

Margaret A. Palmer

Distinguished University Professor, University of Maryland

PalmerLab.umd.edu

Director, National Socio-environmental Synthesis Center

SESYNC.org

I. EDUCATION

1979, 1983 M.S., Ph.D. Coastal Oceanography, University of South Carolina
1977 B.S. Biology - Phi Beta Kappa, Emory University

II. PROFESSIONAL EXPERIENCE:

2015 - Distinguished University Professor, University of Maryland
2011 - Director, National Socio-Environmental Synthesis Center
2005-2011 Director, Chesapeake Biological Laboratory, UMCES
2003 - Professor of Entomology, University of Maryland
1999-00 Director, Ecology Program, National Science Foundation
1997-99 Director, Biological Sciences Program, University of Maryland
1997- Professor of Biology, University of Maryland
1992 -97 Associate Professor of Zoology, University of Maryland
1989- 92 Assistant Professor of Zoology, University of Maryland
1987- 89 Visiting Assistant Professor of Zoology, University of Maryland
1986 Visiting Scientist, Division of Invertebrate Zoology, Smithsonian Institution
1983- 87 Assistant Professor of Biology, Wabash College

III. AREAS OF PROFESSIONAL EXPERTISE

Restoration ecology, especially streams and rivers; wetland hydrology and carbon dynamics; invertebrate biodiversity; environmental impacts of mining & restoration of mined lands.

IV. AWARDS AND SPECIAL RECOGNITION

2018 Ramón Margalef Distinguished Speaker, Iberian Limnological Society
2018 Ruth Patrick Award of the American Society of Limnology and Oceanography
2017 Fellow, Society for Freshwater Science
2016 2016 Sustainability Science Award, Ecological Society of America
2015 Distinguished University Professor, University of Maryland
2015 Award of Research Excellence, Society for Freshwater Science
2012 Fellow, Ecological Society of America
2012 41st Henry J. Oosting Memorial Lecturer, Duke University
2011 University System of Maryland, Board of Regents Faculty Award for Excellence
2010 University of Maryland Center for Env Science, President's Award for Excellence
2006 Distinguished Ecologist citation, Colorado State University
2006 Ecological Society of America, Distinguished Service Award
2002 AAAS Fellow
2001 Aldo Leopold Leadership Fellow
1994 British Ecological Society Visiting Scholar
1993-94 Distinguished Scholar Teacher, University of Maryland
1990-91 Lilly Fellow

1990	Woods Hole Oceanographic Institution Invited Visiting Scholar
1986	McLain-McTurnan Research Scholar
1983	Byron K. Trippet Research Award
1983	Sigma Xi Award for Excellence in Research in the Natural Sciences
1979-81	Slocum Lunz Doctoral Fellowship, Belle W. Baruch Predoctoral Fellowship
1976	Woods Hole Oceanographic Institution Student Fellowship
1973-77	Academic Scholarships from Emory University & the Sirrine Foundation
1977	Phi Beta Kappa

V. EDITORIAL SERVICE

2016 -	<i>Science</i> magazine
2016 -	Princeton University Press, Advisory Board for <i>Monographs in Population Biology</i> book series
2014 -	International Advisory Board, <i>Ecosystem Health and Sustainability</i> , Ecological Society of America
2009 -	Editorial Board, <i>Current Opinion in Environmental Sustainability</i> , Elsevier
2009 -16	Editorial Board, Island Press <i>Restoration Ecology</i> book series
2007 -	Editorial Board, NY Academy of Sciences, <i>Year in Ecology & Conservation</i>
2005-	Editorial Board, <i>Restoration Ecology</i>
1998-05	Editorial Board, <i>Limnology & Oceanography</i>
1998-01	Freshwater Biology (1998 – 2001)

Other: Regular reviewer for *Science*, *Nature*, all ESA journals; Periodic reviewer for host of other journals including for example: *Trends in Ecology & Evolution*; *J. Applied Ecology*; *Environmental Science & Technology*, *PNAS*, *Ecology Letters*, *Freshwater Biology*, *Environmental Management*, *JAWRA*, *PLOSone*, etc.

VI. BOARD AND ADVISORY SERVICE

2017 -	Water, Science, & Technology Board, National Academies of Science
2016 -	Appalachian Headwaters Board of Directors
2015 -	Science Advisory Council, Conservation International
2012-14	Sustainable Environment Actionable Data Project (SEAD), Univ of Michigan
2012-16	Leibniz-Institute of Freshwater Ecology and Inland Fisheries Board
2011-15	European Union – REFORM board (Restoring Rivers)
2011-15	Scientific Advisory Panel, Missouri River Restoration Program
2010-15	U.S. National Committee for the International Institute for Applied Systems Analysis (IIASA), Austria
2010-14	European Union BioFRESH Scientific Advisory Board
2010-15	Swedish Research Council Formas, RESTORE Scientific Advisory Board
2009-11	Senior Advisory Board, CUASHI (Consortium of Universities for the Advancement of Hydrologic Science)
2008-10	Scientific Advisory Board, Potomac Conservancy
2006-09	NSF, National Advisory Board, Long Term Ecological Research
2006-14	Board of Trustees, Chesapeake Bay Trust
2005-08	Scientific Advisory Board, NSF National Center for Earth Surface Dynamics
2004-06	Scientific Advisory Board, Center for Watershed Protection
2004 -	Scientific Advisory Board, American Rivers

2002-05 Scientific Advisory Board, Grand Canyon Research and Assessment Center, USGS
 2001-04 Chair, Scientific Advisory Board, National Center for Ecological Analysis & Synthesis (2003 -04); board member (2001 – 2003)

VII. PROFESSIONAL AFFILIATIONS & COMMITTEES

2017 American Society of Limnology & Oceanography 2017 annual meeting, organized a symposium with two of my students on “Connectivity in Freshwaters”
 2016 American Geophysical Union, Chapman Conference: “Extreme Climate Event Impacts on Aquatic Biogeochemical Cycles and Fluxes”, program committee
 2015 Ecological Society of America, MacArthur Award Selection Committee
 2014 Natural Resources Ecological Lab Advisory Board, Colorado State University
 2013 NSF Task force: Envisioning the Future of LTER Network Office
 2012 Society of Ecological Restoration (SER) 5th World Conference on Ecological Restoration, conference planning committee
 2011-11 Organizer, workshop for International Consortium for Freshwater Biodiversity, Barcelona, Spain (Co-convenor, Klement Tockner - IGB Berlin)
 2010-13 Missouri River Recovery Program, Independent Science Advisory Panel
 2008-12 Chair, International Committee on Freshwater Biodiversity, *Diversitas*
 2005-06 NRC Committee on River Science
 2004-10 Section Head, Faculty of 1000, BioMed Central, Marine & Freshwater Ecology
 2004-06 Chair, Hydro-ecology Science Committee, NSF National NEON Design Team
 2004-06 National Research Council, member: Committee on River Science
 2003-07 International Riverine Landscapes – leadership team (2003 – 2007)
 2002-07 Chair “Synthesis of the state of Stream Restoration in the Nation”, NSF – National Center for Ecological Analysis and Synthesis
 2002-09 Ecological Society of America, Chair-Aquatic Section (1999-01); Vice-Chair, Aquatic Section (1997-99); Mercer Award Committee (1998-02); Pubs Comm. (2000-03); Nominations Comm.(2001); Chair, Ecological Visions project (2002-05);Governing Board (2003-05); Chair, Corporate Awards Comm. (2006-08); ESA Fellows election (2002-04); MacArthur Awards Comm. (2005-06).
 2002-08 Society for Freshwater Science. Policy Comm.(2000-04); Endowment Comm. (2000-20); Executive Comm.(1997-00); Co-Organizer, Symposium & journal issue (Ecological Heterogeneity, March 97); Chair, Awards Comm.(2005 -08)
 1995-02 Chair, Freshwater Section & Steering Committee Member, S.C.O.P.E. Project on Biodiversity & Ecosystem Function in Soils & Sediments, (1995- 01)
 1996-01 Chair, Advisory Board of Scholars: AAC&U-NSF project on Women & Science
 1999-01 National Center for Ecological Analysis & Synthesis, participant and co-leader for Project on Hydrological Regimes & Stream Ecosystems: Future Scenarios

VIII. PUBLICATIONS

Books

Falk, D., M. A. Palmer, and J. B. Zedler (eds.). 2006. Foundations of Restoration Ecology. Island Press. Washington, D.C.

Palmer, M.A., J.B Zedler, and D.A. Falk. 2016. Foundations of Restoration Ecology. 2nd Edition. Island Press. Washington D.C.

Peer-reviewed articles (* = Palmer student or postdoc)

1. Palmer, M.A., B. Kjerfve, and F.B. Schwing. 1980. Tidal analysis and prediction in a South Carolina estuary. **Contributions in Marine Science** 23: 17-23.
2. Coull, B.C. and M.A. Palmer. 1980. Heteropsyllus (Copepoda, Harpacticoida): A revised key including a new species from Chesapeake Bay. **Trans. of the American Micros. Soc.** 99:303-309.
3. Palmer, M.A. and B.C. Coull. 1980. The prediction of development rate and the effect of temperature for the copepod, *Microarthridion littorale*. **J. Experimental Marine Biology and Ecology** 48: 78-83.
4. Palmer, M.A. 1980. Variation in life history patterns between intertidal and subtidal populations of the meiobenthic copepod, *Microarthridion littorale*. **Marine Biology** 60: 159-165.
5. Palmer, M.A. and R.R. Brandt*. 1981. Tidal variation in the sediment densities of marine benthic copepods. **Marine Ecology Progress Series** 4: 207-212.
6. Fleeger, J.W. and M.A. Palmer. 1982. Secondary production of the estuarine, meiobenthic copepod, *Microarthridion littorale*. **Marine Ecology Progress Series** 7: 157-162.
7. Coull, B.C., E.L. Creed, R.A. Eskin, P.A. Montagna, M.A. Palmer, and J.B.J. Wells. 1983. Phytal meiofauna from the rocky intertidal at Murrell's Inlet, S.C. **Transactions of the American Microscopical Society** 102:380-389.
8. Coull, B.C. and M.A. Palmer. 1984. Field experimentation in meiofaunal ecology. **Hydrobiologia** 118: 1-9.
9. Palmer, M.A. 1984. Invertebrate drift: behavioral experiments with intertidal meiobenthos. **Marine Behavior and Physiology** 10: 235-253.
10. Palmer, M.A. and G. Gust. 1985. Dispersal of meiofauna in a turbulent tidal creek. **Journal of Marine Research** 43: 170-210.
11. Eskin, R.A. and M.A. Palmer. 1985. Suspension of nematodes in a turbulent tidal creek: species patterns. **Biological Bulletin** 169: 615-623.
12. Palmer, M.A. and R.M. Molloy*. 1986. Flow and the vertical distribution of meiofauna: a flume experiment. **Estuaries** 9: 225-228.
13. Palmer, M.A. 1986. Hydrodynamics and structure: interactive effects on meiofauna dispersal. **Journal of Experimental Marine Biology & Ecology** 103: 1-16.

14. Palmer, M.A., P. Montagna, D. Hardin, R. Spies. 1988. Meiofauna dispersal near natural petroleum seeps in the Santa Barbara channel: a recolonization experiment. **Oil & Chemical Pollution** 4:179-189.
15. Palmer, M.A. 1988. Marine meiofauna and epibenthic fish predators: separating predation, disturbance, and hydrodynamic effects. **Ecology** 69: 1251-1259.
16. Palmer, M.A. 1988. A review of passive transport and active emergence of marine meiofauna with implications for recruitment. *Marine Ecology Progress Series* 48: 81-91.
17. Coull, B.C., M.A. Palmer, and P.E. Myers. 1989. Controls on the vertical distribution of meiobenthos: field & flume studies with juvenile fish. **Marine Ecology Progress Series** 55:133-139.
18. Palmer, M.A. 1990. Temporal and spatial dynamics of meiofauna within the hyporheic zone of Goose Creek, Virginia. **J North American Benthological Society** 9:17-25.
19. Palmer, M.A. 1990. Understanding the movement dynamics of a stream-dwelling invertebrate community using marine analogs. **Stygologia** 5(2): 67-74.
20. Fleeger, J.W., M.A. Palmer, and E.B. Moser. 1990. On the scale of aggregation of meiobenthic copepods on a tidal mudflat. P.S.Z.N.I.: **Marine Ecology** 11:227-237.
21. Palmer, M.A. 1992. Incorporating lotic meiofauna into our understanding of faunal transport processes. **Limnology and Oceanography** 37:329-341.
22. Palmer, M.A., A.E. Bely*, and K.E. Berg*. 1992. Response of stream fauna to lotic disturbances: a test of the hyporheic refuge hypothesis. **Oecologia** 89:182-194.
23. Palmer, M.A., P. Arensburger*, and A.P. Martin*. 1992. The role of patch dynamics in explaining population persistence of hyporheic biota: a numerical simulation model. pp. 119-132 in Proc 1st Int'l Groundwater Ecology Conf (Edt. J. Stanford & J.. Simons) Amer.Water Res.Assoc. Bethesda, MD.420pp.
24. Hakenkamp*, C.C. and M.A. Palmer. 1992. Problems associated with quantitative sampling of groundwater invertebrates. Pp.101-110 in Proc. of the First Int'l Groundwater Ecology Conference. (see above)
25. Palmer, M.A. 1993. Experimentation in the hyporheic zone: challenges and prospectus. **Journal of the North American Benthological Society**. 12:84-194.
26. Poff, N.L., M.A. Palmer, P. Angermeir, R. Vadas, C.C. Hakenkamp*, A. Bely*, P. Arensburger*, and A.Martin*. 1993. Size structure of the metazoan community in a Piedmont stream. **Oecologia** 95:202-209.

