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Education

1984 - University of North Carolina at Chapel Hill, Ph.D. in Marine Sciences.

1978 - University of South Carolina, B.S. in Marine Science.

Professional Experience

2005 to present – Professor, Rubenstein School of Environment and Natural Resources,
University of Vermont, Burlington, VT 05405 *and*

1998 to present – Director, Rubenstein Ecosystem Science Laboratory, University of Vermont, 3
College Street, Burlington, VT 05401,

1994 (September) - 2005 - Associate Professor, Rubenstein School of Environment and Natural
Resources, University of Vermont, Burlington, VT 05405

Research specialty: aquatic ecology and ecotoxicology. Manage large, externally funded research program on lake and watershed ecology (about \$800,000 per year for the last three years). Supervise 5-10 graduate students, 1-2 post-doctoral associates, and 3-5 research staff. Designed and now manage the lakeside Rubenstein Ecosystem Science Laboratory, operate the University's 45-foot research vessel *Melosira*, and coordinate with and support the scientific interpretation in the adjacent science center and aquarium, *ECHO at the Leahy Center for Lake Champlain*.

Teach upper-level undergraduate courses in Ecosystem Management, Marine Ecology, Restoration Ecology, Ecology of a Large Lake (summer field course), and graduate special

topics seminars. Course load is typically two classes per semester (100-125 students enrolled). Advise 20-24 first-year undergraduate students in the various majors in the Rubenstein School of Environment and Natural Resources. Fall semester, facilitate weekly discussion section in first-year course Race and Culture and Natural Resources.

Serve as primary technical advisor to the Lake Champlain Basin Program and sit on the Lake Champlain Steering Committee which oversees this coordinated management effort [includes federal, state (Vermont, New York), provincial (Quebec) and local governments and stakeholder representatives]. Also provide technical assistance to several other regional, national, and international groups.

1990 (October) - 1994 - Assistant Unit Leader, Vermont Cooperative Fish and Wildlife Research Unit, U.S. Fish and Wildlife Service and Research Associate Professor, University of Vermont, School of Natural Resources, Burlington, VT 05405

Advised graduate students, conducted research, and provided technical assistance to natural resource managers in federal and state government and the private sector.

1987 - 1990 - Ecologist, National Wetlands Research Center, U.S. Fish and Wildlife Service, Slidell, LA 70458

Served as Section Leader/Project Manager in the Technology Development Branch at the National Wetlands Research Center. Responsible for all aspects of management of the Environmental Analysis Section of the branch. Project areas included GIS and cartographic analyses, field studies of the biological effects of contaminated sediments in estuaries, evaluations of the effectiveness of various marsh management practices in coastal wetlands, and statistical consulting, analysis, and data base management for the Center.

1985 - 1987 - Ecologist, National Wetlands Research Center, U.S. Fish and Wildlife Service, Slidell, LA 70458

Served as ecologist in the Technology Development Branch. Primary responsibilities included (1) designing, managing, and evaluating contracted research on wetlands ecology and environmental analysis, and (2) serving as member of the Department of the Interior Coastal Barrier Study Group. Responsible for preparing draft and final reports to Congress on the Coastal Barrier Resources System (CBRS), preparing briefing materials for Departmental staff and others, and responding to public comments on the draft reports.

1984 - Instructor, Prologue School, Urban Skills Institute, City Colleges of Chicago, Chicago, IL 60640

Instructor in math, science, and computer science.

1979 - 1984 - Research and Teaching Assistant, Research Fellow, University of North Carolina at Chapel Hill, Chapel Hill, NC 27514 and Institute of Marine Sciences, Morehead City, NC 28557

1977 and 1978 - Summers, Research Assistant to Bruce C. Coull, Belle W. Baruch Institute for Marine Biology and Coastal Research, University of South Carolina, Columbia, SC 29208

Honors and Awards

2006 – SUNY College of Environmental Science and Forestry Partner of the Year Award. Once given annually for successful partnership and collaboration. Syracuse, NY.

2006 – Teddy Roosevelt Conservation Award, Isle LaMotte Preservation Trust, Lake Champlain Land Trust, and The Champlain Islands Chamber of Commerce, Isle LaMotte, VT

2003 – Ibakari-Kasumigaura Prize, International Lake Environment Committee, Shiga Prefecture, Japan (5-6 given biannually globally, for meritorious scientific work in developing or transitioning countries. Received with Albanian Veli Puka and Macedonian Trace Naumoski for our work on Lake Ohrid).

2000 – Conservation Leadership Award, Lake Champlain Committee, Burlington, Vermont.

1998 – Lake Champlain Research Consortium, Distinguished Service Award (First given, for long term commitment and dedication to the development of research and education within the Lake Champlain Basin).

1997 – Shoemaker Communications Award, U.S. Geological Survey, for Excellence in Communicating Scientific Information (One given annually nationwide).

1997 – Environmental Merit Award. Environmental Protection Agency, New England Region. For technical assistance concerning the Pine Street Barge Canal Superfund Site.

1996 – Kroepsch-Maurice Award for Teaching Excellence. University of Vermont. (One given annually to an Associate Professor).

1996 – Louisiana Wildlife Biologists Association outstanding literature publication of 1995 for “Gulf of Mexico coastal wetlands: case studies of loss trends.”

1993 – National Association of Government Communicators - Honorable Mention for brochure "The Fragile Fringe: Coastal Wetlands of the Continental United States."

1991 – Fish and Wildlife Service Special Achievement Award for leadership in Lake Champlain Basin Program activities.

1989 – Fish and Wildlife Service Special Achievement Award for service on the Department of the Interior's Coastal Barriers Study Group.

