLO*, Narragansett, RI (Jun 1986).
- Kemp, W.M. and W.R. Boynton. Simulation studies of the decline, restoration and protection of submersed macrophyte habitats in Chesapeake Bay. *Intern. Soc. Ecol. Soc. (with ESA, AIBS, ISEM)*. Syracuse, NY (Aug 1986).
- Caffrey, J., L. Murray, W.M. Kemp. Influence of submersed macrophytes on nitrogen cycling in estuarine sediments. *ERF*, New Orleans (Oct 1987).
- Kemp, W.M., and T. Randall. Ecosystem simulation of processes relating nutrient enrichment to anoxia and trophic dynamics in Chesapeake Bay. *Estuar. Res. Fed. Meeting*, New Orleans (Oct 1987).
- Day, J., . . . W.M. Kemp . . . L. Murray. Dynamics of a tropical seagrass community in Laguna de Terminos, Mexico. *ERF*, New Orleans (Oct 1987)).
- Garber, J., W. Boynton, and M. Kemp. Benthic-pelagic coupling in temperate estuaries. *Estuar. Res. Fed. Meeting*, New Orleans (Oct 1987).
- Kemp, W.M. et al. "Balance between ammonium regeneration and denitrification in mesohaline Chesapeake Bay." *Chesapeake Bay Research Conference*, CRC. Baltimore, MD (Mar 1988).
- Kemp, W.M. "Benthic-pelagic coupling in mesohaline Chesapeake Bay: Particle deposition" *CRC Conference*. Baltimore, MD (Mar 1988).
- Kemp, W.M. "Relative roles of benthic vs. planktonic processes and physical vs. biological factors in seasonal oxygen depletion of Chesapeake Bay." *Atlantic Estuar. Res. Soc.*, Solomons (Oct 1988).
- Sampou, P.A., T. Randall and W.M. Kemp. "Planktonic respiration in Chesapeake Bay: Role in seasonal oxygen depletion." *Chesapeake Research Conference* (Mar 1988).
- Neundorfer, J. and W. M. Kemp. "Nitrogen versus phosphorus nutrient enrichment effects on submerged aquatic vegetation," *Benthic Ecology Meetings*, Solomons, MD (Mar 1989).
- Rosman, L. and W. M. Kemp. "Nitrogen cycling in Chesapeake Bay sediments." *Benthic Ecology Meetings*, Solomons, MD (Mar 1989).

- Mayer, M. and W. M. Kemp. "Macrofaunal effects on nitrification potential of marine sediments." Benthic Ecology Meetings, Solomons, MD (Mar 1989).
- Neundorfer, J. and W. M. Kemp. "Relative responses of *Potamogeton perfoliatus* to nitrogen versus phosphorus fertilization," Estuar. Research Federation Meet., Baltimore, MD (Oct 1989).
- Mayer, M., T. Randall and W. M. Kemp. "Effects of polychaetes on sediment nitrogen cycling in marine sediments." Estuar. Research Fed Meet., Baltimore, MD (Oct 1989).
- Caffrey, J. M. and W. M. Kemp. "Interactions between the submersed macrophyte, *Potamogeton perfoliatus*, and N cycling in estuarine sediments." Estuar. Research Federation Meet., Baltimore (Oct 1989).
- Rosman, L. and W. M. Kemp. "Spatial and temporal patterns of nitrification and denitrification in Chesapeake Bay sediments." Estuar. Research Federation Meet., Baltimore, MD (Oct 1989).
- Kemp, W. M. and P. Johnson. "A simulation model of plankton trophic dynamics in the mesohaline region of Chesapeake Bay" Estuar. Research Federation Meet., Baltimore, MD (Oct 1989).
- Kemp, W. M. et al. "Benthic-pelagic coupling in Chesapeake Bay: The importance of redox conditions." ERF, Baltimore, MD (Oct 1989).
- Kemp, W. M. et al. "Estuarine modulation of nutrient transport from land to sea: Retention, assimilation and export." ERF, Baltimore, MD (Oct 1989).
- Kemp, W. M. et al. "The fate of nutrients and particulates in Chesapeake Bay." AAAS Meeting, New Orleans (Feb 1990).
- Mayer, M. S., W. M. Kemp and R. T. Randall. "Effects of burrow irrigation on nitrogen cycling in sediments." ASLO Meeting, Williamsburg, VA (June 1990).
- Kemp, W. M. and R. D. Bartleson. Preliminary ecosystem simulations of estuarine plankton-benthic interactions: The benthic submodel. Ches. Research Consortium Conf (Dec 1990).
- Bartleson, R. D., W.M. Kemp. Preliminary ecosystem simulations of estuarine plankton-benthic interactions: The planktonic submodel. Ches. Res. Consortium Conf. (Dec 1990).
- Mayer, M. S., L. Schaffner and W. M. Kemp. "Benthic metabolism and depth distribution of ammonium and nitrification potential in sediments from three different benthic communities." Ches. Research Consortium Conference (Dec 1990).
- Boynton, W. R., W. M. Kemp, J. H. Garber, J. L. W. Cowan, S. E. Stammerjohn, L. L. Matteson, F. M. Rohland and M. Marvin. "Long-term characteristics and trends of benthic oxygen and nutrient fluxes in the Maryland portion of Chesapeake Bay." Ches. Research Consortium Conference (Dec 1990).
- Kemp, W. M., E. Smith and W. Boynton. "Role of plankton community metabolism in regulating sedimentation of organic matter in a coastal environment," (Poster) BNL Symposium No. 37, Primary productivity and biogeochemical cycles in the sea, Upton, NY, (Jun 1991).
- Kemp, W. M. and W. R. Boynton. Processes of recycling, organic transformation and exchanges between uplands and the sea, Biennial ERF Meet, San Francisco (Nov 1991).
- Smith, E. M., and W. M. Kemp. "Temporal and spatial variability of Chesapeake Bay planktonic net community metabolism in relation to estuarine trophic dynamics," 11th ERF Meeting, San Francisco (Nov 1991).

- Bartleson, R. and W. M. Kemp. "Ecosystem simulation of estuarine planktonic-benthic interactions," 11th Biennial ERF Meeting, San Francisco (Nov 1991).
- Mayer, M., W.M. Kemp. "Polychaete impact on estuarine biogeochemical cycles: The role of *Loimia medusa* in nitrogen fluxes and transformations," ASLO, Santa Fe, NM (Jan 1992)
- Kemp, W. M., E. Smith, C. Madden and W. Boynton, "Role of plankton community metabolism in regulating sedimentation of organic matter in Chesapeake Bay," ECSA/ERF Conference, Plymouth, England (Sep 1992).
- Boynton, W. and W. M. Kemp. "Inputs, transformations and transport of nitrogen and phosphorus in Chesapeake Bay," Joint ECSA/ERF Estuarine Conference, Plymouth, England (Sep 1992).
- Boynton, W.R. and W.M. Kemp. Relationships between external forcings and ecosystem stocks and processes in Chesapeake Bay. Estuarine Res. Fed. Conf., Hilton Head, SC. (Nov 1993).
- Smith, E. , W. M. Kemp, C. Madden, K. Whipp, W. Boynton. Regulation of particulate organic deposition by plankton community metabolism in Spring. Estuarine Res. Fed. Conf., Hilton Head, SC. (Nov 1993).
- Kemp, W. M., E. Smith, C. Madden, J. Cornwell, M. Marvin, D. Capone, W. Boynton. Ecosystem metabolism and organic carbon balance in Chesapeake Bay. Estuarine Res. Fed. Conf., Hilton Head, SC. (Nov 1993).
- Madden, C. J., R. Bartleson and W. M. Kemp. Simulated ecosystem dynamics of the Patuxent estuary: Bottom-up versus top-down effects. Estuarine Research Fed. Conf., Hilton Head, SC. (Nov 1993).
- Madden, C. and W. M. Kemp. A simulation model of the Patuxent River estuarine littoral zone. Marine and Estuarine Shallow Water Sci. and Mgmt. Conf. Atlantic City, NJ (Mar 1994).
- Kemp, W. M. and R. Bartleson. Chesapeake Bay plankton-benthos ecosystem process model: Feedback effects on nutrient-oxygen relations. CRC Chesapeake Res. Conf. Norfolk, VA (Jun 1994).
- Madden, C. J. and W. M. Kemp. Eutrophication effects on SAV relative to habitat restoration goals: A modeling study. CRC Chesapeake Research Conf. Norfolk, VA (Jun 1994).
- Kucklick, J. R., C. Madden, J. Baker, W. M. Kemp, C. Chen, F. Ko. Modeling hydrophobic organic contaminant trophic transfer in the mesohaline Chesapeake Bay. IAGLER/ERF Joint Meeting, Windsor, Ontario, Canada (Jun 1994).
- Kemp, W. M., J. Petersen, and C.-C. Chen. Spatial scaling of experimental ecosystems containing estuarine planktonic and benthic communities. Ecol. Soc. of Amer. Meeting, Snowbird, Utah (Aug 1995).
- Petersen, J. E., J. Cornwell and W.M. Kemp. Implicit scaling in mesocosm research. Ecol. Soc. of Amer. Meeting, Snowbird, Utah (Aug 1995).
- Chen, C.-C., J. Petersen and W. M. Kemp. Experimental scaling effects on growth of wall periphyton in pelagic-benthic studies. Atl. Estuar. Res. Soc. Meet., Solomons, MD (Mar 1995).
- Bartleson, R. D. and W. M. Kemp. Simulation studies of ecosystem dynamics in the mesohaline region of Chesapeake Bay. Atl. Estuar. Res. Soc. Meet., Solomons, MD (Mar 1995).
- Kemp, W. M., J. Petersen, and C.-C. Chen, T. Goertemiller, J. Cornwell, L. Sanford, T. Malone. Extrapolating from mesocosm to estuary: Scale-dependence of planktonic-

