

David F. Raikow, Ph.D.

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Research Ecologist: Federal Principal Investigator; stream ecology, lake ecology, community, ecosystem, and landscape ecology; ecosystem connectivity, food webs, biological invasion, ecotoxicology, biogeochemistry; macroinvertebrates, phytoplankton, zooplankton, fish.

Science Manager: Create, plan, and administer original multi-disciplinary research programs; Initiate and lead new research thrusts, oversee scientific contracts; Create and manage budgets; Hire and supervise interns; Write interagency agreements, Quality Assurance Project Plans, project management plans, and work breakdown structures; Write Operating Agreement for a Limited Liability Company, Co-Founder and Co-Owner of Wemantic LLC.

Agency Representative: Represent the National Oceanic and Atmospheric Administration (NOAA), the Great Lakes Environmental Research Laboratory (GLERL), and the NOAA National Center for Research on Aquatic Invasive Species (NCRAIS) at workshops, meetings, and conferences; Build new relationships with state and federal agencies, universities, and non-government organizations; Critique scientific merit of proposed federal regulations.

Writer and Speaker: Write grant proposals, protocols, status reports, technical memos, scientific papers, presentations, book reviews, book proposals, book chapters, and books; Critique scientific manuscripts and grant proposals; Present complex scientific concepts to scientists, untrained audiences, congressional delegates, and the media; Create workshops for, and present seminars to, undergraduates and the public.

EDUCATION

- Ph.D. 2002 Ecology, Evolutionary Biology and Behavior (EEBB) and Zoology (dual degree), Department of Zoology and W. K. Kellogg Biological Station, Michigan State University, East Lansing, MI 48824.
- M.S. 1996 Biological Sciences, Ecology and Evolution Program, Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA 15260
- B.S. 1993 Biological Sciences, University of Pittsburgh.
- B.A. 1993 History and Philosophy of Science, University of Pittsburgh.

CERTIFICATIONS

- “Ecologist”, Ecological Society of America (*current through 2014*) 2003
- “Teaching College Science and Mathematics”, Michigan State University 2002

PROFESSIONAL EXPERIENCE

RESEARCH ECOLOGIST

U.S. Environmental Protection Agency (EPA)
National Exposure Research Laboratory (NERL)
Ecological Exposure Research Division (EERD)
Ecosystems Research Branch (ERB)
26 W. Martin Luther King Dr., Cincinnati, OH 45268

GS-0408-12
Sept. 2006 to Present

Contact Supervisor: Yes
Greg Toth
513-569-7242

RESEARCH COORDINATOR: Create, develop, organize, and lead, multidisciplinary and interagency research programs. Write research proposals, scopes of work, and budget estimates. Write Quality Assurance Project Plans, work plans, work breakdown structures, and timelines. Oversee scientific work contracts.

AQUATIC ECOLOGIST: Apply knowledge of aquatic ecosystem ecology, experimental design, methodology, and statistical analysis while designing and implementing applied ecological research projects in the field and laboratory. Collect, manage, explore, and analyze scientific and environmental data. Write peer-reviewed scientific publications, technical reports. Present results at national conferences.

SCIENCE ADVISOR: Provide advice and counsel on technical scientific approaches to peers. Review reports and manuscripts.

Projects:

"Effect of eutrophication on mercury biomagnification in aquatic food webs"

- Manage a contractor-conducted artificial-stream mesocosm experiment to assess the effect of eutrophication on Hg uptake in aquatic ecosystems, analyze data, publish results.

"Spatial extent of PCB export to terrestrial invertebrate predators by emergent aquatic insects"

- Field study at the Lake Hartwell/Twelve mile Creek superfund site near Clemson, SC.

"Identifying source areas for water-borne materials using resource shed analysis"

- Create new research thrust to determine the contributory importance of areas of water-borne chemical contaminants, nutrients, and within watersheds, and relate to land-covers

"Resource shed delineation in aquatic ecosystems"

- Create and oversee multi-institution (EPA-NOAA-University at Buffalo), multi-disciplinary (Ecological-Hydraulic-Hydrologic) research project.
- Use ArcMap (ArcINFO) to organize, display, & evaluate off shore resource sheds.
- Accomplishments:
 - o \$150,000 grant from NY Sea Grant.
 - o 1 paper published, 1 paper in revision, 1 paper in preparation, 1 proceedings paper, 1 technical memo, 14 presentations, web sites to disseminate maps.