27. Ward, J.V. and M.A. Palmer. 1994. Distribution of freshwater meiofauna over a range of spatial scales in alluvial river-aquifer systems. **Hydrobiologia** 287: 147-156.
28. Hakenkamp*, C.C., M.A. Palmer, and B.R. James. 1994. Community dynamics of metazoa from a sandy aquifer near the Chesapeake Bay. **Hydrobiologia** 287:195-206.
29. Turner*, E.J., R.K. Zimmer-Faust, M.A. Palmer, & M. Luckenbach. 1994. Settlement of oyster larvae: effects of water flow & water-soluble chemical cues. **Limnology & Oceanography** 39:1579-1593.
30. Breitburg, D.L., M.A. Palmer, and T. Loher. 1995. Larval distributions and the spatial patterns of settlement of an oyster reef fish: responses to flow and structure. **Marine Ecology Progress Series**. 125:45-60.
31. Palmer, M.A., P. Arensburger*, P.S. Botts, C.C. Hakenkamp*, and J. Reid. 1995. Disturbance & the community structure of invertebrates: patch-specific effects and the role of refugia. **Freshwater Biology** 34: 343-356.
32. Palmer, M.A. and D.L. Strayer. 1996. Meiofauna. pages 315-337 in: Methods in Stream Ecology Edited by R. Hauer and G. Lamberti. Academic Press.
33. Palmer, M.A., P. Arensburger*, P. Martin*, and D. Denman. 1996. Disturbance in patchy environments: role of woody debris as a refuge for invertebrates. **Oecologia** 105:247-257.
34. Palmer, M.A., J.D. Allan, and C.A. Butman. 1996. The role of dispersal as a regional process influencing local community structure: marine vs. freshwater comparisons. **Trends in Ecology and Evolution** 11:322-326.
35. Turner, P.M. and M.A. Palmer. 1996. Species composition of the rotifer community inhabiting the interstitial sands of Goose Creek, Virginia with comments on habitat preferences. **Q. Journal of Microscopy** 37:552-565.
36. Palmer, M.A. and N.L. Poff. 1997. The influence of environmental heterogeneity on patterns and processes in streams. **J North American Benthological Society** 16:169-173.
37. Palmer, M.A., C.C. Hakenkamp*, and K. Nelson-Baker*. 1997. Ecological heterogeneity in streams: why variance matters. **Journal of the North American Benthological Society** 16:189-202.
38. Palmer, M.A., R. Ambrose, and N.L. Poff. 1997. Ecological theory and community restoration ecology. **Restoration Ecology** 5:291-300.
39. Palmer, M.A., A.P. Covich, B. Finlay, J. Gibert, K.D. Hyde, R.K. Johnson, T. Kairesalo, P.S. Lake, C.R. Lovell, R.J. Naiman, C. Ricci, F. F. Sabater, and D.L. Strayer. 1997. Biodiversity and ecosystem function in freshwater sediments. **Ambio** 26:571-577.

40. Freckman, D.W., J. Brussaard, P. Snelgrove, and M.A. Palmer. 1997. Biodiversity and ecosystem functioning of soils and sediments. **Ambio** 26:556-562.
41. Wall, D.H., L. Brussaard, P. Hutchings, M.A. Palmer & P.V.R. Snelgrove. 1998. Soil & sediment biodiversity & ecosystem functioning. **Nature & Human Resources** 34:41-51.
42. Covich, A.P., M.A. Palmer, and T.A. Crowl. 1999. The role of benthic species in freshwater ecosystem processes. **Bioscience** 49:119-126.
43. Hakenkamp*, C.C. and M.A. Palmer. 1999. Introduced bivalves in freshwater ecosystems: the impact of *Corbicula* on carbon dynamics. **Oecologia** 119: 445-451.
44. Hakenkamp*, C. C. and M. A. Palmer. 2000. The ecology of hyporheic meiofauna. IN: Streams and Ground Waters - Edt. by J. Jones and P. Mulholland. Academic Press.
45. Palmer, M.A., C.M. Swan*, K. Nelson*, P. Silver Botts and R. Alvestad*. 2000. Streambed landscapes: evidence that stream invertebrates respond to the type and spatial arrangement of patches. **Landscape Ecology** 15:563-576.
46. Silver, P., J. Cooper, M. Palmer, & K. Nelson*. 2000. Density-independent influence of spatial arrangement of patches on chironomid life history traits. **Oecologia** 124: 216-224.
47. Swan*, C.M. and M.A. Palmer. 2000. Small-scale spatial patterns in lotic meiofauna communities. **Freshwater Biology** 44:109-121.
48. Palmer, M.A., Alexander, L., W. Lamp, and J. Brooks. 2000. Review of Carr, J. and Chu, Restoring Life in Running Waters. **Restoration Ecology** 8:210.
49. Palmer, M.A. and P.S. Lake. 2001. Invertebrate Biodiversity in Freshwaters. Encyclopedia of Biodiversity Volume 3, pages 531-542. Simon Levin (ed.)
50. Hakenkamp*, C., S. Ribblett*, C. Swan*, J. Reid, M. A. Palmer, M. Goodson*. 2001. The impact of an introduced species of bivalve (*Corbicula fluminea*) on the benthos of a sandy stream. **Freshwater Biology** 46: 491-502.
51. Boulton, A., C. Hakenkamp*, M. Palmer, and D. Strayer. 2001. Freshwater meiofauna & surface water-sediment linkages. Chap 11 in: Freshwater Meiofauna: Biology and Ecology. Edt: S. D. Rundle, A. L. Robertson, J. M. Schmid-Araya Publisher: Backhuys
52. Silver, P., M.A. Palmer, C.S. Swan*, and D. Wooster*. 2001. The small scale ecology of freshwater meiofauna. Chapter 10 in: Freshwater Meiofauna: Biology and Ecology. Edt: S. D. Rundle, A. L. Robertson, J. M. Schmid-Araya Publisher: Backhuys, Leiden.
53. Wall, D.H., M.A. Palmer, and P. V.R. Snelgrove. 2001. Biodiversity in critical transition zones between terrestrial, freshwater, and marine soils and sediments: processes, linkages, and management implications. **Ecosystems** 4: 418-420.

54. Ewel, K.C., Cressa, C. Kneib, R., Lake, P.S. Levin, L., Palmer, M.A. et al. 2001. Managing critical transition zones. **Ecosystems** 4: 451-460.
55. Levin, L., Bosch, D, Brim, J.B., Covich, A., Dahm, C., Erseus, C., Ewel, K.C., Kneib R., Moldenke, A., Palmer, M.A., Strayer, D.L, Snelgrove, P. & Weslawski, J. 2001. The role of biodiversity in the function of marine critical transition zones. **Ecosystems** 4: 430-451.
56. Cardinale*, B.J., C.S. Smith*, and M.A. Palmer. 2001. The influence of initial colonization by hydropsychid caddisfly larvae on the development of stream invertebrate assemblages. **Hydrobiologia** 455:19-27.
57. Michener, W.K., Baerwald, T., P. Firth, M. A. Palmer, J. Rosenberger, E. Sandlin, and H. Zimmerman. 2001. Defining and unraveling Biocomplexity. **BioScience** 51:1018-1023.
58. Cardinale*, B.J., M.A. Palmer, C.M. Swan*, S. Brooks*, & N. L. Poff. 2002. Influence of habitat heterogeneity on biofilm metabolism in a stream ecosystem. **Ecology** 83: 412-422.
59. Cardinale*, B.J., M.A. Palmer, and S.L. Collins. 2002. Species diversity enhances ecosystem functioning through interspecific facilitation. **Nature** 415: 426-429.
60. Palmer, M.A., G.E. Moglen, N. E. Bockstael, S. Brooks*, J.E. Pizzuto, C. Wiegand, and K. van Ness. 2002. The Ecological consequences of changing land use for running waters: the suburban Maryland case. **Yale Bulletin Environmental Science** 107: 85-113.
61. Brooks*, S., M.A. Palmer MA, B.J. Cardinale*, C. Swan*, S. R. Ribblett*. 2002. Stream rehabilitation: limitations of community structure data. **Restoration Ecology** 10:156-168.
62. Cardinale*, B.J. and M.A. Palmer. 2002. Disturbance moderates biodiversity-ecosystem function relationships: experimental evidence from stream caddisflies. **Ecology** 83:1915-1927
63. Benda, L.E., L. Poff, C. Tague, M.A. Palmer, J. Pizzuto, S. Cooper, E. Stanley, and G. Moglen. 2002. How to avoid train wrecks when using science in environmental problem solving. **Bioscience** 52: 1127-1136.
64. Nilsson, C., J. E. Pizzuto, G. E. Moglen, M. A. Palmer, E. H. Stanley, N. E. Bockstael, and L. C. Thompson. 2003. Ecological Forecasting and running-water systems: challenges for economists, spatial analysts, hydrologists, geomorphologists, and ecologists. **Ecosystems** 7: 659-674.
65. Hastings, A. and M.A. Palmer. 2003. A bright future for biologists and mathematicians. **Science** 299: 2003-2004.
66. Poff, N.L., J. D. Allan, M.A. Palmer, D. D. Hart, B.D. Richter, A.H. Arthington, J. L. Meyer, J.A. Stanford, K. H. Rogers. 2003. River flows & water wars: emerging science for environmental decision-making. **Frontiers in Ecology & Environment** 1:298-306.