- benthic ecosystem processes. Estuar. Res. Federation. Meeting, Corpus Christi, TX (Nov 1995).
- Petersen, J. E. and W. M. Kemp. Scaling biological, material and energetic inputs to experimental benthic-pelagic ecosystems. Estuar. Res. Federation. Meeting, Corpus Christi, TX (Nov 1995).
- Madden, C. and W. M. Kemp. Use of a simulation model to investigate plant-habitat interactions in a Chesapeake Bay submersed plant community. ERF Meeting, Corpus Christi, TX (Nov 1995).
- Kemp, W. M., E. Smith, K. Whipp, C. Madden. Contributions of shallow-water regions to the net ecosystem metabolism of Chesapeake Bay. Estuar. Res. Federation. Meeting, Corpus Christi, TX (Nov 1995).
- Møhlenberg, F., W. M. Kemp, C. Madden. Bivalve control of plankton biomass depends on vertical mixing. Estuar. Res. Federation. Meeting, Corpus Christi, TX (Nov 1995).
- Boynton, W. R. et al. Design and preliminary results from a new LMER program in Chesapeake Bay: trophic interactions in estuarine systems (TIES). Estuar. Res. Federation. Meeting, Corpus Christi, TX (Nov 1995).
- Hagy, J. D., W. R. Boynton and W. M. Kemp. Seasonal and regional patterns in community metabolism and nutrient processing in a land-margin ecosystem: An analysis with box models. Estuar. Res. Federation. Meeting, Corpus Christi, TX (Nov 1995).
- Kemp, W. M., E. M. Smith, J. Hagy, C. Madden and W. R. Boynton. Retention and transformation of nutrient inputs to the land-sea interface: Implications for net ecosystem production. AGU Oceans Sci. Meeting, San Diego, CA (Feb 1996).
- Kemp, W. M., E. M. Smith and C. Madden. Structural and functional responses of coastal ecosystems to eutrophication: Natural variations and management. ECSA/ERF, Middleburg, Netherlands (Sep 1996).
- Kemp, W. M., E. Smith, J. Hagy, C. Lascara, B. Boicourt, L. Harding, E. Houde, M. Roman and W. R. Boynton. Trophic interactions in Chesapeake Bay: Relations to organic carbon balance. Joint ECSA, ERF, Middleburg, Netherlands (Sep 1996).
- Kemp, W. M. Scale-dependence of interactions among populations and processes in natural and experimental ecosystems. Crafoord Symposium. Stockholm, Sweden (Sep 1996).
- Kemp, W. M. Scale-dependent dynamics of ecosystems. Crafoord Symposium. Lund, Sweden (Sep 1996).
- Smith, E., L. Harding, M. Mallonee, W. M. Kemp. Plankton community responses to river forcing in Chesapeake Bay: Comparison of conditions in 1995 and 1996. LMER Meeting, Savannah, GA (Nov 1996).
- Smith, E. M. and W. M. Kemp. Variations in the balance between plankton community production and respiration along a shore-normal depth gradient in Chesapeake Bay. ASLO Meeting, Sante Fe, NM (Feb 1997).
- Houde, E., W. Boicourt, W. Boynton, W. Kemp, M. Roman, L. Harding, J. Purcell, L. Sanford, E. Smith, A. Gauzens, J. Hagy, S. Jung, M. Mallonee, C. Rilling, S. Suttles, S. Brandt, M. Jech, D. Holliday. Physics and biology of the estuarine turbidity maximum (ETM) in Chesapeake Bay. ASLO Meeting, Sante Fe, NM (Feb 1997).
- Petersen, J. E., C.-C. Chen and W. M. Kemp. Plankton-benthic community development in response to different light intensities. ESA Meeting, Albuquerque, NM (Aug 1997).
- Smith, E. M., W. M. Kemp. Plankton community structure and the balance of autotrophy and heterotrophy in a coastal marine ecosystem. ASLO/ESA, St. Louis, MO (Jun 1998).

- Petersen, J., W. M. Kemp. Scaling experimental aquatic ecosystems to match nature: application of dimensional approaches. INTECOL98 Meeting, Florence, Italy (Aug 1998).
- Kemp, W. M. and W. R. Boynton. "Patterns of nutrient limitation in Chesapeake Bay. Invited Presentation, "Nutrient Limitation in Marine Environments," Danish National Environmental Research Institute, Risø, Denmark (August 1998).
- Kemp, W. M. and R. Bartleson. Nutrients, turbidity and light requirements for survival of submersed aquatic plants, Workshop, "Seagrass Management Ecology: Responses to Environmental Stress," Ft. Myers, FL (Oct 1998).
- Smith, E. M. and W. M. Kemp. "Bacterial community respiration as a function of individual cell activity," ASLO/AGU Meeting, Sante Fe, NM (Feb 1999).
- Petersen, J. E. and W. M. Kemp. "Effects of physical scale on mean properties and on variance in experimental planktonic ecosystems," ASLO/AGU Meeting, Sante Fe, NM (Feb 1999).
- Kemp, W. M., M. Brooks, and R. Hood. "Productivity, variability and trophic transfer efficiency in pelagic food webs," ASLO/AGU Meeting, Sante Fe, NM (Feb 1999).
- Kemp, W. M., J. Hagy, E. Smith and W. Boynton. Ecosystem metabolism and nutrient fluxes in Chesapeake Bay: Role of hydrology and climatology. Estuar. Research Federation, New Orleans (Sep 1999).
- Smith, E. M. and W. M. Kemp. Bacterioplankton respiration and growth efficiency along an estuarine gradient: Effects of phosphorus and carbon additions. Estuar. Research Federation, New Orleans (Sep 1999).
- Bartleson, R.D. , L. Murray, W.M. Kemp and R.B. Sturgis Use of numerical ecosystem simulation to aid in the design of SAV nutrient enrichment mesocosm experiments. Estuar. Research Federation, New Orleans (poster, Sep 1999).
- Bartleson, R.D., W.M. Kemp, L. Walstad, L. Murray, and L.P. Sanford. Effects of seagrass bed size on local water quality: preliminary model study and field corroboration. Benthic Ecol. Meet., UNC., Wilmington, NC (Mar 2000).
- Smith, E. M. and W. M. Kemp. Variability in plankton respiration along the estuarine gradient of Chesapeake Bay. ASLO 2000, Copenhagen, Denmark (Jun 2000).
- Kemp, W. M., E. M. Smith and J. E. Petersen. Photic depth, production/respiration ratios & trophic transfer in aquatic ecosystems. ASLO 2000, Copenhagen, Denmark (Jun 2000).
- Smith, E. M. and W. M. Kemp. Production-respiration coupling across trophic gradients in Chesapeake Bay. ASLO, Albuquerque, NM (Feb '01).
- Bartleson, R. L. Walstad, L. Sanford, M. Kemp, C. Stevenson. Effects of seagrass bed size and flow regime on local water quality: Preliminary model study and field corroboration. ASLO, Albuquerque, NM (Feb '01).
- Madden, C., W. M. Kemp, D. Gruber. Everglades restoration and seagrass habitat recovery: Use of an ecological model of the seagrass community to assess management strategies in FL Bay. Florida Bay Sci. Conf., Key Largo (Apr '01).
- Cornwell, J. C., M. Owens, W. M. Kemp. Nitrogen cycling in Florida Bay Mangrove environments. Sediment-water exchange and denitrification. Florida Bay Science Conference, Key Largo (Apr '01).
- Petersen, J. E., and Kemp, W. M. Multiscale experiments in estuarine research: Improving realism and advancing theory. Ecol. Soc. Amer. Conference, Madison, WI (Aug '01).