- 1988 – Fish and Wildlife Service Director's Award for Unusually Outstanding Performance in FY87 (Highest Fish and Wildlife Service Performance Award, 2 given annually nationwide).
- 1987 – National Association of Government Communicators - First place award for brochure "Restless Ribbons of Sand: Atlantic and Gulf Coastal Barriers."
- 1987 – Federal Business Association of Greater New Orleans Distinguished Service Award in Professional Category.
- 1986 – Appointed Affiliate Member of the Louisiana State University Graduate School in the Center for Wetland Resources and Department of Marine Sciences.
- 1984 – Spring semester, Dissertation Fellowship, University of North Carolina at Chapel Hill.
- 1981-1983 – National Science Foundation Doctoral Dissertation Improvement Grant (\$9532) OCE 8106883 "Larval settlement into marine soft-sediment systems: interactions with the meiofauna."
- 1978 – Phi Beta Kappa, University of South Carolina.
- 1977-1978 – Belle W. Baruch Scholarship in Marine Biology, University of South Carolina.

Refereed Journal Articles and Book Chapters (In review)

- Smyth, R.L., M.C. Watzin, and R.E. Manning. *In review*. Investigating stakeholder preferences for managing Lake Champlain using a choice experiment. *Journal of Environmental Management*. (*accepted with revisions*)
- Sullivan, S.M.P., M.C. Watzin, and W.S. Keeton. *In review*. A riverscape perspective on habitat associations among riverine bird assemblages. *Landscape Ecology*. (*accepted with revisions*)
- Levesque, V.R., M.C. Watzin, and P.A. Stokowski. *In review*. Dams, data and decisions: A case study of values and science in dam removal debates. *Society and Natural Resources*.
- Brines Miller, E. and M.C. Watzin. *In review*. The effects of zebra mussels on the lower planktonic foodweb in Lake Champlain. *Journal of Great Lakes Research*.
- Sullivan, S.M.P. and M.C. Watzin. *In review*. Vertical channel adjustment and fish community diversity in river-floodplain ecosystems. *Transaction of the American Fisheries Society*
- Olsen, D.A. and M.C. Watzin. *In review*. Length-mass relationships and measures of larval condition in stream invertebrates. *Journal of the North American Benthological Association*.

Refereed Journal Articles and Book Chapters Chapters (In press and published)

- Smyth, R.L., M.C. Watzin, and R.E. Manning. *In press*. Defining acceptable levels for ecosystem indicators: integrating ecological understanding and social values. *Environmental Management*.
- Watzin, M.C. 2006. The Role of Law, Science and the Public Process: Practical Lessons from Lake Champlain (USA and Canada) and Lake Ohrid (Macedonia and Albania). *Global Business & Development Law Journal* 19:241-258.
- Sullivan, S.M. P., M.C. Watzin, and W.C. Hession. 2006. Merging fluvial geomorphology and fish diversity, production and condition in streams and rivers. *Freshwater Biology* 51, 1811–1826.
- Sullivan, S.M. P., M.C. Watzin, and W.C. Hession.. 2006. Differences in the reproductive ecology of belted kingfishers (*Ceryle alcyon*) across streams with varying geomorphology and habitat quality. *Waterbirds* 29(3): 258-270.
- Clark, J.S., Hession, W.C., Rizzo, D.M., Laible, J. & Watzin, M. 2006. Two-Dimensional Hydraulic Modeling Approach to Linking Stream Morphology and Aquatic Habitat Quality. In: Voinov, A., Jakeman, A., Rizzoli, A. (eds). Proceedings of the **iEMSS Third Biennial Meeting: "Summit on Environmental Modelling and Software". International Environmental Modelling and Software Society, Burlington, USA, July 2006. CD ROM. Internet: <http://www.iemss.org/iemss2006/sessions/all.html>
- Watzin, M.C., E. Brines Miller, A.D. Shambaugh, M.K. Kreider. 2006. Application of the WHO Alert Level Framework to Cyanobacteria Monitoring on Lake Champlain, Vermont. *Environmental Toxicology* 21(3): 278-288.
- Watzin, M.C., E. Brines Miller, A.D. Shambaugh, M.A. Kreider. 2006. A Partnership Approach to Cyanobacteria Monitoring in Lake Champlain. *Great Lakes Research Review* 7: 8-13.
- Mihuc, T.B., G. Boyer, J. Jones, M. Satchwell, M. Watzin. 2006. Lake Champlain phytoplankton and algal toxins: present and past. *Great Lakes Research Review* 7: 18-21.
- Kyriakeas, S.A. and M.C. Watzin. 2006. Effects of adjacent agricultural activities and watershed characteristics on stream macroinvertebrate communities. *Journal of the American Water Resources Association* 42(2): 425-441.
- Mahar, A.M. and M.C. Watzin. 2005. Effects of metal and organophosphate mixtures on *Ceriodaphnia dubia* survival and reproduction. *Environmental Toxicology and Chemistry* 24(7): 41-48.
- Sullivan, S.M.P., M.C. Watzin, and W.C. Hession. 2004. Understanding Stream Geomorphic State in Relation to Ecological Integrity: Evidence Using Habitat Assessments and Macroinvertebrates. *Environmental Management* 34: 669-683.