67. Palmer, M.A., D.D. Hart, J. D. Allan, E. Bernhardt* and the National Riverine Restoration Science Synthesis Working Group. 2003. Bridging engineering, ecological, and geomorphic science to enhance riverine restoration: local and national efforts. Proc. National Symposium on Urban and Rural Stream Protection and Restoration, EWRI World Water and Environmental Congress, Philadelphia, Pa, June 2003, published by the American Society of Civil Engineers, Reston Va.
68. Swan*, C.M. and M. A. Palmer. 2004. Leaf diversity alters stream litter decomposition. **Journal of the North American Benthological Society** 23: 15-28.
69. Silver, P., D. Wooster* & M. Palmer. 2004. Chironomid responses to spatially-structured, dynamic stream landscapes. **J North American Benthological Society** 23: 69-77.
70. Cardinale*, B. J., E. Gelman, and M. A. Palmer. 2004. Net-spinning caddisflies as ecosystem engineers: The effect of *Hydropsyche* on benthic substrate stability in streams. **Functional Ecology** 18:381–387.
71. Moglen, G., K., Nelson*, M. A. Palmer, J.E. Pizzuto, and C.E. Rogers and M.I. Hejazi. 2004. Hydro-ecological responses to land use in small urbanizing watersheds. In: R. DeFries, G. Asner, R. Houghton (eds.) *Ecosystems and Land Use Change Interactions*. **Geophys. Monograph Ser.** 153:41-60, AGU, Washington, D.C.
72. Palmer, M.A., E. Bernhardt*, E. Chornesky, S. Collins, A. Dobson, C. Duke, B. Gold, R. Jacobson, S. Kingsland, R. Kranz, M. Mappin, M. L. Martinez, F. Micheli, J. Morse*, M. Pace, M. Pascual, S. Palumbi, O. J. Reichman, A. Simons, A. Townsend, and M. Turner. 2004. Ecology for a crowded planet. **Science** 304: 1251-1252.
73. Cardinale*, B. J., M. A. Palmer, A. R Ives, and S. Brooks*. 2004. The diversity-productivity relationship in stream ecosystems varies with the natural disturbance regime. **Ecology** 86:716-726.
74. Palmer, M., E. Bernhardt*, E Chornesky, S Collins, A. Dobson, C Duke, B Gold, R. Jacobson, S Kingsland, R Kranz, M Mappin, M Martinez, F Micheli, J Morse, M.Pace, M Pascual, S Palumbi, O J Reichman, A Simons, A Townsend, & M Turner 2005. Ecology for the 21st Century: an Action Plan. **Frontiers in Ecology & the Environment** 3:4-11
75. Allan, J.D., M.A. Palmer, and N.L. Poff. 2005. Freshwater ecology pp. 272-88 in Climate Change and Biodiversity. Edited by T.E. Lovejoy and L. Hannah. Yale Univ Press
76. Hastings, A., P. Arzberger, B. Bolker, S. Collins, A. R. Ives, N. A. Johnson, M. A. Palmer. 2005. Quantitative bioscience for the 21st century. **BioScience** 55:511-517
77. Meyerson, L.A., J. Baron, J. Melillo, R. J. Naiman, R.I. O'Malley, G. Orians, M.A. Palmer, A.S.P. Pfaff, and O.E. Sala. 2005. Aggregate Measures of Ecosystem Services: Can we take the pulse of nature? **Frontiers in Ecology and the Environment** 3:56-59

78. Palmer, M.A. 2004. Ecological futures and ecological research. **Journal of Soil and Water Conservation** Nov/Dec: 120
79. Moore*, A.M. and M.A. Palmer. 2005. Agricultural watersheds in urbanizing landscapes: implications for conservation of biodiversity of stream invertebrates. **Ecological Applications** 15:1169-1177
80. Bernhardt*, E.S., M. A. Palmer, J. D. Allan, G. Alexander, S. Brooks*, J. Carr, C. Dahm, J. Follstad-Shah, D.L. Galat, S. Gloss, P. Goodwin, D. Hart, B. Hassett*, R. Jenkinson, G.M. Kondolf, S. Lake, R. Lave, J.L. Meyer, T.K. O'Donnell, L. Pagano, P. Srivastava, E. Sudduth. 2005. Restoration of U.S. Rivers: a national synthesis. **Science** 308:636-637
81. Hassett*, B., M.A. Palmer, E. S. Bernhardt*, S. Smith, J. Carr, and D. Hart. 2005. Status and Trends of River and Stream Restoration in the Chesapeake Bay Watershed. **Frontiers in Ecology and the Environment** 3: 259-267.
82. Swan*, C.S. and M. A. Palmer. 2005. Leaf litter diversity leads to non-additivity in stream detritivore colonization. **Oceanological & Hydrobiological Studies** 34: 19-38.
83. Wohl, E., P Angermeier, B Bledsoe, M Kondolf, L MacDonnell, D Merritt, M Palmer, L Poff, and D Tarboton. 2005. River restoration. **Water Resources Res** 41: 1- 12 W10305
84. Ribblett*, S.R., W. Coates, and M.A. Palmer. 2005. Protozoan functional groups influence rates of decomposition in stream ecosystems. **Freshwater Biology** 50:516-527
85. Palmer, M.A. 2005. Nature's technology: futures with our without? The Environment, global change, and sustainability. Pp in: *Vision 2033: Linking Science and Policy for Tomorrow's World*, American Assoc Advancement of Science, Washington, D.C.
86. Palmer, M.A., E. Bernhardt*, J. D. Allan, G. Alexander, S. Brooks*, J. Carr, C. Dahm, J. Follstad-Shah, D.L. Galat, S. Gloss, P. Goodwin, D. Hart, B. Hassett*, R. Jenkinson, G.M. Kondolf, S. Lake, R. Lave, J.L. Meyer, T.K. O'Donnell, L. Pagano, P. Srivastava, E. Sudduth. 2005. Standards for ecologically successful river restoration. **Journal of Applied Ecology** 42: 208-217.
87. Palmer, M.A. and E.S. Bernhardt*. 2006. Hydroecology and river restoration: ripe for research and synthesis. **Water Resources Research** 42, W03S07
88. Palmer, M.A. and J. D. Allan. 2006. River restoration: as the need for river restoration grows, supporting federal policies should follow. **Issues in Science& Techn** 22: 40-48.
89. Palmer, M. A., D. L. Strayer, and S. D. Rundle. 2006. Chapter 19: Meiofauna. pp. 415-433. In: F. R. Hauer and G. A. Lamberti (eds.). *Methods in Stream Ecology*. Academic Press.

90. Palmer, M.A. 2006. Ecological theory and restoration ecology, pp 1 – 10 *In: Foundations of Restoration Ecology*. Island Press. Washington, D.C.
91. Menninger*, H. M. and Palmer M.A. 2006. Restoring ecological communities: from theory to practice. Pp 88-112 *In: Foundation of Restoration Ecology*. Island Press. Washington, D.C.
92. Swan*, C.M. & M.A. Palmer. 2006. Composition of speciose leaf litter alters stream detritivore growth, feeding activity and leaf breakdown. **Oecologia** 147:469-78
93. Swan*, C.S. and M. A. Palmer. 2006. Preferential feeding by an aquatic consumer mediates non additive decomposition of speciose leaf litter. **Oecologia** 149:107-114.
94. Groffman, P.M., J.S. Baron, T. Blett, A. Gold, I. Goodman, L.H. Gunderson, B.M. Levinson, M.A. Palmer, H.W. Paerl, G.D. Peterson, N. L. Poff, D.W. Rejeski, J.F. Reynolds, M.G. Turner, K.C. Weathers, J. Wiens. 2006. Ecological thresholds: The key to successful environmental management an important concept with no practical application? **Ecosystems** 9: 1-13.
95. Jenkinson, R., K. Barnas, J. Braatne, E. Bernhardt*, M. Palmer, J.D. Allan, and the National River Restoration Science Synthesis Working Group. 2006. Stream restoration databases and case studies: a guide to information resources and their utility in advancing the science and practice of restoration. **Restoration Ecology** 14: 177–186.
96. Bernhardt*, E.S. and M.A. Palmer. 2007. Restoring streams in urbanizing landscapes. **Freshwater Biology** 52: 738-751.
97. Nelson*, K. and M. Palmer. 2007. Stream temperature surges under urbanization and climate change. **Journal of the American Water Research Association** 43: 440 – 452.
98. Hassett*, B., M.A. Palmer, S. Smith and E.S Bernhardt*. 2007. Evaluating stream restoration in the Chesapeake Bay watershed through practitioner interviews. **Restoration Ecology** 15(3): 463-472.
99. Palmer, M.A., J. D. Allan, and J. M. Meyer. 2007. River restoration in the United States in the 21st century. **Restoration Ecology** 15(3): 472-481.
100. Bernhardt*, E.S., E.B. Sudduth, M.A. Palmer, J.D. Allan, J.L. Meyer, G. Alexander, J. Follstad-Shah, B. Hassett*, R. Jenkinson, R. Lave, J. Rumps, L. Pagano. 2007. Restoring rivers one reach at a time: Results from a structured survey of U.S. river restoration practitioners. **Restoration Ecology** 15 (3): 482-493.
101. Heatherly, T., M. R. Whiles, D. J. Gibson, S. L. Collins, A. D. Huryn, J. K. Jackson, M. A. Palmer. 2007. Stream insect occupancy-frequency patterns and metapopulation structures. **Oecologia** 115: 313 – 321.

102. Menninger*, H. L. and M. A. Palmer. 2007. Herbs and grasses as an allochthonous resource in open canopy headwater streams. **Freshwater Biology**. 52: 1689- 1699.
103. Wohl, E., M.A. Palmer, and J. M. Kondolf. 2008. The U.S. Experience. Chapter 10 *In: River Futures*. Edt. G.J. Brierley. Island Press.
104. Pizzuto, J., G. Moglen, M.A. Palmer, and K. Nelson*. 2008. Two model scenarios illustrating the effects of land use and climate change on riverbeds of suburban Maryland, U.S.A. pages 359-381 *In Gravel Bed Rivers 6 - From Process Understanding to River Restoration*. Edt: M. Rinaldi, P. Ergenzinger, H. Habersack, T. Hoey, H. Piegay. Elsevier.
105. Palmer, M.A., C. Reidy, C. Nilsson, M. Florke, J. Alcamo, P.S. Lake, and N. Bond. 2008. Climate change and the world's river basins: anticipating response options. **Frontiers in Ecology and the Environment** 6: 81-89.
106. Williamson, C., W. Dodds, T.K. Kratz, and M.A. Palmer. 2008. Lakes and streams as sentinels and integrators of terrestrial and atmospheric processes. **Frontiers in Ecology and the Environment** 5: 247-254.
107. Menninger*, H.L., M. A. Palmer, L.S. Craig*, and D.C. Richardson*. 2008. Periodical cicada detritus impacts stream ecosystem function. **Ecosystems** 11:1306-1317.
108. Craig*, L.S., M.A. Palmer, D. C. Richardson*, S. Filoso*, E. S. Bernhardt*, B. P. Bledsoe, M.W. Doyle, P. M. Groffman, B. Hassett*, S. S. Kaushal, P. M. Mayer, S. M. Smith, and P.R. Wilcock. 2008. Stream restoration strategies for reducing nitrogen loads. **Frontiers in Ecology and the Environment** 6: 529-538.
109. Kaushal, S.S., P. M. Groffman, L. E. Band, C. A. Shields, R.P. Morgan, M. A. Palmer, K. N. Eshleman, K. T. Belt, C. M. Swan*, S.E.G. Findlay, and G.T. Fisher. 2008. Interaction between urbanization and climate variability amplifies watershed nitrate export in Maryland, U.S.A. **Environmental Science & Technology** 42: 5872–5878.
110. Nelson*, K., M. A. Palmer, J. Pizzuto, G. Moglen, P. Angermeier, R. Hilderbrand, M. Dettinger, and K. Hayhoe. 2009. Forecasting the combined effects of urbanization and climate change on stream ecosystems: from impacts to management options. **J. Applied Ecology** 46: 154–163
111. Palmer, M.A. 2009. *Invited Odum essay*: Reforming Watershed Restoration: Science in Need of Application and Applications in Need of Science. **Estuaries & Coasts** 32: 1-17.
112. Palmer, M.A., D. P. Lettenmeier, N.L. Poff, S. Postel, B. Richter, and R.O. Warner. 2009. Climate Change and River Ecosystems: Protection and Adaptation Options. **Environmental Management** 44:1053–1068
113. Palmer, M.A. and S. Filoso*. 2009. Restoration of ecosystem services. **Science** 325: 575-576.