RESEARCH AQUATIC BIOLOGIST

National Oceanic and Atmospheric Administration (NOAA)
 Great Lakes Environmental Research Laboratory (GLERL)
 2205 Commonwealth Blvd.
 Ann Arbor, MI 48105-2945

GS-0401-11
 Nov. 2003 to Sept. 2006
 Contact Supervisor: Yes
 David Reid, 734-741-2019

RESEARCH COORDINATOR: (50% time) Create, develop, organize, and lead research programs. Write domestic and international collaborative research proposals, work plans, timelines, and Memorandum of Understanding to govern interagency project and funds transfer. Write and manage budgets with spending authority and purchase card.

REPRESENTATIVE: (50% time) Represent the National Oceanic and Atmospheric Administration (NOAA), the Great Lakes Environmental Research Laboratory (GLERL), and the NOAA National Center for Research on Aquatic Invasive Species (NCRAIS) at scientific and regulatory meetings, workshops, conferences, and as the alternate NOAA representative to the Great Lakes Aquatic Nuisance Species Panel. Develop and maintain relationships between NOAA and federal agencies (e.g. USGS, EPA, NASA, FWS, Sea Grant, Coast Guard), Universities (e.g. Michigan, Michigan State, Windsor, Toledo, Purdue), non-government organizations (e.g. Great Lakes Commission). Present scientific information to the public.

AQUATIC BIOLOGIST: Apply knowledge of lake ecosystem ecology, biological invasions, aquatic biology, experimental design, methodology, and statistical analysis while designing and implementing applied biological research. Collect, explore, manage, and analyze data. Present and publish results, write reports.

SCIENCE ADVISOR: Provide advice and counsel on technical scientific approaches to peers. Evaluate, prioritize, and recommend aquatic nuisance species research priorities to agency. Analyze and critique scientific merit of proposed federal regulations. Review and comment on biological invasion publications, studies, programs, proposals, and other relevant activities including rapid emergency response plans.

“Resting Eggs in Ship Ballast Tanks - An Unaddressed Secondary Invasion Vector.”

- Evaluate efficacy of treating ship ballast tanks to prevent new biological invasions.
- NOBOB-2: Identifying, Verifying, and Establishing Options for Best Management Practices; sample ship ballast tanks in the field.
- Accomplishments: Created new methods to evaluate the effect of stressors on aquatic invertebrate resting eggs; three publications.

“Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS)”

- Develop, plan, and create the first “one-stop” on-line resource of biological information on Great Lakes exotic species by using distributed database technology.
- Accomplishment: \$35,000 grant from the Great Lakes Fisheries Trust.

“International Field Years on Lake Erie (IFYLE)”, Co-PI

“Forecasting Potential Spread of Introduced Species” (\$2.5M proposal not funded)

- Recruited 10-member multi agency (NOAA, USGS, Great Lakes Commission, UC San Diego) and international (USA, Germany, Lithuania, Ukraine) research team.

TEACHING EXPERIENCE

Certification in Teaching College Science and Mathematics:

- Program of Michigan State University, College of Natural Science.
- Mentored Teaching Project: “Improving links between the elements of a field ecology course”, 2002.
- 10 Workshops: Planning a course, Pedagogical changes, The systematic introduction of ethics, Designing group experiences, Academic myths we live by, Finding a job, Grading papers, Choosing tools, On-line cheating, and Web site building for classes.
- Class: Teaching College Science, NSC 870.

Great Lakes Summer Student Fellowship Program:

- Mentor undergraduate interns conducting research at GLERL, 2004, 2005.