- Cianfrani, C.M., W.C. Hession, and M.C. Watzin. 2004. Evaluating aquatic habitat quality using channel morphology, and watershed scale modeling techniques. In: Proceedings of the World Water and Environmental Resources Congress, American Society of Civil Engineers, Salt Lake City, UT.
- Watzin, M.C. 2004. Combining scientific data in frameworks for decision-making: examples from two transboundary lakes (Lake Champlain, USA & Canada, and Lake Ohrid. Macedonia & Albania). In: Proceedings, Conference on Water Observation and Information Systems for Decision Support, published on DVD, available at www.balwois.net, and through Institute of Research for Development, Montpellier, France.
- DeWolfe, M.N., W.C. Hession, and M.C. Watzin. 2004. Sediment and phosphorus loads from streambank erosion in Vermont, USA, In: Critical Transitions in Water and Environmental Resources Management, G. Sehlke, D.F. Hayes, and D.K. Stevens eds., American Society of Civil Engineers, Reston, VA.
- Boyer, G.L., M.C. Watzin, A.D. Shambaugh, M.F. Satchwell, B.H. Rosen, and T. Mihuc. 2004. The occurrence of Cyanobacteria toxins in Lake Champlain. In: T.O. Manley, P.L. Manley, and T.B. Mihuc, eds, Lake Champlain: Partnerships and Research in the new Millennium. Kluwer Academic/Plenum Press. Pp. 241-258.
- Watzin, M.C., P.L. Manley, T.O. Manley, and S.A. Kyriakeas. 2004. Lakebed pockmarks in Burlington Bay, Lake Champlain. II. Habitat characteristics and biological patterns. In: T.O. Manley, P.L. Manley, and T.B. Mihuc, eds, Lake Champlain: Partnerships and Research in the new Millennium. Kluwer Academic/Plenum Press. Pp. 331-348.
- Manley, P.L., T.O. Manley, M.C. Watzin, and J. Gutierrez. 2004. Lakebed pockmarks in Burlington Bay, Lake Champlain. I. Hydrodynamics and implications of origin. In: T.O. Manley, P.L. Manley, and T.B. Mihuc, eds, Lake Champlain: Partnerships and Research in the new Millennium. Kluwer Academic/Plenum Press. Pp. 299-330.
- Watzin, M, O. Avramoski, S. Kycyku, T. Naumoski, D. Panovski, V. Puka., and L. Selfo. 2003. Lake Ohrid Experience and Lessons Learned. In: Proceedings, World Lake Basin Management Initiative Workshop, June 18-21, 2003. Published on CD-ROM by LakeNet, Annapolis, MD. 28 pp.
- Meyer, J.L., L.A. Kaplan, D. Newbold, D.L. Strayer, C.J. Woltemade, J.B. Zedler, R. Beilfuss, Q. Carpenter, R. Semlistsch, M.C. Watzin, P.H. Zedler. 2003. Where rivers are born: the scientific imperative for defending small streams and wetlands. American Rivers Special Publication. 24 pp.
- Cobb, S.E. and M.C. Watzin. 2002. Zebra mussel colonies and yellow perch foraging: spatial refuge for invertebrates, enhanced prey for perch, or both? *Journal of Great Lakes Research* 28:256-263.
- Cedfeldt, P. T., M.C. Watzin, and B. Dingee Richardson. 2000. Using GIS to identify functionally significant wetlands in the northeastern United States. *Environmental Management* 26:13-24.

- Watzin, M.C. and A.W. McIntosh. 1999. Aquatic ecosystems in agricultural landscapes: a review of ecological indicators and achievable ecological outcomes. *Journal of Soil and Water Conservation Society* 54:636-644.
- McIntosh, A., M. Watzin, and J. King. 1999. Toxic substances in Lake Champlain: an overview. In: T. Manley and P. Manley, eds, *Lake Champlain research and progress towards management*. American Geophysical Union. Washington, DC. Pgs. 239-259.
- Boucher, A.M. and M.C. Watzin. 1999. A toxicity identification evaluation of metal-contaminated sediments using an artificial pore water containing DOC as the dilution media. *Environmental Toxicology and Chemistry* 18: 509-518.
- Lacey, R., M.C. Watzin, and A.W. McIntosh. 1999. Sediment organic matter content as a confounding factor in toxicity tests with *Chironomus tentans*. *Environmental Toxicology and Chemistry* 18: 231-238.
- Cobb, S.E. and M.C. Watzin. 1998. Trophic interactions between yellow perch and their benthic prey in a littoral zone community. *Canadian Journal of Fisheries and Aquatic Sciences* 55:28-36.
- Watzin, M.C., A.W. McIntosh, E.A. Brown, R. Lacey, D.C. Lester, K.L. Newbrough, and A.R. Williams. 1997. Assessing sediment quality in highly heterogeneous environments: a case study of a small urban harbor in Lake Champlain. *Environmental Toxicology and Chemistry* 16:2125-2135.
- Watzin, M.C. and P.R. Roscigno. 1997. The effects of zinc contamination on the recruitment and early survival of benthic invertebrates in an estuary. *Marine Pollution Bulletin* 34:443-455.
- Friedmann, A.S., M.C. Watzin, T. Brinck-Johnsen, and J.C. Leiter. 1996. Low levels of dietary methylmercury inhibit growth and gonadal development in juvenile walleye (*Stizostedion vitreum*). *Aquatic Toxicology* 35:265-278.
- Weller, C. M., M. C. Watzin, and D. Wang. 1996. The role of wetlands in reducing phosphorus loading to surface water in eight watersheds in the Lake Champlain Basin. *Environmental Management* 20:731-739.
- Gruessner, B. and M.C. Watzin. 1996. Response of an aquatic community collected from a Vermont stream to environmentally realistic atrazine exposure in laboratory microcosms. *Environmental Toxicology and Chemistry* 15(4):410-419.
- Friedmann, A.S., M.C. Watzin, J.C. Leiter, and T. Brinck-Johnsen. 1996. Effects of environmental mercury on gonadal function in Lake Champlain northern pike (*Esox lucius*). *Bulletin of Environmental Contamination and Toxicology* 56:486-492.

- Gruessner, B. and M.C. Watzin. 1995. Patterns of herbicide contamination in selected Vermont streams detected by enzyme immunoassay and gas chromatography/mass spectrometry. *Environmental Science and Technology* 29:2806-2813.
- Johnston, J.B., M.C. Watzin, L.R. Handley, and J. Barras. 1995. Gulf of Mexico coastal wetlands: case studies of loss trends. Pp. 269-273 in: *Our Living Resources, A Report to the Nation on the Distribution, Abundance, and Health of U.S. Plants, Animals, and Ecosystems*. Department of the Interior, Washington, DC.
- Gruessner, B., N. Shambaugh, and M.C. Watzin. 1995. Comparison of an enzyme immunoassay and gas chromatography/mass spectrometry for the detection of atrazine in surface waters. *Environmental Science and Technology* 29: 251-254.
- Watzin, M.C., P.F. Roscigno, and W.D. Burke. 1994. A community-level field method for testing the toxicity of contaminated sediments in estuaries. *Environmental Toxicology and Chemistry* 13(6): 1187-1193.
- Watzin, M.C. and F.B. McGilvrey. 1989. Coastal Barrier Resources Act: Report to Congress. In: D.K. Stauble, ed. *Barrier islands: process and management*. American Society of Civil Engineers, New York. pp. 208-222.
- Watzin, M.C. 1986. Larval settlement into marine soft-sediment systems: interactions with the meiofauna. *Journal of Experimental Marine Biology and Ecology* 98:65-113.
- Watzin, M.C. 1985. Interactions among temporary and permanent meiofauna: observations on the feeding and behavior of selected taxa. *Biological Bulletin* 169:397-416.
- Watzin, M.C. 1984. Egg-laying in the acoel turbellarian *Neochildia fusca*. *Transactions of the American Microscopical Society* 103:322-325.
- Watzin, M.C. 1983. The effects of meiofauna on macrofauna: meiofauna may structure macrofaunal communities. *Oecologia* 59:163-166.
- Bell, S.S., M.C. Watzin, and B.C. Coull. 1978. Biogenic structure and its effects on the spatial heterogeneity of meiofauna in a salt marsh. *Journal of Experimental Marine Biology and Ecology* 35:99-107.