114. Palmer, M. A. and D. C. Richardson*. 2009. Provisioning Services: A Focus on Fresh Water. In: The Princeton Guide to Ecology, ed. Simon A. Levin, 625-33. Princeton: Princeton University Press.
115. Lookingbill, T., S. Kaushal, R. Gardner, R. Morgan, A. Elmore, R. Hilderbrand, K. Eshleman, W. Boynton, M. Palmer & W. Dennison. 2009. Altered ecological flows blur boundaries in urbanizing watersheds. **Ecology & Society** 14(2): 10
116. Wenger, S.J., A.H. Roy, C.R. Jackson, E.S. Bernhardt*, S. Filoso, C.A. Gibson, W.C. Hession, S.S. Kaushal, E. Marti, J.L. Meyer, M.A. Palmer, M.J. Paul, A.H. Purcell, A. Ramirez, A.D. Rosemond, K.A. Schofield, E.B. Sudduth, and C.J. Walsh. 2009. Twenty-six key research questions in urban stream ecology: an assessment of the state of the science. **Journal of the North American Benthological Society** 28:1080-1098.
117. Carpenter, S.R., V. Armbrust, P. Arzberger, T. Chapin, J. Elser, E. Hackett, T. Ives, P. Kareiva, M. Leibold, P. Lundberg, M. Mangel, N. Merchant, W. Murdoch, M. Palmer, D. Peters, S. Pickett, K. Smith, D. Wall, and A. Zimmerman. 2009. Synthesis must be accelerated in ecology and environmental science. **BioScience** 59: 699-701.
118. Mooney, H., A. Lariguaderie, E. Elmquist, O. Hoegh-Guldberg, S. Lavorel, G.M. Mace, M. A. Palmer, R. Scholes, T. Yahara. 2009. Biodiversity, climate change, and ecosystem services. **Current Opinion in Environmental Sustainability** 1: 46-54.
119. Palmer, M.A. 2009. River restoration as a collaboration with nature. IN: Proceedings of the 4th European River Restoration international conference; Venice, Italy. pp 27-34.
120. Palmer, M.A., H.L. Menninger*, and E.S. Bernhardt*. 2010. River Restoration, Habitat Heterogeneity and Biodiversity: A Failure of Theory or Practice? **Freshwater Biology** 55: 1 – 18.
121. Mace, G.M., W. Cramer, S. Diaz, D.P. Faith, A. Lariguaderie, P. Le Prestre, M. A. Palmer, C. Perrings, R.J. Scholes, M. Walpole, B. Walther, J.M.E. Watson, and H. A. Mooney. 2010. Biodiversity targets after 2010. **Current Opinion in Environmental Sustainability** 2: 1-6.
122. Palmer, M.A. E. S. Bernhardt*, W. H. Schlesinger, K. N. Eshleman, E. Foufoula-Georgiou, M. S. Hendryx, A. D. Lemly, G. E. Likens, O. L. Loucks, M. E. Power, P. S. White, P. R. Wilcock. 2010. Mountaintop Mining Consequences. **Science** 327 (5962): 148-149.
123. Palmer, M.A. 2010. Beyond infrastructure for water resources. **Nature** 467: 534-535.
124. Alexander, L.C., D. J. Hawthorne, M.A. Palmer and W. O. Lamp. 2011. Loss of genetic diversity in the North American mayfly *Ephemera invaria* associated with deforestation of headwater streams. **Freshwater Biology** doi:10.1111/j.1365-2427.2010.02566.x

125. Bernhardt*, E.S. and M.A. Palmer. 2011. The environmental costs of mountaintop mining valley fill operations for aquatic ecosystems of the Central Appalachians. **Ann. N.Y. Acad. Sci.** ISSN 0077-8923. Issue: The Year in Ecology and Conservation Biology
126. Filoso, S. and M.A. Palmer. 2011. Assessing stream restoration effectiveness at reducing nitrogen export to downstream waters. **Ecological Applications** 21: 1989-2006
127. Bernhardt*, E.S. and M.A. Palmer. 2011. River restoration – the fuzzy logic of repairing reaches to reverse watershed scale degradation. **Ecological Applications** 21:1926-1931
128. McDonough*, O.T., J.D. Hosen*, and M.A. Palmer. 2011. Temporary streams: the hydrology, geography, and ecology of non-perennially flowing waters. In: River Ecosystems: Dynamics, Management and Conservation (H.S. Elliot and L.E. Martin, eds). Nova Science Publishers, Inc., Hauppauge, NY
129. Stranko, S., M. A. Palmer, R. Hilderbrand. 2011. Fish and Benthic Macroinvertebrate Diversity of Restored Urban Streams and Reference Streams. **Restoration Ecology** 20: 747-755.
130. Palmer, M.A. 2012. Socio-environmental sustainability and actionable science. **Bioscience** 62: 5-6.
131. Lariguaderie, A., A-H Pieur-Richard, G. Mace, M. Lonsdale, H.A. Mooney, L. Brussaard, D. Cooper, W. Cramer, P. Daszak, S. Diaz, A. Duraiappah, T. Elmqvist, D. Faith, L.E. Jackson, C. Krug, P.W. Leadley, P. Le Prestre, H. Matsuda, M.A. Palmer, C. Perrings, M. Pulleman, B. Reyers, E. Rosa. J. Scholes, E. Spheeris, B.L. Turner, and T. Yahara. 2012. Biodiversity and ecosystem services science for a sustainable planet: the DIVERSITAS vision for 2012-20. **Current Opinion in Environmental Sustainability** 4: 101-105.
132. Palmer, M.A. and C. A. Febria*. 2012. The heartbeat of ecosystems. **Science** 336:1393-1394
133. Laub*, B.G., D.W. Baker, B. P. Bledsoe, and M.A. Palmer. 2012. Range of variability of channel complexity in urban, restored, and forested reference streams. **Freshwater Biology** 57: 1076-1095.
134. Laub*, B.G., O. T. McDonough*, B. A. Needleman, and M.A. Palmer. 2013. Comparison of designed channel restoration and riparian buffer restoration effects on riparian soils. **Restoration Ecology** 21: 695-703.
135. Palmer, M.A. and O.T. McDonough*. 2013. Ecological restoration to conserve and recover river ecosystem service. Pages 279-300 IN: Sabater S & Elosegui A. *River conservation: Challenges and opportunities*. Foundation BBVA. Bilbao, Spain.
136. Ahalt, S., Band, L., Minsker, B., Palmer, M.A., Tiemann, M., Idaszak, R., Lenhardt, C.,

- Whitton, M. 2013. Water Science Software Institute: An Open Source Engagement Process. **Software Engineering for Computational Science and Engineering (SE-CSE)** 40-47. DOI 10.1109/SECSE.2013.6615098
137. Pahl-Wostl, C., A. Arthington, J. Bogardi, S. Bunn, H. Hoff, L. Lebel, E. Nikitina, M.A. Palmer, L. Poff, K. Richards, M. Schluter, R. Schulze, A. St-Hilaire, R.E. Tharme, K. Tockner, and D. Tsegai. 2013. Environmental flows and water governance: managing sustainable water uses. **Current Opinion in Environmental Sustainability** 5:341-351.
 138. Pahl-Wostl, C., M.A. Palmer, and K. Richards. 2013. Enhancing water security for the benefits of humans and nature – the role of governance. **Current Opinion in Environmental Sustainability** 5: 676-684.
 139. McCluney, K.E., N. L. Poff, M. A. Palmer, J. H. Thorp, G. C. Poole, B. S. Williams, M. R. Williams, J. S. Baron. 2014. Riverine macrosystems ecology: a framework for understanding the sensitivity, resistance, and resilience of whole river basins with human alterations. **Frontiers in Ecology and the Environment** 12: 48-58.
 140. Palmer, M.A., S. Filoso, and R.A. Fanelli*. 2014. From ecosystems to ecosystem services restoration as ecological engineering. **Ecological Engineering** 65: 62-70
 141. Ahalt, S., L. Band, L. Christopherson, R. Idaszak, C. Lenhardt, B. Minster, M. Palmer, M. Shelley, M. Tiemann, and A. Zimmerman. 2014. Water Science Software Institute: Agile and Open Source Scientific Software Development. **Software Engineering for Computational Science and Engineering**. IEEE Computing Society 16: 18-26.
 142. Acuna, V., T. Datry, J. Marshall, D. Barcelo, C.M. Dahm, A. Ginebreda, G. McGregor, S. Sabater, K. Tockner, and M.A. Palmer. 2014. Temporary streams and rivers – new policy instruments. **Science** 343: 1080-1081.
 143. Palmer, M.A., B. Koch*, and K. Hondula*. 2014. Ecological restoration of streams and rivers: shifting strategies and shifting goals. **Annual Review of Ecology, Evolution, and Systematics** 45: 247-269.
 144. Palmer, M.A. and K. Hondula*. 2014. Restoration as mitigation: analysis of stream mitigation for coal mining impacts in southern Appalachia. **Environmental Science and Technology** 48: 10552-10560.
 145. Moglen, G.E. and M. A. Palmer. 2014. Physics attributed to curve number model illustrate need for caution, and ecological responses often lag restoration efforts. *Proc. Natl. Acad. Sci.* 111(23): E2356. doi:10.1073/pnas.1400119111
 146. Hosen*, J., O.T. McDonough*, C. Febria*, and M. A. Palmer. 2014. Dissolved Organic Matter Quality and Bioavailability Changes across an Urbanization Gradient in headwater streams. **Environmental Science and Technology** 48: 7817-7824.

147. Koch*, B., C. Febria*, M. Gevrey, and M.A. Palmer. 2014. Nitrogen removal by stormwater management structures: a data synthesis. **Journal of the American Water Resources Association** 50: 1594-1607.
148. McDonough*, O.T., M.W. Lang, and M.A. Palmer. 2015. Surface hydrologic Connectivity between Delmarva bay wetlands and nearby streams along a gradient of agricultural alteration. **Wetlands** 35: 41-53.
149. Febria*, C.M., B.J. Koch*, and M.A. Palmer. 2015. Operationalising the ecosystem services framework for managing riverine biodiversity. 26 pp *In: Water Ecosystem Services: A Global Perspective*. Edt. by Martin-Ortega, J., B. Ferrier, I. Gordon, and S. Khan. Cambridge University Press. Cambridge.
150. Suding, K.N., E. Higgs, M. A. Palmer, J. B. Callicott, C. B. Anderson, M. Baker, J. J. Gutrich, K. L. Hondula*, M. C. LaFevor, B. M. H. Larson, A. Randall, J. B. Ruhl, and K. Z. S. Schwartz. 2015. Committing to ecological restoration: global legal and policy clarifications. **Science** 348: 638 – 640.
151. Koch*, B.J., C.M. Febria*, R.M. Cooke, J.D. Hosen*, M.E. Baker, A.R. Colson, S. Filoso, K. Hayhoe, J.V. Loperfido, A.M.K. Stoner, and M.A. Palmer. 2015. Suburban nitrogen retention: estimating the effectiveness of stormwater management structures. **Elementa** doi: 10.12952/journal.elementa.000063
152. Poff, N.L., C.M. Brown, T.E. Grantham, J.H. Mathews, M.A. Palmer, C.M. Spence, R.L. Wilby, M. Haasnoot, G. F. Mendoza, K.C. Dominique, and A. Baeza. 2015. Operationalizing sustainable water management in a non-stationary world: eco-engineering decision scaling. **Nature Climate Change** 6: 25-34.
153. Filoso, S., M.R.C. Smith, M. Williams, and M. A. Palmer. 2015. The efficacy of constructed stream-wetland complexes at reducing the flux of suspended solids to Chesapeake Bay. **Environmental Science & Technology** 49: 8986–8994.
154. Palmer, M.A., J. Liu, J. H. Matthews, M. Mumba, and P. D’Odorico. 2015. Building water security through green infrastructure. **Science** 349:584-585.
155. Febria*, C.M., J. D. Hosen*, B. C. Crump, M. A. Palmer, and D. D. Williams. 2015. Microbial response to change in flow status in temporary headwater streams: a cross-system comparison. **Frontiers in Microbiology** 6: article 522.
156. Palmer, M.A. and J.B. Ruhl. 2015. Aligning restoration science and the law to sustain ecological infrastructure for the future. **Frontiers in Ecology and the Environment** 13(9): 512–519.
*2016 Ecological Society of America Innovation for Sustainability Science Award
157. Palmer, M.A., J. K. Kramer, J. Boyd, and D. H. Hawthorne. 2016. Practices for Facilitating Interdisciplinary Synthetic Research: the National Socio-Environmental

Synthesis Center. **Current Opinion in Environmental Sustainability** 19: 111-122.