- Bartleson, R. L. Sanford, W. M. Kemp, J. C. Stevenson. Patch scale influence on the interaction of seagrass ecosystems and the water column. Estuarine Research Federation Conf. St. Pete Beach, FL (Nov 2001).
- Cerco, C., W. M. Kemp, L Harding, M. Lomas. Modeling primary production in Chesapeake Bay. Estuarine Research Federation Conf. St. Pete Beach, FL (Nov 2001).
- Cornwell, J. C., M. Owens, W. M. Kemp. Nitrogen cycling in Florida Bay sediments: denitrification, nitrogen fixation and DIN fluxes. Estuarine Research Federation Conf. St. Pete Beach, FL (Nov 2001).
- Davis, J. L., W. M. Kemp, J. Cornwell. Nutrient cycling across the sediment-water interface in *Thalassia testudinum* beds, Florida Bay, USA. Estuarine Research Federation Conf. St. Pete Beach, FL (Nov 2001).
- Hagy, J. W. Boynton, W. M. Kemp, R. Ulanowicz. Effects of hypoxia on food web structure and efficiency during summer in mesohaline Chesapeake Bay: An assessment using network analysis. Estuarine Research Fed. Conf., St. Pete Beach, FL (Nov 2001).
- Kemp, W. M. and J. Petersen. Scaling relationships in natural and experimental coastal ecosystems. Estuarine Research Federation Conf. St. Pete Beach, FL (Nov 2001).
- Schulte, K. L. Murray, W. M. Kemp. The relationship of seagrass bed patchiness to primary production and nutrient pools. Estuarine Research Fed. Conf. St. Pete Beach, FL (Nov 2001).
- Taub, F., J. Petersen, W. M. Kemp and D. Hinkle. Community metabolism: Properties of scale (size/shape) and data analyses. Canadian Conference Fisheries Res. (Aug 2002).
- Taub, F. B, J. E. Petersen, W. M. Kemp, and D. Hinkle. 2002. Photosynthesis and respiration interactions in aquatic ecosystems. VIII International Congress of Ecology. Seoul, Korea (Aug 2002).
- Petersen, J. L. Schromen-Wawrin and W.M. Kemp. 2003. Water exchange, nutrients and “top-down” vs. “bottom-up” limitation of plankton: Mesocosm and modeling studies. Ecol. Soc. Amer. (Aug).
- Cornwell, J. W.M. Kemp, M. Owens, J. Davis, E. Nagel. 2003. Internal nutrient cycling in Florida Bay: Denitrification, nitrogen fixation and the role of microalgae. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystem. Tampa, FL (April).
- Madden, C. A. McDonald, S. Kelly, M. Hunt, M. Kemp. 2003. Use of a dynamic, mechanistic simulation model to assess ecology and restoration of the Florida Bay seagrass community. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystem. Tampa, FL (April).
- Davis, J., W.M. Kemp, J. Cornwell. 2003. Effects of *Thalassia testudinum* dieback on sediment biogeochemical processes in Florida Bay. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystem. Tampa, FL (April).
- Nagel, E., J. Cornwell., W.M. Kemp, M. Owens. 2003. Nitrogen fixation in micro-phytobenthos dominated zones of Florida Bay. Joint Conference on the Science and Restoration of the Greater Everglades and Florida Bay Ecosystem. Tampa, FL (April).
- Kemp, W.M., M. Brooks, W.R. Boynton. 2003. Trophic yield, nutrient enrichment and environmental variation in Chesapeake Bay. Estuar. Res. Fed. Meeting. Seattle (Sep).
- Taub, F. J. Petersen, W.M. Kemp and D. Hinkle. 2003. Oxygen dynamics in estuarine ‘cosms: Net photosynthesis and night-time respiration. Estuar. Res. Fed. Meeting. Seattle, WA (Sep).

- Burton, J. J. Cornwell, W.M. Kemp, M. Owens. 2003. The effects of microphytobenthos on nitrogen cycling: A comparison between subtropical and temperate estuaries. Estuar. Res. Fed. Meeting. Seattle, WA (Sep).
- Davis, J., W.M. Kemp, J. Cornwell. 2003. Effect of the seagrass, *Thalassia testudinum*, on sediment biogeochemical processes. Estuar. Res. Fed. Meeting. Seattle, WA (Sep).
- Testa, J.M. and W.M. Kemp. 2005. Interacting effects of climate and nutrient management on net metabolism and biogeochemical fluxes in the Patuxent River estuary. Atlantic Estuar. Res. Society, Solomons, MD (March).
- Testa, J.M. and W.M. Kemp. 2005. Stoichiometry of biogeochemical fluxes in the Patuxent River estuary, USA. Amer Soc. Limnol. Oceanogr., Santiago de Compostela, Spain (June).
- Ball, W., W.M. Kemp, D. DiToro, T. Gross. 2005. Developing a collaborative large-scale engineering analysis network for research in the Chesapeake Bay regional environmental system. AEESP Research and Education Conference, Clarkson, New York (June).
- Kemp, W.M., J.M. Testa, E.M. Smith, W.R. Boynton. 2005. Organic carbon balance, pelagic-benthic interactions, and estuarine hypoxia: Inferences from rate measurements and box models. Estuarine Res. Fed. Meeting. Norfolk, VA (Oct).
- Testa, J.M. and W.M. Kemp. 2005. Interacting effects of climate and nutrient management on water quality, net ecosystem production, and biogeochemical fluxes in the Patuxent River estuary. Estuarine Res. Fed. Meeting. Norfolk, VA (Oct).
- Williams, M.R., T. R. Fisher, C. F. Cerco, W. R. Boynton, M. W. Kemp, K. N. Eshleman, S.-C. Kim, D. A. Fiscus, S. E. Greene, and G. Radcliffe. 2005. Effects of tidal marshes on the biogeochemistry of low-salinity estuarine regions: Inferences from numerical modeling. Estuarine Res. Fed. Meeting. Norfolk, VA (Oct).
- Ball, W.P., W.M. Kemp, D. DiToro, T. Gross. 2005. Design of a Collaborative Large-scale Engineering Analysis Network for Chesapeake Bay Research and Management. Estuarine Res. Fed. Meeting. Norfolk, VA (Oct).
- Battles, E.V., L. Murray, W. M. Kemp. 2005. Artificially induction of tuber production in two species (*P. perfoliatus*, *S. pectinata*) of submersed aquatic vegetation (poster). Estuarine Res. Fed. Meeting. Norfolk, VA (Oct).
- Davis, J., S. Henson, B. Jacobson, W.M. Kemp. 2005. Influence of *Ruppia maritima* and *Potamogeton perfoliatus* on biogeochemical cycling in Chesapeake Bay: Implications for restoration. MD Sea Grant Research Fellows Poster Session, Baltimore (Sep).
- Davis, J., W. M. Kemp. 2006. Influence of *Ruppia maritima* & *Potamogeton perfoliatus* on biogeochemical cycling in mesohaline Chesapeake Bay. AERS, Philadelphia (Mar).
- Testa, J. and W. M. Kemp. 2006. Exchanges of nitrogen and phosphorus between tidal freshwater marshes and the Patuxent River estuary: Temporal variability and relevance in large-scale nutrient budgets. AERS, Philadelphia (Mar).
- Ball, W., D. Di Toro, T. Gross, W.M. Kemp, R. Burns, M. Piasecki, I. Zaslavsky, B. Cuker, L. Murray. 2006. Conceptual design of a Chesapeake Bay Environmental Observatory (CBEO). AGU Meeting, San Francisco (Dec).
- \*Boynton, W., J. Hagy, J. Cornwell, M. Kemp, S. Greene, M. Owens. 2007. Nitrogen budgets for ecology and management: Patuxent R. estuary case study. ERF Meeting, Providence, RI (Nov).

- \*Nagel, J., M. Kemp, J. Cornwell, M. Owens, D. Hinkle, C. Madden. 2007. Seasonal and regional variations in production of *Thalassia testudinum* communities throughout Florida Bay. ERF Meeting, Providence, RI (Nov).
- \*Orth, R., S. Marion, K. Moore, D. Wilcox, T. Carruthers, B. Dennison, M. Kemp et al. 2007. Annual and decadal trends in distribution and abundance of Chesapeake Bay submerged aquatic vegetation 1984-2004. ERF Meeting, Providence, RI (Nov).
- \*Harris, L., M. Brush, L. Lucas, M. Kemp, J. Kremer. 2007. Predicting and understanding: Model approaches, applications and understanding. ERF Meeting, Providence, RI (Nov).
- \*Testa, J.M. & M. Kemp. 2008. Effects of hypoxia and anoxia on sediment-water nutrient exchanges: Insights from long-term analyses in Chesapeake Bay. AERS Meeting, Lewes, DE (Mar)
- \*Bosch, J. & M. Kemp. 2008. Hypoxia, benthic macrofauna and nutrient recycling: Potential interactions for Chesapeake Bay. AERS Meeting, Lewes, DE (Mar).
- \*Gruber, R., D. Hinkle & M. Kemp. 2008. Submerged aquatic plant bed impacts on water quality. AERS Meeting, Lewes, DE (Mar)

### 3. Invited Workshops (Unpublished):

- Georgia Dept. Natural Resources, "Wetlands and Estuarine Resources" (Commentator) Savannah, Georgia (June 1976).
- Florida Sea Grant Program, "Freshwater and the Florida Coast" (Panelist) Tampa, Florida (May 1977).
- National Sea Grant Program, "Coastal Ecosystem Research Workshop". Baton Rouge, LA (November 1979).
- Dept. of Interior, Fish and Wildlife Service, "Approaches to Evaluating Environmental Impacts". (Review Panel). Raleigh, NC (May 1980).
- Amer. Soc. Limnol. Oceanogr., "Land-Sea Interface" (Rapporteur) Woods Hole, MA (May 1987).
- LMER Scientist Meeting, Overall organizer of NSF sponsored gathering of 48 scientists, Cambridge (Nov 1990).
- LMER Scientist Meeting, "Coupling and modeling of estuarine ecosystem processes," Presentation on status of *Proteus*, Pt. Reyes, CA (Nov 1991).
- LMER Scientist Meeting, "Comparative analysis of estuarine ecosystem processes," Presentation on status of *Proteus*. Woods Hole (Nov 1992).
- CRC, "Current Approaches for Modeling Estuarine Ecosystem Processes," Scientific Organizer, CRC Workshop, St. Michaels, MD (Mar 1992).
- LMER Scientist Meeting, "Comparative analysis of estuarine ecosystem processes," Presentation on status of *Proteus*., Seaside, Oregon (Nov 1993).
- CRC, "Tributary/Ecosystem Modeling Workshop," Organizing Committee, CRC Workshop, St. Michaels, MD (Jul 1994).
- CRC, "Ecosystem Modeling Workshop," Organizing Committee, EPA/CRC Workshop, St. Michaels, MD (Jul 1995).
- SCOR Workshop on "Estuarine Ecosystem Synthesis," Irvine, CA (Feb 1995).
- US EPA, "National Nutrient Assessment Workshop," Wash, D.C. (Dec 1995).
- CRC, "Ecosystem Modeling Workshop," Organizing Committee, EPA/CRC Workshop, St. Michaels, MD (Jul 1996).