Manuscripts in Preparation

- Watzin, M.C., J. Hoffmann, N.J. Gotelli, B. Swisher, and G. Alexander. Land use and stream architecture: predicting macroinvertebrate community composition below stream confluences. *Journal of the North American Benthological Association*.
- Watzin, M.C., J. Rowder and B. Lancaster. Will Fish Become Significant Predators on Zebra Mussels in Lake Champlain? *Journal of Great Lakes Research*.

Watzin, M.C., R.L. Smyth, E.A. Cassell, W.C. Hession, R. Manning, and D. Wang. Ecosystem indicators for a large lake and watershed ecosystem. Bioscience.

Refereed Technical Reports

Watzin, M.C., S. Fuller, M Kreider, S. Couture, and M. Levine. 2006. Monitoring and evaluation of cyanobacteria in Lake Champlain: Summer 2005. Report to the Lake Champlain Basin Program, Grand Isle, Vermont. 31 pp + appendices.

Watzin, M.C., R.L. Smyth, E.A. Cassell, W.C. Hession, R. Manning, and D. Wang. 2005. Ecological indicators and an environmental scorecard for the Lake Champlain Basin Program. Report to the Lake Champlain Basin Program, Grand Isle, Vermont. 167 pp + appendices. LCBP Technical Report 46, 209 pp + appendices.

Watzin, M.C., E. Brines-Miller, M Kreider, T. Clason, S. Couture, and M. Levine. 2005. Monitoring and evaluation of cyanobacteria in Lake Champlain: Summer 2004. Report to the Lake Champlain Basin Program, Grand Isle, Vermont. 28 pp + appendices.

Watzin, M.C., A.d. Shambaugh, E.K. Brines, T. Clason and M Kreider. 2004. Monitoring and evaluation of cyanobacteria in Lake Champlain: Summer 2003. Report to the Lake Champlain Basin Program, Grand Isle, Vermont. 26 pp + appendices.

Watzin, M.C, A.d. Shambaugh and E. Brines. 2003. Monitoring and evaluation of cyanobacteria in Burlington Bay, Lake Champlain: Summer 2002. Report prepared for Lake Champlain Basin Program, Grand Isle, Vermont. 36 pp + appendices.

Watzin, M.C., A.d. Shambaugh, E.K. Brines and G.L. Boyer. 2002. Monitoring and evaluation of cyanobacteria in Burlington Bay, Lake Champlain: Summer 2001. Report to the Lake Champlain Basin Program, Grand Isle, Vermont.

Donlon, A. and M. Watzin. 2000. Preliminary evaluation of progress toward Lake Champlain Basin Program phosphorus reduction goals. Report to the Lake Champlain Steering Committee. 42 pp + appendices.

Watzin, M.C. and A.W. McIntosh. 1998. Aquatic ecosystems in agricultural landscapes: achievable ecological outcomes and targeted indicators of ecological health. USDA Natural Resources Conservation Service Technical Report Series.

McIntosh, A., M. Watzin, et al. 1997. Lake Champlain Sediment Toxics Assessment Program: an assessment of sediment-associated contaminants in Lake Champlain. Phase II. Lake Champlain Basin Program Technical Report 23B, 535 pp.

Watzin, M.C., S. Tucker, and C. South. 1995. Environmental problems in the Mobile Bay ecosystem: the cumulative effects of human activities. U.S. Environmental Protection Agency. 125 pp.

Watzin, M.C. and J.G. Gosselink. 1992. The fragile fringe: coastal wetlands of the United

States. Louisiana Sea Grant College Program, Louisiana State University, Baton Rouge. LA; U.S. Fish and Wildlife Service, Washington, DC; and National Oceanic and Atmospheric Administration, Rockville, MD. 20 pp.

Watzin, M.C. 1991. Coastal Barrier Resources System mapping process. In: Proceedings of the Habitat Loss and Modification Group meeting. U.S. Fish Wildl. Serv. Biol. Rep. 90(18): 23-28.

Watzin, M.C. and R.H. Baumann. 1988. Shoreline change and wetland loss in the Coastal Barrier Resources System: a case study analysis. Appendix A in Report to Congress: Coastal Barrier Resources System. U.S. Department of the Interior, Washington, DC. 146 pp.

U.S. Department of the Interior, Coastal Barrier Study Group. 1988. Report to Congress: Coastal Barrier Resources System. Executive summary; Vols. 1-22, Appendices A-D. Washington, DC. (principal author and editor)

U.S. Department of the Interior. 1988. Final supplemental legislative environmental impact statement on the proposed changes to the Coastal Barrier Resources System. Washington, DC. 124 pp. (principal author and editor)

Other Publications

Watzin, M., A. Shambaugh, E. Brines, A. Mahar, A. Pitt, and A. McIntosh. 2005. Pollution, plankton, and people: the state of Burlington Bay. University of Vermont. 20 pp.

Watzin, M.C. 2004. Improving wetland restoration. (invited editorial). *Conservation in Practice*.