158. Hart, D.D., J. L. Buizer, J.A. Foley, L.E. Gilbert, L.J. Graumlich, A. R. Kapuscinski, J.G. Kramer, M. A. Palmer, D.R. Peart, and L. Silka. 2016. Mobilizing the power of higher education to tackle the grand challenge of sustainability: Lessons from novel initiatives. **Elementa: Science of the Anthropocene** 4: doi: 10.12952/journal.elementa.000090
159. Palmer, M.A., J.B. Zedler, and D. A. Falk. 2016. Ecological theory and restoration ecology. pp 3-26 *In: Foundations of Restoration Ecology*. Edited by: M.A. Palmer, J.B. Zedler, and D. A. Falk. Island Press, Washington D.C.
160. Moreno- Mateos, D. and M.A. Palmer. 2016. Watershed processes as drivers of aquatic ecosystem restoration. pp 395-423. *In: Foundations of Restoration Ecology*. Edited by: M.A. Palmer, J.B. Zedler, and D. A. Falk. Island Press, Washington D.C.
161. Palmer, M.A. 2016. Persistent and emerging themes in the linkage of theory to restoration practice. pp 517-531. *In: Foundations of Restoration Ecology*. Edited by: M.A. Palmer, J.B. Zedler, and D. A. Falk. Island Press, Washington D.C.
162. Turner, B.L., K. J. Esler, P. Bridgewater, J. Tewksbury, N. Sitas, B. Abrams, S. F. Chapin, R. Chowdhury, P. Christie, S. Diaz, P. Firth, C. N. Knap, J. Kramer, R. Leemans, M. Palmer, D. Pietri, J. Pittman, J. Sarukhán, R. Shackleton, R. Seidler, B. van Wilgen and H. Mooney. 2016. Socio-Environmental Systems (SES) Research: what have we learned and how can we use this information in future research programs. **Current Opinion in Environmental Sustainability** 19: 160-168
163. Filoso, S., M.O. Bezerra*, K. C. Weiss*, and M.A. Palmer. 2017. Forest restoration and water yield: a systematic review. **PLOS One** doi.org/10.1371/journal.pone.0183210
164. Fanelli*, R., K. Prestegard, and M. A. Palmer. 2017. Evaluation of infiltration-based stormwater management to restore hydrological processes in urban headwater streams. **Hydrological Processes** 31:3306-3319.
165. Hosen*, J.D., C.M. Febria*, B.C. Crump, and M. A. Palmer. 2017. Watershed Urbanization Linked to Differences in Stream Bacterial Community Composition. **Frontiers in Microbiology** 8: article 1452. doi.org/10.3389/fmicb.2017.01452
166. Olander, L., R. Johnston, H. Tallis, J. Kagan, L. Maguire, S. Polasky, D. Urban, J. Boyd, L. Wainger, and M. Palmer. 2018. Benefit Relevant Indicators: Ecosystem services measures that link ecological & social outcomes. **Ecological Indicators** 85: 1262-1272.
167. Epting*, S.M., J. D. Hosen*, L. C. Alexander, M. W. Lang, A.W. Armstrong*, and M. A. Palmer. 2018. Landscape metrics as predictors of hydrologic connectivity between Coastal Plain forested wetlands and streams. **Hydrological Processes** 32: 516-532. DOI: 10.1002/hyp.11433

168. Vörösmarty, C.J., V.R. Ozuna, A.D. Cak, P. Green, Z. Tessler, F. Corsi, A. Bhaduri, S. Bunn, J. Gastelumendi, I. Harrison, R. Lawford, P. J. Marcotullio, M. McClain, R. McDonald, P. McIntyre, M.A. Palmer, R. Robarts, A. Szöllösi-Nagy, and S. Uhlenbrook. 2018. Ecosystem-based water security and the sustainable development goals. *Ecohydrology and Hydrobiology*.
169. Hosen*, J.D., A. Armstrong*, and M.A. Palmer. *in final revision*. The effect of restoration and of hydrologic connectivity on dissolved organic matter in Coastal Plain wetlands and streams draining wetland watersheds.

IX. PUBLISHED REPORTS

Palmer, M.A., P. Arzberger, J. Cohen, R.D. Holt, J. Morse, D. Sumners, and Z. Luthey-Schulten. (2003) Accelerating mathematical-biological linkages: report of a joint NSF-NIH workshop. National Science Foundation online report.

NRC (2006). River Science at the U.S. Geological Survey. National Academies Press, Washington, D.C. (Palmer - member of NRC Committee)

NEON ISEP (2006). NEON Integrated Science and Education Plan. National Neon Design Committee. National Science Foundation.

U.S. Climate Change Science Program (2008) Adaptation Options for Climate-Sensitive Ecosystems: Rivers. Chapter 6.4. US CCSP Program, Washington, D.C.
<http://www.climatescience.gov/Library/sap/sap4-4/final-report/>

Carpenter, S.R., V. Armbrust, P. Arzberger, T. Chapin, J. Elser, E. Hackett, T. Ives, P. Kareiva, M. Leibold, P. Lundberg, M. Mangel, N. Merchant, W. Murdoch, M. Palmer, D. Peters, S. Pickett, K. Smith, D. Wall, and A. Zimmerman. (2009). The Future of Synthesis in Ecology and Environmental Sciences. Report to the National Science Foundation

Palmer, M.A. (2011). Metrics for the ecological evaluation of stream restoration outcome: a literature review with evidence-based recommendation. National Fish & Wildlife Foundation. Washington, D.C.

Doyle, M., S. Bartell, A. Farmer, C. Guy, S. Murphy, and M. Palmer. Spring pulses and adaptive management. (2011) Missouri River Recovery Program. Independent Science Advisory Panel.
<http://projects.ecr.gov/moriversciencepanel/pdfs/MRISAPFinalReportSpringPulse-AdaptMgt113011.pdf>

McKnight, D., A. Ellison, C. Goodale, M. Palmer, L. Rustad, and A. Zimmerman. 2014. Report to the National Science Foundation from the Task Force on Envisioning the Next-Generation LTER Network Office. <http://lnovision.colorado.edu/>

Olander, L., R. Johnston, H. Tallis, J. Kagan, L. Maguire, J. Boyd, S. Polasky, and L. Wainger. 2015. Best practices for integrating ecosystem services into federal decision making. doi:10.13016/M2CH07

Barton, C.M., L. Alessa, S. Bankes, T. Bogdan, L. Buja, E. CoBabe-Ammann, J.J. Feddema, K.A. Galvin, S. van der Leeuw, B. Turner, M. Alberti, R. Axtell, L. Betencourt, S.J. Breckler, E. Brondizio, D.G. Brown, P. Fox, R. Graves, E. Hackett, S. Hofferth, J.S. Jackson, R. Kassimir, M. Levy, J. Liu, E. Moran, G.C. Nelson, M. A. Palmer, W. Rand, D. Rogers, D. Rogers, J. Syvitski, and S. Wang. (2015). Advancing Next Generation Human Systems Science: A National Center for Social Informatics and Analytics. A report from an NSF Workshop in Washington, D.C.

Vörösmarty, C.J., V.R. Ozuna, A.D. Cak, P. Green, Z. Tessler, F. Corsi, A. Bhaduri, S. Bunn, J. Gastelumendi, I. Harrison, R. Lawford, P. J. Marcotullio, M. McClain, R. McDonald, P. McIntyre, M.A. Palmer, R. Robarts, A. Szöllösi-Nagy, and S. Uhlenbrook. 2018. Ecosystem-based water security and the sustainable development goals. Framing Notes to the High Level Panel on Water: Water-Related Environmental Services. Submitted to The United Nations Secretary-General and President of the World Bank Group High Level Panel on Water (HLPW), (Sustainable Development Knowledge Platform) convened in September 2017. <https://sustainabledevelopment.un.org/HLPWater>

Hampton, S.E., B.S. Halpern, M. Winter, J.K. Balch, J.N. Parker, J.N. Baron, M.A. Palmer, M. P. Schildhauer, P. Bishop, T.R. Meagher and A. Specht. 2017. Best practices for virtual participation in meetings – experiences from synthesis centers. Bulletin of the Ecological Society of America 98 (1): 57-63. DOI: 10.1002/bes2.1290

X. CONTRACTS AND GRANTS (Recent only)

2000-04, National Science Foundation Grant, (with P. Silver & D. Wooster) “Spatial Patch Structure: Can Ephemeral & Heterogeneous Patches Influence Stream Invertebrate Assemblages?” (P.I.; Co-P.I. = P Silver) \$353,000.

2000-04, Environmental Protection Agency/National Science Foundation Grant, “Spatial Pattern of Urbanizing Landscapes: linking Economics, Hydrology, and Geomorphology to understand the Ecology of Stream Ecosystems” (M. Palmer – lead PI; Co-PI’s – Bockstael, Moglen, Poff, Pizzuto) \$1,125,000.

2002-05, C.S. Mott Foundation, “National River Restoration Science Synthesis – focus on mid-western and southeastern stream ecosystems” \$150,000.

2002-05, Packard Foundation, “National River Restoration Science Synthesis – focus on a national level scientific evaluation” (P.I.) \$150,000.

2002–05, Environmental Protection Agency (GCRP) (CO PI with G. Moglen) “Modeling the combined effects of land use change and climate change on stream ecosystems” \$297,000

2002-05, Ecological Society of America (through awards from NSF, EPA, USDA, Mellon, Packard). “Environmental Science in the 21st Century” \$91,000.

2004-06, American Rivers (Altria), “United States River and Stream Restoration Science” (P.I.) \$35,000

2004-07, CALFED (Subcontract from University California –Berkeley; M Kondolf = P.I.), “River Restoration Science Synthesis project” \$83,000

2005-09, Environmental Protection Agency, “Ecological Sustainability in Rapidly Urbanizing Watersheds” (P.I.) \$292,000.

2005-08, Packard Foundation, “NRRSS Phase II: Testing the ecological effectiveness of channel re-configuration restoration projects” (P.I.) \$150,000

2005-06, Environmental Protection Agency, Climate Change Science Program, “Ecosystems and climate change: a research agenda” \$15,000.

2006-07, Environmental Protection Agency, Climate Change Science Program, “Prospectus of the effect of climate change on wild and scenic rivers” (P.I.) \$25,000.

2006-09, Environmental Protection Agency (via MDE): “Western Chesapeake Coastal Plain Stream Restoration Targeting” (P.I.) \$265,000.

2007-10 National Science Foundation, Dissolution Mortality of Juvenile Bivalves in Coastal Marine Deposits (lead PI: M. Green & George Waldbusser; Palmer- Co-P.I.) \$491, 000.

2007-09 U.S. D.A. – NRCS (CEAP). “Assessment of Wetland Water Quality Services Across an Alteration Gradient in the Choptank River Watershed” (P.I.) \$164,105.

2009- 11 U.S.D.A. – NRCS (CEAP) “Assessment of Wetland Water Quality Services Across an Alteration Gradient in the Choptank River Watershed” (P.I.) \$120,000.

2009-11 National Fish & Wildlife Foundation. “Promoting Successful Watershed Restoration using Cost-Effectiveness Monitoring and Assessment” (P.I., Co-PI= L. Wainger) \$183,084

2010-11 National Science Foundation. Increasing Seawater Filtration Capabilities to Enhance Coastal Mesocosm-scale Research” \$114,155 (Co-PI with Dave Secor)

2010-13 National Science Foundation. “Sustaining Coastal Experimentation and Observing Systems in Support of Marine Ecosystem and Climate Science (infrastructure award)”. (Co-PI with Tom Miller) \$1,702,000.

2010-13 National Oceanic & Atmospheric Administration. “Integrating Climate Change into the Restoration of the Chesapeake Bay and Watershed” (P.I.) \$1,303,191.

2011-14 Environmental Protection Agency (Climate Change Program). “Quantification of Freshwater Ecosystem Service Production Functions under a Changing Climate” (P.I.) \$894,540.

2011-16 National Science Foundation. “Environmental Synthesis Center - Bridging Computational, Social, and Natural Science for Environmental Solutions” (P.I.) \$27,500,000.

2011-12 National Science Foundation, “EAGER: Launch of a Water Science Software Institute (WSSI)”, (lead P.I. S. Ahalt, Co-PIs: M. Palmer, L. Band, B. Minsker), \$300,000. (\$100,000. To Co-P.I. M. Palmer)

2011-14 FAPESP (São Paulo Research Foundation, Brazil) “The role of forest fragments in controlling water quality and ecosystem functioning of streams draining agricultural catchments”, (Lead P.I. Sílvia Frosini. Co-PIs: L. Martinelli, S. Filoso, M. Palmer), \$124,000

2012-14 National Science Foundation “Conceptualization of a Water Science Software Institute” (Lead: S Ahalt, UNC; Co-PI’s: M. Palmer, L. Band, B. Minsker) \$780,000. (\$218,000 to University of Maryland)

2012-15 National Science Foundation. “Cyberinfrastructure Information Exchange and Cyber Challenges Working Group across BIO centers.” (P.I.) \$199,750.

2013-16 United States Department of Agriculture-ARS. “Wetland - Stream Hydrologic Connectivity and Ecosystem Services”. (P.I.) \$100,000.

2014-16 National Science Foundation, “SESYNC-LTER Postdoctoral Immersion Program”. (P.I.) \$621,216.

2015-2017. National Science Foundation. “Interactions of Food Systems with Water and Energy: DTMS for Research” (P.I.) \$173,226.

2016-2021. National Science Foundation. “Advancing socio-environmental research through computational, theoretical, and interdisciplinary synthesis”(P.I.) \$28,500,000.

2017-2019 National Science Foundation. “Conceptualization: Geospatial Software Institute” (Co-PI; P.I. = Shaowen Wang, Univ Illinois) \$500,000.