Classes taught and assisted:

- Instructor: Genetics Recitation; Michigan State University, lead discussion, write quizzes, and grade tests, 2002.
- Instructor: Ecology Lab; Michigan State University and University of Pittsburgh; Run campus-based labs, and assist in field-based courses, 1995, 2001.
- Instructor: Introductory Biology Lab; Michigan State University and University of Pittsburgh. Run labs, create tests, and evaluate student presentations, 1994-1997.
- Assistant: Ecology; Michigan State University and University of Pittsburgh field stations. Assist lecture classes, write and evaluate tests, 1995, 2001.
- Assistant: Ecology of Fishes; University of Pittsburgh, assist field course, 1996.

Guest Lecture:

- “Biological Invasions”, Community and Ecosystem Ecology (Graduate), MSU, 2000-2004.

OTHER EXPERIENCE

GRADUATE STUDENT, 1996 - 2002, Michigan State University, Kellogg Biological Station.

“How the feeding ecology of native and exotic mussels affects freshwater ecosystems”

- Discovered phytoplankton community dominance of toxic *Microcystis aeruginosa* in lakes invaded by zebra mussels. Identified competitive food-web interactions between zebra mussels and larval fish. Obtained \$21,650 grant

“The Lotic Intersite Nitrogen eXperiment (LINX)”

- Created three new experiments. Supported stream food web and nutrient cycling experiments. Identified organic matter subsidy to stream mussels from wetlands in a complex watershed.

“Long Term Ecological Research (LTER)”

- Collected samples and measured parameters for long-term aquatic ecosystem monitoring.

GRADUATE STUDENT, 1994 - 1996, Dept. of Biological Sciences, University of Pittsburgh.

WRITER, 2002 - 2004, The Resume Place, 89 Mellor Ave., Baltimore, MD 21228.

PUBLICATIONS

In-Preparation

Raikow, D. F., J. T. Oris, C. Hammerschmidt, M. G. Mehling, A. K. Gevertz, D. M. Walters, In Preparation, Effects of eutrophication on mercury biomagnification in aquatic food webs.

Atkinson, J. F., D. F. **Raikow**, and T. E. Croley, In Preparation, Hydrodynamic modeling for resource shed prediction in the Great Lakes.

In-Review

Raikow, D. F., D. M. Walters, K. M. Fritz, M. A. Mills, In Review, The spatial extent of aquatic subsidy and contamination in lake riparian food webs, *Ecological Applications*.

In-Revision

Raikow, D. F., J. F. Atkinson, and T. E. Croley, In Revision, Development of resource shed delineation in aquatic ecosystems. *Environmental Science and Technology*.

Walters, D. M., K. M. Fritz, M. A. Mills, D. F. **Raikow**, In Revision, Riparian spiders as sentinels of aquatic sediment contamination. *Environmental Science and Technology*.

Peer-reviewed

Croley, T. E., D. F. **Raikow**, J. F. Atkinson, and C. He, 2008, Hydrological resource sheds. *Journal of Hydrologic Engineering* 13:873-885.

Raikow, D. F., D. F. Reid, and P. F. Landrum, 2007b, Aquatic invertebrate resting egg sensitivity to glutaraldehyde and sodium hypochlorite. *Environmental Toxicology and Chemistry* 26: 1770-1773.

Raikow, D. F., D. F. Reid, E. R. Blatchley III, G. Jacobs, and P. F. Landrum, 2007a, Effects of proposed physical ballast tank treatments on aquatic invertebrate resting eggs. *Environmental Toxicology and Chemistry* 26: 717-725.

Raikow, D. F., D. F. Reid, E. E. Maynard, and P. F. Landrum, 2006, Sensitivity of aquatic invertebrate resting eggs to SeaKleen® (Menadione): A test of potential ballast tank treatment options. *Environmental Toxicology and Chemistry* 25: 552-559.

Sarnelle, O., A.E. Wilson, S. K. Hamilton, L. B. Knoll, D. F. **Raikow**, 2005, Complex interactions between the zebra mussel, *Dreissena polymorpha*, and the noxious phytoplankter, *Microcystis aeruginosa*. *Limnology and Oceanography* 50: 896-904.

Raikow, D. F., 2004. Food web interactions between larval bluegill sunfish (*Lepomis macrochirus*) and exotic zebra mussels (*Dreissena polymorpha*). *Canadian Journal of Fisheries and Aquatic Sciences* 61: 497-504.