Watzin, M., A. McIntosh, A. Shambaugh, E. Brines and A. Pitt. 2004. The Burlington Bay project: Water quality and ecosystem health along the shores of Lake Champlain. Report to Green Mountain Power Corporation, Colchester, Vermont. 19 pp.

Watzin, M.C., E.A. Cassell and D.W. Meals. 2003. Analyzing effects of conservation practices using network modeling. Report to USDA Natural Resources Conservation Service Watershed Science Institute.

Watzin, M.C. 2003. Lake Ohrid and its Watershed: Our Lake, Our Future. 2003. Lake Ohrid Conservation Project. Tirana, Albania and Ohrid, Macedonia. 24 pp. (public education brochure, in English, Macedonian and Albanian)

Watzin, M.C., J. Rowder, B. Lancaster, R. Acabbo, and L. Bronson. 2003. Zebra Mussels, Shipwrecks, and the Environment – Will Fish Become Significant Predators on Zebra Mussels in Lake Champlain? Final Report to Argosy Foundation. 26pp.

- Watzin, M., A. McIntosh, A. Shambaugh and E. Brines. 2003. The Burlington Bay project: Water quality and ecosystem health along the shores of Lake Champlain. Report to the Green Mountain Power Corporation, Colchester, Vermont. 37 pp.
- Watzin, M.C, V. Puka, and T.B. Naumoski, eds. 2002. Lake Ohrid and its Watershed, State of the Environment Report. Lake Ohrid Conservation Project. Tirana, Albania and Ohrid, Macedonia. 134 pp.
- Watzin, M.C., A.W. McIntosh, A. Shambaugh, A. Pitt, A. Mahar, E. Brines. 2002. The Burlington Bay Project: Water Quality and Ecosystem Health Along the Shores of Lake Champlain. Report to Green Mountain Power Corporation, Colchester, VT. 46 pp.
- Watzin, M.C., A.W. McIntosh, A. Shambaugh, S. Beauvais, A. Mahar, E. Swahn. 2001. The Burlington Bay Project: Water Quality and Ecosystem Health Along the Shores of Lake Champlain. Report to Green Mountain Power Corporation, Colchester, VT. 42 pp.
- Watzin, M.C., A.B. Cohn, and B. E. Emerson. 2001. Zebra mussels, shipwrecks, and the environment. Final report to the Argosy Foundation. Available at the Lake Champlain Maritime Museum, Vergennes, VT. 55 pp.
- Watzin, M.C., A.B. Cohn, and M. M. Lescaze. 2000. Zebra mussels, shipwrecks, and the environment. Final report to the Argosy Foundation. Available at the Lake Champlain Maritime Museum, Vergennes, VT. 45 pp.
- Watzin, M.C. 1995. Measuring Community-Level Responses of Benthos to Heavy Metal Contamination Using Artificial Sediments. Final Report. National Biological Survey, Southern Science Center, Lafayette, LA. 73 pp.
- Watzin, M.C. and S. E. Cobb. 1995. An Examination of the Role of the Benthos in the Food Web Dynamics of Lake Champlain. U.S. Fish and Wildlife Service. 104 pp.
- Watzin, M.C. and B. Gruessner. 1994. An Assessment of the Effects of Agricultural Nonpoint Source Pollution on Lower Tributary Ecosystems. U.S. Fish and Wildlife Service. 96 pp.
- Roscigno, P.F., M.E. McNiff, M.C. Watzin, and W. Ji. 1993. The use of geographic information system technology to compare the environmental impacts of human development on Mobile Bay, Alabama and Galveston Bay, Texas. In: Coastal Zone '93: Proceedings of the Eighth Symposium on Coastal and Ocean Management, O.T. Magoon, H. Converse, V. Tippie, L.T. Tobin, and D. Clark, eds. pp 825-837.
- Watzin, M.C. 1993. Overview of Vermont's environmental research and some general comments on research and management. Pp 3-11 in: Environmental research for Vermont: an agenda for the 1990s and beyond. Proceedings of a conference sponsored by EPSCoR/EPA. Vermont EPSCoR, South Burlington, VT.
- Watzin, M.C. 1992. A research and monitoring agenda for Lake Champlain. Proceedings of a workshop. December 17-19, 1991, Burlington VT. Lake Champlain Basin Program Technical Report No. 1. U.S. Environmental Protection Agency, Boston, MA. 196 pp.

- Roscigno, P.F., G.M. Martin, J.B. Johnston, and M.C. Watzin. 1992. Using GIS to determine the effects of contaminated sediments on natural resources in an estuary. In: Proceedings, the second national U.S. Fish and Wildlife Service Geographic Information Systems Workshop, June 10-13, 1991. U.S. Fish and Wildlife Service, Washington, DC. pp. 41-50.
- Staynor, F.O., J.D. Scurry, J.B. Johnston, M.C. Watzin, and P.F. Roscigno. 1991. U.S. Fish and Wildlife Service selected geographic analyses. In: Coastal Zone '91: Proceedings of the Seventh Symposium on Coastal and Ocean Management, O.T. Magoon, H. Converse, V. Tippie, L.T. Tobin, and D. Clark, eds. pp. 1968-1980.
- Staynor, F.O., J.D. Scurry, J.B. Johnston, M.C. Watzin, and P.F. Roscigno. 1990. Selected geographic analysis projects: U.S. Fish and Wildlife Service's National Wetlands Research Center. In: Proceedings of the First U.S. Fish and Wildlife Service Geographic Information Systems Workshop, Fish and Wildlife Service, Washington, D.C. Pp. 220-233.
- Watzin, M.C., P.F. Roscigno, and E.R. Roach. 1988. Use of GIS technologies in addressing resource management problems in Mobile Bay, Alabama. In: Proceedings, Fifth National Map Overlay and Statistical System (MOSS) User's Workshop. pp. 149-157.
- Watzin, M.C. and E.C. Pendleton. 1987. Wetland research program for the Louisiana and central Gulf of Mexico coast. U.S. Fish Wildl. Serv. NWRC Open File Rep. 87-1. 31 pp.
- Roach, E.R., M.C. Watzin, J.D. Scurry, and J.B. Johnston. 1987. Wetland trends in coastal Alabama. In: T. Lowery, ed. Symposium on the natural resources of the Mobile Bay estuary. Alabama Sea Grant Extension Service. pp. 92-101.
- Rathbun, C.E., M.C. Watzin, J.B. Johnston, and P.E. O'Neil. 1987. Areal extent of wetlands above and below the 10-foot contour line in Alabama. U.S. Fish Wildl. Serv. NWRC Open File Rep. 86-3. 9 pp.
- Watzin, M.C. and M.S. Brody. 1986. Bibliography of forest succession, old-field succession, forest models, reforestation, and wildlife production. U.S. Fish Wildl. Serv. NCET Open File Rep. 86-2. iii + 63 pp.
- Watzin, M.C. 1986. Habitat mapping for coastal management in Louisiana: proceedings of a workshop held May 21-22, 1985, in Slidell, Louisiana. U.S. Fish Wildl. Serv. NCET Open File Rep. 86-1. 13 pp.
- Watzin, M.C. and R.H. Baumann. 1985. Coastal Barrier Resources System: a changing landscape. In: O.T. Magoon, H. Converse, D. Miner, D. Clark, and L.T. Tobin, eds. Coastal Zone '85: proceedings of the fourth symposium on coastal and ocean management. American Society of Civil Engineers, New York.