XI. SEMINARS AND PRESENTATIONS (recent only)

2004 Palmer, M.A. **Invited plenary**. Ecological Futures. American Association for the Advancement of Science Annual Meeting. Symposium on Future of the Environment, Security, and Health. Seattle, WA

2004 Whiles, M., D. Gibson, S. Collins, T. Heatherly, A. Huryn, J. Jackson, R. Hall, M. Palmer. Application of the core-satellite metapopulation model to stream insect data sets: patterns in space and time. Annual meetings of the North American Benthological Society. Vancouver.

- 2004 Hassett*, B.H. and M. A. Palmer. Evaluating stream restoration: analysis of a database for the lower Chesapeake Bay watershed. Ecological Society of American Annual Meetings, Portland OR
- 2004 Swan*, C.M., D. Richardson*, and M.A. Palmer. A simulation study of detritivores foraging on speciose leaf litter: implications for the diversity-function relationship. Ecological Society of America Annual Meetings, Portland, OR
- 2004 Nelson*, K. and M. A. Palmer. Surviving in a warmer, more urban world: a spatially explicit habitat model for fish. Ecological Society of America. Annual Meetings, Portland, OR
- 2004 Palmer, M. and E. Bernhardt*. **Invited plenary.** Restoration of stream ecosystems and landscapes in the United States. International Symposium on Riverine Landscapes. Lulea, Sweden
- 2004 Bernhardt*, E. and M. Palmer. **Invited.** Restoring streams in urban landscapes. International Symposium on Riverine Landscapes. International Symposium on Riverine Landscapes. Lulea, Sweden
- 2004 Palmer, M. River restoration in the nation: how is the Chesapeake Bay doing? **Invited.** Chesapeake Bay Foundation. Annapolis, Maryland. November
- 2004 Palmer, M. River restoration in the Nation: Data to inform prioritization. **Invited Plenary.** National Conference on Ecological Restoration, Orlando, FL. December
- 2005 Black, P. Tom Stockton, Lester Yuan, David Allan, Walter Dodds, Lucinda Johnson, Margaret Palmer, J. Bruce Wallace. Using knowledge elicitation to inform a Bayesian belief network model of a stream ecosystem. Ecological Society of America Annual Meetings, Montreal.
- 2005 Heatherly, T., M.R. Whiles, D.J. Gibson, S. Collins, A.D. Huryn, J.K. Jackson, and M. A. Palmer. Stream insect distributional patterns and metapopulation models: effects of spatial scale and sampling intensities ESA Annual Meetings, Montreal, CA
2005. Menninger*, H.L., Margaret A. Palmer, Laura S. Craig*, Brooke A. Hassett*, David C. Richardson*, and Robert F. Smith*. Terrestrial-aquatic linkage: The effects of periodical cicadas on stream ecosystem function. ESA Annual Meetings, Montreal, CA
- 2005 Hassett*, B., M.A. Palmer, and E.S. Bernhardt*. Status and trends of stream restoration in the Chesapeake Watershed. ESA Annual Meetings, Montreal.
- 2005 Swan*, C.S. and M. A. Palmer. "Restoration of biodiversity in stream ecosystems: beyond the aesthetic endpoint". ESA Annual Meetings, Montreal
- 2005 Palmer, M.A., E.S. Bernhardt, and S. Clayton. **Invited.** "River restoration in the U.S.: status and trends". American Fisheries Society annual meetings, Alaska.

2005 Palmer, M.A. **Invited.** Restoring Chesapeake Bay streams and rivers. Annual Maryland Streams Symposium, Maryland.

2005 Palmer, M.A. **Invited.** Moving toward effective river and stream restoration. Symposium on: "Integrated Restoration of Riverine Wetlands, Streams, Riparian Areas, and Floodplains in Watershed Contexts". Organized by the State Association of Wetland Managers. Amherst, MA

2005. Palmer, M.A. **Invited.** "Stream ecosystems in urbanizing watersheds". Conference on Urbanization: Stresses on Maryland's Water Resources. Organized by the Maryland Water Resources Research Center. College Park, MD

2005. Palmer, M.A. **Invited.** "New Ecological Visions: Novel Solutions for Living on the Planet". Environmental Grantmakers Association Annual Meeting. New Paltz, NY

2006 Galat, D.L., Bernhardt*, E.S, Lubinski, K.S., Palmer, M.A., Theiling, T.H. and Wilcox, D.B. "Large River Rehabilitation within an Adaptive Management Framework: Setting Achievable Goals and Objectives." Ecological Society of American meeting: Ecology in an Era of Globalization, Merida, Mexico.

2006 Palmer, M.A. **invited.** "Hydroecology: a new research frontier"? American Geophysical Union annual meetings. Baltimore, MD

2006 Palmer, M.A. **Invited.** "Stream ecosystem structure and function in urbanizing landscapes". Colorado State University, Distinguished Ecologist Series, April.

2006 Palmer, M.A. **Invited.** "Restoring our nation's rivers and streams". Colorado State University, Distinguished Ecologist Series, April.

2006. Palmer, M.A. **Invited.** "Why 'Bringing back the Native Species' is the wrong ecological ethic". Colorado State University, Distinguished Ecologist Series, April.

2006. Palmer, M.A. **Invited Panelist.** "Ecosystem Services". Ecological Society of America Annual Meetings, Memphis, August.

2006. Palmer, M.A. **Invited.** Restoration ecology and ecological ethics. Ecological Society of America Annual Meetings, Memphis, August

2006. M. A. Palmer (delivered by H. Menninger*). **Invited.** Does ecological heterogeneity promote restoration success? Ecological Society of America Annual Meetings, Memphis

2007 M.A. Palmer. **Invited.** "Building a Framework for Restoration to Reduce N flux down Streams". Chesapeake Bay Program, Annapolis, MD

2007 M.A. Palmer. **Invited.** Restoration, conservation, and design to enhance ecological resilience. Cary Conference, Millbrook, NY

2007 M. A. Palmer. **Invited.** A world preoccupied with ecosystem structure: moving toward a more dynamic approach to restore biodiversity. Ecological Society of America annual meetings; San Jose, CA

2007 M.A. Palmer. (delivered by L. Craig*) **Invited.** Science-based prioritization schemes for restoration in the Chesapeake Bay watershed. Ecological Society of America annual meetings; San Jose, CA

2007. M.A. Palmer. **Invited.** Decadal visions for ecology. Ecological Society of America annual meetings; San Jose, CA

2007 M.A. Palmer. **Invited.** Ecological Restoration of Coastal Watersheds: Pipedreams or Portfolios? International Estuarine Research Federation conference, Providence, RI

2008 Craig*, L.S. and M. A. Palmer. Multiple controls on baseflow nitrate concentrations in Maryland (US) streams. North American Benthological Society Annual Meetings, Logan, UT

2008 Kaushal, S., P. Groffman, L. Band, M. Palmer. Interaction between land use and climate variability amplifies stream nitrate export. North American Benthological Society Annual Meetings, Logan, UT

2008 Palmer, M.A. **Invited.** "Stream Ecosystems: Restoration and Resilience in the Face of Global Change," Pennsylvania State University, Distinguished Lecture Series

2008 Palmer, M.A. **Invited Visiting Scholar.** Series of seminars given including: Ecosystem structure and function in an urbanizing world. Wabash College, IN

2008 Palmer, M.A., **Invited.** Re-inventing urban streams. North American Benthological Society Annual Meetings, Salt Lake City, Utah.

2008 Palmer, M.A. **Invited.** Restoring and managing urban watersheds. Wabash College.

2008 Palmer, M.A. **Invited.** Re-inventing urban streams. Urban Stream Symposium,

2008 Palmer, M.A. **Invited plenary.** River restoration as a collaboration with nature. 4th European River Restoration Conference. Venice, Italy.

2009 Palmer, M.A. **Invited.** Risks and adaptation options for rivers and streams in the face of climate change. Impact of Climate Change on Ecosystem Services at the Climate Congress in Copenhagen, March 10-12, 2009.

2009 Palmer, M.A. **Invited.** Ecological restoration and restoration ecology: streams as a case study. Arizona State University. January

2009 Palmer, M.A. **Invited.** Restoration of structure vs. function in streams. University of Michigan. April..

2009. Palmer, MA. **Invited plenary.** The benefits of stream restoration – and how we can increase them. Mid-Atlantic Stream Restoration Conference. West Virginia.

2009 Palmer, M.A. **Invited plenary.** Restoration of diadromous fish and their ecosystems: Chesapeake Bay perspectives. Diadromous Fishery Restoration Conference. University of Maine.

2009 Palmer, M.A. **Invited plenary.** Science to Support Ecological Restoration, Mitigation, & Adaptation. International Ecology Conference (INTECOL 2009). August, 2009. Brisbane, Australia.

2009 Palmer, M.A. **Invited.** River Futures: Recovering biodiversity and lost ecosystem function. DIVERSITAS 2nd Open Science Conference. October, 2009. Capetown, South Africa.

2010 Palmer, M.A. **Invited.** Ecological consequences of mountaintop mining. Yale University

2010 Palmer, M.A. **Invited plenary.** Reducing the pressure on freshwater ecosystems. PreCOP10 : Scientific symposium for the 2010 Conference of Parties for the Convention on Biodiversity. Nagoya, Japan.

2010 Palmer, M.A. **Invited symposium speaker.** Watershed management and restoration in a changing world. Ecological Society of American symposium: Ecological Theory and Managing Ecosystems

2010 M.A. Palmer, M.A. **Invited Symposium speaker.** Policy and regulatory setting for mountaintop removal mining. Ecological Society of America symposium: Environmental Impacts of Mountaintop Mining for Coal

2010 S. Smith, S. Filoso, M.A. Palmer. Sediment Dynamics and Flux in Rehabilitated Coastal Plain Streams at the Estuarine Boundary. Maryland Monitoring Council.

2010 M.A. Palmer, S. Filoso. Nutrient dynamics and flux in rehabilitated Coastal Plain streams Maryland Monitoring Council.

2010 M.A. Palmer **Invited.** Ecological Restoration and Dreams of Natural Streams. Kathryn Fuller Science for Nature Annual Lecture. World Wildlife Fund.

2010 M.A. Palmer. **Invited.** Ecological theory, restoration ecology, and stream ecosystems. Michigan State University.

2010 M.A. Palmer. **Invited.** Promoting effective restoration through monitoring and adaptive management. Chesapeake Bay Program, IAN seminar.

2010 M. A. Palmer. **Invited.** Restoration and theory in a changing world. Ecological Society of America Symposium: Advice from Theorists on Ecosystems in a Changing World. Pittsburgh, PA

2010 S. Filoso and M.A. Palmer. Moving toward more strategic approaches in stream restoration. Ecological Society of America annual meetings.

2010 M.A. Palmer. **Invited.** The Environmental Impacts of Mountaintop Mining. Elon University, Elon, N.C.

M.A. Palmer. **Invited.** The Environmental Impacts of Mountaintop Mining. Elon University; Yale University, New Haven, Connecticut

2011 M.A. Palmer. **Forum Organizer Form.** (and speaker). International Freshwater Consortium on Biodiversity and Ecosystem Services. Barcelona, Spain.

2011 M.A. Palmer. **Invited Plenary.** Ecosystems: Reference, Emerging, and Novel. Implications for Restoration. Society for Ecological Restoration. Mid-Atlantic Conference.

2011 M.A. Palmer. **Invited Plenary.** Recovering and maintaining freshwater ecosystem services: challenges under global change. 7th European Freshwater Sciences Symposium. Girona, Spain

2011 M.A. Palmer. **Invited.** Socio-environmental synthesis and the Bioeconomy. National Science Foundation.

2012 M.A. Palmer **Invited.** Socio-cultural context as a driver of the science of ecological restoration. 41st Oosting Lecture, Duke University.

2012 M.A. Palmer. **Invited.** Managing and restored freshwater ecosystem services: formal and informal institutional constraints. “Developing Ecologically-Based Conservation Targets Under Global Change”- The 2nd Emerging Issues Conference of the Ecological Society of America

2012 M.A. Palmer. **Invited.** Stream and river restoration in theory and practice. Forest and Landscape Restoration Symposium, Pyongyang University, North Korea. (one of 5 scientists from the U.S. invited; AAAS sponsored)

2012 M.A. Palmer **Invited.** The present and future of translational ecology. Ecological Society of America annual meetings, Portland, Oregon.