CRC, "Ecosystem Modeling Workshop," EPA/CRC Workshop, St. Michaels, MD (Jul 1997).  
 EPA/MEERC, "Scaling Relations in Experimental Ecology," Co-organizer of international workshop, St. Michaels, MD (Dec 1997)  
 NSF, LMER Scientist Meeting, "Scale, variance and trophic transfer efficiency: Modeling studies in TIES." Presentation, Solomons, MD (Nov 1997).  
 Ag Alternatives 98 Workshop, "What is eutrophication and why it affects everyone," Invited talk, Chesapeake College, Wye Mills, MD (Mar 1998).  
 CRC Community Modeling Workshop, Estuarine ecosystem simulation models. Invited speaker, Annapolis, MD (June 2002).  
 NOAA MD Sea Grant, "Hypoxia workshop", Regulation of estuarine hypoxia by oxygen production and consumption processes, College Park, MD (Aug 2004)  
 STAC Shallow Water Monitoring" Workshop, Invited participant, Maryland Department of the Environment, Annapolis, MD (Nov 2004)  
 National Science Foundation, Cooperative Large-scale Engineering Assessment Network for Environ Res (CLEANER) Workshop, Invited participant, Arlington, VA (Dec 2004)  
 US Environmental Protection Agency, "Nutrient Enrichment and Fisheries: Thoughts for Food Webs", Gulf Ecology Research Lab, Gulf Breeze, FL (Mar 2005).  
 \*STAC Workshop, "Sediment, light and SAV", Invited participant, Discussion leader, Annapolis, MD (Jan 2007)  
 \*STAC Workshop, "Thresholds in the recovery of eutrophic coastal ecosystems", Workshop Organizer (Chair of Steering Comm.), Baltimore, MD (Feb 2007).  
 \*STAC Workshop, "SAV Reproductive Ecology", Steering Committee, Poster presentation, Annapolis, MD (Mar 2007).  
 \*NOAA CSCOR Workshop, "Hypoxia and living resources", Session synthesis speaker, Bay St. Louis, MS (Mar 2007).  
 \*NOAA/EPA Workshop, "Long Island Sound Research Integration," Invited plenary speaker, Stony Brook, NY (May 2007).  
 \*University of Copenhagen, "Ecosystem metabolism workshop," Invited speaker, Hillerod, Denmark (Aug 2007).  
 \*STAC Workshop, "Four-Dimensional Interpolation," Steering Committee, Annapolis (Dec 2007)  
 \*NOAA Hollings Marine Laboratory, Research Synthesis, External Review Committee, Charleston, SC (Jun 2007).  
 \*USEPA Atlantic Estuarine Laboratory, External Review Committee, Narragansett, RI (Sep 2007).

#### **E. Symposia Organized/Chaired for Professional Meetings**

Amer. Institute Biological Sciences/ESA/ISEM. "Aquatic ecosystem modeling," Grand Forks, ND (Jul 1983).  
 Amer. Soc. Limnol. Oceanogr./Amer. Geophys. Union, "Estuarine Processes" San Francisco, CA (Dec 1984).  
 University of Aarhus, "Nitrogen cycling in coastal marine systems." Modeling session, Aarhus, Denmark (Jun 1985).  
 Estuarine Res. Fed., "Comparison of important ecosystem processes in estuaries." Chair of Invited Session, New Orleans (Oct 1987).

Amer. Soc. Limnol. Oceanogr./Amer. Geophys. Union "Coupling nutrient inputs, recycling processes and trophic interactions in Chesapeake Bay." San Francisco, CA (Dec 1988).  
 Estuarine Research Federation Tenth Biennial International Conference, Program Co-chair for overall meeting (Nov 1989)  
 Estuarine Research Federation, "Benthic-pelagic interactions" Chair of Invited Session, Baltimore (Nov 1989)  
 Estuarine Research Federation, "Land-Margin Ecosystem Research" Co-chair of invited session, San Francisco, CA (Nov 1991)  
 Chesapeake Research Consortium Conference. Session Chair, "Ecosystem Process Models," Norfolk, VA (May 1994).  
 Estuarine Research Federation Conference, Workshop Organizer, "Integrated metabolism and organic carbon balance in estuarine ecosystems," Providence, RI (Oct 1997).  
 Estuarine Research Federation Conference, Workshop Organizer, "Comparative analysis of biogeochemical budgets for estuaries of the world," Workshop co-organizers (W. M. Kemp, S. V. Smith, D. Swaney, R. Twilley) St. Pete Beach, FL (Nov 2001).  
 Estuarine Research Federation Conference, Workshop Organizer, "Scaling relationships in estuarine ecosystems," Session co-chair (W. M. Kemp & W. R. Boynton) St. Pete Beach, FL (Nov 2001).  
 Estuarine Research Federation Conference, Workshop Organizer, "Biogeochemical modeling of Florida Bay," Seattle, WA (Sep 2003).  
 US EPA Chesapeake Bay Program. STAC. "Coupled Modeling of Water Quality and Trophic Dynamics in Chesapeake Bay," Chair, Organizing Committee (M. Kemp, D. Breitburg, L. Linker, R. Butt), Annapolis, MD (Jan 2004).  
 \*US EPA Chesapeake Bay Program. STAC. "Thresholds and Non-Linear Trajectories in Recovery of Eutrophic Coastal Ecosystems" Chair, Organizing Committee, Annapolis, MD (Feb 2007), Lead Author of Workshop Report.  
 \*Harris, L., M. Brush, L. Lucas, M. Kemp, J. Kremer. 2007. Session Co-Organizer: Predicting and understanding: Model approaches, applications and understanding. Estuarine Research Federation Meeting, Providence, RI (Nov).

## **F. Active Memberships in Professional Societies**

Estuarine Research Federation, Elected Member of Governing Board (1987-1989).  
 American Institute of Biological Sciences  
 American Society of Limnology and Oceanography  
 Atlantic Estuarine Research Society  
 Ecological Society of America  
 Sigma Xi, Research Society of America

## ***IV. Teaching and Training***

1982- Associate Member, Graduate Faculty, University of Maryland, CP  
 1990- Associate Member, UMCES Graduate Faculty

### **A. University of Maryland Courses**

Course No.	Title	Institution	Semester	Enrollment	Credit	Co-Instructor or TA	No.
	<b>Lectures</b>						
*MEES 611	Estuar Systems Ecology	UMCP	F '79	≈ 15	3	W. Boynton	15*
		UMCP	Sp '82	≈ 12	3	--	15*
		UMCP	F '86	≈ 14	3	--	15*
		UMCP	F '87	≈ 11	3	--	15*
		HPL	Sp '89	≈ 12	3	--	15*
		HPL	F '91	≈ 10	3	--	15*
		HPL	Sp '93	≈ 9	3	--	15*
		HPL	F '94	11	3	C. Madden	15 <sup>†</sup>
		HPL	Sp '6	17	3	J. Petersen	15 <sup>†</sup>
		HPL	Sp '00	17	3	E. Smith	15
		HPL	Sp '02	15	3	J. Davis	26
		HPL	Sp '04	7	3	M. Brooks	26
		HPL	Sp '06	6	3	M. Brooks	26
*MEES 611	<b>Estuar Systems Ecology</b>	<b>HPL</b>	<b>Sp '08</b>	<b>5</b>	<b>3</b>	<b>J. Testa</b>	<b>26<sup>†</sup></b>
MEES 698T	Modeling Coastal Ecosystem Processes	HPL	W '96	≈ 8	1	C. Madden	3 <sup>†</sup>
MEES 621	Marine/Estuarine Ecology	HPL	F '84	≈ 20	3	T. Malone R. Newell	3 <sup>#</sup>
		HPL	F '87	≈ 20	3	Malone et al.	3 <sup>#</sup>
		HPL	F '89	≈ 20	3	Malone et al.	3 <sup>#</sup>
MEES 699	Seagrass Ecology	HPL	S '01	3	1	---	8
	Modeling Plankton	HPL	S '02	2	2	--	4
*MEES 608	Philos. of Science	HPL	F '81	≈ 15	1	M. Sagoff	7 <sup>†</sup>
	Theoretical Ecology	HPL	F '82	≈ 15	1	M. Sagoff	7 <sup>†</sup>
	Seagrass Ecology	HPL	F '84	≈ 10	1	C. Stevenson	7*
	Carbon Flux in Oceans	HPL	F '86	≈ 10	1	M. Roman	7 <sup>†</sup>
	Roots of Ecol Thought	HPL	F '87	≈ 10	1	V. Kennedy	7 <sup>†</sup>
	Gaia Hypothesis	HPL	F '89	≈ 10	1	H. Ducklow	7*
	Ecosystem Modeling	HPL	F '90	≈ 10	1	--	7*
	Scale in Ecosys Anal	HPL	F '92	≈ 10	1	T. Malone	7 <sup>†</sup>
	Scale /Var Coast Ecos	HPL	F '94	≈ 10	1	T. Malone	7*
	Anal Scale Exptl Ecos	HPL	F '94	≈ 10	1	L. Sanford	7 <sup>†</sup>
	<b>The Odum Legacy</b>	<b>HPL/CBL</b>	<b>S' 03</b>	<b>≈ 10</b>	<b>1</b>	<b>W. Boynton</b>	<b>15<sup>†</sup></b>
Zool 708	Ecosystems	UMCP	F '95	≈ 15	3	R. Costanza	2 <sup>#</sup>

\* Organized course, primary lecturer, responsible for grades.

# Guest lecturer for course organized by colleague.

<sup>†</sup> Co-organizer of course, shared responsibilities.