Raikow, D. F., O. Sarnelle, A. E. Wilson, and S. K. Hamilton, 2004, Dominance of the noxious cyanobacterium *Microcystis aeruginosa* in low-nutrient lakes is associated with exotic zebra mussels. *Limnology and Oceanography* 49: 482-487.

Hamilton, S. K., J. L. Tank, D. F. **Raikow**, E. Siler, N. Dorn, and N. Leonard, 2004, The role of instream vs. allochthonous N in stream food webs: modeling the results of an isotope addition experiment. *Journal of the North American Benthological Society* 23: 429-448.

Raikow, D. F., and S. K. Hamilton, 2001, Bivalve diets in a Midwestern U.S. stream: A stable isotope enrichment study. *Limnology and Oceanography* 46: 514-522.

Hamilton, S. K., J. L. Tank, D. F. **Raikow**, W. M. Wollheim, B. J. Peterson, and J. R. Webster, 2001, Nitrogen uptake and transformation in a Midwestern U.S. stream: A stable isotope enrichment study. *Biogeochemistry* 54: 297-340.

Raikow, D. F., S. A. Grubbs, and K. W. Cummins, 1995, Debris dam dynamics and coarse particulate organic matter retention in an Appalachian mountain stream. *Journal of the North American Benthological Society* 14: 535-546.

Searcy, W. A., S. Coffman, and D. F. **Raikow**, 1994, Habituation, recovery, and the similarity of song types within repertoires in red-winged blackbirds (*Agelaius phoeniceus*). *Ethology* 98: 38-49.

Technical Memos, Proceedings, and Reviews

Croley, T. E., C. He, J. F. Atkinson, and D. F. **Raikow**, 2007, Resource shed definitions and computations, NOAA Technical Memorandum GLERL-141, Great Lakes Environmental Research Laboratory, Ann Arbor, Michigan.

Croley, T. E., J. F. Atkinson, and D. F. **Raikow**, 2007, Hydrologic-hydraulic-ecologic resource sheds, The 18th International Association of Science and Technology for Development (IASTED) Conference on Water Resources Planning, May 30 – June 1, 2007, Montreal, Quebec, Canada.

Stevens, M. H. H., D. F. **Raikow**, M. R. Servedio, R. J. Collins, T. L. Schumann, A. N. Tipper, and W. P. Carson, 1996, Hutchinson's chariot: A review of Species Diversity in Space and Time, by M. L. Rosenzweig. *Plant Science Bulletin* 42:48-49.

Non-peer reviewed

Troutman, K., 2007, *The Federal Resume Guidebook*, 4th ed., Jist Works, Indianapolis, IN, ISBN: 978-1593574260 (I'm a contributing author).

Troutman, K., and E. Troutman, 2004, *The Student's Federal Career Guide: 10 Steps to Find and Win Top Government Jobs and Internships*, The Resume Place, Baltimore, MD, ISBN: 978-0964702561 (I'm a contributing author).

Troutman, K., 2004, *The Federal Resume Guidebook*, 3rd ed., Jist Works, Indianapolis, IN, ISBN: 978-1563709258 (I'm a contributing author).

GRANTS

- \$ 15k 2009 Additional support for effect of eutrophication on mercury biomagnification in stream food webs, EPA Research Award.
- \$ 70k 2008 Effect of eutrophication on mercury biomagnification in stream food webs, EPA Research Award.
- \$150k 2006 Resource shed delineation in Lake Ontario and Lake Erie, NOAA New York Sea Grant.
- \$ 19k 2006 Resting eggs, Great Lakes Aquatic Nonindigenous Species Information System, International Field Years on Lake Erie. NOAA Research Award.
- \$ 35k 2005 Great Lakes Aquatic Nonindigenous Species Information System. Great Lakes Fisheries Trust.
- \$ 12k 2005 Stable isotope analysis of the Lake Erie Food Web - International Field Years on Lake Erie. NOAA Research Award.
- \$ 7k 2004 Resting eggs, Great Lakes Aquatic Nonindigenous Species Information System. NOAA Research Award.
- \$ 22k 1999 Can the zebra mussel suppress bluegill and promote Microcystis?, Kalamazoo Community Foundation.
- \$ 9k 1993-2002 Student research awards including Sigma-Xi, Howard Hughes Medical Institute, McKinley Research Fund, Lauff Research Award.