2012 M.A. Palmer. Research priorities for the National Socio-environmental Synthesis Center. Ecological Society of America annual meetings, Portland, Oregon

2012 Hosen*, J., C. Febria*, O. McDonough*, and M. A. Palmer. Land use and inorganic nutrient load alter enzymatic processing of dissolved organic matter by stream microbial communities. American Geophysical Union fall meetings, San Francisco.

2012 McDonough*, O.T., J.D. Hosen*, M.W. Lang, R.A. Oesterling, and M.A. Palmer. Stream dissolved organic matter quantity and quality along a wetland-cropland catchment gradient. American Geophysical Union fall meetings, San Francisco.

2012 Koch, B.J., B. Miles, A. Rai, L.E. Band, B.S. Minsker, M.A. Palmer, M.R. Williams, R. Idaszak, M.C. Whitton, and S. Ahalt. 2012. Advancing water science through improved cyberinfrastructure. (Poster) Fall Meeting of the American Geophysical Union, San Francisco, CA.

2012. Febria*, C.M., Koch*, B., and Palmer, M.A. 2012. Restoring ecosystem services in streams: A case study of modeling management options for ecosystem service provision in Chesapeake Bay watersheds. EcoSummit 2012. Columbus, OH (**session organizer & presenter**)

2012. Palmer, M.A., **Invited**. Restoring ecosystems to restoring ecosystems services: a paradigm shift? EcoSummit 2012.

2012 Palmer, M.A., Restoration of ecosystem services in running water. EcoSummit 2012.

2013 Palmer, M.A. **Invited keynote**. Building Community and Improving Leadership of Cyberinfrastructure Enterprise. Conference held at University of Michigan

2013 Palmer, M.A. **invited keynote**. The “Is” and the “Ought” in Ecological Restoration. University of Wisconsin Ecology Symposium, Day 1. Madison, WI

2013 Palmer, M.A. **invited keynote**. Process-based Restoration to Restore Freshwater Ecosystems. University of Wisconsin Ecology Symposium, Day 2. Madison, WI

2013 Hosen*, JD, OT McDonough*, CM Febria*, MR Williams, MA Palmer. Anthropogenic Land Cover Linked to Shifts in Stream Dissolved Organic Matter Composition. ASLO 2013 Aquatic Sciences Meeting, 2013 February 17-22, New Orleans, LA.

2013 Koch*, B.J., C. M. Febria*, M. Gevrey, L. A. Wainger, M. A. Palmer. Assessing the nitrogen removal capacity of urban stormwater management structures. Society for Freshwater Sciences. Jacksonville, FL

2013 Palmer, M.A., **Invited plenary**. Socio-cultural contexts that shape reciprocal interactions between natural resource exploitation and scientific responses. Society for Freshwater Sciences. Jacksonville, FL

2013 Febria*, C.M. Koch*, B., and Palmer, M. AquaBase: An ecological production function approach to linking hydro-ecology and management options in urbanizing watersheds. SFS 2013 Annual Meeting. Jacksonville, FL, USA.

2013 Koch*, B., Febria*, C.M., Gevrey, M., Wainger, L.A., Palmer, M.A. Assessing the nitrogen removal capacity of urban stormwater management structures. SFS 2013 Annual Meeting. Jacksonville, FL. USA

2013 Palmer, M.A. **Invited**. River and stream restoration – changing perspectives, goals, outcomes, and rules. Northern Illinois University.

- 2013 Palmer, M.A. **Invited Moore lecture.** University of Virginia. Watershed Restoration through a Socio-Ecological Lens.
- 2013 Palmer, M.A., **Invited Plenary Speaker.** International Society for Ecological Restoration conference. Madison, WI
- 2013 Palmer, M.A. **Invited.** Restoration and socio-cultural dynamics. Columbia University.
- 2013 Hosen*, J., C.M. Febria* and M.A. Palmer. Controls on microbial use of headwater stream dissolved organic matter. American Geophysical Union.
- 2014 Koch*, B.J., C.M. Febria*, A. Colson, R.M. Cooke, and M.A. Palmer. Using structured expert judgment to estimate variability in nitrogen retention by urban stormwater control structures. Joint Aquatic Sciences Meeting, Portland OR
- 2014 Hondula*, K. and M.A. Palmer. Restoration as mitigation: ecological vs. regulatory approaches to evaluating stream restoration outcome. Joint Aquatic Sciences Meeting, Portland OR
- 2014 Laub*, B., and M.A. Palmer. Potential impact of channel stability restoration on benthic diatom communities in urban streams. Joint Aquatic Sciences Meeting, Portland OR
- 2014 Palmer, M.A. **Invited Plenary.** Ecological restoration of riverine systems: successes and limitations. European Society for Ecological Restoration Conference, August 3-8, 2014, Oulu, Finland
- 2014 Palmer, M.A. **Invited.** Climate change and aquatic natural capital as buffers. Environmental Defense Fund, New York
- 2014 Palmer, M.A. **Invited Keynote.** Future of Natural Resources Conference, North Carolina State University, N.C.
- 2014 Palmer, M.A. **Invited.** Science magazine editorial board retreat on Water Science Frontiers. American Association for the Advancement of Science, Washington, D.C.
- 2015 Palmer, M.A. **Invited.** Society for Freshwater Science, Award of Excellence Presentation, Milwaukee, WI
- 2015 Bezerra*, M., M. Palmer, S. Filoso, and S. F.B. Ferraz. Tropical streams at risk: sugarcane agriculture and gully formation as a driver of stream degradation. Society for Freshwater Science, Milwaukee, WI
- 2015 Palmer, M.A. **Invited Plenary.** The past and future of ecology. 100th Anniversary Meeting, Ecological Society of America, Baltimore MD

2015 Palmer, M.A. Ecologists accelerating discovery: Ecological synthesis paves the way to transdisciplinary socio-environmental synthesis. 100th Anniversary Meeting, Ecological Society of America, Baltimore MD

2015 Acuna, V., Ruhi-Vidal, A., M. A. Palmer. Temporary streams: current management challenges and promising solutions. International Congress of Conservation Biology, Montpellier, France

2015 Palmer, M.A. **Invited Plenary.** Keeping the Ecology in River Connectivity. International Society for River Science meeting; La Crosse, WI

2015 Fanelli*, R., K. Prestegard, and M. A. Palmer. Can watershed restoration practices reverse the hydrological effects of urbanization? Geological Soc. of America, Annual Meetings, Baltimore MD

2015 Bezerra*, M., S. Filoso, and M.A. Palmer Hydrological connectivity via gully formation in tropical watersheds limits the effectiveness of riparian buffers in protecting streams. American Geophysical Union annual meetings, San Francisco

2015 Armstrong*, A., S. Epting*, J. Hosen*, and M. Palmer. Tracking Changes in Dissolved Organic Matter Patterns in Perennial Headwater Streams Throughout a Hydrologic Year Using In-situ Sensors and Optical Properties. American Geophysical Union annual meetings, San Francisco

2015 Palmer, M.A. **Invited.** Forest and floodplain restoration: ecological and human benefits. Walton Family Foundation meeting.

2015 Palmer, M.A. **Invited Plenary.** Ecological Restoration for Water Ecosystem Services. VI Brazil Symposium for Restoration Ecology; Sao Paulo Brazil

2015 Bezerra*, M., S. Filoso, and M. A. Palmer. Does compliance with the Brazilian forest code mitigate the impacts of sugarcane agriculture and its legacy on in-stream nutrients? Society for Freshwater Science annual meetings. Sacramento, CA

2016 Palmer, M.A. **Invited Plenary.** Restoring America's streams and rivers: a promise or reality? Cleveland Natural History Museum, Annual Explorer's Lecture.

2016 Palmer, M.A. **Invited.** Resilience and the Social Construction of Restoration. University of Virginia.

2016 Palmer, M.A. **Invited.** From Restoration of Ecosystems to Restoration of Ecosystem Services: Underlying Theories and Social Implications. Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam

2016 Palmer, M.A. **Invited.** Directions in Environmental Monitoring: from Patterns, to Processes, to Social Outcome. Conference on Environmental Monitoring & Technology. Ohio University.

2017 Palmer, M.A. **Invited Plenary.** Court rooms, Comedy, Diplomacy, and Conference Rooms: Venues for Actionable Science and Effective Communication. American Society of Limnology & Oceanography 2017 Aquatic Sciences Meeting, Honolulu, HI

2017 Palmer, M.A. **Invited.** Appalachian Socio-Environmental Systems: a Role for the Humanities and Science. 2017 Appalachian Studies Conference, Va. Tech. University

XII. TEACHING AND TRAINING

Courses taught:

Full Courses: Biological Oceanography; Experimental Aquatic Ecology; Non-majors Biology; Stream Ecosystem Structure and Function; Invertebrate Zoology

Seminars: Topics in Theoretical Ecology; Advanced Topics in Stream Ecology; Ecology of a Shrinking Planet; Environmental Restoration Applications.

Short Courses: Stream Restoration: Geomorphic, Hydrologic and Ecological Foundations (taught 6 times with Peter Wilcock, Jack Schmidt)

Students Supervised as Major Advisor: (bold = current; date of graduation in parentheses)

Honors Theses - Alexa Bely (1991), Peter Arensbarger (1993), Michelle Berger (1994), Misty Ralston (1995), Rachel Alvestad (1998), Christopher Bertz (1999), Christopher Smith (1999), Max Bent (2000), Christopher Patrick (2006)

M.S. - Christine Hakenkamp (1991), Eileen Lavan (1992), Christopher Swan (1997), Suzanna Ribblett (2002), Aaron Moore (2004), Bob Smith (2006), Lie'Ann Van Tull (non thesis, 2010), Steve Epting (2016), **Anna Kottkamp (2019), Elizabeth de la Reguera (2019), Graham Steward (2019)**

Ph.D. - Christine Hakenkamp (1997), Marcia Shofner (1999), Karen Nelson-Baker (2001), Brad Cardinale (2002), Christopher Swan (2003), Holly Menninger (Dec 2006); Laura Craig (2009), Dave Richardson (2008), Evan Grant (2009), Brian Laub (2011), Owen McDonough (2012), Jake Hosen (May 2015), Rosemary Fanelli (2016), Maira Bezerra (Sept 2017), **Alex Armstrong (2019), Kelly Hondula (2019)**

Post Doctorates – Beth Turner (1991-95); Shane Brooks (1998-2001); Dave Wooster (1999-2001); Jacqui Brooks (1998-2001); Karen Nelson (2001-2004); Emily Bernhardt (2002-2004); Solange Filoso (2006 -08), Catherine Febria (2010-2012), Ben Koch (2011-2014), **Nate Jones (2017 – 2019), Christine Prasse-Maietta (2017-2018)**

Undergraduate Researchers Advised in my lab:

Justin Benoit, Meera Bose, Cynthia Burke, Jeremy Goetz, Sadie Jernigan, Lisa Darcey, Amanda Glazier, Amanda Graham, Ann Marie Infantino (high school student), Chris Long, Jennifer Mulz, Kasey May, Carl McCalla (african amer, male, high school), Patricia Reutemann, Colleen Roots, Suzanne Schoepe, Ewan Simpson, Robin Vanmeter, Gretchen Mitchell, Mike Goodison,

Suzanna Ribblet, Sam Vasilevsky, Olivia Yu, Chris Patrick, Emily Duncan. Lauren Cullers, Leina'ala Hall, Abigail **Julianna Greenberg (2017 -)**, **Abigail Toretsky (2017 -)**

Other Graduate Student Committee service (recent only):

Jose Barrios (MEES-UMCP)
Jess Hines (ENT)
Janet Nye (MEES-CBL)
George Waldbusser (MEES-CBL)
Ryan Utz (MEES-AL)
Melanie Harrison (MEES-UMBC)
Ryan Woodland (MEES-CBL)
Denise Yost (MEES –CBL)
Emily Seldomridge (MEES-UMCP)
Tara Wiley (MEES-UMBC) - deceased
Ken Belt (MEES)
Allan Leslie (ENT-UMCP)
Amy Norris (BEES-UMCP)
Becca Eckert (ENTO-UMCP)