## B. Courses Taught Elsewhere

Course No.	Title	Institution	Semester	Enrollment	Credit	Co-Instructors	No.
	Lectures						
	Ecology & Mgmt of	Univ. of	S '92	≈ 15	3	C. Madden	10 <sup>†</sup>
	Estuar. Ecosystems	Campeche	S '93	≈ 10	3	C. Madden	10 <sup>†</sup>
		Mexico	W '94	≈ 8	3	C. Madden	10 <sup>†</sup>
			W '95	≈ 10	3	C. Madden	10 <sup>†</sup>

<sup>†</sup> Co-organizer of course, shared responsibilities.

## C. Graduate Students Supervised as Major Advisor

### 1. Degrees Conferred

Jeffrey J. Cunningham, MS, 1979, Current position: Research Faculty, Univ. Maryland, Dept. of Agric. and Resource Economics, College Park.

Marlon R. Lewis, MS, 1980, Current position: Professor, Dalhousie Univ., Halifax, NS, Canada.

Mark C. Jenkins, MS, 1981, Current position: Research Scientist, National Institutes for Health, Bethesda, MD.

William J. Goldsborough, MS, 1983, Current position: Fisheries Manager, Chesapeake Bay Foundation, Annapolis, MD.

Kenneth W. Staver, MS, 1984, Current position: Asst. Res. Prof., Univ. of Maryland, Wye Agric. Res. Sta., Queen Anne, MD.

Jane M. Caffrey, PhD, 1989, Current position: Asst. Res. Prof., Univ. California, Santa Barbara, CA.

Janet V. Neundorfer, MS, 1990, Current position: US Army Corps of Engg, Baltimore.

Smith, Erik M., MS--1992, MEES, Current position: Postdoctoral Fellow, University of Quebec, Montreal, Canada.

William Kuhn, MS, 1992, Current position: Environmental Consultant, Santa Barbara, CA.

Marilyn Mayer, PhD; 1992, Current position: Asst. Prof., St. Lawrence Univ., Lawrence, New York.

Stokes, Catherine, MS; 1996, Current position: Maryland Department of Natural Resources, Annapolis, MD.

Kenneth Moore, PhD; 1997, Current position: Assoc. Res. Prof., Virginia Institute of Marine Science, College of William and Mary, Gloucester Pt., VA.

John E. Petersen, PhD; 1998, Current position: Assistant Professor, Oberlin University, Oberlin, OH.

Chung-Chi Chen, PhD; 1998, Current position: Research Scientist, Center for Marine Science, Taipei, Taiwan.

Smith, Erik M., PhD—2000, UMCP, MEES, Current position: Research Asst. Prof., NERR Research Coordinator, University of South Carolina, Belle Baruch Lab, Columbia.

Brooks, Maureen, MS—2003, UMCP, MEES (co-advised with R. Hood), Current position: Faculty Research Assistant, UMCES, Horn Point Lab.

Schulte, Kristin, MS—2003, UMCP, MEES (co-advised with L. Murray), Current position: S. Carolina DNR, Charleston

Apple, Jude, PhD—2005, UMCP, MEES (co-advise with P. Del Giorgio), Current position: Postdoc, Office of Naval Research, Washington, DC.

Testa, Jeremy, MS—2006, UMCP, MEES, “Factors regulating variability in water quality and net biogeochemical fluxes in the Patuxent River estuary”, Current position: Graduate student, HPL, UMCES, Cambridge, MD.

Nagel, Jessica, PhD—2007, UMCP, MEES, “Plant-sediment interactions and biogeochemical cycling for seagrass communities in Chesapeake and Florida Bays,” Current position: Research Scientist, USGS, Patuxent Wildlife Research Center, Beltsville, MD.

## 2. Current Advisees

\*Testa, Jeremy, PhD, UMCP, MEES, Expected graduation 2013.

\*Bosch, Jennifer, PhD, UMCP, MEES, Expected graduation, 2013.

\*Gruber, Renee, MS, UMCP, MEES, Expected graduation, 2009

## 3. Post-Docs Advised

Robert R. Twilley, Supported by US EPA, "Submerged Aquatic Vegetation in Chesapeake Bay," PhD, Univ. of Florida (1981-1983).

Peter Sampou, Supported by Sea Grant "Factors regulating oxygen depletion," PhD, Univ. of Rhode Island, GSO (1986-1987).

Christopher Madden, Supported by Sea Grant/EPA/NSF, "Plankton community metabolism and ecosystem simulation modeling," PhD, Louisiana State Univ. (1992-1996).

Steven Blumenshine, Supported by EPA/MEERC and EPA/CBP, "Scaling pelagic-benthic interactions in coastal ecosystems," PhD, Notre Dame University (1998-1999).

John Petersen, Supported by EPA/MEERC, “Scaling relationships in experimental and natural ecosystems,” PhD, University of Maryland (1999-2000).

## 4. Current Graduate Student Committee Membership

*Stutes, Jason	PhD	(Cebrian)	DISL, Univ. of S. Alabama (grad '07)
*Lee, Daniel D.-Y.	PhD	(R. Hood)	MEES, UMCES, HPL
*Li, Yun	PhD	(M. Li)	MEES, UMCES, HPL

## 5. Undergraduate Interns Advised

1978 Linda Breisch, Univ. of Michigan;  
Geri Unger, Univ. of Michigan;  
Karin Limburg, Vassar College.

1979 Sandra K. Phipps, Salisbury State College;  
Thomas R. Schueler, Univ. of Maryland, College Park;  
Tracy Gill, Univ. of Maryland, College Park;  
Curtis P. Ersing, Gordon College.

1980 Robert J. Thomann, Manhattan College;  
Susan Garabrant, Univ. of Maine;

- Robert A. Hansen, Univ. of Maryland; Eileen Donaghue, Univ. MD
- 1981 Paul Dark, Emory Univ., Georgia;  
Lorie Winchell, St. Lawrence Univ.;  
Mark Schiavone, Salisbury State College;  
Chris Peters, Univ. of Maryland, Baltimore County;  
Patricia S. Estes, Salisbury State College.
- 1982 Thomas R. Schueler, George Washington Univ., Washington, DC
- 1984 Keith West, Univ. of Maryland, Eastern Shore, Princess Anne.
- 1985 Greg Steyer, Univ. of Maryland, College Park.
- 1986 Tony Silvia, Washington College, Chestertown, MD;  
Janet Neundorfer, Salisbury State College, Salisbury, MD.
- 1987 Michael Owens, Salisbury State College, Salisbury, MD;  
David Pohle, Bowdoin College, Maine.
- 1988 Tom Randall, Salisbury State College, Salisbury, MD;  
Kristina Heister, Salisbury State College, Salisbury, MD.
- 1989 Chris Ellison, Univ. of Maryland, College Park
- 1990 Eli Meir, Cornell University, Ithaca, NY
- 1991 Eric Kiesman, University of Massachusetts, Amherst.
- 1992 Ken Whipp, Salisbury State University, Salisbury.
- 1994 Eric Conway, Martin Marietta Scholars Program.  
Jeniffer Gormer, Salisbury State University
- 1996 Steve Grimes, REU, Fullerton College.
- 1998 Maureen Brooks, Western Maryland University.
- 2002 Elisabeth Kittridge, REU, Mount Holyoke College, South Hadley, MA
- 2003 Sara Henson, REU, The College of St. Rose, PA
- 2004 Barbara Jacobson, REU, University of North Carolina, Pembroke

## V. *Outreach and Service*

### A. Editorships

*Marine Technology Society Journal*, Acting Editor for Special Issue, "Seagrass Ecology" (1982-83).

Columbia Univ. Press, Co-editor (w/ B. Gardner, J. Petersen and V. Kennedy) of book, "Scaling relations in experimental ecosystems" (1998-1999).

*Ecological Applications*, Editorial Board Member (1999- 2002).

\**Estuarine, Coastal and Shelf Science*, Editorial Board Member (1998-2007).

\**Ophelia*, Editorial Board Member (2000-present).

\**Marine Ecology Progress Series*, Contributing Editor (2007-present)

### B. Public Service

Amer. Assoc. Sanitarians, MD Chapter. Presentation (Nov 1979).

Amer. Assoc. Sanitarians, MD Chapter. Banquet speaker, Baltimore, MD (Mar '80).

Maryland Council Biol. Science Teachers, Presentation of progr, HPEL (Apr 1980).

Chesapeake Bay Foundation, Smith Is, MD. Presentation (Dec 1982).

Chesapeake Bay Foundation, Environ. Education Progr., Joint project to teach grade school students about estuarine ecology via SAV transplant and monitoring study (Nov. 1982 - July 1983).

Chesapeake Bay Foundation. Presentation. Annapolis (Aug 1982).

Chesapeake Bay Foundation, Education Staff Retreat, "Recent Advances in Estuarine Ecology," Fox Island (Sept. 4-5, 1984).

Chesapeake Bay Foundation, Staff Seminar, "Ecology of submersed plants in Ches. Bay," Annapolis (17 Jan 1984).

Ches. Bay Soc. News, "Submerged aquatic vegetation in Chesapeake Bay: the decline of a valuable resource." Article (Dec 1986).

Dorchester Public Library, "Chesapeake: The Twilight Estuary" Film presentation, (Feb 1986)

Oxford Community Center, "Chesapeake: The Twilight Estuary" Film presentation, (Mar 1986).

Chesapeake Bay Yacht Clubs Assoc., Kent Island, "Submerged Aquatic Vegetation in Chesapeake Bay," Lecture (Sept 1986).

Chesapeake Bay Foundation, Tilghman Island, MD, "The role of scientists in Chesapeake Bay cleanup," Presentation (Mar 1987).

Chesapeake Bay Foundation, Smith Island, MD, "Seagrass ecology in Chesapeake and Danish coastal waters," Presentation (Jul 1987).