SELECTED COLLABORATORS

Atkinson, Joseph	Great Lakes Program, University at Buffalo
Croley, Tom	NOAA Great Lakes Environmental Research Laboratory
Fritz, Ken	EPA, National Exposure Research Laboratory
Fuller, Pam	USGS, Center for Aquatic Resources Studies
Hamilton, Stephen	Dept. of Zoology, Michigan State University
Landrum, Peter	NOAA Great Lakes Environmental Research Laboratory
Mills, Marc	EPA, National Risk Management Research Laboratory
Reid, David	NOAA Great Lakes Environmental Research Laboratory
Ricciardi, Tony	Redpath Museum, McGill University
Sarnelle, Orlando	Dept. of Fisheries and Wildlife, Michigan State University
Walters, David	USGS, Fort Collins Science Center
Wilson, Alan	Dept. of Fisheries and Allied Aquacultures, Auburn University

HONORS and AWARDS

Term Position Extension, EPA.	2009
Superior Accomplishment Recognition Award, EPA.	2007-2009
Service Recognition, GLERL, for “The Environmental Science Careers Seminar Series”.	2006
Term Position Extension, NOAA.	2005
Fellowship, Graduate Research Training Group (RTG), Michigan State University.	1997-1999
Graduation Cum Laude, University of Pittsburgh.	1993
Departmental Honors, Biological Sciences, University of Pittsburgh.	1993
Departmental Honors, History and Philosophy of Science, University of Pittsburgh.	1993

PRESENTATIONS

Conference contributions:

- Raikow**, D.F., D. M. Walters, K.M. Fritz, M. Mills. 2009. Not without cost: ecological subsidy and the lateral extent of polychlorinated biphenyl (PCB) export from aquatic to riparian food webs. American Society of Limnology and Oceanography, Nice, France.
- Walters, D.M., Mills. M. A., Fritz, K. M., **Raikow**, D.F., 2009, Using riparian spiders as sentinels of PCB export and risk at contaminated sediment sites, Society of Environmental Toxicology and Chemistry, New Orleans, LA.
- Mehling, M., Gevertz, A., Hammerschmidt, C., **Raikow**, D.F., Walters, D.M., Oris, J., 2009, Effect of Eutrophication on Mercury Accumulation and Distribution in Stream Ecosystems, Society of Environmental Toxicology and Chemistry, New Orleans, LA.
- Raikow**, D.F., J.F. Atkinson, and T.E. Croley. 2008. Delineating resource sheds in aquatic ecosystems. North American Benthological Society, Salt Lake City, Utah.
- Walters, D.M, K.M. Fritz, D.F. **Raikow**, M. Mills, R.R. Otter. 2008. $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ track contaminant flux from aquatic to terrestrial food webs. The 6th International Conference on Applications of Stable Isotope Techniques to Ecological Studies, Honolulu, HI.
- Croley, T.E., C. He, C. DeMarchi, and D.F. **Raikow**. 2008. Managing Saginaw Bay nutrient loading by surrounding watersheds through near real time hydrologic resource sheds. International Hydrological Programme: The Role of Hydrology in Water Resources Management, Capri, Italy.
- Raikow**, D.F., J.F. Atkinson, and T.E. Croley. 2007. Applying resource sheds to coasts and lakes. American Society of Limnology and Oceanography, Santa Fe, New Mexico.
- Atkinson, J.F., D.F. **Raikow**, and T.E. Croley. 2007. Hydrodynamic Modeling for Resource Shed Delineation in the Great Lakes. American Society of Limnology and Oceanography, Santa Fe, New Mexico.
- Croley, T.E., J.F. Atkinson, and D.F. **Raikow**. 2007. Hydrologic-hydraulic-ecologic resource sheds. The Second IASTED International Conference on Water Resources Management. Honolulu, Hawaii.
- Raikow**, D.F., J.F. Atkinson, and T.E. Croley. 2006. Resource shed delineation in Lake Erie. International Association of Great Lakes Research, Windsor, Ontario, Canada.
- Raikow**, D.F., D.F. Reid, and P. Landrum. 2006. Sensitivity of aquatic invertebrate resting eggs to proposed ballast tank treatment methods. International Conference on Aquatic Invasive Species, Miami, Florida.
- Raikow**, D.F., O. Sarnelle, A.E. Wilson, and S.K. Hamilton. 2004. Dominance of the noxious cyanobacterium *Microcystis aeruginosa* in low-nutrient lakes is associated with exotic zebra mussels. International Conference on Aquatic Invasive Species, Ennis, Ireland.
- Raikow**, D.F., D.F. Reid, P. Landrum, and H. Vanderploeg. 2004. Acute toxicity of SeaKleen (Menadione) to zooplankton diapausing eggs. International Conference on Aquatic Invasive Species, Ennis, Ireland.