Grants and Contracts

Funded research projects since coming to the University of Vermont:

- 2006-2008 – Emerging Threats to the Lake Champlain Ecosystem. NOAA. With S. Levine, J. E. Marsden, G. Druschel, A. Lini and M. Beekey. (\$456,510)
- 2006-2007 – A phosphorus accounting system for Lake Champlain. Vermont ANR (\$75,000).
- 2006-2008 – Missisquoi River Basin, Vermont, a watershed approach to improving water quality in Lake Champlain. NRCS Conservation Planning Initiative. With R. Sims. (\$81,600).
- 2006-2008. Piloting an interdisciplinary watershed field camp. National Science Foundation. with P. Bierman (PI), G. Druschel, D. Rizzo, and B. Wemple. (\$151,520)
- 2004-2007 – Effects of multiple stressors (mercury and PCBs) on reproduction in the fathead minnow. Dartmouth Medical College, PhD training grant for Jamie Jukosky. With J.C. Leiter.
- 2003-2006 – Applying spatially explicit dynamic landscape modeling to forest watershed planning and adaptive management in the Northern Forest. U.S. Forest Service. (\$175,644) with A. Voinov (P.I.), R. Costanza, J. Farley, R. Boumans, C. Ginger, B. Bowden, T. Maxwell.
- 2002-2006 -- Linking land use change, stream geomorphology, and aquatic biodiversity in a hierarchical classification scheme. U.S. Environmental Protection Agency STAR (\$664,339) with C. Hession, A. Troy, and W. Keeton.
- 2002-2007 – Monitoring and evaluation of blue-green algae (Cyanobacteria) in Lake Champlain Vermont Agency of Natural Resources and Lake Champlain Basin Program. (\$215,000)
- 2002-2005 – Improving tolerance-based biotic indices in agricultural watersheds: assessing macroinvertebrate responses to agricultural pollutants. USDA-CREES, National Research Initiative (\$197,919)
- 2002-2007 – Tier-based monitoring for toxic Cyanobacteria in the lower Great Lakes. NOAA. With G. Boyer (P.I.) and P. Hopkins (SUNY Syracuse), J. Makarewicz (SUNY Brockport), C. O'Neill (Cornell), T. Mihuc (SUNY Plattsburgh). (\$3,328,055)
- 2002-2006 – Linking Land Use Change, Stream Geomorphology, and Aquatic Integrity in Changing Forested Landscapes. U.S. Forest Service. With C. Hession, A. Troy, and W. Keeton. (\$200,000)
- 2002-2004 – Analyzing effects of conservation practices using network modeling. USDA, NRCS. (\$50,000) with E. Alan Cassell.
- 2001-2002 – Understanding the linkages between channel stability and in-stream biodiversity. U.S. Forest Service. (\$10,000) with Cully Hession.

- 2001-2002 – Zebra Mussels, Shipwrecks and the Environment: Characterization of Corrosion. NPS through New England Interstate Water Pollution Control Commission (\$20,000) With Art Cohn, Lake Champlain Maritime Museum.
- 2001-2002 – Will fish become significant predators on zebra mussels in Lake Champlain? Argosy Foundation. (\$50,000)
- 2000-2002 – Monitoring and evaluation of blue-green algae (Cyanobacteria) in Lake Champlain Vermont Agency of Natural Resources, Lake Champlain Basin Program, and U.S. Centers for Disease Control (\$83,500) With Barry Rosen.
- 2000-2004 – Developing ecosystem indicators and an environmental scorecard for the Lake Champlain Basin Program. U.S. Environmental Protection Agency through New England Interstate Water Pollution Control Federation (\$100,000). Lead investigator with interdisciplinary team of 8.
- 2000-2002 – Groundwater contributions to Lake Champlain by percolation through the lakefloor. Lintilhac Foundation. (\$50,000). With P. Manley and T. Manley.
- 1999-2002 – Reducing uncertainty in ecological risk assessment in agricultural watersheds. U.S. Environmental Protection Agency through VT EPSCoR (\$268,635) With J. Hoffmann, N. Gotelli.
- 1999-2004 – Environmental quality of Burlington Bay. Funded by Green Mountain Power Company as part of the Pine Street Barge Canal Superfund Settlement. (\$1,000,000) With A. McIntosh.
- 1998 - 2001 – Zebra mussels, shipwrecks and the environment. Argosy Foundation. (\$160,000) With A. Cohn, Lake Champlain Maritime Museum.
- 1998-2000 – A database to help select ecological indicators in agricultural watersheds. USDA-CREES National Research Initiative. (\$50,000)
- 1998-1999 – Effects of agricultural runoff on aquatic communities. USDA - Natural Resources Conservation Service. (\$25,000)
- 1996-1999 – Effects of zebra mussels on bottom-feeding fishes. Lintilhac Foundation. (\$35,420)
- 1996-1997 – Identifying indicators of ecological health and achievable ecological outcomes in agricultural watersheds. USDA - Natural Resources Conservation Service. (\$17,000)
- 1995-1996 – Effects of sediment bioturbation on the toxicity of the overlying water in Inner Burlington Harbor, VT. U.S. Geological Survey. (\$25,000)
- 1994 – The effects of elevated mercury body burden on reproductive performance in walleye (*Stizostedion vitreum*). U.S. Fish and Wildlife Service. (\$5,000)