Ches. Bay Soc. Newsletter, "Submerged aquatic vegetation: Research programs at HPEL" Article (Dec 1987).

Chesapeake Bay Foundation staff, Annapolis, "Synopsis of research on environmental problems in Chesapeake Bay," Presentation (May 1988).

Ches. Bay Found. Retreat with staff, Smith and Tangier Island, "SAV research in Chesapeake Bay," (Nov 1988).

Chesapeake Bay Foundation staff retreat, Tighlman Is., "Nutrients and Bay water quality: Teaching concepts to students," Presentation (Feb 1989).

Media Day presentation, Cambridge, MD, "How is the water now: or where did all the nutrients go?" (May 1989).

Wye Institute, Talbot Co, MD, "Watershed Targeting Workgroup," Meeting (Jun 1989).

Chesapeake Bay Foundation, Annapolis, "Environmental problems in Chesapeake Bay," Meeting w/ Pennsylvania Delagates (Aug 1990).

Chesapeake Bay Program, Port Isobelle, VA, "Science, Management and Environmental Activism in Chesapeake Bay." Staff Retreat (Apr 1994).

HydroQual, Mawah, NJ "Jamaica Bay Nutrient Management Plan," External consultant, (Oct 1994).

ERF Science Reference Series, Education Comm. consultation (Oct 2000).

### **C. Federal/State/Local Government**

Calvert County Board of Commissioners (MD), Special study commissioned to examine ecological-economic effects of development in county (Aug 1978).

Delmarva Advisory Council, General presentation, HPEL (Dec 1979).

Maryland Sea Grant Program. Development of 30 min film on US EPA research, Michael Fincham, director (1980).

Sen. C. Mathias, General meeting to apprise of status of EPA Ches. Bay Prog. Research (Feb, Aug 1982).

Univ. Maryland Agronomy Student Club. General presentation and discussion. HPEL (Sep 1982).

Office Environmental Programs, Patuxent River Water Quality Management Hearings, Expert testimony, Baltimore (17 Sept 1984).

Interagency Technical Revw Comm on SAV, General meeting, Annapolis (Oct 1984).

U.S. EPA Monitoring Program Review, Horn Point, (Apr, Dec 1983).

U.S. EPA, Chesapeake Bay Progr, Habitat Workshop, Richmond, Va. (Aug 1983).

STAC, Sediment Workgroup. Chesapeake Research Consortium. Appointed member (Aug 1987).

USEPA/COE Workshop. Baltimore, MD, "Sediment-water modeling for Chesapeake Bay cleanup," (Feb 1988).

USEPA MARS Subcommittee. Annapolis, "Sediment data collection needs for water quality modeling," Presentation (Jun 1988).

Governor's Science Advisory Council, Presentation at meeting, Cambridge (Sep 1988).

USEPA MARS Subcommittee, Annapolis, "Sediment, data collection report for water quality modeling," Presentation (Oct 1988).

MD Dept of the Environment, "Presentation to Secretary Martin Walsh, Cambridge (Feb 1989).

EPA Living Resources Subcommittee, Annapolis, "Ecosystem Modeling of SAV," Presentation (Sep 1989).

EPA Modeling subcommittee, Annapolis, "Ecosystem modeling for managing estuarine resources," Presentation (Jul 1990).

Interagency Bay committee on zooplankton monitoring, Easton, "Role of zooplankton in ecosystem process models," Presentation (Sep 1991).

NOAA/EHP, "Ecosystem Modeling," Workshop (Mar, Jun 1992).

USEPA/CBP, Annapolis, "Chesapeake Bay modeling workshops: Physical circulation," (Jun 14-15, 1993).

USEPA/CBP, Annapolis, "Chesapeake Bay modeling workshops: Ecosystem processes," (Jul 26-28 1993).

USEPA/CBP, Annapolis, "Chesapeake Bay modeling workshops: Sediment transport," (Aug 23-24, 1993).

South Florida Water Management District, West Palm Beach, "St. Lucie River Estuary Nutrient Research Plan," External reviewer. (Sep 1994).

Chesapeake River Basins Commission. "Susquehanna River Low-Flow Strategies" Workshop, Annapolis (Sep 1995).

EPA/CBP, "SAV Habitat Criteria Evaluation Team," Annapolis, MD (Sep 1996-May 1997).

EPA/CBP, "SAV Habitat Criteria Evaluation Team," Annapolis, MD (Jan-Dec 1997).

MD DNR Special Task Force on clam dredging and SAV habitat (1998).

\*USEPA/CBP, "Model Evaluation Subcommittee: Expert Model Review Team" (2000-2002).

USEPA Chesapeake Bay Program, Living Resources Subcommittee, Modeling and Monitoring Workgroup (1999-present).

- USEPA/CBP. 2002. "Oyster Filtration Modeling: Expert Overview Committee" (2000-present).
- USEPA/CBP, 2002. "Water Clarity Criteria Team: National Water Quality Criteria Initiative," (2000-present).
- USEPA CBP. 2002. External Reviewer, Dissolved Oxygen Criteria Document (October).
- USEPA/CBP (CRC). 2005. "Oyster Filtration Modeling: Expert Overview Committee" (2000-present).
- \*USEPA/CBP (CRC). 2006. Ecosystem Modeling Technical Advisory Panel" (2003-present).
- \* **Scientific & Technical Advisory Committee. 2006.** USEPA Ches Bay Program, (2001-present).
- \*USEPA CBP. 2006. External Reviewer, Chesapeake Bay Program Water Quality Criteria Addendum Document (October).

#### **D. National**

- National Research Council, Comm. Coastal Ocean, Washington, DC, "Land Margin Ecosystem Research," Presentation (Sep 1991).
- NSF Land Margin Ecosystem Research Program Coordinating Committee. Member (1990-1994).
- NSF Proposal Panel, Biotic Systems and Resources (May 1991)
- ONR, Site Review, Woods Hole Oceanogr. Instit., "Oceanographic ecosystem modeling project" (Aug 1993).
- LOICZ U. S. Global Change Program, LMER Coordin. Comm. Representative, Raleigh, NC May 1993.
- National Academy of Sciences, Ocean Studies Board, "Committee on High Priority Science in the Coastal Zone." Member of Ad Hoc committee and co-author of report to President (Oct 1994).
- President's Office of Science & Technology, "National Environmental Monitoring and Research Workshop," Invited participant, Smithsonian Institute, Washington, DC (Sep 1996).
- Cary Conference, Successes, limitations and frontiers in ecosystem science. Invited participant. Millbrook, NY (May 1997).
- Pew Fellow Program in Marine Conservation, Invited to serve as nominator for three potential recipients, Boston (Nov 1998).
- NOAA Coastal Ocean Program. 2002. Panel member, Multi-Stressor Ecosystem Research Program (May).
- National Research Council, External Review of US Dept Interior Report. 2002. "Greater Everglades Ecosystem Restoration: Assessment of Critical Ecosystem Studies Initiative (Nov).
- Washington Post. 2004. Questions and Answers section. Interview with David Fahrenthold regarding climate effects on Bay ecology.
- US EPA Gulf Research Laboratory. 2005. Response of aquatic food webs to nutrient enrichment: Assessing the state of the science. Invited speaker and workshop summary leader, Gulf Breeze, FL (March).

Hudson River Foundation. 2005. Nutrient dynamics, lower trophic levels and community metabolism. Workshop oversight panel, New York, NY (March)  
National Science Foundation. 2005. Biological Oceanography Panel, Arlington, VA (May)  
The Weather Channel. 2005. Forecast Earth: Coastal Dead Zones. Participate and assist in filming 30 min show for airing in November.  
Clean Water Network. 2006. Mini-caucus on nutrients. Invited presentation and panelist, Chesapeake Bay eutrophication (January).

## **E. International**

UNESCO-Universite Paris VII, Ecole Europeenne D'Ete D'Environnement, "Quantitative Ecology," Venice, Italy (1976).  
UNESCO-Universite Paris VII; Ecole Europeenne D'Ete D'Environnement, "Modeling the Sea," Louvaine-La-Neuve, Belgium (1977).  
University of Stockholm, Sweden, Graduate Student Program -- Advised 2 students (Gunilla Ejdung and Pia Romare) in research at HPEL (Sep 1980-Jun 1981).  
NATO Advanced Research Institute: "Energy and Materials Flux in Marine Ecosystems." (Work Group Rapporteur). Bombannes, France (May 1982).  
Universidad Nacional Autonoma de Mexico, Tropical Seagrass Research, Member Mexico-USA Research Team. International Sea Grant, Campeche, Mexico (1981-1985).  
University of Stockholm, Asko Laboratory, "Marine Resource Assessment in the Baltic," Special Consultant (July 1983).  
NATO Advanced Res Inst: "Ecosystem Theory in Relation to Biological Oceanography." (Work Group Rapporteur). Quebec, Canada (1984).  
University of Copenhagen, Host for Two Visiting Scientists: Kaj Sand-Jensen; Jens Borum (May-Nov 1986).  
SCOR Working Group 73 and COPE (UNESCO) "Physical Biological couplings at marine interfaces". Liege, Belgium (May 1985).  
Visiting Faculty, University of Copenhagen and University of Aarhus, Sabbatical leave. (May-Oct. 1985).  
UNESCO/NSF: "Primary production in the Caribbean marine environment". Discovery Bay, Jamaica (Nov. 1985).  
Beijer Institute for Ecological Economics, Royal Swedish Academy of Sciences, Stockholm. Workshop on impact of biodiversity loss (1991).  
Danish Ministry of the Environment, Copenhagen. Workshop on coastal eutrophication research program. Invited speaker (1991).  
Danish Ministry of the Environment, National Environmental Laboratory, Ecosystem modeling consultant for Roskilde Fjord Eutrophication Study (Oct 1994).  
Croatian and Slovenian Governments. "Comparative ecosystem analysis of Northern Adriatic Sea and Chesapeake Bay. Workshop (May 1995).  
External Expert Member, Appointments Board, University of Stockholm, Sweden. Review of Chair in Marine Systems Ecology (Sep 1995).  
Stockholm Water Symposium/EMECS Meeting. Invited speaker Stockholm (Aug 1997).  
ECI Prize in Marine Ecology, Submitted nomination for Scott Nixon, Kiel, Germany (Aug 1998).  
LOICZ Futures Meeting, Invited workshop, Miami (May 2002).