- Raikow**, D.F., 2004. Great Lakes aquatic nonindigenous species information system. Regional Data Exchange Conference, Detroit, Michigan.
- Sarnelle, O., A.E. Wilson, S.K. Hamilton, L.B. Knoll and D.F. **Raikow**. 2003. Complex effects of zebra mussels (*Dreissena polymorpha*) on the bloom-forming bluegreen, *Microcystis aeruginosa*. International Association of Great Lakes Research. Chicago, Illinois.
- Raikow**, D.F., O. Sarnelle, A.E. Wilson, and S.K. Hamilton. 2002. Zebra mussel impacts on phytoplankton across a productivity gradient in Michigan lakes. Ecological Society of America. Tucson, Arizona.
- Raikow**, D. F, and S. K. Hamilton. 2001. The promises and problems of using stable isotopes to study unionid diets. North American Benthological Society, La Crosse, Wisconsin.
- Wilson, A.E., D.F. **Raikow**, O. Sarnelle, and S.K. Hamilton. 2001. Mussels and Microcystis: Do zebra mussels promote blue-green algal blooms in oligotrophic lakes? Ecological Society of America, Madison, Wisconsin.
- Hamilton, S.K., J.L. Tank, D.F. **Raikow**, E. Siler, N. Dorn, J. Halliday, and N. Leonard. 2001. Food webs in a Midwestern U.S. stream: Insights from a 15N tracer experiment. North American Benthological Society, La Crosse, Wisconsin.
- Raikow**, D.F. and S.K. Hamilton. 2000. An examination of stream bivalves and their food resources using stable isotopes. North American Benthological Society, Keystone, Colorado.
- Raikow**, D.F., 2000. Nitrogen uptake in newly conditioned stream organic matter. Long Term Ecological Research All Scientist Meeting, Snowbird, Utah.
- Raikow**, D.F., 2000. Competition for food between zebra mussels and larval bluegill. Ecological Society of America. Snowbird, Utah.
- Hamilton, S.K., J.L. Tank, D.F. **Raikow**, and W.M. Wollheim. 2000. Ammonium uptake by heterotrophic microbes, nitrifiers, and algae in a Midwestern U.S. stream. North American Benthological Society, Keystone, Colorado.
- Raikow**, D.F., 1999. Nitrogen uptake in newly conditioned stream organic matter, North American Benthological Society. Duluth, Minnesota.
- Raikow**, D.F., 1999. The contribution of unionids to nitrogen cycling in a stream ecosystem. Freshwater Mollusk Conservation society, Chattanooga, Tennessee.
- Raikow**, D.F., 1997. Substrate heterogeneity and macroinvertebrate diversity in stream riffles. North American Benthological Society. San Marcos, Texas.
- Raikow**, D.F., 1997. Substrate heterogeneity and macroinvertebrate diversity in stream riffles. Ecological Society of America.
- Raikow**, D.F., S. A. Grubbs, and K.W. Cummins. 1994. Debris dam dynamics and coarse particulate organic matter retention in an Appalachian mountain stream. North American Benthological Society. Orlando, Florida.