- 1993-1997 – Lake Champlain sediment toxics assessment. U.S. Environmental Protection Agency (\$500,000) Co-investigator on interdisciplinary team of 6, A. McIntosh, project director.
- 1992-1994 – An examination of the role of the benthos in the food web dynamics of Lake Champlain. U.S. Fish and Wildlife Service. (\$41,702)
- 1992-1994 – An assessment of the effects of agricultural nonpoint source pollution on lower tributary ecosystems. U.S. Fish and Wildlife Service. (\$77,001)
- 1992-1993 – A functional assessment of the wetlands in northwestern Vermont: accuracy of mapping using LANDSAT TM and determination of values. U.S. Environmental Protection Agency. (\$16,926)
- 1991-1992 – A research and monitoring agenda for Lake Champlain. U.S. Environmental Protection Agency. (\$26,691)
- 1991-1992 – A study of cumulative impacts in the Mobile Bay ecosystem. National Oceanic and Atmospheric Administration (\$18,049)
- 1991-1994 – Measuring community-level responses of benthos to heavy metal contamination using artificial sediments. U.S. Fish and Wildlife Service (\$66,628)
- 1990-1991 – Development of a community-level field approach for testing the toxicity of contaminated sediments. U.S. Fish and Wildlife Service (\$20,127)

Funded instrumentation and educational projects:

- 2000-2001 – Research Instrumentation for the Rubenstein Ecosystem Science Laboratory. State of Vermont. (\$225,000)
- 1998-2001 – Research Enhancement at the Rubenstein Ecosystem Science Laboratory at the Lake Champlain Basin Science Center. U.S. Environmental Protection Agency. (\$750,000)
- 1995-1996 – A seminar program for women students in natural resources. U.S. Forest Service. (\$1,000)
- 1995-1995 – A seminar program for women students in natural resources. University of Vermont Women’s Center. (\$700)
- 1995 – Lake Champlain science education. Lake Champlain Basin Science Center. (\$1,500)

Current and Recent Major Contracts

- 2003-2005 – Ecosystem Management in Lake Ohrid and Lake Shkoder, Macedonia, Albania, Montenegro. World Bank GEF.

2003 – An analysis of the effectiveness of the Lake Ohrid Conservation Project, and other large lake management projects in Europe and the Americas. World Bank GEF through Lakenet.

2002-2003 – Lake Ohrid Conservation Project, Macedonia and Albania: Developing a monitoring program to determine the state of the environment. Ministries of Environment, Albania and Macedonia.

1996-1998 – Lake Champlain Committee and the City of Burlington on the Pine Street Barge Canal Superfund Site (funded by a Technical Assistance Grant from the U.S. Environmental Protection Agency).

Proposals Pending

2006. Evaluating the cumulative effects of conservation practices, geomorphic instability, and landscape context on water quality at the watershed scale. USDA CREES CEAP (\$642,360) with A. Voinov and D. Healy

2005. Integrated Watershed Management in the Transboundary Drin River Basin, Macedonia, Albania, Montenegro, and Kosovo. Global Environment Facility. With international collaborators

Selected Invited Seminars and Presentations (of 65 given)

2006. Linking Land Use Change, Stream Geomorphic Condition and Ecosystem Health. Vermont Law School.

2006. A Hierarchical Approach to Monitoring Cyanobacteria in Lake Champlain. SUNY Syracuse.

2006. An Integrated Watershed Resource Management Approach for the Lake And Watershed Ecosystems. World Bank. Washington, DC.

2005. Linking Land Use Change, Stream Geomorphic Condition, and the Ecological Integrity of Streams, Watersheds, and Lake Champlain. NSF Biocomplexity Program Collaborative Sino-American Conference.

2005. Considering scale in the design of stream and watershed classification systems. ASLO Conference, Salt Lake City, UT.

2005. The Role of Law, Science and the Public Process: Practical Lessons from Lake Champlain (USA and Canada) and Lake Ohrid (Macedonia and Albania). University of the Pacific Law School, Transboundary Waters Symposium, Sacramento, CA.

2004. Combining scientific data in frameworks for decision-making: examples from two transboundary lakes (Lake Champlain, USA & Canada, and Lake Ohrid, Macedonia &

- Albania). Conference on Water Observation and Information System for Decision Support, Institute of Research for Development, France.
2004. Analyzing the Effects of Conservation Practices on Vermont Dairy Farms Using Network Modeling and a Systems Approach. USDA NRCS, Science and Technology Consortium Seminar, Washington, DC.
2003. Implications of Mercury and PCB Contamination for Fish, Wildlife and People in the Lake Champlain Basin. The Wildlife Society.
2003. Developing ecosystem indicators and an environmental score card for lake and watershed management: method and case study from Lake Champlain, USA and Canada. Stockholm World Water Symposium.
2002. A framework for selecting ecological indicators for Missisquoi Bay. LCRC Symposium 2002: Lake Champlain in the New Millennium. St. Jean, Quebec. Keynote address.
2001. Developing Ecosystem Indicators and an Environmental Scorecard for Managing Lake Champlain. Ninth World Lakes Conference, Shiga Prefecture, Japan.
2000. Monitoring Air and Water Quality to Assess Ecosystem Health: Linking Efforts Between Media. EPA's National Advisory Committee on Water Quality Monitoring.
2000. Using Research for Better Management of Lake Champlain and Other Large Lakes. International LAKENET Conference on Large Lakes of the World.
2000. Communicating science effectively to the media and the public. International Association of Great Lakes Research (Cortland, Ontario). Invited panelist.
2000. Keynote address "The Lake Champlain Ecosystem: Opportunities and Challenges" in the Lake Champlain Maritime Museum summer lecture series.
1998. Society of Environmental Toxicology and Chemistry Annual Meeting (Charlotte, NC) Using field survey data to predict exposure scenarios and interpret toxicity test results.
1998. U.S. Fish and Wildlife Service, Lake Champlain Basin Wetland and Riparian Habitat Restoration Workshop. Habitats needing restoration in the Lake Champlain Basin.
1997. Hydrobiological Institute of Macedonia, Ohrid, Macedonia. Toxic contamination and the ecosystem health of Lake Champlain.
1997. Lake Champlain Research Consortium. Setting a Research Agenda for the Lake Champlain Basin 1998-2000. Ecosystem health.
1996. New England Board of Higher Education Teacher's Workshop. Ecosystem management: what exactly is it?