**SCOR**, Scientific Committee on Ocean Research, **Work Group 128** on Natural and Human-Induced Hypoxia and Consequences for Coastal Areas, associate member (**September 2005** to present)

## **F. University of Maryland System**

Univ. of Maryland System Life Sciences Review, Presentation (Jun 1995)  
Search Committee CEES Director Position, 1989-1990  
Search Committee MEES Graduate Program Director, 1990-1991  
Maryland Sea Grant Program Assessment,” Presentation “History of SAV research in Chesapeake Bay,” (Meeting Oct 2000).  
MEES Curriculum Committee, Initiated effort to coordinate MEES curriculum (Meetings Mar, Apr 2000).

## **G. UMCES and Horn Point Laboratory**

### 1. UMCES

Faculty Senate, Fall 1984-1986  
UMCES Graduate Education Committee, 1987-1988  
UM Bd of Regents, presentations to H. Hughs, for UMCES (Oct 1995)  
Selection Comm. Truitt Environmental Award (Oct-Nov 1997)  
UMCES Science Forum, “N enrichment and coastal food-webs” (Dec 2000)  
\*UMCES Graduate Faculty Council (Dec 2000-present)  
Ad hoc Curriculum Coordination committee (2001)  
UMCES Promotion Review Committee (2002)  
UMCES Promotion Review Committee, Chair (2004)  
CBL *Quantitative Ecologist* Faculty Search Committee (2005-2006)

### 2. Horn Point Laboratory Committees

Graduate Research and Education Committee, HPEL (1978-1979).  
Computer Science Committee, CEES (1979-present).  
Search Committee, Geologist, HPEL (1980).  
Library Programs Committee (Chairman), HPEL (1980-1982).  
Non-Tenure Faculty Review Committee (Chairman) HPEL (1982-1985).  
Seminar Committee, HPEL (1982-1984).  
Academic Affairs Committee, HPEL (1982-1984).  
Search Committee, HPEL Director (1982).  
Computer Committee, HPEL (1982-1985).  
Boat Operations Committee (Sept. 1984-1985, Chairman).  
Tenure Review Committees (1985-1985).  
Geochemist Search Committee (Spring 1984).  
Finfish Aquaculturalist Search Committee (Fall 1984).  
Invertebrate Biologist Search Committee (1985).  
Tenure Review Committee (1986, Chairman).  
Post Doc Search Committee (1987, Chairman).  
Tenure and Faculty Advance (1987-1989).

Microbial Oceanographer Search (1987-1988).  
 Systems Ecologist Search, CBL (1987-1988).  
 Environmental Policy Analyst Search, CBL (1987-1988).  
 Analytical Services Committee (1990-present)  
 Dormitory Committee (1990, Chairman)  
 Graduate Education Committee (1990-1991)  
 Tenure Review Committee (1990-1991, Chairman)  
 Promotion Committee (1991, Chairman)  
 Aquatic Plant Ecologist Search Committee (1991-present)  
 Planning Committee (1991-present)  
 Education Committee, (1985-1993, Chairman, 1993).  
 Open-House Ad hoc Planning Comm (Jun 1993)  
 Seminar Committee, Chair (1995-1996, Chair; 1985-1987, Chair).  
 Computer and Electronic Services (1996)  
 Seminar Committee Chair (2000-2001).  
 Education Committee Chair (2001-2002).  
 Education Committee (1999-2004).  
 Faculty Promotion Committee (2005-6)

3. Other UMCES/HPL Activities

Maryland Council Biol. Science Teachers, Presentation of progr, HPEL (Apr 1980).  
 Maryland Sea Grant Program. Development of 30 min film on US EPA research,  
 Michael Fincham, director (1980).  
 Univ. Maryland Agronomy Student Club. General presentation and discussion. HPEL  
 (Sep 1982).  
 University of Maryland Alumni Trustees, Cambridge, "Chesapeake: The Twilight  
 Estuary" Film and lecture (May 1986).  
 Univ. of Maryland Task Force on Graduate Studies and Research, University  
 reorganization planning meeting, Solomons (Jun 1988).  
 CEES Faculty-Student Colloquium, Solomons "Land-Margin Ecosystem Research in  
 Chesapeake Bay," Presentation (Sep 1989).  
 Italian Senate Delagation, Cambridge "Eutrophication and anoxia in Chesapeake Bay,"  
 Presentation (Jan 1990).  
 HPL Summer Undergraduate Interns, "Global problems of coastal eutrophication,"  
 Presentation, Cambridge (Jun 1990).  
 HPL Summer Undergraduate Interns, "Coastal eutrophication," Presentation, Cambridge  
 (Jun 1992).  
 MEES 698, Lecture, "Dynamics of dissolved in estuarine waters" (Jul 1993).  
 HPL Summer Undergraduate Interns, "Eutrophication in Chesapeake Bay," Presentation,  
 Cambridge (Jun 1993).  
 HPL Summer Undergraduate Interns, "From Nutrient Inputs to Estuarine Fish  
 Production: Ecological Feedbacks," Presentation (Jun 1994).  
 MEES 698, Environmental Science for High School Teachers, L. Murray, W. Bell,  
 "Eutrophication in Chesapeake Bay," Guest Lecture. (Jun 1994).  
 HPL Summer Undergraduate Interns, "Eutrophication research in Chesapeake Bay,"  
 Presentation (Jun 1998).

HPL Summer Undergraduate Interns, "Eutrophication research in Chesapeake Bay,"  
 Presentation (Jun 2001).  
 REU Summer Intern Program, "Coastal eutrophication," Presentation (Jun 2003).  
 REU Summer Intern Program, "Eutrophication and upper trophic levels," presentation  
 (Jun 2004).  
 Easton High School Advanced Placement Biology class, presentation on Chesapeake Bay  
 ecology for teacher, Lee Anne Hutchinson (November 2004).  
 Swarthmore College Environmental Biology Class, presentation on Eutrophication in  
 Chesapeake Bay for Rachel Merz (October 2004)  
 Chesapeake Bay Program, Chesapeake Bay Ecology course, presentation on  
 Eutrophication and fish production for Laura Murray (August 2004)

## **H. Other Professional Services**

### **1. Proposal Reviews**

- 1980** NSF Environ. Biology (Sept)  
 NSF, Environ. Energy Resources (Mar).  
 NOAA LA Sea Grant Program (Jan)  
 NOAA South Carolina Sea Grant Program (Mar)  
 Maryland Dept. Natural Resources (PPSP) (July)  
 Canadian National Sciences and Engineering Res. Council. (Nov.)
- 1982** NSF, Environ. Biology, (Feb)  
 NSF, Environ. Biology, (Apr)  
 NSF, Biological Oceanogr., (Apr)  
 NSF, Biological Oceanogr., (Aug)  
 NOAA VA Sea Grant, (May)
- 1983** NSF, Resource Init. and Improve. (Oct.)  
 NSF, Biol. Oceanography (Jul)  
 NSF, Biol. Research Resources (May)  
 NSF, Biol. Res. Res. (Jan)  
 NOAA, National Sea Grant (Apr)  
 NOAA, LA Sea Grant (3 Props. May)  
 MD DNR, Power Plant Siting (Sep)  
 Hudson River Foundation (Oct)
- 1984** NSF, Population Biology and Phys. (Dec)  
 NSF, Biological Oceanography (3 proposals, Nov)  
 NSF, Ecosystems Studies, (Jul)  
 NSF, Biological Oceanography (Jul)  
 NSF, Biological Oceanography (Apr)  
 NSF, Biol. Research Resources (Mar)  
 Hudson River Foundation (May)  
 NOAA, National Sea Grant (Sep)  
 NOAA, Sea Grant, Louisiana State Univ. (Feb)
- 1985** NSF, Biological Oceanography (March)  
 NSF, Biological Oceanography (April)