Seminars:

- “Legacy Contamination of streams: forgotten but not gone”, Public Seminar, Powdermill Nature Reserve, Rector, PA, 2009
- “Ecological subsidy and resource sheds: under-used concepts in conservation”, Invited Seminar, The Nature Conservancy, Chicago, IL, 2008.
- “Commercial online professional networks”, EPA Postdoc face-to-face meeting, Washington, DC, 2008.
- “Linking watersheds and coasts by delineating resource sheds”, Environmental Protection Agency, Research Triangle Park, NC, 2007.
- “Applying the dose-response model to ecological questions”, The laboratory group of Dr. Emma Rosi-Marshall, Loyola University, Chicago, IL, 2007.
- “Linking watersheds and coasts by delineating resource sheds”, Network of Cincinnati EPA Trainees (NCET), Cincinnati, OH, 2007.
- “Resource shed delineation and application”, Management advisory team meeting, University at Buffalo, Buffalo, NY, 2007.
- “Resource shed delineation in Lake Erie”, Ecosystem Research Branch, EPA-NERL, Cincinnati, OH, 2006.
- “Aquatic invasive species: trends and challenges”, Invited Seminar, Shared Waters: A Symposium on the Great Lakes, Western Michigan University, 2006.
- “Resource shed delineation in the Great Lakes”, MI Department of Natural Resources, Traverse City, MI, 2006.
- “Resource shed delineation in the Great Lakes”, MI Department of Natural Resources, Detroit, MI, 2006.
- “Resource shed delineation in the Great Lakes”, Resource Shed Workshop, University at Buffalo, Buffalo, NY, 2006.
- “Great Lakes aquatic invasive species research priorities”, Invited Panelist, IAGLR: Understanding Michigan Great Lakes Research Needs and Looking Forward, 2005.
- “Biological invasions in the Great Lakes: science, policy, and management”, Invited Seminar, Great Lakes Research Planning Workshop, Purdue University, 2004.
- “Biological invasions in the Great Lakes: science, policy, and management”, Invited Seminar, NOAA Great Lakes Seminar Series, GLERL, 2004.
- “Newly discovered and corroborated deleterious effects of zebra mussels on lake ecosystems”, Invited Seminar, NOAA Great Lakes Seminar Series, GLERL, 2003.
- “The Lotic Intersite Nitrogen eXperiment (LINX)”, Invited Seminar, Department of Biological Sciences, University of Pittsburgh, 2001.
- “Biological invasions”, Public Seminar, Three Rivers Rotary Club, 2001.
- “Biological invasions”, Public Seminar, Seedlings Garden Club, 2000.

PROFESSIONAL SERVICE

Panels and Symposia:

- Attendee: EPA Integrated Modeling for Integrated Assessment Workshop, 2008, 2007.
- Invited Participant: “EPA Future Midwestern Landscapes Study Design Meeting”, 2007.
- Alternate NOAA Representative to the Great Lakes Aquatic Nuisance Species Panel, 2005.
- Invited Panelist and Speaker on Invasive Species Research Priorities: IAGLR conference forum “Great Lakes Research Needs”, MI Dept. of Environ. Quality (sponsor), 2005.
- Invited Participant: “Aquatic Nuisance Species and the Disruption of the Great Lakes Food Web Symposium”, National Wildlife Federation (sponsor), 2005.
- Invited Participant: “Aquatic Invasive Species Database Summit”, 2005.
- Invited Participant: “NOAA Aquatic Invasive Species Retreat”, 2005.
- Participant: “AIS Rapid Response Workshop”, Great Lakes Commission, 2004.
- Participant: “Lake Erie Science Planning Workshop”, GLERL, 2004.
- Participant: “National Ecological Observation Network Workshop”, MSU - KBS, 2004.
- Attendee: “Great Lakes - Baltic Sea Invasive Species Symposium”, 2004.
- Attendee: “Great Lakes Aquatic Nuisance Species Panel Meeting”, 2004.