XIII. OUTREACH AND SERVICE (recent only)

Public Service

1997-02 2/year guest talks on Ecology to elementary schools – Prince Georges and Anne Arundel Counties
2000-03 Montgomery County Dept of Environmental Protection - advise on stream restoration and watershed science
2003-04 Anne Arundel Technical Advisory Board, Watershed Biomonitoring
2001-03 Seminars given at multiple venues on the science of river restoration such as to the Science and Technical Advisory Committee for the Chesapeake Bay Program, special symposia the state DNR organizes, etc
2003-05 Database development for state and Chesapeake Bay wide river restoration database
2004 Five talks given to community river groups, non-profit foundations in the Bay area, and schools
2006 Chesapeake Bay Trust, Advisory Committee on Measuring Restoration Effectiveness
2006 Chesapeake Bay Restoration Program, Advisory Committee on Corsica River restoration
2006 Public seminars (Docent's – Chesapeake Biological Lab) – River Restoration
2006 South River Federation – advisory committee
2006 Rotary Club talk, St. Mary's County, MD
2006-07 Earthjustice, Appalachian Center for the Environment & Economy – produce a science report & testify on restoration as mitigation for Mtn Top Mining
2007-07 Oyster Recovery Partnership, Science Advisor
2007 American Chestnut Land Trust, science advisor on a restoration project
2006 Governor's Transition Team on Environment and Natural Resources
2007 Maryland Stream Restoration Association, raised funds for meetings & participated
2007 Edgewater Community group – advisor on development impacts & monitoring
2007 Chesapeake Bay Program – worked with Scientific & Technical Advisory Committee

2007 South River Federation, sponsor and contributor to public meetings & activities

2007 Speaker to Asbury Retirement Center – “Environmental Research on the Bay”

2007 EPA Chesapeake Bay Program – Presented and moderated workshop on Stream Restoration & nutrient benefits (April, Patuxent Wildlife Center)

2007 Maryland Department of Natural Resources *ad hoc* committees (e.g., nontidal waters initiatives) (Annapolis, MD)

2007 Speaker and workshop participant: Summit on the Effects of Growth on Water Quality, Presentation: Impacts of Development on Stream Ecosystems (May 2007, Annapolis, MD)

2007 Speaker, National Academy of Science workshop on “Transitioning to Sustainability through Research and Development on Ecosystem Services” (Wash, D.C.)

2007 U.S. Senate staff Briefing on Clean Water Restoration Act (Oct 2007, Wash D.C.)

2007 U.S.D.A. ARS-NRCS Workshop for CEAP Wetlands Mid-Atlantic Regional Studies presentation: “Ecosystems services: What, How, and Where to measure”, (Dec Beltsville, MD)

2008 Editorial board for book series, The Year in Ecology and Conservation Biology.

2008 Potomac Conservancy, Scientific Advisory Board

2008 University of Vienna, Search Committee for Full Professorship in Limnology

2008 Keynote speaker, Maryland Stream Restoration Association, Symposium on Measuring and Assessing Stream Restoration, Baltimore, MD

2009 Keynote speaker, Chesapeake Environmental Protection Association forum on watershed restoration, Harwood, MD. February.

2009 Presentation to Anne Arundel County DPW project managers & engineers

2009 - Chesapeake Bay Trust; accepted 2nd term on board; member Executive Committee; chair of Grants Policy committee; Strategic Planning Committee

2010 National Press Club press conference on Science paper on Mountaintop Mining + 26 interviews with members of the media including one on the Colbert Show

2010 Chesapeake Bay Program, review of Scientific & Technical Advisory Committee Reports

2010 Juried entries for Smithsonian’s Anne-Marie Gardens Gallery art exhibit “Green”

2011 High School Career Night panel, Severn High School

2011 Volunteer leader of stream assessment teams to evaluate the hydrologic and biological status of mine impacted streams on Zeb mountain (TN)

2012 Provide expert scientific report on stream restoration mitigation plans for Appalachian Mountain Advocates

2012 Worked with county and state water resource managers

2012 Provided review comments on stream restoration report for Chesapeake Bay Program

2013 Host discussion group on Maryland stream restoration effectiveness

2013-14 Chesapeake Bay STAC committee on assessment of stream restoration

2013 Judge – student video productions; Society for Ecological Restoration contest

2104 Synthesis (seminar) on stream restoration outcomes for Natural Resource leaders

2014 Presenter at Annapolis Cafe Scientifique on “The Environmental Costs of Mountaintop mining”

2014 Water Values Podcast, Interviewed by David McGimpsey; went live Sept 2014

2014 Multiple media interviews (Baltimore Sun, Science magazine, Sea Grant Magazine)

2015 *Science* Magazine, Science Life Lab Prize Selection Committee

2015 Streaming videos (4) developed on theory underlying socio-environmental research

- (with K. Jones)
- 2016 Workshop speaker: restoration of the Jacuari watershed, Brazil
 - 2016 Media Interviews (Christian Science Monitor, Hakai magazine, Huffington Post,
 - 2016 Committee input to *American Rivers* on restoration of salmon in the San Joaquin – Sacramento River basins
 - 2016 Maryland Stream Restoration Workshop plenary talk at Mount St. Mary's College.
 - 2016 Citizen Science talk, UMCES, Chesapeake Biological Lab
 - 2017 Interview with reporter from *Science* magazine on the impact of the White House executive order reversing the Office of Surface Mining's Stream Protection Rule.
 - 2017 Interview and provided extensive background material for *Nature* magazine reporter on the impact of any executive orders to reverse the Clean Water Rule of 2015
 - 2017 Interview with WV National Public Radio on the Administrative Order to halt a National Academies study on the health impacts of mountaintop mining
 - 2017 Interview with a writer for Orion magazine; topic: restoration of coal mining lands

Other Professional Service (since 2006)

- 2006 Review research & graduate program: University of South Alabama
- 2007 Instructor, Stream Restoration Short Course: Utah State University
- 2007 - Ecological Society of America – member, MacArthur Award committee; chair, Corporate Awards committee
- 2007- North American Benthological Society – chair, Distinguished Research Award committee
- 2007- National Science Foundation – Environment & Sustainability review panel (Engineering Directorate)
- 2008- Lecturer, Stream Restoration Ecology, Johns Hopkins University
- 2008 U.S. National Research Council, Water Science & Technology Board, Reviewer of study report on “Stormwater Discharge Contributions to Water Pollution”
- 2009 National Science Foundation – The Future of Synthesis Workshop, one of 15 participants
- 2009 National Science Foundation – Foundation wide peer review panel
- 2009 National Science Foundation – workshop on proposed Biodiversity Initiative
- 2009 U. S. Senate Environment & Public Works Committee – testify in hearing on the science related to Mountaintop Mining
- 2010 The World Bank - Invited participant in Biodiversity Valuation workshop
- 2010 U.S. Senate Environment & Public Works Committee – organize 6 member scientific team to conduct a briefing for U.S. Senate staff on Mountaintop Mining
- 2010 Expert Witness in Environmental Review Board hearing in Charleston, WV on Stream water Conductivity and Surface Mining
- 2011 National Science Foundation, served on two peer-review panels (together ~30 proposals reviewed)
- 2011 National Science Board, Invited Participant in Discussion of mid-level funding at NSF
- 2011 National Science Foundation – Biological Directorate; invited speaker on the “Bioeconomy” for the External Advisory Board for the Bio AD
- 2012 State of Alaska Congressional Hearing, “Salmon streams and coal mining”. Held in Juneau, AK

- 2012 Expert Witness in Mountaintop mining case involving restoration as mitigation. 4th Circuit Federal Court 2012
- 2013-14 Junior Faculty Mentor – Northern Illinois University
- 2013 Panel Chair for External Review of Natural Resources, Cornell University
- 2013 Participant in workshop “Integrating Ecosystem Services and Adaptive Management”
USGS, Resources for the Future, Bureau of Land Management
- 2013 Presenter to EPA Expert Panel on Connectivity
- 2013 Expert witness on impact of NPDES violations in W.V.
- 2013 Scientific input for Alaska Trustees for the Environment on Chitna watershed
- 2014 Workshop Organizing Committee, Assessing the outcomes of Stream Restoration,
Scientific and Technical Advisory, Chesapeake Bay Program
- 2014 Invited participant: “Water Forum” (linking finance, policy, and science for water
resource sustainability), Aspen Institute, Aspen CO
- 2014 Invited panelist for Water Science & Technology Board, National Research Council,
meeting on Restoration of Aquatic Ecosystems
- 2014 Invited panelist for “Operationalizing Ecosystem Services for Aquatic Resources” at A
Community of Ecosystem Services (ACES) Annual Conference, Washington D.C.
- 2015 Presenter at International Consortium for Synthesis Centers workshop, Berlin, Germany
- 2015 Invited participant: “21st Century Social Science”, NSF sponsored workshop on social
science research on problems of the environment
- 2015 Facilitator and Participant: Forest Restoration in Brazil – Water Recovery; workshop
series
- 2015 Science Magazine, Science Life Lab Prize Selection Committee
- 2016 Contributing author of “Water Related Environmental Services” for the United Nations –
World Bank High Level Panel on Water
- 2017 Co-Organizer, Symposium on “Hydrologic Connectivity: Linking land use change and
management to movement and transformation of resources within catchments.”
ASLO Aquatic Sciences Meeting 2017, Honolulu, Hawaii
- 2017 Evaluation of candidates for Director of the Leibniz Institute for Freshwater Ecology
and Inland Fisheries (IGB), Germany
- 2017 Review of and report on proposal for sustainability institute at the University of Virginia

University System of Maryland service

- Curriculum Transformation Advisory Board (1991-1993)
- Women's Studies Program Steering Committee (1991-1993)
- Lilly Selection Committee (1992-1993)
- Women in Non-traditional Fields Committee (Ad Hoc, 1991-2000)
- Diversity Project Faculty Committee (1994)
- Faculty Affairs Advisory Committee to the Provosts' Office (1994-95)
- University Honors Research Grants Awards Committee (1996-97)
- Director, Biological Sciences Program (1997 -)
- Chair, Executive SAC Committee (1997 -)
- Chair, Faculty Teaching Evaluation Committee in Biological Sciences (1997 -)
- Apac, Jr. Committee (1992)
- Chair, Committee for Undergraduate Marine Biology Specialization (1990-93)
- MEES Advisory Committee (1990-93)

Search Committee for Dean of Life Sciences (1994-95)
 BEES Program Executive Committee (1996-97)
 Instructor Search Committee for Plant Sciences labs (1996-97)
 Chair, Search Committee for Theoretical Ecologist (1999- 2000)
 Faculty Advisory Committee, Department of Biology (2001 – 2002)
 Promotion Committee, Department of Entomology (2002 – 2003)
 Biodiversity Center advisory Committee (2001 – 2003)
 Graduate Affairs Committee, Department of Entomology (2003 - 05)
 College of Life Science, Dean's Advisory Committee (2004 - 2005)
 Spearheaded Restoration Certificate Program development (2006 -07)
 Academic Administrators Advisory Committee (USM Provosts) (2005-2009)
 Public Policy graduate student lecture series (2010)
 Journalism workshop speaker (UMCP – Baltimore Sun) (2010)
 BEES Graduate Program Executive Committee (2010-11)
 UM - NSF *ADVANCE* proposal review (2011)
 I-School, College of Information Studies, UM, invited “Futurist” Speaker, Public Panel
 UM – NSF *ADVANCE* symposium speaker (2011)
 Council of Environment, University of Maryland (2012, 2013, 2014, 2015, 2016)
 Faculty mentor, Conservation Graduate Program team project (2013)
 Search Committee, Director, Appalachian Environmental Laboratory, UMCES (2012-2013)
 Panel Speaker, University of Maryland *ADVANCE* workshop on Communications (2013)
 Promotion Committee, Chesapeake Biological Lab, UMCES (2013)
 Search Committee, Department of Entomology, University of Maryland (2013-14)
 Advisory Committee, Ctr for Smart Growth: “Plan for Regional Sustainability” (2014-2015)
 CMNS Academic Council (2012, 2013, 2014, 2015)
 New Faculty Mentor, Department of Plant Sciences and Landscape Architecture (2015 -)
 New Faculty Mentor, Department of Environmental Science and Technology (2015 -)
 Entomology, Faculty Review Committee (2015-2016)
 CMNS Committee to Review the CONS program (2015)
 UMD Advisory Committee for Climate Implementation Summit (2015-2016)
 UM21 Panelist and Discussion Leader: UM Climate Summit (May 2016)
 Provost's Environmental Programs Committee (2017-)
 Dean of CMNS Search Committee (2017)
 Office of the VPR, Review of Science & Technology Center proposals (2017)
 Chair of Search Committee for 2 ecologists (ENTO Search) (2017-2018)