- 1986** NSF, Biological Oceanography (April)  
NSF, Biological Oceanography (Nov)  
NSF, Biological Oceanography (Nov)  
NSF, Ecology (Feb)  
NSF, Ecology (March)  
Sea Grant, VA (May)  
Sea Grant, New Hampshire (Apr)
- 1987** NSF, Biological Oceanography (April)  
NSF, Biological Oceanography (Aug)  
NSF, Biological Oceanography (Nov)  
NOAA, NURP (July)  
NOAA, MSMD (July)
- 1988** NSF, Biological Oceanogr. (Feb)  
NSF, Biological Oceanogr. (4 proposals, Aug)  
NOAA, New Jersey Sea Grant (Feb)  
NOAA, Delaware Sea Grant (May)  
NOAA, Texas Sea Grant (Sept)  
NOAA, Rhode Island Sea Grant (Nov)  
NOAA, Virginia Sea Grant (May)  
NOAA, Natl. Estuar. Res. Preserve Progr. (Apr)
- 1989** NSF, Biological Oceanogr. (Apr)  
NSF, Biological Oceanogr. (2 proposals Aug)  
NSF, Biological Oceanogr. (Nov)  
NOAA LA Sea Grant (Mar)  
NOAA Puerto Rico Sea Grant (Oct)
- 1990** NSF, International Programs (May)  
NSF, International Programs (Jun)  
NOAA, VA Sea Grant (May)  
NOAA, Rhode Island Sea Grant (Nov)  
NOAA, California Sea Grant (Dec)  
Hudson River Foundation (Apr)  
Hudson River Foundation (Jul)
- 1991** NSF, Ecosystems (Mar)  
NSF, Ecosystems (Aug)  
NOAA, NY Sea Grant (Mar)  
NOAA, Natl. Sea Grant (Apr)
- 1992** NSF, Ecosystems (Apr)  
NSF, Ocean Science (May)  
NOAA, Rhode Island Sea Grant, (Nov, Dec)  
NOAA, Maine Sea Grant, (Apr)  
Natural Science Res. Council, LOIS, UK (Dec)
- 1993** NSF, Ecosystems (Apr)  
NOAA, Rhode Island Sea Grant, (Jan, Feb)  
Natural Science Res. Council, LOIS, UK (Aug)
- 1994** NSF, Ecology (Jul)  
NSF, OCE (Nov)

- NSF, OCE (Dec)
- NOAA, Florida Sea Grant, (Jun)
- DEB, Connecticut, LIS Res Fund (Dec)
- 1995** NSF, Ecology (Dec)
- NSF, OCE (Jan)
- Connecticut Sea Grant (Sep)
- 1996** NSF, Ecology (Mar, May, Nov)
- NSF, OCE (Mar, May, Nov)
- N. Carolina WRRRI (May)
- 1997** SeaGrant, CT (Sep)
- SeaGrant, AL (Sep)
- N. Carolina WRRRI (Dec)
- NERC/UK (Nov)
- Hudson R Found (Dec)
- 1998** USGS, WRR, NC (Feb)
- NOAA/HAB (May)
- NOAA/SG, MA (Aug)
- 1999** NERC, UK (Sep)
- WRRC, NC (Sep)
- 2000** NOAA/ Sea Grant, RI (Sep)
- 2001** NOAA/Sea Grant, CT, LIS Study (Nov)
- 2002** NSF OCE (May)
- NSF Biol (Nov)
- 2003** NOAA/Sea Grant AL (Aug)
- NOAA/Sea Grant RI (Sep)
- Hudson R. Found. (Feb)
- Amer. Chem. Soc. (Dec)
- 2004** NOAA Va Sea Grant (Aug)
- NSF Arctic Programs (Nov)
- Amer Chem Soc PRF (Jan)
- 2005** NERR Graduate Fellowships (Dec)
- NERR Graduate Fellowships (Dec)
- NSF Young Investigator (Nov)
- 2006** NERR Research Proposal
- \*2007** Hudson River Foundation

## 2. Manuscript Reviews

- 1978-82** Estuaries (4 manuscripts reviewed, 1980-1982)
- Estuar. Coastal Shelf Sci. (1981)
- J. Plankton Research (1982)
- Science (1982)
- Marine Technol. Soc. J. (1982)
- Edited Books (4 manuscripts reviewed 1978-1982)
- 1983** Bull. Mar. Sci. (Dec.).
- Estuaries (Dec.).

- Estuaries (Oct.)  
 Estuaries (Sept.)
- 1984** Contrib. Marine Science (Nov.).  
 Ecological Modeling (Nov.).  
 J. Environ. Qual. (Nov.).  
 Estuaries (Nov.).  
 Estuar. Coastal Shelf Sci. (Oct.).  
 Estuaries (Jul.).  
 Publ. Cornell Ecosystem Center (Sept.).  
 Publ. Cornell Ecosystem Center (Jun.).
- 1985** Science (March)  
 J. Environ. Qual. (July)  
 Aquatic Botany (December)  
 Estuar. Res. Fed. (November)  
 Estuar. Res. Fed. (December)
- 1986** Limnol. Oceanogr. (August)  
 Limnol. Oceanogr. (Sept)  
 Limnol. Oceanogr. (Dec)  
 Ecol. Model. (Jun)
- 1987** Limnol. Oceanogr. (Feb)  
 J. Environ. Qual. (May)  
 Limnol. Oceanogr. (Jun)  
 Estuar. Coastal Shelf Sci. (July)  
 Bull. Mar. Sci. (Sep)  
 Estuaries (Sep)
- 1988** Estuaries (Feb)  
 Oxford University Press (Mar)  
 Limnology and Oceanography (Jun)  
 Limnology and Oceanography (Jul)  
 Coral Reef Symp. Proc. (Oct)
- 1989** J. Marine Research (Dec)  
 Biogeochemistry (Sep)  
 Marine Environmental Res. (Mar)  
 Estuar. Coast. Shelf Sci. (Mar)  
 Estuaries (Sep)  
 Trans. Amer. Fish. Soc. (Apr)
- 1990** Limnol. Oceanogr. (May)  
 Estuar. Coast. Shelf Sci. (Jul)  
 Estuaries (Jun)
- 1991** J. Mar. Res. (Mar)  
 Estuaries (Jul)  
 Limnol. Oceanogr. (Nov)  
 Estuar. Coast. Shelf Sci. (Dec)
- 1992** Limnol. Oceanogr. (Apr)  
 Mar. Ecol. Progr. Ser. (Oct, Nov)  
 Estuar. Coast. Shelf Sci. (Dec)

- ECSA Conf. Proc. (Dec)
- 1993** Limnol. Oceanogr. (Apr, Dec)  
Estuar. Coast. Shelf Sci. (Jan, Nov)  
J. Mar. Res. (Dec)  
Estuaries (Dec)  
Ecol. Appl. (Jul)  
Bull. Mar. Sci. (May)  
Ecol. Econ. (Nov)  
USFWS Bull. (Aug)
- 1994** Mar. Ecol. Progr. Ser. (May)  
J. Exper. Mar. Biol. Ecol. (Apr)  
J. Mar. Res. (Jan)  
Estuaries (Jun)  
J. Geophys. Res. Oceans (Apr)
- 1995** Contin. Shelf Res. (May)  
Ecological Applications (2--Apr, Dec)  
Ecological Engg. (Aug)  
Limnol. Oceanogr. (Aug)  
Biogeochem. (2--Jun, Oct)  
Aquat. Microbial Ecol. (Dec)  
AGU Coast. Estuar. Studies Ser. (Oct)
- 1996** Limnol. Oceanogr. (May)  
Biogeochem. (Dec)  
Aquat. Microbial Ecol. (Dec)  
Estuar. Coastal Shelf Sci. (May)
- 1997** Limnol. Oceanogr. (Nov)  
Biogeochem. (Aug)  
Mar. Ecol. Progr. Ser. (Dec)  
Estuaries (Nov)  
Cary Confer Book (Jul)
- 1998** Mar. Ecol. Progr. Ser. (Feb)  
Mar. Ecol. Progr. Ser. (Apr)  
Mar. Ecol. Progr. Ser. (Aug)  
Limnol. Oceanogr. (Jun)  
Limnol. Oceanogr. (Dec)  
Estuar. Coast. Shelf Sci (Oct)  
Aquat. Microbiol. Ecol. (Dec)
- 1999** Mar. Ecol. Progr. Ser. (May)  
Mar. Ecol. Progr. Ser. (Sep)  
Estuar. Coast. Shelf Sci (Sep)
- 2000** Biogeochem (Feb)  
Limnol. Oceanogr. (Aug)  
J.Mar. Freshw. Res (Jul)  
Estuar. Coast. Shelf Sci (Sep)  
Estuaries (Jul)
- 2001** Oikos. (Aug)

- Estuaries (Aug)
- 2002** Bioscience (Sep)
- Estuaries (Sep)
- Estuaries (Sep)
- Biogeochemistry (Sep)
- Limnol. Oceanogr (Jan)
- Estuar. Coastal Shelf Sci. (Mar)
- 2003** Nature (Jan)
- Limnol. Oceanogr (Sep)
- Estuar. Coastal Shelf Sci. (Jun, Dec)
- Estuaries (May)
- Ecol. Model (Dec)
- Acad. Press Book Chap (Jun)
- 2004** Mar. Ecol. Prog. Ser. (Feb)
- Mar. Ecol. Prog. Ser. (Aug)
- Mar. Ecol. Prog. Ser. (Dec)
- Limnol. Oceanogr. (Apr)
- Springer-Verlag Book Chap (Oct)
- 2005** Limnol. Oceanogr. (Apr)\*
- Limnol. Oceanogr. (Aug)\*
- Limnol. Oceanogr. (Sep)\*
- Mar. Ecol. Prog. Ser. (Feb)
- Mar. Ecol. Prog. Ser. (Dec)
- Estuaries (Nov)
- Ecological Appl (Oct)
- Hydrobiol. (Aug)
- \*Special citation letter from L&O Editor
- 2006** Limnol. Oceanogr. (Jun)
- Sea Grant Book (July)
- Springer Book (Oct)
- \*2007** MEPS (1)
- L&O (1)
- Estuar Coasts (2)
- CJFAS (1)
- Books (2, Academic, AGU)

3. External Advisor, Promotion and PhD Committees

- 1990 (1)
- 1991 (1)
- 1992 (1)
- 1993 (1)
- 1994 (2)
- 1995 (2)
- 1996 (1)
- 1998 (1)
- 1999 (2)

2001 (3)

2003 (1)

2004 (2)

\*2007 (2, EPA AEL, U of Hawaii)