Written Contributions:

- Internal review: Evaluation of non-target effects associated with transgenic crops”, EPA NRML report, 2008.
- Review of “An Analysis of the Effectiveness of Ballast Water Exchange in Controlling Aquatic Nonindigenous Species Introductions to the Great Lakes Basin and Chesapeake Bay”, Report to Congress, 2006.
- NOAA Aquatic Invasive Species Program Five Year Strategic Plan, 2006.
- Aquatic Invasive Species Research Priorities, Great Lakes ANS Panel, 2004.
- Aquatic Invasive Species Control and Management Research Priorities, NOAA AIS Research Strategy Workshop, 2004.
- International Maritime Organization (IMO) Ballast Water Organism Mitigation Standards, Ballast Water Technology Type Testing Regulations, and Draft Guidelines for Ranking Invasive Species Projects in Natural Areas, U.S. Coast Guard, 2004.

Symposium and Workshop Organization:

- “Quantifying Ecological Subsidy and Resource Sheds”; Propose and run a special session at the ASLO Conference, 2007.
- “Environmental Science Careers Seminar Series”; Create and present a four-part seminar series for undergraduate and graduate students, GLERL, 2005.
- “NOAA Aquatic Invasive Species Research Strategy Workshop”; Lead the Control and Management breakout workgroup, 2004.
- “Stable Isotopes in Aquatic Food Web Research: Pitfalls and Potentials”; Propose and run a workshop at the LTER All-Scientist Meeting, 2001.
- “First Biennial Western Pennsylvania Symposium of Ecologists, Evolutionary Biologists, and Systematists”; Co-organize and co-host, Powdermill Nature Reserve, 1995.

Proposal review:

- Cooperative Institute for Coastal and Estuarine Environmental Technology.
- NOAA GLERL International Field Years on Lake Erie.
- NOAA Great Lakes Ecosystem Research Program.
- US National Science Foundation.
- NOAA Sea Grant.

Manuscript review:

- *Journal of the North American Benthological Society.*
- *Canadian Journal of Fisheries and Aquatic Sciences.*
- *Journal of Great Lakes Research.*
- *Marine Ecology Progress Series.*
- *Limnology and Oceanography.*
- *Marine Biology.*
- *Hydrobiologia.*
- *Wetlands.*

CONTINUING EDUCATION

Project Management	16 hrs.	In-house guest trainer Michael Greer	2006
Advanced Conservation GIS and Remote Sensing	32 hrs.	Smithsonian's National Zoological Park Conservation and Research Center	2006
Introduction to ArcGIS II	24 hrs.	ESRI	2005
Introduction to ArcGIS I	16 hrs.	ESRI	2005
Microsoft Access II	8 hrs.	Washtenaw Community College	2004
Microsoft Access I	8 hrs.	Washtenaw Community College	2004
Confined Space Entry	4 hrs.	Hazmat School	2004

CURRENT SOCIETY MEMBERSHIPS

American Society of Limnology and Oceanography	2000- present
Ecological Society of America	1997- present
North American Benthological Society	1993- present

OUTREACH and COMMUNITY SERVICE

National Ocean Science Bowl , Moderator, Science Judge	2004-2006
Interviewee for newspapers, television, and radio concerning biological invasion.	2000-2005
Invited Speaker , Lego Robotics Teams, Women in Science (University of Michigan)	2005
Volunteer at the NOAA Booth in the Detroit International Boat Show	2004
International Science and Engineering Fair , Grand Awards Judge	2000, 2004
Mentor local 7th grader science project : "Will turtles eat zebra mussels?"	1998
Emergency Medical Technician , Medical Supply Officer, Secretary: Foxwall EMS.	1989-1992

REFERENCES

1. Stephen K. Hamilton, Ph.D.*Ph.D. major advisor.*

Professor

W. K. Kellogg Biological Station

Michigan State University

3700 East Gull Lake Drive

Hickory Corners, MI 49060

269-671-2231

hamilton@kbs.msu.edu

3. David M. Walters, Ph.D.*EPA mentor now at USGS.*

Ecologist

US Geological Survey

Fort Collins Science Center

2150 Centre Ave, Building C

Fort Collins, CO 80526-8118

970-226-9484

waltersd@usgs.gov

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