1995. University of Maine. Community-level responses to toxic contaminants: lessons from approaches in aquatic ecosystems.
1995. Middlebury College. Atrazine, yellow perch, and other research tales from Lake Champlain.
1994. Society of Environmental Toxicology and Chemistry Annual Meeting (Denver, CO). Response of benthic communities to zinc contamination: tests using formulated sediments. (in special session on use of artificial sediments in toxicity testing).
1992. Johnson State College. Measuring impacts of human activities in Mobile Bay, Alabama: field and modeling approaches.
1992. Middlebury College. Fate and effects of contaminants in the Mobile Bay Estuary, Alabama.
1992. University of Vermont, SNR. An overview of the Lake Champlain ecosystem. Lead seminar in a special series on Lake Champlain and other large lakes.
1992. Vermont EPSCoR - Environmental Research for Vermont: An Agenda for the 1990s and Beyond (Killington, VT). Plenary Address - Vermont's environmental research and general comments on environmental research and management.
1992. Vermont Wetland Association (Burlington, VT). Wetland evaluation and management: considering functions and values in a landscape context.
1991. Estuarine Research Federation Biennial Meeting (San Francisco, CA). Testing community-level responses of benthic invertebrates to heavy metal contamination using artificial sediments.
1991. EPA Special Workshop on Contaminants in Estuaries (Biloxi, MS). Invited session organizer and participant.
1991. EPA Workshop - A research and monitoring agenda for Lake Champlain. Plenary address - State of knowledge about Lake Champlain, Closing Address.
1990. US-USSR Conference on Environmental Conservation for the 1990's. (Lexington, Virginia). Invited panelist.
1990. National "No Net Loss of Wetlands" Symposium (Jackson, MS). Invited panelist.

National Scientific Meetings

My students and I present papers and posters regularly at national scientific meetings, including those of the International Association for Great Lakes Research, Ecological Society of America, Society of Environmental Toxicology and Chemistry, North American Benthological Society, Estuarine Research Society, International Fisheries Society, the North American Lake Management Society, and others. Some recent examples are listed below.

2006 – AGU (Baltimore, MD)
2005 – ASLO (Salt Lake City, UT)
2004 - International Fisheries Society (Vancouver, BC)
2003 - North American Lake Management Society (Mashantucket, CT)
2003 - International Association for Great Lakes Research (Chicago, IL)
2002 - North American Benthological Society (Pittsburgh, PA)
2000 - International Association for Great Lake Research (Cortland, NY)
1999 - Society of Environmental Toxicology and Chemistry (Charlotte, NC)
1998 - Society of Environmental Toxicology and Chemistry (San Francisco, CA)

Local Invited Presentations

For the last 5 years, I have presented 14-20 local talks a year on a variety of subjects. These talks are to groups, such as The Nature Conservancy, Soil and Water Conservation Districts, Lake Champlain Committee, Champlain Regional Chamber of Commerce, state and local governments, the Vermont legislature, and others. Topics span research and environmental issues of interest to the community.

Service to the Profession

Since 1992, I have served as Chair of the Technical Advisory Committee to the Lake Champlain Steering Committee, as well as serving on the Steering Committee itself. In this capacity, I oversee all technical aspects of the Lake Champlain Basin Program (collaborative effort between the U.S. Environmental Protection Agency, U.S. Department of Agriculture, US Department of the Interior, State of Vermont, State of New York, Province of Quebec, and others). About \$70 million invested in the program to date.

In September 2003, the Vermont Water Resources Board opened a special “Investigative Docket” to review the technical issues associated with stormwater regulation and management in Vermont. At the Chair’s request, I wrote the group’s report, “A Scientifically Based Assessment and Adaptive Management Approach to Stormwater Management,” captured the consensus of the group on the issues raised by the Board in another report entitled: “Areas of Agreement about the Scientific Underpinnings of the Water Resources Board’s Original Seven Questions.” At the end of February, the Board forwarded a series of recommendations to the Vermont Legislature, including these two reports. New stormwater regulations based on our recommendations were passed by the Legislature in May 2004.

Have reviewed manuscripts for the following journals:

Ecology
Ecological Applications
Environmental Management
Environmental Pollution
Environmental Science and Technology
Environmental Toxicology and Chemistry
Estuaries
Hydrobiologia
Journal of Environmental Quality
Journal of Great Lakes Research
Journal of Experimental Marine Biology and Ecology
Marine Environmental Research
Marine Ecology Progress Series
Wetlands

Have reviewed research proposals and/or served on research panels for the following agencies:

U.S. Environmental Protection Agency
National Science Foundation
National Oceanic and Atmospheric Administration
Sea Grant College Program
Lake Champlain Basin Program
U.S. Fish and Wildlife Service
U.S. Geological Survey
U.S. Department of Agriculture
Canada Foundation for Innovation (NSERC)

Scientific Societies

Sigma Xi
Ecological Society of America
Society of Environmental Toxicology and Chemistry
Estuarine Research Federation
International Association for Great Lake Research
North American Benthological Society
American Institute of Biological Sciences
American Association for the Advancement of Science